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YALE STUDIES IN ECONOMICS

VOLUME I

THE AMERICAN CIGARETTE INDUSTRY

A Study in Economic Analysis and Public Policy

By

RICHARD B. TENNANT

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NEW HAVEN

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To

My Mother

PREFACE

MY interest was first drawn to the cigarette industry in the spring of 1946, and the first version of this study was submitted as a doctoral dissertation at Yale University in May, 1948. Since then it has been completely rewritten. A summary version was published under the title "The Cigarette Industry," as Chapter VII in *The Structure of American Industry* edited by Walter Adams (New York, Macmillan, 1950). I am grateful to the copyright holder, the Macmillan Company, for permission to use portions of that chapter in the present volume. I am also indebted to the University of Chicago Press and the McGraw-Hill Book Company for permission to reproduce Figures XVII and XXVII.

It is a pleasant duty to thank those who have contributed to the completion of this study. Among my colleagues at Yale University, Professor Eugene V. Rostow first stimulated my interest in the industry, while Professor George H. Dession made available to me his copy of the transcript of proceedings in the 1941 antitrust prosecution, as well as a wealth of information concerning personalities in the industry. Professors Ralph M. Brown and Kent T. Healy have given many valuable suggestions. Professors Chester I. Bliss, Elvin M. Jellinek, and G. Warren Nutter gave helpful advice on statistical principles, though they bear no responsibility for the applications made. I am indebted to Messrs. Elmer W. Hallowell, Kenneth Jenkins, and Henry A. Peel, my former colleagues in the Economic Data Analysis Branch, Office of Price Administration, for much useful information. My greatest personal debt is to Professor John P. Miller of Yale University who has read several drafts of this work and whose criticisms and suggestions at many points have served to refine and to focus the argument. I am, of course, wholly responsible for the errors and omissions which remain.

I wish also to acknowledge my indebtedness for exceptionally able help in preparing the manuscript for the printer. Mrs. Mathias W. Niewenhous typed the greater part of two versions with unfailing speed and accuracy. Mr. Charles Levy prepared the graphs. Mr. Sherman S. Hasbrouck, Yale '50, holder of a Bursary Appointment in 1948–49, typed most of a revised draft from Soundscriber dictation and uncovered information needed for revisions. His successor, Mr. Warren H. Higgins, Jr., Yale '52, performed some of the same functions and also performed the onerous tasks of checking sources and computations, and compiling a portion of the index. It is no exaggeration to state that without the skill and hard work of these two men this book would still be in rough manuscript.

Finally, I wish to express my gratitude to the Yale University Department of Economics which has made publication possible by a grant from its research fund.

Richard B. Tennant

Timothy Dwight College
Yale University
July 18, 1950

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CUE TITLES

CUE	TITLE
BC	U.S. Bureau of Corporations. *Report of the Commissioner of Corporations on the Tobacco Industry,* Pts. I–III. 1909–15. 3 vols.
CIR	U.S. Commissioner of Internal Revenue. Annual Reports, 1864–1949.
Cox	Cox, Reavis. *Competition in the American Tobacco Industry, 1911–1932.* New York, Columbia University Press, 1933.
DA	U.S. Department of Agriculture. Annual Reports on Tobacco Statistics. 1937–49. Prepared in various years by: Agricultural Marketing Administration, Agricultural Marketing Service, Bureau of Agricultural Economics, Production and Marketing Administration, War Food Administration.
DX	*United States* v. *American Tobacco Co.* United States District Court for the Eastern District of Kentucky, Criminal No. 6670 (1941), Defendants' Exhibits.
Fisher	Fisher, W. H. *Economics of Flue-cured Tobacco.* Richmond, Federal Reserve Bank of Richmond, 1945.
GX	*United States* v. *American Tobacco Co.* United States District Court for the Eastern District of Kentucky, Criminal No. 6670 (1941), Government Exhibits.
Moody's	Moody's Investors Service. *Moody's Manual of Investments American and Foreign. Industrial Securities.* New York, Moody's Investors Service, 1949.
OPA	U.S. Office of Price Administration. Photostatic copies of documents in the National Archives.
OTC	U.S. Office of Temporary Controls, Office of Price Administration, OPA Economic Data

CUE	TITLE
	Series, No. 21. *Survey of Tobacco Products Manufacturers.* May, 1947.
Poor's	Standard and Poor's Corporation. *Standard Corporation Descriptions.* New York, Standard and Poor's Corporation.
Robert	Robert, J. C. *The Tobacco Kingdom: Plantation, Market, and Factory in Virginia and North Carolina, 1800–1860.* Durham, Duke University Press, 1938.
Robert, *Story*	——— *The Story of Tobacco in America.* New York, Knopf, 1949.
Tilley	Tilley, N. M. *The Bright-Tobacco Industry, 1860–1929.* Chapel Hill, University of North Carolina Press, 1948.
TP	*United States* v. *American Tobacco Co.* United States District Court for the Eastern District of Kentucky, Criminal No. 6670 (1941), Transcript of Proceedings. Names following page references are those of witnesses.
Wootten	Wootten, H. M. *Printers' Ink, 202,* No. 5 (January 29, 1943), 12; *206,* No. 4 (January 28, 1944), 20; *210,* No. 5 (February 2, 1945), 17; *218,* No. 5 (January 31, 1947), 36; *222,* No. 4 (January 23, 1948), 27; *226,* No. 1 (January 7, 1949), 28; *230,* No. 2 (January 13, 1950), 26.

PART I

INTRODUCTION

Chapter I

THE PROBLEM

IN 1949 THE AMERICAN PEOPLE consumed 351.8 billion cigarettes for which they spent $3,502 million through normal channels of trade.[1] Another 33.2 billion, worth $97 million at wholesale, were withdrawn free of tax for export or for use on ships at sea.[2] Cigarettes accounted for 1.4% of the gross national product at market prices and for 3.5% of all consumer expenditure on nondurable goods.

The importance of this activity to various sectors of the economy may be seen from Table 1.

TABLE 1

Approximate Distribution of Cigarette Sales Value, 1949 *

Item of Cost or Profit	Millions of Dollars
State excise tax	380
Federal excise tax	1,231
Corporation income tax	93
Total taxes	1,704
Wholesale and retail margins	708
Farm value of tobacco used	550
Other manufacturing and selling costs	480
Interest	20
Net profits of manufacturers	137
Total	3,599

* See n. 1, this page.

Federal tax yields from cigarettes in 1949 were larger than the proceeds from all internal revenue taxes for any year prior to 1918. Tobacco is the fourth most important cash crop in American agriculture and ranks first in Connecticut, Maryland, Virginia, North Carolina, and Kentucky. Cigarettes are distributed in all states by about 5,600 jobbers and a million retail outlets.

As may be seen from Figure I, this economic importance is a recent development. Two generations ago cigarettes were a minor branch of the tobacco industry, a branch which "in point of value . . . has always ranked below the plug, smoking and cigar branches, but above snuff, fine-cut, and little cigars." [3] In 1900 cigarettes accounted for 3.4% of

1. See Appendix A, p. 389, for explanation of these and other quantitative estimates in this chapter not individually documented.

2. Other tobacco products accounted for another $796 million of consumer expenditure in 1948.

3. *BC*, Pt. III, p. 151.

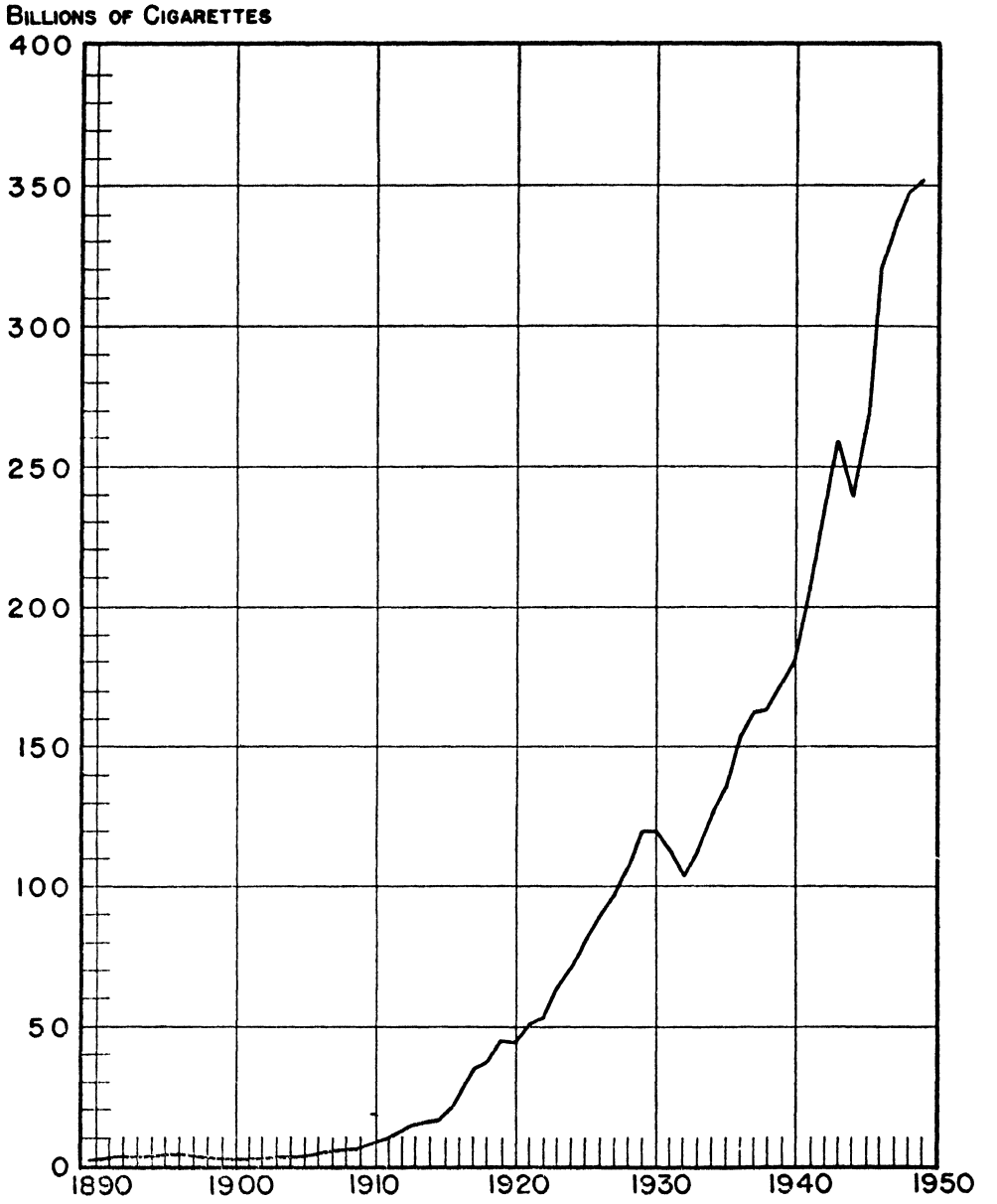


FIGURE I. Tax-paid withdrawals of small cigarettes, 1890–1949. Prior to 1897 includes little cigars.

SOURCES: *CIR; DA.*

the leaf tobacco consumed, for 6.7% of tobacco tax receipts, and for 4.1% of the value of tobacco products. In 1946 the same figures were 76.0%, 92.5%, and 76.3%. Total expenditure on cigarettes in 1900 was only $12.8 million, or less than 0.4% of sales in 1949.

Cigarette production is concentrated in a small number of large firms. Three companies, in 1949, accounted for 78% of the national output, and

the six largest produced 98% of the total. The remaining 2% of the market, amounting to about 8.5 billion cigarettes, was divided among some 35 other producers, no one of whom accounted for more than 0.8% of the national output.

This concentration has been remarkably stable over the years. The three largest companies have been the industry leaders ever since the First World War. Other companies have come forward in recent years to struggle for the fourth position, but there is a wide gulf between the Big Three and their next competitors, and their leadership has never been seriously challenged.

The major cigarette companies compete among themselves by means of heavy advertising expenditures. The leading brands are usually sold at identical wholesale and retail prices, and the former may stay unchanged for years at a time. It is unusual for price to be used as a competitive weapon.

Rapid growth, industrial concentration, and nonaggressive price behavior have been reflected in sustained high profits for the industry leaders. The net earnings plus interest given in Table 1 amount to only 6.3% of net sales and to 8.5% of tangible assets, but these figures reflect abnormal influences of the postwar period. In the 30 years from 1912 to 1941 the three leading companies earned average yearly net profits after interest and taxes equal to 17.5% on their tangible net worth, and the American Tobacco Company earned 12.1% on net sales over the same 30-year period. There is reason to believe that these figures underestimate the true profitability of cigarette manufacture, but even so they are remarkably high. From 1929 to 1941 the American Tobacco Company earned 11.1% on net sales, while American manufacturing corporations as a whole were earning only 3.8%.[4]

The concentration of output and the stable prosperity of the leading firms are immediately suggestive of monopoly, and monopoly is, in fact, an old problem in the cigarette industry. Twice in its brief history there have been successful Sherman Act prosecutions, and there have been frequent complaints of unfair trade practices, collusion, and price manipulation. In 1911 the Supreme Court declared the American Tobacco Company and its subsidiaries and affiliates, together known as the "Tobacco Trust," to be a monopoly and a combination in restraint of trade within the meaning of the Sherman Act.[5] A subsequent circuit court decree dissolved the combination, divided its business among 16 "successor companies," and enjoined a number of specific forms of collusive behavior.[6]

The terms of the dissolution decree aroused much protest at the time it was issued, and 30 years later, in 1941, the major successor companies

4. See p. 342.
5. *United States* v. *American Tobacco Co.*, 221 U.S. 106 (1911).
6. *United States* v. *American Tobacco Co.*, 191 F. 371 (1911).

and 13 of their officers were convicted of further violations of the Sherman Act.[7] The Supreme Court upheld this conviction in 1946.[8] There was no charge that the provisions of the original settlement had been violated, and this suggests that the remedies granted by the courts in 1911 were inadequate.

The effects of the second antitrust case are still uncertain. The 1911 case was a proceeding in equity to obtain specified reforms, but the 1941 case was prosecuted on criminal charges and the only direct result was to impose fines of $15,000 on each defendant. These fines, and even the heavier burden of litigation costs, are small when measured against the financial strength of the major corporations or against the private fortunes of the individual defendants. The fines serve principally to register the fact that a conviction has been obtained, and the government may yet seek to change some aspects of industry structure or behavior through further proceedings in equity.

It is this issue of pending reform which gives to the present study one of its principal purposes. We wish to examine the dissolution settlement of 1911, and the subsequent history of the industry, and to consider possible reforms which the courts might enforce in future proceedings. In later chapters we shall investigate the market structure and market behavior of the cigarette industry. We shall examine the influence of structure and behavior on each other and shall seek to explain them both in terms of the technical peculiarities and historical accidents which have affected the industry. We shall, in other words, attempt to develop a theory of oligopoly behavior, taking into account the leading institutional peculiarities of the cigarette industry, and we shall also try to discover why those institutional peculiarities are what they are. From our knowledge of market behavior we may be able to judge the urgency of reform, and from our study of the origins of market structure we may discover desirable and effective remedial measures.

Whatever results we obtain should have a wider relevance than for this one industry alone. Although the cigarette industry is, by itself, no mean affair, it is important in a wider sphere as representative of the many industries where competitors are large and few. We are investigating one aspect of the problem of bigness in a free economy.

The problem is important and thus far largely unsolved. We, as a people, have not decided on a national policy toward large-scale industry, and economists are not agreed among themselves as to what such a policy should be. In the present continuing world crisis when, in all societies, the state exercises unprecedented power, the smaller Leviathans of indus-

7. *United States* v. *American Tobacco Co.*, United States District Court for the Eastern District of Kentucky, Criminal No. 6670 (1941).

8. *American Tobacco Co.* v. *United States*, 328 U.S. 781 (1946).

try do not seem so serious a menace. But if we are to regain a peaceful world, and if a vigorous democracy is to survive, it is necessary that freedom and initiative not be swallowed up either by the state or by too great concentrations of private economic power. It is this wider political issue as well as the narrower considerations of resource allocation and exploitation which make industrial size a vital problem.

Of course, highly concentrated industries are not all alike. Market structures differ, and we may expect them to yield different economic results and to present different problems of control. Yet all such industries raise certain common issues, and if the problems of policy for any one of them can be solved, the solution for similar industries is that much advanced.

One purpose of this study, then, is to evaluate present public policy and to suggest possible new lines of approach. An equally important aim is to contribute to the development of economic theory. In recent years the analysis of the firm in various kinds of competitive circumstance has reached a high degree of refinement and elaboration. Much of this analysis, however, has been developed in general terms, without reference to industrial peculiarities, and rests upon assumptions which have been subjected to serious criticism. An empirical study of one industry should indicate whether the assumptions of traditional analysis are valid for that industry and should also serve to give proper theoretical recognition to its institutional characteristics.

According to the usual analysis of the firm, equilibrium is found at that output for which marginal cost and marginal revenue are equal. This same equilibrium position may also be defined as the level of input for which marginal cost of input is equal to marginal revenue product.[9] These equilibrium conditions may be understood to mean any one or all of the following statements:

1. A rationally conducted firm
   a) attempts to achieve maximum profits,
   b) uses marginal analytical techniques in reaching this goal.
2. Most firms do
   a) attempt to achieve maximum profits,

9. It is worth recalling the obvious but easily forgotten fact that marginal equilibrium conditions are derived from the criterion of maximum profits by processes of formal logic and that the statement of these conditions is merely a special way of saying that maximum profits should be or are obtained. If maximum profits exist, then the marginal adjustment is perfected. If the marginal adjustment is made, then maximum profits exist. This follows from the general mathematical principle that the difference between two functions is a maximum (or a minimum!) when the first derivatives of those functions are equal. Now, profits are the difference between revenue and cost. Marginal revenue and marginal cost are the first derivatives of the revenue and cost functions, respectively. Consequently, the equilibrium conditions of marginal analysis arise by definition and can be found without the use of any economic reasoning whatever.

b) use marginal analytical techniques in reaching this goal,

c) succeed in obtaining maximum profits, i.e., make the most of their opportunities.

3. The economist can predict entrepreneurial behavior and determine its economic results from a knowledge of marginal curves as determined by

a) entrepreneurial expectations,

b) objective market circumstances.

Each of these interpretations has been sharply challenged.[10] Critics object that maximum profits are not necessarily the only rational end of business. There are other ends—prestige, public service, economy of effort—which are quite as rational objects of policy. Nor are businessmen always rational. Competing interests of many sorts may prevent the firm from seriously attempting to make profits as large as possible. Other economists object that, whatever the objects of policy, marginal techniques are not used in making business decisions and are not, in fact, suited to such use. Finally, it is objected that, regardless of aims and methods, it is not likely that the firm will obtain maximum profits. Even a successful firm may not make the highest profits possible and hence may operate happily at a point quite inconsistent with "equilibrium." Thus marginal analysis describes neither the objects of business policy, nor the process of policy decision, nor the consequences of such policy. If these objections be granted, it follows that entrepreneurial expectations cannot be usefully interpreted in marginal terms and that to interpret objective circumstances in marginal terms is to direct attention to irrelevant aspects of the firm's environment.

Without attempting to decide the issues here raised, it is sufficient to state the working hypotheses which will be used in the remainder of this study:

1. Profits are a sufficiently important object of business policy so that the implications of profit seeking are significant for an understanding of business behavior.

2. The statement of the maximum profits criterion in marginal terms is analytically useful. Like other mathematical methods it adds nothing to factual information, but like other mathematical methods, it makes easier the handling of quantitative data and concepts.

Marginal analysis provides our only analytical framework for a study

10. See especially R. L. Hall and C. J. Hitch, "Price Theory and Business Behaviour," *Oxford Economic Papers,* No. 2 (May, 1939), pp. 12–45; W. J. Eiteman, "The Equilibrium of the Firm in Multi-Process Industries," *Quarterly Journal of Economics, 59* (February, 1945), 280–286; R. A. Lester, "Shortcomings of Marginal Analysis for Wage-Employment Problems," *American Economic Review, 36* (March, 1946), 63–82; M. W. Reder, "A Reconsideration of the Marginal Productivity Theory," *Journal of Political Economy, 55* (October, 1947), 450–458. For a defense of marginalism, see Fritz Machlup, "Marginal Analysis and Empirical Research," *American Economic Review, 36* (September, 1946), 519–554.

of industry behavior, and we are bound to use it until a better one is evolved. We will, therefore, tentatively assume the usefulness of this method and apply it in our later work. If an adequate watch is kept for the influence of other variables than those normally included in the theory of the firm, this procedure should not involve us in any grave errors and may throw light on the behavior of the cigarette industry. And from our study of the industry, in turn, we should be able to judge the soundness of the marginal approach.

We wish, however, not only to test the validity of traditional analysis but also to make it more useful by applying it to a specific industry. The theory of the firm has been developed on the basis of general assumptions as to cost and revenue functions supposed to be equally valid for all industries. Thus diminishing returns to one input factor as it is increased while other factors are held constant are used to account for falling marginal product and rising marginal cost. The ultimate satiation of consumer demand for any particular commodity yields declining average and marginal revenue. It is usually assumed that these functions can be represented by continuous curves and that the changes are gradual.

One cannot escape the feeling that curves of this sort, drawn on the basis of excessively general hypotheses, will yield only unreliably general conclusions. If this analytical framework is to have relevance to any particular industry, it is necessary to specify the curve shapes which technical circumstance and market limitations require. Failure to do so has been responsible for some of the heaviest critical attacks on marginal analysis. The detailed study of the cigarette industry may aid the development of theory not only by indicating whether or not the marginal categories are relevant to experience but also by supplying factual content to the curve shapes which are so often plucked out of the blue.

In conditions of oligopoly, such as we find in the cigarette industry, it is even more important to take account of institutional peculiarities than it is in other types of competition. Fortunately, there is less likelihood of neglect in such industries, for the importance of institutional differences is clearly apparent in oligopoly theory. The nature of equilibrium in oligopoly depends upon the strategies of opposing firms. There are many possible policies, many possible reactions by competitors, and equally many possible expectations of competitors' reactions. The result has been the construction, not of a single theory, but of a body of coordinate theories based upon different assumptions as to the nature of competitive relations among the few large firms which make up the industry. From Cournot to von Neumann and Morgenstern, the development of oligopoly theory has been the development of a number of discrete cases with varying assumptions as to the degree of foresight possessed by competitors.

According to these different assumptions, oligopoly may result in prices higher than monopoly, lower than perfect competition, or somewhere

in between. Prices once set may be subject to violent fluctuations or completely rigid. With this variety of theoretical results, no one is likely to approach specific problems with the assumption that one piece of analytical apparatus is equally valid for all times, places, and industries. It is perfectly clear that the practical use of oligopoly theory requires a careful investigation of the industry under study to determine the competitive relations whose results are in question. Oligopoly theory is indeed a "ticket of admission to institutional economics." [11] So, of course, is all economic theory. The ultimate justification of economic analysis is its presumed usefulness in solving problems of policy. It can be so useful only if it is made realistic and if the institutional peculiarities of each situation are carefully examined in order to aid in adapting assumptions to observed facts or at least to indicate the limits of applicability of the analytical tools being used.

If this is done, the solution of practical problems can be advanced by relevant analytical methods, while a careful regard for institutional fact will improve the soundness and scope of theoretical models. A single empirical study of this sort may contribute something to the development of economic analysis. Its full contribution, however, is likely to be realized only in conjunction with other industry studies which, by establishing patterns of institutional behavior, may indicate the general relevance of marginal analysis and may also suggest new lines of theoretical inquiry.

A question may arise as to why this study is entitled *The American Cigarette Industry* instead of "The American Tobacco Industry." The six major producers of cigarettes are also major producers of other tobacco products. Only two produce cigars and one produces snuff, but all are important producers of smoking and chewing tobaccos. Nevertheless, the principal focus of the industry and of this study is on cigarettes. More than 90% of the dollar sales of the five producers for whom figures are available is derived from cigarettes. The cigarette majors are relatively less important in the other tobacco fields, and competitive relationships in the other branches are different. The cigarette end of the business within each firm is sufficiently distinct so that separation in study is possible. The process of production of cigarettes is separate from that of other products and it is only in the purchase of leaf and the mechanics of product distribution that the various forms of manufactured tobacco are closely related. Finally, cigarettes have been the key to the tobacco industry throughout their history, even when, in terms of money expenditure, they were relatively insignificant. Cigarettes were the foundation stone of the old Tobacco Trust. Cigarettes have been the principal concern of the successor companies since the industry first assumed its present organization. For all these reasons, and because life is short, it seems wise

11. E. S. Mason, "Price and Production Policies of Large-Scale Enterprise," *American Economic Review Supplement, 29,* No. 1 (1939), 61.

to restrict the scope of this study. From time to time we shall refer to other tobacco products and shall have occasion to remark on differences in their economic behavior, but our principal work and interest will be with cigarettes alone.

Part II traces the historical development of the cigarette industry, indicates some of the general influences to which it has been subject, and outlines its present organization.

Part III examines the structure of the industry with respect both to the purchase of leaf tobacco and to the sale of the finished product. The nature of cigarette demand and the techniques of leaf and cigarette production are considered. Emphasis is placed upon the way in which market structure and institutions reflect underlying technical necessities.

Part IV is concerned with market policy and with profit results. Observed behavior is compared with that which theory would lead us to expect as the result of the institutional circumstances discussed in Part III.

Part V integrates the analysis of Parts III and IV and applies the findings to current issues of public policy. The first chapter develops a general theory of the industry in terms of dynamic adaptation to environment and examines the usefulness and validity of marginal analysis. The final chapter considers economic and political criteria for policy and suggests a number of possible reforms.

PART II

HISTORY

Chapter II

ORIGINS TO 1890

Early Growth

ALTHOUGH CIGARETTES HAVE become a major tobacco product only since 1900, their history in the United States reaches back before the Civil War. During most of this period the industry has exhibited a characteristically high rate of growth. Figure II, in which cigarette production and consumption are plotted on a logarithmic scale, indicates the long period of preparation for the apparently sudden eruption after 1900.[1]

In 1854 an observer of New York smoking practices reported that "some of the *ladies* of this refined and fashion-forming metropolis are aping the silly ways of some pseudo-accomplished foreigners in smoking Tobacco through a weaker and more *feminine* article which has been most delicately denominated *cigarette*." [2] Ten years later manufactured cigarettes were well enough known to be the object of special taxation. The Internal Revenue Law adopted June 30, 1864, levied $1 per hundred packages "on cigarettes made of tobacco, enclosed in a paper wrapper, valued at not over five dollars per hundred packages, each containing not more than twenty-five cigarettes." [3] A $3 tax was imposed on the same quantity of more expensive cigarettes. In the subsequent fiscal year, tax was paid on 19.7 million cigarettes, more than 14 million of which were in the cheaper price class.[4]

The new industry was nearly strangled at birth. In the next years sharp

1. Figure II may require some explanation. A semilogarithmic graph, or "ratio chart" as it is sometimes called, has the principal advantage of directing attention to percentage changes rather than absolute changes. Distances along the vertical axis are proportional, not to annual quantities of cigarettes as in Figure I, but to the logarithms of those quantities. The effect of plotting in this manner is to make a given vertical interval in any part of the chart represent the same percentage of the quantity marked by the bottom of the interval. Thus the distance between 50 million and 60 million cigarettes is the same as that between 1 billion and 1,200 million or between 20 billion and 24 billion. In each case the interval is 20% of the lower figure. If the cigarette growth curve were a straight line sloping upward to the right, this would indicate that each year the consumption increased by a constant percentage over the consumption of the year preceding. A similar line on Figure I would indicate that consumption increased each year by a constant number of cigarettes. Figure I is useful when we wish to discuss the absolute size of cigarette consumption and the absolute increase from one year to the next. Figure II is helpful when we wish to discuss percentage rates of growth. For further explanation of the meaning and uses of logarithmic graphs, see any standard statistical textbook.

2. Robert, *Story*, p. 112.

3. U.S. Laws, Statutes, 38th Congress, 1st Session, Chapter 173 (1864).

4. *CIR*, 1900, p. 435.

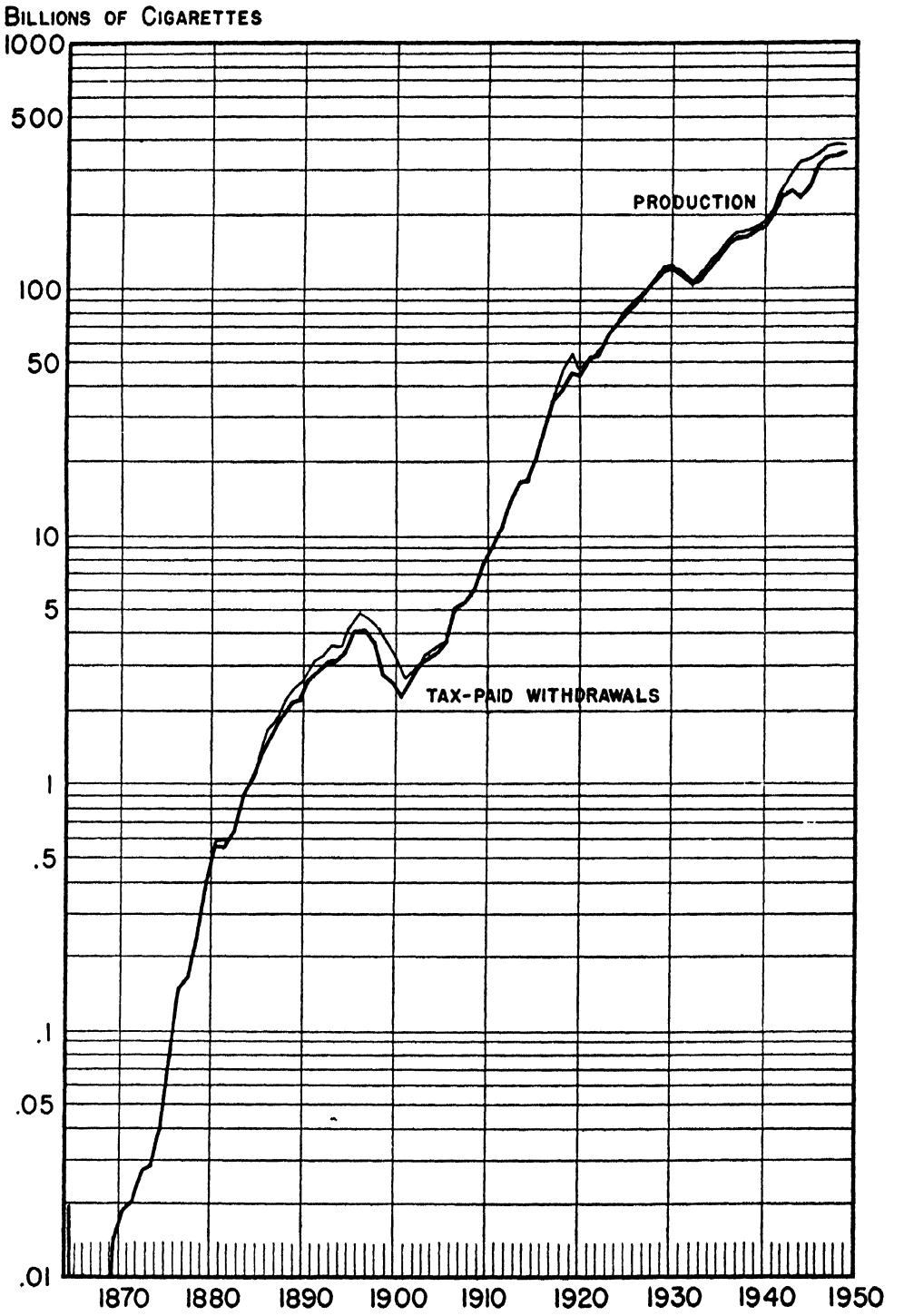


FIGURE II. Small cigarettes: tax-paid withdrawals, 1865–1949; production, 1880–1949. Large cigarettes included prior to 1898. Little cigars included in withdrawals, 1867–96, and in production prior to 1897.

SOURCES: *CIR; DA.*

tax increases, first to $2 and then to $5 per thousand, reduced tax-paid consumption to very low levels, and it was not until 1868, when tax rates were cut back to $1.50 per thousand small cigarettes, that growth was resumed.[5] Taxes were paid on only 1.8 million cigarettes in the fiscal year 1869, but by 1872 the level of 1865 was surpassed. Production reached 0.5 billion in the calendar year 1880 and exceeded 1.0 billion in 1885.[6] As may be seen from Figure II, the percentage rate of growth in this early period was the most rapid in the industry's history. This growth persisted despite a new tax rise to $1.75 per thousand in 1875.

In the earliest years cigarettes were produced principally in New York and a few other cities, where considerable populations of the foreign born provided skilled rollers and a market. The first cigarettes were made of Turkish tobacco, and the fact that New York was the port of entry was another circumstance favoring location in that city. Almost immediately, however, a change to the use of domestic Virginia tobacco encouraged manufacture in the South as the region of principal material supply, and the firm of Allen and Ginter began to manufacture cigarettes in Richmond around 1875.[7]

Technology and Costs

The change from imported to domestic leaf reduced the cost of production, encouraged the manufacture of cheaper brands, and helped to stimulate consumption. With the decline in leaf costs, attention focused on the high labor costs of manufacture. All production was by hand, and a skilled workman could roll no more than 3,000 cigarettes in a 10-hour day.[8] In 1876 the labor costs of one brand were 96.4¢ per thousand, of which 86.2¢ was required for the operation of rolling the cigarette itself.[9] The process of manufacture seemed relatively simple, and there were many attempts to develop machinery for rolling cigarettes. Allen and Ginter encouraged inventive efforts and offered $75,000 for a practical cigarette machine.[10] Despite the incentives, it was several years before success was achieved.

In 1872 Albert H. Hook made "the first known attempt to manufacture a rolled and wrapped cigarette of indefinite length." [11] The principal prob-

5. *Ibid.*, p. 433. Small cigarettes were defined as those weighing 3 pounds or less per thousand. Heavier cigarettes were taxed at $5. Although tax rates have changed several times since 1868, the two weight classes of small and of large cigarettes still serve as the tax base. The volume and tax proceeds of large cigarettes have always been insignificant.

6. *DA*, 1937, p. 90.

7. Tilley, p. 508.

8. *BC*, Pt. III, p. 149.

9. *Ibid.*, Pt. I, p. 63.

10. Tilley, p. 570.

11. *Bonsack Machine Co.* v. *Elliott*, 69 F. 335, 336 (1895).

lems encountered concerned the proper forming and compression of the filler and the difficulty of drawing the paper through the mechanism without breakage. In Hook's machine, tobacco was not preformed before reaching the paper. The paper itself was drawn from a flat spool through a former and served both to compress the filler and to draw the whole cigarette through the machine. Although Hook patented his invention in 1876, it was never used commercially. In 1874 a patent was issued to the Abadie Company of Paris for a machine with the additional feature of a preformed filler. This too was a commercial failure.[12]

In 1879 Charles and William Emery patented a machine which relieved the cigarette paper itself of most of the stress. An endless ribbon belt, passing through formers, first compressed the filler and, after delivering the filler to the paper, enfolded the completed cigarette and carried it through yet another former for sealing. A further patent was issued to William Emery in 1884 for a vibrating tamping bar to improve the packing of the filler.[13] The Emery machine proved fairly successful and was used commercially by Goodwin and Company of New York, of which Charles Emery was head.[14]

The first fully satisfactory machine, however, was patented by James A. Bonsack in 1881 and was subsequently improved. In this machine an endless belt underlay both paper and filler and passed through the mechanism with both.[15] Bonsack's distinctive contributions were improvements in the tobacco feeding mechanism, the cigarette forming tube, and the cutting knife.[16] His machine weighed a ton, absorbed one-half horsepower, and required an operator and two feeders. It could produce 200–220 cigarettes per minute in the middle 1880's, compared with 750–1,600 per minute for present-day machines. The Bonsack Machine Company customarily rented its machines, complete with operator, on a royalty basis, charging 30¢ or 33¢ per thousand depending upon whether a printing device was used. A guarantee of $200 per month was required. Even with these royalties the Bonsack machine reduced the cost of rolling cigarettes by more than half, and the labor costs alone of this operation were cut to 2¢ per thousand.[17] With these savings it was inevitable that machine methods should replace hand manufacture on all but the most expensive brands.

Thus by the middle 1880's the cost of producing cigarettes was sharply reduced both by the use of domestic leaf and by the development of machine manufacture, and further savings were secured in 1883, when the

12. *Bonsack Machine Co.* v. *Elliot* (sic), 63 F. 835 (1894); *Bonsack Machine Co.* v. *Elliott*, 69 F. 335 (1895).
13. *Ibid.*
14. *BC*, Pt. I, pp. 65, 67.
15. 69 F. at 338.
16. Tilley, *loc. cit.*
17. *Bonsack Machine Co.* v. *S. F. Hess & Co.*, 68 F. 119 (1895).

tax on small cigarettes was reduced to 50¢ per thousand.[18] The large decline in total cost from all causes could have its effect either in reduced prices to the consumer, in heavier selling expenses, or in larger profits for the manufacturers themselves. Ultimately, all three results occurred, and each encouraged the further growth of the industry.

The principal effect of the change in technology, however, was upon market structure. Machinery increased the optimum scale of enterprise and thus encouraged the concentration of output. Moreover, the sudden introduction of the new methods caused temporary instability in competitive relationships, which favored the courageous innovator. The ultimate consequence was a complete revision of the structure of the industry and the establishment of extreme concentration of output and of power.

Early Concentration

Even before the change to machine manufacture, the output of cigarettes was highly concentrated. In the early 1880's there were four principal manufacturers: Allen and Ginter of Richmond, Va.; William S. Kimball and Company of Rochester, N.Y.; and the Kinney Tobacco Company and Goodwin and Company, both of New York City. In 1880 these three cities contributed 80% of the nation's cigarette taxes,[19] and it is probable that these four firms had about that proportion of the national output. Between 1880 and 1885 the firm of Washington Duke Sons and Company, which had previously produced only smoking tobacco, secured a foothold in the industry through the extraordinary persistence and salesmanship of James B. Duke. The predominance of all these firms was based on their ability to expand markets. The product was new and strange, and it was necessary both to educate consumers and to open distributive channels through tobacco jobbers and retailers, so that goods would actually be available to satisfy the new demand. The position of the five leading firms was based on their advertising ability and on their power to keep the channels of distribution open.

Technology and Market Structure

In these years, however, while the industry was young, even the leading firms were quite small, and with hand methods of manufacture it was probable that the existing concentration of output could not be long continued. The process of manufacture required the supervision of numbers of skilled workmen, which would have caused difficulties in the operation of really large plants. As the industry continued its growth the leading firms could maintain their position only by an equivalent increase in their

18. *CIR*, 1900, p. 436.
19. *CIR*, 1880, pp. 11, 13.

own size, and if technological methods had remained unchanged, it seems unlikely that cigarette firms as large as those we know today could have grown up. The old firms would have found their expansion blocked by rising costs. New firms would have come in, and much less concentration of output would have resulted.

With the introduction of machinery, however, the problem of supervising hand labor was removed, and the principal obstacle to continued industrial concentration disappeared. It was possible to increase the output of a firm simply by adding more machines, and the firm was free to expand to the extent that its sales would allow. There was no obvious limit to the number of machines which a firm might operate without decline in efficiency. In this purely negative sense, the adoption of machinery removed potential barriers to the scale of enterprise.

The new machinery, moreover, gave positive encouragement to increased concentration of output. The industry was still so small that the output of a single machine was large relative to the total market. A single unit could turn out 120 thousand cigarettes in a 10-hour day, or 36 million in 300 working days. One such machine could have produced the entire national output in 1875, had it been available. Fifteen machines could have produced the 1880 output, while in 1885 only 30 such machines were necessary. Minimization of machine costs thus encouraged a relatively small number of companies.

More important was the competitive advantage which machine production conferred on particular manufacturers. The marked reduction in cost made possible by machinery gave an important advantage to the producers who first adopted the new methods. The established manufacturers as a group enjoyed an advantage over outsiders through the ownership of certain kinds of machines. Thus Goodwin and Company controlled the Emery machine, while the Kinney Tobacco Company and William S. Kimball and Company jointly owned the Allison machine.[20] To be sure, the Bonsack machine was available to all on a royalty basis, but James Duke secured special privileges with respect to these royalties, which were of great assistance in his later rise to industry leadership.

Although the Bonsack machine was patented in 1881, and although it offered large savings in cost, the established cigarette manufacturers did not at once adopt the new methods. Even Allen and Ginter, which installed the first Bonsack unit, did not install them throughout its plant until 1887.[21] The Bonsack machine was not at first fully satisfactory mechanically, and there was also a fear of possible public dislike of machine-made goods. In the early 1880's machines were used only sporadically.

20. *BC, loc. cit.*
21. J. W. Jenkins, *James B. Duke: Master Builder* (New York, Doran, 1927), p. 68.

In 1884, however, James Duke installed two Bonsack machines in the factory of W. Duke Sons and Company at Durham. A young machinist, William O'Brien, succeeded in improving the performance of these machines, and there is even a story, which may be apocryphal, that Duke himself experimented with them and helped to remove the last bugs.[22] It does appear, however, that Duke satisfied himself that the machines were worth while, and on June 11, 1885, he signed a secret contract with the Bonsack Company. The contract stated that: "the manufacturers of cigarettes who use the Bonsack machines, except the Lone Jack factory, have so far declined to put the machines on their fine brands for the reason that they fear that there may be a prejudice against machine-made work, which might injure the sales of their goods." [23] Duke agreed to put two machines on his fine brands and eventually to do all plain work by machine. In return he was to receive a special rebate which would reduce the royalty to 24¢ a thousand, whether printed or not. There was to be a further reduction to 20¢ as soon as all plain work should be done on machines. The arrangement was to be permanent, "unless the same W. Duke Sons & Co. shall divulge the same, or unless they shall fail to put the machines on their fine work." Later an additional clause guaranteed that the net royalty charged Duke should always be at least 25% less than that paid by anyone else.[24]

Although the example set by Duke in the use of machinery was soon followed by the others, he had obtained an important advantage. For a brief period he was the sole user of machinery, and later he had the best machine available on better terms than anyone else could obtain. Duke had no royalty advantage vis-à-vis those companies which owned their own machines, but his machine was more efficient than theirs. Against Allen and Ginter and against any outside competition which might arise on the basis of the Bonsack machine, Duke had a royalty advantage which permitted price concessions or increased selling expenditures.

The Bonsack machine contract was not the sole explanation of Duke's success and in other hands would not have been enough. The Lone Jack firm mentioned above was closely connected with the Bonsack Company and for a time had terms more favorable than those accorded Duke.[25] The latter was forced to sue in order to secure his guaranteed 25% advantage, yet the Lone Jack Company was a relative failure as a cigarette producer. In addition to his royalty advantage, Duke possessed commercial genius and a driving capacity to sell tobacco products. Even be-

22. W. K. Boyd, *The Story of Durham: City of the New South* (Durham, Duke University Press, 1925), pp. 88, 89.

23. Contract between Bonsack Machine Co. and W. Duke Sons & Co., *Bonsack Machine Co.* v. *S. F. Hess & Co.*, 68 F. 119, 125 (1895).

24. *Wright* v. *Duke*, 36 N.Y. Supp. 853, 855 (1895), cited in Tilley, p. 574.

25. 36 N.Y. Supp. at 856.

fore the introduction of machinery, Duke had won a strong foothold in the cigarette industry by methods which throw much light on its special characteristics.

Duke's Conquest of the Industry

Duke's interest in cigarettes dated only from 1881. His father Washington Duke had started the manufacture of bright leaf smoking tobacco on his farm near Durham in 1865. The business prospered as a family enterprise and in 1874 was moved into Durham itself. A formal partnership of Washington Duke, his three sons, and George W. Watts of Baltimore was formed in 1878, and two years later Washington Duke sold his interest to Richard H. Wright, a successful tobacco manufacturer. James Duke succeeded to effective control of the business, which at this time was worth about $70,000.[26]

The chief rival of the Dukes was Blackwell and Company, manufacturers of the famous Bull Durham brand of smoking tobacco, which at that time enjoyed wide popularity. The Duke brands were unable to make satisfactory progress against this competition, and in 1881 Duke decided to enter the cigarette business.[27] There were no skilled cigarette rollers in Durham, but this deficiency was repaired by importing a few Russian-Jewish immigrants to train and supervise local labor.[28]

For the first two years, however, business was slow. Prolonged agitation in Congress over possible tax reductions made dealers unwilling to expand inventories. The log jam was broken in March, 1883, when the reduction to 50¢ per thousand was enacted. The new rates were not to go into effect until May 1, but Duke immediately cut prices on all orders by 50%, if three-quarters of each order was for delivery after the new rates became operative.[29] By this means dealers were induced to replenish their inventories with Duke of Durham cigarettes, and a signal victory was gained over competitors. In nine months 30 million cigarettes were sold.[30] As Duke later remarked, "We got the market before the change came, and then afterwards we had it on a profitable basis." [31] In this same period R. H. Wright was sent on a 19-month trip around the world and successfully opened foreign markets to Duke cigarettes.[32] Edward F. Small and other salesmen toured the principal domestic markets, visiting jobbers and retailers both to sell goods and to observe consumer

26. Boyd, *op. cit.*, pp. 80–85.
27. *Ibid.*, p. 87.
28. Jenkins, *op. cit.*, p. 66.
29. Boyd, *op. cit.*, p. 90.
30. Jenkins, *op. cit.*, p. 72.
31. U.S. Industrial Commission, *Report of the Industrial Commission on Trusts and Industrial Combinations,* Vol. XIII of the Commission's Reports (1901), 319.
32. Boyd, *op. cit.*, p. 90.

brand preferences.[33] Newspaper advertising appealed directly to consumers. Duke had developed a slide-and-shell box which was superior to existing containers.[34] A rapid expansion of the cigarette business as well as the steady progress of the smoking tobacco brands made larger quarters necessary, and a brick factory was built in Durham in 1884.[35]

In the spring of that year Duke carried the fight to his principal rivals by establishing a branch factory on the New York East Side. A number of brands were produced, including Cameo, Cross Cut, and Duke's Best. Duke had available for his New York enterprise about $100,000, which he used with great effectiveness. Duke himself devoted much personal attention to canvassing the New York retail trade in order to push his goods. Heavy sums were spent on advertising. Some of this was in the form of newspaper and billboard display, but the consumer was also attracted by redeemable coupons or by photographs of actresses enclosed in each cigarette package. Special deals and cash rebates were allowed to jobbers to enlist their support.[36]

In the fiscal year 1885, $60,761 or 11.5% of all cigarette taxes were paid in the Fourth Collection District of North Carolina, which included Durham.[37] It is safe to infer that most of the Durham collections were on Duke's cigarettes. In addition, there was the growing business in New York. In this same year W. Duke Sons and Company paid $138,623 in taxes on all tobacco products.[38] Thus Duke was already a power in the cigarette industry before the change to machine production, and the favorable royalties after the middle of 1885 were merely one additional element in making possible his rise to the top.

The success of Duke's salesmanship suggested obvious possibilities for profit. In 1885 W. Duke Sons and Company was changed from a partnership to a corporation, with a capital of $250,000.[39] In the same year R. H. Wright, who was not informed of the full particulars of the Bonsack agreement, was induced to leave the firm. Washington Duke bought back his interest, while Wright became general manager of the Lone Jack Cigarette Company and invested heavily in Bonsack Company stock.[40]

Meanwhile Duke increased his selling pressures by every means at his disposal. He cut prices to distributors and expended large sums on advertising, employing both the funds released by his savings in production costs and the greater part of all operating profits.[41] Aggressive

33. Tilley, pp. 534–535.
34. Boyd, *op. cit.*, p. 89.
35. *Ibid.*, p. 91.
36. Jenkins, *op. cit.*, pp. 73–79.
37. *CIR*, 1885, pp. 8, 28.
38. Boyd, *op. cit.*, p. 91.
39. Jenkins, *op. cit.*, p. 72.
40. *Wright* v. *Duke*, 36 N.Y. Supp. 853 (1895).
41. Jenkins, *op. cit.*, pp. 77–79.

methods enabled Duke's cigarette enterprises to prosper both in Durham and in New York, and by 1889 Duke was the largest manufacturer in the country. In that year the sales of the five principal companies were as follows:

TABLE 2

Cigarette Sales of Five Principal Manufacturers, 1889 *

COMPANY	MILLIONS OF CIGARETTES
W. Duke Sons & Co.	834
Allen & Ginter	517
Kinney Tobacco Co.	432
William S. Kimball & Co.	237
Goodwin & Co.	168

* *BC*, Pt. II, 96.

The value of Duke's sales was $4.5 million,[42] and annual profits were at a rate of $400,000.[43]

Duke's battle for control over the cigarette industry was helped by complacency on the part of his competitors. In the earlier years they were large and rapidly growing companies which had more capital at their disposal than did Duke, and as late as 1887 one of the major cigarette manufacturers is reported to have said of Duke, "We don't consider him a manufacturer of cigarettes; he will be broke before the year is out." [44] Duke, however, knew precisely what he wanted to accomplish. As early as 1887 he made unsuccessful attempts to interest the other producers in joining forces.[45] In the following year some of the others offered to buy him out.[46] In 1889 the Kinney Tobacco Company was ready for negotiations, but Lewis Ginter told him: "Listen, Duke, you couldn't buy us out to save your neck. You haven't enough money and you couldn't borrow enough. It's a hopeless proposition." [47]

Duke continued to apply pressure. His firm spent $800,000 on premiums and advertising in 1889 alone.[48] The other firms fought back, but without proportionate results and with unhappy effects on profits. It does not appear that they were forced to yield, but Duke had made the situation most uncomfortable, had followed his aggressive policy for a long time, and indicated a willingness to continue indefinitely. It was impossible to defeat Duke without excessive cost, and the possibility of joining him grew increasingly attractive. In January, 1890, after further

42. *BC*, Pt. I, p. 64.
43. Jenkins, *op. cit.*, p. 87.
44. *Ibid.*, p. 86.
45. *BC, loc. cit.*
46. Jenkins, *op. cit.*, p. 86.
47. *Ibid.*, p. 87.
48. *BC, loc. cit.*

negotiations, the five principal manufacturers united to form the American Tobacco Company with James B. Duke as president.

This combination, which quickly became known as the "Tobacco Trust," had an almost complete monopoly of the cigarette trade. In 1889 the five companies together produced 2,188 million cigarettes, or 91.7% of the total national output of 2,413 million.

Chapter III

THE TOBACCO TRUST

THE DEVELOPMENT OF THE TRUST

Initial Capitalization

THE AMERICAN TOBACCO COMPANY was incorporated in New Jersey with an authorized capital of $15 million in common shares and $10 million in 8% noncumulative preferred, or $25 million in all. The whole of this stock was assigned to the members of the combination in proportion to the past earnings and future prospects of each company. The Dukes received $7.5 million of the total issue. Total tangible assets were expected to be $5 million for the five companies, but an inventory showed them to amount to only $3.2 million. Notes of individual stockholders were accepted to make up the deficiency.[1]

The amount of water in this capital structure is staggering, yet it is typical of many similar transactions which occurred thereafter. As an estimate of the discounted value of future monopoly profits, the capitalization proved conservative. In the succeeding five years the American Tobacco Company earned more than $4 million per year.[2] The subsequent history of the Tobacco Trust is one of repeated capital inflation, followed, with one outstanding exception, by justifying profits. Duke and his associates found a new philosopher's stone for changing not lead but water into gold.

Ultimate Scope

For the first few years of its existence the business of the American Tobacco Company was confined principally to cigarettes. After 1894, however, the company invaded other branches of the tobacco industry and became the dominant power in all lines of tobacco manufacture with the single exception of cigars. At the apex of its career, before the dissolution in 1911, the American Tobacco Company, its subsidiaries, and affiliates controlled the output of various branches of the tobacco industry as shown in Table 3.

1. *BC*, Pt. I, pp. 65–66.
2. *BC*, Pt. II, p. 146.

TABLE 3

Trust Share of the National Output of Tobacco Products, 1910 *

PRODUCT	PERCENTAGE
Cigarettes	86.1
Plug	84.9
Smoking	76.2
Fine cut	79.7
Snuff	96.5
Little cigars	91.4
Cigars	14.4

* *BC*, Pt. III, p. 2.

In addition, the company had extensive interests in cigarette and cigar machinery, in licorice paste, in box manufacture and box-making machinery. It owned a large chain of retail tobacco stores and was heavily interested in tobacco manufacturing throughout the world.

In the course of its development the American Tobacco Company acquired an interest in about 250 other companies operating here and abroad. In some cases companies were newly organized; in some, a minority interest was acquired. Most of the acquisitions, however, represented the purchase of controlling interests in existing businesses. Some of the companies were closed down, others were operated as subsidiaries, while still others were converted into branches of the parent company. In 1909, 86 companies were doing business as members of the Tobacco Trust in the United States, Puerto Rico, and Cuba, and at least 33 companies were operating exclusively in other parts of the world.[3]

There is no need to detail here the steps by which the Duke empire was created. Much of the subsequent history of the Trust was concerned with other forms of tobacco than cigarettes and has only minor relevance to the present study. Furthermore, the corporate history of the Trust is exhaustively described in the reports of the Bureau of Corporations, to which reference may be made. In this study we need only sketch the broad outline of events in order to place the cigarette branch in proper perspective.

The outstanding events in the history of the Tobacco Trust were as follows:

1890	American Tobacco Company incorporated.
1894–1898	Plug war. Continental Tobacco Company organized.
1899–1900	Snuff war. American Snuff Company organized.
1901	Consolidated Tobacco Company incorporated. Invasion of English market. Organization of British-American Tobacco Company, Ltd.

3. *BC*, Pt. I, pp. xxi–xxii, 304–307.

1901–1902 American Cigar Company organized. Cigar war.
1904 New American Tobacco Company incorporated.
1911 Dissolution of the Tobacco Trust by court decree.

The Tobacco Wars

In extending his control to other tobacco products, Duke made use of the same competitive methods which had proved so useful in creating a monopoly of cigarettes. First in plug, and then in snuff and cigars, important minority interests were secured by purchase, and violent selling pressures were applied to expand the business so acquired. Policy was directed as much to harassing competitors as it was to positive promotion of the Trust's own brands, and losses were willingly assumed if business could only be increased. Competitors were given the choice of joining forces with Duke or of going under, and it was usual for these wars to end in a compromise settlement in which all parties joined in a new and greater tobacco monopoly. As the first of these campaigns, and one which is typical of the rest, the plug war merits special description.

In 1891 the American Tobacco Company increased its authorized capital to $35 million. The new issue of $6 million in common stock and $4 million in preferred eventually was exchanged for the assets and business of other tobacco companies. One of the first acquisitions was the National Tobacco Works of Louisville, Ky., a prominent manufacturer of plug chewing tobacco. By this purchase the American Tobacco Company acquired the important brands Piper Heidsieck, Newsboy, and Battle Ax.[4] After 1894, as profits from cigarettes increased the company's resources, aggressive efforts were made to sell plug and to embarrass competitors. Battle Ax was used as a "fighting brand" with a sharply reduced price. At one time in 1895, when the tax on manufactured tobacco was 6¢ a pound, Battle Ax sold to jobbers for 13¢ a pound or well below manufacturing cost. Heavy advertising accompanied these price cuts. The leading plug manufacturers, including P. Lorillard Company of Jersey City and Liggett and Myers Tobacco Company of St. Louis, conferred in 1895 on ways of meeting the threat and in the next two years cut the prices of their own brands in retaliation.[5] Realizing the true source of the American Tobacco Company's strength, Liggett and Myers and the Drummond Tobacco Company,[6] also of St. Louis, began to manufacture cigarettes in 1896.[7]

The course of the plug war can be traced in Table 4.

4. *Ibid.*, p. 68.
5. *Ibid.*, pp. 96–97.
6. One of Drummond's brands was Chesterfield. *United States Tobacco Journal,* February 5, 1898, p. 7.
7. *BC, loc. cit.*

TABLE 4

Trust Sales of and Losses on Plug and Profits on Cigarettes, 1894–98 *

YEAR	PLUG SALES Millions of Pounds	PLUG LOSSES Thousands of Dollars	CIGARETTE PROFITS Thousands of Dollars
1894	9	—110 (gain)	3,529
1895	20	913	3,530
1896	31	1,378	3,290
1897	38	890	2,886
1898	33	942	2,690

* *BC*, Pt. III, p. 51.

Continued high profits on cigarettes allowed the American Tobacco Company to support heavy losses on plug. Without such resources the independent plug manufacturers were less able to continue an indefinite struggle. They were still earning profits on their own plug operations, for prices were cut drastically on only a limited number of fighting brands, but their profits were reduced [8] and the American Tobacco Company's business continued to expand. Duke was becoming steadily more dangerous and gave every indication of planning to continue his aggressive methods. The struggle against Duke seemed all the more fruitless in view of the relatively generous offers to buy with which he accompanied his raiding tactics. The plug manufacturers weakened, and in 1898 options were secured on all desired plants except that of Liggett and Myers. In December the Continental Tobacco Company was incorporated in New Jersey.[9]

The new company issued stock in the amount of $97.7 million evenly divided between common and 7% noncumulative preferred. Less than $3 million was sold for cash, the rest being given in exchange for the various plug business acquired. American sold its own plug business to the Continental Tobacco Company for $1.1 million in cash, $15.2 million in preferred stock, and the same amount of common. Although American did not own a majority of Continental Stock, James B. Duke was elected president and Duke men were in control at all times.[10]

Not for several months were these transactions completed by the acquisition of Liggett and Myers. In connection with this purchase, powerful financial interests offered Duke the only serious opposition he ever encountered and were able to force their admission into the management of the Trust.

In June, 1898, a group of financiers and experienced tobacco men agreed to organize a new tobacco company. The group included such

8. *BC*, Pt. II, p. 316.
9. *BC*, Pt. I, pp. 98–99.
10. *Ibid.*, pp. 101–102.

men as Thomas Fortune Ryan, W. Bourke Cochrane, P. A. B. Widener, Anthony N. Brady, and Thomas Dolan. Another member of the group was William H. Butler, a director of the American Tobacco Company and formerly one of the proprietors of the Kinney Tobacco Company.[11]

In October these men bought the National Cigarette and Tobacco Company of New York, the only important independent cigarette producer, and turned it over in exchange for stock to the Union Tobacco Company of America, newly organized for the purpose. Butler resigned his position with the American Tobacco Company and became president of the Union Company. In December the new company acquired most of the stock of the Blackwell's Durham Tobacco Company of Durham, N.C. This was a reorganization of the old Blackwell and Company mentioned earlier as the producer of Bull Durham smoking tobacco. The promoters of the Union Tobacco Company were also instrumental in preventing Liggett and Myers from joining the plug combination and themselves secured an option on a controlling interest in that company.[12]

Control of three important competitors in cigarettes, smoking tobacco, and plug, together with tremendous financial resources, made the Union Tobacco Company and its backers a serious menace to the American Tobacco Company. Duke was forced to buy at a high price.

In March, 1899, the American Tobacco Company issued $33.5 million in new common stock. A 100% stock dividend was declared on the $21 million already outstanding, and $12.5 million was issued in exchange for $3 million in cash and the securities of the Union Tobacco Company which was dissolved soon after. The financiers behind the Union Company also transferred the Liggett and Myers Tobacco Company and $5 million in cash to the Continental Tobacco Company in exchange for $35 million of the latter's common and preferred stock.[13]

After the purchase of Liggett and Myers, the Continental Tobacco Company controlled about 60% of the plug output of the country. The company continued to expand and to acquire additional businesses for cash, and in 1910 it contributed 84.9% of the national output.[14]

One of these acquisitions, the R. J. Reynolds Tobacco Company, deserves particular mention because of its later importance as a manufacturer of cigarettes. Richard J. Reynolds, the son of a prosperous Virginia planter and manufacturer, moved to Winston-Salem, N.C., in 1875 and began the production of twist and unsweetened flat plug for the local market. The business prospered and in 1890 was incorporated in North Carolina by R. J. Reynolds, his brother W. N. Reynolds, and

11. *Ibid.*, p. 73.
12. *Ibid.*, p. 74.
13. *Ibid.*, p. 75.
14. *BC*, Pt. III, p. 49.

one other.[15] Continued expansion required more capital than could be obtained locally and brought the concern within the Duke empire.[16] In 1899 a new corporation was chartered in New Jersey with J. B. Duke as one of the incorporators. The capital was fixed at $5 million (later increased to $7.5 million), of which two-thirds went to the Continental Tobacco Company.[17] The Reynolds family retained a one-third interest in the company and were accorded considerable independence of action within the empire. Most Continental subsidiaries were manufacturers of sweet navy plug. Flat plug appealed to a different market and there was little problem of coordinating policies. Accordingly, the only real ties between the R. J. Reynolds Tobacco Company and the rest of the combination were the capital invested and the consequent dividends paid. Reynolds acquired several smaller flat plug manufacturers and secured as dominant a position in that branch as did Continental itself in the larger navy plug branch.[18]

The pattern of conquest exhibited in the plug war was repeated in the Trust's invasion of the snuff and cigar branches of the domestic tobacco industry and in an attempt to dominate tobacco manufacture in the rest of the world. The Trust's campaigns in the snuff and foreign branches were successful, while the struggle for the cigar industry was the one case in which the Trust's methods met with complete defeat.

Control of the snuff branch was based upon a concentration of output previously brought about by other interests. In 1898 the Atlantic Snuff Company had been formed by four companies which together produced about half the national total. The American Tobacco Company had acquired some small snuff businesses in the course of time, and in 1898 P. Lorillard Company brought a fairly large snuff trade into the Continental Tobacco Company. Additional concerns acquired in 1899 brought the total output for the Trust interests to about one-third the output for the nation as a whole. After a brisk price war throughout 1899, the American Snuff Company was organized in March, 1900, with a capital of $23 million. Ten million dollars was issued to each of the two major protagonists in exchange for their snuff businesses, and the remainder was used to acquire the business of the George W. Helme Company, the largest independent snuff manufacturer. At its formation the American Snuff Company controlled about 80% of the national output, and subsequent acquisitions brought its control to 96.5% in 1910.[19]

Similar methods were applied in the following year to extend the

15. *R. J. Reynolds Tobacco Co.* v. *Allen Bros. Tobacco Co.,* 151 F. 819 (1907); *TP,* p. 11098, W. N. Reynolds.
16. *TP,* p. 11106, W. N. Reynolds.
17. *GX,* No. 302.
18. *BC,* Pt. I, p. 104.
19. *Ibid.,* pp. 141–144; Pt. III, p. 138.

Trust's dominance beyond the national boundaries. In the fall of 1901 the American Tobacco Company invaded the English market by buying control of Ogden's, Limited, a leading manufacturer of tobacco products. The customary methods of cut prices and extravagant deals to jobbers and retailers followed. Thirteen of the major British manufacturers combined to form the Imperial Tobacco Company (of Great Britain and Ireland), Ltd., waged a retaliatory price war, and encouraged a boycott of American products. There was even a threat to invade American markets, but before anything of this sort developed, the two sides came to terms. Ogden's, Limited, was sold to the Imperial Tobacco Company in exchange for securities of the latter company. American and Imperial agreed to keep out of each other's territory, and a new company, the British-American Tobacco Company, Ltd., was organized to do business in the rest of the world outside the United Kingdom, the United States, Cuba, and Puerto Rico. Two-thirds of its £5.2 million capital was allotted to the American Tobacco Company in exchange for its foreign possessions and export trade.[20]

In all important branches of the tobacco industry except cigars, production was already concentrated in a few firms before the appearance of the Trust, and the Trust had merely to carry that concentration one step further. In the cigar industry, however, there was no such previous concentration, and almost all cigars were made by hand in small factories. For the Trust to establish control of cigars, it had first to enforce industrial concentration where it did not already exist.

Whereas the other major Trust subsidiaries were organized as a consequence of successful price wars, the American Cigar Company was organized in 1901 in order that such a price war might be waged. Again, unlike the other companies whose securities were issued in exchange for businesses acquired, the capital stock of the American Cigar Company to a total of $10 million was mostly sold for cash to other members of the Tobacco Trust. Later $10 million in 4% gold notes was guaranteed by the Trust, and $10 million in preferred stock was issued to the American Tobacco Company.[21]

These funds were used to purchase a large number of cigar companies in 1901 and later years, and the American Cigar Company made vigorous attempts to dominate this branch of manufacture by advertising and by extravagant inducements to jobbers.

In 1902 alone, the American Cigar Company lost $3.5 million, yet was unable to bring its share of the national output above 16.4%. Even extreme price warfare was unable to change the basic structure of the industry, and the Trust was able to gain neither monopoly control nor monopoly profits. After 1904 the American Cigar Company operated at

20. *BC*, Pt. I, pp. 166–172.

moderate profits but was unable to retain more than 13% or 14% of the market.[22] The competitive weapons which were sufficient to establish monopoly in the other tobacco branches were not adequate in the case of cigars. The persistence of industrial decentralization in cigars indicates the importance of the Bonsack machine in making possible the heavy concentration of the cigarette industry.

With the conclusion of the plug, snuff, English, and cigar wars, the physical structure of the Trust was nearly complete, although control of most branches of manufacture except cigars continued to increase through minor acquisitions and the expansion of business. Many of the constituent companies and subsidiaries of both the American and Continental companies manufactured smoking tobacco in addition to their other products. Most of this business was transferred to the control of the American Tobacco Company and was concentrated in a relatively small number of factories. By 1900 the Trust controlled 59.2% of all smoking tobacco in the country, and the later growth of business awarded it dominant control. The less important little cigar branch was conquered by purchasing a few existing concerns and expanding their business.[23]

In addition to its direct tobacco business, the Trust absorbed many concerns operating in contributory fields. The most important subsidiaries of this sort were: the MacAndrews and Forbes Company (licorice paste); the Conley Foil Company (tin foil); the Golden Belt Manufacturing Company (cotton bags for tobacco); the Mengel Box Company (wooden boxes); the American Machine and Foundry Company (machine construction and repair); the International Cigar Machinery Company; the United Cigar Stores Company (392 retail stores).[24]

Financial Changes and Profits

Coincident with this growth in the physical structure of the Trust, and partly occasioned by it, were important changes in managerial personnel and in financial control. Prior to 1898 the directors of the American Tobacco Company were practical tobacco men connected with the original constituent companies. These men were not in sympathy with Duke's efforts to extend control of the company to other branches of the tobacco industry. Their efforts to disengage themselves from the enterprise were regarded with suspicion by financial observers:

The stock [of the American Tobacco Company] has suffered largely through the humbugging processes pursued in Wall Street by some of the curious gentlemen who have been handicapping the company as its Directors. But though speculators [on] . . . the inside [may] have been able to make

22. *BC,* Pt. II, p. 289; Pt. III, p. 192.
23. *BC,* Pt. II, pp. 84–85, 181.
24. *BC,* Pt. I, pp. 24, 313.

money in the stock market by discrediting their own property, it is amply understood that the 8 per cent dividends which the stockholders receive are much more than earned; and there is a cash surplus on hand estimated at some millions of dollars.[25]

However, Ginter, Kinney, Kimball, and Emery had practically disposed of their interests in the company by 1898, and none of them was a director after 1897. Butler, as we have seen, left to join the Union Tobacco Company in 1898. In their places were elected two financiers, Oliver H. Payne and H. L. Terrell, who invested heavily in American Tobacco Company stock in 1897 and 1898. The brokerage house of Moore and Schley of New York helped finance the Continental Tobacco Company and became closely allied with the management. Finally, through the Union Tobacco Company and the Liggett and Myers transfer, a new group of powerful financiers acquired large interests in the Trust and were thenceforth intimately connected with its affairs.[26]

These changes in management were soon reflected in financial reorganizations which affected both the total profitability of the Trust and the distribution of its profits.

In 1901 ownership was widely scattered. The construction of the Trust by the principal method of exchange of shares meant that considerable blocks of stock were held by those who had sold out to the Trust rather than by the Trust managers themselves. The departure of the original incorporators of the American Tobacco Company from its affairs contributed to a further spreading of securities. The restricted earnings of the Trust consequent upon the unusual expenses of the various tobacco wars had kept the market price of its securities well below the level which would be justified once monopoly was obtained and offered to wealthy insiders an opportunity for securing control on extraordinarily favorable terms.

In June, 1901, the Consolidated Tobacco Company was organized with a capital stock of $30 million which was paid for in cash. The capital stock and cash resources were subsequently raised to $40 million. The directors and principal stockholders were mostly men on the directorates of the American and Continental companies. Sixteen directors and the financial house of Moore and Schley held 94% of the capital stock of the new company. An offer was made to exchange 4% bonds of the Consolidated Company for equal par value of the common stock of the Continental Tobacco Company and at the rate of $200 for $100 of American Tobacco Company stock. Continental had never paid a dividend, and the recent market price had been between $20 and $30 a share. American had paid 6% dividends, although earnings were 9%. The offer guaranteed 4% on the par value of Continental stock and 8% on the par value of

25. *New York Times,* August 4, 1897, p. 6, col. 4.
26. *BC,* Pt. I, pp. 4–5.

American stock. The principal security of the guarantee was, of course, the common stock exchanged, but the large resources of the new company provided added safety, and the offer was generally accepted. More than 98% of Continental stock and 90% of American stock was exchanged by September, 1901, and all but a few thousand dollars' worth of both securities was obtained in the next few years.[27]

The directors of the Consolidated Tobacco Company did not conceal their identity or their connection with the other two companies. They did, however, conceal their knowledge of probable future higher earnings as the result both of the termination of the tobacco wars and of expected tax reductions. In June, 1898, tax rates had been raised to $1.50 per thousand on small cigarettes and to 12¢ per pound on manufactured tobacco, and prices had been raised to cover the tax. On July 1, 1902, the taxes were cut to 54¢ per thousand on small cigarettes with a wholesale value of $2 or less per thousand, and to $1.08 per thousand on more expensive cigarettes. The manufactured tobacco rate was cut to 6¢ a pound. Prices were not correspondingly reduced, and the great increase in earnings which occurred went to the Consolidated Tobacco Company.[28]

The organization of Consolidated thus concentrated the ownership and control of the Tobacco Trust in a few hands and funneled into those same hands the entire increase in earnings which the combination enjoyed after 1901. The consolidation also made available $40 million in cash for further expansion of the Trust's activities. Some of these resources were used in the campaign for the control of the cigar branch, but they were principally employed to expand the foreign activities of the combination.

The final step in the financial development of the Tobacco Trust occurred in October, 1904, when the Consolidated Tobacco Company, the American Tobacco Company, and the Continental Tobacco Company were merged into a new American Tobacco Company. There were several reasons for the change. The decision of the Supreme Court in the Northern Securities case [29] cast doubt on the legal safety of the existing holding company arrangement. There was the possibility of simplifying the combination's organization and securities. And finally the reorganization served to make more secure the control of the ruling clique.

Intercompany holdings of securities were canceled outright, and the remaining securities of the old companies were exchanged for securities in the new American Tobacco Company. Preferred stock of the old companies was exchanged for 6% bonds of the new company in such a way

27. *Ibid.*, pp. 7–9, 116–119.
28. *Ibid.*
29. *Northern Securities Co.* v. *United States,* 193 U.S. 197 (1904).

as to preserve the existing rate of earnings, while Consolidated bonds were exchanged, half for 6% preferred stock and half for 4% bonds in the new company. The preferred stock of the new American Tobacco Company was without voting privileges, unlike the preferred stock of the old American and Continental companies. By means of these exchanges the existing minority voice of the American and Continental preferred stockholders was stilled by making them into bondholders, while Consolidated bondholders were denied a voice in their new status as preferred stockholders. Common stock in the new company was exchanged for Consolidated common stock, and the previous concentration of control was perpetuated and strengthened in the new arrangement. The common stock continued to be closely held and during the life of the Trust was not listed on the New York stock exchange.[30]

In 1908 the 86 domestic members of the Tobacco Trust had a combined net capitalization, excluding intercompany holdings, of $316 million. The American Tobacco Company was capitalized at $227 million, so that at least $89 million in the securities of domestic Trust subsidiaries was held by others than the American Tobacco Company itself. American was, however, the leader and principal owner of the Trust.[31]

Against this capitalization, the Trust as a whole had $325 million in total assets as shown in Table 5.

TABLE 5

Composition of Trust Assets (Book Value), 1908 *

Class of Asset	Millions of Dollars
Domestic tobacco business	
Tangible assets	118
Good will	148
Total	266
Foreign business	30
Domestic companies not connected with tobacco manufacture	5
Miscellaneous loans and deposits	25
Total	325

* *BC*, Pt. II, pp. 81, 216, 224, 260, 263, 276, 282, 287, 292, 295.

The most striking aspect of these figures is the large proportion of intangible assets. There is no information on the good will contained in the foreign, miscellaneous, and domestic investments, but in the case of domestic tobacco manufacture, good will accounted for 55.5% of all assets.

The greater part of this good will appeared on the books of the combination as the result of excessive security issues at the time of the major

30. *BC*, Pt. I, pp. 11–12.
31. *Ibid.*, p. xxii; Pt. II, p. 66.

consolidations, first, of the American Tobacco Company itself and, later, of the Continental Tobacco Company, the American Snuff Company, and the American Cigar Company. The Bureau of Corporations made elaborate analyses of the books of the Trust in order to distinguish legitimate good will as measured by the purchase cost of intangibles from "overvalued" good will as measured by the arbitrary writing up of intangible values. Such overvaluation was determined to be $85 million.[32]

It is difficult, however, to see any serious value to this kind of computation. From the point of view of investors, none of the good will, except in the case of the cigar group, represented "water," for adequate profits were earned on it. As a measure of monopoly power, all the good will was "water" regardless of origin. For good will is the capitalized value of future earnings above the level of normal profits and depends upon the degree of market control. Such control is equally effective whether it depends upon consumer loyalty or upon forcible exclusion of competition. It is seldom possible to determine with any precision which of these factors is responsible for a superior position, and it is not clear what advantage would flow from such a distinction. The source of monopoly profits may affect the urgency of reform and may influence the choice of remedial measures, but to detect the existence of monopoly and to measure the degree of exploitation, the source of power is irrelevant. The bureau's calculations do not make this distinction in any event. There is no reason to assume that all good will before the Trust acquired property represented (desirable) consumer loyalty and that all increases in good will thereafter represented (undesirable) forcible exclusion of competition and the extortion of profits from an unwilling public.

However measured, the Tobacco Trust was enormously profitable. In 1908 the American Tobacco Company reported earnings of $28.7 million or 12.6% on the capitalization. After payment of interest and preferred dividends, earnings on the common stock amounted to 46.1%. Combined earnings of American and Lorillard for the same year as adjusted by the Bureau of Corporations amounted to $32.3 million, of which $12.1 million was from investment and $20.2 million from the direct business. Investments of these companies amounted to $108 million, so that the return on investments was 11.2%. Earnings in the direct business were 32% of the tangible assets.[33]

The profit history of the entire domestic tobacco business in the Trust, except for cigars and snuff, is presented in Figure III. Especially noticeable is the marked fall in earnings during the period of the plug and snuff wars and the renewed high profit rates after 1901 as the results of those wars were enjoyed. Also worthy of note is the fact that the highest profit rates were enjoyed in the early years of the Trust, when its business was

32. *BC*, Pt. II, pp. 6–7, 87–131, 216, 261, 282, 305; Table 5, above.
33. *BC*, Pt. II, pp. 67, 78, 151.

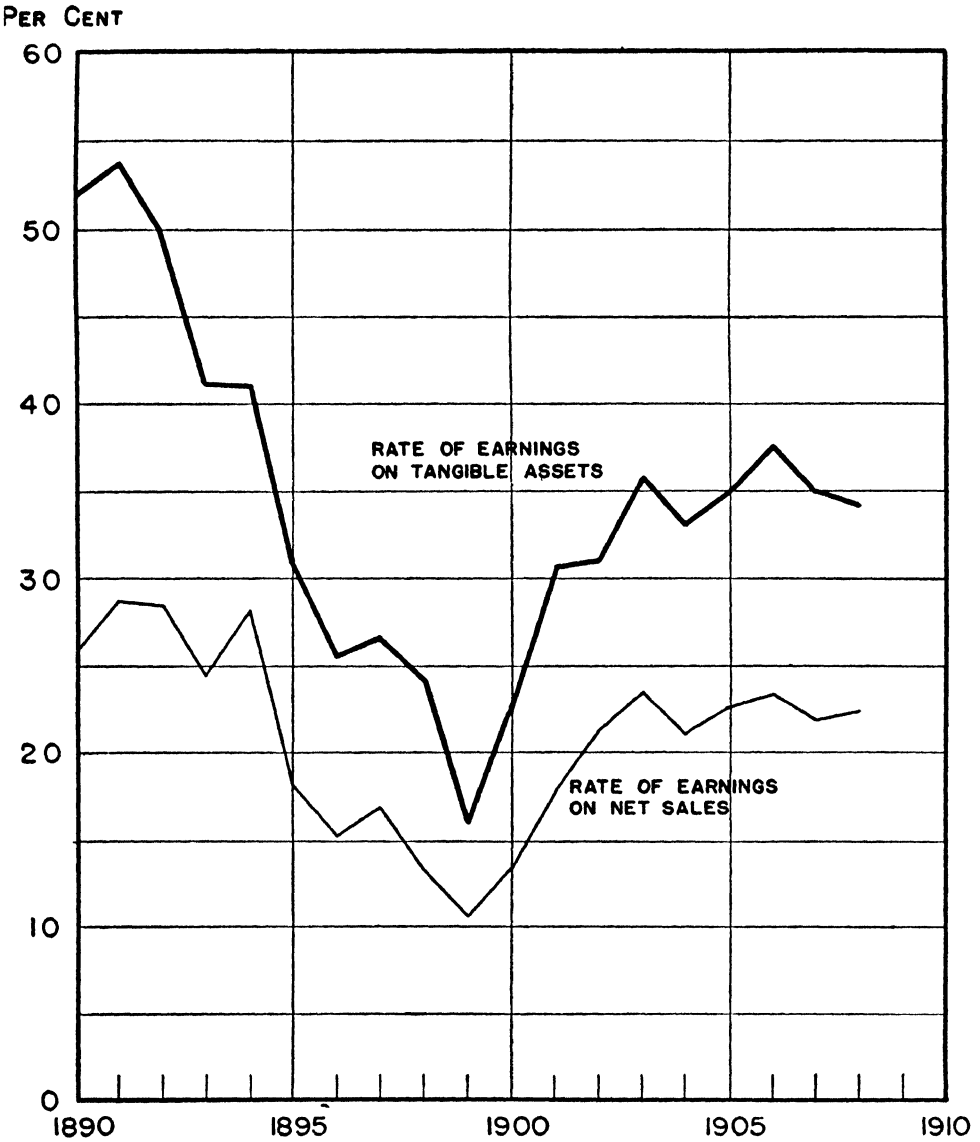


FIGURE III. Ratio of earnings to tangible assets and to net sales, domestic tobacco business of the Trust, 1890–1910. Does not include cigar or snuff subsidiaries or sales of contributory subsidiaries, i.e., licorice paste, box manufacture, etc.

SOURCE: *BC*, Pt. II, pp. 232, 238, 242.

principally confined to cigarettes. For the whole period the Trust earned 32.7% on tangible assets in an average year, and profits on net sales, including the federal excise tax, were 20.6%.

Figure III does not show the profit results of the cigar or snuff subsidiaries. From 1901 to 1908 the snuff group of companies earned 39.4%

on tangible assets. During this same period the cigar group earned 0.6% on tangible assets and 0.5% on net sales, owing to excessive losses in 1902.[34]

The tremendous cumulative effect of these profit rates can be seen by following through the increase in value of $1,000 in cash invested in 1890. Each $1,000 in tangible assets contributed at the organization of the American Tobacco Company was exchanged for $3,000 in common stock and $2,000 in preferred stock. In 1898 a 100% stock dividend increased the par value of common holdings to $6,000. In 1908 the stock was selling for $340 a share, or a total market value of $20,400. The preferred stock was exchanged for $2,667 of 4% bonds in 1904 which were selling at par in 1908. The market value of securities held was thus $23,067. In the same period dividends on common stock amounted to $12,090, and dividends and interest on preferred stock converted to bonds amounted to $3,040. Thus the total return on $1,000 invested in 1890 without withdrawal and also without reinvestment of dividends would have been $36,197. Similarly, $1,000 cash invested in common stock of the Consolidated Tobacco Company in 1901 would have had a market value in 1908 of $3,400 and would have received $1,200 in dividends for a total return of $4,600 in eight years.[35]

CIGARETTES UNDER THE TRUST

Stability of Control

The American Tobacco Company's initial monopoly of the cigarette branch was well maintained in later years. As may be seen from Figure IV, the Trust's proportion of the national output never fell below 81.7%, and for most of the 20-year period the percentage of control hovered in the neighborhood of 85%. Profits were high but variable, ranging between 28.4% and 55.7% of net sales less tax. Total profits from cigarettes were about $3.5 million a year for the first few years, declined to less than half that figure by 1902, and rose again to $7 million in 1910.

It is evident from these fluctuations in control and in profits that the Trust was not able completely to suppress a number of disruptive forces which were at work in the industry in the 20 years from 1890 to 1910. Attempts of competitors to break in, shifts in public taste, and other unfavorable developments served to reduce profits and to weaken the Trust's control from time to time. Nevertheless, the large share of the market and the generous profits which the Trust enjoyed, even in its weakest and least remunerative years, indicate that essential monopolist dominance was maintained and that the fruits of monopoly were enjoyed.

34. *Ibid.*, pp. 268, 287–289.
35. *Ibid.*, pp. 310–313.

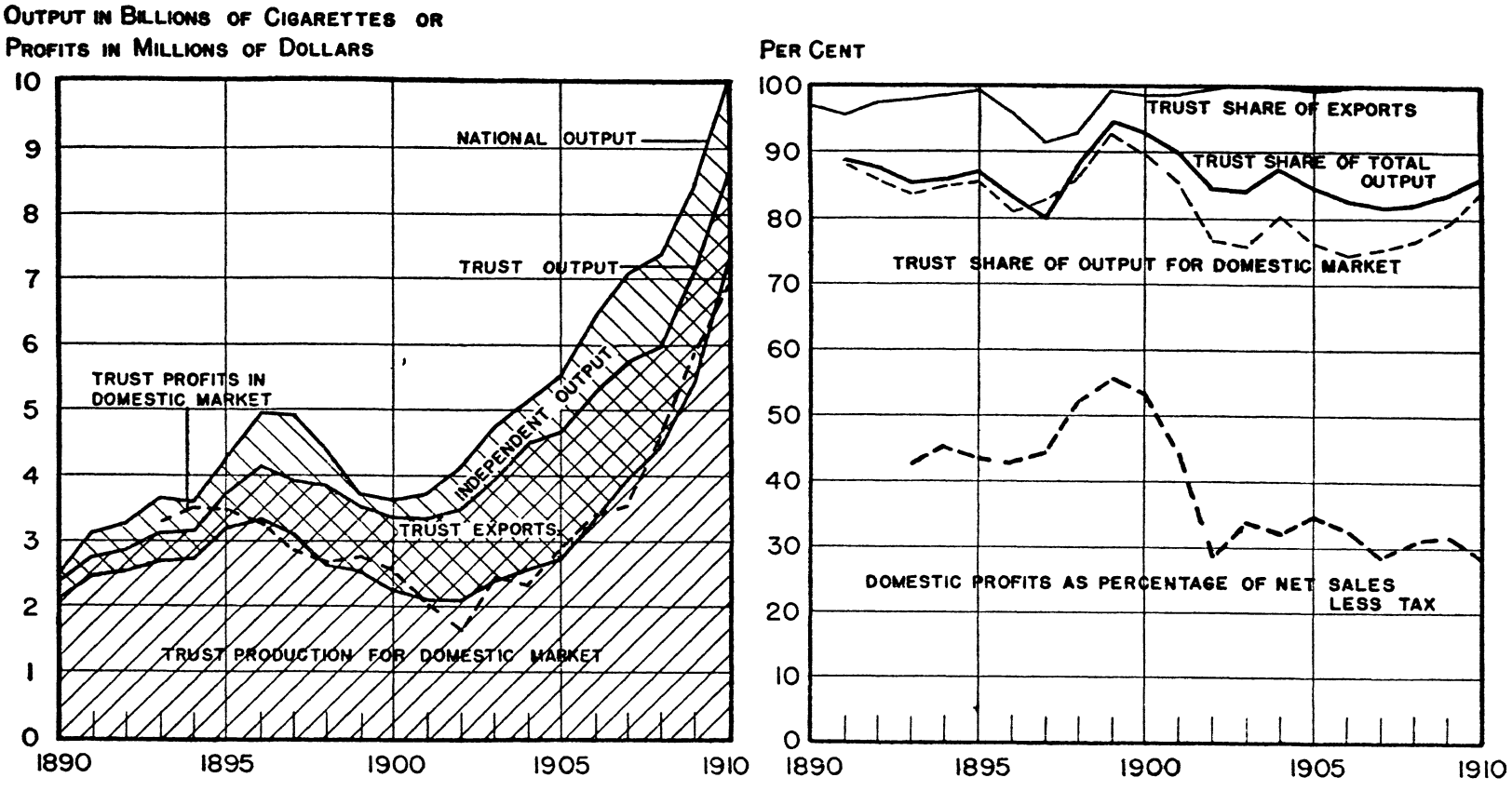


FIGURE IV. Trust cigarette profits and share of the national production, 1890–1910. Includes production for export in bonded manufacturing ware houses. Includes little cigars prior to 1898; these were negligible for the Trust prior to 1895. Trust output based on sales prior to 1898.

SOURCE: *BC*, Pt. I, pp. 325, 329, 336, 338; Pt. III, pp. 153, 155, 158, 440.

The Basis of Trust Power

One important source of prosperity was almost complete control of the export trade. R. H. Wright's world tour in the 1880's was highly successful and established Duke as a principal exporter of cigarettes. Allen and Ginter also enjoyed a large export business in cigarettes for many years, and the American Tobacco Company had an essential monopoly of foreign trade at the time of its organization. Most of the export trade was in cheap cigarettes from low-grade domestic leaf for Oriental markets. The Trust's leadership in cigarette exports was never challenged. At the height of the plug war the American Tobacco Company's proportion of exports fell as low as 91.6%, but after 1901 it had nearly 100% of such business at all times. Presumably this secure monopoly was based upon the head start in foreign contacts which the Trust had secured and upon the narrow unit profit margins that the cheapness of the product probably required.

The Trust's control of the domestic market was less overwhelming than its control of exports, but here, too, essential supremacy was retained. The Trust's dominance was secured by the same methods which originally created it—the use of energetic selling methods and the ruthless use of superior earning capacity to wage commercial warfare.

In the first years the position of the Trust was strengthened by control of cigarette machinery. The Allison and Emery machines were owned by the Kinney and Goodwin companies, respectively, and came with them into the combination. Soon after the consolidation a contract with the Bonsack Machine Company secured the exclusive use of that machine in return for royalty payments of $250,000 a year. The contract was for an initial period of three years, renewable at the pleasure of the American Tobacco Company, and could be cancelled whenever other companies should obtain the use of the Bonsack machine or whenever as many as 100 million cigarettes should be made in twelve months in the United States on other machines. Patent rights on the De Coufle cigarette machine, a French invention, were purchased in 1892 at a cost of $250,000.[36]

Despite this protection, new competition arose almost at once. In 1893 the National Cigarette and Tobacco Company of New York commenced operations, using the Elliott machine, which was patented in 1890.[37] The new company carried on a moderately successful business for several years with Admiral as its principal brand. The Bonsack Machine Company claimed infringement of its patents and in 1894 secured an injunction against further use of the Elliott machine.[38] The National

36. *BC*, Pt. I, pp. 66–67, 69.
37. *Ibid.*, p. 326.
38. *Bonsack Machine Co.* v. *Elliot* [sic], 63 F. 835 (1894); *Bonsack Machine Co.* v. *National Cigarette Co.*, 64 F. 858 (1894).

Cigarette and Tobacco Company thereupon adopted another machine, the Baron, which in 1895 was held not to infringe the Bonsack patents.[39] Several smaller companies were using still another machine, the Briggs, which was based on Canadian patents and was held not to constitute an infringement.[40] As a result of these decisions, the American Tobacco Company ceased to pay royalty after 1895, purchased the Bonsack machines it was using, and abandoned its exclusive rights.[41]

The dominance of the Trust, however, rested upon no such narrow basis as machine control. There were other barriers to the rise of new competition and the consequent erosion of monopoly profits. The American Tobacco Company had acquired all the brands of any significance when it was organized.[42] Many of these brands had a secure following, and the loyalty of consumers to established Trust brands was probably one of the strongest barriers against the easy entry of new competition. Duke made every effort to preserve this following and to strengthen it with advertising on all the more promising brands. Great success was achieved with the old Kinney brand Sweet Caporal, which accounted for more than half the national consumption of cigarettes by 1898.[43]

Advertising under the Trust was principally in the form of prizes and redeemable coupons packed in each box of the brand being advertised, although there was also some use of general publicity. When the Dingley tariff in 1897 prohibited the packing of such coupons, advertising on cigarettes was almost entirely discontinued and did not fully recover until the prohibition was removed in 1901. The company anticipated the law in 1900 by making Sweet Caporal box fronts redeemable.[44]

The expense of this and other forms of publicity was very great, although it was not as heavy under the Trust, except on particular brands in particular years, as it had been in the cutthroat cigarette war in 1889.[45] New competition was seriously deterred by the necessity of such expenses in promoting new brands and the probability of increased outlays by the Trust if such new competition should become important. The

39. *Bonsack Machine Co.* v. *National Cigarette & Tobacco Co.*, 69 F. 335 (1895).
40. *Bonsack Machine Co.* v. *Smith*, 70 F. 383 (1895).
41. *BC*, Pt. I, p. 67.
42. The most important were Richmond Straight Cut, Pets, Virginia Brights, Duke's Best, Cameo, Sweet Caporal, Vanity Fair, High Grade, and Old Judge. In the first decade the Trust introduced very few new brands, yet in 1901 J. B. Duke stated that 100 brands of cigarettes were being manufactured. In 1898 prices were advertised to the wholesale trade on 5 brands of Turkish cigarettes, 2 brands of Louisiana perique (which must have smoked like shredded dynamite), and 38 brands of domestic Virginia cigarettes. *New York Times*, May 14, 1890, p. 5, col. 5; U.S. Industrial Commission, *Report of the Industrial Commission on Trusts and Industrial Combinations*, Vol. XIII of the Commission's Reports (1901), 318, testimony of J. B. Duke; *United States Tobacco Journal*, June 30, 1898, p. 3.
43. *BC*, Pt. III, p. 162.
44. *Ibid.*, p. 165.
45. See pp. 54–55.

actual level of Trust advertising was not sufficiently high seriously to impair its profits, but the necessary level of expense to make headway against the Trust would probably allow only the slimmest profit margins.

The contrast in profitability between the established Trust and potential competitors was strengthened by the known aggressiveness of the American Tobacco Company in other ways than advertising. The constituent companies had engaged in bitter price wars among themselves prior to the consolidation, and with Duke in charge, there was every likelihood that aggressive warfare would be waged against any potentially dangerous competitor.

These deterrents were sufficient to prevent the high level of Trust profits from attracting many competitors, and such independents as did arise were ruthlessly attacked. Independent manufacturers usually lacked a national market and could be disciplined by local price cutting. Thus in 1901 the American Beauty brand was sold in North Carolina at $1.50 per thousand less 2% for cash at a time when the internal revenue tax was $1.50 per thousand. According to Duke this was merely a method of introducing a new brand,[46] but it is significant that a similar brand, Carolina Brights, was manufactured by the Wells-Whitehead Tobacco Company of Wilson, N.C., which the American Tobacco Company purchased two years later.

There were other and more devious methods by which the entrance of new competitors to the industry could be rendered uninviting and the position of existing competitors made precarious. Since the Trust controlled so large a proportion of the total cigarette business, its brands were of the utmost importance to all cigarette wholesalers. A series of rebate and consignment agreements with jobbers in the early 1890's practically required them to deal exclusively in Trust goods.[47] Although these agreements were generally cancelled by 1897, there were sporadic incidents in which discrimination against independent goods was sought and enforced. It is difficult to know how important a factor this was in view of the frequent hostility of the distributive trades to the Trust, but to the extent that discrimination was obtained, it was one more obstacle in the path of independent competition.

In at least one case the Trust organized a secretly controlled subsidiary, which bid away the labor force of an independent manufacturer, fomented strikes, and gave bonuses to distributors not to handle the independent goods. Price and advertising competition was subsidized by supplying the subsidiary with leaf below cost, while at the same time leaf prices were bid up on the local markets where the independent manufacturer

46. U.S. Industrial Commission, *op. cit.*, p. 319.
47. See pp. 304–305.

bought.[48] On another occasion it was charged that the American Tobacco Company insinuated its own man as sales manager of an independent concern, and that this individual proceeded to wreck the independent's business by transferring salesmen to territories where they were least efficient and by other means.[49]

These methods were not used continuously nor did they usually result in the complete destruction of rival companies. Even unfair methods of competition were expensive, and it did not pay to try completely to eliminate all competitors. Only when small independents showed signs of growth was it profitable to suppress them, and even then it was seldom worth while to produce bankruptcy. If the ordinary pressures of superior advertising, distributive advantages, and brand loyalties were not enough to resist progress by an independent manufacturer, it indicated that he possessed qualities of product or of management which would be useful to the Trust. Accordingly, it was worth while to use aggressive tactics to make independent life unhappy and then to offer relatively liberal terms of purchase. Such independent competition as arose and was conquered usually passed out of existence by sale to the Trust rather than through the bankruptcy court. In this way competition was eliminated less expensively than by a simple war of extermination, and on some occasions the Trust acquired valuable brands and talent for less than they would be worth in Trust hands.

These methods were almost completely successful in maintaining intact the initial cigarette monopoly of the American Tobacco Company. In 1890 almost all cigarettes produced in this country were made from domestic Virginia or "bright" tobacco, and the Trust continued to dominate this field. In 1910 it was the only significant producer of such cigarettes. The National Cigarette and Tobacco Company was the only important competitor whose primary interest was in Virginia cigarettes, and this threat was eliminated in 1899. The competition of the St. Louis factories was a subsidized offshoot of the plug war and ended with that struggle. There were no further incursions of importance. Additional small businesses were bought, and the American Tobacco Company dominated the domestic Virginia types of cigarette more completely at the end of the period than it did at the beginning.

Turkish Tobacco and New Competition

A fall in later years in the Trust's percentage of all output for domestic consumption was due, not to competitive invasions of existing lines of cigarettes, but to a change in public taste in favor of Turkish cigarettes, in which the Trust had neither an established position nor exceptional

48. *People's Tobacco Co., Ltd.* v. *American Tobacco Co.*, 170 F. 396 (1909).
49. *Ware-Kramer Tobacco Co.* v. *American Tobacco Co.*, 178 F. 117 (1910).

competitive advantage. The American Tobacco Company owned some Turkish brands at its organization, but these never achieved importance.

The new brands were originated by a number of Greeks, Turks, and Egyptians operating in New York City. One of the most important, S. Anargyros, a Greek, began in 1889 to import cigarettes manufactured in Egypt under the label Egyptian Deities. In 1891 he started the manufacture of this brand in New York and built up a large business by 1900.[50] A number of others were engaged in the same occupation, working by hand methods in small shops. Many of them combined a retail store with their manufacturing plant and survived on the combined margins. The high cost of imported Turkish leaf made the labor costs of hand manufacture relatively less important than in the cheaper domestic brands, and the small scale of the industry at first gave little advantage to machine production.[51] For most of the period before 1910 most Turkish cigarettes were made by hand, and in the Turkish brands the independent manufacturers were more important than the Trust.[52]

Although the new brands were growing during the 1890's, the Trust did not suffer from this competition until the turn of the century. In 1899 only 193 million cigarettes of all types were produced by independent manufacturers for the domestic market. Thereafter, independent output, which consisted mostly of Turkish brands, increased rapidly and in 1910 stood at almost 1,400 million. In 1906 the Trust controlled only 73.1% of the national output of all cigarettes for domestic consumption.[53]

The Trust sought to regain control by itself undertaking the production of Turkish cigarettes and also by reinforcing its position in the older domestic cigarette lines. Several leading Turkish cigarette companies were bought and were expanded by the usual aggressive methods. The Trust also developed a number of new brands of its own, both of straight Virginia tobacco and of Virginia blended with Turkish tobacco.

In 1899 the American Tobacco Company purchased the Monopole Tobacco Works in New York for $250,000. The following year it bought the business of S. Anargyros for $450,000 and incorporated it as a subsidiary. In the same year the John Bollman Company of San Francisco, manufacturer of Russian mouthpiece Turkish and Turkish-blend ciga-

50. *Anargyros* v. *Egyptian Amasis Cigarette Co.*, 66 N.Y. Supp. 626 (1900).

51. *BC*, Pt. I, p. 334.

52. The leading independent brands at the end of the period were Natural, Melachrino, Milo, Condax, Rameses, and Philip Morris. These were manufactured in the order named by Schinasi Bros., M. Melachrino & Co., Surbrug Co., Eli Condax & Co., Stephano Bros., and Philip Morris & Co., Ltd. All these companies, except Stephano Bros. of Philadelphia, were located in New York. Three other important New York producers were Nestor Gianaclis Co., I. B. Krinsky, and the Prudential Tobacco Co. The latter had a large output but served a narrow local market in New York and was practically unknown elsewhere. *BC*, Pt. III, p. 440; *TP*, p. 10261, G. W. Whitaker.

53. *BC*, Pt. III, p. 440.

rettes, was acquired.[54] In spite of these purchases, the Trust sales of Turkish brands amounted to only 12.6 million cigarettes in 1900. With the aid of heavy advertising expenditures, sales increased rapidly thereafter, and the Anargyros brands in particular prospered. Additional brands were acquired with the purchase of Butler-Butler, Inc., of New York in 1907. By 1910 the Trust had about 55% or 60% of the country's Turkish business, and although the Trust's Turkish sales were less than 25% of its total cigarette sales by volume, the Turkish brands were more expensive and accounted for more than 42% of dollar sales and profits.[55]

The Trust was also highly successful with its new brands of straight domestic leaf and of blended Virginia and Turkish tobacco. Piedmont was introduced as an all-domestic cigarette and quickly captured the leadership in this type from Sweet Caporal. Hassan and Mecca were two "pseudo-Turkish" blends of cheap Turkish and Virginia tobacco, manufactured in oval shape and put up in boxes replete with minarets and other Oriental scenery. These brands developed a tremendous sale toward the end of the period. Fatima was a more expensive brand than any of these, made of first quality Turkish and Virginia leaf, and was one of the first cigarettes to be put up in the modern type of package. Although it did not attain the volume of Piedmont or of the pseudo-Turkish brands, Fatima had a very large sale in the last years of the Trust and was an important factor in causing the rate of growth of Turkish cigarette consumption to decline. Not only did the Trust maintain its monopoly of domestic-type cigarettes but these and the domestic blends continued to supply the bulk of the country's cigarette consumption.[56]

These changes in Trust control in the first decade of the twentieth century are indicated in Figure V. The significant points to be noted are the rapid growth of the independent Turkish business as the public taste changed and the answering rise both in Trust Turkish sales and in domestic and blended sales as the new Trust brands were introduced and promoted. At the end of the period the independent Turkish business had ceased to grow, and it is probable that if the Trust had been allowed to continue for a few more years, it would have achieved still greater dominance over the cigarette industry in general and over the Turkish branch in particular.

The effects of Trust pressure upon the competitive position of the independent Turkish manufacturers are indicated in Table 6. As Trust advertising expenditures increased, the independent manufacturers were themselves forced to increase selling and advertising expenditures, and by 1910 the independents devoted a higher percentage of sales receipts to

54. *BC*, Pt. I, pp. 83, 86.
55. *BC*, Pt. III, pp. 153, 173–176.
56. *TP*, pp. 10259–10260, G. W. Whitaker; pp. 9077–9079, G. W. Hill.

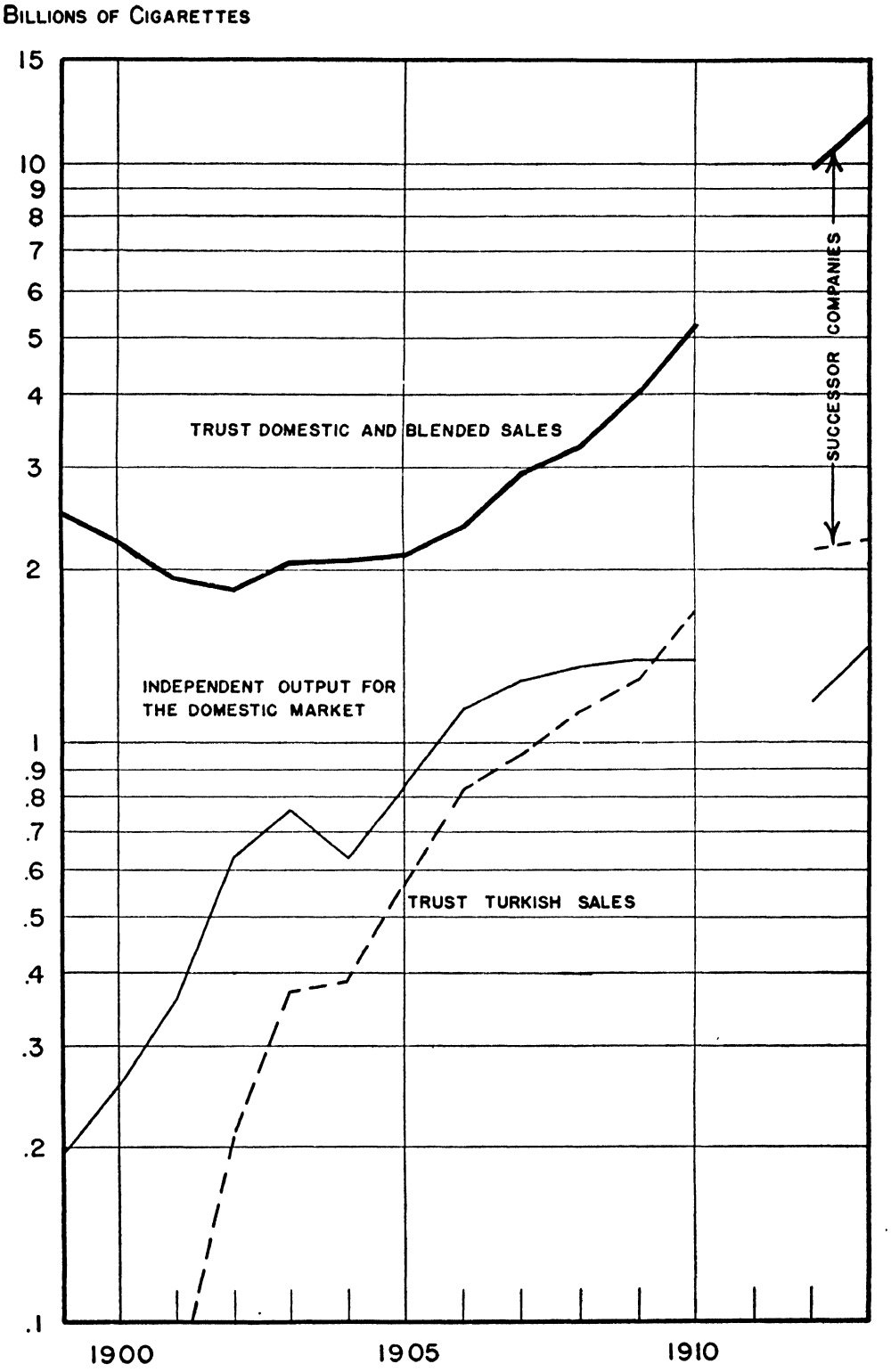


FIGURE V. The Turkish invasion, 1899–1913.

SOURCE: *BC*, Pt. I, p. 329; Pt. III, pp. 161, 174, 330, 341, 440.

TABLE 6

Cigarette Advertising, Selling Costs, and Profits, Trust and Independent Manufacturers, 1900–10 *

Year	Trust Turkish Brands				Trust Domestic and Blended Brands				Seven Leading Independents		
	Total Advertising Millions of dollars	Proportion of Net Sales Less Tax			Total Advertising Millions of dollars	Proportion of Net Sales Less Tax			Proportion of Net Sales Less Tax		
		Advertising Per cent	Selling expense Per cent	Profits Per cent		Advertising Per cent	Selling expense Per cent	Profits Per cent	Advertising Per cent	Selling expense Per cent	Profits Per cent
1900	a †	7.7	5.1	43.5	0.2	3.8	4.8	54.1	b ‡	b	b
1901	0.2	38.2	4.2	10.1	0.4	9.9	5.7	48.6	b	b	b
1902	0.4	22.4	6.0	4.1	0.8	19.6	4.4	37.6	b	b	b
1903	0.5	18.8	5.2	7.7	0.4	7.9	3.1	49.1	b	b	b
1904	0.4	14.4	4.2	12.4	0.7	14.1	4.4	43.4	b	b	b
1905	0.4	11.0	2.9	24.8	0.4	9.2	4.6	42.4	b	b	b
1906	0.6	11.1	2.9	26.2	0.4	8.5	4.7	39.9	1.0	2.2	51.1
1907	0.7	11.9	3.3	24.4	0.6	10.0	4.1	32.4	2.7	3.2	48.0
1908	0.9	10.3	3.8	28.0	0.9	12.0	3.5	34.1	3.5	7.9	35.6
1909	1.0	11.4	4.3	30.4	1.4	14 8	3.8	32.5	3.3	8.6	36.3
1910	2.1	17.6	5.3	25.0	2.0	16.2	4.6	31.7	3.4	8.9	28.3

* *BC*, Pt. III, pp. 161, 166, 174, 177, 331, 342, 445, 447.

† Less than $50,000.

‡ Not available.

selling expenditures than did the Trust. Advertising expenditures, as a percentage of net sales less tax, though increased, were still well short of the extraordinary level of Trust outlays, and independent profits, though falling, were still at a higher rate than those earned by the Trust. Nevertheless, the outlook for the independent manufacturers was ominous. The higher level of selling costs and advertising was enough to reduce profits but not enough to maintain growth. By accepting lower profit rates in the earlier years, the Trust was able to overtake the independents, and once this was done, the danger was severe. For, the larger the Trust output, the larger the total amount of advertising it could develop, even without drawing upon the resources of its other lines of business. The great increase in Trust advertising indicated that it was aiming at complete control of the market. Against this attack the independents could resist either by higher selling expenses with diminished profits and the ultimate likelihood of bankruptcy or sale or they could permit their business to be eroded to an extent where it would no longer be worth while for the Trust to attempt to seize it.

Market Policy and Profits

By skillful use of its overwhelming power and by no less artful attention to changes in public taste, the American Tobacco Company was able to maintain an essential monopoly of cigarette production for 21 years. Concentration of control carried with it a permanently high level of profits, although marked deviations from that level occurred. The profitability of the Trust depended, however, not only on market control but also on the particular market policy adopted. Profits depended not only on excluding competitors but also on the means selected to exploit the imprisoned consumer.

The principal determinants of unit profits in any given year were: the retail price of cigarettes, the distributive margins allowed to jobbers and retailers, the cost of leaf tobacco, and the outlays on advertising and selling. Each of these factors either could be determined by the direct decision of the Trust or could be indirectly influenced by market policy.

The Trust did not raise prices to the consumer except in a very few instances. The brands inherited from the constituent companies were continued at their former prices, and when new brands were introduced, they were continued thenceforth at their initial price.[57] This was partly a matter of industrial custom and partly a result of legal restrictions and consumer preferences. The internal revenue laws provided for cigarettes to be packed in boxes of 10, 20, 50, or 100, of which the smallest

57. *BC*, Pt. III, p. 172.

size was overwhelmingly the most popular.[58] It was also a matter of firm belief both among manufacturers and in the distributive trades that consumers preferred to buy cigarettes at even-nickel prices,[59] and apparently this was true in the case of the cheapest brands. When in 1898 a rise in the cigarette tax forced a price rise on such cigarettes, retailers tried to sell them at odd-cent prices with disastrous effects. Sales of Cycle cigarettes, for example, fell from 600 million in 1898 to only 40 million in 1900.[60] Usually cigarettes were priced in even nickels, and a number of price classes of cigarettes developed according to the possible combinations of 5¢ multiples and packs of 10 and 20.[61]

The established prices were usually well maintained. There was always some price cutting by tobacconists on the more expensive brands. Fatima, in particular, was often sold for 12¢ or 13¢ instead of its nominal 15¢. The cheaper brands, which accounted for the great volume of sales, did not lend themselves to shading and were usually sold at the full price.[62]

The hierarchy of quality classes made any movement of prices on particular brands difficult to effect, especially in an upward direction. A rise in the retail price of so large a fraction as 5¢ would remove it from its previous price class, and, especially in the cheaper cigarettes, former consumers would be unlikely to follow, while the regular patrons of the new price class would be unwilling to accept the brand because of its lowly origin and the consequent connotation of quality.

On July 1, 1910, it became legal to pack cigarettes in boxes of 8 or 15, thus making possible percentage price changes that were somewhat smaller. Still another tax rise induced the Trust to pack its cheapest cigarettes 15 for 5¢ instead of 20 for 5¢. This was equivalent to a retail price rise from $2.50 to $3.33 per thousand. Although even-nickel package prices were maintained and the results were less disastrous than in 1898, the rise in price in the lower grades was followed by a marked relative shift to the next higher price class.

Reductions in retail prices were not much more easily accomplished. A reduction of 5¢ a box or an increase from 10 to 15 cigarettes per box

58. In 1910, for example, revenue stamps were issued for 632 million boxes of 10 cigarettes, for 78 million boxes of 20, and for less than 8 million of all other styles. *CIR*, 1910, p. 170.

59. *BC*, Pt. III, p. 36.

60. *Ibid.*, p. 150.

61. Turkish cigarettes as a type were most expensive. The Trust had Pall Mall and Egyptian Dieties at 10 for 20¢ or 25¢, Murad and Mogul at 10 for 15¢, and Egyptian Straights, Helmar, and Turkish Trophies at 10 for 10¢. Among the blends, Fatima sold at 15¢ for 20, and Hassan and Mecca at 5¢ for 10. Straight Virginia cigarettes included Richmond Straight Cut at the same price as Fatima, Sweet Caporal and Piedmont at 5¢ for 10, and a large number of brands such as Coupon, Home Run, and King Bee at 5¢ for 20. Testimony of G. W. Whitaker and G. W. Hill cited above, n. 56; advertisements in contemporary periodicals.

62. *BC*, Pt. III, p. 171.

would eliminate the profit entirely on all but the most expensive brands. Even where a price reduction would leave some margin, it would be an unusual case where so large a change would be desirable. Furthermore, a price cut might be interpreted by the consumer as implying a reduction in quality. In this event, former consumers would be likely to abandon a brand whose price had been reduced, while it might be unfamiliar to the usual patrons of the lower price level. The probable evaporation of brand good will in such a shift made it as simple to reduce prices by introducing a new brand as by cutting prices on the old. It is not surprising that price cutting, when used by the Trust, was principally a weapon of commercial warfare, and that even when so used, it was seldom done with standard brands. Punitive price cutting was usually confined to special "fighting brands" detailed to do the dirty work and absorb the damage.

It was, accordingly, seldom practicable to adjust to changes in demand or in cost by a change in retail prices. If higher or lower prices were desired, the most effective way to achieve them was to push the sale of new or different brands.

Wholesale prices were somewhat more flexible. When a new brand was being promoted, it was common to grant distributors wide margins in order to gain their cooperation and to secure initial distribution. In 1902, for example, a new domestic brand, probably Piedmont, was introduced at a net price to jobbers of $2.92, leaving $2.08 as a distributors' margin.[63] Later in the decade, when this brand was well established, the jobber's margin was cut to $1.36. While the cooperation of distributors was important in introducing new brands, such cooperation was less important in the case of brands which were already well known. Especially in the later years the jobber performed a mechanical function of supply. Advertising increasingly became a primary function of the manufacturer to the exclusion of the distributor, and the manufacturer's salesmen increasingly solicited orders for jobbers from the retail trade.[64] Even the retailer had relatively little influence on the sale of known brands. It might be dangerous to alienate distributors by too narrow margins, but, on the other hand, there was no reason to allow margins which were exceptionally wide. The minimum level would depend both on the behavior of other manufacturers and on the volume of sales of specific brands. A narrow wholesale or retail markup was more acceptable on a brand with a large sale than on a slow-moving brand. Many changes in net prices and many differences in net prices between brands with identical retail prices are probably to be explained by competitive considerations of this sort.

There were complaints from distributors throughout the history of

63. *Ibid.*, p. 170.
64. *Ibid.*, p. 171.

the Trust that margins were being cut down.[65] After 1890, of course, jobbers lost many of the special deals and rebates which had marked the period of the cigarette war, and between 1901 and 1910, as is shown in Table 7, the margins on five leading domestic brands declined sharply.

TABLE 7

Distributive Margins as Percentages of Retail Prices for Five Trust Brands of Domestic Cigarettes, 1901–10 *

Year	Brand No. 1 †	Brand No. 2 ‡	Brand No. 3 ‡	Brand No. 4 §	Brand No. 5 §
1901	24.4	28.4	——	41.6	18.0
1902	24.8	27.2	41.6	40.4	33.2
1903	24.5	27.0	41.8	35.6	32.8
1904	22.3	27.2	37.6	33.2	32.8
1905	21.8	28.2	39.2	29.2	33.2
1906	21.3	27.2	38.6	27.2	29.2
1907	21.5	27.2	37.4	27.2	28.4
1908	21.6	27.2	30.8	27.2	28.8
1909	21.5	27.2	27.6	26.8	28.8
1910	21.7	26.2	27.2	31.8	35.3

* *BC*, Pt. III, p. 170.
† Retail price $7.50 per thousand, or 15¢ for 20.
‡ Retail price $5.00 per thousand, or 5¢ for 10.
§ Retail price $2.50 per thousand, or 5¢ for 20; after July 1, 1910, $2.92 per thousand, or 5¢ for 15.

This was, however, a period in which a large number of new brands were being established and in which special inducements offered to the trade in early years were being progressively withdrawn. The size of the margins from 1901 to 1910 seems to have been adequate, especially in view of the great increase in sales and the consequent fall in cost per unit of sales. It is possible that distributive savings as the industry developed contributed significantly to Trust profits, but it does not appear that those profits were based upon any undue squeezing of distributors.

Leaf costs were another element of potential flexibility in cost-price relationships. On any particular brand quality could be down-graded by using inferior leaf, and there was also a possibility of depressing leaf costs by resort to monopsonist power in the tobacco markets without accepting leaf of lower quality. There were many complaints from tobacco farmers about this sort of oppression, especially in the Burley and dark-fired tobacco regions of Kentucky.[66] As may be seen from Figure VI, tobacco prices in the 1890's were lower than in the 1880's along with most other prices. It is not clear, however, that the Trust was responsible for this decline. The Trust was only one of several important purchasers of Virginia tobacco, much of which went to foreign export

65. See p. 304.
66. See pp. 215–216.

interests. Cigarette production, moreover, accounted for only a small proportion of total tobacco consumption and employed grades of tobacco which were relatively cheap before the development of cigarettes. From 1901 to 1910, the period of peak power for the Trust, leaf costs on a number of brands of domestic cigarettes showed a persistent tendency to rise. It is probable that the Trust had power to depress leaf prices, but

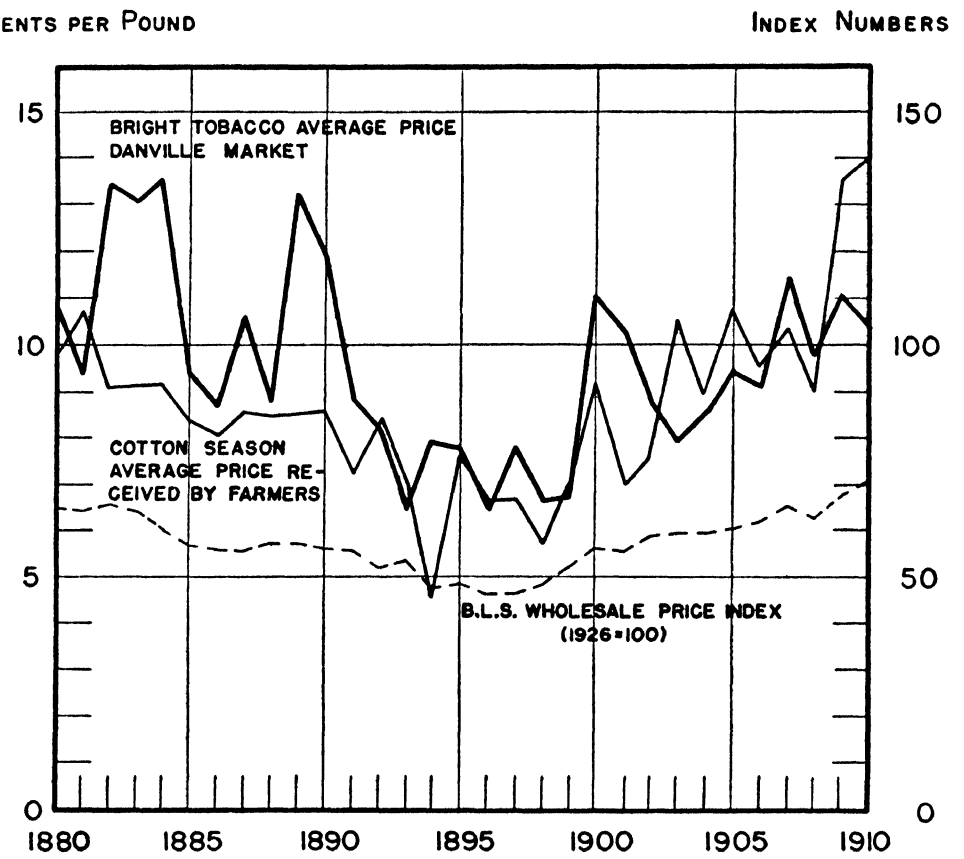


FIGURE VI. Relationship of leaf tobacco prices to other prices, 1880–1910.

SOURCES: Tilley, pp. 353–354; U.S. Department of Agriculture, *Agricultural Statistics,* 1940, p. 108; U.S. Bureau of Labor Statistics, *Handbook of Labor Statistics 1936 Edition,* Bulletin No. 616 (1936), p. 673.

there is no available quantitative measure of the extent to which this power was used.

Quite apart from monopsonist pressure, the Trust probably obtained some savings by a change in the method of purchasing leaf tobacco. Prior to its organization the Trust's constituent companies secured part of their requirements from leaf dealers, who in turn purchased on the auction markets of the bright tobacco belt. After its organization the American Tobacco Company refused to have further dealings with such leaf

agents and secured all its requirements by direct purchase from farmers at the existing auctions.[67] Direct purchase was probably advantageous in a number of ways and may have led to a significant reduction in marketing costs.

Any reduction in leaf costs, however, whether by monopsonist pressure or by more efficient marketing, could not be a useful tool for adjusting to year-to-year changes in cost and demand conditions. Profits from this source, if they existed, represented a continuing opportunity rather than one to be exploited in particular circumstances. Presumably the Trust would at all times be interested in obtaining its tobacco for as little as possible. In so far as superior bargaining power enabled it to depress prices or superior marketing technique enabled it to reduce costs, these advantages should have been fairly constant from year to year. In so far as prices were depressed by a willingness to withhold purchases, this would not be effected by a specific decision on buying policy independent of pricing policy for products. There is no record of any shortage of cigarettes under the Trust, so leaf purchases must have been set by manufacturing requirements. Aside from temporary higgling and bargaining, monopsony profits for the Trust would arise only if cigarette prices were to be raised, thus cutting cigarette consumption and lowering leaf purchases and prices. But here are involved all the inflexibilities and obstacles to price adjustment which we saw before. From lack of contrary evidence and from a consideration of the obvious interests of the Trust, it does not appear that the manipulation of leaf tobacco prices offered any ordinary solution to the problem of adjusting operations to changed conditions of demand, taxes, or competition. However, the low prices of tobacco in the 1890's undoubtedly had favorable effects upon the Trust profits.

A principal instrument of Trust market policy was the volume of its expenditures for advertising and selling. Such expenditures were of primary importance in securing possession of the market, and changes in selling pressures were an effective way of adapting to changed market conditions. In the case of exceptional disturbances, retail prices could be adjusted by abandoning or introducing brands, but in most cases the price structure was allowed to stand, and the best possible adjustment to that structure was made by suitable advertising outlays.

An economical use of advertising was one of the principal reasons for the increased profitability of the Trust compared with that of its constituent firms. Duke's advertising expenditures of $800,000 in 1889 amounted to 18¢ on every dollar of sales.[68] In no year did the Trust approach this level of expenditure except on particular brands. For the first few years the Trust's cigarette advertising averaged a little over

67. Tilley, pp. 262, 307.
68. J. W. Jenkins, *James B. Duke: Master Builder*, p. 91.

10% of sales, and even when new brands were being heavily promoted in 1902 the rate did not rise above 15.2%.[69] Before the Trust was organized prices were adjusted to cover lavish advertising expenditures, and the saving of a part of these expenses after consolidation allowed the Trust to commence operation with a highly profitable rate of return on sales even without raising prices.

We find, then, that the generally high level of Trust profits was based upon inheriting a favorable price structure from the original constituent firms and on certain savings that secure control made possible. Prices were held relatively constant, but with competition eliminated, both margins for distributors and advertising outlays could be reduced, and at the same time a secular decline in leaf prices, which probably was fortuitous, contributed additionally to profits.

Annual profit variations reflected changes in total sales, in distributors' margins, in leaf costs, and in advertising activity, and these in turn reflected both current market conditions and varying objectives to which Trust policy was directed. Measures undertaken to improve long-run market position generally involved a sacrifice of short-run profit, and the Trust did not always strike the same balance between these two partially opposed considerations. Most important characteristics of Trust market behavior are illustrated by the Trust reaction to a fall in over-all cigarette demand after 1896 and by its reaction to the rise of the new Turkish brand competition after 1900.

In 1896 the total national output of cigarettes for domestic consumption reached 4.2 billion, or nearly twice the level at which it had stood in 1890. Thereafter output fell in each succeeding year to a level of 2.5 billion in 1901. Recovery began in 1902, but it was not until 1906 that the output of 1896 was surpassed.

There were several adverse influences at work in this period. A wave of public hostility to the cigarette as a form of tobacco and a campaign of propaganda against its use resulted in the passing of laws in several states prohibiting the sale or possession of cigarettes.[70] A rise in taxes from 50¢ to $1.00 a thousand in 1897 and to $1.50 in 1898 eliminated the cheapest brands of cigarettes which had exhibited the greatest growth in the preceding years. Purchasers of these cigarettes either ceased using cigarettes entirely or substituted roll-your-own for the manufactured variety. The decline also coincided with the period in which it was illegal to pack coupons with tobacco products. By 1902 taxes were again cut to 54¢ on cigarettes worth less than $2.00 at wholesale and to $1.08 on more expensive cigarettes, and advertising by means of coupons was once more permitted.[71]

69. *BC*, Pt. III, p. 158.
70. See pp. 131–135.
71. *BC*, Pt. III, p. 150.

The American Tobacco Company of course suffered from this fall in demand. No relative ground was lost; the Trust's share of the domestic cigarette business reached its maximum in 1899. Sales declined, however, from 3.1 to 1.8 million cigarettes, and profits fell from a peak of $3.5 million to $2 million in 1901.

The Trust reacted to the cigarette depression by raising prices on its cheapest grades and by sharply reducing advertising outlays. Leaf tobacco prices were low in these years and the Trust secured a further decline in manufacturing cost by down-grading the quality of leaf which it used.[72] The effects on unit receipts, costs, and profits are evident in Table 8.

TABLE 8

Trust Cigarette Prices, Costs, and Profits per Thousand, 1896–1902 *

Year	Net Price Dollars	Net Price Less Tax Dollars	Manufacturing Cost Dollars	Advertising Dollars	Profit Dollars	Profit as Percentage of Net Price Less Tax
1896	2.96	2.46	0.90	0.31	1.06	43.1
1897	2.94	2.27	0.89	0.22	1.00	44.1
1898	3.27	2.02	0.79	0.03	1.05	52.0
1899	3.51	2.01	0.73	0.01	1.12	55.7
1900	3.66	2.16	0.78	0.08	1.16	53.7
1901	3.61	2.34	0.85	0.31	1.03	44.0
1902	3.86	2.85	1.29	0.58	0.81	28.4

* *BC*, Pt. III, pp. 155, 157, 158.

The disappearance of the cheapest grades caused a rise in the average net price, but this, and whatever squeezing of distributive margins occurred, was not enough to prevent a decline in the average net price less tax. The sharp restriction in manufacturing and advertising costs raised profits as a percentage of net sales less tax to their highest levels on record despite a fall in total profits.

To some extent the Trust's reaction was determined by forces outside its control. The sharp rise in taxes enforced a rise in retail cigarette prices in the lower grades. The generally low level of tobacco prices in these years was probably a piece of good luck, and the fact that the usual methods of advertising were now illegal encouraged a reduction in advertising outlays. Nevertheless, the down-grading of quality and the almost complete abandonment of publicity suggest a distrust of the future and the desire to take a quick profit at all costs. During this period the Trust extended its control of little cigars, in part as a simple extension of

72. *Ibid.*, p. 157.

its plan to control all tobacco products, but also as a hedge against the possibility that the paper cigarette was obsolescent.[73] The Trust's market policy during the cigarette depression suggests a discounting of long-run considerations and a concentration upon short-run maximization of profits.

After 1901 the consumption of manufactured cigarettes increased once more, and it became apparent that the industry had a future. At the same time, as we have seen, the growth of the independent Turkish brands infringed the Trust's control, and the Trust reacted to its obvious long-run interests by expanding advertising, by granting wide distributive margins, and by accepting a lower rate of profits. This policy produced its expected results, and after 1906 the Trust gained rapidly relative to the independents and attained record profits on its cigarette business in each succeeding year.

In its short-run adaptation to changed conditions, the Trust seems to have followed a passive policy. Distributive margins and advertising expenditures were increased when competition was active and decreased when there was no competition. Apart from this response to outside pressure, the Trust usually accepted its lavish profits as they came without any specific attempt to maximize them in particular years. The one outstanding exception to this occurred at the bottom of the cigarette depression, when the future of the industry looked doubtful and the Trust apparently sought deliberately to achieve maximum short-run profits.

DISSOLUTION

Early Conflict

The development of the cigarette industry coincided with the development of antitrust legislation, and each has impinged frequently on the other. The American Tobacco Company was incorporated a few months before the Sherman Act was passed. The development of relationships with the retail trade was modified by concern for the act's possible implications. A new construction of the law in the Northern Securities case was one of the motives for reorganizing the Trust in 1904. This legal interpretation was seriously modified in the Standard Oil and American Tobacco cases in 1911, and the latter, in turn, changed completely the structure of the cigarette industry. More recently another American Tobacco case has greatly expanded the scope of the Sherman Act, while the effect of that case upon the industry itself has not yet been determined.

The Tobacco Trust's encounters with antitrust legislation began while both the Trust and the Sherman Act were in embryo. An initial intention to incorporate in Virginia was abandoned when the grant of a char-

73. Jenkins, *op. cit.*, p. 97.

ter by the legislature was attacked as legislation encouraging a trust.[74] In North Carolina an antitrust act passed the preceding year was invoked against the members of the Duke firm, and a grand jury indictment was obtained in May, 1890.[75] Nothing came of this, however, and the American Tobacco Company had a short respite.

In 1893 the Attorney General of New Jersey commenced suit in equity to enjoin operation of the Trust in that state on account of its tyranny over distributors.[76] In 1894 a similar bill was filed in Illinois.[77] In 1896 a New York grand jury indicted Duke and other officers of the American Tobacco Company for violation of Section 168 of the penal code, prohibiting "acts injurious to trade or commerce." [78] A second indictment was returned under the state antitrust law.[79] In 1899 the Attorney General of Missouri sought the expulsion of the Trust from that state on the grounds that the plug combination violated the common law and state prohibitions against restraints on trade.[80] Several suits under state antitrust laws were instituted in Kentucky after 1900.[81]

None of these proceedings had any positive issue other than to cause some revision of the Trust's marketing policies. The New Jersey suit was dismissed on legal grounds in 1897.[82] The New York prosecution was frustrated by a split jury in the same year.[83] The Illinois proceedings were without results, while the Missouri suit did not even secure witnesses because of consistently hostile rulings by the court. A number of convictions were obtained and fines imposed in the Kentucky lower courts but were eventually thrown out as a result of constitutional defects in the statutes concerned.[84] The only successful suit under state laws resulted in the conviction and fining of a Continental Tobacco Company salesman, who violated a Massachusetts law by requiring jobbers to deal exclusively in Trust goods.[85]

The failure of these state legal proceedings raised the problem of trust control in more serious form. The New York legislature undertook an investigation of trusts in general and heard a considerable volume of testimony on the tobacco industry in 1897.[86] The United States Indus-

74. *Ibid.*, pp. 88–89.
75. *New York Times,* May 6, 1890, p. 2, col. 1.
76. *Ibid.*, November 17, 1893, p. 2, col. 4.
77. *Ibid.*, May 1, 1894, p. 1, col. 3.
78. *Ibid.*, May 8, 1896, p. 8, col. 4.
79. *Ibid.*, May 30, 1896, p. 1, col. 5.
80. *State ex inf. Crow, Atty. Gen.* v. *Continental Tobacco Co.*, 75 S.W. 737 (1903).
81. *American Tobacco Co.* v. *Commonwealth* (three cases), 115 S.W. 754, 755, 756 (1909).
82. *New York Times,* March 13, 1897, p. 14, col. 6.
83. *Ibid.*, June 30, 1897, p. 12, col. 1.
84. *Commonwealth* v. *American Tobacco Co.* (three cases), 180 S.W. 58 (1915).
85. *Commonwealth* v. *Strauss,* 74 N.E. 308 (1905); 78 N.E. 136 (1906). Review denied, *Strauss* v. *The Commonwealth of Massachusetts,* 207 U.S. 599 (1907).
86. *New York Times,* February 24, 1897, p. 12, col. 4; February 25, 1897, p. 12, col. 1.

trial Commission conducted hearings on various phases of the tobacco industry in 1900 and 1901.[87]

The Sherman Act and Dissolution

It remained, however, for the Sherman Act, whose scope was considerably extended in 1904 by the Northern Securities case, to produce positive results. The first progress was registered in 1907 when the Circuit Court for the Southern District of New York found the MacAndrews and Forbes Company guilty of criminal violations of Sections 1 and 2 of the Sherman Act. Fines were imposed on that company and on a subsidiary.[88] A further result was the institution of several private suits for triple damages under Section 7 of the act.[89]

In 1908 in the same court a government suit in equity against 29 individuals and 65 corporations sought to dissolve the Tobacco Trust or to enjoin it from operating in interstate commerce. By a three-to-one decision, the court found the American Tobacco Company to be in violation of the law but exempted the United Cigar Stores, the Imperial Tobacco Company, and the British-American Tobacco Company. The other parts of the combination were debarred from interstate trade "until conditions existing before the illegal contracts or combinations were entered into are restored." [90]

Both sides appealed the verdict. The immediate effect of this decision and of the evidence brought out in the trial was to stimulate another group of private triple-damage suits.[91]

In May, 1911, the Supreme Court reversed the decision of the inferior court and included the other companies within the ban of the law.[92] The enforcement of a simple injunction against operation in interstate commerce or the appointment of a receiver were held to be too prejudicial to the interests of stockholders and of the public at large. Accordingly, the court declared:

87. United States Industrial Commission, *Report of the Industrial Commission on Trusts and Industrial Combinations,* Vol. XIII of the Commission's Reports (1901), 305–342; *Report of the Industrial Commission on the Distribution of Farm Products,* Vol. VI of the Commission's Reports (1901), 307–321; *Report of the Industrial Commission on Agriculture and on Taxation in Various States,* Vol. XI of the Commission's Reports (1901), 51–71.

88. *United States* v. *MacAndrews & Forbes Co.,* 149 F. 823 (1906); 149 F. 836 (1907). The MacAndrews & Forbes Co. had an almost complete monopoly of licorice paste.

89. *United States Tobacco Co.* v. *American Tobacco Co.,* 163 F. 701 (1908); *Weisert Bros. Tobacco Co.* v. *American Tobacco Co.,* 163 F. 712 (1908); *Larus & Bro. Co.* v. *American Tobacco Co.,* 163 F. 712 (1908).

90. *United States* v. *American Tobacco Co.,* 164 F. 700, 704 (1908).

91. *Monarch Tobacco Works* v. *American Tobacco Co.,* 165 F. 774 (1908); *People's Tobacco Co., Ltd.* v. *American Tobacco Co.,* 170 F. 396 (1909); *Ware-Kramer Tobacco Co.* v. *American Tobacco Co.,* 178 F. 117 (1910); 180 F. 160 (1910).

92. *United States* v. *American Tobacco Co.,* 221 U.S. 106, 186 (1911).

1st. that the combination in and of itself, as well as each and all of the elements composing it, whether corporate or individual, whether considered collectively or separately, be decreed to be in restraint of trade and an attempt to monopolize and a monopolization within the first and second sections of the Anti-trust Act. 2nd. That the court below, in order to give effective force to our decree in this regard, be directed to hear the parties, by evidence or otherwise, as it may be deemed proper, for the purpose of ascertaining and determining upon some plan or method of dissolving the combination and of recreating, out of the elements now composing it, a new condition which shall be honestly in harmony with and not repugnant to the law.[93]

Eight months were allowed for such a plan to be found. If no solution was reached in that period, the lower court was to restrain the Trust from interstate commerce or to appoint a receiver.

In the following months a plan of dissolution was prepared by Duke and his assistants and was modified in conferences with Attorney General Wickersham. The final result was approved by the court and issued as a formal decree on November 16, 1911.[94]

A number of the more independent subsidiaries were separated from American Tobacco Company control by distributing their securities to stockholders in the parent company.[95] Some of these subsidiaries were themselves required to give up a part of their assets and business to newly organized companies in exchange for stock and to distribute the stock received to their own stockholders.[96] The Amsterdam Supply Company, which was a common purchasing agency for the Trust, was ordered dissolved and its assets converted into cash. The American Tobacco Company retained control of the American Cigar Company.

After the more autonomous parts of the Duke empire had been severed, the business of the American Tobacco Company itself and of its more closely integrated subsidiaries was divided into three parts. American itself retained assets valued at $98.4 million, including $53.4 million in tangible assets. A newly organized Liggett and Myers Tobacco Company received $67.4 million in assets, of which $30.6 million were tangible. A newly organized P. Lorillard Company received $47.6 million in total assets, including $28.1 million in tangible assets. The total value of the

93. *Ibid.*, p. 186.

94. *United States* v. *American Tobacco Co.*, 191 F. 371, 417 (1911).

95. Companies so treated were the MacAndrews & Forbes Co., the American Snuff Co., the Conley Foil Co., the American Stogie Co., the Corporation of United Cigar Stores, the Porto Rican-American Tobacco Co., the British-American Tobacco Co., the Imperial Tobacco Co., and the R. J. Reynolds Tobacco Co.

96. Thus the business of the MacAndrews & Forbes Co. was divided with the J. S. Young Co. American Snuff Co. assets were shared with the George W. Helme Co. and the Weymen-Bruton Co. The Conley Foil Co. divided with the Johnston Tin Foil and Metal Co. The American Stogie Co., which was purely a holding company for the Union-American Tobacco Co., was itself dissolved, and the business of the latter was divided with the Hernscheim Tobacco Co.

assets received by the new companies was computed by capitalizing their 1910 earnings at 11.02%.

This division of assets, both tangible and intangible, was carried out by allotting specific plants and the brands manufactured therein to each company. Thus 12 plants were transferred to Liggett and Myers, and 10 to Lorillard, while American retained 17. The expected division of the country's tobacco business is shown in Table 9.

TABLE 9

Percentage Division of the National Tobacco Business under the Dissolution Decree, Based on the 1910 Output of Each Plant *

	American	Liggett	Reynolds	Lorillard	Others
By quantity					
Cigarettes	37.1	27.8	—	15.3	19.8
Smoking	33.1	20.1	2.7	22.8	21.4
Plug	25.3	33.8	18.1	3.7	19.0
Fine cut	9.9	41.6	—	27.8	20.6
Cigars	6.1	—	—	5.7	86.6
Little cigars	15.4	43.8	—	33.8	7.0
Snuff	—	—	—	—	100.0
By value					
Cigarettes	33.2	21.0	—	26.0	19.8

* *United States* v. *American Tobacco Co.*, 191 F. 371, 412, 413 (1911).

Lorillard received a predominant number of high-priced brands, while Liggett brands were concentrated in the middle and lower price range.

In the distribution of principal cigarette brands, American retained Pall Mall, Egyptian Straights, Hassan, Mecca, and Sweet Caporal. Liggett and Myers received Fatima, Piedmont, American Beauty, Imperiales (a Turkish blend mouthpiece cigarette), Home Run, and King Bee. Lorillard received Helmar, Murad, Mogul, Turkish Trophies, and Egyptian Dieties.

The new companies paid for the assets received with the whole of their own newly issued securities as shown in Table 10.

TABLE 10

New Securities Issued by the Successor Companies, 1911 *

(Millions of Dollars)

Issue	Liggett & Myers	Lorillard	Total
7% bonds	15.5	10.9	26.4
5% bonds	15.1	10.6	25.7
7% cumulative preferred stock	15.4	10.8	26.2
Common stock	21.5	15.2	36.7
Total	67.4	47.6	115.0

* *United States* v. *American Tobacco Co.*, 191 F. 371, 426 (1911).

Each type of security was in turn distributed by the American Tobacco Company to its own appropriate security holders. Thus common stock in the new concerns was offered to American Tobacco Company stockholders for cash, but the proportion of new securities which any of the 29 individual defendants might acquire was limited to the proportion of his ownership in the American Tobacco Company. Any stock not disposed of in this way was to be sold to others.

An offer was made to redeem American Tobacco Company 6% bonds, half in Liggett and Lorillard 7% bonds at par and half in cash at $120 for every $100 face value. A similar offer was made to exchange half Liggett and Lorillard 5% bonds at par, and half cash at $96 per $100 face value for American 4% bonds. One-third of any holding of American Tobacco Company preferred stock could be exchanged for an equal amount of Liggett and Lorillard preferred.

Three years were allowed for these transactions to be completed, and meanwhile the unexchanged Liggett and Lorillard securities were sequestered by a trustee to remove them from control by American. Most of the exchanges were made in the allotted time, and such of the securities of the new companies as remained at the end of the period were sold by court order.[97]

The effect of these transactions on the capital structure of the American Tobacco Company can be seen from Table 11.

TABLE 11

Outstanding Securities of the American Tobacco Company, 1911 and 1915 *

(Millions of Dollars)

Issue	November 16, 1911	December 31, 1915
6% bonds	52.9	0.8
4% bonds	51.4	1.4
6% cumulative preferred stock	78.7	52.7
Common stock	40.2	40.2
Total	223.2	95.1

* *United States* v. *American Tobacco Co.*, 191 F. 371, 415, 416 (1911); American Tobacco Company, Annual Report, 1915.

In making these securities exchanges, the control of the Duke interests was diluted as far as possible. In the unreformed American Tobacco Company, the 29 individual defendants held 56% of the common stock which alone had the vote. This concentration of control was decreased by limiting the amount of stock in the new companies which any defendant might acquire and also by awarding voting power to the pre-

97. American Tobacco Company, Annual Report, 1915.

ferred stockholders in all three companies. As a result of these changes the percentage of voting stock held by the defendants was reduced to 35% in the American Tobacco Company and to 41% in the new Liggett and Lorillard companies. The same individuals had 38% of the voting stock in the R. J. Reynolds Tobacco Company and 34% in the British-American Tobacco Company.

The effect of the change was thus to reduce the assets and business of the American Tobacco Company to a fraction of their former size and to divide the rest among some 15 other companies. Within each part of the former empire, the interest of the former Trust managers was reduced.

In addition to these structural reforms, the circuit court decree sought to modify the operation of the industry. The restrictive covenants to divide the world among the American Tobacco Company, the Imperial Tobacco Company, and the British-American Tobacco Company were declared invalid. Restrictive covenants given by individuals and partnerships on selling out to the Trust not to engage in the tobacco business for a term of years were declared of no effect. A number of other sorts of collusive behavior were also enjoined. Individual defendants were forbidden for three years to increase their stock holdings in the successor companies in excess of their quota under the decree. They might, however, secure stock from each other, and the prohibition did not apply to the securities of the British-American Tobacco Company. All defendants were enjoined for five years from employing any common officer or any common purchasing or selling agents and from effecting any sort of financial transaction among the successor corporations. Permanent injunctions were issued against recombining the disintegrated plants and brands, against any sort of collusive agreement on operations, against using the same offices or clerical organization, against common ownership of subsidiaries (with exceptions), against doing business under another name except in the case of an explicitly identified subsidiary, and against requiring jobbers to carry one product in order to obtain another except in the case of bona fide "combination orders." The British-American Tobacco Company and the Imperial Tobacco Company were permanently forbidden to employ a common leaf agent in the United States.

The Decree Controversy

The circuit court decree was the cause of sharp controversy both before and after it was issued. On the occasion of the Supreme Court decision, Justice Harlan remarked in a partly concurring and partly dissenting opinion: "I confess my inability to find, in the history of this combination, anything to justify the wish that a new condition should

be 'recreated' out of the mischievous elements that compose the present combination. . . ." [98] He thought that the Supreme Court itself should provide for dissolution. Assistant Attorney General (later Justice) McReynolds, who had prosecuted the case for the government, considered the settlement "a subterfuge fit only for the scrap heap." [99] An unsuccessful attempt was made by independent interests to appeal the Circuit Court's decision, but as they were not parties to the suit, they were unable to obtain review.[100]

One complaint against the decree concerned the continued position of the Trust owners as major stockholders in all the successor companies: "The main feature of the plan is to divide the corporation . . . into three parts; these three parts to be owned by the same persons, in the same proportions, and to be controlled by the same individuals who the Supreme Court held to have combined in a violation of the law." [101]

Furthermore, the distribution of brands according to the plants which manufactured them resulted in initial monopolies in various branches of the industry. Thus in cigarettes Liggett and Myers received the only 15¢ Turkish blend, all the cheap domestic brands, and all the mouthpiece brands. American retained the only 5¢ "pseudo-Turkish" cigarettes. Lorillard received all the 10¢ and 15¢ Turkish brands except Egyptian Straights. American and Lorillard shared the high-grade Turkish market with the former predominating. American and Liggett shared the medium-priced domestic field.

It was claimed that similar noncompetitive fields existed in the case of other tobacco products and that this would be reflected in noncompetitive leaf buying. Liggett would dominate the market for medium red Burley; American, the market for common red and fine white Burley; and Lorillard, the market for Burley trashes.[102]

Complaint was also made of the great size of the successor companies relative to any independent manufacturers and that they possessed an additional competitive advantage in being "fully equipped" concerns operating in several branches of the industry at once. The independent interests urged disintegration into more than 60 companies. They also wished to see the United Cigar Stores securities removed from control of the individual defendants and to detach and disintegrate the American Cigar Company.

The court refused to meet these objections to the plan of dissolution in any respect. It held that common ownership was legally permissible because of the precedent established by the Northern Securities case,

98. *United States* v. *American Tobacco Co.*, 221 U.S. 106, 190 (1911).
99. *New York Times*, January 4, 1914, Sec. II, p. 1, col. 1.
100. Cox, p. 37.
101. Louis D. Brandeis, "An Illegal Trust Legalized," *World To-Day, 21,* No. 6 (December, 1911), 1440.
102. Cox, p. 34.

and that the specific injunctions against collusive behavior and the reduction of the 29 defendants to a minority position would operate to remove practical evils. The proposals to bring about a thoroughgoing atomization of the industry were unceremoniously rejected:

No time need be given to a consideration of any of these since there is no suggestion that the defendants will adopt them. On the contrary, counsel for defendants expressly stated on the argument that they would not undertake to carry them out. Presumably they think they might better take their chances at a receiver's sale . . .

Manifestly the minuter the fragments into which the old combination is split, and the more they are prohibited from conducting business as other companies are free to conduct it, the less will be their ability to compete with such other companies. The whole line of argument deals with the economics of the tobacco business. No doubt the novel problem presented to this court is connected with questions of economics as well as with questions of law. But this is a court of law, not a commerce commission, and the legal side of the proposition would seem to be the controlling one.[103]

The court's refusal to enforce further disintegration of the combination was subsequently defended by Attorney General Wickersham who thought that the concentration of the industry in a few large firms was preferable to "the general demoralization of business which would ensue were the business to be distributed between a large number of weak organizations with insufficient capital to maintain themselves in active competition." [104] The attempt to carry out such disintegration, moreover, "would have undoubtedly resulted in a receivership and in enormous injury to the general business condition of the country."

To these arguments Mr. Brandeis replied: ". . . the Circuit Judges, having first assumed that the Supreme Court had ordered them to accept the best plan they could get, then assumed that what the Tobacco Trust said was 'the best they would do' was really their best offer." [105]

And Samuel Untermyer in deploring "this puerile outcome" remarked that:

As the result of this reasoning, the bigger and more powerful the unlawful combination—the more dangerous to the public welfare—the more helpless the courts will be to give relief . . . The plea of expediency by the vested interests against business disturbance that would result from impartially administering the law is permitted to drown out the people's cry for the justice to which the courts admit them entitled, but tell them they are powerless to award.[106]

103. *United States* v. *American Tobacco Co.*, 191 F. 371, 375, 376 (1911).

104. G. W. Wickersham, "The Government's Side," *World To-Day, 21,* No. 6 (December, 1911), 1438.

105. Brandeis, *loc. cit.*

106. Samuel Untermyer, "The Tobacco Trust Farce," *World To-Day, 21,* No. 6 (December, 1911), 1433.

The decree was an issue in the presidential election of 1912. Theodore Roosevelt declared that "There never was a more flagrant travesty of justice . . ." [107] The Democratic platform condemned the settlement and President Wilson appointed McReynolds as Attorney General in his new cabinet.

Not all complaints were against the inadequacy of the court's remedies. There were some who objected to any remedies at all. According to one journalist of the period:

> The only serious complaint against the tobacco company comes from American competitors, who have not the experience, capital, business foresight, sagacity and energy to enter the field like true warriors, and give and take blows . . . But business success in this country does not come of childish whining. . . . nor is it the 'spirit' of any just law or the province of any community to go into mourning and bewail the victory the successful competitor has won.[108]

Regardless of complaint, the decree was issued and its provisions enforced. Atomistic competition was not established; monopoly was replaced by oligopoly. The implications of this change for economic behavior and economic results are the subject matter of the remainder of this study.

107. Robert, *Story*, p. 167.
108. T. B. Wilson, "Court-Made Laws," *Overland Monthly*, Ser. 2, *58* (December, 1911), 467.

Chapter IV

THE MODERN INDUSTRY

READJUSTMENT TO COMPETITION

Management

THE FIRST MONTH or two after the issuance of the dissolution decree were taken up with putting its provisions into effect. All the nonfinancial changes were required to be carried out by the end of February so that for most of 1912 the successor companies were operating as going concerns.

The management of the new companies was derived from the old Trust, although this fact seems to have excited less apprehension than the continuation of common ownership. The Trust had most of the experienced tobacco men in the country, and, of course, they stepped into positions of control in the new regime. Since all the major successor companies have continued to be dominated by management, some discussion of the leading personalities and of their common experience is in order.

Duke, himself, resigned his connection with the American Tobacco Company and became chairman of the board of the British-American Tobacco Company. This was the one element of the old combination in which increased stock ownership by individual defendants was not forbidden by the decree. It was also, however, the successor company in which the balance of voting control was most seriously shifted. With the majority holdings of the American Tobacco Company distributed among a large number of shareholders, the compact minority holdings of the Imperial Tobacco Company came into working control and British-American became an instrument of British rather than American tobacco interests. In 1923 Duke resigned his post, apparently by request. Although he was rumored from time to time to have large stock interests in various successor companies, he had no explicit connection with the management of any other tobacco company.[1]

In place of Duke, Percival S. Hill became president of the reorganized American Tobacco Company. Hill had come into the Trust with the Blackwell's Durham Tobacco Company and had served as a vice-president of the old and the new American Tobacco companies, as a director of the Consolidated Tobacco Company, and as an officer or director of a number of Trust subsidiaries. He was, next to Duke, the

1. Cox, pp. 73, 297–302.

most influential of the Trust's executives and had particularly close experience with the cigarette branch of the Trust's business. Hill remained as president until his death in 1925, when his son George Washington Hill succeeded him. The younger Hill had been connected with cigarette sales under the Trust as president of the Butler-Butler subsidiary and had successfully made Pall Mall a leading Turkish brand.[2] After the dissolution he was vice-president-in-charge-of-sales for the American Tobacco Company. The younger Hill was one of the greatest salesmen of all time and was the dominating figure in the industry during the last thirty years. As we shall see, he was responsible for some of the most important characteristics of the modern cigarette industry. At his death in 1946 he was succeeded by Vincent Riggio, who had been associated with the original Pall Mall campaign and who served as vice-president-in-charge-of-sales during the second Hill's presidency. In 1950 Riggio was appointed to the new position of chairman of the board and was succeeded as president by Paul M. Hahn who for ten years had been president of the subsidiary American Cigarette and Cigar Company. American has thus had a consistent and continuous management, whose principal concern has always been with the sale and advertising of cigarettes. Three successive presidents, Duke and the two Hills, have given the firm a tradition of strong personal rule, and particularly under the second Hill, the American Tobacco Company has been a vigorous and aggressive instrument of personal power and eccentricity.

Another strong man of the industry was Richard J. Reynolds, who, first as proprietor and then as president of the R. J. Reynolds Tobacco Company, managed it with independence and energy. Even while a member of the Trust, Reynolds enjoyed essential freedom, and on at least one occasion he rejected an attempt by Trust authorities to interfere in the management of his company by threatening to sell out.[3] Reynolds greeted the dissolution decree with ostensible pleasure and remarked to Josephus Daniels, "Watch me and see if I don't give Buck Duke hell." [4]

R. J. Reynolds was an aggressive and able merchandiser and laid the foundation for his company's success before his death in 1918. He was succeeded by his brother W. N. Reynolds, who remained either in direct charge or in close association with management until his retirement in 1942. Since W. N. Reynolds was one of the original incorporators in 1890, this tenure must represent something of a record in continuous association with management. Although the Reynolds brothers contributed an important degree of continuity to the company's policies, the active management in recent years has been largely in the hands of S.

2. *TP*, pp. 9064–9068, G. W. Hill.
3. *TP*, pp. 11148–11150, W. N. Reynolds.
4. Josephus Daniels, *Tar Heel Editor* (Chapel Hill, University of North Carolina Press, 1939), p. 476.

Clay Williams, who first came to the Reynolds Company from law practice in 1917. From his first association until his death in 1949 he was given heavy responsibility, and although he did not become president until 1931, it appeared in 1941 that "for more than twenty years he has been responsible for the main policies of the company." [5]

Both American and Reynolds have enjoyed vigorous and competent management. American inherited the main line of Trust executives, and in particular inherited those individuals who had been actively concerned with cigarettes. Reynolds had remained independent of the Trust management, even when owned by it, and had its own tradition of executive planning and administration. This strength of leadership in both companies has been consistently maintained by a continuous line of personnel. The American and Reynolds companies have been the leaders in recent years, and each has a strong, if indefinable, personality of its own.

Liggett and Myers also inherited some of the top executives of the Trust. The first president of the new company was C. C. Dula, who had been a vice-president of the American Tobacco Company and had been an officer and director of numerous subsidiaries. Dula's principal experience, however, had been with the plug side of the Trust's business, to which he had come from the Drummond Tobacco Company. He was a member of the Continental Tobacco Company's first board. He was succeeded in 1928 by C. W. Toms, who, in turn, in 1936 was succeeded by J. W. Andrews. Both these men had occupied less important posts under the Trust. Although Liggett and Myers' management has been competent and consistent, it has not been as aggressive or as successful as that of either of the two other major companies.

The P. Lorillard Company, on the other hand, derived its management from the third level of Trust executives. The old P. Lorillard Company served as an operating branch of the parent company under the Trust, and Thomas J. Maloney, who held the presidency in this less important unit, retained the office after the reorganization. As will appear, the management of the P. Lorillard Company was markedly less successful than that of the other successor companies, and there have been several later presidents without important experience under the Trust. Neither Liggett nor Lorillard has shown the same vigor as the other two companies. Liggett policy has consistently been restrained and conservative to the point of timidity, and while Lorillard has, on occasion, been daring enough, it has for some reason failed to inherit or acquire a quality of management comparable to that of the industry leaders.

These variations in management ability among the successor companies, which have been responsible for important changes in the subsequent history of the industry, were not apparent to the casual observer in the period immediately following dissolution. Although American con-

5. *TP*, p. 11169, J. A. Gray.

tinued to be the largest company, Liggett and Lorillard were both of comparable size and with equally bright prospects, while Reynolds was a poor third in plug tobacco and a very minor producer of smoking tobacco. In the first two years of the new regime, there was no indication of the specialization in managerial capacity which was so seriously to affect the later relative standing of the firms. There was as yet no sign of an impending revolution in public cigarette taste or of the challenge to managerial adaptability which that change in taste was to bring about.

The Struggle for Position

The first two postdissolution years are of exceptional interest because they allow a direct comparison between monopoly operation and oligopoly operation of the cigarette industry. During this period there was no significant change in the methods of carrying on business. The same kinds of brands were produced as before in all their multiplicity and they were promoted by the same means of premiums and prizes included in each box. The only important difference between 1910 and 1912 was that there were now three fairly large companies and one small company competing for the business which had previously been the sole province of the Trust.

There is no doubt that the successor companies did compete for business. Whatever bonds of loyalty, intimidation, or stock control there may have been between the managements of the leading successor companies did not prevent a genuine struggle for markets. The initial monopolies of particular classes of cigarettes, which resulted from the method of plant allocation, were soon erased by the strong efforts of all the successor companies to gain a foothold in all parts of the business. Liggett and Myers brought out Vafiadis in an attempt to break into the Turkish branch. American and Lorillard produced Omar and Zubelda, respectively, in competition with Fatima as high-grade blends. Lorillard tried to break into the cheap "pseudo-Turkish" brands with Zira and Nebo, while American reinforced its own blends in this category with Cairo and Tokio. Liggett was experimenting with a Burley-blended cigarette under the old Drummond name of Chesterfield. This was sold in a slide and shell box at 5¢ for 10 in the same class as the pseudo-Turkish. Reynolds had no cigarette business at all prior to the decree and made tentative efforts to develop Reyno, a 5¢ domestic brand, and Osman in the blended field competitive with Fatima.[6]

Although advertising methods remained the same after dissolution, they were greatly developed and expanded. Premiums were made more elaborate. Pictures, souvenir flags, miniature rugs, and other novelties

6. *TP*, pp. 9082–9084, G. W. Hill; pp. 10263–10269, G. W. Whitaker.

were packed along with cigarettes at considerable cost. The effect of competition in stimulating advertising outlays may be seen in Table 12.

TABLE 12

Cigarette Advertising Expenditures of the Trust and the Successor Companies, 1909–13 *

	Domestic and Blended Brands			Turkish Brands		
Year	Millions of Dollars	Dollars per Thousand	Percentage of Net Sales Less Tax	Millions of Dollars	Dollars per Thousand	Percentage of Net Sales Less Tax
1909	1.4	0.35	14.8	1.0	0.79	11.4
1910	2.1	0.39	16.2	2.1	1.22	17.6
1912	7.2	0.75	28.1	3.0	1.42	19.8
1913	10.3	0.89	31.7	3.1	1.39	20.1

* *BC*, Pt. III, pp. 330–331, 334, 341–342, 345.

Although the great rise in total expenditures was accompanied by a major increase in cigarette consumption, the burden of advertising expense per thousand cigarettes or per dollar of sales was very heavy. Selling expenses were also somewhat heavier after the dissolution. The greatest relative change in selling and advertising expense came in the domestic and blended brands, where the principal new competition occurred. Expenditures on the Turkish brands were already high as a result of the Trust's campaign to seize that market, and new competition among the successor companies served to raise these expenditures only moderately. It is worth noting that the domestic and blended brands had a relatively much heavier burden of advertising expense on sales than the Turkish brands, even though the Turkish brands involved a higher expenditure per thousand.

Distributors' margins were not greatly affected. Among the established domestic and blended brands there was a tendency toward greater equality in jobbers' net prices for brands with the same retail price, but there was no general change in jobbers' prices.[7] With a larger volume of sales, distributors' receipts were of course much larger. Turkish brands, on the other hand, exhibited a marked decline in margins. Six out of seven leading brands had higher jobbers' prices in 1913 than in 1910, while the retail prices of all remained constant.[8] There are several explanations for this. Lorillard had essential control of the medium-priced Turkish brands in which much of the growth in sales occurred, and there were no important new brands developed in these categories. As established brands, they benefited little from distributors' good will and there was

7. *BC*, Pt. III, p. 238.
8. *BC*, Pt. III, p. 349.

less need for wide margins. Competition from independents was less important as the successor companies' Turkish sales expanded. Finally, Turkish margins had been extraordinarily wide during the period in which the Trust was invading the market, and Lorillard's reduction of these margins merely continued a trend which had been operating under the Trust since about 1904.

The increased volume of retail sales made it possible for the distributors to operate on a smaller unit margin, and the fact that retail prices on Turkish brands were commonly cut was evidence that distributors could afford higher manufacturers' prices.

Since manufacturers' prices for the domestic and blended brands were unchanged and since manufacturing costs as a percentage of net sales less tax were largely unchanged, the great increase in advertising and selling expenditures necessarily caused a reduction in unit profits as is shown in Table 13.

TABLE 13

Unit Cigarette Profits of the Trust and the Successor Companies, 1909–13 *

	Domestic and Blended Profits		Turkish Profits	
Year	Dollars per Thousand	Percentage of Net Sales Less Tax	Dollars per Thousand	Percentage of Net Sales Less Tax
1909	0.77	32.5	2.11	30.4
1910	0.76	31.7	1.73	25.0
1912	0.49	18.4	1.76	24.6
1913	0.27	10.0	1.95	28.2

* *BC*, Pt. III pp. 330–331, 334, 341–342, 345.

The change came principally in the domestic and blended brands. Turkish profits were already reduced from the full monopoly level, and the failure of strong new competition to develop in this line kept profits about the same.

In return for these expenditures and the reduction in unit profits, the successor companies gained both in total sales and in the share of the market. The great increase in sales volume occurred in the domestic and blended brands. The Turkish sales of the successor companies increased much less. Independent output was stationary and the successor companies' share of the market greatly increased as may be seen in Table 14. This rise in sales more than outweighed the decline in unit profits, and total profits increased as shown in Table 15.

Turkish profits were higher each year than in the preceding one. Domestic and blended profits in 1913, on the other hand, were less than in 1912 and less even than in 1910 when fewer than half an many such cigarettes were sold. For all cigarettes taken together, profits declined in

1913 but were higher in both postdissolution years than in any predissolution year.

TABLE 14

Share of the Cigarette Market, Trust and Successor Companies, 1909–13 *

	Independents	Trust and the Successor Companies			
Year	Output Billions of cigarettes	Output Billions of cigarettes	Proportion of National Output Per cent	Domestic and Blended Sales Billions of cigarettes	Turkish Sales Billions of cigarettes
1909	1.4	5.4	79.6	4.1	1.3
1910	1.4	7.3	83.9	5.2	1.7
1912	1.2	12.0	91.1	9.7	2.1
1913	1.4	14.1	90.7	12.0	2.3

* *BC*, Pt. III, pp. 322, 330–331, 341–342.

TABLE 15

Total Cigarette Profits of the Trust and the Successor Companies, 1909–13 *

(Millions of Dollars)

Year	Domestic and Blended Brands	Turkish Brands	All Cigarettes
1909	3.1	2.7	5.9
1910	4.0	2.9	6.9
1912	4.8	3.8	8.6
1913	3.2	4.4	7.6

* *BC*, Pt. III, pp. 324, 330–331, 341–342.

Effects on Independent Manufacturers

The position of independent cigarette producers was rendered even more precarious than it had been under the Trust. Increased advertising on Turkish cigarettes and even the heavy advertising on semicompeting domestic blends cut deeply into the independent market. Expenditures which the Trust had not found expedient in expanding its sales vis-à-vis the independents were thoroughly worth while for the successor companies when fighting each other, and as more or less innocent bystanders, the independents suffered. In 1912 the independent output was less than in 1910, and although there was some recovery in 1913, independent output for that year represented a net gain of only 48.5 million cigarettes over 1909. In the same period total cigarette output for the country increased by 8,737 million, while Turkish sales for the Trust and its successors increased 955.5 million.

The effect of these pressures on expenses and profits for seven independent manufacturers may be seen from Table 16.

Table 16

Cigarette Advertising, Selling Costs and Profits, Seven Independent Manufacturers, 1909–13 *

Year	Selling Expense Dollars per Thousand	Advertising Expense Dollars per Thousand	Profits Dollars per Thousand	Profits Percentage of Net Sales Less Tax
1909	0.65	0.25	2.73	36.3
1910	0.61	0.23	1.93	28.3
1911	0.65	0.22	1.45	21.7
1912	0.68	0.30	1.53	22.1
1913	0.70	0.46	1.62	22.6

* *BC*, Pt. III, pp. 442, 444.

A further burden was imposed on the independent manufacturers by a rise in leaf costs and in the labor costs of hand manufacture at a time when the successor companies were able to reduce their costs by an increased use of machine methods on their Turkish brands. Although the independent profit rate was scarcely niggardly, it was markedly less than in the earlier years, was less than the successor companies were earning, and was obtained only by allowing the successor companies to obtain 95% of the increase in Turkish business over 1909.

Another ominous sign for the independent manufacturers was the decline in the rate of growth of all Turkish sales which is evident in Figure V on page 47. Although the successor companies' sales set a new record in 1913, the rate of growth was markedly less than the growth of Turkish sales prior to 1910 and markedly less again than the current growth in domestic and blended sales. If this could be regarded as a permanent trend, it implied imminent stagnation for this branch of the industry which might well be disastrous for the independents, whose own powers of growth had ceased already and whose position in any event was precarious. It appeared that the best hope of the independents was to retain a small circle of such loyal customers as could not be lured away by advertising. The future of the industry lay with the legatees of the Trust.

The immediate effect of the dissolution decree was thus to increase competitive pressures on the independent producers and to direct to the successor companies a larger total share of the national business than the Trust itself had been able to win before they were severed from it. Prices and other market policies were not significantly altered, and the consequence of the genuine competition which did arise was to reduce profits through heavier advertising expenses at the same time that those heavier expenses made life difficult for the independents.

Most of the independent cigarette producers did not, in fact, continue the unequal struggle for very long. Certain tobacco interests which had

been associated with the Trust and which found their activities with the successor companies hampered by the dissolution decree turned now to the independent cigarette producers as the means by which a new tobacco empire could be created, or at least as the elements out of which new and profitable combinations could be composed. In this venture many of the stricken independents proved willing partners.

In October, 1912, the Tobacco Products Corporation was incorporated in Virginia with a number of prominent financiers as officers and directors. One of the latter was William H. Butler, formerly of the Kinney Tobacco Company, the American Tobacco Company, the Union Tobacco Company, and several later tobacco ventures.[9] George J. Whelan, the president of the United Cigar Stores, was listed as a stockholder but had no other obvious connection. In succeeding years the Tobacco Products Corporation acquired a number of independent cigarette manufacturers, as follows:

1912 Surbrug Company
M. Melachrino and Company
Booker Tobacco Company
Stephano Brothers (50% of common stock plus block of preferred)
1915 Standard Tobacco Company
Nestor Gianaclis Company
1916 Schinasi Brothers
1917 Prudential Tobacco Company
1918 Falk Tobacco Company (Herbert Tareyton cigarettes)
1919 Philip Morris and Company, Ltd., Inc.

Thus the most important producers of Turkish cigarettes were gathered under one control. In 1917 the Tobacco Products Corporation made itself sole selling agent for its wholly owned subsidiaries. George J. Whelan became president, and it was known that Duke was heavily interested in its stock. In the following year an antitrust complaint was filed by the Federal Trade Commission without any ultimate consequences.[10] There is an element of irony in the fact that the dissolution of the Tobacco Trust into several large companies was followed by the combination of the existing small independents into still another large firm.

THE CAMEL REVOLUTION

The New Brand

The industrial pattern which developed in the first postdissolution years was shattered by two events of almost equal importance to the

9. Tobacco Products Corporation, Annual Report, 1913; see above, p. 30.
10. *Ibid.*, 1914–23; Cox, pp. 326–330.

industry, the introduction of Camel cigarettes and the outbreak of war. These events further hastened the eclipse of the independent manufacturers, revised the leadership among the successor companies, and changed price and selling policies. Between 1914 and 1920 the cigarette industry assumed essentially the character which it has today.

The R. J. Reynolds Tobacco Company was not a cigarette manufacturer before the dissolution and received no cigarette business under the decree. In the fall of 1913 the Camel cigarette was introduced in Cleveland and enjoyed immediate local success. In the remaining months of the year Reynolds sold only 34.8 million cigarettes, or about 0.02% of the national output, but Camel sales at once began to climb. Efforts to promote Reyno and Osman were ineffective, and Camel quickly became Reynolds' sole important brand. In 1914 one-half billion Camels were sold, and in 1917 Camel sales were 12.3 billion, or 35% of the national output. For some time demand for Camels outran productive capacity, and Reynolds added new cigarette machines as rapidly as they could be obtained.[11] The startling rise in Camel sales is indicated in Figure VII.

The rapid progress of Reynolds' new brand was a serious threat to the established cigarette manufacturers. In 1915 Camel sales increased 1.9 billion, while the output of the industry as a whole rose only 1.1 billion. Thus Camel appropriated the entire increment in industry sales and took 0.8 billion in addition from the sales of all competitors. In 1914 and 1915 together, competitors were able to increase sales by only 17 million cigarettes, so that during this period almost the entire progress of the industry was absorbed by Camel, while competitors stood still. In later years the rapid growth of consumption enabled competitors to make some progress, but Camels continued to grow more rapidly than the industry as a whole until 1923, when Camel sales amounted to 45% of the national output.

The extraordinary success of Camel apparently was the result of a number of innovations in manufacture and presentation. The new brand was made of blended Virginia, Turkish, and Burley tobacco, to which Maryland was added in 1916.[12] Burley had previously been used in smoking tobacco and plug, where its ability to absorb large quantities of flavoring materials gave it an especial usefulness. This same characteristic was now turned to advantage in cigarettes. The Burley content of the blend was "cased," i.e., conditioned with flavoring sauces, and the modified flavor of Burley leaf was added to the special characteristics of body and flavor of Virginia and Turkish tobacco. Maryland tobacco was included later because of its superior burning qualities.

There had previously been a trend to blended brands of cigarettes to

11. *TP*, pp. 10825–10828, J. W. Glenn; p. 11828, S. C. Williams. *DX*, No. 1236.
12. *TP*, p. 10827, J. W. Glenn.

take advantage of Turkish flavor and Virginia lightness, and the new blend appealed to a public taste which had already partly developed. Somewhat similar blends had appeared earlier in the Chesterfield and still earlier under the Trust with Obak, one of the Bollman "mouth-

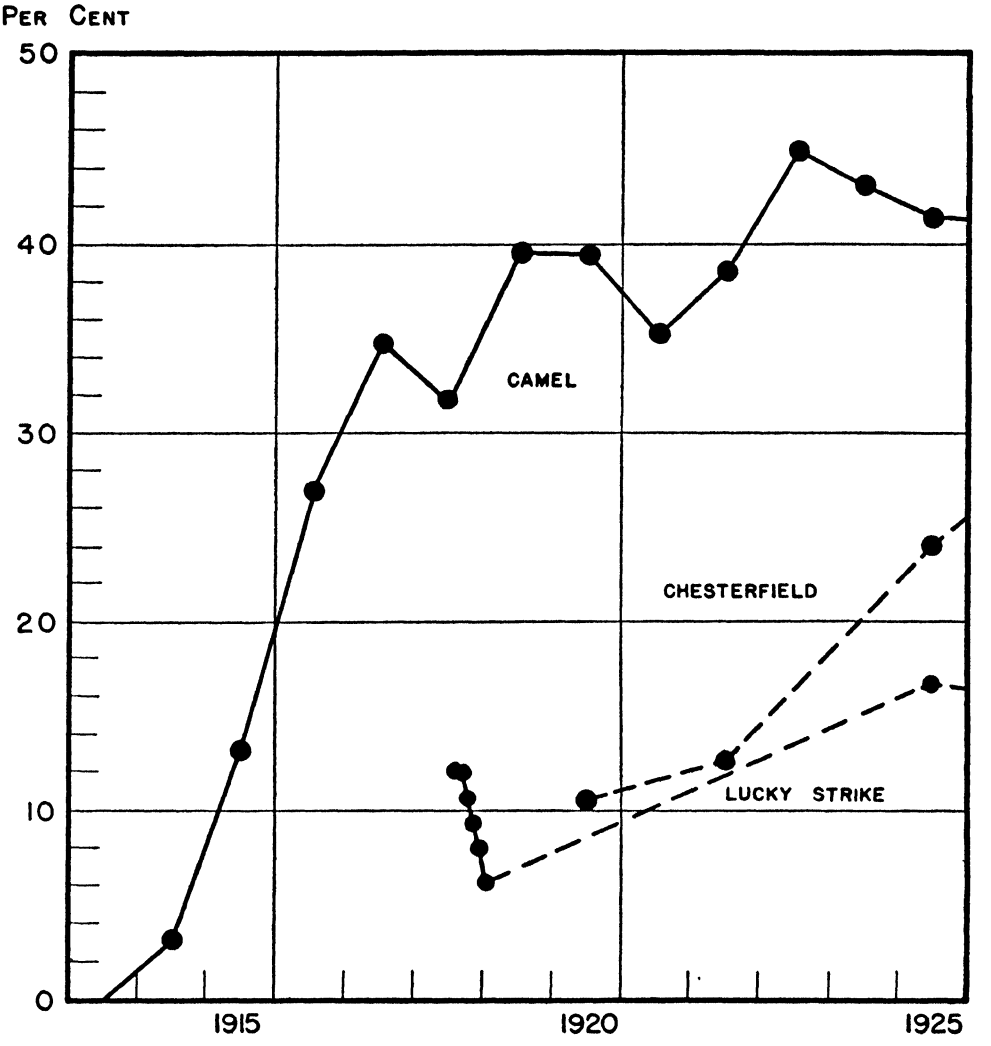


FIGURE VII. The rise of Camel, 1913–25. Brand sales as percentages of national output (annual) or of national tax-paid withdrawals (monthly).

SOURCES: *DA; CIR;* Cox, p. 70; *TP,* p. 10552, J. W. Andrews; *DX,* No. 1236; Table 18, below, p. 88; Table 30, below, p. 161.

piece" brands.[13] Camel, however, was the first Burley blend to receive general acceptance.

Camel was also revolutionary in marketing technique. It was put up in a package of 20 like that in use today. This type of pack had previously been used only for the expensive domestic brands, but Camel was priced

13. *TP,* pp. 10384, 10387–10388, G. W. Whitaker.

at 10¢ a pack, compared with 15¢ for Fatima. Heavy advertising expenses were incurred, but in the form of newspaper and billboard publicity rather than in the form of premiums or prizes. The new package, in fact, bore upon it the legend which still remains, "Don't look for premiums or coupons, as the cost of the tobaccos blended in CAMEL Cigarettes prohibits the use of them."

Chesterfield, Lucky Strike, and the Independents

The other companies responded to the new competitive pressure with increased advertising on their existing brands and with new brands designed to be directly competitive with Camel. Liggett and Myers modified the blend of their experimental Chesterfield, packed it in twenties, and gave it general promotion at the same price as Camel.[14] American in 1916 developed the Lucky Strike as a direct answer. The name was taken from an established brand of smoking tobacco inherited from the Trust. In 1915 Lorillard introduced Tiger as a new blend but failed to achieve any real success.[15] It was not until 1926 that Lorillard introduced Old Gold as a brand comparable to the other three.

Although Lucky Strike and Chesterfield were reasonably successful from the beginning, it was some years before either of them was on equal competitive terms with Camel. The few available sales figures for the early years, as plotted in Figure VII, indicate the magnitude of Camel superiority. It was some time, in fact, before Chesterfield became Liggett and Myers' leading brand, for that company continued to place major advertising emphasis on Fatima and as late as 1919 carried on an extensive campaign in the New York newspapers with the theme that Fatima had "just enough Turkish." Cigarettes supplied by Liggett and Myers to the navy from August, 1918, to February, 1919, included 48 million Piedmonts, 28.8 million Fatimas, and only 13.8 million Chesterfields.[16] American, on the other hand, turned promptly to Lucky Strike as its principal brand and advertised it heavily from 1918 on; yet it was only after 1926 that Lucky Strike became an equal competitor, and Camel relinquished first place to Lucky Strike only in 1930.[17]

In spite of this lag relative to Camel, all three of the Burley-blended brands gained rapidly at the expense of other types of cigarettes. In 1925 Camel, Chesterfield, and Lucky Strike sales together were 82.3% of the

14. *TP*, pp. 9086–9087, 9097–9098, G. W. Hill. Whether Chesterfield was developed to meet Camel competition is disputed. G. W. Whitaker, cited above, was positive that the Chesterfield blend antedated Camel and was unchanged. According to Hill, "My report is from my men that the Chesterfield Cigarette definitely changed its blend. It was a Virginia cigarette originally."

15. Cox, p. 65.

16. *Liggett & Myers Tobacco Co.* v. *United States*, 61 Ct. Cls. 693 (1926).

17. See Figure VIII, p. 82; Table 18, p. 88.

national output.[18] Although some of the older brands, especially Fatima, were still manufactured and sold, the market was completely dominated by the new brands.

In part this change in the nature of the product reflected a skillful adaptation to changes in public taste. Another important factor, however, was the outbreak of war. Interruptions of leaf supplies from the Orient drove out the cheaper Turkish brands almost entirely, and the more expensive brands were at a serious competitive disadvantage with the new blends in a large and widening market.[19]

This was a period in which cigarettes were coming into general use among men, and the bulk of new smokers were forced to use the new blends. Masses of men in the army were introduced to them. After the war Turkish cigarettes remained expensive with continued leaf shortages. There was thus a prolonged period of habituation to the new types, and if, as British and French experience seems to indicate, people like to smoke what they are used to smoking, the continuing strength of these brands is easily understood. Because of relative cost, habituation, and the nature of the product itself, the standard brands were securely established by the end of the First World War, and neither as types nor as particular brands have they ever been seriously challenged.

The great change brought about in competitive relations by the introduction of Burley-blended cigarettes may be seen from Table 17. American retained its lead in the first postdissolution years by developing new blended brands and by the continued prosperity of its Turkish and "pseudo-Turkish" brands. The obsolescence of these types of cigarettes before Lucky Strike achieved maturity reduced its proportionate share of the business in 1925, although total sales were three times larger than in 1913. Liggett and Myers enjoyed great success with Fatima and Piedmont in the first postdissolution years and experienced less of a decline than American because of good progress with Chesterfield and because of the continued vitality of its other brands. The great revolution, of course, occurred in the relationships of Lorillard and Reynolds. The failure of the former to develop a Burley cigarette left it with no other resources when its leading Turkish brands declined. In 1925 Lorillard sold less than half as many cigarettes as in 1913, although the national market was now more than five times as large. Reynolds, meanwhile, had vaulted to overwhelming national leadership on the basis of a single brand. Independent manufacturers found competitive pressures from the new brands as severe as from the first postdissolution scramble. Some were absorbed by the Tobacco Products Corporation, and the rest were

18. *Ibid.*

19. C. A. Wessel, editor of *United States Tobacco Journal,* "The First Sixty Billions Are the Hardest for Cigarette Industry," *Printers' Ink, 126,* No. 5 (January 31, 1924), 137.

TABLE 17

Division of the National Cigarette Business as Anticipated in the Dissolution Decree and as Actually Experienced in 1913 and 1925 *

Company	Billions of Cigarettes 1913	1925
American (sales)	5.5	17.4
Reynolds "	0.035	34.2
Liggett "	5.3	21.9 †
Lorillard "	3.4	1.6
Others (national output *minus* successor sales)	1.4	7.2
National output	15.6	82.2

	Percentage of National Output		
	Decree Estimate	1913	1925
American	37.1	35.3	21.2
Reynolds	——	0.2	41.6
Liggett	27.8	34.1	26.6 †
Lorillard	15.3	22.1	1.9
Others	19.8	9.3	8.7
National output	100.0	100.0	100.0

* *BC*, Pt. III, pp. 322–323; see Table 19, p. 94; *United States* v. *American Tobacco Co.*, 191 F. 371, 411 (1911).

† Gross domestic sales of Chesterfield and Fatima only.

increasingly confined to very cheap or very expensive cigarettes, where the competition of the standard brands was not so keenly felt.

The development of the new brands ultimately served to cut the ground even from under the combined interests of the Tobacco Products Corporation. The concentrated strength of this organization was sufficient to stand against ordinary competitive pressures but was not enough to compensate for the fact that its principal products were now obsolete. In its first years the Tobacco Products Corporation was reasonably profitable. Earnings on net book investment rose from 8.7% in 1913 to 28.4% in 1918, during a period in which investment was increasing rapidly. After 1919, however, profits declined and were equal to only 12.6% in 1921.[20] Tobacco Products was still making money, but the outlook was not encouraging. Turkish cigarettes were falling behind the newly developed standard brands in consumption, and there were limits beyond which the business of the firm was unlikely to grow. The company had been organized in the expectation of unusually high profits, and the men at the head were not the sort to accept without a struggle the limited profits and the limited scope which the future seemed to offer. Accordingly, under the leadership of George J. Whelan, the Tobacco Products Corporation abandoned its cigarette business entirely and became a part

20. Tobacco Products Corporation, Annual Reports.

of the mammoth combination in tobacco manufacture and distribution which the Whelan and Schulte interests built up during the 1920's. In 1919 the Tobacco Products Corporation sold its newly acquired holdings in Philip Morris and Company, Ltd., Inc., to its own stockholders.[21] In 1923 all of Tobacco Products' cigarette brands were leased to the American Tobacco Company for 99 years at an annual rental of $2.5 million, and the company's manufacturing assets were sold to American Tobacco at cost.[22]

The speculative structure of the Tobacco Products Corporation was shattered by the Great Depression, and the lease of its brands to the American Tobacco Company became its only sound asset.[23] In 1935 the American Tobacco Company commuted its lease with Tobacco Products, buying its brands outright at a cost of $36.7 million.[24]

The big new combination in cigarette manufacture, which had been stimulated by postdissolution conditions in the industry, was thus eliminated by the development of the new Burley-blended brands. The net effect of the Tobacco Products Corporation was to concentrate control of the independent brands of Turkish cigarettes in its own hands and then to deliver them to the American Tobacco Company. The elimination of independent output, which direct competitive pressure had never been able to accomplish, was thus brought about by this peculiar organization. Unfortunately no data on company output exist for the year 1924, but it is probable that in that year the Big Three dominated the market for cigarettes more completely than ever before or since.

In recent years, as may be seen from Figure VIII, there has been a shifting battle for industrial supremacy among the three brands. Chesterfield has never attained first place but much of the time has enjoyed the second largest volume of sales, and during the rest of the period it has been a strong third. Lucky Strike and Camel have alternated in the leading position, and often, when one of these has not been in the lead, it has fallen back into third place below Chesterfield. For much of the early period Lucky Strike was the third largest seller, and it was not until the strong selling campaigns of George Washington Hill after 1925 that Lucky Strike achieved second place in 1928 and industrial leadership in 1930.

New Advertising Methods

The success of the new brands and the conditions under which they were introduced had important effects upon advertising and price policies.

21. *Ibid.*, 1919.
22. *Ibid.*, 1923.
23. A detailed account of the complex transactions which led to the rise and final debacle of the Tobacco Products Corporation may be found in Cox, pp. 325–360.
24. American Tobacco Company, Annual Report, 1935.

Reynolds had only one brand to promote and concentrated all selling energy behind it. The competitive pressure on the directly comparable brands was consequently very heavy, and the other companies were in turn forced to concentrate advertising in the same way. Liggett and Myers continued to advertise Fatima and American to advertise its

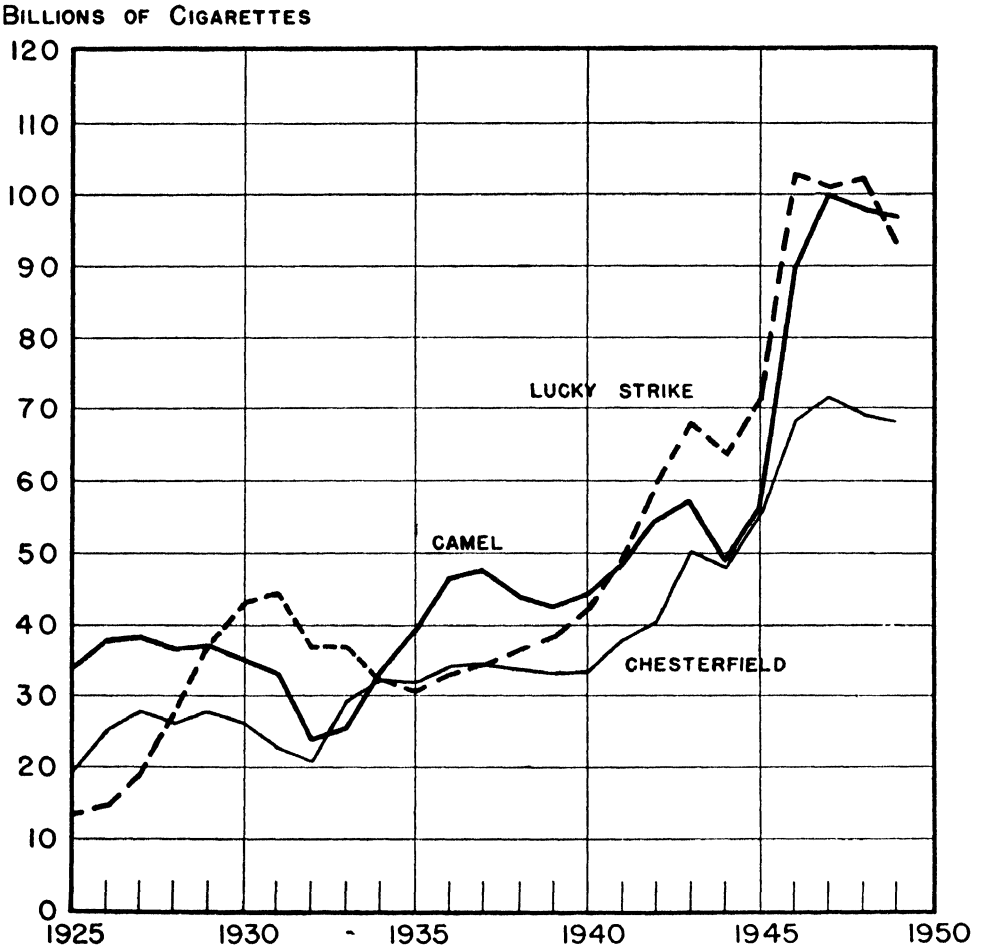


FIGURE VIII. Sales of the three leading brands, 1925–49. Prior to 1940, net sales except gross domestic sales only for Chesterfield. Thereafter, production for domestic market or domestic sales.

SOURCE: Table 18, below, p. 88.

Turkish brands, but both companies soon gave preponderant attention to the only brands which exhibited marked progress.

This concentration on a single brand per firm proved so successful that it became a fundamental principle of selling policy in the industry. The earlier object of advertising and of brand promotion had been to appeal to as many types of consumer as possible. The new theory apparently was

that most consumers could be made to like the same thing, if only the selling pressure were heavy enough.

Although concentrated advertising was probably the result of accident and of practical necessity rather than of considered principle, it was welcomed on theoretical grounds as well. George Washington Hill had achieved phenomenal success as president of the Butler-Butler subsidiary of the Trust by concentrating efforts on a single Turkish brand, Pall Mall, to the exclusion of the many other brands produced by that company.[25] In 1925, on the death of his father, Hill became president of the American Tobacco Company and confined the company's advertising almost wholly to Lucky Strike.[26] The marked rise in sales which followed brought Lucky Strike the industrial leadership in 1930, and for several years all the companies followed the same policy of exclusive emphasis. In recent years the policy has been somewhat relaxed, and the American Tobacco Company has given minor support to Pall Mall and Herbert Tareyton. All the major companies now have secondary brands in the king-size category.

Not only was advertising concentrated on particular brands but the methods of advertising were changed as well. Straight publicity expenditure on a national scale was introduced in place of prizes and premiums. The earlier method was a form of sales promotion intermediate between advertising and price reduction, since it gave the consumer something of value for his money in addition to cigarettes. It was not, however, a satisfactory form either of price concession or of publicity. It was noted by the Bureau of Corporations that "The inserts are not desired by many consumers and the coupon system of obtaining articles of merchandise is of somewhat limited value, apparently, either because many consumers do not care for these premiums, or because they are not willing to take the trouble to save the coupons and redeem them." [27] To pack undesired articles with cigarettes was expensive and ineffective as a publicity device.

25. *TP*, pp. 9064–9066, G. W. Hill.

26. Hill furthered his policy of concentration by disposing of minor brands to other companies. In 1927 American leased to the Union Tobacco Co., a newly organized Delaware corporation controlled by Whelan and Schulte interests, two of the recently acquired Tobacco Products brands (including Herbert Tareyton) and several Imperial Tobacco Co. brands to which American had title under the dissolution decree. Only selling rights were involved; American was to continue manufacturing these brands for the Union account. The lease was canceled in 1930 because of insufficient earnings by Union Tobacco. Cox, pp. 338–339, 344, 350–351.

In 1922 American had disposed of the United State rights to Player's cigarettes, a leading Imperial brand, to Philip Morris-International Corp., a subsidiary of Philip Morris. Philip Morris-International was dissolved in 1926, but American continues to manufacture small quantities of Player's and to import English Player's for the parent company. *In the Matter of Philip Morris & Co., Ltd., Incorporated*, 32 F.T.C. 278 (1940); *TP*, p. 3426, J. A. Crowe; pp. 4036–4038, L. G. Hanson.

27. *BC*, Pt. III, p. 379.

To pack coupons which were not redeemed was less expensive but was also ineffective as a means of attracting customers. The hectic competition of the immediate postdissolution years led to extravagant extensions of these selling methods and to a degree of elaboration in inserts and prizes which must have emphasized to the industry the unsatisfactory nature of this way of doing business. Silk flags, miniature rugs, and other trinkets were added to the photographic inserts of earlier years. The possibilities had been fully exploited, and as George Washington Hill put it, "Our ingenuity wore itself out." [28]

Camel capitalized on the general ennui regarding cigarette prizes and restricted its publicity to straight advertising in newspapers and on billboards. National advertising proved to be effective as a means of promoting sales—at least Camels were an outstanding success. Moreover, Camel advertising stressed quality and the absence of premiums. By linking the two it obtained both belief in Camel quality and an unfavorable inference regarding the quality of competing brands. The upward pressure of wartime costs was a further deterrent. Coupons and inserts quickly disappeared from the industry, and it was not until the early 1930's that Brown and Williamson had the temerity to reintroduce coupons as an attraction with Raleigh cigarettes.

The new methods of advertising were well suited to the new leading brands. The older method of advertising by prizes and premiums was best adapted to a wide constellation of different brands, each of which had a small total volume. Advertising by the package meant that the expenditure per thousand was more significant than total outlay in determining the effectiveness of the advertising message. Thus ten brands could be advertised almost as easily as one, and if ten brands were in fact to be advertised, it was almost necessary to use this type of medium. The effectiveness of general publicity, on the other hand, depends on the total volume of outlay rather than on the expenditure per thousand, and a given total expenditure devoted to one brand is apt to be more effective than the same volume of funds divided among several brands and dissipating much of its selling force in self-competition. Thus, when each firm concentrated on a single most promising brand, advertising by premiums lost some of its attraction, and general publicity became a more desirable means of applying selling pressure. On the other hand, when selling by premiums was abandoned and general publicity was adopted, it was almost necessary to eliminate the previous hierarchy of small brands and to concentrate selling pressures on one or a few important brands.

28. *TP*, pp. 9094–9095.

Price Tactics

The success of the new brands and the new advertising methods caused important changes in the customary price behavior of the industry.[29] So long as there was a complex hierarchy of grades and price classes, it was profitable to adapt operations to changes in cost by variations in the grade hierarchy and in the degree of selling pressure given to different kinds of cigarette. With the disappearance of the grade structure, the method of adapting to changed conditions also disappeared, and this implied an additional flexibility in advertising outlays if the old custom of even-nickel prices was to be retained. Meanwhile, wartime increases in taxes and other costs placed the price structure under additional strain.

Net prices to jobbers rose slowly through 1915 and 1916, but the effect on retail prices was cushioned by reduced package sizes and by eliminating discounts and special prices. Early in 1917 Lorillard raised wholesale prices enough to require odd-cent retail prices but lost its courage and retracted.[30] In October, 1917, excise taxes were increased to $2.05 per thousand and increased again to $3 the following February. Between 1914 and September, 1917, the net wholesale price of Camels had risen only from $3.53 to $3.62 per thousand, but on October 4 Reynolds raised prices to $4.01 and raised them again to $4.60 on November 1.[31] On this occasion Reynolds suggested to jobbers that they sell Camels at 13¢ per pack. American and Liggett also raised prices per thousand but tried to maintain even-nickel package prices by reducing the contents of each pack to 16 cigarettes.[32] The continued prosperity of Camels caused American to abandon the new package in about six months. Liggett and Myers held on longer with Fatima and Piedmont but quickly restored Chesterfield to the usual pack.[33]

Prices later increased still more, and from November, 1919, to December, 1921, net wholesale prices for all three brands were $7.06 per thousand. During this period the suggested retail price was 20¢, but the prac-

29. During this period the method of quoting wholesale prices underwent considerable change. Under the Trust it had been customary to quote a wholesale list price with a 2% cash discount, occasionally supplemented by other special discounts or rebates. In the new competition after dissolution Reynolds adopted the practice of granting a 2% trade discount with 10% for cash in 10 days on all orders. After a number of initial experiments the other companies adopted the same procedure but with the discounts reversed, and Reynolds later came around to 10% trade and 2% cash discounts. Price discussion within the industry is usually in terms of the list price, although these same discounts are always granted, and the list serves merely as the basis for calculating the price which wholesalers pay. Unless otherwise specified, later quotations of manufacturers' prices will refer always to the net price after both discounts. *TP*, p. 9120, G. W. Hill.

30. Cox, p. 204.

31. See Table 55, p. 283.

32. Cox, p. 205.

33. *Liggett & Myers Tobacco Co.* v. *United States*, 61 Ct. Cls. 693 (1926).

ticability of odd-cent prices had been shown, and even-nickel prices were never again regarded as seriously either by manufacturers or retailers. The development of odd-cent prices had been foreshadowed under the Trust by persistent retail cutting on the more expensive brands. Apparently the preference of the public for even-nickel prices was strong only when cigarettes were characteristically sold at 5¢ a box. The necessities of wartime inflation and taxation forced large-scale experiments with odd-cent prices at much higher prices per pack. The experiments were unattended by the disastrous consequences which followed the Trust's attempt to advance its cheapest brands in 1898.

Despite the development of odd-cent retail prices, and despite a good deal of experimentation with price policy in general which occurred in the early years of the Camel era, there has never been a time since the dissolution when price competition among the major successor companies has played a significant role. There have been occasions on which the leading brands have sold at different retail prices, but this has generally been by mistake, and such inequalities have usually been eliminated immediately. It is approximately correct to say that the retail prices of the three leading brands have been identical since those brands first were introduced.

Wholesale prices, on the other hand, were not at first identical among the leading brands. Lucky Strike was introduced at a net price to jobbers 10¢ a thousand higher than that of Camels, and until 1928 Lucky Strike was usually maintained at an adverse differential of 5¢ to 30¢ a thousand above the Camel price. After some initial experimentation the wholesale price of Chesterfields was set equal to the Camel price and maintained identical with it in later years. After 1928 Lucky Strike too was sold at a price identical with Camel.[34]

Although significant wholesale price differences existed for several years and though price was used as an arm of market policy, there was no time at which price competition in any ordinary sense occurred among the major firms even at wholesale. In the early years of the new brands, Reynolds established its position as the acknowledged price leader both by reason of its overwhelming leadership in volume of sales and by reason of the extraordinary vigor with which the company insisted upon exercising its authority. The other companies soon fell into the habit of setting their prices with reference to the Camel price, and although there were differentials among the brands for several years, the only differentials which lasted, those on Lucky Strike, were in an upward direction, which did not, on the face of it, confer the kind of sales advantage which competition through price is usually supposed to bestow.

The absence of price concessions as an instrument of market policy reflects a fundamental change in the purposes of competition. Price war-

34. See Table 55, p. 283.

fare was used by the Trust either to eliminate competitors or to compel them to join forces. Neither of these objects was practicable for the successor companies, since all were too large to be driven out of competition, and any combination or collusion between them was forbidden by the dissolution decree. Accordingly, competitive methods have been directed to the much more restricted object of improving market position without hope of total conquest, and price competition has been a less suitable instrument for this purpose than heavy advertising expenditure.

The revolution in the cigarette industry, brought about by Camels and the war, was complete in all essentials by 1920. The leading brands were established, old brands were obsolete or obsolescent, premiums and coupons were abolished, national advertising was adopted as the principal competitive weapon, and essential identity of prices among the leading brands was established. Reynolds had assumed the role of price leader. The pattern of the industry was thereafter modified only in detail. It remained, however, for the Great Depression and a pricing error to introduce a number of lesser brands and to weaken the overwhelming dominance of the Big Three.

MINOR BRANDS

Old Gold

The failure of the P. Lorillard Company to develop a Burley-blended cigarette almost eliminated it from the industry. Although Lorillard inherited most of the Trust's Turkish brands, it sold only 1.5 billion cigarettes in 1925. Given 15% of the nation's cigarette business by volume and 26% by value, according to the output of its plants in 1910, Lorillard retained only 1.9% in 1925. In 1926 Old Gold cigarettes were introduced and lavishly advertised in a vigorous effort to regain the company's lost position. Necessary funds were secured by selling $15 million in 5½% gold bonds and $14.1 million in common stock. As is indicated in Table 18, the sales of the new brand increased rapidly from 1926 to 1929, but the increase was slower in 1930, and thereafter sales declined. In 1930 Old Gold sales were 6.9% of the national output of cigarettes, but this degree of importance has never again been reached. Even the great growth in Old Gold popularity in recent years raised its share of the national total to only 5.1% in 1949. Lorillard's bid to regain its place as a leading cigarette manufacturer has not been successful, but Old Gold has achieved a moderate sale and ranks as the fifth most important brand in the country.

Old Gold was the only new brand of any significance to arise during the 1920's, and it was not until the period of the Great Depression that a number of new brands achieved importance and for a time even appeared to threaten the lead of the Big Three. The rise of these other

TABLE 18

Net Sales of Leading Cigarette Brands, 1925–49 *

(Billions of Cigarettes)

Year	Lucky Strike	Camel	Chesterfield †	Philip Morris	Old Gold	Pall Mall	Raleigh	Ten-Cent Brands ‡
1925	13.7	34.2	19.7	—	—	—	—	—
1926	14.8	38.0	25.1	—	0.1	—	—	—
1927	19.1	38.4	27.8	—	2.5	—	—	—
1928	27.4	36.7	26.1	—	6.5	—	—	—
1929	37.0	37.2	28.1	—	8.3	—	0.5	—
1930	43.2	35.3	26.4	—	8.5	—	0.2	0.1
1931	44.5	33.3	22.8	—	7.6	—	0.1	0.4
1932	36.7	23.9	20.9	a §	5.6	—	0.2	10.7
1933	36.7	25.6	29.3	0.6	5.3	—	0.2	10.1
1934	32.1	33.3	31.9	2.1	5.0	—	0.6	13.8
1935	30.7	39.4	31.8	3.5	5.1	—	1.4	15.8
1936	33.1	46.4	34.4	5.2	6.5	a §	2.4	16.7
1937	34.5	47.7	34.7	7.8	8.1	0.7	3.5	19.6
1938	36.4	43.7	33.7	9.3	5.9	0.6	4.8	23.4
1939	38.3	42.8	33.0	11.1	5.7	1.6	6.9	25.6
1940	42.0	44.5	33.5	12.5	5.7	4.0	9.5	22.4
1941	49.5	48.5	37.5	17.5	6.0	4.5	10.5	22.6
1942	59.5	54.5	40.5	22.5	11.0	5.5	12.5	18.7
1943	68.0	57.5	50.0	27.0	14.0	6.5	13.5	13.1
1944	64.0	49.5	47.5	26.0	14.0	7.2	12.0	11.0
1945	71.0	56.5	55.5	28.0	15.0	7.0	12.5	12.0
1946	103.0	86.0	66.0	22.0	14.5	9.5	3.0	3.5
1947	102.0	94.7	69.0	22.0	15.0	11.5	2.5	2.1
1948	102.5	98.0	69.5	29.0	16.3	14.0	3.0	3.5
1949	93.0	97.0	68.5	33.5	17.9	17.0	6.5	3.5

* Sources for 1925–39: *TP*, p. 3794, B. J. Sanders; *GX*, Nos. 293, 428, 437, 638, 702; *DX*, Nos. 1267, 1269, 1271. Source for 1940–49: Wootten, 1942–50.

† Gross domestic sales only.

‡ Twenty Grand, Avalon, Wings, Domino, White Rolls, Marvel, Paul Jones, Sensation, Beechnut. Includes Fleetwood, Chelsea, Rameses, Alligator in various years after 1939.

§ Less than 50 million.

brands was occasioned in part by the depressed conditions of the country and in part by errors in market policy committed by the Big Three.

A Pricing Error and New Competition

In 1930 the production of all cigarettes by American, Reynolds, and Liggett amounted to 112.7 billion, or 91.0% of the total national output of 123.8 billion. Since Lorillard production was another 6.9%, there remained only 2.1% of the national output which was produced by others than the successor companies to the Trust. With this secure market control, experiments in price policy seemed safe, and on June 24, 1931, Reynolds advanced the net wholesale price of Camel cigarettes from

$5.64 to $6.04 per thousand. This was equivalent to a rise of a cent a pack at retail, and it came at a time of serious economic depression and at a time when leaf tobacco prices were unusually low. Moreover, cigarette consumption had ceased to grow, and in the fiscal year ended June 30, 1931, tax-paid cigarette withdrawals were 300 million less than for the 1930 fiscal year.

In the second half of 1931 the deepening depression reduced cigarette consumption still further, and the extent of the fall may have been influenced by the price rise. Cigarette withdrawals were 6 billion less in the calendar year 1931 than in 1930 and declined another 10 billion in 1932.

More important for the industry than the decline in consumption was the incentive to new competition provided by the wide margin between leaf costs and selling prices. Low leaf costs made possible the production of a satisfactory cigarette to retail at 10¢ a pack, even with an excise tax of $3 per thousand. The depressed condition of the country and the high prices of the standard brands made it possible to sell these cheaper cigarettes. A number of 10¢ brands were developed in competition with the standard brands and prospered greatly. The Brown and Williamson Tobacco Company, an independent plug manufacturer at the time of the Trust,[35] reduced the price of Wings, which it had previously introduced at 15¢ a pack. Stephano Brothers, one of the old independent Turkish producers, introduced Marvels and Tipt cigarettes. The Axton-Fisher Tobacco Company, which had produced smoking tobacco before 1911 and had more recently manufactured a number of minor cigarettes, including the mentholated Spud, developed Twenty Grand. Larus and Brother Company, another old smoking tobacco manufacturer, brought out Domino and White Rolls. The rapid growth of these brands carried their combined sales to 10.7 billion in 1932 and reduced the portion of all cigarettes produced by the Big Three to 81.4%, or by all four successor companies to 86.6%.

The success of the 10¢ brands is concealed rather than indicated by these figures. The 10.7 billion of sales in 1932 was concentrated in the latter part of the year and represented a marked invasion of the market for the standard brands. In January, 1932, all 10¢ brands accounted for only 2.3% of industry sales, but by June the proportion had risen to 9.1% and by November to 22.8% of the total.[36] The economy brands' invasion of the standard brand market was the more seriously felt since the sales of the latter were also diminished by the decline in total consumption.

On January 3, 1933, the American Tobacco Company led a price cut to $5.29 a thousand net and followed with another cut to $4.85 a thou-

35. Since 1927 Brown & Williamson has been a wholly owned subsidiary of the British-American Tobacco Co., Ltd., one of the successor companies to the old Trust.

36. U.S. Federal Trade Commission, *Report of the Federal Trade Commission on Agricultural Income Inquiry*, 1937, p. 462.

sand on February 11. Strenuous efforts were made, especially by the American Tobacco Company, to see that the standard brands were sold at 10¢ a pack retail, even though this allowed a total markup of only 15¢ a thousand for both jobbers and retailers. Under this extreme pressure the share of the 10¢ brands was reduced to 16.8% in January, to 11.6% in February, and to 7.1% in March. For most of the rest of the year the percentage varied from 6% to 9%, and on January 1, 1934, prices of the standard brands were raised to $5.38 a thousand. The 10¢ brands recovered somewhat when the extreme price pressure was removed, and for most of the next two years their share of the national sales from month to month fluctuated from 10% to 14%.

The threat of serious competition from the 10¢ brands was thus beaten back, but the new brands did not disappear. A certain proportion of the smoking public which had adopted the cheaper cigarettes appears to have developed a liking for them. Throughout the 1930's the total sales of the 10¢ brands mentioned above continued to account for about 11% of the national consumption of all cigarettes, while the absolute quantity sold was twice as large in 1939 as in 1932. In 1938 Lorillard introduced Sensation cigarettes in the same price class and in 1939 sold 4.4 billion of them.[37] In the same year Old Gold sales were only 5.7 billion.

Philip Morris

The unsettling of smokers' tastes as a result of these operations probably made easier the introduction and growth of the Philip Morris cigarette. The company had previously been a manufacturer of Turkish cigarettes under the same name, but in 1933 it brought out the Philip Morris English Blend, comparable to the standard brands. The principal difference in the product seems to have been the use of Latakia tobacco in place of Maryland in the blend [38] and a perceptibly different casing treatment. Advertising was relatively modest in quantity but effective in quality. The net price of Philip Morris was maintained at $6.04 throughout the prewar period, and retailers were encouraged to sell them for 15¢ a pack. During this same period other brands retailed from 11¢ to 14¢ per pack and usually were at 13¢ or two for 25¢.[39] In spite of the price differential, perhaps because of it, Philip Morris grew steadily throughout the period before the war. Philip Morris sales, like those of most other cigarettes, increased greatly during the war, and since 1938 the brand has been the fourth largest in the country. In 1949 it accounted for 9.5% of the national consumption.

Philip Morris also produces a number of other minor brands in various

37. *GX*, No. 293.
38. *In the Matter of Philip Morris & Co., Ltd., Incorporated*, 32 F.T.C. 278 (1940).
39. *TP*, p. 10558, J. W. Andrews; *GX*, Nos. 430–436.

price classes. One expensive brand, Marlboro, achieved a sale of 1.5 billion in 1945, and Paul Jones, a 10¢ brand, reached annual sales of over 1 billion in the middle thirties. In other years these brands, as well as a few others such as English Ovals and Dunhill Superiors, have generally achieved annual sales of only a few hundred million each.[40]

Other Brands

Another cigarette of some importance in recent years is the Raleigh, manufactured by the Brown and Williamson Tobacco Company. This brand began in 1929 as an expensive cigarette, which was reduced in 1932 to sell at the same price as the standard brands. This price reduction had little immediate effect upon Raleigh sales, but later progress was realized with increased advertising, including the use of redeemable coupons.[41] By 1939 Raleighs accounted for 3.8% of the national consumption and enjoyed a considerable expansion during the war, but it is believed that this business has since fallen off sharply.[42]

The Brown and Williamson Tobacco Company is unusual in that it promotes a number of brands of almost equal importance. Raleigh and Wings have been accompanied by Avalon, another 10¢ brand, by Kool, a mentholated cigarette, and by Viceroy which has a filter mouthpiece. While none of these brands is individually of the first rank, they achieved a total sale in 1944 of 27 billion or 8.4% of the national output, and from 1932 to 1942 Brown and Williamson was the fourth most important cigarette manufacturer in the country. Since 1943 Philip Morris has been the fourth ranking manufacturer in point of volume as well as the producer of the fourth most important brand. Brown and Williamson is believed to have fallen behind Lorillard in 1948 and to have regained fifth place in 1949.[43]

Two other significant secondary brands were developed by the American Tobacco Company itself. Pall Mall was the leading high-grade Turkish cigarette of the Trust, and after the dissolution it was still manufactured, but sales fell off as Turkish cigarettes lost popularity and as American restricted its advertising to Lucky Strike. In 1936 Pall Mall was leased to the American Cigarette and Cigar Company,[44] a subsidiary of the American Tobacco Company, was changed to a domestic blend not unlike the standard brands, and was given a moderate amount of advertising promotion.[45] It has since enjoyed a steady growth and now

40. *GX*, No. 437; estimates in Wootten, 1943, p. 13; 1944, p. 21; 1945, p. 19; 1947, p. 36; 1948, p. 28.
41. *TP*, pp. 12269–12272, H. C. Harrison; *DX*, No. 1267.
42. Wootten, *loc. cit.*
43. *DX*, No. 1269; Wootten, *loc. cit.*
44. Formerly the American Cigar Co.
45. *TP*, pp. 9066–9076, G. W. Hill.

ranks as the sixth largest brand in the country.[46] The old Tobacco Products brand, Herbert Tareyton, has had a moderate revival under the sponsorship of the American Tobacco Company itself. In the 1930's it usually sold less than a billion a year, but its popularity increased during the war, and in 1948 it is supposed to have reached 5.5 billion.[47] Although Pall Mall and Herbert Tareyton are small, compared with the three leading brands, their possession has served recently to give the American Tobacco Company a comfortable margin of numerical superiority over the production of either of its two chief rivals.

In addition to the companies already mentioned, two small companies have achieved some importance in recent years. Benson and Hedges of New York has sold expensive grades of cigarettes, other tobacco products, and tobacco accessories since about 1905.[48] Two brands, Virginia Rounds and Parliament, are well known in the eastern United States, though total sales are only a few hundred million annually.

The Riggio Tobacco Company has the distinction of being the only significant producer of cigarettes which has been newly organized since the dissolution of the Trust. This company was founded by Frank V. Riggio, who prior to 1937 had general supervision over all the American Tobacco Company's salesmen. He is the son of the present chairman of the board of the American Tobacco Company. In 1937 the younger Riggio left the American Tobacco Company and founded his own firm and toward the end of 1938 introduced one of the first king-size cigarettes, Regents. The new brand had sufficient success to provoke several imitations.[49] Pall Mall, Herbert Tareyton, and Wings were changed to king-size brands, while Philip Morris introduced Dunhill Majors. Lorillard changed the size of an old brand, Beech Nut, and introduced it in the economy price class. More recently Lorillard and the other major companies have introduced king-size brands in the regular price class. Lorillard brought out Embassy; Liggett changed the size and blend of its old brand, Fatima; and Reynolds has broken its long record of exclusive concentration on one cigarette by introducing Cavalier.

The growth of new brands reduced the proportion of the national output contributed by the Big Three from 91.0% in 1930 to 68.0% in 1939. The major producers sold more cigarettes in 1939 than in 1930, but other companies expanded still more rapidly. The relative progress of the new brands was in some cases due to the nature of the brands themselves and in other cases to lower prices at which some were sold.

46. *GX*, No. 638, 702; Wootten, *loc. cit.*
47. *GX*, No. 702; Wootten, *loc. cit.*
48. Moody's.
49. *TP*, p. 8035, Frank Riggio; p. 9414, Vincent Riggio; *New York Times*, April 7, 1939, p. 38, col. 6; October 28, p. 22, col. 3.

Effects of the Second World War

During the war the relative position of the major companies did not greatly change, although total output expanded and although higher income made low-priced cigarettes less attractive. At least part of the continued vitality of the minor brands was the result of shortages of the regular brands. Owing to lack of machinery and an increasing shortage of leaf tobacco, the major companies were not able to meet the demand for their products. Reynolds was especially limited and was forced to ration Camels to dealers from 1943 until late in 1946.[50]

The field was clear for the smaller producers as far as demand was concerned, and, for at least part of the period, any cigarette that could be manufactured could be sold. The minor companies did not expand more rapidly than the major companies, however, for they were equally limited by productive capacity.

Producers of economy brand cigarettes were also adversely affected by mounting leaf costs. Although price relief was granted, the cheaper brands were forced out of the 10¢ class, and the price differential with the standard brands was narrowed. There was little advantage to be gained by appealing to consumers with a low price, and the cheaper brands gradually withered to be replaced by more expensive new brands. Sensation was withdrawn from the market in 1943. Larus and Brother brought out Chelsea in the regular price range, and sales of Domino fell off. Stephano Brothers converted their old Turkish brand, Rameses, to a domestic blend. Axton-Fisher developed the Fleetwood and the Fleetwood Imperial.[51] A number of cat-and-dog brands were also developed without further purpose than to exploit a current shortage.

With the end of the war and the end of shortages, consumers flocked back to the regular brands. With rationing removed, Camels gained rapidly on their two principal rivals. Many of the new brands did not appeal, and the economy brands had already decayed. In 1947 the output of the Big Three was estimated at 82.5% of the national total. The effect of inflation was thus to repair most of the damage done to the position of the Big Three by the Great Depression and the 1931 pricing error. Except for a permanent expansion of Philip Morris and some progress by Brown and Williamson, the three major producers are in as dominant a position today as they were in 1930.

50. R. J. Reynolds Tobacco Company, Prospectus, July 7, 1945, p. 7; Wootten, 1944, p. 20, 1948, p. 28.

51. In 1945 the Axton-Fisher Tobacco Co. was dissolved and its assets, consisting mostly of leaf tobacco, were sold to Philip Morris. For details of the transaction and the events leading up to it, see Moody's; *New York Times,* March 2, 1937, p. 29, col. 7; June 27, 1939, p. 42, col. 3; February 14, 1940, p. 38, col. 6; February 24, p. 30, col. 1; November 8, p. 36, col. 7; April 2, 1941, p. 38, col. 2; October 15, p. 22, col. 3.

TABLE 19

Production of Cigarettes by Companies, Selected Years *

	1925 †	1930 ‡	1939 ‡	1945	1949
	Billions of Cigarettes				
American	17.4	46.5	41.4	98.0	121.5
Reynolds	34.2	35.2	42.8	72.0	102.3
Liggett	21.9	31.0	39.0	68.5	78.5
Brown & Williamson	a §	0.3	19.1	26.0	22.8
Philip Morris	0.4 ‖	0.5 ‖	12.8 ‖	32.0	35.7
Lorillard	1.6	8.5	10.5	18.0	19.3
Stephano	a §	0.04	6.0	5.0	2.4
Axton-Fisher	a §	0.8	4.3	——	——
Larus	a §	0.03	2.4	4.5	3.2
First three	73.5	112.7	123.2	238.5	302.3
Second three	2.0	9.3	42.4	76.0	77.8
Third three	a §	1.9	12.7	9.5	5.6
Others	6.7	1.0	1.4	8.2	2.9
Total	82.2	123.8	180.7	332.2	388.6
	Percentage of Total				
American	21.2	37.6	23.5	29.5	31.3
Reynolds	41.6	28.4	23.7	21.7	26.3
Liggett	26.6	25.0	21.6	20.6	20.2
Brown & Williamson	a §	0.2	10.6	7.8	5.9
Philip Morris	0.5	0.4	7.1	9.6	9.2
Lorillard	1.9	6.9	5.8	5.4	5.0
Stephano	a §	0.03	3.3	1.5	0.6
Axton-Fisher	a §	0.7	2.4	——	——
Larus	a §	0.02	1.3	1.4	0.8
First three	89.4	91.0	68.0	71.8	77.8
Second three	2.4	7.5	23.4	22.9	20.0
Third three	a §	0.7	7.0	2.9	1.4
Others	8.2	0.8	0.8	2.5	0.7
Total	100.0	100.0	100.0	100.0	100.0

* Compiled from *TP*, pp. 3794–3795, 3864–3865, B. J. Sanders; *GX*, Nos. 294, 437, 638, 677, 702; *DX*, Nos. 1236, 1265–1269; Wootten, 1946, 1950.

† Figures are for total net sales except Liggett & Myers data which are for gross domestic sales of Chesterfield and Fatima only.

‡ Brown & Williamson data are for sales.

§ Not available.

‖ For year ending March 31 following.

The major changes in competitive relations among the nine companies which have dominated the industry since 1925 can be clearly seen in Table 19 and Figure IX. Points to be noted are: the tremendous growth in output for all producers; the dominant position of the Big Three in 1930,

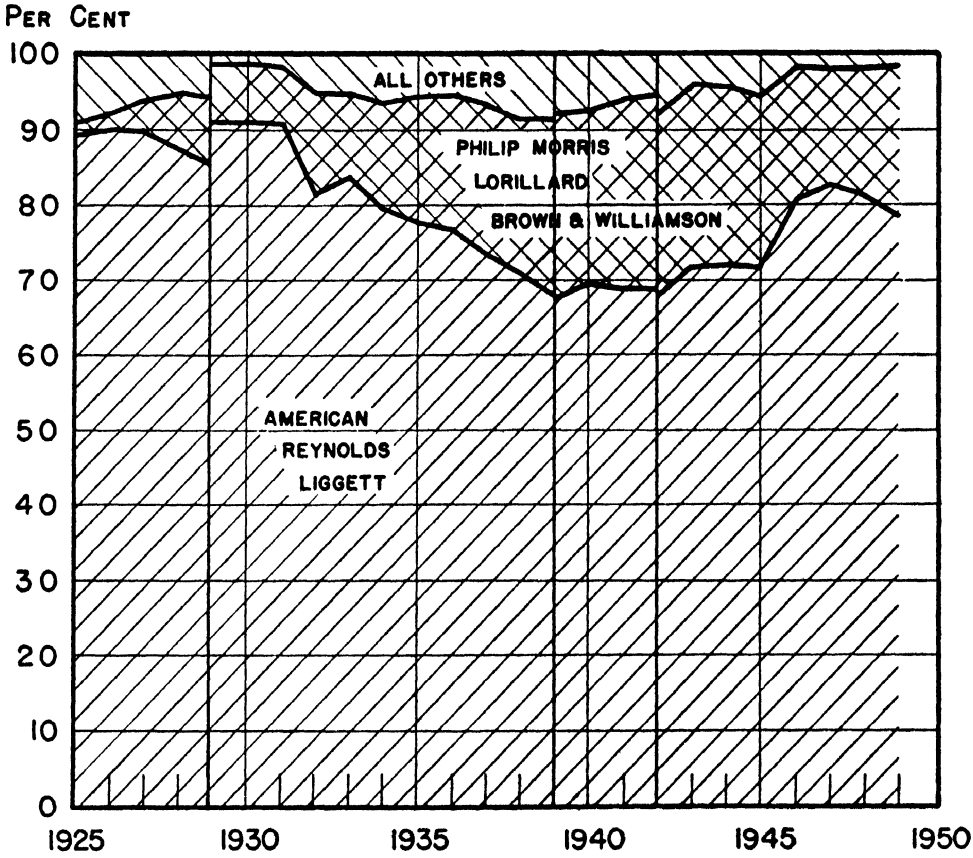


FIGURE IX. Market shares of the Big Three and the Big Six, 1925–49. Company sales (for Liggett only gross domestic sales of Chesterfield and Fatima) as percentage of the national output, 1926–29. Company production (Brown & Williamson sales) as percentage of the national output, 1929–39. Domestic production or sales as percentage of national tax-paid withdrawals, 1939–42. Company production as percentage of the national output, 1942–49.

SOURCES: *TP*, pp. 3794, 3864, B. J. Sanders; *GX*, Nos. 294, 437, 638, 677, 702; *DX*, Nos. 1236, 1269; Wootten, 1940–50.

with the minor success of Lorillard; the decline in Big Three control by 1939, with the rapid rise of Philip Morris, Brown and Williamson, and the economy brands; the decline in importance of very minor brands during the war; and the re-emergence of dominant control by the Big Three in 1946 and 1947.

INVESTMENT AND EARNINGS

Profit Rates

The steady growth of the cigarette industry and the dominant control exercised by the major manufacturers have been reflected in continued high levels of profits. Earnings of 17.5% on tangible net worth for the Big Three since dissolution and earnings of 12.1% on net sales for the American Tobacco Company over the same period are well above usual competitive levels. Earlier earnings by the Trust of 32.7% on tangible assets and 20.6% on net sales appear to have been considerably higher, but the basis of computation in the two periods is different, and, as we shall see, there is reason to believe that the different nominal rates before and after dissolution represent about equal levels of profitability.[52] These profit rates, when applied to the vastly larger volume of cigarette production in recent years, imply enormously increased total profits, and for the major successor companies together both earnings and assets are several times as large as for the old Trust.

Some conception of the total accomplishment in earnings and in capital formation by the major cigarette manufacturers can be gained from Table 20, which presents assets, investment, and earnings for five major companies over as long a period as availability of comparable figures will allow. Especially to be noted are: the great size of total earnings and of the assets presently employed in the business, the large proportion of assets financed by debt rather than by equity capital, the large share of the growth of equity brought about by corporate savings rather than by new outside investment, and, in spite of this, the high proportion of total earnings disbursed in dividends.

Perhaps more illuminating are the changes in assets, debt, and sources of equity for the American Tobacco Company as presented in Figure X. The experience of the American Tobacco Company is typical of the industry, and although similar graphs drawn for the other companies would differ in detail, the broad pattern of relationships shown in Figure X would be valid for them as well. The most significant features of the graph are the sharp rises in assets and in debt in the periods of the two world wars.

Technology and Finance

These rapid changes reflect an important technical characteristic of the cigarette industry. The greater part of the tangible assets of cigarette manufacturers consists of inventories of leaf tobacco. Normally, about three years' requirements are kept on hand. An increase in consumption

TABLE 20

Total Earnings and Investment of the Major Companies, 1912–49 * †

(Millions of Dollars)

	American	Reynolds	Liggett	Philip Morris	Lorillard
Base year	1915	1912	1914	1920	1912
Tangible assets	82.0	16.5	43.5	1.3	32.1
Liabilities	7.2	1.8	37.0	0.1	23.3
Tangible net worth	74.8	14.7	6.5	1.2	8.7
1949					
Tangible assets	650.5	528.5	416.6	156.3	100.6
Liabilities	360.2	240.5	183.0	78.7	41.6
Tangible net worth	290.3	288.1	233.5	77.6	59.0
Increase, base year to 1949					
Tangible assets	568.5	512.0	373.1	155.0	68.6
Liabilities	353.0	238.6	146.0	78.6	18.3
Tangible net worth	215.5	273.4	227.1	76.4	50.2
Sources of increase in tangible net worth					
Sale of capital stock	98.8	66.8	91.3	42.4	31.2
Reinvested earnings	116.7	206.5	135.8	34.0	19.1
Distribution of earnings					
Common dividends	574.4	624.6	392.1	54.6	91.6
Preferred dividends	107.5	18.0	52.0	6.9	27.5
Reinvested earnings	116.7	206.5	135.8	34.0	19.1
Total earnings	798.6	849.1	579.9	95.5	138.2

* Individual items may not add to totals because of rounding. Data are for December 31 except Philip Morris data which are for June 30, 1920, and March 31, 1949.

† Compiled from company reports, Moody's, Poor's.

and in consequent leaf usings will usually lead to a greater increase in size of inventories and to a still greater increase in tobacco purchases. New tobacco must be bought, both to replace the leaf used up and to build inventories to a higher level.

In both periods of increasing debt, sharply rising cigarette consumption increased the demand for leaf tobacco at a time when the production of leaf was restricted either by acreage allotments or by shortages of labor and materials. In consequence, tobacco prices were unusually high, and although the companies did not always succeed in maintaining the normal three-to-one ratio, they did succeed in spending a great deal of money. Even before the recent war, the AAA increased tobacco prices above their previous level, and rising consumption then increased inventory expenses, although not to so great an extent as in the war period.

The rapid rises in inventory costs during the First World War and since the early 1930's were beyond the capacity of ordinary corporate savings to absorb and came at times when equity finance was not always

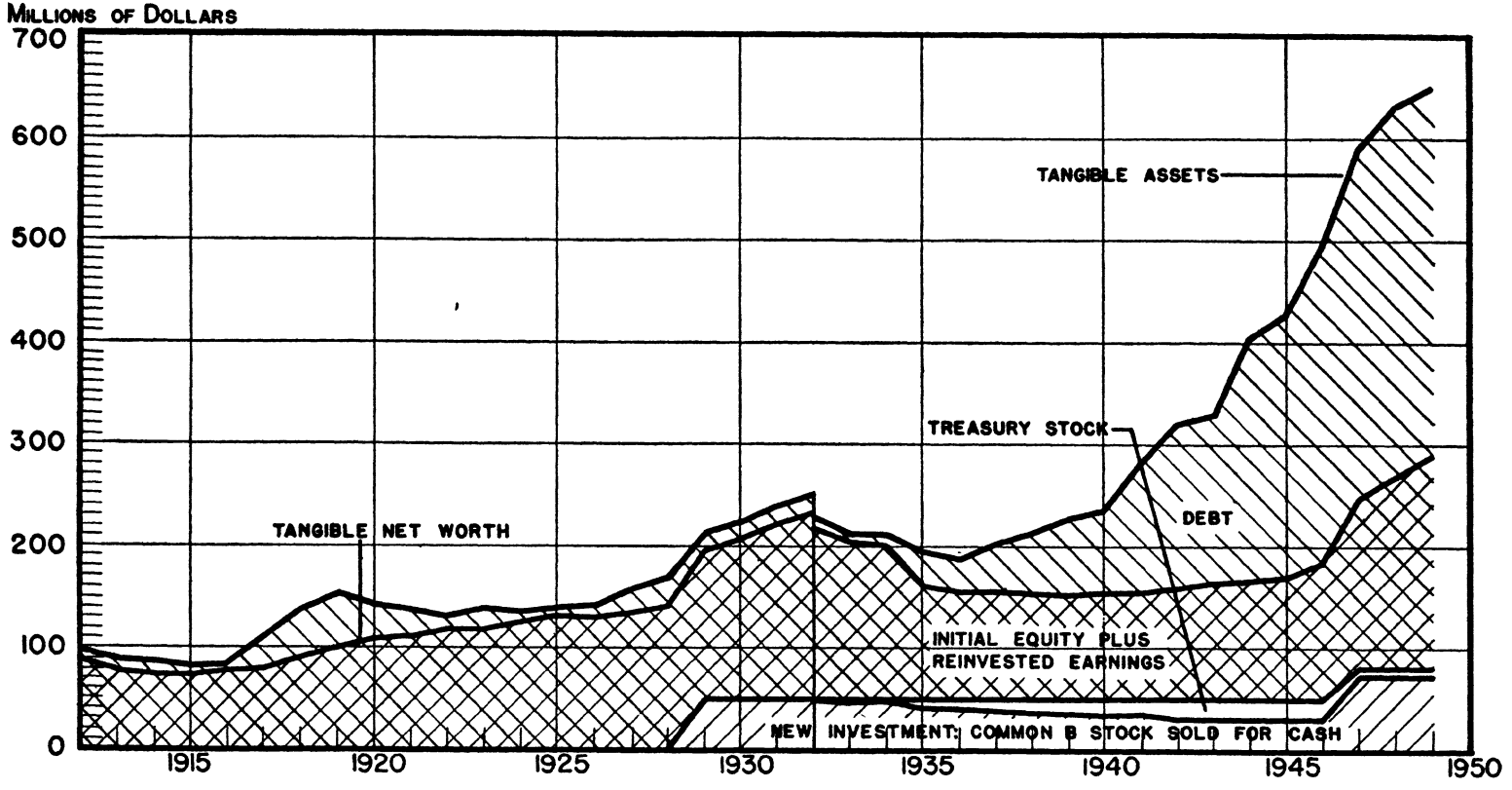


FIGURE X. American Tobacco Company tangible assets, equity, and debt, 1912–49. After 1931, adjusted for subsidiary intangibles and holdings by subsidiary of American Tobacco Company stock.

SOURCE: Company reports.

profitable. Moreover, a future decline, either in consumption or in tobacco prices or in both, would free funds as quickly as they were absorbed, and in this case a redeemable debt might be more convenient than a sudden cash redundancy which could be distributed only by a reduction in capitalization. The desire to maintain control and earnings leverage for existing stockholders may have been another reason for preferring debt to equity finance.

After the First World War leaf prices fell and freed some funds from inventory investment. The rapid growth of the business made necessary permanently higher leaf inventories, but the passage of several profitable years and lower prices for tobacco allowed reinvested earnings to accumulate the necessary funds, and the urgent wartime borrowings were rapidly paid off. Since the recent war there has been no significant fall in tobacco prices, and crop restriction policies make it likely that there will be none. Accordingly, the great increase in inventory capital so urgently and so suddenly acquired probably represents a permanent requirement, and any reduction in debt will be a slower matter than that achieved thirty years ago.

The sharp rise in American Tobacco Company assets in the late 1920's reflects the rise of Lucky Strike to national leadership. Significantly enough, this increase in assets was not accompanied by a rise in debt. It was expected or hoped that the rise in assets would be permanently necessary, and the change came at a time when the securities markets were exceptionally favorable to new equity flotations. The decline in assets and in equity after 1932 reflects smaller inventory requirements in the depression, the payment of dividends in excess of current earnings, and the expense of commuting the Tobacco Products Corporation lease for which funds were borrowed and whose cost was charged against surplus. The loss of leadership to Camel in the late 1930's reduced earnings to approximate equality with dividends and prevented a further growth of reinvested earnings. The renewed growth of corporate savings after 1940 was not enough to prevent a tremendous accumulation of debt.

The financial pattern of the American Tobacco Company has general validity for the industry. Urgent sudden requirements for funds attendant upon unexpected inventory increases have generally been met by borrowing with repayment after the emergency was past. The ordinary growth of the business has usually been cared for by reinvested earnings, although major changes in the size of the firm have sometimes been financed by new equity flotations. Thus Lorillard resorted to the sale of common stock and to long-term borrowing in order to finance its extraordinary expenses in introducing Old Gold. Liggett and Myers started life in 1912 with a very high ratio of debt to equity and during the 1920's increased its equity position both by reinvesting earnings and by selling $45.5 million in Class B common stock. After 1930 the growth in tangible

net worth was wholly the result of additional corporate savings. Reynolds, on the other hand, has relied almost wholly on reinvested earnings for its permanent growth. The extremely rapid rise of Philip Morris has caused that company to finance a high proportion of its secular growth by new capital flotations.

The sources of investment funds since the dissolution bear interesting comparison with the situation existing under the Trust. The construction of Duke's empire involved relatively little cash outlay. Most of the businesses secured were obtained by exchange of shares, and although a few million dollars in cash were received at the original incorporation of the American Tobacco Company, in the organization of the Continental Tobacco Company, and in the Liggett and Myers transfer, the only large quantity of outside cash invested in the industry was the $40 million subscribed in 1901 by the incorporators of the Consolidated Tobacco Company.[53] Even this amount was devoted principally to expanding the foreign business of the Trust and was little used in the domestic business. The heavy bonded debt of the new American Tobacco Company after 1904 represented not the investment of outside funds but the financial manipulations by which the insiders in the Consolidated Tobacco Company had secured control and the lion's share of the profits. Under the Trust the year-to-year variation in tangible assets was less marked than it has been since dissolution, and the Trust was not faced with the same problem of emergency finance which has been the occasion of much borrowing in recent years.

OWNERSHIP AND CONTROL

Stock Concentration

Under the Trust, ownership and control were closely connected, if not identical. Duke was, of course, the principal architect of policy, although he did not own a controlling interest. The major stockholders were, however, all represented on the board of directors, and many of them held corporate office as well. Sixteen directors and the financial house of Moore and Schley held 94% of the capital stock of the Consolidated Tobacco Company when it was first organized, and although there was some dispersion of holdings in the remaining years of the Trust, the 29 individual defendants held 56% of the common stock of the American Tobacco Company in 1911.[54]

The ownership of successor company securities was equally concentrated immediately after the dissolution, and contemporary critics of the

53. See pp. 26, 29–30, 34.

54. *BC*, Pt. I, p. 7; *United States* v. *American Tobacco Co.*, 191 F. 371, 375, 424 (1911).

settlement complained that the same small group of men could control all companies. This fear has not been realized, however, for the securities of the Big Three have become widely dispersed among the general body of investors. In 1939 each issue was divided as shown in Table 21.

TABLE 21

Number of Stockholders in the Big Three, 1939 *

Issue	American	Liggett	Reynolds
Common stock	18,597	3,694	2,438
Common B stock	39,952	17,517	57,435
Preferred stock	7,808	3,448	——

* U.S. Temporary National Economic Committee, *The Distribution of Ownership in the 200 Largest Nonfinancial Corporations,* Monograph No. 29 (1940), pp. 206–207, 218–219, 224–225.

A large number of owners does not, of course, necessarily mean an absence of stock control, and in fact, as might be expected, a high degree of concentration in shareholdings is to be observed. Figure XI presents the Lorenz curves for the common stocks of the Big Three in 1939. American Tobacco Company common was moderately concentrated; Reynolds common had an extraordinarily high degree of concentration; while Liggett and Myers occupied an intermediate position. The other security issues of these companies were about as concentrated as the common stocks, although Reynolds B was considerably less concentrated than Reynolds common, and Liggett and Myers preferred was less concentrated than either of its two other issues.

Perhaps more significant for the question of stock control are the percentages of each issue owned by the twenty largest stockholders, as shown in Table 22.

TABLE 22

Percentage of Big Three Securities Owned by the Twenty Largest Stockholders, 1938 *

Issue	American	Liggett	Reynolds
Common stock	20.5	35.9	59.7
Common B stock	12.4	24.2	22.5
Preferred stock	22.1	26.6	——

* U.S. Temporary National Economic Committee, *The Distribution of Ownership in the 200 Largest Nonfinancial Corporations,* Monograph No. 29 (1940), pp. 391–392, 457–458, 499–500.

Several of the largest holders of American and Liggett securities were banks, brokers, and insurance companies, and many of these institutions held stock in both companies. Thirteen individual stockholders held

11.7% of the American Tobacco Company common, and 14 individuals held 28.0% of the Liggett common. Again, a number of these individuals were significant stockholders in both companies. Although most of the successor companies' stock has passed into other hands, a significant

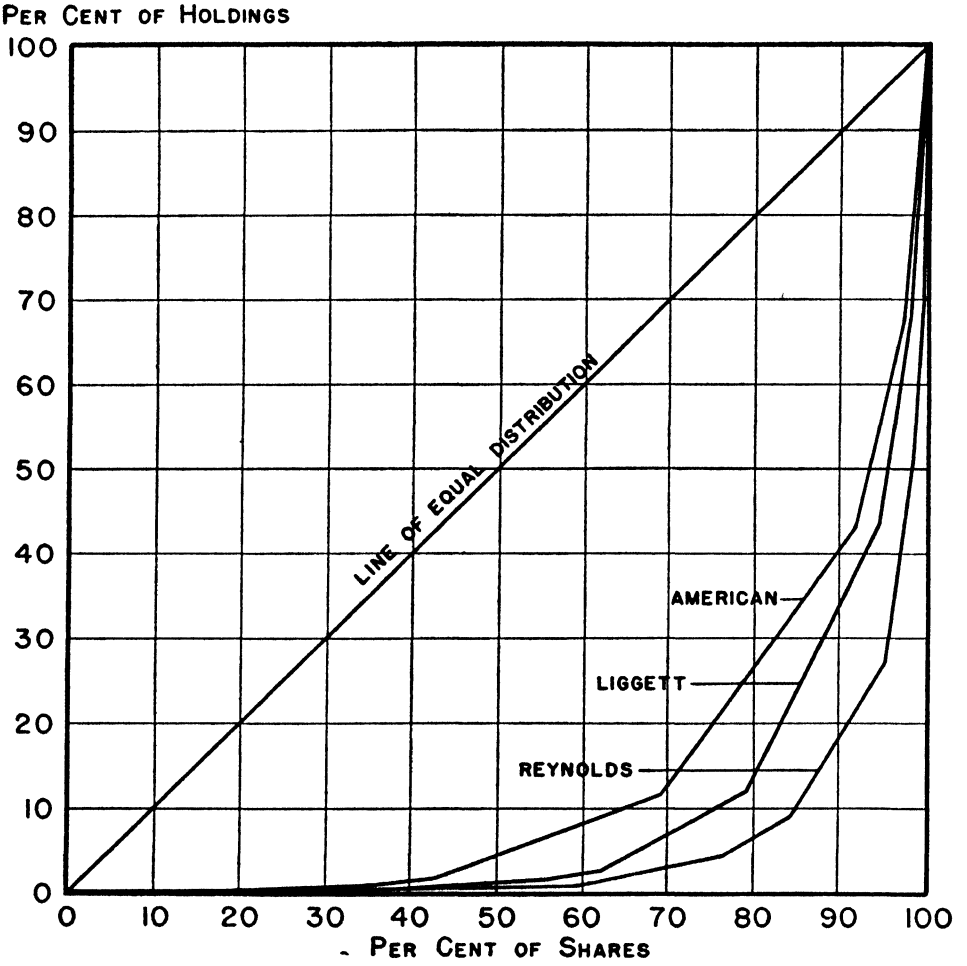


FIGURE XI. Concentration of common stock holdings in the Big Three, 1939.

SOURCE: U.S. Temporary National Economic Committee, *The Distribution of Ownership in the 200 Largest Nonfinancial Corporations,* Monograph No. 29 (1940), Appendix III, Sec. III, facing p. 242.

minority was still owned by the descendants of the original proprietors of the Trust. Thus the Widener and Elkins families were among the principal stockholders of both the American and Liggett companies, while Dula, Duke, and Ryan descendants were important holders of common stock in Liggett, though not in American. Descendants of Thomas Dolan were important owners of preferred stock in both companies. The Reynolds company, on the other hand, had no important owners of common stock

in common with the other companies and had only a relatively minor Duke interest in nonvoting common B stock.[55]

Management Control and Rewards

It is difficult to judge the effect of these stock concentrations upon the control of the cigarette companies. We may note, however, that some of the family holdings were held in trust for a number of different individuals and did not necessarily imply any further concern with the companies than through the dividends received. None of these minority interests, moreover, had any formal representation among the officers or on the board of directors of either the American or Liggett companies.

The real control of the successor companies appears to reside in management. Stockholders are too weak or too indifferent to exert effective influence, and management is in control of the proxy machinery.[56] Long-continued profits remove the incentive for stockholders to interfere. It is significant of the secure power of management that the officers and directors are nearly identical. Only Lorillard has outside directors on its board, and almost all Big Three directors are full-time employees with direct operating responsibilities.

The officers and directors of American and Liggett, on the other hand, have only a minor ownership interest in the companies which they operate, as is shown in Table 23.

TABLE 23

Percentage of Big Three Securities Owned by Officers and Directors, 1939 *

Issue	American	Reynolds	Liggett
Common stock	1.0	26.4	5.6
Common B stock	0.2	2.2	0.0
Preferred stock	0.1	—	0.2

* U.S. Temporary National Economic Committee, *The Distribution of Ownership in the 200 Largest Nonfinancial Corporations,* Monograph No. 29 (1940), pp. 391–392, 457–458, 499–500.

55. U.S. Temporary National Economic Committee, *The Distribution of Ownership in the 200 Largest Nonfinancial Corporations,* Monograph No. 29 (1940), pp. 689–691, 1026–1031, 1266–1269.

56. The policy of the Big Three in restricting the issue of new common stock suggests that ownership was once an important factor in control. Such equity finance as has occurred has generally been through preferred stock or through nonvoting Class B common. Reynolds issued $2.5 million in common stock in 1912, but thereafter until 1949 none of the Big Three ever sold additional common stock. The sale of Class B common meant the sale of rights to assets and earnings on a par with common stock but retained legal control in the hands of the original common stock owners.

In 1947 Liggett and American and in 1949 Reynolds extended voting rights to Class B stock and either have established or are in the process of establishing a single class of common. This reform changes the nominal control of the companies. Presumably the voting advantage of common stock had lost its former significance.

It appears at first sight that there was a close relation between management and ownership in the Reynolds company, and there was indeed, for special reasons, a high proportion of voting stock in the hands of management, which gave it undisputed legal sway over that company. Nevertheless, the very small proportion of voting to nonvoting common in the Reynolds company meant that the actual proportion of equity capital owned by the management and the proportion of total dividends received by them were relatively small. The close connection between ownership and control, between management and the receipt of profits, which existed under the Trust has been greatly weakened since the dissolution.

The managements of the various companies have, nevertheless, been able to appropriate personally a portion of the high profits of the cigarette industry through the operation of incentive payment plans. The proceeds of these plans, while representing a small fraction of total corporate earnings, have been large in absolute terms because of the great size of the earnings from which they are derived. Although opportunities for purely personal gain have been somewhat smaller than under the Trust, the payments made have been large by any standard of values.

American, Liggett, and Lorillard adopted profit participation plans soon after their organization along lines devised by Duke. Each of these plans provided that 10% of profits earned by the businesses inherited from the Trust in excess of those profits earned by them in 1910 should be distributed among the president and five vice-presidents, one-quarter to the president and the remainder divided equally among the others. Base profits for the three companies were different, and Lorillard provided that an additional 5% should be set aside for distribution to employees and officers other than the president and vice-presidents.[57]

Reynolds' plan, on the contrary, provided for payments to any employee in proportion to his ownership of common stock. The profit base was set at 22.19% of the outstanding common stock, which was the rate of earnings secured in 1910. Ten per cent of profits above this base was available for distribution.[58]

The Reynolds plan had, and was probably designed to have, two special effects. It encouraged the concentration of common stock in the hands of officers and employees, since such stock had a higher return and a higher value in those hands. It discouraged the issue of new common stock, since the smaller the total issue, the smaller the profit base and the larger the volume of excess profits available for distribution. Both these influences had full effect. No further issue of common stock occurred after 1912, and the existing common became increasingly concentrated in company hands. In 1912 all of Reynolds' officers and directors together held only 10,465 shares, or only 1.4% of the total issue of 752,500. By

57. *GX*, Nos. 215–216, 395, 478. *Rogers* v. *Hill*, 60 F.2d 109 (1932).
58. *GX*. No. 302.

1939 their control of common stock had risen to 26.4%, although officers and directors still held only a little over 2% of the much larger issue of nonvoting common B.

The proportion of common stock held by other Reynolds employees was much greater than this. In 1944, 1,906 employees received payments of $1.2 million under the plan, at a rate of $2.07 for every eligible share. Thus participating dividends were paid on 580,000 shares of Reynolds common stock. In addition, 200,000 such shares, purchased on the market by the company, were held in the "Retirement and Insurance Investment Fund." [59] Thus at least 780,000 shares, or 78% of the total issue of Reynolds common stock, were in the hands of employees or of the company itself.

The amounts paid under these various plans have been staggering in total even though they have been a minor percentage of total earnings. From 1925 to 1939 the receipts of five Reynolds officers under their plan were as follows: [60]

W. N. Reynolds	$4,495,076
S. C. Williams	2,670,580
J. A. Gray	3,917,131
R. E. Lasater	1,954,915
J. W. Glenn	444,546

In 1932, Reynolds' most profitable year, W. N. Reynolds received $437,502, and the receipts of all five were $1,372,988. To these returns must be added fixed salaries, which in the case of this company are quite moderate, and the usual dividends accruing on the stock whose ownership was the basis of these payments.[61]

The American Tobacco Company bonus has been even more rewarding to individuals. George Washington Hill received $4,907,300 in bonuses from 1925 to 1939.[62] In the most profitable year, 1931, Hill's bonus payment was $891,570, while each of the vice-presidents received $437,883. Executive salaries in the American Tobacco Company are also lucrative. Over the period 1929–39 Hill received $1,432,500 in addition

59. R. J. Reynolds Tobacco Company, Prospectus, July 7, 1945, pp. 30, 33.

60. *GX*, No. 307.

61. In 1949 Reynolds provided for the termination of its profit participation plan. Progressive annual reductions in the percentage of excess profits available for distribution will eliminate all payments in 1959. Meanwhile, holders of Reynolds common may exchange it for Class B common (which now has the vote) at the rate of 1¼ shares of Class B common for each common share. Thus existing beneficiaries of the plan are protected in the present capital value of their privileges. The company explains that high tax rates and restrictions on margins prevent adequate purchases of common stock by new employees for the old plan to serve its incentive purposes. R. J. Reynolds Tobacco Co., Letter to the Holders of New Class B Common Stock, May 24, 1949. We may also note that the nature of the Reynolds plan was such as to benefit most the first generation to enjoy its provisions since the price at which new employees could obtain common stock tended to discount the value of the privileges attached to it.

62. *TP*, pp. 4380–4381.

to his bonus payments. In 1931 his total compensation was $1,051,570. For all officers from 1929 to 1939, salaries amounted to $3,785,000, while bonuses of $11,672,920 were paid. Combined remuneration of the president and vice-presidents for the period was thus $15,457,920.[63]

Not content with these returns, the management of the American Tobacco Company secured other favors. In 1929 the directors awarded themselves an additional bonus in the form of stock rights.[64] In 1931 an "employees' stock subscription plan" was put into operation. Employees ranging in status from the president to factory subassistants were to receive in all 56,712 shares of Class B stock. Each such employee was entitled to purchase stock at the par value of $25 in an amount which depended on his current salary and his efficiency rating. At the time, the stock was selling at $112. In the allotment, Hill received 13,440 shares and the president and vice-presidents together received half the total issue.[65]

In 1931 Richard Reid Rogers, a lawyer and the owner of 6,000 shares of American Tobacco Company common, brought suit to enjoin both the stock allotment plan and the bonus. Acting as his own lawyer, Rogers forced examination of the company's books and fought his way through a maze of suits to eventual triumph.[66] The Supreme Court refused itself to forbid either the stock plan or the bonus but suggested that the former should be submitted to the New Jersey Court of Chancery and remanded the latter issue to the District Court for an investigation in equity. The company immediately sought a negotiated settlement, the stock allotment plan was cancelled, and the bonus was modified.[67] The earnings base was raised, and on earnings above $32.5 million a year the percentage of excess profits to be distributed was reduced.[68] It was estimated that these changes saved the company $6.2 million by March, 1940. For his labors Rogers received a fee for reasonable services of $263,000, with an additional $262,000 to pay the income tax thereon. A later suit by other parties sought to overthrow the Rogers settlement but succeeded only in recover-

63. *Heller* v. *Boylan,* 29 N.Y. Supp. 2d 653 (1941).

64. *Ibid.*

65. "A Behind-the-Scenes Picture of American Tobacco Profits," *Printers' Ink, 162,* No. 13 (March 30, 1933), 51–53, 57, 58.

66. *Rogers* v. *American Tobacco Co.,* mandamus for inspection of certain records granted, 257 N.Y. Supp. 321 (1931); affirmed 249 N.Y. Supp. 993 (1931). *Rogers* v. *Guaranty Trust Co., Rogers* v. *American Tobacco Co.,* bill in equity to enjoin stock distribution dismissed without prejudice, 60 F.2d 106 (1932); affirmed on merits, 60 F.2d 114 (1932); reversed and remanded for reinstatement of decree in 60 F.2d 106, 288 U.S. 123 (1933). *Rogers* v. *Hill,* suit to determine compensation of designated corporate officers, injunction granted *pendente lite,* 53 F.2d 395 (1931); injunction dissolved, 60 F.2d 109 (1932); dismissal affirmed, 60 F.2d 1079 (1933); reversed and remanded, 289 U.S. 582 (1933); petition to set aside decree denied, 34 F. Supp. 358 (1940). *Rogers* v. *Guaranty Trust Co.,* motion for better particulars granted in suit to cancel stock issued, 53 F.2d 398 (1931).

67. *Heller* v. *Boylan,* 29 N.Y. Supp. 2d 653 (1941).

68. *GX,* No. 483.

ing another $2 million of bonus overpayments which had resulted from misinterpreting the bylaw.[69]

The Liggett and Myers bonus plan in recent years has been less lucrative than in the case of the other two companies because of lower profit levels and because of a considerable restraint shown by its executives in availing themselves of its benefits. In September, 1928, the directors reduced the percentage of excess profits to be distributed from 10% to 5% subject to stockholders' approval. In June, 1931, there was a further decline to 2½% as the share of the president and vice-presidents. Another 2½% has been set aside for distribution to other officers and employees. In 1936 the president reduced his own bonus share from ⅝% to ⅜% of excess profits, or the same level as that enjoyed by all the vice-presidents.[70] One vice-president who was in continuous service from 1925 to 1939 received a total of $1,180,677 in bonus payments during this term.[71]

The P. Lorillard bonus has been the least remunerative of the lot, and a certain amount of low comedy attaches to management attempts to devise a new bonus system which would actually yield bonuses. In 1921 a new bonus provision was adopted which provided for an earnings base of $1.50 per common share plus 7% on surplus. Fifteen per cent of the excess of net profits over this base was to be distributed as a bonus. From 1926 to 1931 no bonus was paid. In 1931 a new bonus system was proposed which would distribute 5% of net profits among officers and employees in proportion to stock owned, but subject to certain limitations. It was also proposed to issue 250,000 shares of common stock to officers and employees at the favorable price of $10 per share. Stockholders brought suit in the New Jersey courts. Both the bonus change and the stock issue were restrained and the projects dropped.[72]

Philip Morris also has a bonus plan for such officers and employees as the directors determine. The profit base is 7% on the average capital and surplus, with an adjustment for the difference between 7% on the funded debt and the interest actually accrued. Ten per cent of the amount by which profits exceed this base is available for distribution. Philip Morris has had this plan on a year-to-year basis since 1937.[73]

The Entrepreneurial Function

The existence of incentive payment plans in all the cigarette companies serves to give management an interest in maximum profit performance and, to some extent, serves to lessen that divergence between manage-

69. *Heller* v. *Boylan*, 29 N.Y. Supp. 2d 653 (1941).
70. *TP*, pp. 3914–3925, B. J. Sanders.
71. *TP*, pp. 3850, 3861, B. J. Sanders.
72. *Scott* v. *P. Lorillard Co.*, 154 A. 515; affirmed, 157 A. 388 (1931).
73. Poor's.

ment and ownership interest which is characteristic of modern corporation development. Yet, we may notice that these plans create a similarity of interest, not an identity, and that, in the modern cigarette industry, management and ownership are by no means so indissolubly wedded as they were under the Trust. Although managers have a common interest with owners, managers are not the owners of the industry, and most owners in turn have very little opportunity to impress management with their own wishes. Even though stock ownership is fairly highly concentrated, the largest owners are still small. It would be difficult for them to exert more than a remote influence upon corporate policy, and there is no positive evidence that they maintain even this distant connection. The apparent identity between ownership and management which formerly arose from the close holdings of Reynolds common stock is deceptive, for the great body of Class B equity owners without the vote had no direct connection with management. Even where, as with Reynolds, a minor group of owners exerted dominant influence, this still represented control leverage by a restricted group rather than the essential identity of managers and owners which existed under the Trust.

At least part of the development in market structure and policy in the cigarette industry may be traced to these basic changes in the nature of ownership and control. Management has achieved a degree of permanent dominance which makes it undisputed master of industry policy. Long-continued tenure and a very great measure of success have endowed management control with a respectability and legitimacy which are as important for its continued maintenance as is the inherent weakness of dispersed stockholdings. However, through the incentive payment plans, management has been in on a very good thing, and its great real interest is to preserve a stable prosperity. There is, to be sure, a sharp struggle for industry supremacy between American and Reynolds, but this struggle takes place in a limited field of conflict and with well-tried weapons whose power and, more important, whose limitations are extremely well known. The managers have little interest in great risks to secure great profits, and they have no incentive to strive for capital gains at the expense of current profits. For this reason, as well as others, competition in the cigarette industry has changed from the cutthroat warfare of the Trust days to a more genteel struggle. Even the perennial conflict between the insiders and the rest has been typified in recent years by the American Tobacco Company's extra stock allotment plan, which was an altogether more modest affair than the gigantic manipulations of the Consolidated Tobacco Company.

It is, perhaps, improper to explain, in terms of changed entrepreneurial control, developments in competitive methods and in the aims of policy which in any event were indicated by changes in objective economic and political circumstance. Nevertheless, the nature of control in the industry

has changed, and the motives of the present rulers of the industry are markedly different from those which animated Duke. If entrepreneurial changes are not primarily responsible for the great changes in competitive tactics, still entrepreneurial interest is consistent with the new methods, and the habits of managers tend to impose upon the industry a fundamentally conservative competitive policy.

Chapter V

HISTORICAL LESSONS AND PROBLEMS

IN THE PRECEDING chapters we have traced the development of the cigarette industry and have inquired briefly into its present status. We have discussed the structure of competitive relationships, the nature of market policy, the resulting profits, and the way in which all these have changed over the years. This historical survey will serve as a frame of reference for our later investigations of particular aspects of industry structure and behavior.

A historical narrative not only gives perspective to more restricted studies but also suggests problems for further examination. Why have some industry characteristics remained unchanged throughout its history? Why have other characteristics altered markedly, and why have the latter adopted the particular forms which they now exhibit?

At all times the output of the cigarette industry has been concentrated in a few firms, and the dominant firms have earned extraordinarily generous profits. The maintenance of favorable market position has been the principal object of industry policy, and except for a brief period under the Trust, the struggle for markets had been rendered easier by an ever growing total demand. Yet, while the industry exhibits these stable major characteristics, it has been subject to revolutionary change in economic importance, in the nature of its products, in technological methods, in competitive tactics and strategy, and in entrepreneurial control.

The stable rate of growth of consumption has caused important changes in other aspects of the industry. In recent years the absolute volume of production has been tremendously greater than that of earlier periods, and this, by the complexity of administration which it introduces and by the economic power which it implies, has changed both the scale and the nature of the industry's problems.

Occasional instability in consumers' preferences for particular types of cigarettes has been another influence for change. The shifts in public favor from Virginia to Turkish and then to Burley-blended brands first subjected the Trust to the only serious competition it ever encountered and then shattered the initial equilibrium established in the industry after dissolution. Changes in taste put a high premium upon managerial adaptability, imposed heavy penalties upon managerial ineptitude, and were responsible for a major revision in the rank of the leading firms. Technological change offered a similar challenge to alert management in the early days of machine manufacture.

The influence of public policy has been equally important. Concern for possible legal consequences has often modified behavior, and the struc-

ture of the industry was completely changed by the decree of 1911. The more recent antitrust conviction has equally great potentialities for reform.

Within this dynamic environment of growing demand, shifting tastes, technological development, and legal intervention, the market policies of the cigarette industry have undergone substantial and continuing change. The very tools of market policy, price and advertising outlays, have altered their form and function. The early practice of fixed, even-nickel retail prices, combined with relatively flexible wholesale prices, has given way to more flexible retail prices quoted in odd cents and to more rigid wholesale prices which may remain unchanged for years at a time. Significant differences among the wholesale prices of competing brands in the early postdissolution years have given way to substantial identity in more recent times. Advertising, though always important, has changed its media from coupons and inserts to general publicity and has changed its purpose from the scattered encouragement of many brands to the concentrated promotion of a few or one per firm.

The broader aims of policy, too, have altered. At all times improved market position has been a principal object, but the kind of improvement sought has changed. Before Duke entered the industry, competition among the major producers appears to have been relatively restrained, but Duke used prices and advertising outlays as weapons of commercial warfare to eliminate competitors or to compel them to join forces with him. Monopoly was the logical end of Duke's competitive tactics. After the dissolution, however, the cigarette industry adapted itself to a situation in which all competitors were expected to survive and in which market policies were determined on that assumption. Only on rare occasions have the aggressive methods of the earlier era been used, and competition has been restricted to vigorous advertising campaigns.

Although competitive methods have always been consistent with a high concentration of output, and although they have often been restrained and unaggressive, the restraint has not been sufficient to prevent repeated changes in the identity of the leading producers. The earlier leaders, like Allen and Ginter, yielded leadership to Duke, who, in turn, created and developed the Trust. The intervention of the federal courts established the successor companies, while different managerial abilities resulted in Reynolds' replacing Lorillard as a significant manufacturer of cigarettes. Still later new firms have won a position of importance.

The gradual evolution of corporate organization has changed the centers of industry control. In the earliest days and under the Trust, entrepreneurial functions were concentrated and unambiguous. The proprietors of the early companies and the incorporators of the Trust were both managers and owners and, as individuals or as small groups, could operate the affairs of the tobacco industry to their own pecuniary advantage.

The simpler problems of a smaller industry made possible a flexible policy and encouraged the single-minded drive for industry position or for profits, which the identity of manager and owner made desirable.

In recent years, as in most corporate industry, management and ownership have become increasingly divorced, and management now dominates the industry with only incidental interference from stockholders. The existence of incentive payment plans for management does much to give it a real community of interest with stockholders, yet this motive for astute management and especially for risky gambles is less strong than that once possessed by the ambitious architects of the Trust. Meanwhile, the growing size of the industry, the increased complexity of its problems, and the memory of a successful past tend to harden the policies of the major firms in traditional molds.

It is apparent from this summary of the stable and changing characteristics of the cigarette industry that we already are able to advance partial and tentative answers to the questions raised earlier. The continuous concern with market position and the persistent use of advertising suggest that the nature of cigarette demand may be a principal reason for the consistently high concentration of output and the consistently high profits earned. Our first task will be to investigate that demand in some detail.

It is not difficult to explain the fact that changes in other industrial characteristics have occurred. There are many dynamic influences at work within the industry or impinging on it from outside. Often the occasion for change has been a personality like Duke, Reynolds, or Hill, or an external influence like a change in tastes or the enforcement of a court decree. It is the stable characteristics of the industry, not those which have changed, which are most difficult to explain.

Yet it is essential that we account not only for the fact of change but also for the specific pattern of alteration and for the characteristics which the industry now exhibits. We may note the extraordinary importance of past development, of personality, and of historical accident. Each competitive situation arose from a previous condition, and each set of policies developed from previous behavior. The present reflects the impact of dynamic factors upon a previous equilibrium. Yet this is only a partial explanation, for the ways in which the industry has changed have been consistent with its nature. Accident may occasion change, but the particular adaptations effected are not dependent solely upon accident. Much of the rest of this study is concerned with isolating the basic factors which cause the industry to be what it is and which have caused it to exhibit important common characteristics throughout its history. Yet we may note once more that history itself has been a profound shaper of the industry, and that with respect both to institutions and policies, with respect to market structure and behavior, the present leans heavily upon the past.

PART III

MARKET STRUCTURE

Chapter VI

THE DEMAND FOR CIGARETTES

THE DEMAND FOR ALL TOBACCO PRODUCTS

Historical Opinion

THE SIMULTANEOUS DISCOVERY of the New World and of tobacco was the occasion of a rapid expansion of European trade. Exports of *conquistadores* and imports of gold and of tobacco did much to build the foundations of the modern world. Most historians would, I suppose, award primary importance to the first two factors in effecting the spread of Western civilization and in stimulating the change from a natural to a money economy. Yet tobacco, too, has played an important part in shaping the present age, directly through its effects on manners and morals, and indirectly through its effects upon the finance of governments and the pattern of successful settlement.

The introduction of tobacco to Spain was followed in the succeeding century by its spread to all the principal parts of Europe. By 1560 it was generally accepted on the Continent as a specific remedy for most ailments.[1] Tobacco was still unfamiliar in England at this time but was soon adopted by Sir Walter Raleigh and recommended with almost missionary zeal. Within a few years the custom of "drinking" smoke had spread from the sea captains to the court and to such other classes as could afford the new dissipation.[2]

Tobacco was warmly welcomed, and yet, of course, a practice which looked so strange, felt so pleasant, accomplished so little, and cost so much could not be unopposed. Edmund Spenser might regard it as "diuine Tobacco," [3] and others might claim for it tonic, medicinal, and restorative powers, but opposition was early and violent. Excessive claims for tobacco's therapeutic qualities stimulated an opposite skepticism, while the use of a "medicine" for recreational purposes seemed immoral and unnatural. Robert Burton declared tobacco to be:

a good vomit, I confess, a virtuous herb, if it be well qualified, opportunely taken, and medicinally used; but as it is commonly abused by most men, which take it as tinkers do ale, 'tis a plague, a mischief, a violent purger

1. J. E. Brooks, *Tobacco, Its History, Illustrated by the Books, Manuscripts, and Engravings in the Library of George Arents, Jr., Together with an Introductory Essay, a Glossary and Bibliographical Notes by Jerome E. Brooks* (New York, Rosenbach, 1937–43. 4 vols.), I, 43.

2. *Ibid.*, p. 52.

3. *The Faerie Queene* (1590), quoted in *ibid.*, p. 319.

of goods, land, health, hellish, devilish and damned tobacco, the ruin and overthrow of body and soul.[4]

Other writers attacked tobacco in prose and verse:

> Here lieth he had lived longer, if
> He had not choakt himselfe with a Tabacco whif.[5]

And:

> Tobacco that outlandish weede
> It spends the braine, and spoils the seede
> It duls the sprite, it dims the sight,
> It robs a woman of her right.[6]

King James I issued anonymously his famous *Counterblaste to Tobacco,* declaring smoking to be: "A custome lothsome to the eye, hatefull to the Nose, harmefull to the braine, daungerous to the Lungs, and in the blacke stinking fume thereof, neerest resembling the horrible Stigian smoak of the pit that is bottomelesse." [7]

Aversion to the weed, aversion to Sir Walter Raleigh, and the fact that hated Spain was the principal source of supply led King James to attempt to suppress tobacco use by admonition and by raising the import duty from 2*d.* to 6*s.* 10*d.* per pound.[8] Opposition to tobacco did not acquire such strength on the continent of Europe, but in Turkey, Persia, India, and China savage penalties were intermittently visited upon the users or purveyors of tobacco.[9]

Prohibitions and objections were fruitless then as later both because of the difficulty of enforcement and because of the financial sacrifice which enforcement demanded. The effect of King James's tariff was to drive tobacco into illegal channels, to stimulate home cultivation, and to deprive the fisc of revenues which it could well use.[10] The possibility of securing supplies from Virginia rather than from Spain removed one mercantilist objection. The fiscal argument was probably controlling. It was early discovered that the demand for tobacco would support any price within a wide range, if only that price could be enforced, and the possibilities for taxation were too attractive to miss.

In England the easiest way of collecting this levy was through the ports. Accordingly, duties were reduced somewhat to lessen the premium on smuggling, cultivation was prohibited within the British Isles and

4. *The Anatomy of Melancholy* (1621), quoted in H. W. Farnam, "Our Tobacco: Its Cost," *Unpopular Review, 1,* No. 1 (1914), 145, 162.
5. E. Gardiner, *The Triall of Tabacco* (London, 1610), quoted in Brooks, *op. cit.,* p. 61.
6. William Vaughan, *Approved Directions for Health* (4th ed. London, 1612), quoted in Brooks, *loc. cit.*
7. (London, 1604), quoted in Brooks, *op. cit.,* p. 57.
8. Brooks, *op. cit.,* p. 59.
9. *Ibid.,* pp. 71–72.
10. *Ibid.,* p. 59.

encouraged in the American colonies. All colonial tobacco regardless of ultimate destination was routed through English ports, where a heavy duty was collected.[11] Virginia might indeed be a colony "founded upon smoak," but the foundation was solid enough. The first successful English settlement in North America survived by virtue of the weed, and, until the end of the colonial era when Whitney's cotton gin gave a new direction to agriculture, tobacco remained the principal export staple of Virginia, North Carolina, and Maryland and the chief support of successful colonization in those latitudes.

Other countries than England found other ways to profit from tobacco. Tariffs, excise, or the exploitation of monopoly have been used in different places and in different times to enrich the treasury or to profit private interests. But always and everywhere, from the first days, men have appreciated the inelasticity of tobacco demand and the consequent capacity of tobacco to bear heavy charges.

In this country the cultivation of tobacco was for a long time of greater importance than manufacture or consumption, and the conditions of demand were looked at from the point of view of the farmer. All through the colonial era and later, growers were aware of the high prices which short crops would bring, and there were constant efforts to limit production. Intercolonial jealousies, the powerlessness of government, and the large number of producers combined to thwart most of these plans, but the continuous complaints of "overproduction" show that colonial farmers were familiar with problems which have since become general in agriculture and that they were well aware of the price insensitivity of tobacco.[12]

Excise taxes were introduced in this country to fight the Civil War, and subsequent imposts have been added repeatedly without decreasing the use of tobacco or even, so far as can be seen, effectively slowing its growth. Private interests were aware of the possibilities and established monopoly as soon as it was practicable to do so. So long as tobacco manufacture was in the hands of hundreds of small firms, nothing could be accomplished. But when the cigarette industry developed with only a few firms and when cigarette machinery made technically possible the indefinite expansion of those firms, combination was effected. Monopoly profits from cigarettes were used to extend control over most other parts of the tobacco industry. Once control was established, the profit history of the old American Tobacco Company was adequate testimony to what men had long known: that the demand for tobacco is peculiarly insistent and unresponsive to price.

11. *Ibid.*, p. 93; Robert, p. 5.
12. Brooks, *op. cit.*, pp. 126–131; Robert, pp. 7–9.

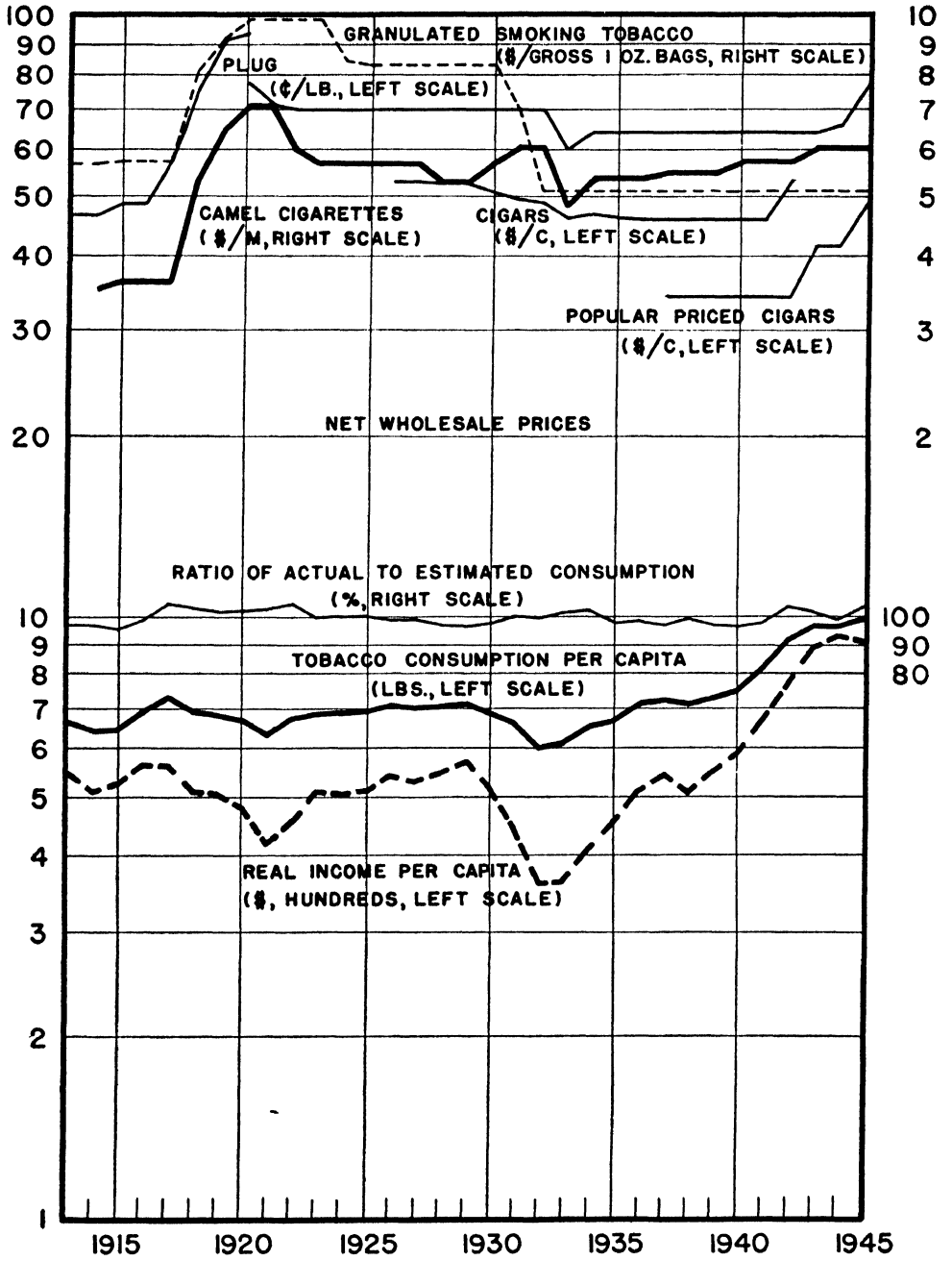


FIGURE XII. Factors affecting tobacco consumption, 1913–45. Plug series changes in 1919. Wholesale prices are annual averages or July 1 quotations.

SOURCES: Prices and consumption: *DA;* Table 55, below, p. 283. Real income based on national income estimates of Kuznets and Department of Commerce (old series) deflated by Bureau of Labor Statistics index of cost of living in large cities (1935–39 = 100) and on midyear population estimates of the Bureau of the Census: U.S. Department of Agriculture, *Agricultural Statistics,* 1942, p. 663; 1946, p. 566. U.S. Bureau of the Census, *Historical Statistics of the United States 1789–1945* (1949), pp. 26, 236.

Elasticity of Demand for All Tobacco Products

A precise measure of the elasticity of tobacco demand is difficult to establish in a meaningful way. There is doubt as to what constitutes "the price" for all tobacco products. Some sort of weighted average is indicated, but reliable price series for some of the important constituent products are not available. Relevant information which is available is presented in Figure XII.

The most striking features of Figure XII are the great stability of per capita tobacco consumption and the close association of changes in consumption with changes in real income per capita. Tobacco consumption exhibits a marked upward trend, but year-to-year fluctuations are very moderate. Both the trend and the annual deviations from trend correlate closely with changes in real income. From 1913 to 1945 income and consumption move together in 29 years and in opposite directions in only 3 years. In 2 of the 3 years the divergence is so slight that it may not exist at all in view of probable errors in measuring the two series. In only one year is there a marked increase in consumption accompanied by a decrease in real income, and that was a year of recovery from war-imposed shortages.

If we calculate the multiple regression of per capita consumption on real national income per capita and on "time," we secure the following equation:

$$X_1 = -0.446 + 0.460X_2 + 0.00156X_3$$

where X_1 is the logarithm of consumption in hundredths of a pound, X_2 is the logarithm of income in dollars, and X_3 is the year of observation numbered according to its last two digits.[13] Taken at its face value, this equation indicates an income elasticity of tobacco demand of +0.460 and a secular rate of growth of 0.36% a year.

In Figure XII actual consumption is plotted as a percentage of the "normal" consumption given by this equation. The deviations from the regression surface obviously are small, and the equation, in fact, accounts for 96.7% of the variation in per capita consumption.

If income were omitted from the calculations and only the trend were found, 56.4% of the explained variation would be sacrificed. Calculation

13. The standard deviation from the regression equation is 0.01015 measured in logarithms. The antilogarithm is 1.0236. Since adding logarithms is equivalent to multiplying the corresponding natural numbers, the range ±0.01015 is equivalent to the range between the natural numbers secured by multiplying 1.0236 by the consumption figure estimated from the equation and by dividing 1.0236 into that same consumption figure. At the mean, this implies a standard deviation of 0.17 pounds above and 0.16 pounds below the value given by the regression equation.

The standard errors of the regression coefficients are 0.0206 and 0.000208, respectively. The coefficients of multiple and partial correlation are as follows: $R_{1.23} = 0.983$; $r_{12.3} = +0.971$; $r_{13.2} = +0.807$.

A further indication of the goodness of fit and a measure of the relative importance of

of the simple regression of consumption on income, neglecting the trend, would sacrifice 6.4% of the explained variation. It thus appears that over this period changes in the national income were of primary importance in effecting changes in tobacco consumption, while changes in consumption habits were of real but relatively minor importance.[14]

each of the independent variables in explaining variations in consumption are given in Table 24.

TABLE 24

Analysis of Variance in Regression of Tobacco Consumption on Real Income and on "Time," 1913–45

Source of Variation	Sums of Squares	Degrees of Freedom	Mean Square	F	P
Regression	91,005	2	45,503	441	< 0.001
Increment X_2 *	51,304	1	51,304	498	< 0.001
Increment X_3 *	8,895	1	8,895	86	< 0.001
Residual	3,092	30	103		
Total	94,097	32			

* The "increment" for each of the independent variables is the difference between the explained sum of squares obtained with that variable included in the regression equation and the explained sum of squares which would be obtained in its absence. The regression coefficients differ significantly from zero according to the usual statistical tests.

For further explanation of the statistical concepts employed in this chapter, see R. A. Fisher, *Statistical Methods for Research Workers* (10th ed. Edinburgh, Oliver & Boyd, 1948); G. W. Snedecor, *Statistical Methods* (Ames, Iowa State College Press, 1946). Also see Table 43, below, p. 243.

14. A word of caution is in order, however. The analysis of variance and tests of statistical significance have been developed for use in the biological sciences where experimental design yields randomized data in adequate quantity. In the social sciences we suffer from lack of information and, more seriously, from complete lack of control over the data which we do have. We cannot refine our factual information by the techniques of experimental design but must accept it as it comes. Our series are almost always intercorrelated and confounded, so that when we measure the relationship between any two variables, we implicitly measure the relationship between other variables. It requires considerable judgment to determine which are the causally relevant pairs of variables in any investigation.

In addition, our statistical series are almost always autocorrelated. Consumption in any year is related to consumption in the preceding year, and national income in any year depends on income the preceding year. Some of this temporal self-dependence can be taken care of by eliminating trend or by including "time" as an explicit factor in our correlation, as we have just done. Even when this is done, however, we may not have removed all the significant influence of one time period on another. For this reason we do not have as many really independent "observations" as we have sets of data. Since significance tests are based upon the number of independent observations, such tests will persistently overstate the degree of reliability in our calculations.

For these reasons it is necessary in the social sciences to accept no statistical relationships for which adequate explanation on other grounds is not available. Tests of significance do not endorse the reliability of our discovery but may be useful in indicating how frequently a similar result would arise from random sets of data. If, as in the present case, the likelihood of such random results is small, it is still necessary to remember that even

The dependence of consumption upon income recommends itself to our reason. Tobacco is an urgently desired commodity of small cost, and its use is normally a matter of habit. Yet it is also regarded as a luxury, and when incomes are low or when they decline, it is natural that people should attempt to economize. On the other hand, the dependence of consumption upon "time" is surprisingly slight. The spread of smoking habits among women and the increasing average age of the population would lead us to expect a marked upward trend in tobacco consumption and 0.36% a year is very small.

It is possible that the equation underestimates the importance of secular influences because of a high intercorrelation between income and "time." Each independent variable is associated with variations in consumption which are probably due to the other.[15] Both income and consumption rise with the passage of time, and we have no method of separating out that part of the rise in per capita consumption which is due to changes in smoking habits and in population structure from that part which is due to rising incomes. Our calculations attribute weights to the two variables in such a way as will minimize the root-mean-square deviations from the regression surface, but this is a matter of convenience rather than of analytical principle.[16] We need not, however, concern ourselves with this problem. For present purposes it is enough to notice that consumption is affected both by secular influences and by the national income, that the latter is apparently the more important influence, and that, even so, the responsiveness of consumption to income is remarkably low.

A somewhat different measure of income elasticity of demand was calculated by J. J. Gottsegen for the years 1918–19.[17] His method employed budget data as reported by the Bureau of Labor Statistics rather than correlated time series. Family expenditures on tobacco in various income brackets were reported and the percentage increase in such expenditure for each percentage rise in the income ladder was used to calculate elasticity according to the following formula:

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close associations may be fortuitous. Even when the relationship between two variables is reliable, persistent, and nonfortuitous, it may reflect necessary functional relationships between other variables rather than between the two whose relationship is under examination.

15. The simple correlation coefficient between income and "time" is +0.450.

16. If we were to introduce the square of "time" as an additional variable, this might increase the formal goodness of our fit by allowing for nonlinear trend, and it would certainly reduce the relative importance of income changes. It would not, however, be worth the labor to do this. We could not get a much better fit for 4 variables than we now have for 3 since the standard deviation from the regression surface is already small in view of the uncertainty which attaches to the measurement of real income. Without an analytical principle on which to base the relative importance of rising income and independent secular trend, there is little point in tinkering with a mechanical reweighing of the factors.

17. J. J. Gottsegen, *Tobacco: a Study of Its Consumption in the United States* (New York, Pitman, 1940), p. 186.

$$\eta = \frac{\frac{\Delta E}{E}}{\frac{\Delta Y}{Y}}$$

where E was average family expenditure on tobacco and Y was average family income.[18] The average elasticity for all income groups, weighting each according to its share in the national income, was +0.81. Eliminating the highest income class, the average reduced to +0.56.

Both measures of income elasticity bear testimony to the extraordinary insistence and stability of tobacco demand.[19] Neither approach provides a measure of price elasticity, but income elasticity can be used to indicate the probable responsiveness of tobacco demand to price changes.

We observe that the regression of consumption on income and on "time" accounts for 96.7% of the variation in consumption. This leaves only 3.3% to be explained by other factors, and it is apparent that the contribution of price changes to changes in consumption cannot have been high. In Figure XII it is illuminating to compare the wholesale

18. These results were then compared with similar elasticities for other items of expenditure as calculated by Jacob Marschak, "Consumption. Problems of Measurement," *Encyclopaedia of the Social Sciences* (New York, Macmillan, 1931), Vol. IV. The basic data on tobacco and the various elasticities are shown in Table 25.

TABLE 25

Income Elasticity of Demand for Tobacco and for Other Items of Expenditure, Derived from Budget Data, 1918–19

Family Income Level	Under $900	$900–$1,200	$1,200–$1,500	$1,500–$1,800	$1,800–$2,100	$2,100–$2,500	Over $2,500
Average number in family	4.3	4.5	4.7	5.0	5.1	5.7	6.4
Average family income	$813	$1,075	$1,344	$1,632	$1,925	$2,272	$2,790
Average expenditure on tobacco	$11.61	$13.80	$15.02	$17.38	$19.62	$21.41	$27.53
Elasticity							
Tobacco		0.58	0.35	0.73	0.72	0.51	1.25
Food		0.71	0.52	0.51	0.53	0.76	0.91
Rent		0.71	0.80	0.71	0.67	0.39	0.21
Clothing		1.24	1.28	1.15	1.07	1.40	1.36
Pleasures		3.16	2.57	2.49	2.19	1.78	2.63

19. The two methods of measuring income elasticity have offsetting strengths and weaknesses. The use of budget data yields income elasticity for different income levels and at specific dates. The influence of income is not confounded with that of "time." It is, however, distorted by varying numbers of family members and of wage earners. It is, moreover, limited to the unusual occasions on which budget information is available and suffers from any incomplete coverage or biased sampling. The time series approach employs basic data which, at least on the side of consumption, are more likely to be accurate than are budget surveys. It is not limited so narrowly in time but yields average elasticity for a long period rather than for the short period of the budget approach.

prices of various products with actual consumption as a percentage of the regression normal. Not only are the deviations from normal remarkably small but they do not fall in such a pattern as to indicate even a minor influence of price upon consumption.

It is, of course, possible to select years in which the movements of prices and relative consumption suggest a relationship between them. The decline in actual consumption from 105% to 102% of normal during the period of the 1917–20 price rises was one such occasion. So also in 1933 there was a slight rise in relative consumption coincident with sharp price cuts. It is, however, dangerous to base conclusions on such arbitrarily selected data. Moreover, even if these associations are meaningful and even if we were to suppose all deviations from normal to be perfectly correlated with price, the slightness of those deviations implies extremely low responsiveness.

There are still stronger reasons for believing that tobacco demand is almost completely inelastic. If we leave income and trend entirely out of account and consider only the raw variations in tobacco consumption, these variations are so slight as to imply only minor sensitivity to price. If all the decline in consumption between 1917 and 1921 were attributed to the price rises, the percentage response would be much smaller than the percentage price change, and price elasticity accordingly would be very low. The same is true of the rise in consumption from 1921 to 1923. For the rest of the period consumption changes do not follow such a pattern as to indicate any influence *by* price, although there is ample evidence of an influence *upon* price.

However studied, the data indicate no more than infrequent and minor response to price. At no time have price influences been of serious quantitative importance. The smooth and regular association of consumption with the national income suggests that income, not price, is the true explanation of the moderate divergences of consumption from trend which have been observed.[20]

20. There are, however, several cautions which must be issued concerning this argument. As always in economic studies, data are inadequate and force resort to undesirable methods. Per capita tobacco consumption is measured with the entire population as the base, although only a portion smoke or are potential smokers. Variations in the proportions of children and of the very aged mean that the potential smoking population is always changing and that even if tobacco habits were to remain constant, there would still be fluctuations in per capita usage. Such erratic fluctuations may operate either to accentuate or to lessen divergences between the consumption series and the income series.

National income is used rather than disposable income or consumer expenditure because it is available over a longer period. Use of the Bureau of Labor Statistics cost of living index, in order to deflate national income, involves disproportionate emphasis on large cities, and any index must be open to serious objections when used over so long a period. Most of these weaknesses in the data used, however, affect long-run comparability rather than year-to-year changes which are primarily in question here.

The wholesale price series are of doubtful use in measuring elasticity of demand, since varying distributors' markups and state taxes may yield very different retail prices,

Our conclusions are in marked disagreement with those of an investigation by the Bureau of Agricultural Economics in 1937.[21] The bureau found a simple correlation of +0.993 between expenditure per capita on tobacco products and the earnings of industrial workers for the decade 1926–35. Since expenditure per capita could be closely estimated from a knowledge of income alone, it was reasoned that price had no effect on expenditure, and consequently that consumption varied in such a way as precisely to offset price changes. Such compensating behavior of price and quantity implies unitary elasticity of demand by definition.

It does not appear, however, that these conclusions are justified by the bureau's data. The period examined was too short to establish any relationships with real confidence and it was, moreover, a period in which income, expenditure, consumption, and price were all highly intercorrelated and in which all exhibited a marked temporal trend. In particular, consumption exhibited a +0.959 correlation with income, which is consistent with the results we found earlier. Moreover, there was a strong positive correlation (+0.875) between consumption and price, so that we appear to be examining the influence of consumption on price policy rather than vice versa. Furthermore, the fact that consumption and price moved together yields a +0.944 correlation of expenditure with consumption. Thus it was only to be expected that income and expenditure would be closely related, and there is no reason to infer an offsetting relationship between consumption and price. The bureau's data are wholly consistent with our conclusions and are inadequate to support the analytical results which the bureau based on them.

These data will, moreover, give positive support to our hypothesis of zero elasticity of demand. If we calculate the multiple regression of consumption on price, earnings, and "time," the partial regression coefficient of consumption on income is the only one which rates as significant by the usual statistical tests. In Figure XIII consumption and income are plotted, and the simple regression line of consumption on income is drawn through the scatter. In Figure XIV the deviations from the income regression line are plotted against price. As far as can be seen from the

even while the wholesale price remains constant. Retail prices, however, are available only for certain products and only since 1926, except for some data in 1922 and 1923. Moreover, retail prices are reported only for selected large cities and represent not the average price paid but the price of the most popular brand. It is not clear that they reflect consumers' price changes more accurately than do wholesale prices.

Prices have been left in the usual form and have not been deflated. The reason for this is that deflation would introduce correlation between consumption and prices even if none exists. A deflated price is a function of the general price level, which is in turn a function of the national income. We have already determined that tobacco consumption is a function of the national income, and it therefore follows that it will be some function of any deflated price series. In view of this fact, there seems to be no purpose served by deflating the product price series.

21. U.S. Bureau of Internal Revenue, *An Analysis of the Effects of the Processing Taxes Levied under the Agricultural Adjustment Act* (1937), pp. 44–46.

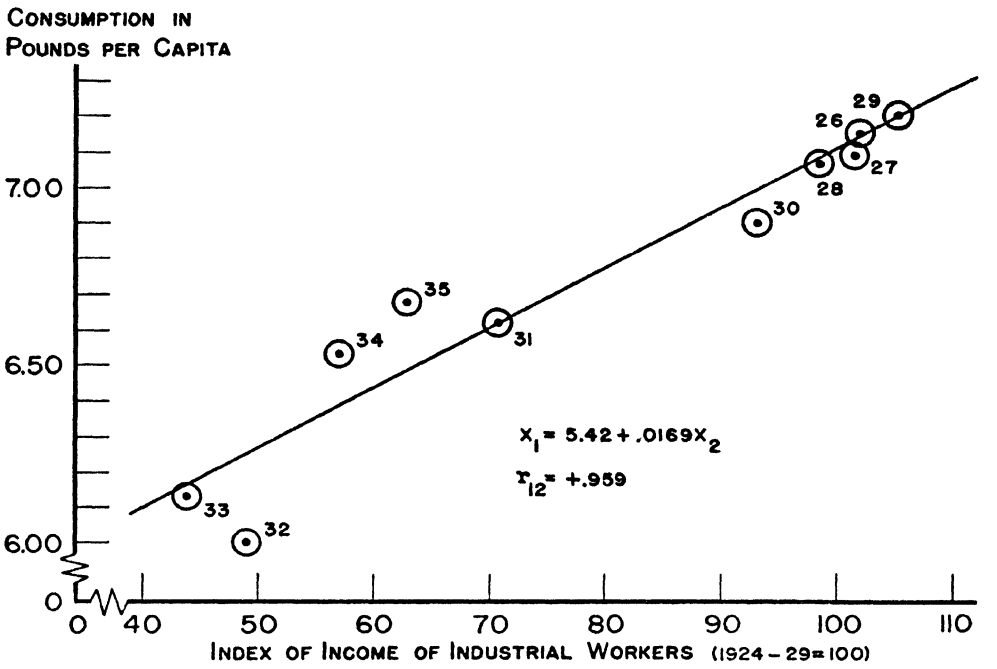


FIGURE XIII. Regression of tobacco consumption on industrial earnings, 1926–35.

SOURCE: Computed from U.S. Bureau of Internal Revenue, *An Analysis of the Effects of the Processing Taxes Levied under the Agricultural Adjustment Act* (1937), p. 97.

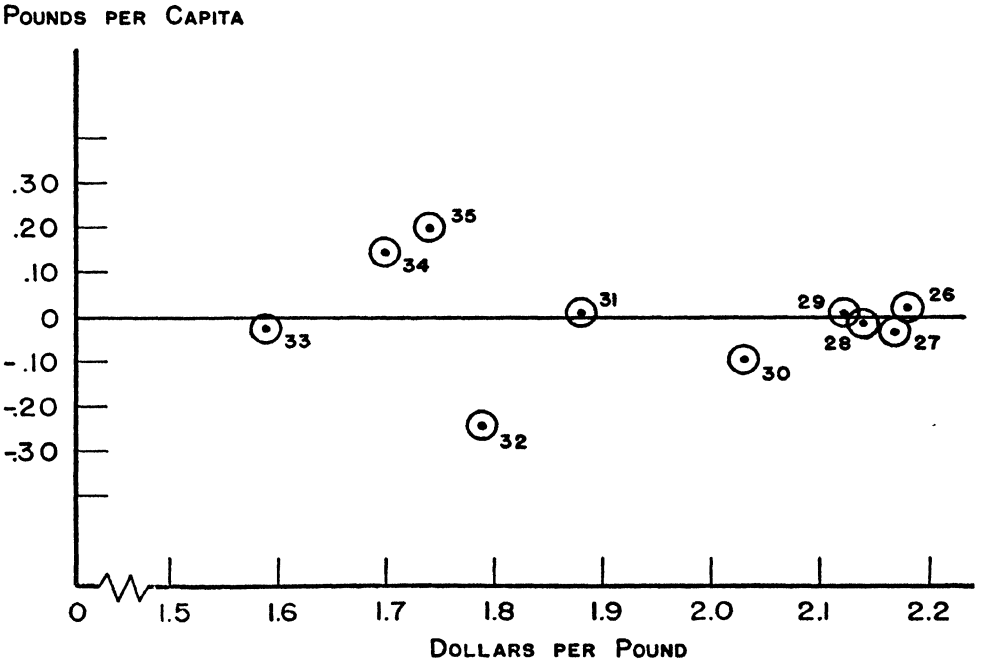


FIGURE XIV. Weighted average retail prices of all tobacco products except snuff and deviations of tobacco consumption from regression on industrial earnings, 1926–35.

SOURCE: Figure XIII.

limited observations in view, the deviations appear to be random and without relation to price.

We conclude, then, that the price elasticity of tobacco demand is very low under the conditions we have been able to observe. This is not to say that elasticity is zero for all prices and quantities. The demand for any commodity must become elastic if only the price is pushed high enough. We have seen an indicated income elasticity of almost one-half, and it is certain that the quantity of tobacco consumed would decline markedly if the price rose enough seriously to affect the proportion of income available for other things. Presumably public ire at extortion would cause consumers to restrict purchases at prices well below that level. But in the range of price movements which we have been able to observe, there is no evidence of price sensitivity. Changes in per capita consumption are adequately explained by other variables. Perhaps at other price levels tobacco consumption would have been different from what it has been, but within the observed range of movement, price has not been a sufficiently *variable* variable to bring about changes in consumption.

THE DEMAND FOR ALL CIGARETTES

Substitution among Tobacco Products

This high degree of price inelasticity is to be expected if account is taken of the urgency of the want which tobacco satisfies, the small relative cost even of expensive tobaccos, and the complete lack of substitutes. The last point is crucial. There is nothing to take the place of tobacco. A man either uses tobacco in some form or he does not. There is no other similar commodity to which he can turn if tobacco is unavailable.

This is not true, of course, of particular forms of tobacco. A cigarette smoker, in case of need, can shift to a pipe or to a cigar. To some extent plug and even snuff are possible substitutes for the cigarette. Over a period of years, large shifts occur in the relative use of various tobacco products. It might be-expected that this availability of substitutes would introduce an appreciable price elasticity into the demand for any one tobacco product, but this does not seem to be the case.

Changes in per capita consumption of the principal tobacco products are shown in Figure XV. The single most arresting aspect of this chart is the meteoric rise of cigarette consumption since 1900. Less dramatic but equally significant are the persistent downward trend in the consumption of cigars and the precipitate drop in the use of chewing tobacco. In contrast, smoking tobacco and snuff exhibit marked stability over an extended period, though the former has been subject to considerable year-to-year fluctuations.

A comparison of Figure XV with the wholesale price series in Figure

XII fails to reveal any obvious price incentives for the major shifts which occurred between products. It is no easier to detect a marked association between relative price changes and the year-to-year changes in the consumption pattern. A little later we will consider in some detail the possible influence of price changes upon cigarette consumption. We will be in

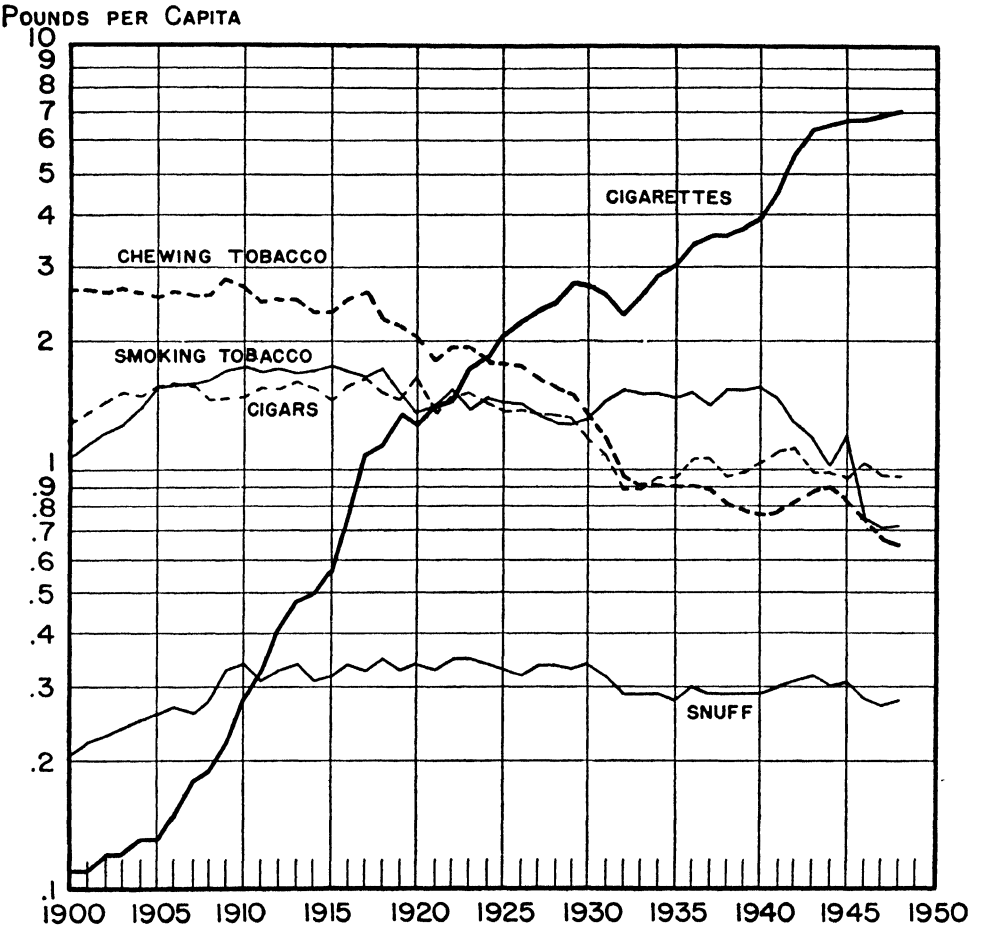


FIGURE XV. Per capita consumption of various tobacco products, 1900–48.
SOURCE: *DA*.

better position to undertake that task if we first examine some of the long-term influences which have operated in this and in previous historical periods.

The rise of the cigarette which has characterized the tobacco industry in the twentieth century is not the first, nor the most complete, nor the most rapid change in tobacco habits of which history has record. Since the first introduction of tobacco to Europe from the New World, there have been several waves of changing tastes and fashion.

Before the discovery of America the aborigines were familiar with all

the present ways of using tobacco. Not all tribes used all methods, but tobacco was known in all parts of the Western Hemisphere with the exception of the Andean Highland, and while some regions smoked, others chewed and snuffed. Much smoking was in pipes, but cigars were common in the Caribbean area, and a form of cigarette was made by wrapping tobacco in the leaves of other plants.[22]

Europe quickly adopted the Indian's methods of tobacco use. Spain adopted the cigar, while the pipe rapidly assumed popularity in France and England. The spread of pipe smoking into Central Europe and Scandinavia accompanied the Thirty Years' War. Spain also developed the cigarette, either as an outgrowth of the Indian pseudocigarette or as an independent invention, and "papeletes" were common in Spain by the middle of the seventeenth century. From Spain the pipe and cigarette were carried by the routes of trade to the Levant and southern Russia, while the Arabs developed the hookah, or water pipe.[23]

In the eighteenth century smoking fell from favor in France, and snuff was adopted as the chief form of tobacco in all circles with any pretensions to elegance. As French things were in high esteem, the rest of the Western world followed suit. The taking of snuff in the nostril and the transfer of snuff from box to nose became a highly stylized form of social behavior. The pipe became an object of mild contempt, a development which moved Dr. Johnson to lament:

> Smoaking has gone out. To be sure it is a shocking thing, blowing smoak out of our mouths into other peoples mouths, eyes and noses, and having the same thing done to us. Yet I cannot account why a thing which requires so little exertion and yet preserves the mind from total vacuity, should have gone out.[24]

After the French Revolution, snuff was no longer a symbol of elegance and came to be regarded as the somewhat dirty habit that it is. Its fall from favor was aided by a positive revival of interest in smoking. Cigars were confined to the Iberian Peninsula for almost 300 years, but as a result of the Peninsular War, the British army brought home both the cigar and the "papelete." [25] Cigar tobacco was difficult to secure in England, and cigars remained a luxury article until late in the nineteenth century. This very fact undoubtedly served to give cigar smoking a degree of prestige and to restore pipe smoking to respectability. The cigarette did not take hold in England at this time. The pipe and cigar were the prevailing methods of tobacco use in Europe in the nineteenth century, though sailors of all nations took to chewing tobacco because of the fire

22. Brooks, *op. cit.*, I, 18–19.
23. *Ibid.*, pp. 12, 41, 69, 170.
24. J. Boswell, *Journal of a Tour to the Hebrides* (London, 1785), quoted in *ibid.*, IV, 9.
25. Brooks, *op. cit.*, I, 167.

hazard, and Scotland was loyal to snuff for many years after its general popularity had passed.

In the United States the eclipse of French influence was accentuated by the aggressive democracy of the frontier, and as snuff fell from favor, plug took its place. Inhalation gave way to expectoration.[26] As the *New York Times* lamented editorially:

> Snuffing is rather rare here, common as it is in Europe, especially on the Continent. We do not smoke any more than, if as much as the English; and the French, Italians, notably the Germans, Dutch and Spaniards exceed us in smoking. But as tobacco eaters we occupy the field alone, having, it is to be regretted, a monopoly of one of the most unwholesome and obnoxious of practices. The national mastication and expectoration are known all over the world, and do ample service in all conceptions and caricatures of Brother Jonathan. To see a landsman chewing tobacco anywhere abroad is to know him for an American, native or adopted.[27]

The pipe and cigar were used by those urban circles which admired Europe, but the great democratic, rural population took to plug, twist, and fine-cut chewing tobacco.

The world had thus experienced several marked shifts in habits of tobacco consumption before the cigarette achieved prominence. Once introduced, no method seems to have died out entirely, but wide swings have occurred in predominant use. Some parts of the world were fairly consistent in their habits, but the shift of British tastes from pipe to snuff, to cigars, and back again to pipe indicates the volatility which can exist even among a conservative people.

The Rise of the Cigarette

The cigarette was slow in taking hold outside Spain and the near East. Although Spain had developed the "papelete" by the middle of the seventeenth century and although the British made its acquaintance in the Peninsular War, the cigarette was a curiosity in England until the latter part of the nineteenth century. The French tobacco monopoly first manufactured cigarettes in 1843.[28]

The Crimean War introduced thousands of English soldiers to the

26. Snuff did not disappear, but its method of use changed completely. In this country snuff is seldom taken in the nostril but is usually applied between gum and cheek as a "dry chew." Another method of use is by "dipping." A small stick is chewed until the end is well frayed and is then held in the mouth with the snuff end between gum and cheek. So used, snuff exhibits a stability in consumption which is in marked contrast to the wide swings in the consumption of other tobacco products. Per capita consumption has been about one-third of a pound annually since the beginning of the century. Snuff is now used almost wholly by Southern Negroes and by recent immigrant circles in Northern cities.

27. July 15, 1878, p. 4, col. 6.

28. Consular report quoted in *ibid.*, December 31, 1880, p. 2, col. 6.

smoking habits of their Russian enemies and Turkish allies and is given credit for stimulating the use of cigarettes. For a while afterward in England it became a mild fad to be a skillful roller.[29] Yet the practice was too startling and too closely identified with the effete East to appeal to British conservatism, and there seems to have been a pause in which cigarette smoking retained its foothold in England but remained suspect and of minor importance. In 1868 the *Chambers's Edinburgh Journal* reported on the cigarette as a new but growing form of tobacco, praised the mildness of Turkish leaf, and advised that for full benefit the smoke should be inhaled into the lungs.[30] In 1877 cigarettes were still rare enough for a smoker in London to be hooted at by street boys.[31]

In 1882 the Egyptian campaign reinitiated the British army into the mysteries of the cigarette, and from that time on its popularity increased.[32] About the same time the press attacked this particular form of tobacco, claiming that it was a poor excuse for more manly smoking methods, that Turkish tobacco was diluted with foreign and deleterious substances, and that the habit-forming effects of inhaling made the cigarette a danger to health.[33] The beginning of such attacks is good evidence that the use of the cigarette had taken hold. Edward VII, then Prince of Wales, adopted the cigarette habit in the course of his travels and conferred the glamour of royalty on a growing custom.[34]

Cigarettes were introduced to this country before they were well known in England.[35] Their use was observed as early as 1854, and the Internal Revenue Law of 1864 reveals a small industry in existence at that time.[36] The subsequent growth in the consumption of ready-made cigarettes can be accurately traced, although the volume of roll-your-own cigarettes cannot be estimated without a large margin of error.

Although cigarette consumption has increased steadily since 1870, the years since 1900 have been the period of spectacular growth. The cigarette has come to dominate the tobacco industry and in doing so has changed or has typified the change in manners and morals which characterizes twentieth-century America. The growth of the cigarette at the expense of the cigar has lightened the air. The decline of plug has had generally purifying consequences, while the adoption of the cigarette by

29. *Chambers's Edinburgh Journal,* Ser. 6, *2,* No. 56 (December 24, 1898), 55.
30. Vol. *45,* Pt. II, No. 248 (September 26), pp. 617–618.
31. J. Fortescue in the London *Morning Post,* quoted in *Living Age, 323,* No. 4188 (October 11, 1924), 87.
32. *Ibid.*
33. *Saturday Review,* May 4, 1889, p. 528.
34. *London World,* quoted in *New York Times,* February 8, 1883, p. 6, col. 2.
35. For a summary of various theories as to how the cigarette was introduced, including one which blames the whole thing on Rensselaer Polytechnic Institute, see E. O. Porter, "The Cigarette in the United States," *Southwestern Social Science Quarterly, 28* (June, 1947), 64–75.
36. See p. 15.

women has marked important changes in the relationship of the sexes.

The dramatic significance of the cigarette in terms of cultural patterns is easily seen. Yet the strangeness of this development and the true strength of the forces which brought it about cannot be appreciated without a consideration of the social environment from which it started. The great rise of cigarettes began under conditions of violently hostile public opinion. In the 1890's and the first years of this century, almost all "decent opinion" was against the cigarette. It was considered a menace to health and morals as well as an unmanly and decadent dissipation.

The antitobacco agitators, of course, have been always with us since James I first denounced the weed. There was an antitobacco society in New York in 1834. Between 1857 and 1872 George Trask of Fitchburg, Mass., issued an irregular *Anti-Tobacco Journal.* The burden of this propaganda was consistent over many years. The effects on health and the cost of a "useless habit" were deplored. Plug was accorded special attention on account of its dirtiness, and it is impossible to read Trask's comments on the sanitary effects of chewing tobacco in an urban environment without a shudder of sympathy. Temperance societies included tobacco within the ban of their displeasure, and in one campaign for juvenile support produced the following gem:

"I'll never use tobacco, no;
It is a filthy weed:
I'll never put it in my mouth,"
Said little Robert Reed.
"It hurts the health;
It makes bad breath;
'Tis very bad indeed.
I'll never, never use it, no!"
Said little Robert Reed.[37]

The early propaganda against tobacco lacked in virulence and popular persuasiveness, compared with the propaganda which greeted the cigarette. For reasons which can be guessed at but which elude complete explanation, the reform instinct was challenged by the cigarette more than by other types of tobacco, and the public at large was more seriously impressed by the outcry. The cigarette, of course, was a mild form of tobacco and hence more likely to tempt the very young. Also, the cigarette was new, and the public was, on that account, more ready to believe the worst about it than about familiar and unfrightening forms of tobacco.

All the old bogies were brought out for use against the cigarette. It was a menace to health, created an appetite for drink, weakened the mind, induced insanity, corrupted the morals, and impaired the vision. It caused cancer, constipation, and baldness. "Its dreadful evils through the law

37. *Harper's New Monthly Magazine,* July, 1880, p. 320, quoted in Porter, *op. cit.,* p. 70.

of inheritance, extend to offspring even to the second, third, and fourth generations." The habit was unbreakable, and the damage caused was incurable. The cigarette was the worst form of tobacco. Cigarettes were "coffin nails" and "little white slavers." The tobacco filler was salvaged from rejected cigar butts and the raked-over contents of spittoons. The paper was made of filthy rag-pickings, impregnated with arsenic. Cigarettes were soaked in opium, and the flavorings used contained dangerous drugs. One ambitious count distinguished eighteen different poisons in a single cigarette. With a fine disregard for the canons of inductive inference, it was held that the general fondness of juvenile delinquents for cigarettes was proof positive that cigarettes caused delinquency.[38]

Much of this drivel was the work of cranks, or at least of reformers who allowed zeal to destroy their senses of proportion. But many people who were not cranks believed what they were told enough to have a profound suspicion of and dislike for cigarettes. The first users of cigarettes in this country were the immigrant populations of the large cities, and this alone was enough to make the xenophobic hinterland suspicious. In any event, they were new, and in a nation which had not yet succumbed to the dogma that any change is an improvement, there was a predisposition to oppose them.

It is difficult to estimate how deeply anticigarette propaganda penetrated into the general public consciousness, but there are indications. The attempts of reformers at first met with a hostile reception from what may be regarded as lay quarters. In 1860 the General Conference of the Methodist Episcopal Church of the State of Ohio resolved that "After the present session we will not receive any person into full communion who persists in the use of tobacco." [39] The *New York Times* commented editorially on this "absurd and preposterous" resolution and suggested that "In this seventh decade of the nineteenth century, the undefined thunders of an ecclesiastical tribunal against pipes and cigars are more likely to evolve the spark that will fire them up, than to force or frighten anyone into their discontinuance." [40]

In 1876 the same paper described Trask's antitobacco writings as "the most dreary tracts ever composed by an enfeebled intellect" [41] and a few months later commented on the growth of cigarettes:

38. M. W. Lawrence, *The Tobacco Problem* (6th ed. Boston, Lee & Shepard, 1885), pp. 80–83, 163; C. W. Hubbell, "The Cigaret Habit—A New Peril," *Independent, 56,* No. 2881 (February 18, 1904), 375–378; C. W. Hubbell, quoted in *New York Times,* December 3, 1893, p. 13, col. 7; Bruce Fink, *Tobacco* (Cincinnati, Abingdon Press, 1915), pp. 35, 41; L. W. Madden, *Independent, 84,* No. 3492 (November 8, 1915), 231; "Antitobacco Exaggerations," *Literary Digest, 53,* No. 3 (July 15, 1916), 128; Anti-Cigarette International League, *First Annual Report* (Chicago, 1921).

39. *New York Times,* October 30, 1860, p. 4, col. 5.

40. *Ibid.*

41. September 6, 1876, p. 4, col. 4.

This change is partially due to the force of imitation, which has led Americans to copy, in this as in other things the habits of foreigners; but another motive is that of economy. . . . To one in sound health, who is willing to smoke moderately, and make his cigarettes from light Turkish or Latakia tobacco, there would seem to be little danger in the practice. . . .[42]

Yet, in 1879 worry was expressed because

Lads at school acquire a taste for tobacco by surreptitiously smoking cigarettes—cigarettes which have done more to demoralize and vitiate youth than all the dram-shops of the land.[43]

And in 1882:

Where the danger of cigarettes comes is from their cheapness, which permits too many of them to be smoked, and because they are getting into use by urchins of all ranks who are not more than 10 years old. Smoking when indulged in by boys is as pernicious a habit as if they commenced to tipple.[44]

By the following year the editor's contempt had increased:

The cigarette is designed for boys and women. The small-boy who wishes to commit the crime of secret smoking, but whose stomach is not stout enough for a cigar or a pipe, naturally smokes a cigarette, and thus enjoys the consciousness of guilt without the remorse of stomach. A grown man has no possible excuse for thus imitating the small-boy. . . . The decadence of Spain began when the Spaniards adopted cigarettes and if this pernicious practice obtains among adult Americans the ruin of the Republic is close at hand.[45]

By 1892 the *New York Times* had acquired a more even-tempered hostility:

Boys and women are oftener smokers than heretofore, but their favorite cigarette only proves by its huge popularity the truth that tobacco is less universally consumed and used in less quantity in proportion to population. The cigarette is, for the most part, a despicable as well as a lethal form; yet it marks the step toward less and milder tobacco. . . .[46]

The *Times,* which we may take as a spokesman for civilized urban opinion, maintained this attitude of mild hostility for many years and, when other parts of the country began to demand positive measures of control, refused to agree. In 1893 the editor commented on an anticigarette law in the state of Washington which had just been declared unconstitutional:

The smoking of cigarettes may be objectionable as are many other foolish practices, and it may be more injurious than other modes of smoking to-

42. May 27, 1877, p. 6, col. 4.
43. January 11, 1879, p. 4, col. 5.
44. October 17, 1882, p. 4, col. 7.
45. January 29, 1884, p. 4, col. 5.
46. August 21, 1892, p. 4, col. 5.

bacco, but it is an evil which cannot be remedied by law, and it is not the kind of evil to the community at large that is a legitimate subject for legislative action. That kind of a law is pretty sure to be evaded, and it begets a contempt for law in general and for public authority that is more pernicious than selling cigarettes or even smoking them.[47]

Such restraint was not in harmony with the reformist temper of the country at large. A wave of anticigarette legislation swept over the country between 1896 and 1921. All states but Texas have prohibited sales to minors, and 14 states once prohibited the sale of cigarettes entirely. The last of the general prohibition laws was not repealed until 1927.[48]

The strength of popular prejudice against the cigarette, especially in the rural areas of the country, is well illustrated by these prohibitory laws and their interpretation. In 1898 the Supreme Court of Tennessee, in passing on the validity of the state anticigarette law asked the question:

Are cigarettes legitimate articles of commerce? We think they are not, because wholly noxious and deleterious to health. Their use is always harmful; never beneficial. They possess no virtue, but are inherently bad, and bad only. They find no true commendation for merit or usefulness in any sphere. On the contrary, they are widely condemned as pernicious altogether. Beyond question, their every tendency is toward the impairment of physical health and mental vigor.[49]

Although the United States Supreme Court declined to take judicial notice of these alleged facts, it recognized that "a belief in their deleterious effects, particularly upon young people, has become very general" and decided that it was within the power of the state to control such traffic within its own borders.[50]

In 1917 the Supreme Court of Oklahoma considered the case of a grocery store which had been closed on the grounds that:

people would congregate at said store and become drunk and imbibe intoxicating liquors in said store, that cigarettes were sold to minors in violation of law, that the general reputation of such place of business was that of a place where lewd men and women would resort for the purpose of unlawful cohabitation and sexual intercourse; that such place was an unfit place for women and children to purchase groceries.[51]

Although it was not stated which offenses were considered the more heinous, the position of unlawful cigarette sale in the hierarchy is at least suggestive.

Thomas Alva Edison, himself an inveterate cigar smoker, penned the following letter to Henry Ford:

47. June 15, 1893, p. 4, col. 2.
48. Gottsegen, *op. cit.*, p. 152.
49. *Austin* v. *State*, 101 Tenn. 563, 566; 48 S.W. 305, 306 (1898).
50. *Austin* v. *Tennessee*, 179 U.S. 343, 348 (1900).
51. *Balch* v. *State ex rel. Grigsby, Co. Atty.*, 65 Okl. 146; 164 P. 776 (1917).

April 20, 1914

FRIEND FORD,

The injurious agent in Cigarettes comes principally from the burning paper wrapper. The substance thereby formed is called "acrolein." It has a violent action in the nerve centers, producing degeneration of the cells of the brain, which is quite rapid among boys. Unlike most narcotics, this degeneration is permanent and uncontrollable. I employ no person who smokes cigarettes.

Yours,
THOS. A. EDISON [52]

Businessmen often refused to employ cigarette smokers, and the burden of much anticigarette propaganda was that cigarettes rendered the smoker "unfit for business." Successful men who were also cigarette smokers were declared to be men whose "future lies behind them." [53] Women, of course, in most parts of the country could not smoke without damage to their reputations. Attempts were made to have schoolboys pledge abstinence from tobacco. The most delightful of these was the pledge of the "Clean Life Army," sponsored by the Anti-Cigarette International League:

Our pledge: Believing that a clean life honors God, safeguards my country, and develops my own powers, I hereby pledge upon my honor with God's help, to abstain from cigarettes and tobacco in any form and from all intoxicating beverages. I also promise to live a clean life.[54]

In 1892 the editor of the *New York Times* had remarked with satisfaction: "Nowadays the rhymers rarely sing in praise of tobacco, and the anti-nicotians have ceased from troubling." [55] The rejoicing was premature. Succeeding years witnessed the most violent antitobacco crusade on record. The low intellectual level on which that crusade was conducted, compared with the previous agitation of the seventeenth century, showed that the American silly season was well under way and is at least putative evidence that the decline of Western civilization had already begun.

In spite of this hostile climate of opinion, the use of cigarettes grew steadily. With a firm basis in the customs of the foreign populations in large cities, the habit spread to other sections of metropolitan society, became fashionable, and gradually infected even those parts of society and the nation which affected to despise fashion. The reformers realized the hopelessness of their struggle even in their period of greatest success. How, they asked, could the physical injury from cigarettes be brought home to people when physicians themselves were victims? How could

52. Henry Ford, *The Case against the Little White Slaver* (Detroit, Henry Ford, 1916), p. 3.
53. Anti-Cigarette International League, *op. cit.*, p. 17.
54. *Ibid.*, p. 7.
55. August 21, 1892, p. 4, col. 5.

college youths be turned from ruin when their mentors were so frequently addicted? [56]

Women were reported to be adopting the habit as early as 1854,[57] and by 1910 it was well known in the trade that a considerable and reliable female business had developed.[58] A writer in *Good Housekeeping* in 1916 remarked that "ninety percent of this magazine's readers would be horrified to think of the use of tobacco becoming as general among girls and women as it is among boys and men." [59] The 10% who would not be horrified is revealing. By 1919 some of the younger women in New York were smoking at dinner parties, but with a trace of defiance.[60] By 1922 New York women were smoking openly on the street and in bus tops, and there was even a little flurry of tobacco shops especially for women.[61] In 1924 the editor of the *United States Tobacco Journal* estimated feminine consumption at 5% of the national total,[62] while in 1929 Moody's Investors Service thought it amounted to about 14 billion cigarettes, or 12% of the total.[63] In 1935 a *Fortune* survey indicated that the proportion of women who smoke cigarettes varied from 8.6% in rural areas to 40.2% in cities of 100,000 to 1,000,000 population, with a national average of 18.1% compared with 52.5% for men. For the country as a whole, only 9.3% of women over 40 smoked, while 26.2% of women under 40 did so.[64] Feminine smoking has increased since then, although there are still sections of the country where it is frowned upon. The end is probably not yet.

Factors Responsible for the Growth in Cigarette Consumption

The reasons for the general change from other forms of tobacco to the cigarette and the initiation of women into the art are moderately complex, although simple explanations have been advanced. The First World War is said to have introduced thousands to the cigarette under battlefield conditions. The campaigns to supply the soldiers are supposed to have weakened moral and social prejudices against the cigarette. On the other

56. Hubbell, *op. cit.*, p. 378.
57. See above, p. 15.
58. *Harper's Weekly, 54* (September 17, 1910), 25.
59. H. W. Wiley, "The Little White Slaver," *Good Housekeeping, 62* (January, 1916), 94.
60. F. L. Allen, *Only Yesterday* (Harmondsworth, Middlesex, England, Penguin Books, 1938. 2 vols.), I, 31; *New York Times,* March 16, 1919, Sec. VII, p. 2.
61. Harry Burke, "Women Cigarette Fiends," *Ladies Home Journal, 39* (June, 1922), 19.
62. C. A. Wessel, "The First Sixty Billions Are the Hardest for Cigarette Industry," *Printers' Ink, 126,* No. 5 (January 31, 1924), 6.
63. "Women and Cigarettes," *Printers' Ink, 158,* No. 7 (February 18, 1932), 25–27.
64. "Cigarettes," *Fortune, 12* (July, 1935), 111.

hand, the growth of advertising in the industry is given credit for spreading the new habit, especially among women.

In recent years advertising publications have been quite boastful about this constructive salesmanship. Thus L. D. H. Weld, writing in *Printers' Ink,* states that "The growth of cigarette consumption has, itself, been due largely to heavy advertising expenditure." [65] On another occasion the same publication referred to "the one feature which has contributed more than any other single factor to the enormous growth of the cigarette industry—advertising." [66]

The leaders of the cigarette industry have been equally enthusiastic about the influence of advertising. Thus George Washington Hill, testifying at Lexington on the great rise in cigarette consumption, remarked:

> The impetus of those great advertising campaigns not only built this for ourselves, but built the cigarette business as well, because that is the way competition works. You don't benefit yourself most, I mean, altogether. Of course, you benefit yourself more than the other fellow if you do a good job, but you help the whole industry if you do a good job.[67]

And S. Clay Williams gave this justification for continuing heavy advertising expenditures: "I think that if we were to discontinue advertising of our brands, that you would find a sloughing off of the volume of consumption of tobacco products in that form, smokers going towards pipe or roll-your-own or some other forms of tobacco." [68] The implication of both statements is that advertising was a major, if not the only, factor responsible for the great relative rise of cigarettes.

It is impossible, of course, to prove that these explanations are incorrect. In historical developments we are forever barred from any certain knowledge of "what would have happened if." If we observe the circumstances of cigarette growth, we see that it is associated with two world wars and with a great increase in advertising. The correlation is high, but are we therefore justified in imputing causal effect? Certainly there are adequate reasons for doubt.

For perspective it is well to refer back to Figure II on page 16. There are only three breaks in the steady rise of consumption since 1870. From 1896 to 1901, in 1920, and again in 1931 and 1932, cigarette consumption as shown by tax-paid withdrawals declined. The first decline has been attributed to a tax increase, which eliminated the cheapest classes of cigarette, and to anticigarette agitation and legislation. The second decline probably reflects statistical complications attendant upon the liquidation of the war rather than any real decline in cigarette smoking.

65. "Advertising and Tobacco," *Printers' Ink, 181,* No. 1 (October 7, 1937), 70.
66. *Printers' Ink, 152,* No. 9 (August 28, 1930), 52.
67. *TP,* p. 9100.
68. *TP,* p. 11841.

The third decline is associated with the Great Depression and an example of extreme monopoly pricing.

Apart from these three occasions, cigarettes have increased in every year over the consumption of the year preceding. And the rate of growth, as is usual with most growth curves, is proportionately more rapid in the earlier years than in the later. One looks in vain for an indication of significant influence by the First World War. The trend of consumption from 1904 to 1913, if projected, passes through the value for 1919. In 1914 and 1915 the rate of growth declined, and the subsequent spurt during the war served only to restore consumption to the level it would have reached had the prewar rate of growth been maintained. Advertising began to expand significantly soon after the dissolution in 1911, but again no change in trend is noticeable. After 1920, when cigarette advertising hit its full stride, the rate of growth of production fell to 7% a year compared with an average annual rate of growth of 22% from 1904 to 1920.

There is even less sign that the growth of smoking among women was caused by advertising directed to them. As we have seen, female smoking reached significant proportions before the end of the First World War, yet it was not until 1927 that advertising in any volume was directed at women. Advertisers, in fact, were extremely timid in appealing to the feminine trade and only made the first tentative attempts when that trade was already so large and so widely accepted that it was safe to do so.

The first advertisement showing a woman smoking was in 1919 in P. Lorillard's publicity for Helmar cigarettes.[69] The ladies in these ads were shown in oriental settings and costumes to allay criticism, though it was noted at the time that they looked as if they had "never been East of Brooklyn Borough Hall." [70] The example was not followed for some years.

In 1924 C. A. Wessel, managing editor of the *United States Tobacco Journal,* commented on the increase in feminine smoking:

> . . . the custom is almost,—save for its element of prurient curiosity to an old-fashioned world—commonplace . . . It is a matter of general record that practically no encouragement has been extended to women smokers by any branch of the tobacco industry. Whatever audible sentiment there is in the trade, in fact, is unfavorable to the indulgence. All responsible tobacco opinion is that the new custom is so novel, and has in the past been so associated by writers, dramatists and other interpreters of the social state and human emotions with the bizarre and the risque, that it would not be in good taste for tobacco men as parties in interest to stir a particle toward or against

69. "Blow Some More My Way," *Printers' Ink, 159,* No. 2 (April 14, 1932), 20.
70. "Camel, Lucky Strike and Chesterfield," *Printers' Ink, 152,* No. 9 (August 28, 1930), 52.

a condition with whose beginnings they had nothing to do and whose end, if any, no one can foresee.[71]

A more succinct statement of the same point of view was expressed in 1926 by "one of the biggest men in the industry": "The manufacturers fear that they may draw the lightning of the busybody element . . ." [72]

The industry was still too much on the defensive against anticigarette reformers to dare greatly. Laws prohibiting cigarettes were still on the books of Kansas, Iowa, Indiana, and Mississippi. The time was only recently passed when, to quote this same anonymous authority, "A bill would be introduced to a legislature to prohibit the manufacture or sale of cigarettes; it would be referred to a committee, and our people would have to get busy and pay somebody to see that it died."

In 1926 the first crack in the dam appeared with Liggett and Myers' famous Chesterfield advertisement in which a young woman did not smoke but pleaded, "Blow some my way!" As one writer remarked impatiently: "They are all linking up the woman and the cigarette, yet none of them offers her a package for sale." [73]

Philip Morris ran a series of advertisements for Marlboro cigarettes, showing merely a cigarette held in a schematic but distinctly feminine hand. In April, 1927, Philip Morris summoned up the courage to show a whole woman with the apologetic legend: "Women, when they smoke at all, quickly develop discriminating taste." This of course meant Marlboros which were "Mild as May." [74]

The heavens did not fall, and the advertising interests saw the vision of new accounts.

> In its new progressive consciousness America of today has little use for outworn prejudices, and these are being shelved automatically in the triumphant march of progress . . . It requires little imagination to conceive of the potential market lying in this direction only waiting for the intensive cultivation of the advertiser.[75]

Triumphant march or no, advertising to women was in full swing by the end of 1927. This was the period of George Washington Hill's great campaigns with the slogan, "Reach for a Lucky instead of a Sweet," which was largely responsible for Lucky Strike's rapid rise to industry leadership. It is apparent, however, that this advertising followed, rather than caused, the growth of feminine smoking, just as the First World War

71. Wessel, *loc. cit.*

72. Lin Bonner, "Why Cigarette Makers Don't Advertise to Women," *Advertising & Selling, 7* (October 20, 1926), 21.

73. *Ibid.*

74. "Marlboro Makes a Direct Appeal," *Advertising & Selling, 8* (March 23, 1927), 25.

75. Oscar Williamson, "An Inhibition versus a Market," *Advertising & Selling, 8* (January 26, 1927), 34.

followed, rather than caused, the period of most rapid growth in cigarette consumption in general.

The argument of course does not prove that either war or advertising have not been influential in increasing smoking among both men and women. Perhaps without the First World War the growth curve of cigarette consumption would have levelled off and would never have reached its present heights or would have done so only many years later. Perhaps without continuous prompting from advertisers the early growth in female smoking would have proved merely a passing fancy or would have spread much more slowly. There is no way by which such suggestions can be proved or disproved, but a consideration of the timing of the change to cigarettes indicates that they are at least suspect.

If advertising and war were not responsible for the growth of cigarettes, what were the causes? Primarily it resulted from the advantages which cigarette smoking possesses in an urban civilization. Plug tobacco, which was the chief form of nicotinic dissipation in the mid-nineteenth century, is messy and socially disagreeable at the best, and in city life it is nearly intolerable. Of course, city dwellers chewed and spat, and in New York the spittoon with its ring of near misses was a legally required feature of every public gathering place.[76] Most contemporaries saw no evil in this situation, but it was a dirty habit, offensive to many, and quite incompatible with ordinary sanitation. Sooner or later the latent offense was bound to be appreciated, and as soon as the American public became concerned either with cleanliness or health, the plug necessarily fell from favor. Snuff suffers from somewhat similar drawbacks but, in any event, has never been an important method of tobacco use outside particular geographical regions and particular classes of the population.

Cigars and pipe tobacco are not objectionable on the same grounds as plug, but they have disadvantages in city life. They are both full-bodied smokes which may be offensive to neighboring nonsmokers and which require considerable application and leisure on the part of the smoker. The cigarette is not only a lighter smoke, which is easier on the atmosphere than the same quantity of smoke from other sources, but also it is a quick short smoke, which is easily fitted into the odd moments of the day. It can be smoked while working more easily than the pipe or cigar, both of which require steady attention from at least one hand, while the pipe, of course, periodically requires the complete attention of the smoker. These advantages, while considerable, are not decisive, and many cigar and pipe smokers remain, but there has been a tendency for many years for existing smokers to change to cigarettes and for new smokers to adopt the cigarette in preference to other forms. There is also the circumstance that many individuals who find pipes or cigars too irritating or too strong or for some other reason disagreeable, and hence would not

76. Robert, *Story*, p. 274.

otherwise smoke at all, have taken to the cigarette as one form of tobacco which at least is endurable. In the case of women, this is especially important. Changing relationships between the sexes, occurring for other reasons, have made smoking permissible and even desirable to women if it was at all pleasant. The special effect of cigarettes on the nerves must also be taken into account. The lightness of cigarette smoke and the ease with which it is inhaled seem to involve a closer union between smoker and smoke than do other forms and to make the smoker more dependent upon tobacco. It is a matter of common observation that persons who overindulge in tobacco and are constantly reaching for a smoke are usually cigarette smokers. This implies an additional source of consumer loyalty which ensures that, once smokers have adopted cigarettes from any of the motives given above, they are likely to remain cigarette smokers.

In view of all these factors, one may well wonder why cigarettes have not been used more widely and much earlier, why it is only within the last generation that they have dominated the tobacco industry. One reason is that conditions have become increasingly favorable to the cigarette with increased urbanization, the higher tension of modern industrial society,[77] and the change in the position of women. Another explanation is that cigarettes are a relatively new commodity and that, since they were first introduced effectively around 1870, their use has spread constantly and about as rapidly as any social fashion is likely to spread. The rate of growth in the early years indicates that, even at that time, the cigarette possessed advantages over other forms of tobacco and that only the passage of time was needed for those advantages to be fully exploited.

The experience of other countries provides an interesting commentary on the influence of advertising on total cigarette consumption. In no other country has advertising been as thoroughly and even extravagantly exploited as in this country. Yet other countries adopted the cigarette more rapidly than the United States, in spite of higher cigarette prices and lower consumer income. In 1913 our per capita consumption of cigarettes was only two-thirds that of Finland and five-sixths that of the United Kingdom. As late as 1920 Greek per capita consumption was half again as large as that of the United States.[78] British women were smoking cigarettes quite generally and openly by the end of the First World War,[79] and it was their example, among other things, which gave the

77. But see *New York Times,* March 10, 1889, p. 14, col. 2: "Whatever be its merits or demerits, one thing is certain—namely, that there is an ever-increasing subjection to the influence of this narcotic, whose soothing powers are requisitioned to counteract the evil effects of the worry, overpressure and exhaustion which characterize the age in in which we live."

78. *DA,* 1937, p. 101. Estimates by J. B. Hutson.

79. *New York Times,* July 27, 1919, Sec. III, p. 3, col. 5.

1919 flapper in the United States courage to flaunt the new habit in public. British per capita consumption was below that of the United States in 1924 and 1929 and was about equal in 1932. According to one estimate, American consumption per capita before the recent war was 40% below that of England.[80]

The great and rapid changes in tobacco usage which have occurred in other countries and other times indicate that caution should be used in attributing any particular change to specific causes like wars or advertising methods. They may be responsible in the case of cigarettes, but the fact that similar changes have occurred without such aids suggests that cigarettes too have been carried along on a more fundamental tide of fashion. Fashion alone has been enough to cause such changes in the past, while cigarettes have gained both from fashion and from their natural adaptability to an urban environment and an industrial civilization.

Elasticity of Demand for All Cigarettes

Our skepticism toward the probable effect of price and advertising on the major changes in tobacco habits finds confirmation when we turn to a study of the year-to-year variations in the consumption pattern. Figure XVI presents a number of the factors which may be supposed to influence substitution among tobacco products and bears witness both to the high degree of possible substitution and to the extraordinary stability of consumption habits at any point in time. In 46 years cigarettes rose from 2% to 70% of tobacco consumption, yet the smoothness and consistency of this growth is as remarkable as its magnitude. Deviations from the trend are very small—smaller in proportion even than the deviations in total tobacco consumption which we observed in Figure XII. It appears that there is less variability at any given moment in the relative importance of cigarettes than there is in the total consumption of tobacco.

In contrast we notice a high degree of instability in advertising expenditures by the R. J. Reynolds Tobacco Company. Traceable advertising expense for all cigarettes, for its brief period of availability, is much more stable than Reynolds advertising expenditures or than traceable expenditure on Camel cigarettes alone. Nevertheless, total cigarette advertising varies much more widely than does relative cigarette consumption. We may be nearly certain that the advertising elasticity of total cigarette demand is very small. We have seen before that total tobacco demand is primarily explained by income changes. If advertising does not perceptibly influence the percentage of tobacco used in the form of cigarettes, it cannot, therefore, have an appreciable influence on the absolute volume of cigarettes sold.

It is possible that offsetting changes in the advertising on competing

80. H. M. Wootten, quoted in *ibid.*, March 11, 1946, p. 32, col. 2.

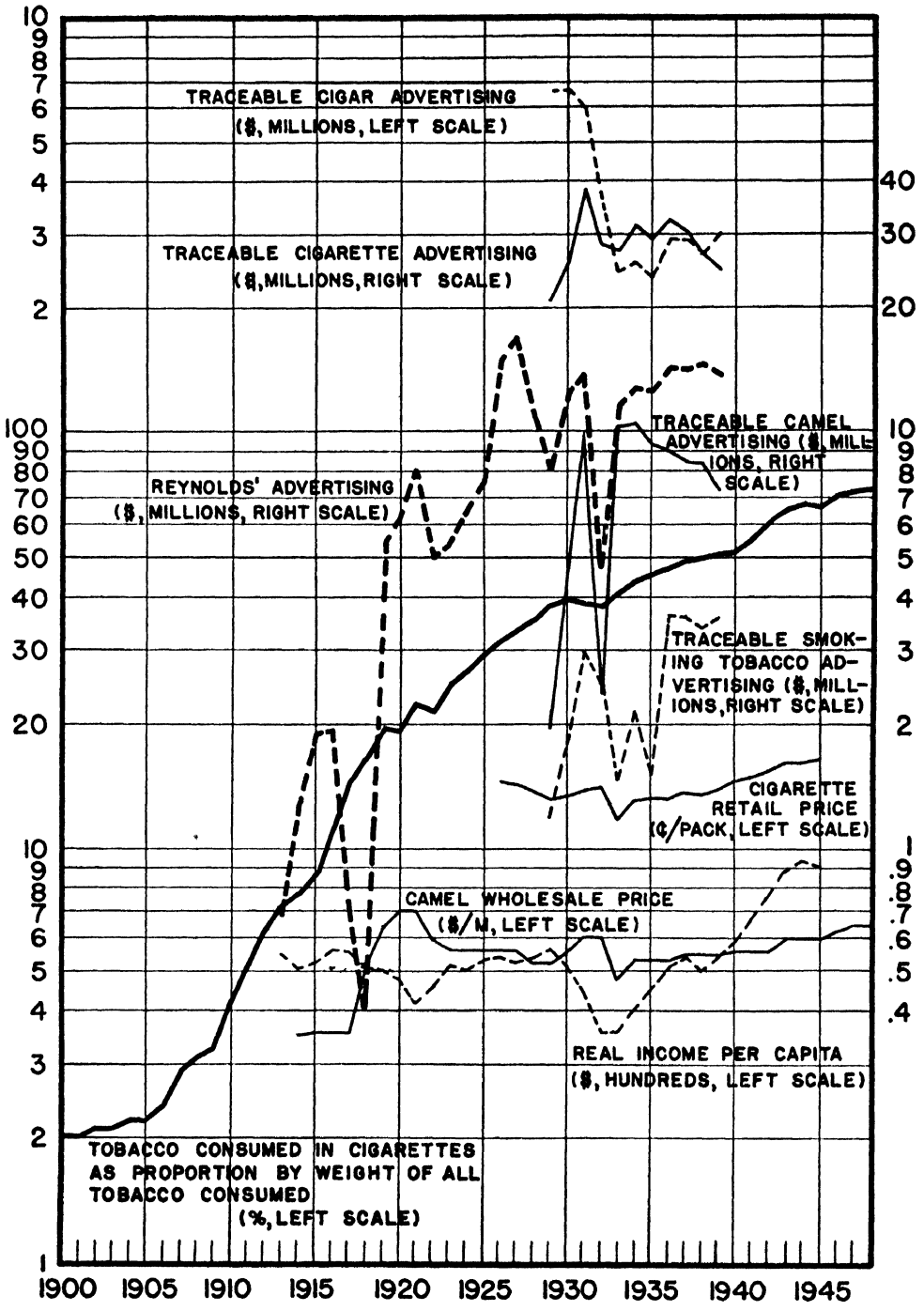


FIGURE XVI. Factors affecting cigarette consumption, 1913–48. Reynolds' advertising includes expenditures on all products but excludes free goods. Traceable advertising is estimated expenditure for space and time.

SOURCES: *DA; DX,* No. 1260; N. H. Borden, *The Economic Effects of Advertising* (Chicago, Irwin, 1942), pp. 229, 254, 265; Figure XII, above, p. 118.

tobacco products, such as smoking tobacco and cigars, might yield such cigarette demand stability in the face of fluctuating advertising even if the advertising elasticity of demand were relatively high. We notice, however, that the temporal pattern of advertising on cigars and smoking tobacco is quite different from the pattern of cigarette advertising, while the absolute magnitude of expenditure on these products is much smaller. Considerable variation in advertising pressure on cigarettes must exist, and we are justified in concluding that, within a wide range of variation, advertising expenditures have little influence on cigarette consumption.

Similar arguments apply to the influence of price on consumption. Prices have not been as variable as advertising, but they have shown a greater volatility than relative cigarette consumption. It may accordingly be concluded that the price elasticity of demand is of a low order. We notice in Figure XII that prices of the various products move roughly together so that again we must remember that offsetting changes could yield a stable consumption pattern even if price elasticity were high. But there have also been some marked shifts in the relative prices of the various products without any equivalent changes in the relative importance of cigarettes.

Yet the case for low price elasticity is less compelling than the case for low advertising elasticity. We observe that advertising has not occasioned demand changes, although advertising itself has fluctuated widely over the last 35 years. We observe that prices have not occasioned changes in demand, but the range of fluctuations in price in that same period has been small, and the number of changes has been few. Perhaps with more frequent or larger changes in price we would have observed greater variability in tobacco use.

It is clear that in the early stages of the cigarette industry price changes could and did influence cigarette consumption. The increases in cigarette taxes from the equivalent of 40¢ per thousand in 1864 to $5 per thousand in 1867 effectively eliminated tax-paid consumption.[81] It must be noted, however, that cigarettes at that time had barely secured a foothold, that the tax increases were proportionately extremely large, and there is no indication of how much illegal consumption may have escaped the tax gatherer. The experience of the 1860's has only moderate relevance to the nature of cigarette demand in more recent years.

Again, after 1896, cigarette consumption declined sharply to the accompaniment of tax rises and an almost complete cessation of advertising.[82] The decline in consumption began even before the tax changes or the reduction in advertising took effect, and it seems probable that advertising reduction was the effect rather than the cause of the consumption decline. The almost complete disappearance of such cheap brands as

81. See above, pp. 15–17.
82. See above, p. 55.

Cycle, however, indicated that price was responsible for at least some of the fall in consumption. Much of the growth in consumption in the early 1890's had been concentrated in these cheaper brands which were more likely to be sensitive to price than more expensive grades. The tax increase from 50¢ to $1.50 in 1898 required a large percentage rise in the prices of these cigarettes and came at a time, moreover, when public opinion was exceptionally hostile to cigarettes. Accordingly, consumption of these grades declined, but J. B. Duke expressed the opinion that the tax rise "did not stop the consumption of cigarettes, because now nearly everybody has a package of paper with his package of tobacco, and he makes them himself. I think the consumption has been increasing." [83]

In more recent years the factors which made cigarette consumption respond to price in 1898 have not been in evidence. The great growth of consumption has not been concentrated in cheap grades. Much larger rises in excise tax than that in 1898 have failed to check the increase in consumption, and with the higher level of prices which now obtains, any given absolute price change is proportionately much smaller. Meanwhile, effective hostility to the cigarette has almost disappeared. It is probably still true that very large changes in cigarette prices would affect consumption patterns, but within the range of observed prices for the past 35 years the elasticity of demand is very low.

Further light on the price elasticity of demand is shed by an examination of the rare occasions on which fairly abrupt changes have occurred in the relative importance of cigarettes. Such changes occurred in 1920, 1922, and 1929–32.

In 1920, for the first time since 1905, the consumption of cigarettes as a percentage of total tobacco consumption ceased to grow and fell slightly from 19.6% to 19.3%.[84] Total withdrawals fell from 44,772 million in 1919 to 44,616 million in 1920. In so far as so slight a decline requires an explanation, it is no doubt provided by the readjustments attending the end of the war and demobilization. One possibility is that a part of the production for export during the war was fed back into civilian inventories during 1919 and thus increased 1919 tax-paid withdrawals above and reduced 1920 tax-paid withdrawals below actual consumption. The sharp spurt in 1919 consumption, whether measured in total withdrawals, per capita consumption, or as a percentage of total tobacco consumption, lends plausibility to this hypothesis. In any event, the divergence between production and withdrawals during the war years bears evidence to the dislocations attendant upon the war, and, in view of the disturbed conditions, it is not surprising that some irregularity in consumption figures should occur, whether caused by statistical complica-

83. U.S. Industrial Commission, *Report of the Industrial Commission on Trusts and Industrial Combinations,* Vol. XIII of the Commission's Reports (1901), 326.

84. See Figure XVI, p. 143.

tions, as I have suggested, or by actual changes in consuming habits.

The events of 1921 and 1922 require more attention, both because the changes in relative importance of cigarettes were more pronounced and because they were accompanied by variations in other products which are significant for our purposes. In 1921 the relative importance of cigarettes rose from 19.3% to 22.4% and fell back again to 21.7% in 1922. Reference to Figure XV will indicate that a rise in per capita cigarette consumption was accompanied by a fall in the consumption of all other tobacco products except smoking tobacco. The year 1921 was one of depressed incomes, and total tobacco consumption fell from 6.70 to 6.34 pounds per capita. The fall in consumption of those products which did decline is adequately explained by the income effect. The decline in plug on account of income was accentuated by its pronounced downward secular trend, which was already clearly apparent. The rise of cigarettes and smoking tobacco, however, suggests a substitution of products because of price differentials. A part of the rise in cigarette consumption reflects recovery from the (probably statistical) low levels of the year before, and another part, of course, reflects the persistent upward trend, but it seems quite plausible to suppose that part of the cigarette rise and most of the smoking rise represented a shift from the more expensive cigar to the less expensive pipe and cigarette.

In 1922 all products rose under the influence of expanding incomes. The failure of cigarettes to rise as rapidly as the other products, and the sharp recovery of cigars, suggests that, with higher incomes, some of the smokers who had shifted to cigarettes in the stress of 1921 had shifted back again to cigars.

The interproduct relationships, which we have guessed at in 1921 and 1922, can be clearly seen in the more violent readjustments of the Great Depression of 1929–32. All tobacco products, save smoking tobacco, fell sharply, the proportionate falls in cigars and chewing tobacco being the most pronounced as a result of strong downward trends and the high relative cost of the former. The rise of smoking tobacco reflects the growth of roll-your-own cigarettes as well as pipe smoking. In the depression, prices of cigarette tobacco were cut sharply and it was heavily advertised. Several firms developed simple machines for home cigarette manufacture. The possibility of obtaining adequate cigarettes at very much lower cost was strongly attractive in the midst of depression and provides us with one of the few undeniable evidences of price elasticity which we can find for recent years. The closeness of substitutes in this case no doubt accounts for the unusual result.

There has always been a considerable volume of this kind of cigarette, although an adequate measure is difficult to obtain. Cigarette tobacco like Bull Durham is also used to some extent for pipe smoking, while other kinds of pipe tobacco are also used in home-made cigarettes. Production

of the two kinds of tobacco is not reported separately, while internal revenue figures on cigarette papers are inadequate because of unknown wastage.

One estimate of the volume of roll-your-own consumption based upon cigarette papers is shown in Table 26. In 1930, 6.1 million pounds of

TABLE 26

Tax-paid Withdrawals of Factory-made Cigarettes and Estimated Roll-your-own Production, 1923–33 *

(Billions of Cigarettes)

YEAR	ROLL-YOUR OWN	FACTORY-MADE
1923	13.9	64.5
1924	11.7	71.0
1925	13.0	80.0
1926	12.8	89.4
1927	13.7	97.2
1928	12.7	105.9
1929	12.2	119.0
1930	13.5	119.6
1931	15.8	113.4
1932	35.4	103.6
1933	40.4	111.8

* U.S. Congress, House, Committee on Ways and Means, 73d Congress, 2d Session, Hearings before a Subcommittee, March 27–31, April 10, 1934, *Tobacco Taxes* (1934), p. 240; *DA,* 1937, pp. 94–98.

Bull Durham were sold compared with 15.4 million in 1932. Despite the subsequent recovery in national incomes and in consumption of manufactured cigarettes, Bull Durham cigarettes did not decline. In 1939, 19.3 million pounds were sold.[85] Apparently some who learned to roll their own in the depression discovered that they liked them that way. A *Fortune* survey in August, 1938, found 7.2% of the smokers questioned to be roll-your-own smokers.[86] Based on 1938 withdrawals, this would imply a total consumption of about 12 billion home-made cigarettes.

We have, then, evidence that in some circumstances there is an appreciable price elasticity of demand for cigarettes. Most of the decline in cigarette consumption in 1929–32 resulted from the fall in real incomes and the general consequent tendency to restrict tobacco consumption. The increase in roll-your-own cigarettes, however, resulted from a keen appreciation of the price differential between them and manufactured cigarettes.

The degree of price sensitivity which this indicates should not be overestimated, however. Between 1929 and 1932 the consumption of all tobacco products together fell by 1.17 pounds per capita. The shift in con-

85. *GX,* No. 638.

86. "Cigarette Preferences," *Fortune, 18* (August, 1938), 76.

sumption from other products to roll-your-own cigarettes was only 0.27 pounds per capita. The predominant reaction of smokers to the depression was not to change products but to reduce the quantity of consumption. The degree of price elasticity among products introduced by falling incomes was quite small.

It should be noted also that it is only in times of depression that this kind of market behavior is noticeable at all. Despite changes in prices and in advertising pressures, the relative importance of cigarettes stays close to the trend value. Despite the obvious possible substitutions and despite the occurrence of marked shifts in use with the passage of time, at any given moment consumption habits appear to be fixed. The various tobacco products do not in normal times behave in the market like substitute commodities. Within the range of our observations the elasticity of demand for cigarettes is no more perceptible than for tobacco products as a whole. What elasticity would be at other price levels or under other market conditions we have no way of knowing.

Rather different conclusions were reached in a study of cigarette demand made some years ago by E. H. Schoenberg.[87] His approach was to calculate the multiple regression of per capita cigarette consumption on real price and "time" from 1913 to 1931, and on real price, advertising, and "time" from 1923 to 1931. For these two periods Schoenberg derived the following equations:

$$X_1 = 692.9 - 22.6X_2 + 52.2X_3$$
$$X_1 = 1258.0 - 80.4X_2 + 47.1X_3 + 7.9X_4$$

where X_1 is the number of cigarettes consumed per capita, X_2 is the real price in dollars per thousand, X_3 is "time," and X_4 is advertising expenditure in millions of dollars.[88]

The mean elasticity of demand, based on the second equation was —0.68. For selected prices and selected years Schoenberg found elasticities ranging from —0.5 to —1.3. It appeared that demand was more elastic at high prices than at low and had been growing less elastic with the passage of time.

These changes in elasticity, however, are a meaningless reflection of the types of curves fitted and are without significance for the actual behavior of demand. Since the equations yield linear demand curves, it

87. E. H. Schoenberg, "The Demand Curve for Cigarettes," *Journal of Business, 6* (January, 1933), 15–35.

88. The coefficients of multiple correlation are 0.993 for the first equation and 0.998 for the second. Standard errors of estimate are 32.9 cigarettes and 8.9 cigarettes. Standard errors of the regression coefficients are 8.7 and 10.7 for price, 2.0 and 10.8 for "time," and 4.4 for advertising.

Consumption was based on tax-paid withdrawals. The entire population was used in calculating per capita consumption. The price series consisted of the list price of Camel cigarettes deflated by the Bureau of Labor Statistics All Commodity Wholesale Price Index (1926 = 100). Advertising expenditures were based on Bureau of Advertising reports of the newspaper advertising of the 4 leading companies.

necessarily follows that elasticity varies from point to point and is higher at high prices than at low. It does not require multiple correlation analysis to establish this relationship; it is true by definition. The decrease in elasticity with time is a similar formal consequence of linear demand and of the fact that consumption exhibits a more marked upward trend than price. With a straight-line demand curve, a given absolute price change is always associated with the same absolute quantity change. As price and quantity increase over time, the associated *percentage* changes decrease. If both variables exhibited the same logarithmic trend, the percentage changes in price and quantity would be equally affected, and elasticity would be unchanged. Since, however, per capita consumption increases more rapidly than price, percentage quantity changes diminish relative to the associated percentage price changes, and elasticity is necessarily lower. Schoenberg's conclusions are imposed on the data by the types of curves fitted. At the most, they measure a divergence in price and consumption trends but reveal nothing about the actual behavior of elasticity. Only the regression equations and the mean elasticities derived therefrom have any possibility of meaningful interpretation.

The regression equations themselves, however, are vitiated by weaknesses in assumptions and interpretation. Minor objections may be made to the statistical "significance" of some of his regression coefficients, but let us ignore such considerations and accept Schoenburg's equations at face value.[89] What is their real meaning? Granting significance, what do they signify?

A statistically measured association between two variables proves nothing about the causal relationship between them. Merely by calculating a relationship between price and consumption or advertising and consumption, we do not demonstrate that either price or advertising influences consumption. It may be that consumption influences price and advertising or even that no direct relationship whatever exists between them. The measured association may reflect necessary functional relationships between other variables than those measured.

The remarkable thing about Schoenberg's second equation is not that he finds a direct association of advertising and consumption but that the association is no more reliable than he indicates. If advertising does influence consumption, we would expect both to rise together. On the other hand, high sales volumes allow a high level of advertising, and again the two should rise together. As we shall see, cigarette advertising

89. In the second equation 4 variables are fitted to only 9 observations, and these 9 are not completely independent. This is a practical guarantee of high correlation, whether or not real relationships exist. The regression coefficient of consumption on advertising is less than twice its standard error and consequently under suspicion. In the first equation the price coefficient is less than 3 times its standard error. In the second equation, however, the regression coefficient of consumption on price is 8 times its standard error and hence probably significant in spite of the large number of variables.

is undertaken for other reasons than to increase total consumption. As we have already seen, there is reason to think that advertising itself does not affect total consumption. There is nothing in Schoenberg's calculations or analysis to make us believe that he has measured the influence of advertising on total consumption. In so far as he has measured anything at all, and the large standard error renders it doubtful, he has measured the dependence of advertising budgets on the prosperity of the industry.

There is a similar possibility of measuring inverse causation between price and quantity. High prices reduce quantity if the demand curve does not shift; price affects quantity by a movement along the demand curve. But a shift in the demand function may itself change prices by occasioning a movement along the supply curve. If we measure prices and consumption without additional information we cannot be sure whether we obtain a measurement of a fixed demand curve, a fixed supply curve, or the resultant of shifts in both. The simple distinction between quantity demanded and the demand schedule, which proves such a trap for the beginning economics student, is also a serious threat to statistical demand studies unless proper precautions are taken.

It is almost certain that Schoenberg's results reflect shifts in the demand curve rather than movements along the curve. We have noticed that tobacco consumption and cigarette consumption per capita move over time with great regularity. In so far as these shifts can be removed by a linear trend, they do not vitiate Schoenberg's findings. But we have also seen that tobacco consumption is affected by real incomes, and cigarette consumption is usually affected in about the same proportion. But this means that the demand curve shifts about its trend position as the national income changes and that, at least in part, Schoenberg's results measure the effect of these shifts.

Figure XVII is reproduced from Schoenberg's article. The high degree of correlation between consumption and price obviously results from the two extreme values of 1930 and 1931 when real price was very high and consumption was unusually low. But these were years of depressed real income and this was undoubtedly the significant causal factor. High real price and low real incomes were closely associated in these two years. In measuring the correlation of price and consumption, Schoenberg implicitly measured the relationship between income and consumption.

Schoenberg states that his correlations were not improved by introducing an index of earnings as an additional variable. This is understandable, since he had already measured this influence through other variables with which income was correlated. The fact that he deflated his prices introduced some necessary correlation between prices and income throughout the period. The fortuitous association of high cigarette

prices and depressed income was of overwhelming importance in establishing the price-consumption relationship, especially in the short period. In the longer period, 1930 and 1931 were less important, but the relationship was also much less close.

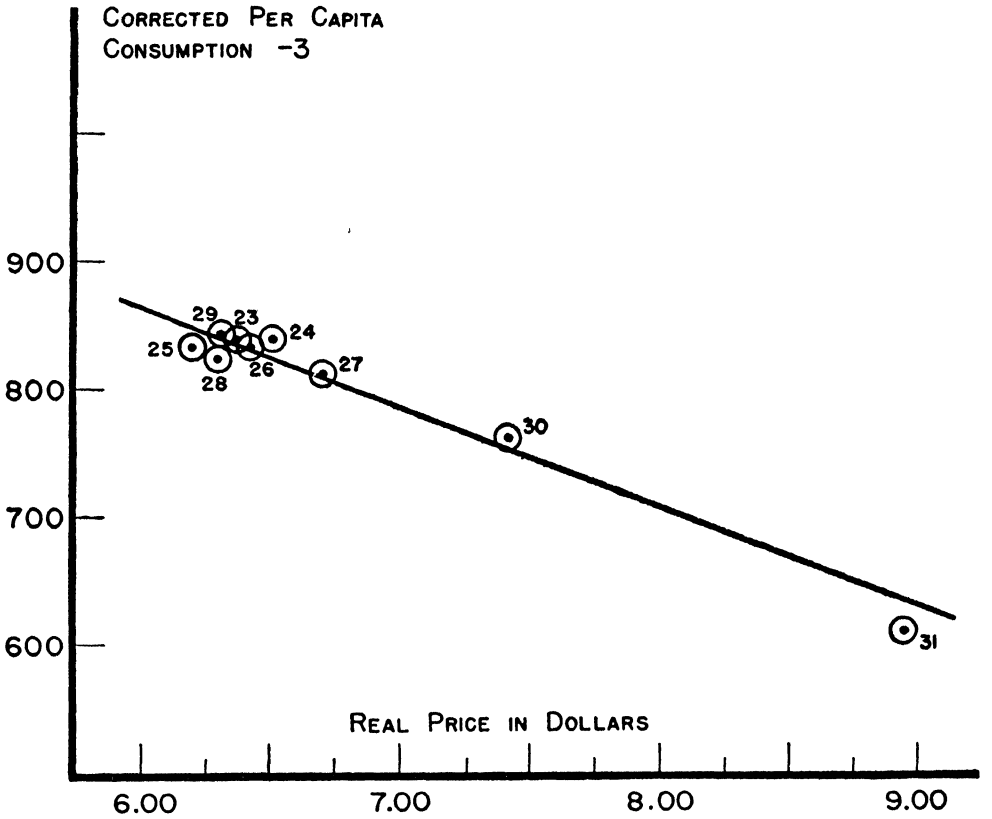


FIGURE XVII. Partial regression of per capita cigarette consumption on real price, 1923–31.

SOURCE: E. H. Schoenberg, "The Demand Curve for Cigarettes," *Journal of Business, 6* (January, 1933), 27.

THE DEMAND FOR INDIVIDUAL BRANDS

Brand Elasticity: Product Similarity

The massive insensitivity of total cigarette consumption to changes in price and advertising contrasts strongly with the behavior of individual brands. Although brand preferences and loyalties exist, brand sales are much more variable than are total cigarette sales. This is clearly seen from Figure XVIII, where national tax-paid withdrawals of small cigarettes are compared with brand sales. The latter are clearly subject to much more violent year-to-year fluctuations. Chesterfield sales exhibit

the greatest stability of the three, but even for this brand consumption is more variable than for all cigarettes. The leading brands not only are possible substitutes for each other, but actual switching from one brand to another takes place with considerable frequency.

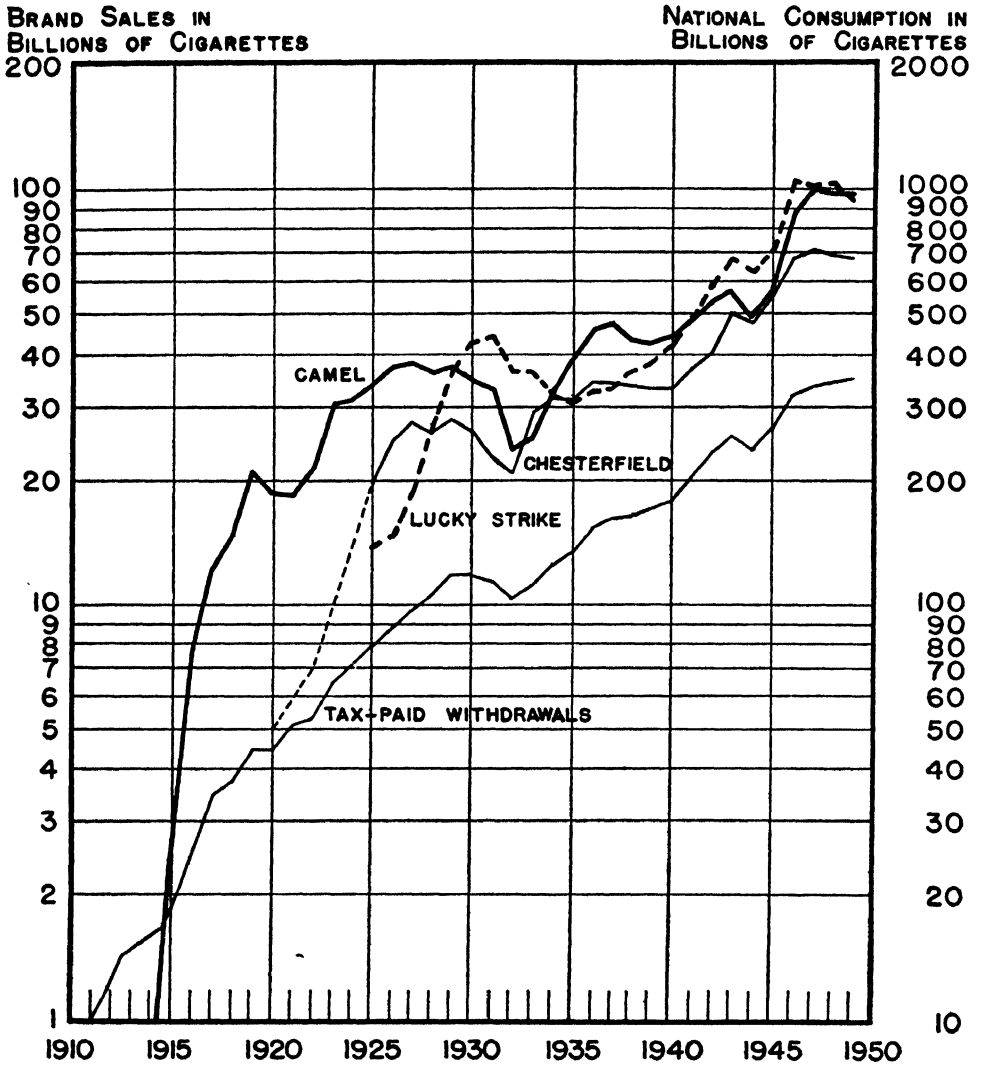


FIGURE XVIII. Variations in brand sales and in national consumption, 1912–49.

SOURCES: *DA; DX,* No. 1236; Table 18, above, p. 88.

Changes in brand sales, however, apparently depend on new smokers and on a minority of smokers who happen in any given year to be unsettled in their preferences. A survey by the Axton-Fisher Tobacco Company indicated that most smokers were loyal to one brand for five to six years and that about 40% occasionally bought a package of ciga-

rettes other than their favorite brand.[90] A *Fortune* survey of smoking habits found the degrees of loyalty indicated in Table 27.

TABLE 27

Proportions of Smokers Questioned in Survey Who Had Smoked the Same Brand for Certain Numbers of Years *

YEARS	PER CENT
1	12.6
2	12.9
3	10.0
4	5.9
5	10.1
6	5.9
7	2.0
8	5.4
Over 8	31.0
Don't know	4.2

* "Cigarettes," *Fortune, 12,* No. 1 (July, 1935), 114.

Since all relatively new smokers of necessity fall in the category of those who have been in the same brand for only a short time, these figures overstate the proportion of smokers who are open to a change, or at least of those smokers who will admit the instability of their preferences.

The extent to which this moderate substitution among brands implies a sensitiveness to changes in price and advertising is difficult to determine with any quantitative precision. The standard brands have maintained identical prices during most of the period for which data are available, and we are almost wholly debarred from finding out what interbrand price elasticity would be if prices varied. There are, however, certain general considerations which lead us to think that both the price and the advertising elasticities of particular brands are high, and there are a few instances in the actual sales history of the leading brands which seem to bear this out.

To the extent that one brand of cigarettes is the same as another, and to the extent that consumers realize this fact, we would expect brand sales to be highly sensitive to price. A lower price on any brand should lead to an indefinite increase in its sales at the expense of other brands, and both the scope and rapidity of this increase should be limited only by the spread of knowledge, or possible considerations of convenience, or other factors which cause the subjective cost to the consumer to differ from the apparent price. On the other hand, real or supposed differences between brands might be expected to render brand sales moderately insensitive to price.

90. "One Appeal for Four Years—and Still at It," *Printers' Ink Monthly, 25,* No. 1 (July, 1932), 62.

The first question which arises, then, is whether the various brands do exhibit real differences among themselves. As we have just seen, smokers are often loyal to a favorite brand for a long period of time, and many of them will state categorically that they have definite likes and dislikes which result from the character of the cigarette. If smokers hold to this belief consistently and act upon it, it may make no difference in the results whether the preferences are founded on self-deception or not. However, a knowledge of the existence of real differences in the cigarettes themselves would affect our judgment of the weight to be accorded the statements of the professed partisan, both as an explanation of his present conduct and as an indication of the probable strength and duration of the preferences which he claims.

Various "blindfold" tests have cast doubt on the expressed preferences of smokers, since they seem to indicate that smokers cannot distinguish one brand from another when they are prevented from looking at the label. Some of these tests have been conducted without adequate statistical care, and the results may consequently be vitiated. One thorough and extensive set of tests, however, was run at Yale University at the request of the Department of Justice, and, within its own terms, does not seem open to criticism.[91] These tests were conducted by C. I. Hovland of the psychology department on some 285 subjects from New Haven representing a thorough cross section of the city's sex, age, and occupation groups. Only confirmed smokers were tested. They were not blindfolded but were given the cigarettes with the labels down and were checked to see that they did not look directly at the cigarette. As much time was given as the subject required, and a second cigarette of the same kind was provided if requested. Most subjects required only one cigarette and made up their minds after a few puffs.

In the first test, given to 190 subjects, 7 cigarettes of different brands were presented in random order for identification. The subject was informed in advance what brands would be included and that there were to be no duplicates. The results of these identifications are presented in Table 28. A further analysis of the results was made to determine how frequently the subjects correctly identified the brands which were stated to be their favorites. If no power to discriminate existed and if selection were determined purely by chance, 1 in 7, or 14%, of the "favorite" cigarettes offered should have been properly identified. In fact, successful identification was made in 20% of the cases.

A second test was conducted with 95 subjects who were asked to state their favorite brand and one which they disliked or were sure they could distinguish. Each subject was then given 8 cigarettes of each kind in random order and asked to identify them. By chance, 8 cigarettes on the

91. *TP*, pp. 5149–5194, C. I. Hovland.

TABLE 28

Results of Brand Identification Test with Seven Brands and 190 Subjects, 1941 *

Identified as	Brand Smoked						
	Avalon	Camel	Chesterfield	Lucky Strike	Old Gold	Philip Morris	Twenty Grand
Avalon	*28*	23	21	28	*22*	24	24
Camel	33	*39*	29	28	32	23	31
Chesterfield	21	23	*31*	42	42	*27*	23
Lucky Strike	*26*	24	33	*34*	23	31	*28*
Old Gold	*27*	28	32	25	*24*	*23*	30
Philip Morris	20	*26*	24	14	24	*40*	35
Twenty Grand	35	*27*	20	19	23	*22*	*19*

* *GX*, No. 661.

average should have been identified correctly in this test. The actual average number of correct identifications was 8.66.

The results of Hovland's tests failed to show any significant power of the smokers to distinguish one cigarette from another. The distribution of choices was very little more accurate than the results one would expect from tossing a coin, and such margin of superiority as existed was only what was to be expected from the operation of random errors. Surprisingly enough, smokers not only failed to distinguish one standard brand from another but also failed to identify the cheap 10¢ cigarettes when smoked in competition with the more expensive.

These results, though valid within the limits of the test, need to be treated cautiously before being given wider application. The first general point to be noted is that the test failed to establish a power to discriminate between brands, but it did not therefore prove that the power does not exist. It is a characteristic of statistical tests that the null hypothesis is never proved; it can only be disproved. In this case, the null hypothesis under test was that no power to discriminate exists. The test failed to prove this hypothesis wrong but did not therefore prove it right. The most that can be said is that the test results are consistent with the supposition that smokers are without capacity to discriminate beween brands on the basis on which the test was conducted.

A more specific and more serious objection to the test arises from the abnormal smoking conditions and taste criteria which it erected. Only one cigarette of a given kind was smoked at a time and that for only a few puffs. It is true that more time was allowed, but smokers did not avail themselves of it. The nervous tension of smoking under test and the prohibition of the normal travel of the eyes may have had some effect on the results, although this was probably less damaging than the con-

ditions of the usual blindfold test, where the smoke cannot be seen at all. The most serious weakness of the experiment, however, was that it tested only immediate taste sensations, and these are by no means the only or even the most important elements of smoking satisfaction. Anyone who smokes at all frequently is more concerned with his reaction to the repeated smoking of a particular brand. The taste of the first cigarette is less significant than the taste of the twentieth on the same day, and the amount of irritation or discomfort after a protracted smoking period may be more important than either.

There is good reason to believe that significant differences in these respects do exist between brands, especially between the standard brands and the so-called economy brands. We have not only the expressed opinions of smokers on which to base our judgment but also evidence, presented in Table 29, as to the quality of tobacco which is used in these two groups.

TABLE 29

Weighted Average Leaf Costs, by Type of Cigarette, Six Standard and Five Economy Brands, 1941–42 *

(Dollars per Thousand)

	1941	1942
Standard brands	1.0515	1.1516
Economy brands	0.4804	0.4906

* *OTC*, p. 6.

Economy brand tobacco was less than half as expensive as standard brand tobacco in these two years. Such cost differences must imply a significant difference in smoking quality unless we are to impute to the major producers complete ignorance of or indifference to their own welfare.

Real differences undoubtedly also exist between different types of cigarettes. Straight Turkish tobacco supplies a more full-bodied and aromatic smoke than do the standard domestic and Turkish blends, while straight Virginia cigarettes, such as Benson and Hedges' Virginia Rounds seem to the writer to have a distinctly different flavor. So far as I am aware, cigarettes of these different genera have not been included in any published results of "blindfold" tests, so that direct proof on this level is not obtainable. However, the different origins of the tobacco used, the different costs which those tobaccos require, and the swing in public favor away from both the straight Turkish and the straight Virginia brands are suggestive of actual differences in the product. American Tobacco after the dissolution had several previously popular Turkish and straight Virginia brands, yet only the new Lucky Strike blend was able to make progress. Pall Mall was revived in the thirties, but only after its old

straight Turkish tobacco was replaced by a new blend similar to that of the standard brands.

The question whether the standard brands differ significantly among themselves is, of course, the most important one for an explanation of industry behavior, and it is also the question to which it is most difficult to give a confident answer. The testimony of the blindfold tests is unanimously against the existence of such differences. However, as we have seen, the tests themselves are suspect. If Hovland's tests (and his are the best of the lot) were not sufficiently sensitive (or not directed to the right criteria) to detect the marked differences in quality between the standard and the economy brands, it is not to be expected that they would distinguish among standard brands with much the same levels of tobacco cost and quality.

There is not among the standard brands the same positive evidence with which to impeach negative test results that existed between the standard and economy brands. There are, however, some suggestive facts. The blends used in the standard brands, though similar, differ somewhat from each other. Camel, Lucky Strike, and Chesterfield cigarettes are composed of blended Virginia, Burley, Turkish, and Maryland tobaccos. Philip Morris contains a small quantity of Latakia tobacco in place of Maryland,[92] and Old Gold is also supposed to contain no Maryland.[93]

There is some evidence that the blend proportions of the Big Three are not identical. Thus the leaf used by Liggett and Myers in the manufacture of all cigarettes from 1931 to 1939 consisted of 70% Virginia, 17% Burley, 9% Turkish, and 4% Maryland tobacco.[94] Since Chesterfield sales accounted for 87.5% of all cigarettes produced by the company during that period, these proportions are not far from the Chesterfield blend proportions. The other Liggett and Myers cigarettes included the heavily Turkish Fatima and the pure Virginia Piedmont, as well as a number of other straight Virginia cigarettes, so it is likely that the proportion both of Virginia and of Turkish tobaccos is slightly lower in the Chesterfield blend than these figures would indicate. Even if all other cigarettes were made wholly of Virginia tobacco, the percentage of Virginia tobacco in the Chesterfield blend could not be less than 65%. On the other hand, Virginia tobacco makes up about 50% of the Lucky Strike formula,[95] while the president of Liggett and Myers expressed the opinion that, when first introduced, the Camel "was a cigarette in

92. *In the Matter of Philip Morris & Co., Ltd., Incorporated,* 32 F.T.C. 278 (1940).

93. Ray Hurley and S. H. DeVault, *Production, Marketing and Consumption of Maryland Tobacco,* Maryland Agricultural Experiment Station, Bulletin No. 382 (College Park, July, 1935), p. 253.

94. Computed from *GX,* No. 424.

95. *TP,* p. 3381, J. A. Crowe.

which burley largely predominated and it carried quite a substantial amount of sweetening." [96]

A low degree of actual distinction among brands is indicated by the way in which they developed. When Camel was first introduced, it differed markedly from existing cigarettes and was greatly preferred by the smoking public. The natural reaction of competitors was to reply with blends as nearly like the successful blend as possible. Of course, any improvement in the answering brands would be most welcome to their makers, and they have since claimed that this was uppermost in their minds and that they were in fact successful in achieving such improvements. It is clear, however, that the pressing competitive necessity was to secure a brand *comparable* to the overwhelmingly successful Camel and that improvements or differences of any kind were of secondary importance.

The development of close imitations of successful competing brands is not only indicated by the competitive necessities but is also an old and familiar practice in the tobacco industry. Chewing and smoking tobaccos have long been put out in hundreds of different brands. Some have been aggressive new developments attempting to attract additional consumers. Whenever one of these has been successful, it has been the practice of competitors to put on the market other brands as nearly identical with the successful brand as possible. E. A. Darr, the Reynolds sales manager, testified at Lexington as follows:

A . . . We had a lot of trouble getting the Sales Department ideas across to the Manufacturing Department as to the type that we wanted. They had never made a shredded tobacco, and we experimented for a year or more, trying to get what we thought was right, and we finally put out something—Top, a brand that we considered just as close as we could get it to brands that met with consumer acceptance.

. . . . . .

Q In trying to arrive at this blend, did you buy packages of the competing brands and have those analyzed and studied?

A Yes, sir.

Q You say that the investigation went on for a year or more before you got the proper blend?

A Yes, sir. The Manufacturing Department presented a mixture and said this was better than anything on the market, and I told them finally that I would not ask for that, that I just wanted something that was good and we would take care of putting it on the market from the sales end. In other words, I wanted it close, or nearly identical with the brands that were the biggest sellers, that I could get it.[97]

96. *TP*, p. 10546, J. A. Andrews.
97. *TP*, pp. 11396–11397.

After the dissolution, which left the successor companies with partial monopolies of particular branches of the cigarette industry, each company sought to rebuild its areas of weakness by developing new brands closely imitating the most successful rival brands.[98] The response to the success of Camels was of the same sort, and it is clear that, in both intent and accomplishment, Lucky Strike and Chesterfield were very similar to Camel, if not identical with it.

Still another indication of effective similarity among brands is provided by the marked changes in brand characteristics which have occurred in the past 30 years. In the 1920's there was a considerable expansion of leaf tobacco production in Georgia and Florida, and the lighter and milder leaf from these regions was incorporated in the standard brands.[99] The consequent changes in blend and the continued dominance of the Big Three suggest either that there was close adaptation to consumers' tastes (which would imply greater similarity among brands) or that preferences are not closely dependent upon brand characteristics. In either event, it seems likely that physical distinctions are not important.

Considerations of competitive necessity, of the history of brand development, and of the usual results of taste tests lead us to expect brand characteristics to be very similar. On the other hand, the competitive drive for a better product and the differences in blend proportions lead us to expect some difference in the smoking characteristics of the various brands. How great the differences and similarities are is difficult to measure with any precision. Certain incidents of market behavior may provide the needed clue.

Brand Elasticity: Market Experience

The quality differences between classes of cigarette are reflected in different retail prices. Thus the economy brands before the war usually sold at retail for 3¢ a pack less than the standard brands, while special brands like Fatima, Marlboro, or Virginia Rounds sold for 2¢ or 3¢ more. Some straight Turkish brands were several times as expensive as the regular brands. These differentials persisted for years without any marked shift in sales from the more to the less expensive brands and indicate a marked inelasticity for certain kinds of cigarette. Not all of the price differential reflected differences in smoking quality. Appearance and fancy packaging were an important part of the attraction of high-priced brands, while advertising appeal was another but immeasurable factor in consumer preferences for all price classes.

Although these factors combined to make the demand for types of cigarette quite inelastic, cross elasticity of demand sets maximum limits

98. See p. 70.
99. Robert, *Story*, p. 240.

to the price differentials which can exist without a large shift in sales. In 1931 a rise in standard brand prices and a fall in tobacco costs allowed the economy brands to sell at a 4¢ or 5¢ lower retail price. The shift in sales which followed raised the less expensive brands from negligible proportions to 23% of the total national sale of cigarettes. This was a period of low consumer incomes, and the cross elasticity of demand between the two price levels was probably greater on that account than it would ordinarily be. However, the major producers have since considered any differential of more than 3¢ as unfair and discriminatory and have tried whenever possible to keep the price differences at that level.[100] Presumably this means that a larger difference would lose business for the standard brands.

At 3¢ there was little change in the years prior to the war either toward or away from the cheaper brands. During the war short crops of tobacco and the rapid exhaustion of existing stocks raised tobacco prices sharply. The imposition of price ceilings raised the price of lower leaf grades relative to the market average. The economy brands were forced to higher prices, and with a differential of 2¢ there was a marked tendency of consumers to shift to the standard brands. With expanded incomes, 2¢ or even 3¢ was not enough to hold buyers to the cheaper brands.

During the war shortage people smoked whatever they could get, and this staved off disaster for the minor firms. For a short time, indeed, some of the smaller companies made hay (almost literally) by manufacturing cigarettes at the regular 15¢ price in the knowledge that anything produced would be bought. The economy brands themselves all but disappeared, and there has not since been enough cheap tobacco to allow a low enough price to attract consumers in the present inflated state of the national income.

There are fewer data available on which to base a judgment as to the cross elasticity of demand among the standard brands themselves. For most of the period in which the present major brands have been in existence, they have sold at identical retail prices. This may be taken as an indication that brand demand is so highly elastic that identical prices are required. While this is plausible, it does not rise to the dignity of proof, for identical prices are equally compatible with inelastic demand, especially if, as many people suspect, collusion is present.

There have, however, been three occasions on which different retail prices prevailed among the Big Three, and the reaction in two cases indicates a high degree of elasticity in brand demand.

On October 1, 1918, the net wholesale price of Lucky Strike cigarettes was raised to $6.77 per thousand. Prices of Camel and Chesterfield were unchanged at $5.29. On November 11 Lucky Strike prices were cut back

100. *TP*, p. 11456, E. A. Darr; p. 10302, G. W. Whitaker.

near the level of the other two. The effect on monthly sales is shown in Table 30.

TABLE 30

Lucky Strike Sales and Share of the Market, August, 1918–January, 1919 *

Month	Lucky Strike Sales Millions of Cigarettes	National Tax-paid Withdrawals Millions of Cigarettes	Lucky Strike Share of the Market Per Cent
August, 1918	414.8	3,442	12.1
September	406.4	3,403	11.9
October	321.8	3,027	10.6
November	279.8	2,987	9.4
December	220.1	2,788	7.9
January, 1919	188.7	3,079	6.1

* *TP*, pp. 9841–9842, A. L. Janson; *DA*, 1937, pp. 91–92.

In four months the relative importance of Lucky Strike cigarettes declined by half. The price differential amounted to 3¢ a pack and was in force for only five weeks. It is not apparent what other influences may have been at work. If this development resulted from price differences alone, it bespeaks a very high degree of demand elasticity.

In March, 1922, prices of Lucky Strike and Camel were cut from $6.62 to $6 net. Chesterfield reduced only to $6.35. Retail prices were a cent higher than those of the other brands, and sales declined. At the end of two months Liggett and Myers began giving an allowance off invoice of 30¢ a thousand. This reduced the wholesale differential to 5¢, which was not enough to be reflected generally in a difference at retail.[101]

On July 30, 1946, Chesterfield net prices were briefly raised from $6.25 a thousand to $6.45. Camel and Lucky Strike were unchanged, and in two weeks Liggett and Myers rescinded their increase. In the absence of information as to the effect on Chesterfield sales, one cannot draw conclusions regarding the elasticity of brand demand. In such a short time the effect was probably small, especially as many retailers did not raise the price of Chesterfield relative to the other brands.[102]

A somewhat different situation is indicated by the history of Philip Morris and Company. The earlier brands of this company, Marlboro, English Ovals, Philip Morris Cambridge, and Philip Morris Oxford Blues, were special quality cigarettes. When the new Philip Morris English Blend was introduced in 1933, it was designed to compete in the principal price class but was set at a higher wholesale price and retailed generally for 15¢ straight, while the other standard brands were at 13¢ a pack or 2 packs for 25¢. The early and critical growth of the brand was

101. *TP*, pp. 10329–10330, G. W. Whitaker; pp. 10554–10555, J. W. Andrews.
102. *New York Times*, July 31, 1946, p. 29, cols. 5, 6; October 8, 1946, p. 17, col. 6.

achieved under an adverse price differential, and it was not until the war that Philip Morris sold uniformly at the same retail price as the other brands. That price identity was ultimately established is evidence that demand, when developed, is elastic, but the ability to make initial progress at a higher price indicates that there is an element of consumer preference which withstands price appeals and that over at least some regions of the demand curve there is a degree of inelasticity even for comparable brands.

In the case of Philip Morris the higher price was in part offset by a wider margin to distributors. The net price was $6.04 a thousand compared with $5.38 for the standard brands at a time when the retail prices stood at 15¢ and 13¢ a pack. Distributors thus enjoyed an extra markup of nearly 1¢ a pack on Philip Morris and were consequently encouraged to give it special preference, conspicuous display, etc. For a new brand, such cooperation was important, and, in part, the Philip Morris price differential reflected a belief that dealers' demand was more elastic than the demand of the ultimate consumer.

This experience of Philip Morris throws light upon the nature of the demand for individual cigarette brands. In some small measure the ability of this brand to progress against a price differential reflects quality differences in the product itself. To a much greater extent it reflects advertising pressure and the presence of elements of indefinable prestige. Philip Morris advertising was extensive and skillful, and the history of the company allowed it to "trade down" on the reputation of the expensive Turkish cigarettes previously produced.

Under these circumstances the price differential itself probably served as a net advantage rather than a net handicap. Higher unit profits made available advertising funds in greater proportion to the early volume of sales. The higher price may also have served as a direct incentive to sales by implying high quality. The feeling that, if an article is expensive, it *must* be good has been an important factor in price class demand in other commodities and was probably of great importance in the early growth of Philip Morris. The abandonment of the price differential by Philip Morris indicates that with brand maturity, with an expanded market, and with public acceptance as the equivalent of the older standard brands, elasticity has increased, and the stimulating effect of prestige is no longer enough to offset the restrictive effect of added cost to the consumer.

Such factors probably continue to be important in the case of those brands which sell at a high price to those sections of the buying public most susceptible to snob appeal. The inverse price reaction must also be of importance in maintaining demand relationships between the economy and the standard brands. Even though real quality differences exist, the market of the cheaper brands is restricted not only by those who buy and

disapprove but also by those who never sample them at all because the lower price suggests that quality will be found inferior.

With these exceptions, the major cigarette producers have always maintained or sought to maintain identical retail prices. They claim that it is necessary, that any price differential would be disastrous to the higher priced brand. While the experience of Philip Morris indicates that this is not always so, the later behavior of this company and the experiences of Lucky Strike in 1918 and Chesterfield in 1922 seem to bear them out. It seems undeniable from what we know of brand similarity that the elasticity of brand substitution is very high and that preferences are not sufficiently strong to support different retail prices among the standard brands without serious effects on sales volume.

The Influence of Advertising on Brand Demand

The discussion of the preceding sections suggests a high sensitivity of brand sales to advertising pressure. The physical characteristics of the standard brands are nearly identical and their individual demands are highly elastic, yet despite close similarity, consumers are not indifferent to the choice of brands but show enduring loyalties based upon very slight physical differences or upon irrational grounds. The irrational element suggests that brand demand should be highly sensitive to persuasive advertising. The ability of advertising to influence buying behavior through nonlogical and subconscious appeals has been demonstrated with many types of products, and cigarette brands seem especially susceptible to this kind of market pressure.

One effect of advertising may be to decrease the elasticity of demand for the product advertised. By conveying an impression of superior quality or glamorous association, consumers may be rendered sufficiently loyal to overlook small differences in price. This influence was clearly apparent in the early history of Philip Morris. So, too, the demand for the standard brands as a group is quite inelastic, and while this results in part from quality differences, it also reflects the influence of persuasive advertising. On the other hand, the very expensive brands which cater to small inelastic markets do not advertise heavily, and we have the paradoxical situation that it is precisely between those brands which advertise most heavily that price cross elasticity is the highest. Heavy expenditures are not effective in insulating the standard brands against the effects of price differences within their own class.

The paradox, however, is only apparent, for the effect of advertising in reducing the elasticity of demand among comparable brands is of little importance in the cigarette industry. Advertising serves the interests of the manufacturers, not by making price cuts ineffective but by making them unnecessary. The principal function of cigarette advertising is as

a competitive weapon among the major producers. Advertising permits the recruiting of new customers and the retention of old ones by the pressure of publicity rather than by the cut and parry of competitive price reductions, although there is every reason to believe that the latter would be a highly effective way of shifting customers among the different brands.

Of course it is almost never true that advertising acts solely to decrease elasticity of demand. For this to happen would imply that a given price cut would gain fewer customers if the product were advertised than if it were not. It is difficult to think of a case where so peculiar an effect would follow. The effect of successful advertising must be to increase brand sales at all possible prices, and whatever effect it may have on the elasticity of the firm's demand curve, the curve itself must be shifted to the right. In the cigarette industry any effect on price elasticity among the standard brands is immaterial in view of the fact that identical prices are maintained at all times. The service of advertising is to increase the volume of sales at whatever the going price happens to be. Even in its effects on the economy brands, standard brand advertising is probably more important in diminishing their share of the market than it is in diminishing the percentage sensitivity of that share to price reductions.

A meaningful quantitative measure of the effectiveness of advertising is difficult to secure, but suggestive information is presented in Figures XIX, XX, and XXI, and in Table 31. Brand sales and advertising exhibit a similar degree of variability and in general follow similar temporal patterns. Large advertising outlays and large sales volumes go together, and the percentage of total advertising contributed by each firm is roughly equivalent to the percentage of the total business which it receives.

These relationships are suggestive rather than conclusive, however, for sales volume and advertising outlays depend upon each other in complex ways, and it is not possible to separate out any single line of causation. Presumably large advertising outlays bring large sales, but the quality of advertising ideas may produce disproportionately good or poor effect, or the effect may be canceled out or reversed by the answering outlays of competitors. Moreover, brand sales reflect not merely current advertising activity but past sales and past advertising. On the other hand, sales influence advertising outlays through the resources made available and through the incentives to use them. Large sales make possible increased advertising. A good market for cigarettes may indicate that advertising expenditures would be productive, but a good competitive position may encourage a relaxation of pressure. Conversely, advertising may be used defensively to repair the situation when sales fall off, but also in depressed periods when consumption declines and the supply of new and impressionable smokers is restricted, advertising may

prove unproductive and may be curtailed. Thus advertising may increase or decrease when sales rise, according to the particular situation and the decision of the executives, and there is ample evidence that the managers of the Big Three have reacted differently to brand prosperity and depression. Sales volume may exhibit a direct or an inverse correlation with advertising outlays quite consistently with high advertising efficiency, and

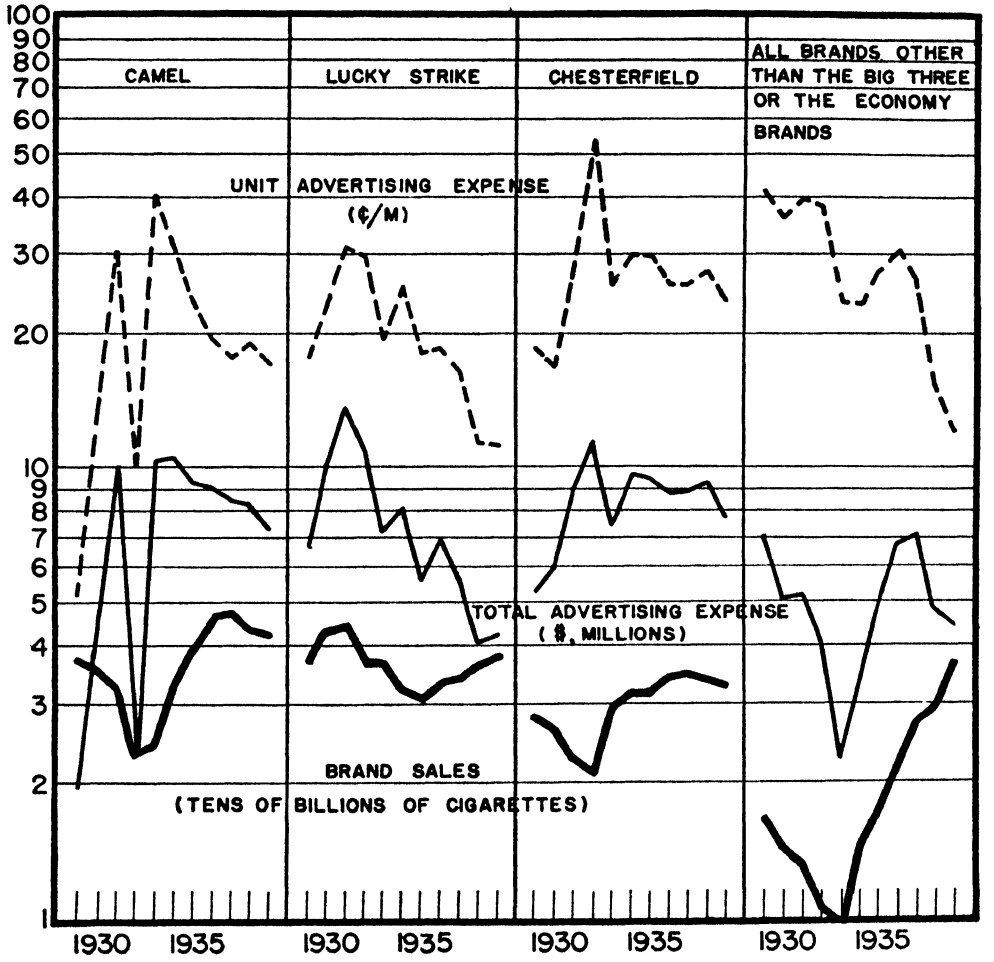


FIGURE XIX. Traceable advertising and brand sales, 1929–39. Advertising is estimated expenditure for space and time.

SOURCES: *DA; DX,* No. 1269; N. H. Borden, *The Economic Effects of Advertising,* p. 229; Table 18, above, p. 88.

accordingly we cannot secure a measure of that efficiency by a simple observation of market movements. We must rely on indirect indications of the effectiveness of advertising.

We may observe the confidence of industry leaders in the value of advertising and their willingness to make large outlays, and we may suppose that they know their own self-interest and act accordingly. This is



FIGURE XX. Camel, Lucky Strike, and Chesterfield: sales and traceable advertising as percentages of the industry total, 1929–39.

SOURCES: See Figure XIX.

not conclusive, however, for it is not certain beyond a doubt that executives know their own business, and while advertising undoubtedly is an effective selling force, it may be more efficient in selling large outlays to businessmen than it is in selling the product advertised.

The nature of the product itself is the best proof of advertising efficiency. A high degree of physical similarity among brands and the existence of loyalties based upon intangible differences and irrational appeals provide an obvious opportunity for persuasive advertising and suggest that it must be highly effective. Moreover, there is the observed instability in brand sales as new customers are attracted first to one and then to another brand, and as unsettled smokers switch back and forth.

Some of the switching from brand to brand reflects simple fickleness. The irrational element in brand taste not only reacts to advertising pressure but also possesses a dynamic of its own. Considerable fluctuations between types of cigarette and between individual brands occur even in the absence of advertising pressure and without assignable reason. Thus

TABLE 31

Traceable Cigarette Advertising and Brand Sales, 1938–39 *

	1938			1939		
Brand	Sales Millions of Cigarettes	Traceable Advertising Dollars	Expense per Thousand Cents	Sales Millions of Cigarettes	Traceable Advertising Dollars	Expense per Thousand Cents
Avalon	4,282	147,266	3.4	5,448	596,534	10.9
Camel	43,735	8,361,753	19.1	42,772	7,417,075	17.3
Chesterfield	33,736	9,279,286	27.5	33,073	8,112,309	24.5
Domino	2,090	60,589	2.9	2,261	83,349	3.7
Fatima	353	101,770	28.8	346	21,964	6.3
H. Tareyton	994	98,318	9.9	970	17,035	17.6
Lucky Strike	36,370	4,094,596	11.3	38,347	4,213,988	11.0
Marlboro	250	56,097	22.4	243	19,683	8.1
Marvel	5,267	208,838	4.0	5,802	176,322	3.0
Old Gold	5,905	1,678,499	28.4	5,662	1,152,058	20.3
Pall Mall	593	282,268	47.6	1,592	359,814	22.6
Philip Morris	9,271	1,345,733	14.5	11,094	1,505,776	13.6
Raleigh	4,844	286,389	5.9	6,908	487,364	7.1
Sensation	2,527	53,589	2.1	4,400	181,770	4.1
Twenty Grand	4,057	147	——	3,729	48,525	1.3
Wings	4,182	10,086	0.2	3,072	70,521	2.3

* N. H. Borden, *The Economic Effects of Advertising* (Chicago, Irwin, 1942), pp. 230–231; *TP*, p. 3864, B. J. Sanders; *GX*, Nos. 293, 437, 638, 702; *DX*, Nos. 1236, 1265–1269.

Herbert Tareyton cigarettes have enjoyed a considerable revival in recent years without much advertising promotion. Yet the changes in the sales of the major brands are too great to be satisfactorily explained in this way. Advertising pressures are the only influences regularly at work to change the position of the market among the major brands, and they

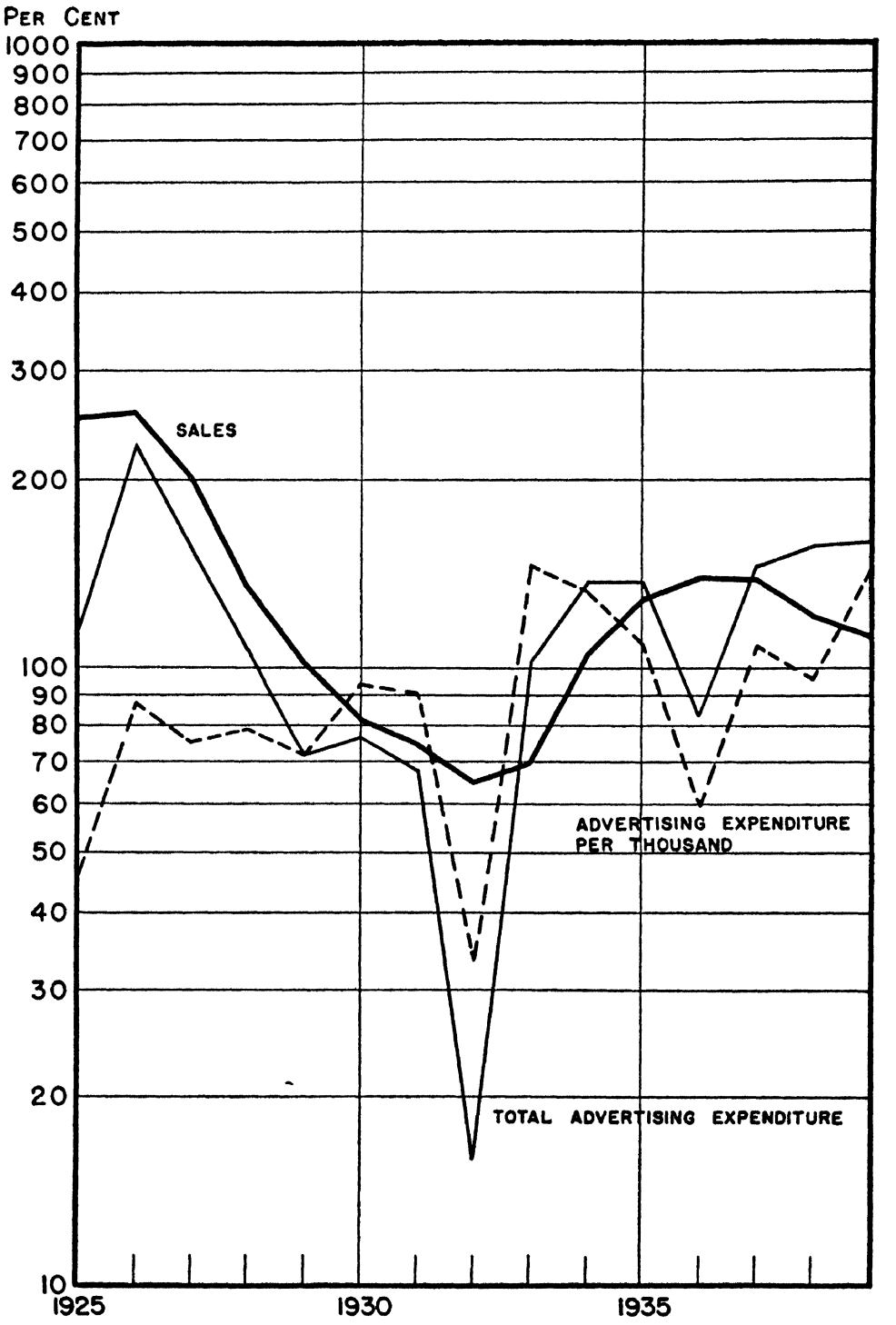


FIGURE XXI. Brand sales and advertising expenditures: Camel as percentage of Lucky Strike, 1925–39. Advertising expenditures are for all company products and include free goods.

SOURCES: *TP*, p. 5730, J. R. Coon; *DX*, No. 1260; Table 18, above, p. 88.

must be credited with most of the variation which exists. Since opposing campaigns partly cancel out, observed instability measures only what we may call net advertising pressure and so understates the marginal efficiency of advertising as measured by the effect which a change of one firm's advertising will have on its own sales. Although we cannot get a precise measure of the advertising elasticity of demand, there can be no serious doubt that this elasticity is very high and that advertising expenditures are an extremely effective method of applying market pressure.

Equally as important as the effectiveness of advertising outlays in shifting brand demand is the variation in that effectiveness among firms and for the same firm at different periods of time. Many of the differences in advertising expenditures per thousand, as shown in Table 33, reflect varying stages in the growth or decay of particular brands and the history of previous advertising efforts, but when allowance is made for these factors, the efficiency of advertising appears to vary widely among firms. Thus in the 1930's Lucky Strike consistently had low advertising costs per thousand and received a percentage of total cigarette patronage which was larger than the percentage of total advertising outlays for which it was responsible. Chesterfield, on the other hand, incurred high unit costs and received a smaller proportion of business than it contributed in advertising outlays. In the period before 1933 less was spent per thousand Camels than on the other major brands, but after that year Camel advertising was relatively expensive. Philip Morris has been able to make progress in spite of advertising expenses which both in total and per thousand were smaller than the expenses in either Camel or Chesterfield. Old Gold, on the other hand, was the subject of several expensive campaigns which did not produce commensurate results.

These differences in advertising effectiveness may be explained partly by differences in the products themselves but chiefly by differences in the skill with which advertising is employed. Sales volume is not a simple function of advertising dollars. The sales message is as important as the loudness with which it is shouted, and the difficulty of devising an effective sales appeal adds an important element of unpredictability to the consequences of the firm's market policy.

The effect of advertising in shifting the demand curve for a given brand to the right is offset to a greater or lesser degree by the opposing advertising of competitors. The advertising program of each of the major companies has as a major purpose the defeat of the advertising programs of its competitors, and in an even struggle the result may well be effectively zero. We have seen before that there is no perceptible response of total cigarette consumption to varying advertising expenditures. The effect of advertising is primarily to influence the position of the existing market among the various competitors.

Advertising competition, however, is not merely a draw. It has more

the character of a gamble or of a duel with peculiarly unreliable guns. The unpredictable nature of the results from any particular advertising campaign permits any one of the Big Three to gain or lose and has resulted in frequent shifts in relative position.

Competitive advertising serves not only to settle the allocation of business among the claimant firms but also to affect profoundly the structure of the industry. The central importance of advertising gives the large firm an advantage over the small, and the organization of the cigarette industry in a few firms is at least partly due to this factor. Although sales are not a simple function of expenditure, still large sales and large expenditures accompany each other. Large-scale advertising appears to be a necessary, if not a sufficient, condition of brand growth.

The effectiveness of massive expenditure reflects the nature of advertising itself and the development of national advertising media. Even informative publicity requires considerable expense to convey the message with proper coverage. Persuasive advertising requires still larger expense, for frequent repetition is necessary to impress the sales message so deeply that it will affect buying behavior even when the logical content of the message is forgotten. The increasing use of such national media as radio, magazines, and newspapers has increased the geographical spread of the market and thus makes necessary still larger expenditures if adequate intensive coverage is to be secured. The use of premiums and prizes and the lesser development of persuasive techniques made density of coverage less important in the early cigarette industry, and the expenditure per thousand was the most important determinant of advertising effectiveness. Persuasive advertising through national media has changed the emphasis from unit cost to total outlays and has greatly increased the advertising effectiveness of the large firm.

Since selling pressure depends upon density of coverage, we would expect that increasing expenditures over a considerable range should produce increasing sales with the same or even greater efficiency. Perhaps some point may be reached where excessive repetition will finally drive the irritated consumer to revolt and so will defeat its own purpose, but it does not appear that any such adverse reaction occurs in cigarette advertising at any level of brand expenditure below that of the very largest firms. We observe in Table 31 that comparable costs per thousand are found in both very large and very small firms, although for reasons already discussed this evidence is not conclusive.

A more direct indication of the efficiency of large-scale advertising is provided by the history of the present brands. The change in policy from the earlier dispersion of selling effort to the concentrated promotion of one brand per firm reflected the discovery of generally acceptable tobacco blends and the change from premiums and coupons to general advertising media. It was believed that more customers would be attracted if national

advertising were used in large doses than if the same total expenditure were spread over a large number of brands, thus dissipating much of its force in self-competition. According to G. W. Whitaker, the Liggett and Myers vice-president-in-charge-of-sales:

> Between Camel and Lucky Strike the competition got so heavy that we felt that we could not any longer do as we had done before, and that is, to promote a number of brands of cigarettes; that we had to do more and more concentrating on Chesterfield cigarettes, which had proved acceptable to the consumer, and so we curtailed on expenditure on the old brands and put the backing back of Chesterfields . . . In the course of four or five years, I would say, Chesterfield became the leading seller on the Pacific Coast, and we naturally lost some volume on the old brands. We expected that when we started.[103]

The success of the major brands and the decline of the others is evidence of the correctness of the belief in concentrated advertising, though again brand history also reflects the quality of the brands themselves.

The growth of advertising efficiency with size, or at least the failure of such efficiency to decline, means that the market sets no limit on the size of the firm other than that set by the competing expenditures of other firms. The larger the sales volume, the larger the advertising expenditure which can be afforded. The heavier the advertising outlays, the larger sales tend to be. Thus sales and advertising feed upon each other, and both grow together. If all other firms were small, one large firm would presumably achieve such complete industrial dominance as was enjoyed by the old Tobacco Trust. Where, through historical circumstance, there are a few large firms, the massive advertising expenditure of each limits the amount of business gained by the others. Further growth stops except for the general secular increase, and the oligopolists devote their energies to a struggle over the division of the market. Opposing advertising expenditures limit the possible growth of any firm, but it is only concentrated expenditure which has this effect, and it is only other large firms which can employ such expenditures. The fact that as far as the market is concerned the growth of the firm either is limited by opposing advertising power or is not limited at all is an important factor in causing cigarette production to be concentrated in a few large firms.

Which firms they shall be and how many is determined partly by the distribution of commercial skills and partly by historical accident. Not only do large firms have a selling advantage over small but the firms in existence have an advantage over new competitors. The existing firm can draw upon current revenues to finance large-scale advertising which would require enormous reserves of capital in the case of a new firm trying to break in. Furthermore, the existing firm will find directly profitable

103. *TP*, pp. 10269–10270.

advertising outlays which would not be worth while for a new firm. The sales of a brand at any time depend not only on current advertising but also on the volume of previous sales. The appeal of advertising is primarily to the fringe of unsettled present smokers and to impressionable new smokers, and even complete success with this group may not be enough for a firm which has no other customers. The existing firm advertises to attract new customers and to retain old ones. The new firm has only new customers to attract, and in consequence the number of customers affected by its advertising will be that much smaller. The marginal efficiency of advertising will thus be less for a new than for an old firm, and the old firm will have both greater means and greater incentives to advertise extensively. The attempt to buy a major market outright can be a tremendously expensive and not particularly successful undertaking, as Lorillard found in its early attempts to develop Old Gold.

Thus the heavy volume of cigarette advertising serves as a competitive weapon in the struggle among the major brands and serves also as a barrier against the competition of outsiders. There is always a hypothetical threat from small companies which advertise less and from potential competitors which, not being in existence, do not advertise at all. The inelasticity of the demand for the standard brands taken as a whole, which their large advertising expenditure helps create, protects them against price competition by outsiders. The selling pressure developed by their own enormous outlays makes very difficult the growth of minor companies through contrary advertising.

This does not mean that new competition cannot arise. A superior product or superior salesmanship may enable new firms to break into the industry or small firms to grow larger. The replacement of Lorillard by Reynolds and the growth of Philip Morris are ample evidence of the power of technological change and the significance of different selling abilities. The rarity of the event indicates its difficulty. But it is significant that the new firm when successful itself becomes one of the large firms. We do not find successful small firms employing advertising and remaining small. The prosperous small companies are those which do not advertise heavily and which supply a special product to a restricted public. Any firm which appeals to the general cigarette market makes its appeal through advertising, and there are only a few such firms. The firm becomes successful and big or it does not remain in competition for the business of the ordinary brands. New companies may invade the cigarette market, but they do not, as small firms, crowd in upon the major producers.

SUMMARY

The per capita consumption of all tobacco products taken together varies moderately over time in response to changes in taste, fashion, and the national income. In normal times there is no evidence of any price elasticity of demand. Cigarettes have grown rapidly in relative importance during the last half-century as the result of changes in taste and fashion. In the early years of the industry there was evidence of substitution among tobacco products in response to price incentives, and some sensitivity to price is still observable in periods of acute depression. In normal years, cigarette demand is wholly inelastic within the range of observed price variations. Advertising appears to have no effect on total cigarette demand, although it is possible that the secular swing in tastes has been influenced by sustained advertising over a period of years. Consumption of cigarettes depends primarily on long-run taste trends and on changes in the national income.

For all cigarettes in a given price class taken together, demand is moderately elastic. Substitution between price classes is limited partly by quality differences and partly by the influence of persuasive advertising. Between the almost identical standard brands there is evidence of high sensitivity both to price and to advertising, although a considerable proportion of smokers is, within limits, loyal to existing brands. Market pressures are most effective in shifting the fringe of new or unsettled smokers.

We find that the nature of cigarette demand is in part responsible for the concentrated structure of the industry. Advertising is a highly efficient competitive weapon which is somewhat erratic in its effects owing to the difficulty of finding an effective sales message. In general, large expenditures secure large sales. The leverage of large total outlays and the dependence of present on past sales mean that size can only be opposed successfully by size. The result is to encourage the large firm at the expense of the small and the existing firm at the expense of the outsider.

These considerations, however, rest wholly on the market characteristics of cigarettes. The remainder of our investigations in Part III are directed to the issue of whether other significant technical circumstances also require that the firm be large. We shall examine in turn the conditions under which the firm secures its most important raw materials, the technical methods of production, and the mechanics of products distribution, to see if in any of these respects the large firm enjoys advantages or efficiencies which are denied the small producer.

Chapter VII

THE SUPPLY OF LEAF TOBACCO: PRODUCTION

TECHNOLOGY

Leaf Types and Qualities

THE COMMON TOBACCO plant, *Nicotiana tabacum,* was introduced from the Spanish settlements of the Caribbean early in the colonial era. Another species of the same genus, *N. rustica,* is native to the eastern United States and was cultivated by the Indians and first settlers. It has since been abandoned in this country and is now grown commercially only in Russia and a few Asiatic countries. There are more than fifty other species of *Nicotiana,* but none is employed as a source of tobacco.[1]

Common tobacco is not found in the wild state and probably cannot survive without cultivation. With proper care, however, it is relatively hardy and is grown successfully in such diverse climates as those of Sweden, Canada, Virginia, Florida, Cuba, Brazil, and Sumatra.

This tolerance in survival is associated with a marked sensitivity of quality to slight changes in soil, climate, and cultural methods. Tobacco from different regions is seldom fully interchangeable in use. Virginia cigarette and smoking tobacco, Turkish cigarette tobacco, Havana cigar filler, and Sumatra cigar wrappers are familiar examples of specialized leaf. In some regions tobacco is produced because of market restrictions or relative cheapness despite a general inferiority.

The relatively excellent quality of American leaf is attested by the receptive market it has found throughout the world over a long period of years. In 1913 total world production was estimated at 3.5 billion pounds, of which 1.0 billion pounds were American.[2] Some 945 million pounds entered into international trade, of which 444 million were supplied by the United States.[3] Many foreign governments have since made earnest efforts to stimulate tobacco production within their own boundaries or in colonial possessions. Yet in 1939 American production was 1.9 billion pounds of a world total of 5.6 billion, and the United States supplied 358 million pounds of the billion entering into foreign trade.[4]

1. Unless otherwise cited, technical data in this chapter are drawn from W. W. Garner, *The Production of Tobacco* (Philadelphia, Blakiston, 1946).
2. Claudia Thomson, *World Acreage and Production of Tobacco by Countries,* U.S. Bureau of Agricultural Economics (August, 1938), pp. 4, 7.
3. *DA,* 1937, p. 103.
4. *DA,* 1942, pp. 26, 83.

Not all American tobacco, however, is of uniform excellence, and there is the same specialization of types within our own boundaries as exists between regions in the rest of the world. Excellent cigar wrappers are made from the shade-grown leaf of Connecticut, Massachusetts, Georgia, and Florida. Good binder and filler (not equal to the best Havana but good enough to thrive behind a tariff) are produced in the states just named and in New York, Pennsylvania, Ohio, Wisconsin, and Minnesota. Leaf suitable for noncigar uses is grown in the coastal states from Maryland to Florida and in Tennessee and Kentucky, with small quantities in neighboring states. Leaf suitable for smoking tobacco, plug, and snuff but not for cigarettes is grown in parts of Virginia, Kentucky, Tennessee, Louisiana, and a few other states.

A detailed account of the kinds of leaf produced would be unduly long and would serve no useful purpose. The Department of Agriculture recognizes some 26 types of domestic leaf which differ in character and quality as a result of different soils, biological strains, and cultural methods.

Soil variations are of critical importance. A given strain of tobacco, when planted in different soil, will often produce markedly different leaf even when subjected to the same growing and curing treatments. In consequence it is difficult and sometimes impossible to change tobacco types in response to market incentives. Different tobacco types are poor substitutes, both in consumption and production, and often behave in the market like different commodities. The great growth of production of cigarette tobaccos has come about primarily by expanding cultivation into new tobacco areas rather than by replacing the types previously grown for chewing tobacco. To some extent, Burley tobacco has been introduced to regions which formerly produced other tobacco types, but in many regions the soil is not suited to cigarette tobacco, and the farmers have been forced either to accept the lower prices on the less favored leaf or to withdraw from production entirely.

Only seven of the 26 types of domestic tobacco are used in cigarette production. Five of these are types of flue-cured tobacco distinguished by the region producing them. The two others are the light air-cured Burley and Maryland types. In addition a significant amount of oriental leaf from Turkey, Greece, Bulgaria, and Syria is used. The leading brands use about 53% flue-cured, 32% Burley, 5% Maryland, and 10% Turkish.[5]

As indicated by the names, one important element in the differences of the various types is the method of curing the harvested leaf. Flue-cured tobacco (also called Virginia or Southern Bright) is subjected to high temperatures in a sealed barn, heated by metal flues. No smoke is allowed

5. Standard and Poor's Corporation, *Industry Surveys—Tobacco,* Sec. II (February 21, 1947), p. T4–4. But see above, pp. 157–159.

to touch the tobacco. This contrasts with the numerous fire-cured types, used mainly for plug, snuff, and export, where an open fire on the floor of the barn smokes the tobacco at low temperatures. Burley and Maryland, on the other hand, are allowed to hang in a well-ventilated barn for a considerable period. Turkish tobacco and cigar leaf are also cured in this manner.

When applied to the proper kind of tobacco, flue-curing produces a leaf of bright lemon color, light in body. The smoke produced is also light, though with a somewhat acrid "bite." Burley is darker in color and has the principal quality of being able to absorb large quantities of flavoring liquors. Maryland leaf is very light and flimsy, with exceptional fire-holding properties. Turkish tobacco is highly aromatic and gives off a somewhat heavier smoke than do the other cigarette types. The four kinds are combined to take account of flavor, lightness, strength, and burning behavior.

The method of curing is only one element in the differences of the various types. Flue-cured tobacco varies so much within the type, owing to differences in soil, that five subtypes are recognized. Burley differs from flue-cured both in soil and in biological strain. Maryland soil is similar to flue-cured soil, but cultural practices and biological strain differ.

The original tobacco grown in tidewater Virginia was a heavy dark-fired leaf. As cultivation pushed back into the less fertile soils of the Piedmont, the leaf produced became lighter both in body and color. The receptive market which this leaf found encouraged further attempts to lighten it. Lighter, less fertile soils were selected for tobacco production, and efforts were made to reduce the quantity of smoke reaching the tobacco. Before the Civil War this was accomplished by reducing the degree of heat applied and by the use of charcoal fires. After the war the use of flues became general. The production of bright tobacco was thus well established before cigarettes achieved significance, although the more recent growth has been due to the spectacular rise in demand for cigarette tobacco. In the 1890's the cultivation of tobacco spread from the "Old Belt" in the Virginia and North Carolina Piedmont and from the "Middle Belt" along the fall line into the "New Belt" of the North and South Carolina coastal plain. Around 1918 flue-cured tobacco was introduced to Georgia in response to growing demand and as an alternative to sea-island cotton which was then under ruinous attack by the boll weevil. The soils of the newer belts are even better suited to bright leaf production than the Piedmont, and tobaccos from the Piedmont, the Middle Belt, and the coastal plains of North Carolina, South Carolina, and Georgia are each regarded as constituting a separate type.

Flue-cured tobacco must be nearly the only crop for which infertile soil is required. The desired lightness and texture depend not upon biological strain but upon some restriction in the nourishment available dur-

ing growth. Heavy rich soil tends to produce a thriving growth of low quality. Although the plant requires a great deal of food and suffers severely from deficiency diseases, this nutrition must be of the right kind and applied at the right rate. Excess nitrogen in particular tends to produce rank growth, so that manure can be applied only with great care. The best results are obtained from the heavy use of commercial fertilizers. In 1938 average applications for the various flue-cured states ranged from 800 to 1,000 pounds per acre, and the use of more than a ton is not unusual.[6] Flue-cured tobacco soil may be regarded as the physical medium through which quantities of prepared nourishment are supplied to the plant. The chemical requirements of the soil are for the most part negative. The most important positive qualities concern physical structure, porosity, and ease of drainage.

Some other crops, legumes in particular, tend to raise the level of nitrogen and of organic elements to an undesirably high level. Still others favor diseases which attack tobacco. For these reasons, as well as the restrictions of infertile soil, the selection of crops for rotation presents problems. Although agricultural experts now recommend a number of rotations, there is no rotational system in general use. In many cases, continuous cultivation is practiced with good results, and in others, fallow grown up in weeds proves a beneficial treatment for the land. Since most elements of nourishment are supplied by fertilizer, there is not much problem of soil depletion from continuous cultivation. However, tobacco diseases tend to become established when land is used continuously, and the fact that tobacco is a clean-cultivated crop presents serious problems of erosion in the hilly sections of the Piedmont.

Burley tobacco is also a light leaf but depends for its lightness on inherent biological characteristics rather than upon soil or cultural methods. The White Burley variety was discovered in Ohio in 1864 and has since enjoyed great prosperity. In earlier years it served as excellent plug filler and has since played an important part in the development of cigarettes. The original area has been extended to include all the bluegrass region of Kentucky and Tennessee, and cultivation has also spilled over into neighboring states, to replace the various fire-cured and dark air-cured types which preceded it.

Burley thrives best on rich land, which must be well drained yet hold moisture well. Although lightness is primarily due to inherent characteristics, the leaf has been rendered still lighter in recent years by closer planting and a consequent reduction in available nutrition.

Relatively little fertilizer is used in Burley production. In 1938 Kentucky and Tennessee averaged 250 and 311 pounds per acre, respectively.[7] Continuous culture is less usual than with flue-cured because of soil de-

6. U.S. Department of Agriculture, *Agricultural Statistics*, 1940, p. 709.
7. *Ibid.*

pletion and because the ordinary strains are susceptible to black root rot which tends to creep in if a field is long under tobacco. The danger of erosion in hilly territory is another discouraging factor. Several rotational systems are in use, the most frequent involving a single crop of tobacco followed by wheat, red clover, timothy, and bluegrass sod. This crop sequence requires an indefinite retirement of land from tobacco after two crops at the most. Shorter rotations, which are possible, are not yet in general use. Although Burley is a rich land crop, it is unfavorably affected by too much nitrogen so that manure or rotations involving legumes must be employed with care.

Maryland tobacco in many respects stands between Burley and flue-cured. The extreme lightness of the cured leaf reflects both soil and biological strain. The leading Maryland soils are somewhat more fertile than flue-cured soils and hold moisture better. When well rested, the best soil will produce good tobacco without fertilizer. Continuous cultivation implies progressive soil depletion, but fertilizer is used less heavily than with flue-cured. In 1931 the average application per acre for 246 farms was 548 pounds.[8]

It is usual to keep land in continuous cultivation for several years and then let it grow up in weeds for several more. Other rotations are used, and Maryland does not seem to be as seriously affected by excess nitrogen as are the other types.

The Cultural Routine

Cultural practices deserve attention because of their direct impact on economic behavior. "Tobacco is the most intensive annual farm crop grown on any considerable acreage," [9] and, of all domestic tobaccos, flue-cured is the most intensively cultivated, with the exception of shade-grown wrapper leaf. The number and complexity of operations belong more to horticultural than to agricultural pursuits.

Preparation of a new crop often begins before the old crop is fully disposed of. Fall plowing of the land is a frequent practice, and the preparation of plant beds starts before freezing weather sets in. It was formerly the custom to clear a virgin spot in the woods and to sterilize the soil with a large fire of logs. In recent years the disappearance of the woods and the appearance of the blue mold disease have forced the planting of beds in open fields. Lack of fuel now prevents burning over the bed, while steam sterilization has been too expensive for the smaller acreages. The threat of weed seeds has been met to some extent by suitable poisons ap-

8. Ray Hurley and S. H. DeVault, *Production, Marketing and Consumption of Maryland Tobacco,* p. 221.

9. W. W. Garner *et al.,* "History and Status of Tobacco Culture," U.S. Department of Agriculture, *Yearbook,* 1922, p. 425.

plied well beforehand, but the exposed position of modern plant beds subjects the farmer to frequent risk of failure. Multiple beds are often planted for purposes of insurance.

Planting of the prepared bed occurs from December in the southernmost districts to March in the northern areas. The seed, which is incredibly small (300,000 to the ounce), is usually mixed with fertilizer or some other substance to facilitate handling. A bed of 100 square yards receives about one ounce of seed and will produce enough seedlings for three or four acres of tobacco. The bed is rolled and cloth covers are stretched for protection.

The seedlings are extremely fragile and subject to damage from cold and drought as well as numerous diseases and insect pests. If they survive these threats, they are ready for planting when five or six inches high. This occurs from March in Georgia to May in the Piedmont. The land has previously been plowed and repeatedly disced and harrowed. It is usually worked into ridges and fertilizer is applied broadcast or in the row. The treatment received before transplanting is of critical importance.

Transplanting is usually a hand operation, although mechanical devices are also used. Water supply to the seedlings is an important and uncertain matter. Setting preferably takes place while the soil is wet and, in case of drought, hand setting is a difficult matter. Machine transplanters, which carry their own water supply, are a great advantage in such situations but do not otherwise materially reduce costs. In the flue-cured and Maryland districts, about 5,500 plants per acre are usually set out in a precise rectangular pattern. The Burley regions plant 8,300 to 10,800 to the acre. Missing plants or plants which fail must be replaced.

Cultivation begins in a week or ten days after setting, when the plants have taken hold. The soil is loosened along the rows with a cultivator, and the field is then hand hoed to loosen the soil between plants, remove grass and weeds, and uncover partly buried plants. Three or four subsequent cultivations are required to maintain the proper physical structure in the soil for the circulation of air and water. As the root systems develop, cultivation becomes less necessary and may even be a cause of damage.

If the plant is allowed to flower and go to seed, the leaves will be deprived of necessary nourishment. Accordingly, it is the custom in most types of tobacco to "top" the plant, i.e., remove the flower head so as to direct nourishment into the leaves. In the heavier types of tobacco, it is usual to top low, leaving only 8 or 12 leaves in order to produce dark, oily leaves of large size. Since the aim of cigarette tobacco production is a light leaf, it is the custom to top high and late, leaving 15 to 18 leaves. With the larger number, plant food is spread more thinly with a favorable effect on quality.

As soon as topping is completed, shoots known as "suckers" develop

in the leaf axils in an attempt to replace the severed seed head. The suckers impose an equal drain on the plant's nutritional system and must be removed at intervals of a week. Poison baits must be applied for some of the many insects which threaten tobacco. The phrase "wormin' 'n' suckerin' " is an ancient and apt description of one laborious phase of tobacco culture.

As tobacco matures the bottom leaves ripen first, and if harvesting is delayed until the top leaves are ready, the bottom leaves will dry out or "fire." In the flue-cured belts this difficulty is met by "priming" the crop, i.e., harvesting the individual leaves as they mature. In the Burley and Maryland districts the bottom leaves may be primed off, but the plant as a whole is harvested by cutting the stalk when the middle leaves have reached optimum maturity. A portion of the flue-cured crop has always been harvested by stalk-cutting but in recent years has become very small.

In the flue-cured regions, two to four leaves at a time are removed at intervals of a week. Harvesting is thus spread out over a considerable period of time, but the amount of heavy labor is reduced, and the tobacco is ready for curing in batches with consequent reduction in the required curing space.

The primed leaves are strung on stout laths which in turn are placed on racks at regulated intervals in the curing barn. This is a small structure 16, 20, or 24 feet square on the inside and is usually filled in one day. A barn of the smallest size will accommodate about 50,000 leaves, or one priming from three acres.

Curing is an exacting process lasting for 3½ to 4 days during which close attention is required from the fire tender. The leaf, as it comes from the field, contains about 80% water, which is expelled in the curing process. About 20% of the dry weight is also lost, to the accompaniment of important chemical changes. A close control of temperature is necessary if these changes are to occur consistently with each other. During the first third of the period, low temperatures yellow the leaf and effect some drying. In the second third, higher temperatures dry out the leaf web; while at the end of the process, temperatures of 170 or 180 degrees dry out the midrib. The precise temperatures and timing vary according to the soil, the history of the crop, current weather conditions, and the judgment of the operator. After curing is completed and the barn cools, the tobacco is allowed to absorb moisture or "come into order." When 20% moisture has been regained, the tobacco is pliable and can be handled safely. If it is too dry, it will be brittle, while if too wet, it is liable to discoloration and spoilage. The process is completed, and the first tobacco is ready for sorting and market from the end of July in Georgia to mid-September in the Piedmont.

In the Burley and Maryland areas the crop is harvested by cutting the stalk and, after wilting, the entire plant is hung on sticks in the curing

barn. The size of the barn varies according to acreage but in any event is larger than a flue-cured barn since the whole crop, including stalks, must be put under cover, instead of a single priming of leaves. Adequate controlled ventilation is an absolute necessity, hence the many vertical or horizontal shutters.

Air-curing involves the same processes of drying and fermentation as does flue-curing, but the difference in temperature and timing affects the nature of the final product. Curing is supposed to take place under natural weather conditions, and although heat is sometimes used, its purpose is to compensate for unusual or undesirable variations in the weather. Curing is hastened by high temperatures and drying by low humidity. Some reasonable combination of these is necessary in order that the two processes should go on together. There is considerable latitude in the allowable temperature so long as it does not fall much below 65 degrees, and humidity can be controlled to some extent by ventilation and by the fact that the tobacco itself will provide moisture in the event of dry weather. The chief difficulty occurs in prolonged wet spells, when ventilation may do more harm than good and when the delayed drying may cause leaf spoilage, known as "house burn" or "pole sweat." Coke or charcoal fires are useful in combatting this situation.

Burley leaf is ready to be taken down in November or December. Warm damp weather is needed to render the leaf pliable enough to be handled. The problem of moisture at this time is critical, for if the leaves are too dry, they will be brittle; while if too damp, they are likely to spoil in storage. Since the leaf will keep well in the storage barn, it is usual to take down at one time only as much as can be handled and disposed of.

Maryland tobacco receives the same treatment as Burley in harvesting and curing but is not ready to take down until late winter or spring. Accordingly, it does not appear on the market until the calendar year following cultivation.

When tobacco is ready for sorting it is commonly taken down and packed in "bulks," i.e., orderly piles. Under these conditions, like all vegetable matter, tobacco ferments and further favorable effects on quality may follow. The principal purpose of such packing, however, is merely to preserve the tobacco while it is being prepared for market.

Leaf properties depend largely upon their position on the stalk. The bottom leaves are very thin and light, while higher leaves become progressively heavier. In the flue-cured regions, the leaves from the bottom quarter of the plant are called "lugs," the next quarter "cutters," and the top half "leaf." Within these groups there are smaller subdivisions called, in ascending order, "trash lugs" or "priming lugs" or "primings," "sand lugs," "good lugs," "smoking leaf," "wrappers," and "tips." Farmers do not always recognize a difference between good lugs and cutters, while wrappers are secured in quantity only from very good crops. In Burley

the ascending types of leaf are known as "flyings," "trash," "lugs," "bright leaf," "red leaf," and "tips." Maryland tobacco has three basic divisions of "seconds," "bright leaf," and "dull leaf." The last two are also known as "crop" and "second crop."

The differences according to stalk position are sufficiently important to cause a difference in the ultimate use of the leaf. Primings and flyings are used mostly for granulated smoking tobacco. Cigarette tobacco comes principally from the lugs, cutters, trash, seconds, and bright leaf (Maryland). The lighter portions of the smoking leaf and bright leaf (Burley) grades are also cigarette tobaccos, while the remainder of these grades are used in smoking tobacco. Red leaf and tips are employed as plug filler, while dull leaf has usually been exported or used as cheap cigar filler. The flue-cured wrapper grade is used for plug wrappers, while a similar grade is sometimes selected from Burley leaf to wrap plug or little cigars.

Color is an important factor in leaf quality. Lemon yellow is preferred in the flue-cured types, while orange, red, and mahogany are of decreasing value. Burley and Maryland do not attain as bright coloring as does flue-cured, but in these types, too, the lighter colors are the more valuable. Other elements in quality are size, texture, body, elasticity, finish, blemishes, and degree of damage.

It will be apparent that, with so many factors affecting quality, a proper sorting may prove exceedingly complicated. The major producing companies recognize over 100 grades of flue-cured tobaccos. Fortunately for the farmer, many of these grades are accounted for by differences in region or by differences between crops. A given farmer's tobacco is likely to be fairly homogeneous, and the method of harvesting in the flue-cured areas provides a certain amount of automatic sorting. Usually the farmer sorts five or six grades from each priming, with considerable overlap between primings. Burley is usually divided into a dozen or more grades, while Maryland has only three basic grades with quality subdivisions. When sorting is completed, several leaves are tied together in a "hand" and the tobacco is ready for market.

The farmer has a strong incentive to sort as accurately as possible. The price received for the best grade of a given type is frequently ten times the price of the poorest grade. Since mixed grades are usually paid according to the lowest grade in the mixture, the penalty for inaccurate sorting is severe. Georgia farmers do not sort well and do not tie their tobacco in hands. Accordingly, they lose a cent or two per pound in the price received, although Georgia flue-cured is of very high quality.[10]

The intricate nature of tobacco production is further complicated by a series of dangers and uncertainties which require great judgment on the part of the cultivator, as well as great industry. Tobacco is subject to a

10. Fisher, p. 58; *TP*, p. 8871, J. E. Lipscomb, Jr.

large number of bacterial, fungus, and virus diseases, of which black shank, Granville wilt, black root rot, and blue mold are the most important. For many diseases, control measures have been developed either by seed bed sterilization, seed bed spraying, by certain crop rotations, or by the development of resistant strains. The incidence, however, remains high, with an annual crop loss of 15% by value.

Although tobacco is used as an insecticide, it is itself subject to attack by a great many insect pests. Cutworms, wireworms, hornworms, budworms, and the tobacco flea beetle are the most important. Various poisons are available and are usually successful. However, many insects are repressed by a complicated balance of natural enemies, and, in seasons when this balance is upset, disastrous outbreaks may occur.

The weather offers other problems to the farmer. Some kinds of plant diseases are encouraged by special weather conditions. In addition, weather variations greatly complicate the cultural routine. If the weather is dry at transplanting time, the farmer must decide whether or not to delay. He may plant and lose the crop. Or he may delay, the seedlings may attain undesirable maturity and bloom prematurely when set in the field. Weather expectations are important at topping time. If the rainfall is expected to be normal, the farmer will top high to produce a large number of light leaves. If drought succeeds, the extra leaves will not develop properly. If he tops low in expectation of drought, removing all but the few leaves which can expect to find nourishment, the return of normal rainfall will cause a rank growth of poor quality. There are other weather risks against which the farmer has no defense. A generally rainy season produces larger, lighter leaves than does a dry season. Concentrated rainfall in the early part of the season may leach nutrients from the soil and may, by overstimulation, make the plant more vulnerable to later injury from heat and sun. Rainfall succeeding drought late in the season, after the leaf margins have hardened, will cause a thickening of the leaf with delayed ripening and lower quality. A hailstorm at any time can completely destroy a crop.

The farmer's risks are not over with the harvest. Great judgment is necessary for a proper curing. There is also some danger of fire. Toward the end of the process, the flues are likely to become red hot. A piece of tobacco falling on the pipes may ignite, and the consequent loss of barn and one priming is a serious burden.

The weather during the sorting period and prior to market offers additional problems. Dry leaf is brittle, while wet leaf will spoil. The vegetable fermentation which occurs in bulked tobacco may improve quality but may equally well cause spoilage. Unless the weather is right, the farmer is under pressure to sell soon after curing, and, in the flue-cured and Burley regions, he always sells during the same season. There is no carryover in the farmer's possession from one year to another. The perish-

ability of freshly cured tobacco is most noticeable in the flue-cured types. Burley is less hygroscopic, keeps well in the barn, and will not spoil quite so quickly as flue-cured even after sorting and bulking. Maryland, in contrast, picks up little water and can be kept in hogsheads for extended periods.

FARM ECONOMY

Labor Costs and Farm Size

The technical processes of tobacco production find immediate expression in the economic organization of the farm. The large amount of labor required, the high degree of skill that labor must display, and the small capital investment involved all result in a typical farming unit which is extremely small.

An acre of flue-cured tobacco requires about 460 man-hours of labor plus 110 hours of horse work. Burley requires about 330 man-hours per acre, and Maryland about 250. The very high labor cost of flue-cured tobacco reflects the great care required in field preparation before planting, in harvesting, and in curing. Burley absorbs more labor than Maryland because of the larger number of plants per acre. A number of farm studies have shown labor costs to be about 52% to 55% of flue-cured costs, 42% of Maryland, and 38% of Burley. The lower relative importance of labor in Maryland and Burley reflects the lower absolute labor input in those types, a higher investment in curing barns and sticks, and high land rents in the Burley areas.

With these heavy labor requirements, one man can care for only a few acres. The typical farm can command the labor of family members, together with some hired labor. The process is not, however, one where large numbers of hired laborers are easily directed. There is a tendency for farms to be small and, even where landholdings themselves are large, to break operations down into small units by the use of cash or share tenants.[11]

The effect of these forces can be seen in the distribution of acreage allotments in 1944 as presented in Table 32. One-half of all flue-cured allotments were smaller than 5 acres. One-half of all flue-cured acreage was in allotments of less than 7.5 acres. The largest single allotment could not have been larger than 781 acres. Half of all Burley allotments were smaller than 1.5 acres, while half of all Burley acreage was in allotments of less than 3.5 acres. The largest single Burley allotment was 223 acres.

11. For an account of the influence of tobacco technology on farm organization and slave-holding in the antebellum South, see Robert, pp. 17–19.

TABLE 32

Tobacco Acreage Allotments, 1944 *

Size of Allotment Group in Acres	Flue-cured		Burley	
	Allotments	Acreage	Allotments	Acreage
1.0 or less	11,521	8,586	102,507	95,920
1.1– 1.5	13,923	18,220	45,592	57,333
1.6– 2.0	15,118	27,795	28,710	50,946
2.1– 2.5	11,295	26,913	15,472	36,424
2.6– 3.0	13,800	39,352	13,169	36,923
3.1– 3.5	11,165	36,379	8,111	26,370
3.6– 4.0	10,643	40,146	5,772	21,807
4.1– 5.0	33,361	152,155	11,577	51,862
5.1– 7.5	33,056	200,982	10,889	66,650
7.6– 10.0	14,704	127,002	4,491	38,762
10.1– 15.0	11,707	141,428	3,373	40,884
15.1– 20.0	4,399	76,147	1,081	18,598
20.1– 30.0	3,004	72,349	791	19,348
30.1– 40.0	1,036	35,544	271	9,346
40.1– 50.0	518	23,378	120	5,324
50.1–100.0	666	44,521	114	7,716
100.1–200.0	125	16,696	28	3,754
200.1–300.0	21	4,749	1	223
300.1–400.0	3	1,097	0	0
400.1–500.0	1	464	0	0
500.1 and over	2	1,281	0	0
Total	190,338	1,095,184	252,069	588,188

* *DA*, 1944, pp. 27–29.

These allotments represent restrictions of acreage below the amount which farmers would plant if left to themselves and, to that extent, understate the natural size of the typical tobacco farm. They do not, of course, measure the size of the whole farm but merely of the tobacco acreage permitted. A 1936 survey in Pittsylvania County in the Virginia Old Belt found that 545 farms had an average area of 143.2 acres, with 41 acres in crops and 7.3 acres in tobacco.[12]

Maryland tobacco acreages are also typically small. In 1929 the average tobacco farm had a total area of 120 acres, of which 27 acres were in crops, 22 acres in pasture, and 6.1 acres in tobacco. Average tobacco acreages varied among the five counties from 4.7 acres to 8.0 acres.[13]

It may be incautious to argue that because tobacco farms are small this reflects the inherent characteristics of the productive process. There is some evidence that farm sizes are somewhat smaller than technological circumstances would require. The Pittsylvania survey found the relationships indicated in Table 33.

12. W. L. Gibson, Jr., *Economics of Flue-cured Tobacco Farming*, Virginia Agricultural Experiment Station, Technical Bulletin No. 66 (Blacksburg, 1940), pp. 26, 31.

13. Hurley and DeVault, *op. cit.*, pp. 192, 195–196.

TABLE 33

Relationship between Acreage and Returns on 535 Farms, 1936 *

Acres in Tobacco	Number of Farms	Returns per Worker Dollars	Return on Investment Per Cent
Under 3.0	47	105	−5.4
3.0– 4.9	125	229	−1.1
5.0– 6.9	126	328	1.8
7.0– 8.9	99	421	4.9
9.0–10.9	48	459	7.4
11.0–12.9	32	588	12.3
13.0 and over	58	636	12.9

* W. L. Gibson, Jr., *Economics of Flue-cured Tobacco Farming*, Virginia Agricultural Experiment Station, Technical Bulletin No. 66 (Blacksburg, 1940), p. 65.

The reason advanced to explain these results was that the efficient use of family and hired labor required an undertaking of sufficient size to spread the costs. The survey also found that between 1933 and 1936 the average farm increased 11.3 acres in total area. Consolidation of farms or tenant holdings had occurred in order to obtain larger base acreages under the crop control programs. Efficient labor use required the larger base, and the extra investment and taxes involved were a premium for the right to efficient production.

While this reasoning establishes the possibility that tobacco acreages can be too small, this may not be the whole explanation of the statistical results obtained. The larger farms are likely to be efficient, not only because of the efficiency of size but because efficient farmers are likely to secure larger farms. Farmers differ considerably in ability, and the more efficient are likely to have the funds required to obtain larger acreages. Moreover, since the efficient size of the farm is largely a question of management, the good farmer will be able to handle a larger area than the poor farmer. The good farmer has both the ability and the incentive to expand his holdings relative to the poor farmer. Thus the association between earnings and size may reflect the influence of efficiency on size as well as the influence of size on efficiency. It does not necessarily follow that, because larger farms are more profitable than the small, a general increase in farm sizes would increase profits.

The narrow range of farm sizes covered in the survey is also worth noting. The average tobacco acreage of the largest group studied was only 17.9, and there is no indication of how efficiencies behave at still larger acreages. The detailed analysis of farming operations made in the course of the survey indicated that many farms were not using labor to best advantage and that many were too small. This analysis does not, however, conflict with the reasoning that the possibilities for increased

efficiency are limited to quite small farms. The processes of production themselves are so little mechanized, so little adapted to mechanization, and so much dependent on large quantities of labor individually applied that a small scale of operation is clearly indicated. The persistence of small farms in all regions and the lack of any really large tobacco farms are reasonable evidence of the strength with which technical circumstances require small-scale production.[14]

The very small size of the typical Burley acreage, as compared with the other types, reflects the cultural practices of the region. Burley soil is rich and well suited to other crops. Consequently, it commands a high price. The usual rotation system requires that land be retired from tobacco production for an extended period after one or two crops. The total amount of tobacco land on any farm must thus be several times the quantity actually planted to tobacco. The high value of the land and its productivity in other uses encourage the active cultivation of land not under tobacco, and consequently the farm enterprise becomes large while tobacco acreage is small. The expansion of the total enterprise is limited by available family and hired labor with a consequent restriction on individual Burley acreages.

The importance of family and cropper labor means that tobacco production costs involve relatively small cash outlays. Thus the Pittsylvania survey found average farm expenses to be as presented in Table 34.

TABLE 34

Average Expenses on 535 Farms, 1936 *

ITEM	DOLLARS
Labor	475
Crop	197
Machinery	114
Livestock	51
Upkeep	98
Miscellaneous	10
Total	945

* W. L. Gibson, Jr., *Economics of Flue-cured Tobacco Farming,* Virginia Agricultural Experiment Station, Technical Bulletin No. 66 (Blacksburg, 1940), p. 19.

No provision was made for the labor of the farm operator or for the rent of land. Only $105 was paid for hired labor. The remaining $370 represented unpaid family and cropper labor. The single most important cash item was $126 for fertilizer.

14. The larger farms and heavy output concentration of Connecticut shade-grown cigar wrapper leaf are an interesting exception. Here the necessity of introducing a completely new leaf type after 1900, the high costs of 5,000 square yards of cover cloth per acre, and the need to import farm labor in a region with good employment alternatives have required heavy investment and have encouraged industrial rather than family farming. The same factors have not been present in the cigarette tobacco regions of the South with their relatively stable technology, low cash expense, and surplus population.

Factors Affecting Leaf Production

The nature of farm costs has had an important influence upon the conditions of tobacco supply. In recent years the farmer's decisions as to acreage and production have been largely determined by government crop controls, but prior to 1934 the scope and direction of the farm enterprise was set by the decision of the individual farmer. In the absence of control, the low proportion of cash expense made it possible for tobacco production to continue under unfavorable conditions. Although costs varied widely among farmers and although prices of tobacco fluctuated excessively, farmers seldom received less than the cash expense of their crop. The effect of low tobacco prices on the farmer was to give him a small return on the labor which he and his family had invested. As long, however, as he chose to accept a low labor return, depressed prices would not force him to abandon cultivation.

This did not mean that tobacco production was wholly insensitive to price changes. The expectation of low prices might reduce the incentive, and the experience of past low prices might reduce the ability to hire labor or to employ optimum amounts of fertilizer. Some loss in acreage and in yield would probably result. A further incentive to flexible tobacco production was offered by the possibility of shifting to other crops.

Ease of crop substitution, however, was limited in all regions by the tendency of farm prices to move together and in some regions by the lack of suitable alternatives. In the Old Belt, for example, the soil is good for tobacco and poor for most other crops. Although other products are grown, tobacco is the only important cash crop for many farms. The Pittsylvania survey found that tobacco accounted on the average for only 7.3 of 41 crop acres but that it contributed 97% of all cash income.[15] Other crops were grown for the farm living, as green manure, or as fodder. The survey concluded:

> On farms having good tobacco, the best percentage was the highest. Production of other things reduced the income if it reduced the amount of tobacco that could be produced . . . After more than 200 years of farming in this area, the farmers had learned that tobacco was the most profitable crop they could grow and had increased the percentage of their farm business represented by that crop.[16]

Under the soil conditions of the Old Belt, tobacco prices would have to decline far and permanently to effect a change to other cash crops.

In the New Belt, soil conditions are less restrictive. Cotton and tobacco are often grown on the same farm and could be substituted to some extent. Corn and other grains are possible alternatives. In the Burley belt, too,

15. Gibson, *op. cit.*, p. 33.

16. F. L. Underwood, *Flue-cured Tobacco Farm Management,* Virginia Agricultural Experiment Station, Technical Bulletin No. 64 (Blacksburg, January, 1939), p. 303.

owing to the richness of the land there is a thriving production of corn, hay, and livestock. Corn, wheat, hay, and vegetables are grown in Maryland in considerable quantity.

It was not to be expected, however, that substitution of other crops would work easily or in response to small price changes, at least in the settled areas of tobacco production. The comparative advantage of these regions in tobacco production is so great that it would take violent changes in market relationships to bring about a shift to other crops. Moreover, tobacco occupies so small a soil area and so large a proportion of farm labor that the substitution of other crops presented problems. The expansion of other crops gained by suppressing a small tobacco acreage would be limited, while other crops on the same area would not provide enough work to keep the labor force fully employed. If tobacco prices declined far enough to make contraction worth while, other crops might be expanded as a residual decision. In the settled tobacco regions, however, other crops did not compete with tobacco as active substitutes in the use of land and lent only a minor degree of flexibility to tobacco production.

These considerations did not apply as fully to the fringe tobacco areas. As cultivation expanded into new regions, there was always a crop frontier which was not yet firmly wedded to tobacco production and in which crop shifts were more feasible. In such regions habits were not so firmly fixed, other crops had a more equal attraction, and the farm size and labor force were not so closely proportioned to the requirements of tobacco culture. It was, accordingly, possible for considerable acreages to be planted to tobacco when prices were attractive, with a return to more usual crops when tobacco markets were depressed.

Since 1934 the flexibility of tobacco production has been modified by government controls. Under the Agricultural Adjustment Acts, benefit payments have been made to contracting farmers who agreed to restrict acreage. The first AAA also established production quotas for each farm adhering to the arrangement and required that excess production be rendered unmerchantable before a farmer could qualify for benefit payments. The program was financed by processing taxes on tobacco used in manufacture, while under the Kerr-Smith Act, noncontracting farmers were taxed one-third the value of their gross sales.[17]

These regulations were in effect for two years, but in October, 1935, the Supreme Court invalidated the processing tax and production control elements of the Adjustment Act,[18] and the Kerr-Smith Act was promptly repealed. In the two following years benefits were paid for reducing the acreage of "soil depleting crops" under the Soil Conservation and Domestic Allotment Act of 1936. Benefit payments alone were relatively in-

17. For details, see H. B. Rowe, *Tobacco under the A.A.A.* (Washington, D.C., Brookings Institution, 1935).

18. *United States* v. *Butler et al., Receivers of Hoosac Mills Corp.* 297 U.S. 1 (1935).

effective, and the Agricultural Adjustment Act of 1938 provided for marketing quotas to be imposed subject to ratification by two-thirds of the growers concerned. Tax penalties were imposed for marketing in excess of the quota.[19] These quotas have since been in effect every year except 1939. At first the marketing quota, both in total and for each farm, was established in pounds, but since 1940 it has been defined as the actual production from the farm's allotted acreage.

In most years since 1934 tobacco production has thus been subject to direct controls enforced by benefit payments and by tax sanctions. There has been little possibility of a free response to price incentives by the individual farmer. Maximum acreage is set by collective decision, and the individual farmer can increase his output only by closer planting, heavier fertilization, and consequent higher yields. Although the opportunities lying in this direction have been fully exploited, they confer only a limited ability to increase production. It still lies within the farmer's discretion to reduce acreage and production, but continued high prices for tobacco and the legal restriction of acreage below what farmers would plant if left to themselves insure that this decision will not be made. The potential downward flexibility of tobacco acreage through the substitution of other crops is of little present significance.

The factors influencing tobacco production have thus been markedly different since 1934 from what they were in earlier years. Price may still influence the activity of the farm, but it does so through the controls of the Department of Agriculture rather than through the decisions of the individual farmer. The nature of production controls, both before and after 1934, is relevant to this present study. The cigarette industry bought tobacco for many years before government crop controls were inaugurated. The conditions of supply which it encountered then are relevant to a history of its buying policies. We shall find also that the AAA has not greatly changed some of the important characteristics of tobacco supply and that the analysis of the industry before control can be carried over with minor modifications into later years.

ELASTICITY OF SUPPLY

Long Run

Before 1934 the existence of a large number of very small producers meant that tobacco usually was produced and offered on the market under conditions of perfect competition. Each farmer made his own decisions to plant and brought his crop to market in response to market conditions without any thought of personally affecting the price he would receive.

19. The constitutionality of the new control provisions was upheld in *Mulford* v. *Smith*, 307 U.S. 38 (1939).

There were, indeed, occasional attempts at collective action by the farmers aimed at restricting crops, but the difficulty of effecting such control in the absence of adequate organization and the incentive of each farmer to flout the general will usually insured that results were negligible. In years of exceptional distress a resort to violence might be more effective. Outbreaks of "night riding," in which barns were burned, seed beds scraped, and physical violence visited upon dissenters occurred sporadically, especially in Kentucky and Tennessee.[20] The opposition of state authority, the difficulty of maintaining a state of semi-insurrection, the tenuousness of group loyalties, and the difficulties of securing adequate geographical coverage usually prevented lasting results. In most years prior to crop control, the acreage planted depended on the judgment of the individual farmer.

So, too, in most years the farmer marketed his crop by completely independent decision without thought of influencing the going market price. There were years when cooperative marketing associations attempted to secure for the farmer monopoly power as an offset to the monopsony power of leaf dealers or manufacturers.[21] But usually the farmer sold his crop alone. In most years before 1934 the farmer produced and sold his crop on perfectly competitive terms, and the concept of a supply curve is therefore validly applied.

Since 1934 government policy has replaced individual decision in several aspects of tobacco supply. Year-to-year fluctuations in planting are determined by acreage controls, while purchase and loan agreements influence short-run market results. Consideration of the latter is postponed to the following section, but we may note that collective acreage controls raise doubts as to the meaning and utility of the supply curve concept. Where the individual farmer in an uncontrolled market reacts to price as a datum and adapts himself to it without hope of influence, the Department of Agriculture sets acreage allotments with the explicit purpose of affecting price. The true supply curve of traditional economic analysis is drawn up on perfectly competitive assumptions and seems ambiguous when applied to the behavior of a quasi-monopolist like the Department of Agriculture.

It is, however, worth while to consider the behavior of tobacco supply under the AAA as if it resulted from perfectly competitive conditions. We can compare the price of tobacco in one year with acreage or production the following year and know that we are measuring the influence of price upon supply rather than vice versa. Moreover, both the individual farmer and the Department of Agriculture base their decisions to plant or

20. J. G. Miller, *The Black Patch War* (Chapel Hill, University of North Carolina Press, 1936); J. O. Nall, *The Tobacco Night Riders of Kentucky and Tennessee, 1905–1909* (Louisville, Standard Press, 1939).

21. *Ibid.;* see below, pp. 215–221.

their decisions to change acreage allotments on the same price experience. The department can, of course, take into account a wider variety of information in establishing policy than can the single farmer and makes its decisions with a different end in view. We might, accordingly, expect the reaction of tobacco supply to price changes to differ markedly with con-

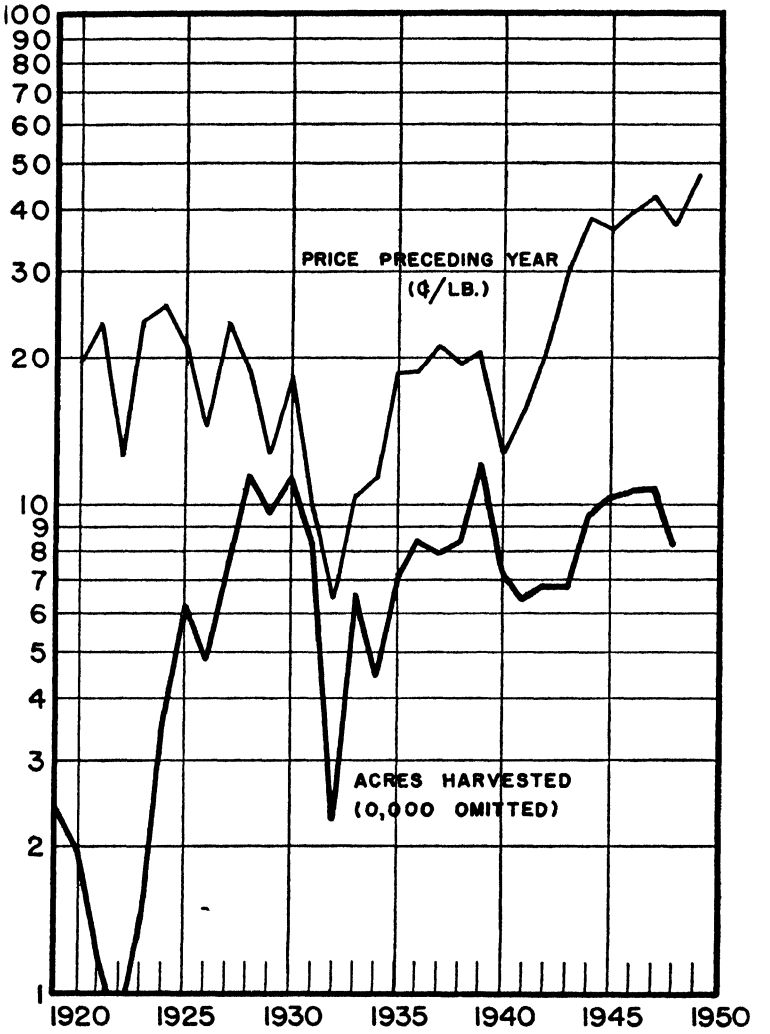


FIGURE XXII. Acreage and price preceding year, Georgia, Type 14 flue-cured tobacco, 1919–48.

SOURCE: *DA.*

trol and without, but it is interesting to see just how different the results have been. We shall first examine the relationship of production and price for the period 1910 to 1947 as if it were a homogeneous unit and shall then consider what differences are apparent in the periods before and after crop control.

The responsiveness of tobacco production to price is indicated by the data presented in Figures XXII–XXVI. In all types except Maryland there is evident a strong association between movements in price and in the quantity of tobacco planted or harvested in the succeeding year.

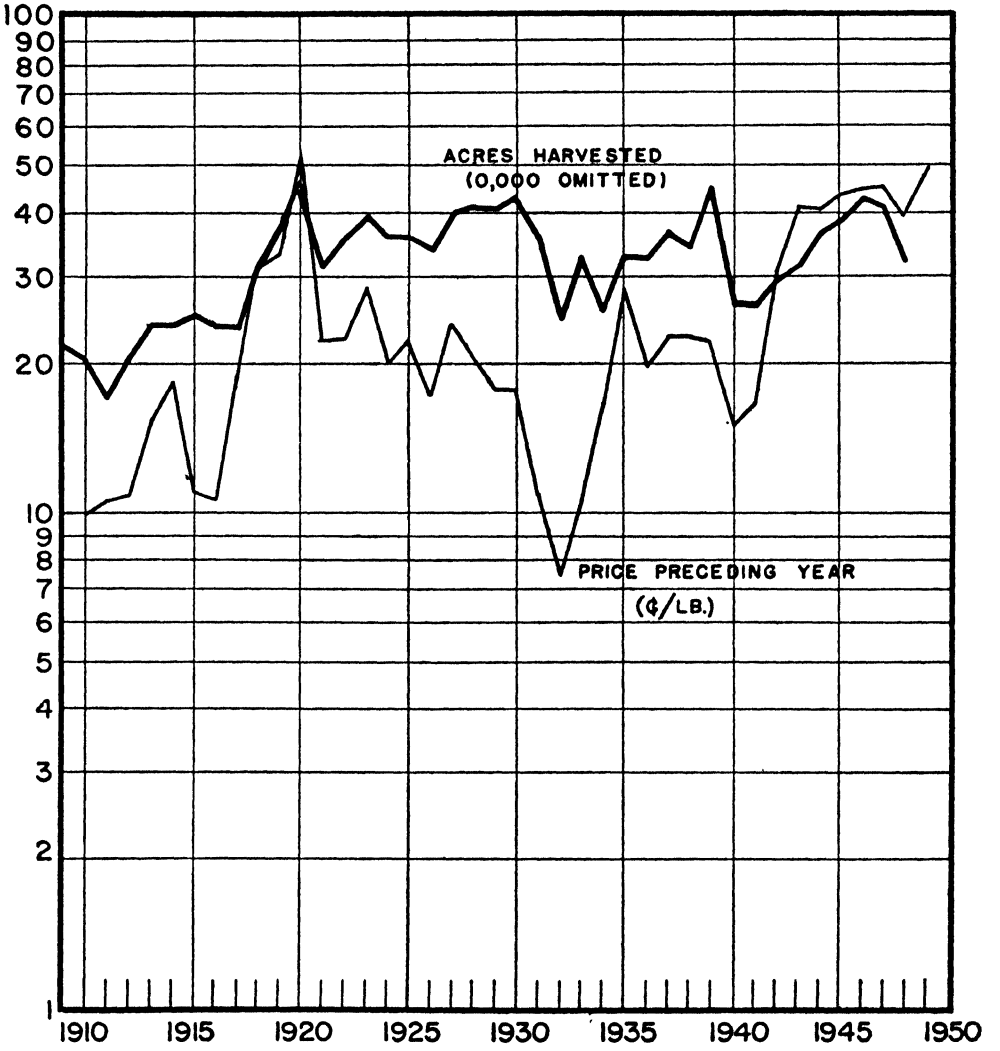


FIGURE XXIII. Acreage and price preceding year, Virginia Old Belt, Type 11 flue-cured tobacco, 1909–48.

SOURCE: *DA*.

The expected difference in responsiveness between established and fringe tobacco areas is clearly apparent in Figures XXII and XXIII. Acreage and price the preceding year moved together with fair consistency in the Virginia and North Carolina Old Belt, yet it is clear that the movements in acreage were, in general, proportionately much less violent than the fluctuations in prices received. If all acreage fluctuations

were attributed to price movements, the elasticity of supply would be less than one-third. In Georgia and Florida, on the other hand, fluctuations in acreage prior to 1934 were even more violent than price. Leaving out of account the years of secular growth induced by the boll weevil, the

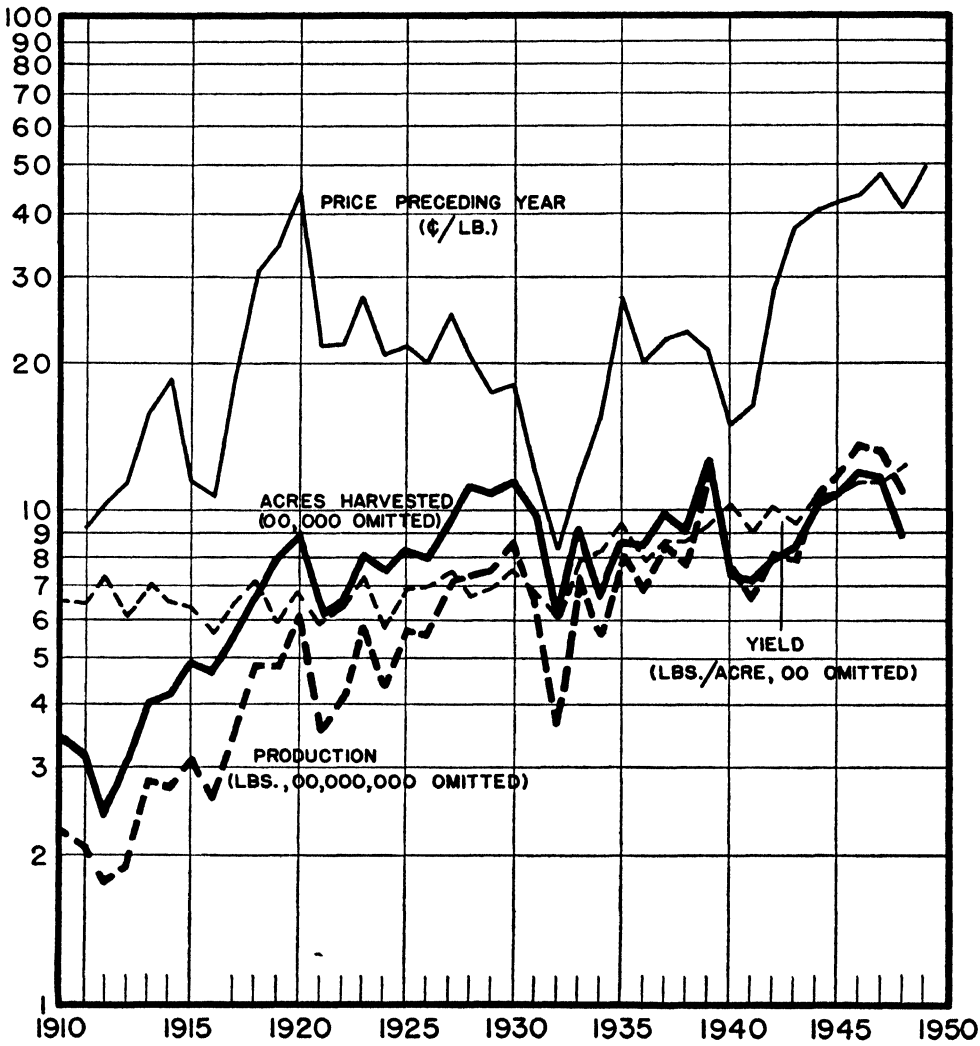


FIGURE XXIV. Acreage, production, yield, and price preceding year, Types 11–14, flue-cured tobacco, 1909–48.

SOURCE: *DA*.

elasticity of supply appears by inspection to have been somewhat greater than unity.

Flue-cured tobacco as a whole is dominated by the established areas and exhibits a responsiveness to price more like that of Virginia and North Carolina than like that of Georgia and Florida. Figure XXIV indicates a weak relationship between yield and price, but not enough to

make the variation in production conform appreciably more closely than acreage to the movements in price. Production is, however, a better series than acreage for comparison with prices. It is the supply of produced leaf, not acreage, in which we are mainly interested. And the trend of production is linear when plotted on an arithmetic scale, while the acreage trend is nonlinear.

If we compute the multiple regression of production on price the preceding year and on "time," from 1911 to 1947, we secure the following equation:

$$X_1 = -138.0 + 8.79X_2 + 20.22X_3$$

where X_1 is production in millions of pounds, X_2 is price the preceding year in cents per pound, and X_3 is "time" measured by the last two digits of the year. The mean elasticity of supply is +0.313.[22]

The regression equation accounts for 85.2% of the variation in production. Omission of X_2 from the equation would reduce the explained variation by 8.3%, while the omission of X_3 would diminish it by 47.2%. Although the rising secular trend accounts for more of the variation in

22. The standard errors of the regression coefficients are 2.14 and 2.07, respectively. Table 35 provides additional information on the reliability of the regression equation and the relative importance of the independent variables.

TABLE 35

Analysis of Variance in Regression of Flue-cured Tobacco Production on Price the Preceding Year and on "Time," 1910–47

Source of Variation	Sums of Squares	Degrees of Freedom	Mean Square	F	P
Regression on X_2, X_3	2,981,422	2	1,490,711	100.8	< 0.001
Increment X_2	248,456	1	248,456	16.8	< 0.001
Increment X_3	1,406,148	1	1,406,148	95.1	< 0.001
Residual	517,421	35	14,783		
Total	3,498,843	37			

Both regression coefficients differ significantly from zero according to the usual statistical tests. The marginal contribution of X_3 to the explained sum of squares is 7 times that of X_2. For further explanation, see notes to Table 24, p. 120, and to Table 43, p. 243.

Tobacco prices have been left in nominal form without any attempt to correct for changes in the value of money. The decision to do this was reached partly on the empirical ground that deflated prices show no increase in correlation with production and partly because nominal prices are likely to be as significant as real prices in determining conduct over short periods. In planning from one year to the next, people are likely to have a fixed idea of what a dollar is worth which will not respond quickly to changes in purchasing power. This is especially likely to be true of tobacco farmers, whose costs consist so largely of unpaid labor. Over longer periods changing price levels will have an effect, but our equation tells us least about such long-run comparisons. All factors which operate together over a period of years are lumped together in the catch-all variable "time." Our regression coefficient of production on price is principally concerned with the associations of year-to-year deviations from trend, and here nominal prices are likely to be important.

flue-cured tobacco production than does price, the influence of price is both statistically significant and of considerable magnitude.

We may next break down the data in Figure XXIV into two periods to see what light can be thrown on the effects of crop control. Computing the regression equation for the same variables as those used above for the years 1910–33, we secure:

$$X_1 = -168.5 + 7.26X_2 + 23.49X_3$$

The mean elasticity of supply is +0.293.[23] The regression equation accounts for 77.8% of the variation in production, while elimination of X_2 or X_3 would diminish the explained variation by 12.1% or 83.9%, respectively. It is not surprising to find the results much the same as for the longer period, though with a smaller number of observations the regression coefficients are somewhat less reliable.

Turning now to the years 1934–45, we find the following equation:

$$X_1 = -411.1 + 17.56X_2$$

Price accounts for 63.3% of the variation in production, while the mean elasticity of supply is +0.552.[24] The fit of this equation is not improved by including "time" as an additional variable.[25]

If this equation can be taken at face value, it implies important changes from the earlier period in the influence of price and trend. The statistical evidence alone is not sufficient to establish these changes, yet a consideration of government policy and intent suggests that the new evaluation of price and trend is not far wrong. The object of crop control has been to prevent the continuous expansion of tobacco production which previously kept the price of tobacco at unremunerative levels despite a spectacular growth in demand. According to our second equation, it appears that, with a mean price of 19.2¢ a pound during the period 1910 to 1933, farmers were prepared to increase production by 23.5 million pounds a

23. The standard errors of the regression coefficients are 2.29 and 2.82, respectively. Table 36 provides additional information similar to that in Table 35.

TABLE 36

Analysis of Variance in Regression of Flue-cured Tobacco Production on Price the Preceding Year and on "Time," 1910–33

Source of Variation	Sums of Squares	Degrees of Freedom	Mean Square	F	P
Regression on X_2, X_3	753,340	2	376,670	41	<0.001
Increment X_3	91,300	1	91,300	10	<0.01
Increment X_2	632,329	1	632,329	70	<0.001
Residual	190,976	21	9,094		
Total	944,317	23			

24. The standard error of the regression coefficient is 6.77.

25. The results of calculating the regression of production on both variables are shown in Table 37.

year as knowledge of cultural methods spread, as the population of the region increased, and as other crops proved unrewarding. The purpose of the government has been to restrict this increase in order to secure higher prices for the farmer. It is, accordingly, reasonable to conclude that the production trend in the absence of price rises has been greatly diminished and that the temporal rise in production, visible in Figure XXIV, is properly associated with the rising prices which occurred simultaneously.

These results throw light on the accomplishments of the control programs. From the point of view of the farmers, there is no doubt that they have been a success. We observe that production has continued its upward trend as restrictions on acreage have been approximately balanced by increases in yield. This does not mean, as is sometimes suggested, that con-

TABLE 37

Analysis of Variance in Regression of Flue-cured Tobacco Production on Price the Preceding Year and on "Time," 1934–47

Source of Variation	Sums of Squares	Degrees of Freedom	Mean Square	F	P
Regression on X_2, X_3	555,912	2	277,956	10.62	< 0.01
Increment X_2	89,446	1	89,446	3.40	< 0.1
Increment X_3	20,536	1	20,536	0.77	< 0.4
Residual	289,700	11	26,336		
Total	845,612	13			

Although the regression on both variables differs significantly from zero, the individual partial regression coefficients do not. $b_{12.3}$ does not quite reach the 0.05 level of probability usually accepted as a dividing line between significant and nonsignificant results. $b_{13.2}$ does not differ significantly from zero; almost half the time in random samplings from an uncorrelated population, associations as close as this would arise by chance.

The regression of production on price and "time" is too irregular and the number of observations too small to justify the use of 2 independent variables. We secure better results from either variable alone than we do with both together.

TABLE 38

Analysis of Variance in Regression of Flue-cured Tobacco Production on Price the Preceding Year, 1934–47

Source of Variation	Sums of Squares	Degrees of Freedom	Mean Square	F	P
Regression on X_2	535,375	1	535,375	20.71	< 0.001
Residual	310,236	12	25,853		
Total	845,612	13			

The simple regression of production on price is much more highly significant than the multiple regression on price and "time."

trol has been ineffective, for without control production would undoubtedly have increased much more rapidly than has been the case. The upward trend in production has been associated with an upward trend in prices. Where before control the rising secular trend of acreage and production supplied the growing requirements of industry at constant or falling prices, the effect of control has been to make the increased supplies available only at a higher price level.[26] In 1939 controls were lifted, flue-cured acreage expanded rapidly, and prices fell precipitately. The 1939 acreage increase is a good measure of the degree to which acreage is restricted below its "natural" value, while the price drop is a measure of what the flue-cured farmers owe to the restriction programs.

The effects on the tobacco manufacturers cannot be fully evaluated until we have examined their whole pattern of activity, but we may notice at this point that the conditions of tobacco supply are not fundamentally changed. To secure the production of a given quantity of tobacco requires a higher price with control than it would without, but there is no significant change in the influence of price variations. The manufacturers are faced with a supply curve which has moved upward but which has retained about the same degree of elasticity as it had before.

In all three of the regression equations presented in this chapter we have found rather low degrees of association among the variables concerned. This is not surprising, since we have obviously left out of account a number of variables which may affect production. The effect of prices on future production depends in part on the quality of the current crop. Twenty cents per pound for an extraordinarily good crop may be less stimulating to acreage expansion than 15¢ per pound paid for a very poor crop. Yield is clearly subject to large random fluctuations, and the acreage planted may react to farm costs, availability of labor, attractiveness of other crops, the relationship of present acreage to the trend value, and the directions of movement most recently experienced by acreage and prices. The number of sets of data is limited, and the attempt to include too many variables yields spurious correlations which disappear when account is taken of the degrees of freedom sacrificed.

Perhaps the greatest single reason for the relatively low proportions of variation explained is the necessity of relying on past prices as a principal independent variable. Past prices affect current productive ability, but the incentive to expand or contract depends upon expected prices. It

26. The rise in elasticity of supply since 1933 is of doubtful significance. It is reasonable to expect that the management of the tobacco crop by a central agency would result in a higher awareness of price and in more prompt reactions to unfavorable prices. There is no reason, however, to think that we have demonstrated the existence of such increased responsiveness. The regression coefficient of production on price is considerably higher than in the earlier period but is less than 3 times its standard error. The final equation is derived from only 14 observations and we can place no real confidence in its precise quantities. The increase in elasticity is too slight to have real meaning.

may generally be true that experience conditions expectation, but expectations may also depart from a simple extrapolation of past events. Attempts are often made to forecast future prices on the basis of current stocks and disappearance, developments in foreign markets, and the probable impact of war and economic crisis. Such forecasts make possible a considerable divergence of the relevant expected prices from past experience. This is particularly important in the more recent period in which potential markets have been subject to dramatic and abrupt change, and in which production has been planned explicitly by government. An offsetting circumstance is the general tendency for crop control programs to be settled before the previous crop is fully sold.

Although we have not explained all the variations in production which occur, there is reason to think that the relationships established between price and quantity are soundly based. The regression of production on price differs significantly from zero in all three time periods, and even though we are dealing with time series and hence do not have as many truly independent observations as we have sets of data, it seems likely that our measurements have meaning.

Our estimate of the elasticity of supply is likely to err on the side of understatement. We have measured the association of production and price under conditions in which all other crops were also changing. Since crop prices move together, the tendency to substitute one crop for another is diminished. The true supply curve is drawn up on the assumption that other prices are fixed. If we were able to measure what would happen to tobacco production if the price of tobacco varied while other prices were unchanged, it is probable that crop substitution would increase the indicated elasticity. As we have seen, however, substitution encounters obstacles of soil quality and cultural routine which limit its importance except in the case of major shifts in market relationships.

There is another reason for believing that our measure of elasticity is an understatement. We compare production with the price only one year preceding and thus ignore the larger effect on production which long-continued price relationships are likely to exert. It is reasonable to believe that some of the influence credited to unspecified trend factors and some of the unexplained variation may really reflect delayed price effects. Prices may influence production by their yearly fluctuations, by their tendency to change with the passage of time, and by the influence they exert on production over periods of time, even when prices themselves do not change. Our regression equations measure the effect of short-run fluctuations, but only a part of the influence of price trends or of those reactions of production to price which require an extended period of time to take place. Our elasticity measure is primarily a short-run measure, and if long-run influences were taken into account, it is likely that elasticity would be found to be higher than we have stated it.

This source of understatement is probably especially important for the period since crop controls have been introduced. When prices fall below a level which the Department of Agriculture regards as satisfactory, a moderate decrease in acreage will usually be relied upon to correct mat-

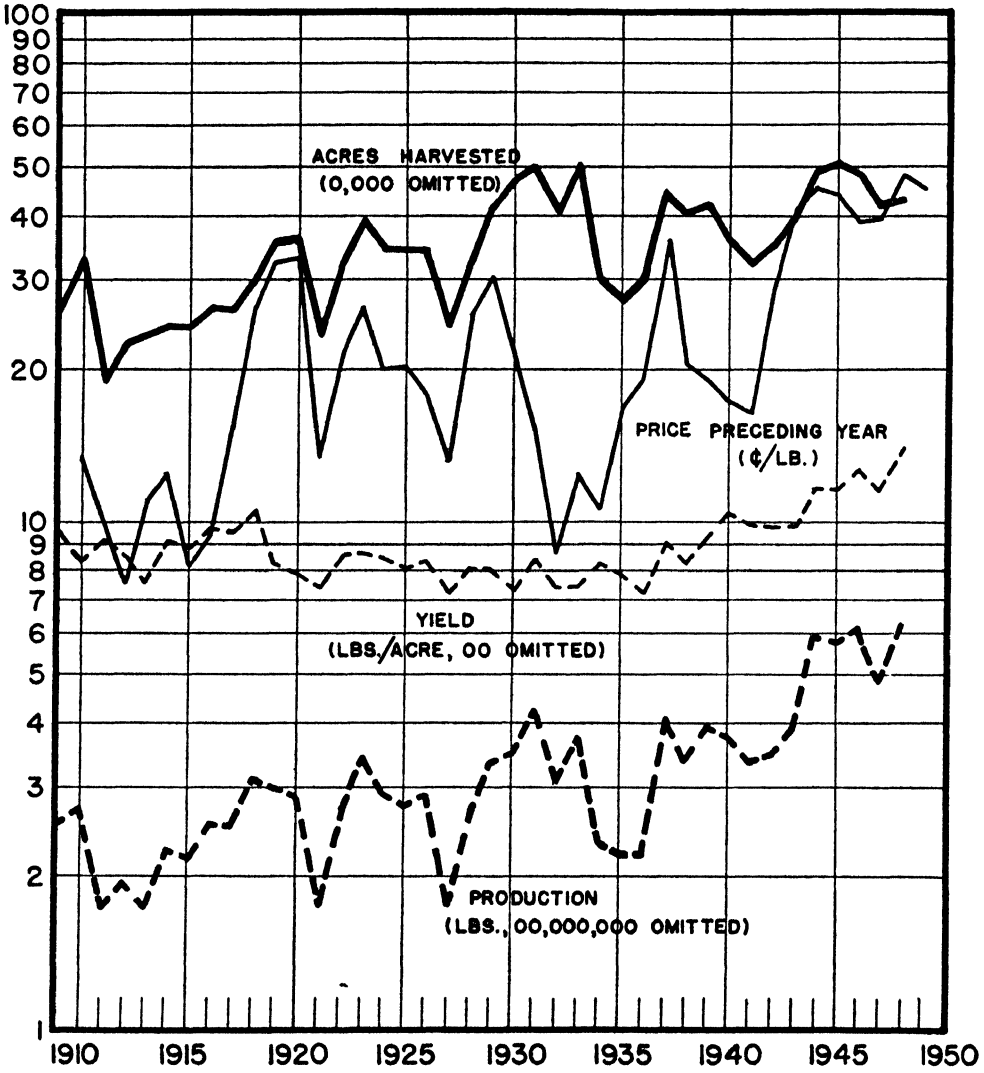


FIGURE XXV. Acreage, production, yield, and price preceding year, Type 31, Burley tobacco, 1909–48.

SOURCE: *DA.*

ters. This is consistent with the limited elasticity we have observed. If, however, the remedy should prove ineffective and prices should remain depressed, much larger acreage cuts could be expected in the future. Thus a price fall, if it lasted long enough, would provoke a reaction in supply of very high elasticity indeed. Viewed thus, it is probable that the

elasticity of supply since crop control is very much larger than it was before.

The other tobacco regions exhibit a supply behavior somewhat different from the flue-cured regions. The responsiveness of Burley supply is

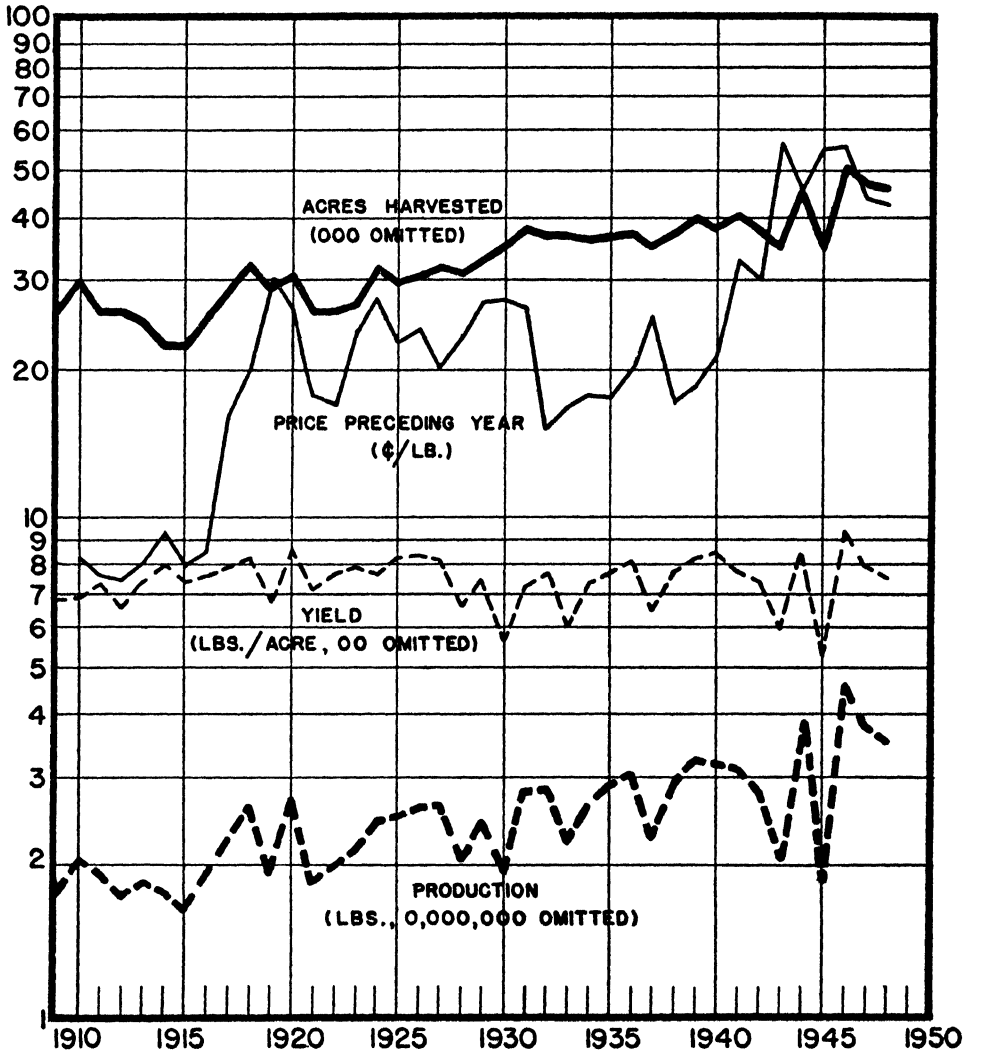


FIGURE XXVI. Acreage, production, yield, and price preceding year, Type 32, Maryland tobacco, 1909–48.

SOURCE: *DA*.

indicated in Figure XXV. Yield fluctuates considerably but without any perceptible relationship to price movements. The smaller use of fertilizer in Burley cultivation reduces the importance of the economic link between yield and price. Observed variations in yield reflect the random incidence of weather, disease, and insect pests,

From 1918 to 1929 the association between acreage and price is very close and indicates an approximate elasticity of one-half. The great rise in acreage in 1930 and 1931, while prices were falling sharply, breaks the pattern but is easily explained. The unusually high prices of 1928 reflected the excellent quality of that crop,[27] and though 1929 prices were lower, they were still high enough to encourage a continuation in 1930 of the secular upward trend in acreage. Burley prices that year were much lower, but the general severe depression in Kentucky agriculture led farmers to expand Burley acreage as the most promising source of cash income.[28] The inverse response of supply to price in these years is thus consistent with a moderate positive elasticity of supply under conditions where other prices are constant, but it also indicates the difficulty of measuring elasticity when the other prices are also changing. After 1931 prices and acreage moved together once more, but with a restricted degree of apparent elasticity.

Maryland tobacco exhibits a negligible reaction to price changes. As a settled tobacco area, there is little likelihood of large-scale crop substitutions. The sustained high level of prices since the First World War has stimulated a moderate upward trend in acreage and production, while temporary deviations from that level have not been sufficiently severe to cause noticeable fluctuations in acreage. Most of the variation in Maryland production is associated with changes in yield, and these last do not bear any observable relationship to price movements. Within the observed range of price fluctuations, the elasticity of Maryland supply from one year to the next is extremely low. The only crop control measures adopted for Maryland tobacco have been designed to improve quality rather than to effect any significant curtailment of production.

Short Run

However complex the factors may be which determine the volume of tobacco production, those determining the quantity marketed in any year can be simply stated. The entire output produced is disposed of. There is no carry-over in the farmer's possession from one year to the next. Except as modified by government intervention, the short-run supply of flue-cured and Burley tobacco is completely inelastic.

This inelasticity is the necessary result of the poor keeping qualities of freshly cured tobacco. In the farmer's hands it is a perishable commodity and must be sold for what it will bring.

Tobacco can, of course, be stored for long periods, and the major manufacturing companies keep their inventories for two to three years.

27. U.S. Bureau of Agricultural Economics, *The Agricultural Situation,* XIII, No. 1 (January 1, 1929), 21–22.

28. *Ibid.,* XV, No. 5 (May 1, 1931), 4.

Fresh-cured tobacco, in fact, is quite unsmokable and needs to age for at least a year in order to lose sharpness and gain aroma. Aging produces beneficial results, however, only when moisture is strictly controlled, and this is beyond the ability of the individual farmer.

In an earlier era, when farmers sold primarily for export, they could and did prepare for permanent storage. Tobacco was brought into proper moisture condition by hanging in a barn or by bulking and was then "prized" or packed in a hogshead under pressure. Although still used to some extent in Maryland, hogshead packing was abandoned in the Burley and flue-cured areas many years ago, and farmers do not have the necessary prizing equipment. The control of moisture by hanging or bulking is a delicate and dangerous procedure if attempted for an extended period of time and at least in the flue-cured areas would require more storage space than is usually available.

Preparation of tobacco for prolonged storage is now handled by the manufacturing companies or by leaf dealers who subject it soon after purchase to a process known as "redrying," which first dries and then humidifies the tobacco to the proper degree. This process requires bulky equipment far beyond the means of the individual farmer. It would be possible for independent companies to offer redrying services to individual farmers if there were a demand for it, but here another weakness in the farmer's market position intervenes. Holding tobacco over to another season would force him to forego immediate payment for his crop. Since many farmers are in the status of tenants and rely for supplies and subsistence upon loans secured by the crop and maturing at harvest, such a delay would be intolerable. Moreover, farmers are not generally qualified to act as tobacco speculators, so that even a farmer who is not compelled to seek immediate payment for his crop would seldom find it worth while to redry and hold off the market. Without redrying, flue-cured and Burley are perishable and must be disposed of quickly. Maryland tobacco is not redried and could be held back from an unfavorable market if the grower were prepared to forego immediate cash returns.

Sufficiently low prices might impel the farmer to destroy his crop or to turn it back into the ground as fertilizer. Very low Georgia prices might cause Piedmont farmers to abandon the still unfinished crop. These possibilities do not seem to be of practical importance. The proportion of abandoned tobacco is very small in any year, and there is no suggestion that abandonment is due to economic motives. Although some price elasticity may have existed at very low prices, in most years the quantity of tobacco offered on the market has been determined simply by the quantity harvested. The quantity harvested in turn reflects the results of decisions to plant and to cultivate made months before market prices are established.

In recent years government policy has modified the complete inelas-

ticity of short-run tobacco supply. In 1939, when British buyers withdrew from the flue-cured markets after the outbreak of war, a market holiday was declared, and a fortnight later arrangements were made for the Commodity Credit Corporation to purchase tobacco through the British buying organization in such a way as to maintain the existing market averages. Similar purchases were made in later years. Although this did not alter the practice of tobacco farmers in selling their entire production no matter what the price, it did affect the terms on which the domestic buyers of tobacco could secure supplies. The elasticity of supply from the point of view of the farmers was still zero, but government purchases introduced considerable elasticity into the short-run supply to manufacturers.

The Commodity Credit Corporation has also granted nonrecourse loans secured by tobacco at various support prices which have gradually risen to 90% of parity. These loans are channeled through farmers' cooperatives which pay out the loan proceeds to the individual farmer and in turn receive his tobacco for redrying and storage. The effect of such loan programs is to modify seriously the short-run supply pattern. When loans are available, farmers will sell no tobacco below the support price, and buyers are confronted with a supply curve which is perfectly elastic at the support level but retains its complete inelasticity at all higher prices. Loans at the maximum rate are available only in years in which marketing quotas are in effect.

CHAPTER VIII

THE SUPPLY OF LEAF TOBACCO: MARKETS

THE AUCTION SYSTEM

Method of Sale

WHEN THE FARMER has sorted his tobacco and tied it in hands, he is ready to load it on truck or wagon and take it to market. Practically all cigarette tobacco is now sold through auction warehouses. In 1946 there were 79 market towns with 436 sales floors in the flue-cured areas, 48 towns with 296 sales floors in the Burley areas, and 5 market towns with 11 sales floors in Maryland. Other types of tobacco were also sold on 17 of the Burley markets, while 3 towns were wholly devoted to noncigarette tobaccos.[1]

At the beginning of the marketing season, or at other times of crisis, the farmer may have to wait for hours or even days before he can be admitted to the warehouse floor. During most of the season he need only drive up and deliver his tobacco.

The warehouse is a large one-storied building with many skylights. The farmer's tobacco is unloaded on shallow baskets about 40 inches square, is weighed, and has placed upon it a ticket showing the weight and the grower's name. The baskets are set in line on the warehouse floor with 17 to 24 inches between rows. Only one grade of tobacco is placed in each basket. On most markets a government inspector examines each basket and marks the government grade on the basket ticket.

The buyers visit the warehouses in rotation, buying at one warehouse while the floor at another is being filled. When they reach a newly filled floor, the buyers crowd down the aisles on either side of the row of baskets being sold. The auctioneer and the warehouseman stand at the front. There are usually six buyers for the large manufacturing and export companies, as well as several commission buyers, leaf dealers, and professional speculators or "pinhookers." Such a group of buyers is known as a "set." The buyers usually pick up a hand or two from any basket in which they are interested. The warehouseman announces the government grade of the basket being sold and calls an opening bid. The auctioneer begins the weird chant which F. E. Boone of Lexington, Kentucky, and L. A. "Speed" Riggs of Goldsboro, North Carolina, have made familiar to the radio public. The buyers bid by a series of winks and signs. Usually the bids rise from the warehouseman's opening but

1. *DA*, 1947, pp. 68–71.

occasionally may fall below it. In six to ten seconds the basket is knocked down to the high bidder, and the group proceeds to the next basket. Floor boys mark the buyer's name, the company grade mark, and the price on the grower's ticket. The farmer may refuse the sale by turning over the ticket or tearing it, but if he chooses to accept, as is usually the case, he can secure immediate cash payment at the warehouse office.

The auction warehouses are privately owned and have no direct connection with the major producers. Expenses are borne by fees and commissions on the tobacco sold. Warehouses have been regarded as public utilities since 1730 at the latest,[2] and permissible fees are prescribed by law in the flue-cured regions. In 1947 the rates were 15¢ a pile up to 100 pounds and 25¢ on larger piles, except in Virginia where the flat rate was 25¢ a pile regardless of size. In addition there was a commission of 2½% on gross sales and a weighing charge of 10¢ per hundred pounds. In the Burley area, rates are not set by law and are slightly higher.[3]

This system, with minor modifications, is used throughout the flue-cured, Burley, and Maryland areas. In 1946 a cigar leaf auction was opened at Lancaster, Pa., but cigar tobaccos have not otherwise been sold at auction.[4]

In the regions of its use the auction system has long been the subject of controversy. Opponents have charged that it is merely the device by which the large buyers oppress the growers, that it is easily manipulated to depress the price of tobacco or to award special treatment to favored individuals, and that, when honestly conducted, it subjects the farmer to an unfair gamble because of erratic and arbitrary valuation of his leaf. The system has been defended as honestly competitive and as an efficient system for judging the quality of the farmer's offering and for providing immediate cash payment.

The Major Buyers

One factor which seriously influences the structure and operation of the auction markets is the great power of the buying interests. The concentration of cigarette output in a few large firms is reflected in a similar concentration in the tobacco markets, although the dramatis personnae are somewhat different.

Six major companies dominate the markets for cigarette tobacco. Three of these are the major cigarette producers, American, Liggett, and Reynolds. Each of these companies maintains its own corps of buyers who cover all markets. Two other important purchasers are the Imperial Tobacco Company and the Export Leaf Tobacco Company.

2. *Gray* v. *Central Warehouse Co.*, 106 S.E. 657, 660 (1921); also see below, p. 211.
3. *DA*, 1947, pp. 73–74.
4. *New York Times*, January 15, 1946, p. 27, col. 5.

The former buys solely for export, while the latter buys for Brown and Williamson and for the export requirements of the British-American Tobacco Company. Both companies are represented on all flue-cured markets by their own buyers.[5]

A sixth major purchaser is the Universal Leaf Tobacco Company which has served as the principal buying agent for Philip Morris. Some subsidiaries have occasionally bought for Lorillard. A wholly owned subsidiary, the Southwestern Tobacco Company, represents Universal on the Burley markets and supplies most of the Burley requirements of the Export Leaf Tobacco Company. Universal operates as a commission buyer and also buys on its own account as a dealer.[6]

The overwhelming dominance of these six companies is indicated by Table 40 on the following page.

5. The Export Leaf Tobacco Co., Ltd., is a wholly owned English subsidiary of the Brown & Williamson Tobacco Co., which in turn is wholly owned by the British-American Tobacco Co.

Under the Trust the British-American Tobacco Co. purchased leaf for export both for itself and for the Imperial Tobacco Co. The dissolution decree forbade common leaf purchase, and after 1911 Imperial purchased on its own account, while the Export Leaf Tobacco Co. was organized to secure British-American's requirements.

6. The Universal Leaf Tobacco Co. was organized in 1918 as a combination of existing leaf dealers operating on different markets. In a few cases Universal consolidated its acquisitions with its own business and runs them from its central office in Richmond. In most cases, however, subsidiaries are operated as independent concerns, and in many cases Universal does not have more than 50% control. The purpose of the combination was to create a strong buying organization which would be represented on most markets. Only one dealer on each market was admitted to the combination, so that no suppression of competition among dealers resulted. The wide representation enables Universal to keep informed of the competitive situation and to fill orders for all kinds of flue-cured tobacco.

In the 1938 crop year Universal and its subsidiaries and affiliates purchased 48.2 million pounds of flue-cured for their own account and 54.2 million pounds for others. It bought 9.5 million pounds of Burley for its own account and 54.2 million pounds on commission. Transactions with other major companies are shown in Table 39.

TABLE 39

Sales of Leaf Tobacco to Other Major Companies by Subsidiaries and Affiliates of Universal, Year Ended June 30, 1939 *

(Millions of Pounds)

COMPANY	BOUGHT ON COMMISSION	REDRIED SALES
American	——	12.3
Liggett	0.5	——
Philip Morris	30.1	7.2
Lorillard	3.9	0.8
Export Leaf	29.0	2.4

* *GX*, Nos. 168–169.

These figures indicate close ties only with Philip Morris and Export Leaf.

TABLE 40

Leaf Tobacco Purchases by Six Companies and by All Others, 1938 Crop Year *

Company	Millions of Pounds		Percentage of Total	
	Flue-cured	Burley	Flue-cured	Burley
Reynolds	75.0	92.2	9.5	27.5
American	58.6	81.7	7.4	24.3
Liggett	94.0	52.1	11.9	15.5
Universal †	102.4	56.0	13.0	16.7
Export Leaf ‡	134.2	—	17.0	—
Imperial	194.4	0.1	24.7	—
Other	129.8	53.6	16.4	16.0
Total	788.4	335.7	100.0	100.0

* *GX*, Nos. 31, 41, 111, 117; *DX*, Nos. 1242, 1272.

† Includes all subsidiaries and affiliates for flue-cured, all consolidated subsidiaries for Burley.

‡ Export Leaf purchased 34 million pounds of Burley through the Southwestern Tobacco Co. and 4 million through another dealer.

The "other" buyers were principally leaf dealers and speculators. Most dealers buy on their own account for later resale to small manufacturers or to supply special items to large manufacturers, while some have a regular business as commissioned buyers. Some represent foreign tobacco monopolies. Still others, the pure speculators or "pinhookers," act as mercantile scavengers, deriving their income from buying up lots of tobacco undervalued by the major buyers. Some undervaluing arises from the distaste of the major buyers for mixed lots of tobacco. If these can be secured at a sufficiently low price, the speculator finds it profitable to buy them in, re-sort properly, and then place them on sale again.

The concentration of purchases in so small a number of buyers plainly gives the buying interests great power in the tobacco markets. There have long been complaints of monopsonist exploitation both under the Trust and since dissolution. Even before the Trust, when buying was much less concentrated, farmers believed themselves to be at a disadvantage in the market and accused the buyers of exploiting a position of superior power.[7] The complaint has frequently been extended to include the mechanics of the auction system itself. Although market power would be unequal under any marketing system, it has been charged that the buyers maintain the auction system to their own advantage, that the rules adopted place the farmer at a disadvantage, and that the buyers manipulate the auction in such a way as to cover the fact of collusion with the appearance of honest competition.

The problem of collusion and the exercise of monopsony power will be treated in Chapter XIV. At present we will confine our consideration to the extent of the power and the relationship of power to the auction

7. Tilley, pp. 396–398, 406–407.

system. There are several issues to which we may direct our attention. To what extent are the major companies responsible for the development of the auction system in its present form? What power do the major buyers have vis-à-vis the farmers? Vis-à-vis smaller buyers? To what extent does the auction system increase or diminish such power? Does the nature of tobacco markets contribute to the success of large cigarette producers relative to the small? These issues cannot be resolved without some consideration of the history of tobacco marketing and of the factors which gave rise to the present system.

EVOLUTION OF MARKETING METHODS

Technical Peculiarities of Tobacco

The one technical characteristic which differentiates tobacco from any other major crop is its complex variation in quality. There are many factors which determine usefulness for smoking purposes. Size, freedom from damage, position on the stalk, color, elasticity, body, finish are some of the factors which seem to affect the smoking behavior of the cured and aged leaf. Since opinions differ as to what constitutes good smoking behavior in terms of lightness, strength, bite, flavor, aroma, and "burn," it is evident that the possible variation in tobacco qualities is almost unlimited. The facts that smoking behavior is related to physical qualities in an uncertain and mysterious manner and that some of the physical qualities such as "body" or "finish" are difficult to define or to reduce to measurable terms make it difficult to set up a classification of grades which will suit all users.

The complex variation in quality is to be found even within one farmer's crop. Unlike cotton or wheat which are likely to be fairly uniform for one farm in a given year, tobacco differs even between leaves on the same plant. Moreover, there is an extremely great difference in quality between poor, medium, and excellent leaf, and price differentials between grades are correspondingly wide. The farmer has always had a strong incentive to pass off poor leaf for good, to mix grades, or to adulterate his crop.

Colonial Marketing

Even in the earliest days, quality control was a problem. Tobacco was commonly used as a medium of exchange, and there was an obvious incentive for progressive depreciation of the "currency." Shipment abroad of bad tobacco was injurious to markets, and there was a continuing desire to restrict quantity in order to raise prices. As early as 1619 the Virginia Assembly provided for the inspection of tobacco and required

that low qualities be burned.[8] This regulation was ineffective, however, partly because the method of sale made the problem of quality less serious than it later became.

In the early colonial period most tobacco was shipped on consignment to London merchants whose boats loaded directly from the plantation wharf. The Virginia planter, almost wholly dependent on the Old World for all but the simplest consumption goods, usually disposed of his tobacco to the same merchant who supplied his needs. The planter's purchases were normally on credit, at good prices, and at stiff rates of interest. The sale of tobacco at harvest time usually failed to extinguish the debt. Although the planter was typically and increasingly behind in his accounts, foreclosure was rare, since the merchant made a good profit on what he did receive, and the nominal excess of accrued debt served the useful purpose of binding his customer-supplier to him.[9]

The sale of tobacco on this basis was a fairly straightforward matter. In colonial days there was little distinction in tobacco qualities except that between satisfactory and worthless leaf.[10] There was little point in packing worthless tobacco or foreign materials when there was a continuing relationship between buyer and seller and when the buyer could name the price of his own goods and of the farmer's tobacco at his own discretion. If anyone was cheated, it was not likely to be the merchant.

As tobacco spread out into the back country, direct consignment became too cumbersome. At first Scottish merchants established stores in the interior at which goods were supplied on credit and tobacco was accepted in payment. The usual disadvantages of barter made the system unacceptable to both sides, and toward the end of the colonial era there was a tendency for merchants to specialize in import or in export trade. At the same time it became unprofitable for ocean-going ships to collect tobacco from tidewater plantation wharfs. Market centers became established at Richmond, Petersburg, Lynchburg, and, for a time, Norfolk. Tobacco was loaded on boats and brought downstream from the upper reaches, or an axle was fitted through the hogshead, and, with a horse or two for power, the tobacco was rolled to market overland.[11]

The problem of quality in tobacco immediately became of greater importance. The dissolution of the old system meant that the buyer could no longer look to the following season or to the prices of the goods he sold the planter to redress the balance for poor quality. The passing of a continuing relationship between planter and merchant gave the planter a

8. Robert, p. 8; L. C. Gray, *History of Agriculture in the Southern United States to 1860* (Washington, Carnegie Institution of Washington, 1933), I, 225.

9. R. G. Albion, "Colonial Commerce and Commercial Regulation," in H. F. Williamson, ed., *The Growth of the American Economy* (New York, Prentice-Hall, 1944), p. 71.

10. Robert, pp. 94–96.

11. *Ibid.*, pp. 53–57; Gray, *op. cit.*, pp. 426–427.

new incentive to falsify quality whenever possible. Each sale was now a separate transaction, and the price received for each hogshead the most pressing single consideration. Accordingly, it was worth while to pack inferior tobacco in the center of the hogshead, with superior leaf on the outside, and to add stones, dirt, sticks, or other rubbish in order to increase the hogshead weight. There were repeated attempts to regulate the sale of leaf throughout the colonial era, and in 1730 Virginia established the first effective inspection system.[12] No tobacco was to be exported except in hogsheads, casks, or cases and from designated public warehouses after examination by licensed inspectors. Bad tobacco was to be destroyed. Maryland and North Carolina passed similar laws, and by 1790 the latter state had enacted at least 75 statutes regulating tobacco warehouses and inspections.[13]

The method of inspection was to remove the hogshead from around the tobacco, to drive an iron spike into the tobacco, and to pry open the compressed mass. A hand or two from each "break" was inspected and the hogshead then replaced. Warehouse receipts were issued for tobacco which passed inspection, and these receipts circulated as legal tender and were receivable for public fees and taxes.[14]

Hogshead Auction

Although the inspection system worked fairly well in the colonial era, it became increasingly unsatisfactory after the Revolution. Not only did lax inspectors certify worthless tobacco as "sound, well conditioned merchantable and clear of trash" [15] but the mere distinction between passed and rejected tobacco was not enough for a market which was increasingly concerned with quality. Tobacco notes declined in importance, and buyers insisted on examining the tobacco themselves.

It was a simple step from examination at the warehouse to sale at the warehouse. And if several buyers followed the inspector along as the breaks were made, it was almost inevitable that sale by auction should occur. The inspectors lost their former function and assumed the duty of auctioneer in the first quarter of the nineteenth century.[16]

Throughout the period before the Civil War the prevailing method of tobacco sale was by auction "on the breaks." The method of sale was not, however, wholly satisfactory. The perennial difficulty of dishonest packing was present even when the buyer himself attended the inspections. The floor boys who opened the hogsheads might not penetrate to the

12. Gray, *op. cit.*, p. 225; Robert, p. 8.
13. *Gray* v. *Central Warehouse Co.*, 106 S.E. 657 (1921).
14. Robert, p. 83; Gray, *op. cit.*, p. 229.
15. Robert, p. 84.
16. *Ibid.*, pp. 97–98; Robert, *Story*, pp. 68–69.

center of the tobacco mass through laziness or through a desire to help the farmer. Hence even under inspection a hogshead would often appear better than it was.

Loose-Leaf Auction

As the nineteenth century progressed, dissatisfaction with hogshead auctions increased. The development of flue-cured tobacco greatly increased the problem of quality control. The new type of leaf was subject to much greater variation in grades than were the older kinds, and this multiplied the possibilities of deception or error. Many farmers could not sort their tobacco properly for the buyer's purposes. Many farmers did not grow enough tobacco to fill a hogshead with tobacco of a single quality, and hence purchase was difficult even in the absence of deception or improper grading. Flue-cured tobacco was more perishable than the earlier varieties and likely to mold and decay if not packed under proper moisture conditions, yet farmers retained an incentive to increase the hogshead weight with excess water. Buyers usually had to redry their purchases immediately to avoid loss. Finally, the best flue-cured wrapper grades suffered injury from the high pressures of hogshead packing.[17]

The growth of domestic manufacturing made possible an increasing sale of loose tobacco. It was pointless to pack tobacco for distant shipment when it was intended for local use. The extra expense of hogshead packing only made more difficult the measurement and maintenance of quality. At least by the early 1830's local manufacturers were buying loose tobacco, and in the 1840's some of this leaf was sold through the usual auction warehouses. Before the Civil War loose tobacco sales amounted to one-fourth to one-fifth by weight of all Virginia hogshead inspections. The rise of many small manufacturers around Danville provided an expanding outlet for this type of leaf, and by 1850 less than 6% of the tobacco sold on that market was supplied by hogshead inspection.[18]

After the Civil War improvements in transportation, the more rapid growth of domestic manufacture, the growing importance of flue-cured tobacco, and increasing concern with tobacco grades stimulated a wider use of loose-leaf auctions. The growth of large manufacturers gave the buying element power to have its wants satisfied. The farmer, too, gained by avoiding the labor and expense of prizing his tobacco into hogsheads and by selling his crop more promptly after harvest. In the middle of the century most tobacco was sold in the spring and summer following harvest. The development of flue-curing and of loose-leaf sale advanced the marketing time by six months to a year and brought the farmer his

17. Tilley, pp. 85–87, 309–310; W. W. Garner, *The Production of Tobacco*, pp. 187, 442.
18. Robert, pp. 101–102.

money that much more quickly.[19] By the end of the century the flue-cured loose-leaf auction was well established.

Burley tobacco continued to be sold by hogshead auction for some years. Much Burley was shipped east for manufacture, and transportation problems encouraged farm packing. The better keeping qualities of Burley tobacco and the fact that it was not at first divided into so many grades as was the flue-cured may have contributed to the delay. From 1880 to 1905 there was a great increase in direct purchase from farmers either at the farm or off the wagon.[20] The first loose-leaf Burley auction was opened in 1905, but the last hogshead market did not close until 1929.[21]

Loose-leaf auction is a recent innovation in Maryland. Prior to the 1938 crop all Maryland tobacco was handled through a hogshead market in Baltimore. Most tobacco was prized on the farm and consigned to one of five selling agents in Baltimore. Many small farmers, however, sold their tobacco loose to "transfer buyers," who consolidated small parcels of like grade, packed them in hogsheads, and shipped them to the Baltimore auction. There the hogshead was opened by state inspectors and several hands removed and labeled. Buyers were not present at the breaks, as was the case in the earlier markets, but examined the hands in the sales room and submitted sealed bids.[22]

The persistence of a hogshead market for Maryland tobacco resulted both from the nature of the product and from the character of its customers. Maryland has consistently had fewer grades than the other cigarette types. It is also a very thin leaf which does not pick up excess moisture easily and is not usually redried. Until this century Maryland was almost entirely an export type of tobacco, and it was not until 1929 that more than half the crop was domestically consumed.[23] Much of the Maryland export went to the French Regie for use in making a kind of smoking tobacco known as "Maryland Scaferlati," and smaller quantities went to other foreign buyers.[24] Sorting before packing was the only process to which foreign buyers would have subjected loose Maryland tobacco, and they had never found it worth while to set up facilities for doing this. Foreign buyers preferred to receive their tobacco ready for shipment.

The experience of buyers with the Maryland auction was not happy, however. With the exception of spoilage and the need for delicate grade

19. *Ibid.*, pp. 102–103.
20. Robert, *Story*, p. 187.
21. P. D. Converse, "Tobacco Auctions Evaluated," *Journal of Business, 16* (July, 1943), 149; C. E. Gage, *American Tobacco Types, Uses, and Markets*, U.S. Department of Agriculture, Circular No. 249 (1933), p. 77.
22. Ray Hurley and S. H. DeVault, *Production, Marketing and Consumption of Maryland Tobacco*, pp. 235, 243, 245.
23. *Ibid.*, p. 262.
24. *Ibid.*, pp. 269–270.

distinctions, all the disadvantages which attended the earlier Virginia auctions were characteristic of the Maryland auctions. Growers often were not large enough to pack one grade to a hogshead even with the broader Maryland grades. Fraudulent packing of poor tobacco or rubbish at the center of the hogshead was frequently complained of. Inspectors in their effort to help the farmer did not break the hogshead deeply enough, or selected the best hands for exhibit, or "plucked" the hands, i.e., removed incriminating leaves from a mixed hand. Making too few breaks or making them all in the same part of the hogshead did not necessarily help the farmer but prevented a thorough sampling of the tobacco. There was a theoretical right to guaranteed quality and the buyer could submit a misrepresented hogshead to arbitration within six months. The fact that the arbitration board was in America and the hogshead in France by the time deception was discovered destroyed the effectiveness of the guarantee.[25]

The effect of foreign dissatisfaction with Maryland packing was to alienate a market. Foreign customers have been turning away from Maryland tobacco for a number of years. The French Regie, before the war, was increasingly using substitute tobaccos or diluting Maryland with other types in order to lessen its dependence on the Maryland market. Growing economic nationalism was one reason for the stimulation of production in French colonies, and unfavorable price relationships were a factor in the shift to Java tobacco, but the experience of inaccurate or dishonest packing was also important.

Meanwhile the growth in cigarette consumption has occasioned an increasing domestic use of Maryland leaf. Here the buyers are less at the mercy of farm packing. It is practical to handle loose-leaf tobacco with modern transportation conditions and with a relatively short distance from farm to factory. The buyers have had experience with auctions in other cigarette types, prefer the results to those of the hogshead market, and are large enough to make their influence felt.

In 1939 the first Maryland loose-leaf market was opened. Four other markets have been added, and the Baltimore hogshead auction has declined to relative insignificance.

ATTEMPTED REFORMS

In the past half-century there have been several attempts to devise a different method of marketing tobacco or to modify the operations of the auction system. After 1900 and again after 1920 cooperative marketing associations were formed by farmers in several states. These associations undertook to pool and grade members' tobacco, to redry and pack it, and to arrange sales by negotiation. In 1934 the New York Tobacco

25. *Ibid.*, pp. 235–239.

Exchange was organized for the purpose of trading tobacco futures after the fashion of the cotton and grain exchanges. In 1929 the Department of Agriculture began grading tobacco according to official standards on a few markets. The practice has since become general throughout the flue-cured and Burley areas. The purpose was not to replace the auction system but to introduce some order into the chaos of private tobacco grades. Inspection has served a useful purpose, but none of the other modifications has achieved lasting success.

The Pools

The first important wave of pooling agreements occurred in Kentucky in 1906. At this time the American Tobacco Company and its subsidiaries controlled about four-fifths of the national plug production. Burley tobacco was the principal plug ingredient, and in the 1905–6 marketing season the leaf department of the American Tobacco Company purchased 165 million pounds [26] of an estimated crop of 228 million.[27] Since certain subsidiary companies purchased their own leaf, the total impact of the Tobacco Trust on leaf markets was even higher than this proportion suggests.

Kentucky farmers had made several previous attempts to offset the monopsony power of the Trust by joint action, but divisive interests were strong and pooling contracts were not enforceable in the courts. The state antitrust act of 1891 and a provision in the state constitution of 1903 were held to ban collusive agreements among farmers.[28] In 1906 the legislature explicitly authorized farmers to pledge and pool their crops, and this law was harmonized with the earlier laws by construing them all to forbid only those combinations which sought to enhance or depress prices above or below their "real value." "So far as this section [of the state constitution] is concerned, trusts, pools and combinations, the only purpose of which is to obtain a fair and reasonable price for an article, are permitted." [29]

With this legal support, the farmers organized the Burley Tobacco Society with branches throughout the region. Contracts were issued binding the association to receive, grade, redry, and sell the grower's crop and binding the farmer not to sell to anyone else.[30] Public opinion was mobilized in favor of the pools, and Night Riders used physical

26. *BC*, Pt. I, p. 252.

27. Based on total tobacco crop for 1905 (U.S. Department of Agriculture, *Agricultural Statistics*, 1942, p. 156) and proportion of Burley to the total crop in 1909 (Gage, *op. cit.*, p. 10).

28. *Commonwealth* v. *Grinstead*, 55 S.W. 720 (1900).

29. *Owen County Burley Tobacco Society* v. *Brumback*, 107 S.W. 710 (1908).

30. *Burley Tobacco Society* v. *Monroe*, 146 S.W. 725, 726 (1912); *Lebus* v. *Stansifer*, 157 S.W. 727 (1913).

violence to compel adherence, although this movement was not as strong in the Burley areas as in the neighboring dark tobacco regions.[31] With centralized control of the crop, the society was able to bargain with the Trust, and prices rose somewhat.

Although higher prices were welcome to the farmer, there were continual incentives, which not even the threat of violence could offset, to break the contract and to sell elsewhere. If society tobacco was increased in price, so also was the price of independent tobacco, and it was a simple matter for the Trust to offer higher prices to contract breakers than the society could return to its members. Moreover, the operating expenses of the society were a charge upon the members, and it was often necessary to wait for cash payment.

After 1908 night riding was effectively suppressed by the federal courts and by the use of federal troops, and as the desire for independent sale undermined the loyalty of members, it became less possible to apply extra-legal pressures.[32] The increased convenience and higher prices from independent sale were a constant temptation, and the Burley Tobacco Society was involved in a long series of lawsuits to restrain members from breaking contracts or to secure damages for contracts already broken.[33]

In 1914 the Supreme Court held the Kentucky statutes and constitution as interpreted by the state courts to be unconstitutional under the Fourteenth Amendment as offering no standard of conduct that it was possible to know in advance.[34] The Kentucky courts were forced to decide whether the antitrust act of 1891 or the pooling act of 1896 should stand and decided in favor of the former.[35] The legal basis of the Burley pools was now destroyed, and even if the Attorney General were to wink at their transactions, there was no way by which contract breakers could be held to account.

With their main prop removed, the Burley and dark-fired pools weakened rapidly. A part of their justification was gone in any event. There were now several competing buyers in place of the old Trust, and the wartime inflation of tobacco prices removed all incentive for the farmer to worry about marketing.

The pooling movement in the flue-cured areas did not achieve as great

31. J. O. Nall, *The Tobacco Night Riders of Kentucky and Tennessee, 1905–1909;* J. G. Miller, *The Black Patch War;* Theodore Saloutos, "The American Society of Equity in Kentucky: a Recent Attempt in Agrarian Reform," *Journal of Southern History, 5* (August, 1939), 347–361.

32. *Ibid.*

33. *Burley Tobacco Society* v. *Thomas,* 141 S.W. 66 (1911); *Burley Tobacco Society* v. *Monroe,* 146 S.W. 725 (1912); *Burley Tobacco Society* v. *Gillaspy,* 100 N.E. 89 (1912); *Lebus* v. *Stansifer,* 157 S.W. 727 (1913).

34. *International Harvester Co. of America* v. *Commonwealth of Kentucky,* 234 U.S. 216 (1914).

35. *Gay* v. *Brent,* 179 S.W. 1051 (1915).

success as in the Burley area prior to the First World War. The larger proportion of dependent Negro tenants and the accompanying racial tension may have retarded collective action. The pressure of the Trust was less overwhelming in the flue-cured regions. In 1905 the American Tobacco Company leaf department purchased only 89 million pounds of a total crop of 198 million.[36] The 1890's, moreover, were the period in which bright-leaf tobacco culture spread into the eastern Carolinas, and this indicated a reduced incentive to organize at the same time that it made organization more difficult.

A further hindrance to the flue-cured tobacco farmer's struggle against the Trust arose from his old preoccupation with the warehouse interests and consequent confusion as to the proper objects of policy. Through its long history the auction system developed as a moderately complex and expensive distributive network and, as has been generally true in such instances, the "original producer" looked askance at the services provided and the wages received by the middleman. Rightly or wrongly, the farmer felt oppressed by parasitic interests. Even when there was no threat from monopsonist manufacturers, the farmer objected to high warehouse charges and to speculative activity which often brought the speculator a greater return than the farmer received from his more obviously productive activities. As early as 1875 under the Grange, farmers put pressure on warehouses to reduce charges and even established their own warehouses to run in competition with them.[37] Such experiments were repeated sporadically, and in later years there were attempts to bypass the auction system entirely by establishing cooperative houses which would redry, grade, and sell by negotiation.[38]

These cooperative attempts achieved only temporary success in the flue-cured areas. They were not sufficiently widespread or inclusive to secure any degree of market control, and whatever savings they could produce were not enough to command loyalty in the face of the strong opposition which they provoked. Strangely enough, they were weakened by a very coincidence of interest between themselves and the Trust. The Trust, too, believed that middlemen's services were unnecessarily expensive and sought to reduce them by dealing directly on the warehouse floor instead of through leaf dealers and speculators.[39] The Trust was willing to buy by negotiation from farm cooperatives since these did not, as in the Burley area, exert significant market power. This complaisance of the Trust toward farm cooperation and its hostility to leaf dealers provided a weapon for dealers and warehousemen in their opposition to combined action by the farmers. The advocates of cooperation could be

36. See nn. 26, 27.
37. Tilley, pp. 396–401.
38. *Ibid.*, pp. 434–436.
39. *Ibid.*, pp. 262–263, 265, 417.

accused of sympathy with the Trust, and since fear of monopoly was ingrained in the Grange and Farmers' Alliance movements, this was a damaging accusation.[40] The confusion in the farmer's mind which this produced, when added to other divisive influences and to the minor gains which cooperation could probably confer, prevented the anti-auction movement from achieving any substantial success. Throughout the period before the First World War, flue-cured farmers were continually agitating against the warehousemen, against speculators, against the auction system itself, and against the Trust. In periods of exceptionally depressed prices, this discontent crystallized in attempts to operate their own warehouses, to sell by negotiation, and even to establish their own manufacturing companies.[41] Such of these attempts as did not fail through their own weakness or through the opposition of other interests withered when prices rose. At no time was flue-cured cooperation as effective a market force as cooperation in the Burley areas.

The collapse of the wartime boom carried flue-cured tobacco to less than half and Burley to less than a third of the 1919 price. The relative hardship of succeeding years caused a revival of interest in marketing pools. In 1922 Kentucky passed the Bingham Act, making legal all agricultural pools whose object was to promote orderly marketing. Other states followed suit. The Burley Tobacco Growers Co-operative Association was organized to do business in Kentucky and elsewhere in the Burley belt.

Flue-cured farmers organized the Tri-State Tobacco Growers' Co-operative Association. Contracts were signed providing for the associations to receive members' crops, grade, redry, and sell. Informal action by the farmers to reduce acreage was encouraged.

The supporters of the new pools sought to avoid the earlier conflict with state antitust laws by the euphemism of "orderly marketing." The enabling acts said nothing about enhanced prices but mentioned, instead, improvement in marketing methods and increased efficiency which it was hoped would result. The courts were obliging in their interpretations and uniformly supported the validity of the new laws.[42]

The legal problem was solved, but the practical problems remained. The pools promised loans to members up to 60% of the estimated value of the tobacco delivered, but in practice advances amounted to only 40%. There was no spectacular rise in tobacco prices. The handling operations of the pools involved expense as well as delay, so the net return to the farmer was often lower than he could get by direct sale.

40. *Ibid.*, pp. 426–427, 437.
41. *Ibid.*, pp. 418–421, 439–442.
42. *Tobacco Growers' Co-op. Ass'n* v. *Jones,* 117 S.E. 174 ((1923); *Potter* v. *Dark Tobacco Growers' Co-op. Ass'n,* 257 S.W. 33 (1923); *Dark Tobacco Growers' Co-op. Ass'n* v. *Mason,* 263 S.W. 60 (1924).

Farmers were often dissatisfied with the pool's grading of their tobacco. There were errors and failures on the part of the pool managers, and in the Tri-State pool, at least, the managers were careful to direct tobacco to redrying plants in which they themselves had a financial interest.[43] All these factors weakened the members' confidence in the association and made them subject to other divisive influences.

Some of the manufacturers were outspokenly hostile to the new method of marketing. They claimed that pool tobacco was improperly conditioned and graded for their use. The American Tobacco Company and the Imperial Tobacco Company refused to deal with the pools. Reynolds and Liggett and Myers, though not enthusiastic, did trade with them.[44] In 1922 Reynolds bought more than $22 million worth of green tobacco from the Burley pool alone.[45]

The most violently opposed group were the warehousing interests. The success of the pool shut down some market towns, and the surviving warehousemen saw their own livelihood threatened if the trend continued. Accordingly, the warehousemen and the market town commercial interests waged an active and vicious campaign of rumor and propaganda against the associations. Since many farmers were in debt to warehousemen and time merchants for fertilizer and supplies, strong pressure could be applied. Although the manufacturers warned their buyers not to engage in the campaign against the association, the buyers also had an interest in the existing system and as individuals tried to defeat the pool.

Despite the attempt to hold the associations together by legal action for the full four-year term of the initial contracts, adequate redress could not be obtained from contract breakers, and the associations slowly bled to death.[46] The percentage of the total crop received by the Tri-State Association declined from 35.4% in 1922 to 14.6% in 1925, and the contracts were not renewed thereafter.[47] The Burley association, aided by sharply rising prices in 1921 and 1922, increased its share of the crop to 72.5% in 1922 and 75.2% in 1923.[48] The decline in price in

43. U.S. Federal Trade Commission, *The American Tobacco Company and the Imperial Tobacco Company,* 69th Congress, 1st Session, Senate Document No. 34 (1926), pp. 6–11.

44. *Ibid.*

45. *DX,* No. 1242.

46. *Burley Tobacco Growers' Co-op. Ass'n* v. *Rogers,* 150 N.E. 384 (1926); *Burley Tobacco Growers' Co-op. Ass'n* v. *Samples,* 284 S.W. 1069 (1926); *Burley Tobacco Growers' Co-op. Ass'n* v. *Devine,* 289 S.W. 253 (1926); *Burley Tobacco Growers' Co-op. Ass'n* v. *Pennebaker Home for Girls,* 299 S.W. 734 (1927); *Burley Tobacco Growers' Co-op. Ass'n* v. *Boyd,* 6 S.W. 2d 241 (1928); *Burley Tobacco Growers' Co-op. Ass'n* v. *Tipton,* 11 S.W. 2d 119 (1928); *Burley Tobacco Growers' Co-op. Ass'n* v. *Roeder,* 165 N.E. 330 (1929).

47. U.S. Federal Trade Commission, *Report of the Federal Trade Commission on Agricultural Income Inquiry,* 1937, pt. I, p. 801.

48. U.S. Federal Trade Commission, *The American Tobacco Company and the Imperial Tobacco Company,* pp. 71–72.

later years reduced its percentage, and contracts were not renewed after the 1926 crop.

The flue-cured pool was dissolved and although the Burley pool retained its legal identity and properties, it lay dormant for many years. By 1930 the only active tobacco cooperatives were in Maryland and Wisconsin.[49]

It is difficult to apportion the blame for the failure of the pools to the inherent defects of the system, errors of management, or the opposition of vested interest. The first two, perhaps, are inseparable. The possible aims of cooperative marketing were to supplant warehousemen and dealers by an alternative market institution of superior efficiency, to offset the monopsony position of the large buyers by a large seller, or to provide elasticity in the supply of tobacco in any one year by redrying and holding it off an unfavorable market. Cooperation would reduce costs only if the services of warehousemen or dealers were in fact wasteful or excessively well paid, and despite the ancient suspicion of farmers, it is not certain that this is the case. When account is taken of the desire of manufacturers to buy their own tobacco by inspection, it does not appear that cooperatives could hope to succeed purely by a lowering of costs. On the other hand, the possibilities of monopoly were limited by the considerable year-to-year elasticity of supply which we have already observed, and the withholding of leaf provided useful short-run elasticity only if carried out with full concern with the state of future markets.

None of the pools had any control over production except by ineffective admonition. In the flue-cured area the 1922 price rise was modest and within the normal range of annual fluctuations for the decade. The great secular rise in acreage and production not only increased its rate in response to the rise with a subsequent fall in price, but production continued to expand in the twenties despite a downward price trend. Burley prices for the 1921 crop rose sharply in response either to the preceding acreage cut, to the agitation accompanying the Burley pool, or to the actual operations of the pool after its organization. There was a sharp concomitant rise in production, and Burley prices fell off after 1922 although the pool continued in operation four more years. Some of its first crop was held off the market for more than a year and was later sold at an unfavorable price.[50] The pools were able to have a temporary effect on tobacco prices at the best and were then overwhelmed by production

49. Government loan programs have made use of cooperatives to redry and store the farmer's tobacco and to handle the loan proceeds. The Burley Tobacco Growers' Cooperative Association was reactivated in 1941 and a Flue-cured Tobacco Cooperative Stabilization Corporation was newly organized in 1945. These cooperatives serve as an arm of public administration and do not perform the kind of independent market function which the pools of the 1920's sought and partly attained. Robert, *Story*, pp. 279–280.

50. *List* v. *Burley Tobacco Growers' Co-op. Ass'n*, 151 N.E. 471 (1926).

changes which were at least partly due to their own activities. Neither as speculators nor as monopolists were the pools a sufficiently great success to retain the loyalties of their members. The lack of success may have been due in part to the countermeasures of other interests, but the principal weakness was lack of control over an otherwise elastic supply. This suggests that the traditional unfavorable position of the farmer may have been due to basic supply conditions rather than to market institutions or even to the monopsonist pressure of the major buyers.

Government Grading

The establishment of a uniform grading system has been an important aid in the marketing of several farm crops. Cotton qualities, though varied, are reducible to unambiguous physical measurements, and cotton has long been handled through trade channels on a grade basis. In 1929 the Department of Agriculture inaugurated a similar grading service for tobacco on a small scale, and in the first year 500,000 pounds were graded at the request of the owners.[51]

The department's grading system is based upon certain physical characteristics which are apparent to an experienced leaf man. Tobacco is classified according to type, stalk position, quality, and color. Cigarette types include Burley, Maryland, and five types of flue-cured according to belt. Four "groups" or stalk positions are recognized in flue-cured and Burley, and three in Maryland. Six flue-cured qualities and five Burley qualities are distinguished, and five colors are recognized. In addition there are a number of special categories for scrap, nondescript, unsound, etc., tobacco.

It will be appreciated that this system allows an exceedingly complex classification of tobacco. Although not all possible combinations of type, group, quality, and color are found, there are about 50 grades in any one cigarette type and so about 250 grades of flue-cured tobacco.

The weakness of the official grades from the point of view of the industry lies in the indeterminacy of the "quality" element. Quality is not easily reduced to physical measurement, and expert judgments need not always agree. The buyers state that the official criteria of quality are not those which they find useful in the conduct of their own businesses, that each government grade includes several of their own private grades, and that each of their grades includes several government grades.[52] The

51. U.S. Congress, Senate, Committee on Agriculture and Forestry, 74th Congress, 1st Session, Senate Report No. 1211 (1935), p. 2.

52. In one recent study it was found that a company grade contained as many as 47 government grades and that a government grade contained as many as 35 company grades. S. L. Clement, *Variations in Flue-cured Tobacco Prices,* North Carolina Agricultural Experiment Station, Technical Bulletin No. 69 (Raleigh, May, 1942) pp. 16, 18. Cited in W. C. Baum, "Workable Competition in the Tobacco Industry," (Ph.D. dissertation, Harvard University, 1949), p. 152.

major purchasers have shown little interest in the department's grades, while warehousemen and leaf dealers have been actively hostile.[53]

Some of the opposition to official grading undoubtedly arises from other causes than the ambiguous quality criteria which it establishes. Much speculative activity on the auction markets results from poor farm handling of tobacco. Confused heterogeneity of quality constitutes an "imperfection" in the market for leaf tobacco, and it is the function of dealers and pinhookers to remove the imperfection by resorting and resale. Any real improvement in farm preparation of tobacco would reduce business opportunities for these market elements, and this is probably sufficient to explain their steady opposition to government grading.

Similarly, the auction system itself depends upon the necessity of inspecting each lot of tobacco purchased. If accurate and reliable grading should in fact be possible, it would encourage the replacement of the auction system by some less expensive marketing arrangement. Warehousemen have an obvious stake in the existing system and so have adequate reason for their hostility to the grading movement.

The manufacturers, too, may have other reasons than the technical inadequacy of government grades to oppose their use. The leaf departments within each company are adjusted to the present system and may have an interest in avoiding change. A more immediate obstacle to the use of official grades may arise from a reasonable skepticism concerning the competence or objectivity of official graders. Tobacco inspection systems have broken down before through lax implementation, and the buyers may well prefer to leave the problem of quality evaluation to their own employees.

Despite lack of interest among buyers and active opposition among other market elements, the area served by government grading has increased until it has become an obligatory part of all flue-cured and Burley auction sales. It has probably been a worth-while development. Grading helps the farmer to appreciate proper sorting and to know when a particular basket of tobacco is knocked down at a price below the prevailing rate. It doubtless serves to reduce the variation in bids for tobacco of a given quality by fixing the buyers' initial attention on the approximate quality of the pile. For both these reasons, grading helps to diminish the random fluctuations generated by excessive sale speed and thus to enable a more efficient operation of the auction method.

A Futures Market

Another attempt to profit by the marketing experience of other crops led to the organization of the New York Tobacco Exchange in 1934. The moving spirit behind the project was Francis R. Henderson, a former

53. Tilley, pp. 285–286, 294–298; *Currin* v. *Wallace*, 306 U.S. 1 (1939).

president of the New York Rubber Exchange and at the time one of the governors of Commodity Exchange, Inc. About two years were spent in organizational and promotional work before the exchange was ready to open.[54]

It was hoped to establish a futures market for tobacco which would function much like the futures markets for other commodities. With the cooperation of the Department of Agriculture, warehouse receipts and a standard form of contract were worked out. Spot prices were to be based on current auction results for government Grade B4F of Type 12 flue-cured. Bidding would establish forward prices for this grade, and futures contracts were to be drawn for other grades based on definite differentials from the standard grade. Trading was to be held within 2¢ a pound of the previous day's close. Units of sale and brokers' commissions were prescribed, and delivery points were established at Norfolk and Newport News, Va., and Louisville, Ky.

After several earlier announcements the Tobacco Exchange opened on September 19, 1934. Trading began with a rush but almost immediately fell off to negligible volume. On the first day, futures contracts were drawn for delivery in January, March, May, and July, which were the months for which activity was expected, but in a few days business disappeared almost entirely. At the end of the first week the exchange members petitioned for Saturday closing "as is done by some other commodity exchanges." Only occasional transactions occurred at intervals of several weeks, and on December 28 the members voted to dissolve the exchange. Efforts were made to transfer futures trading in tobacco to one of the other exchanges, but no results were announced.

The reasons for the sudden death of the Tobacco Exchange are fairly obvious. There was no real function for it to perform. Other commodity exchanges help to transfer a standard commodity from a large number of producers to a large number of ultimate users and at the same time, by hedging and speculation, serve to separate the functions of storage, risk bearing, and manufacture. Tobacco is not a standardized commodity; it is sold to a small number of ultimate users, and there is little point in a separation of functions.

Storage of tobacco is an essential part of processing for consumption. There is no reason for the manufacturer to pay someone else to do a job which is best done under his own supervision. Moreover, since the futures contracts were to run for months only, while storage is a matter of years, futures trading could not have served to separate storage and manufac-

54. *New York Times*, 1934, February 8, p. 35, col. 7; March 21, p. 38, col. 2; May 25, p. 33, col. 1; July 11, p. 33, col. 3; August 5, Sec. II, p. 12, col. 4; August 9, p. 31, col. 5; August 31, p. 25, col. 2; September 6, p. 29, col. 7; September 16, Sec. II, p. 7, col. 6; September 18, p. 40, col. 3; September 19, p. 29, col. 6; September 20, p. 33, col. 1; September 27, p. 39, col. 3; October 4, p. 41, col. 2; December 30, Sec. II, p. 14, col. 2; January 19, 1935, p. 21, col. 5.

ture. The elimination of risk seems equally unimportant. The major companies keep inventories for two or three years and are in the market every year. Since they inevitably buy both at the top and the bottom of the market, they are self-insured against price fluctuations. It is difficult to see how it would pay them through hedging to insure with someone else. A further drawback from the point of view of the major manufacturers was the use by the exchange of a government grading system with which they have expressed complete dissatisfaction. The only likely appeal of such an exchange seems to be to those small buyers who foresee a need for greater stocks, but whose present warehouse capacity is inadequate. Whatever appeal it may have had for this or any other class of dealer did not provide enough business for the exchange to survive.

ADVANTAGES OF THE AUCTION SYSTEM

The history of tobacco auctions and of various attempts at reform suggests that the methods which have survived are the natural and perhaps inevitable consequence of a number of technical and economic incidents in the production and use of raw tobacco. The large number of small growers, the wide geographical spread of production, the perishability of cured leaf, the complex variation of quality within a single farmer's crop, the relative difficulty of transport in the loose state, the indefinite nature of many quality criteria, all limit the possible merchandising methods.

Because of transportation difficulties tobacco should be packed in hogsheads as near the farm as possible. Because of perishability it must be packed in proper keeping order. Separate qualities should be separately sold, so the unit of sale should be variable and suitably small. Since quality criteria are partly private, the buyer himself wants to establish quality rather than to have it done by an impersonal marketing service. Since there is no grade standardization, there is no going price for an identified grade. Each sale is an individual transaction where a separate bargain is struck. Minimization of expense requires a rapid sequence of transactions.

The auction market satisfies all these requirements. The large number of local markets permits purchase and subsequent packing close to the farm. Loose sale permits small and variable lots. The local representation of each major buyer allows the buyer to establish quality to his own satisfaction and to superintend the packing for subsequent transportation and storage. The rapid pace of auction sales permits the inspection of individual lots consistent with a large volume of purchases per buyer.

There is little place in tobacco marketing for a complex system of middlemen to consolidate small farm parcels for future sale en masse. The primary markets are dominated by the manufacturers' own representa-

tives, and the function of leaf dealers is to act as commission buyers for manufacturers who have no buying organization of their own, to pick up the loose ends of the business by salvaging undervalued or poorly packed tobacco, and to supply the minor needs of small manufacturers or of larger manufacturers who have miscalculated. The commercial services of warehouseman and dealer, which are the heart of some commodity markets, are peripheral in the case of tobacco.

The auction system is especially advantageous to the large buyers because of the opportunity it affords for drawing evenly upon the production of a wide geographical area and for keeping informed of competitors' activities. Buyers are usually given instructions from their central offices to acquire a certain percentage of the day's offering of each grade. A system of daily reports to the home office and frequent visits by supervisors help to keep buyers for a given company in line with each other, even though on different markets. In this way the company can cover all parts of the market evenly and can exert a consistent buying pressure against competitors at all points. Through the process of bidding on all markets it is possible to keep informed of what competitors are doing and to influence the price which they are forced to pay. The implications for market behavior will be developed further in Chapter XIV.

The seller too finds advantages in auction sale as compared with other methods. The farmer is discharged from the necessity of long-continued curing operations and from the labor and expense of hogshead packing. He can secure immediate cash payment for his crop, and all offerings are always sold. Even if prices are unsatisfactory, there is efficient contact between seller and buyer. There is no possibility of a willing buyer and a willing seller failing to come together. The openness of auction competition and the clearer identification of loose-leaf quality probably bring the farmer higher prices than he would get by private sale on the farm or by hogshead auction.

THE POWER OF THE LARGE BUYERS

Effects on the Auction System

It does not appear that the power of the buyers is primarily responsible for the persistence of the auction system. The system antedates the era of overwhelmingly powerful buyers and emerged in response to the mutual interests of both sides of the market. The major companies have, to be sure, been hostile to the efforts of the various cooperatives to erect an offsetting monopoly power, but the most vicious opposition came from other interested groups, and it appears that mismanagement and an uncontrolled elasticity of supply were the principal defeating factors. The manufacturers have also been hesitant to make use of official grades, but

it seems likely that this results from the technical and commercial unworkability of a grading system rather than from sinister interest. Official inspection systems broke down before the rise of large buyers, and until it is demonstrated that impartial grading can be done more reliably than in the past, the technical aspects of cigarette tobacco and its production will require something like the present marketing system.

There is no doubt, however, that the overwhelming size of the principal buyers affects the functioning of the auction markets. Rules of operation are established by local tobacco boards of trade, although they have also been subject to state legislation. These boards are composed of representatives of the warehouses and the purchasing interests. Rules are similar throughout the cigarette tobacco areas, partly as a result of the common membership of the large buyers on all boards and partly as the result of long experience with auction sales.

Most of the rules are designed to improve efficiency and are irrelevant to the problem of market power. Thus regulations fixing the hours of business or the spacing of tobacco on the floor are clearly necessary and reasonable. Penalties are usually provided for "nesting" tobacco, i.e., packing it on the basket in such a way as to conceal poor leaf and to exhibit the good in a mixed pile.

Two rules which have been the object of complaint concern the speed of sale and the right of retaliatory rejection. On most markets the prescribed speed is 360 baskets per hour, which allows ten seconds to call a sale, bid it, knock it down, and move on to the next lot. The right of retaliatory rejection, included in some market rules, provides that if a grower rejects a sale of one of his baskets, the buyer may, at his option, cancel the purchase of all previous baskets bought from the same grower on the same day.

The right of retaliatory rejection, if exercised, would obviously weaken the position of the farmer still further and would represent an extreme case of monopsonist oppression. Buyers for the large companies deny using the right and some state that they have not seen it used in 20 or 30 years.[55] In recent years, at least, the practice has become obsolete.

The speed of sales is a continuing complaint. The rapidity with which the auction moves from one pile to the next forces the buyer to be satisfied with a valuation which is accurate only on the average. It is not unknown for buyers to secure identical lots of tobacco on the same market on the same day at prices which will be two or three times as high for one lot as for another.[56] If under- and overvaluations balance, the buyer's total expenditure and average price will not be affected. The grower who produces only a few thousand pounds of tobacco is more seriously con-

55. *TP*, p. 8948, J. E. Lipscomb, Jr.; p. 10141, W. K. Blount; p. 10892, J. W. Glenn.

56. Aaron Sapiro, 'Rolling Their Own," *Survey, 50,* No. 1 (April 1, 1923), 17; Gage, *op. cit.*, p. 75.

cerned. If one lot of tobacco is undervalued, the damage may not be repaired by an overvaluation on subsequent lots. Of course, the individual farmer may win or lose, but the farmer is not, or, at any rate, should not be, in the gambling business.

There is here an obvious conflict of interest between the buyer who wants rapid purchase and the seller who wants careful bidding. The warehouseman and auctioneer are even more interested in speed than the buyers, since commissions depend upon the volume of tobacco handled. A high rate of speed is indicated if the inherently expensive method of purchase by individual inspection is to be reconciled with reasonable cost. Whether the actual speed is disproportionately great and unfair is a matter of some controversy. It is probable that the loose-leaf auction system yields more consistent and less biased estimates of quality than would hogshead auction and at far less cost than on-the-farm sales. The farmer probably does better than he would under other marketing systems, but whether he does as well as he could reasonably expect is a matter of doubt. The power of the buyers and the interest of the warehousemen is undoubtedly effective in maintaining the present speed, whatever one may conclude about the justice of the result.

A similar exercise of buying power is involved in fixing the number of auction markets and the dates of operation. The latter are set by the Tobacco Association of the United States, an organization which represents the principal manufacturers, export buyers, warehousemen, and a few growers. The number of markets is determined by the willingness of the major companies to send buyers. Unless American, Liggett, and Reynolds are on a market, the market is doomed to failure. Prices are certain to be lower, and farmers soon take their tobacco elsewhere. Each of the Big Three has a fixed policy to be represented on all markets where the others buy and to buy on no market where the others are not present. Thus the three major cigarette companies enter or leave a given market as a bloc. The policy of joint representation does not, on its face, indicate how the joint decision is reached, but the necessity of doing what the others do provides each company with the opportunity to shift responsibility and blame when talking with market interests.

The operation of an auction warehouse is a profitable business in its own right. The incidental benefits in the increased trade which a tobacco auction brings to any town lead local merchants and chambers of commerce to be greatly interested in seeing one established. Almost every town with any prospect of successful tobacco marketing has, at one time or another, made strenuous efforts to secure a market.

The farmers have a less urgent interest in the maximum number of markets. A nearby market is a convenience in selling, and an adequate number of markets makes possible the minimum delay in getting on the warehouse floor.

The buying companies have an incentive to increase the number of markets only so long as each can be kept busy. The cost of transporting loose tobacco makes it desirable for the buyers to secure tobacco as near the farm as possible, and this implies a maximum dispersion of markets. Over-all transportation costs are reduced if tobacco can make the greater part of its journey from farm to factory in hogshead form after purchase. On the other hand, a market must have enough business to justify the time and equipment used. The buyer is paid a good salary, takes five or six years to train, and is out of work much of the year. It is necessary that he be kept busy when actually at work. The buying staff for a major company involves an outlay of about $650,000 per year.[57]

Most markets have enough business to keep at least two sales floors in operation. A new array of tobacco is ready for sale while a floor which has just been sold is being emptied and reloaded. A further economy of buyers' time is effected by shifting buyers between belts. The fact that tobacco in different regions is ready for market at different times makes possible a gradual progress of the buying force from belt to belt. Opening and closing dates for markets are fixed by the Tobacco Association with an eye both to climatic requirements and to the possibilities of shifting buyers.

Georgia markets open around the last week in July, followed a week later by the South Carolina and North Carolina border markets. Georgia has a relatively short season of about three weeks, and most markets there are closed in time for the opening of the eastern North Carolina markets in the last week of August. Middle Belt markets open in mid-September. South Carolina markets close a week later in time for the Old Belt opening the last week of September. Old Belt markets close gradually from the end of November to the end of January, while Burley markets are open from early December to February or March. On most markets, business becomes slack toward the end of the season, and it is common for the major companies to move their own employees to the next belt while employing commission buyers to pick up the loose ends.

The attempts of the major companies to restrict markets so as to keep buyers occupied and to adjust market dates to permit shifts of buyers result in overcrowded markets at certain times. In most belts a considerable quantity of tobacco is ready for sale before the market opens. There is an unusually heavy rush of tobacco to market at the beginning of the season, and the farmer may have to wait for some time to get his tobacco on the warehouse floor. At such times it occasionally happens that sales outrun the capacity of local prizeries and central redrying plants to care for the tobacco which has been bought. In that case tobacco remains on the floor, new tobacco cannot be put on, and a "blocked sale" results. The

57. Converse, *op. cit.*, p. 154.

delay may be serious for the farmer, especially if the weather is wet. Markets frequently close while some tobacco is yet to be brought in, and, especially in Georgia, there is a considerable volume of end-of-season trucking to other belts. Through most of the marketing season warehouses are not overcrowded.

It is difficult to make a case for serious monopsonist oppression out of this set of circumstances. There is clearly a divergence of interest between grower and buyer, and more seriously between commercial interests and the buyers, as to the proper number of markets and the length of the marketing season. Under any constellation of power the opposing considerations of coverage and cost would operate to determine the optimum number of markets. It is not clear that a more equal division of power would lead to greatly different results if account were taken of the burden which the costs of extra markets and longer seasons would impose upon the whole marketing process. However, the position of the buyers is so strong and their voice so dominant that they are necessarily charged with whatever unfortunate events flow from the market equilibrium selected.

Effect of Auction Sale on the Buyers' Power

If we make the least charitable judgment of the major buyers' behavior, it appears that their power has been used to enforce a method of auction operation which, by reason of excessive speed and occasional overcrowding, subjects the farmer to risk and some loss. It does not appear, however, that the auction market as regulated by the major buyers adds significantly to the power which they possess. Singly or in concert, the buyers are more powerful than the sellers by reason of their size, but the auction method does not increase the disparity. It is possible that through constant market contact the major buyers secure an intimate knowledge of each others' leaf purchases which facilitates the pursuit of common interests, and that informal collusion is rendered easier than it would be if the market were less perfect and if the buyers knew less about each others' activity. Against this must be set the greater difficulty in securing leaf costs below those of competitors and the consequent weakening of one competitive incentive to depress tobacco prices.[58]

It does not appear that the methods of sale or the conditions of tobacco supply give a significant advantage to the large manufacturer over the small. Anyone can buy at the auction markets,[59] and for companies which are too small to support their own buying organization, there is an adequate system of dealers and commission merchants from whom supplies can be secured. If the major buyers use their monopsony power to depress

58. See pp. 329–330.

59. *Gray* v. *Central Warehouse Co.*, 106 S.E. 657 (1921).

tobacco prices, the small dealer is equally happy to take advantage of the lower price. Under auction conditions the fruits of monopsony power cannot easily be restricted to the wielder.

There may even be some advantage possessed by the small buyer relative to the large. The speed of auctions and the consequent erratic evaluation is a price paid by the major buyers to secure very large quantities of tobacco in a reasonable period of time and with a reasonable expenditure of skill and energy. The buyer with less extensive requirements may be able to watch for undervalued lots, and a well-selected assortment of crumbs from the larger buyer's table may suit him very well indeed.

The principal advantage to the large buyer is the possession of a large corps of trained and efficient buyers. The commission buyers and dealers available to all are also experienced leaf men, and it appears that buying costs through dealers are about the same as the buying costs of the major companies.[60]

We come, then, to the general conclusion that tobacco markets do not give an important advantage to the large manufacturer as against the small. The predominance of large cigarette manufacturers is based upon other factors than relative success in buying tobacco. The method of auction sale arises from technical peculiarities of the crop and does not favor either the large manufacturer against the small or the manufacturer against the tobacco grower.

Yet the institutions of auction marketing are important for the study of monopsony. The buyers are large and few, even though from other causes, and the auction markets provide the framework within which the overwhelming power of the manufacturers is exercised.

60. Converse, *op. cit.*, p. 154.

Chapter IX

MANUFACTURE

THE PROCESS OF PRODUCTION[1]

Redrying and Storage

AS SOON AFTER purchase as possible, tobacco is taken by truck to a local "prizery" and is packed under pressure in hogsheads weighing about 1,200 pounds. The hogsheads are then shipped by rail or water to more centrally located redrying plants. Reynolds operates such plants at Winston Salem, N.C., Danville and South Boston, Va., and Louisville, Maysville, and Lexington, Ky.

At the redrying plants the leaf is subjected to some sorting and regrading, but the most important process is one of preparation for storage. Tobacco will not keep if too wet and will not age properly if too dry, so control of moisture is a necessity. The hogsheads of green tobacco are broken open and pulled apart. The hands are hung upon sticks which in turn are placed upon a moving rack which carries the tobacco slowly through the long and bulky redrying machine. High temperatures are first applied to dry the tobacco completely, after which about 10% of moisture is readmitted by steam jets. On emerging from the machine in proper keeping "order," the leaf is once more packed in hogsheads and placed in the nearest storage warehouse. The major companies maintain storage areas near their principal manufacturing centers and at convenient locations in the tobacco producing regions.

Leaf tobacco normally remains in storage for from two to four years. Inventories are thus several times as large as annual leaf consumption. Even before the war, in 1940, Liggett and Myers had in stock 417 million pounds of tobacco worth $112 million.[2] Wartime expansion and inflation have increased inventory investment still further. The relationship of tangible assets to inventories is shown in Table 41 on the following page.

1. Technical details, unless otherwise cited, are derived from the following sources: B. F. Lemert, *Tobacco Manufacturing Industry in North Carolina* (Raleigh, National Youth Administration of North Carolina, 1939); R. M. Cone, W. H. Hatcher, and W. F. Greenwald, "Cigarette Industry Rules out Rule-of-Thumb," *Chemical and Metallurgical Engineering, 43* (March, 1936), 128; *TP*, pp. 3376–3383, 3462–3481, J. A. Crowe; pp. 10199–10203, W. A. Blount.

2. *GX*, No. 477.

TABLE 41

Total Tangible Assets and Leaf Tobacco Inventories, Five Major Companies, December 31, 1949 *

Company	Tangible Assets in Millions of Dollars	Inventory in Millions of Dollars	Inventory as Percentage of Tangible Assets
American	650.5	531.6 †	81.7
Reynolds	528.5	454.0 †	85.9
Liggett	416.6	333.1	80.0
Philip Morris ‡	189.1	145.4	76.9
Lorillard	100.6	66.6	66.2
Five companies	1,885.3	1,530.7	81.2

* Based on company reports, Poor's.
† Includes finished products.
‡ March 31, 1949.

The willingness of manufacturers to tie up so much capital in this way is due to the requirements of aging, of blend consistency, and of flexibility in production.

Aging is necessary if tobacco is to be smoked with any pleasure. Raw, freshly cured leaf is bitter, harsh, and lacking in characteristic flavor and aroma. During storage, fermentation brings out the desired odor and aroma, eliminates rawness and some of the bitterness. In the heavier tobacco types, fermentation is rapid and is accompanied by a substantial rise in temperature and the giving off of moisture. Cigar tobacco is ready for use in about six months. Cigarette tobacco cannot ferment so rapidly without spoilage. If it contains more than 13% water, cigarette tobacco will blacken and mold. To prevent spoilage, it is packed relatively dry, ferments slowly, and there is very little self-heating. Since fermentation requires temperatures above 60° F., aging depends upon the seasonal swing of temperature. Twice a year, in spring and fall, as temperature and humidity change, the stored tobacco undergoes a "sweat." There is some loss of solid weight, about 2.5%, and a slight gain in moisture.[3]

Just how long aging should continue for optimum effect is a matter of some controversy. The companies hold that two to three years are necessary. On the other hand, opinions have been expressed that stocks are accumulated in order to increase bargaining power against the farmers by rendering the buyers independent of the auction markets in any one year. Merle Vincent, who supervised a study of the industry for the NRA, reported various industry opinions on the proper length of aging as being one to three years.[4] W. H. Fisher states that, "according to tobacco men familiar with British practices," British cigarette manufacturers frequently use raw leaf.[5] H. M. Wootten reports the opinion of "experts in

3. W. W. Garner, *The Production of Tobacco*, pp. 414–416, 422–424.
4. *TP*, p. 5563.
5. Fisher, p. 41.

processing" that one fall and one spring sweat are the minimum requirements, so that leaf aged a year or less will have adequate quality.[6]

It seems probable that a year is the minimum period in which cigarette tobacco can be rendered smokable and that two years or more are required for the best results. That the British use much raw leaf does not seem worthy of belief without more specific evidence. W. W. Garner states that "there are no exceptions" among tobacco types to the necessity for fermentation.[7] The British do indeed prefer a more acrid smoke than does the American public, but this can scarcely extend to a liking for raw tobacco. On April 30, 1939, the Imperial Tobacco Company had inventories of 334.4 million pounds of flue-cured tobacco in England. Purchases from the 1938 crop were 194.4 million pounds.[8] This is a lower ratio of stocks to purchases than is usual in this country, but it implies an appreciable period of aging before use.

Fisher suggests that the weight loss of tobacco in storage may be used as an objective physical index of the completeness of aging and quotes Morrow and Smith to the effect that flue-cured weight losses are usually 1% the first year, 0.5% the second year, and negligible thereafter.[9] If this reasoning is accepted, it appears that one and a half to two years of storage give the best quality results and that after even one year the tobacco is much improved over the raw state.

Another reason for extended storage is to be found in the variation in tobacco qualities from crop to crop. As we have seen in Chapter VII, the quality of tobacco is affected by the amount of precipitation and by its distribution with respect to the fundamental operations of transplanting, topping, and curing. A wet weather crop will be quite different from a dry weather crop. Furthermore, the distribution of grades within a crop will be different from year to year. In some years a higher percentage of "luggy" cigarette grades will be produced than in others. If cigarette blends are to remain consistent over time, it is necessary that precautions be taken to have on hand adequate supplies of all component grades. Otherwise, deficiencies in a given group of grades in a given year would require a change in blend, and a "wet weather crop" might produce "wet weather cigarettes."

A final reason for large stocks is the desire for over-all flexibility in production. Unforeseen expansion in total cigarette consumption or expansion relative to competing brands may require larger quantities of leaf, and since this leaf must be aged, it must be purchased and laid away before there is real knowledge that it will be needed. Provision for crop

6. Wootten, 1944, p. 22.
7. *Op. cit.*, p. 414.
8. *GX*, Nos. 111–112.
9. Fisher, p. 42; J. V. Morrow and Dudley Smith, *Tobacco Shrinkages and Losses in Weight in Handling and Storage*, U.S. Department of Agriculture, Circular No. 435 (July, 1937), pp. 3, 12.

failures may also require stocks. However, weather, disease, and insect pests usually affect quality more seriously than they do the total pound quantity available, and precautionary inventories for this reason are probably accounted for adequately by the considerations of consistent quality outlined above.

It does not seem, therefore, that the usual three-year stocks of cigarette tobacco are unreasonable or represent either naive error or a deep-laid plot against the farmer. During the war, inventories were drastically drawn down, and the margins of safety for future demands or for grade standardization were wiped out or seriously eroded. It is believed that most manufacturers were forced to dilute their blends with inferior tobacco. Yet it did not prove possible to shorten the aging period greatly. Despite the pressure of sales during the wartime shortages, stocks of flue-cured tobacco did not fall below 1.7 times domestic disappearance, while the ratio of stocks to Burley disappearance did not fall below 1.4.[10] These figures refer to flue-cured and Burley used for all products, not merely cigarette leaf. Wootten estimated in 1945 that none of the leading cigarette manufacturers had more than 20 months' supply of tobacco, and one large company was reported down to 13 months.[11] Reynolds was forced to ration cigarettes to domestic consumers in 1943 and later years because of leaf shortages.[12] The remarkable way in which inventories were maintained under stress is suggestive of the essential nature of the aging process.

Cigarette Production

As has already been indicated, the amount of moisture in leaf tobacco is a critical factor in safe storage and fermentation. Moisture is equally important in the manufacturing process. Leaf will spoil if it contains more than 13% water, yet it cannot be handled without breakage if it contains less than 14%. Furthermore, the efficiency of cigarette making machines is seriously affected by a departure of ½% from the optimum. Consequently, moisture control is an essential part of manufacturing technique, and there is a continuous cycle of drying and humidifying throughout the process.

Before tobacco is used in cigarettes, the leaf is "stemmed," i.e., the thick, woody midrib is removed. Some leaf is so treated at the time of redrying, but most stemming is done after the normal term of storage. In some plants the stemmed leaves, or "strips," are put back in hogsheads for another six months, while in other plants, stemming operations are an integral part of the final process of manufacture.

10. *DA*, 1947, pp. 20, 22.
11. Wootten, 1945, p. 18.
12. R. J. Reynolds Tobacco Company, Prospectus (July 7, 1945), p. 7.

Most stemming and manufacturing operations are carried out in buildings of four or more stories so that leaf may move from one process to the next by chute or gravity conveyor. Hogsheads received from outdoor storage are raised to the top floor, broken, and salvaged, and the tobacco allowed to come into higher order for handling. This may be done in a "sweat room" where a temperature of 100° F. and relative humidity of 85% are maintained. After several days in this atmosphere, the tobacco attains about 14% of moisture and may be pulled apart without breaking. The caked masses are removed to a "pulling-up" room where temperature is kept at 75° F. and humidity at 80%. The hands of tobacco are pulled apart and picked over, and wire baskets are filled from different piles in rotation so as to mix belts and grades.

The partly blended tobacco is then subjected to steam in an "ordering machine" which raises the moisture content to the 20% or 25% required for safe stemming. The machine usually consists of a long steel tunnel through which wire baskets of tobacco are carried on an endless conveyor belt. The leaf may then be dumped down a chute to the floor below where conveyor belts bring it to the stemming machines.

These machines grasp each leaf by the butt of the stem and pull it between knives which shear off the rest of the leaf from the midrib. A team of girls is required to feed each machine, and leaf which the machine misses is stemmed by hand. Some irregular scrap is produced in this process. After a cleaning from dust and sand by air separators, this scrap is graded by size; the larger pieces are returned to the flow of cigarette tobacco, while the smaller pieces are salvaged for use in pipe mixtures. Stems are salvaged for insecticides and fertilizer.

Strips are discharged from the machine on a wide, slowly moving conveyor and are picked over by hand to remove foreign objects or undesirable leaf. A rotating wire cylinder sifts out tobacco dust and fine-grain tobacco fragments for salvage as insecticide and fertilizer. The cleaned strips then go to temporary storage for a few days or may be put into hogsheads for longer periods. During the stemming and cleaning operations the strips are reduced in moisture to about 16%, but if storage is to last more than a few days they must be redried to 12%. The process described is applied separately to flue-cured, Burley, and Maryland tobacco, while Turkish leaf, because of its small size, is not stemmed at all.

Stemming operations are usually carried out in separate plants by the leaf departments or leaf subsidiaries of the various companies. When required for use, strips are transferred to the manufacturing departments and plants. If they have been redried for safe storage, they must, of course, be rehumidified for handling. Loose strips are forked into automatic spreaders from various piles in rotation in order to obtain further blending within the type, and the type blend is spread evenly upon conveyor belts. In some plants there is a mixing of tobacco types before the strips

leave the stemmery, while in others, different types are blended only as part of the final process of manufacture. The order of blending also differs among plants, but it is usual for Burley to be mixed with Maryland, for flue-cured to be mixed with Turkish, and for the two mixtures then to be combined in the full blend.

One reason for carrying out the blending in stages is the necessity of applying different conditioning treatments to various types of leaf. Hygroscopic agents are added to the tobacco to make it more pliable for future operations and to enable it to retain its moisture in a dry climate after manufacture. The principal agent has long been glycerine, although Philip Morris uses diethylene glycol which is claimed to be less irritating. Flavoring ingredients are added to affect the flavor and aroma of the smoke and, equally important, to give a pleasing odor to the newly opened cigarette package. "Cocoa, chocolate, licorice, ginger, cinnamon, tonka, vanilla, coumarin, molasses, rum, brandy, maple syrup, certain esters, angelica, oil of anise, oil of juniper, oil of cloves, honey, and sugar are among the flavoring agents which have been used" in tobacco products.[13] The application of these various substances, whether by dipping or in sprays, is known loosely as "casing."

Burley tobacco receives the principal casing treatment because of its highly porous and absorbent character. Burley is usually dipped in a heavy syrup of flavoring and hygroscopic agents, is wrung out under pressure and dried at about 100° C. The other strips may be subjected in a revolving casing cylinder to a fine spray of hygroscopic and volatile flavoring agents as is also done to the dried and sweetened Burley strips. The consolidated blend may be stored in bulk for the casing solutions to diffuse evenly or may be heated and sent at once to the cutting machines. Here the tobacco is shredded to the proper size and is dried, cooled, subjected to a final dressing of aromatic sprays, and placed in storage for several days. The finished blend is usually stored in small bins or boxes so that it will not be unduly compressed by its own weight. In the course of storage the tobacco mixture "draws," i.e., attains a uniform diffusion of aroma and flavor.

After storage the cut tobacco is placed in wheeled tubs or trolleys, is taken to the making room, and is placed in hoppers on the machines. The making machines are fundamentally the same as Bonsack's early invention, though much more rapid and reliable. A roll of cigarette paper is drawn through a mechanism which stamps the name of the cigarette and then passes through a guide to receive a steady stream of tobacco. The paper is then folded over the tobacco, pasted, closed, and heat dried to form a continuous cigarette. A rapidly rotating or reciprocating knife cuts off lengths of 2¾ inches and delivers them on a narrow ledge at a

13. C. F. Bailey and A. W. Petre, "The Modern Cigaret Industry," *Industrial and Engineering Chemistry, 29* (1937), 15.

rate which varies from 750 to 1,600 per minute. The cigarettes are inspected and placed in trays which hold 3,600 cigarettes.

The weights of the filled trays are checked and the trays are then placed on the packing machines. In some plants these machines are in the same room with the making machines, while in others the trays must be sent by truck or conveyor to another part of the plant. The packing machine selects 20 cigarettes, tests them, wraps them in paper and foil, seals, labels, and stamps them at a rate of 1,200 to 2,400 per minute. A cellophane wrapping machine wraps as many as 240 packs per minute.

Cartons are filled by hand as the finished packs emerge and are then closed, sealed, and labeled by machine. Cartons travel to the packing room where they are placed by hand in containers holding 50 or 60 cartons. These cases are then closed by hand and sealed by hand with the aid of a machine which automatically feeds the sealing strips.

The processes described vary slightly among plants but in general follow the pattern which has been outlined. The sequence may, perhaps, be more clearly seen from the flow chart of Philip Morris operations presented in Figure XXVII on the page following.

MANUFACTURING COSTS AND THE SCALE OF ENTERPRISE

The Nature of the Production Process

The manufacture of tobacco products began as a small-scale enterprise, and small plants are still able to produce at costs comparable to those of large plants. Cigarettes are no exception despite the high degree of mechanization applied to certain processes.

From our discussion of manufacturing technique it is apparent that there are four principal requirements for efficiency and economy. Temperature and humidity must be strictly regulated. Large quantities of tobacco must be moved in a controlled flow from one process to the next. Quality must be maintained by repeated inspections. At various stages in manufacture the tobacco and the finished product must be manipulated by machinery.

None of the requirements appears to give a significant advantage to large producers. There is no obvious reason why control of temperature and moisture should be easier for large masses of tobacco than for small. The flow of materials to meet each other is, if anything, directed with more difficulty when quantities are large. The amount of labor required for quality inspection appears to be proportionate to the quantity of tobacco concerned. The machinery used is easily adapted to small-scale operations.

Much of the equipment used in cigarette manufacture is employed in moving tobacco from one part of the factory to another and with handling

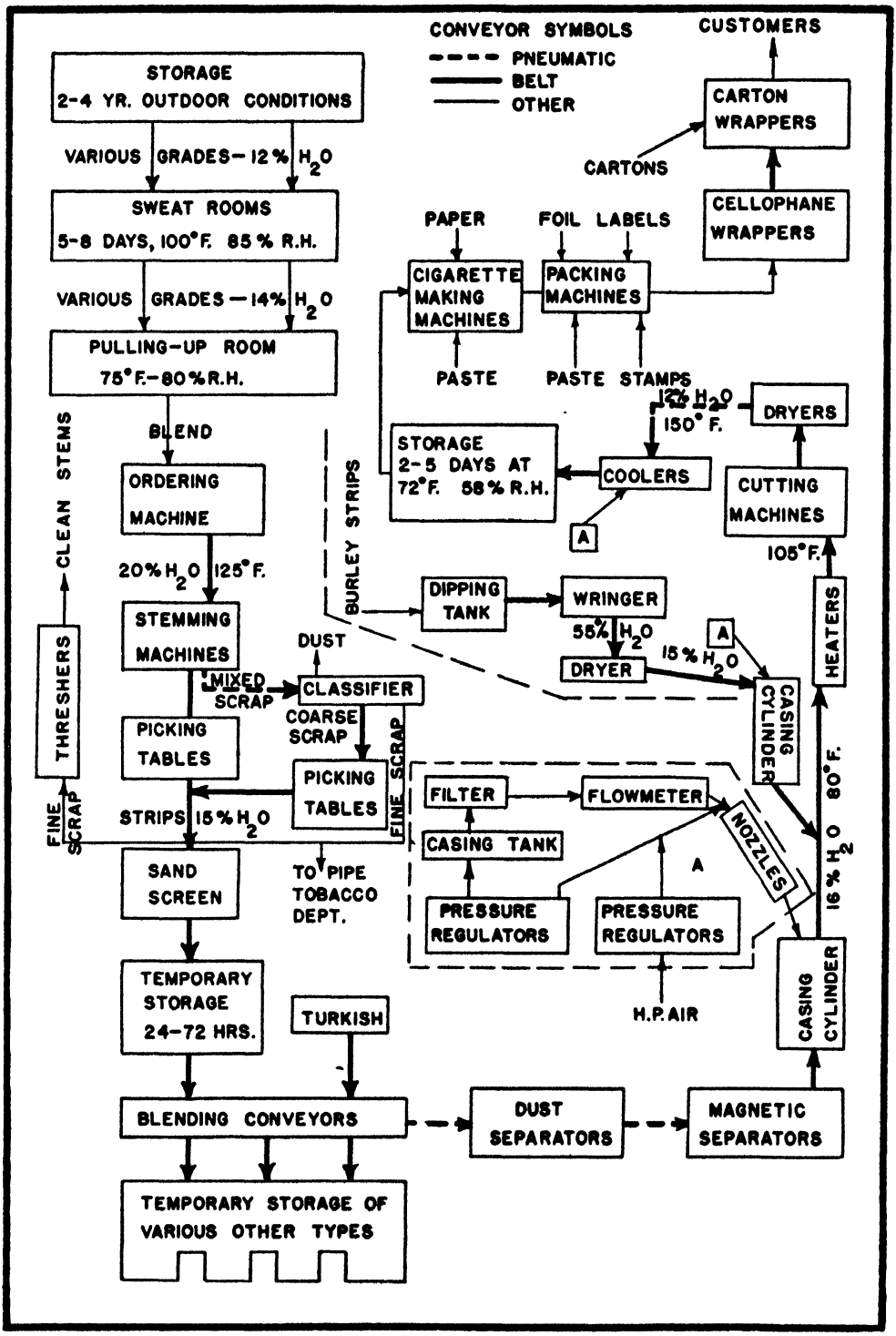


FIGURE XXVII. Flow chart of Philip Morris manufacturing operations.

SOURCE: R. M. Cone, W. H. Hatcher, and W. F. Greenwald, "Cigarette Industry Rules out Rule-of-Thumb," *Chemical and Metallurgical Engineering, 43,* No. 1 (March, 1936), 128.

it during quite simple processes. Conveyor belts are undoubtedly necessary if large masses of tobacco are to be handled without confusion and waste. A part of the service of conveyor systems and of other equipment for handling tobacco is merely to overcome the disadvantages and confusions inherent in large quantities of material which are difficult to keep track of and physically difficult to move. The same problems may not arise in such serious form when the scale of operations is small. In any event, there seems to be no reason why the equipment for simple handling of tobacco cannot be as well adapted to small operations as to large.

Other equipment is used to control the moisture content of tobacco during the various manufacturing processes. Some of this machinery is usually fairly large. Redrying machines may process as much as 10,000 pounds an hour, and ordering machines have similar capacities. At peak capacities one of these machines could turn out enough tobacco in an eight-hour day to make 26.7 million cigarettes. This is equivalent to a yearly rate of 7 billion. Even a moderately small producer could absorb the output of machines of this size, and there is no obvious reason why they cannot be made still smaller without loss of efficiency. The fact that the major producers operate multiple sets of redrying equipment indicates that there is a size beyond which such equipment cannot profitably be built. There is reason to think that 10,000 pounds per hour represents the maximum efficient output for a single machine, and there is no indication of what may be the minimum efficient size. In 1939 there were 106 leaf-processing plants in North Carolina alone. Some of these evidently found it possible to redry tobacco on a very small scale. On the face of it, it seems that the simple processes of drying and humidification are as well adapted to small-scale operations as to large.

The control of quality depends upon direct inspection of the tobacco to determine humidity and to remove undesirable tobacco or foreign objects and upon a continuous check on the operation of various machines. The amount of labor required to inspect tobacco depends largely upon the amount of tobacco to be inspected, and the labor involved in checking machines depends upon the number of machines in use. There is some reason to think that these problems of quality control are even more difficult in large firms than in small. There is, for example, the occasion on which the Supreme Court of Mississippi declared: "We can imagine no reason why, with ordinary care, human toes could not be left out of chewing tobacco, and if toes are found in chewing tobacco, it seems to us that somebody has been very careless." [14] Although this incident has a unique piquancy, there have been other reported damage suits as a result of odd foreign objects in plug and smoking tobacco and as a result of one ciga-

14. *Pillars* v. *R. J. Reynolds Tobacco Co.*, 78 So. 365, 366 (1918).

rette which developed a two-inch blue flame.[15] The reported cases are, of course, only those in which the manufacturers or the plaintiffs thought an appeal worth while, and the number of unreported cases or cases settled out of court must be considerable. There is no doubt that the manufacturers of tobacco products, and especially of cigarettes, take every precaution to prevent contamination, but the remarkable incidents which have occurred are persuasive testimony to the primitive nature of the processes involved in handling tobacco. The simple processes in turn suggest that the efficiency of small cigarette producers is probably equal to that of the large.

The physical manipulations of stemming, shredding, making, and packing employ machinery of considerable complexity, yet here again there is no obvious advantage to size. In all these cases the output of a single machine at maximum efficiency is small compared to the total output of even a quite small company.

Stemming machines give little advantage to size. Small stemming machines are reported to be equally as efficient as large.[16] Even the best stemming machines, though significantly more efficient than hand labor, do not represent the application of highly sophisticated mechanical techniques. Each machine requires the services of several girls to feed it. Some leaf is missed by the machine and is stemmed by hand. Some of the small independent leaf dealers do all their stemming by hand. The persistence of hand methods is due partly to the availability of cheap labor. Stemmers, and especially "slow stemmers," are among the most poorly paid workers in a poorly paid industry.[17] The fact that hand stemming can compete with machine stemming, even though on unfavorable terms, indicates the primitive nature of the process and the doubtfulness of any important advantage accruing to the large producer.

The processes of cutting, making, and packing use complex machinery which could not be replaced by hand labor. A modern making machine will turn out in one to three minutes as many cigarettes as a hand roller used to be able to make in a ten-hour day. Although "Cigarette maker, hand (tobacco)" is still recognized as an occupation,[18] hand rolling is restricted to expensive grades, and all ordinary cigarettes are machine made. Yet even these machines, at their most efficient size, produce indi-

15. *Liggett & Myers Tobacco Co.* v. *Wallace,* 69 S.W. 2d 857 (1934); *Liggett & Myers Tobacco Co.* v. *De Lape,* 109 F.2d 598 (1940); *Foley* v. *Liggett & Myers Tobacco Co.,* 241 N.Y. Supp. 233 (1930); *R. J. Reynolds Tobacco Co.* v. *Loftin,* 99 So. 13 (1924); *R. J. Reynolds Tobacco Co.* v. *Stringer,* 103 So. 5 (1925); *Corum* v. *R. J. Reynolds Tobacco Co.,* 171 S.E. 78 (1933).

16. U.S. National Recovery Administration, Division of Review, Industry Studies Section, Tobacco Unit, *The Tobacco Study* (1936), p. 102.

17. *Ibid.;* S. C. Sufrin and T. P. Henson, "Hours and Earnings of Employees of Independent Leaf-Tobacco Dealers," *Monthly Labor Review, 53,* No. 1 (July, 1941), 215.

18. U.S. Employment Service, *Dictionary of Occupational Titles,* Pt. I (June, 1939), p. 179.

vidually only a small proportion of the total output of a large firm. Even as small a producer as was Philip Morris in 1936 operated a number of cutting, making, and packing machines. In 1942 the American Tobacco Company owned approximately 600 making machines.[19] The individual machines are relatively small and, except for maintenance and inspection, are self-contained and independent of each other. One machine is as efficient as one hundred, and any manufacturer has the same ability to achieve manufacturing efficiency as does the largest. The same considerations apply in the case of packing machines.

One possible disadvantage for the very small manufacturer arises from the use of labor to inspect, adjust, and repair more than one machine. In most factories there is a "cigarette catcher" to each machine, who inspects the emerging cigarettes and places them in the packing trays. A "making machine operator" has charge of minor adjustments on two machines, while "examiners" and "adjusters" check cigarette weights and make more intricate adjustments on several machines. A factory with only one machine would operate at some disadvantage on this account. If we assume that no consolidation of functions is possible and assume a normal production of 1,000 cigarettes per machine-minute and hourly wages of 54¢ for operators, 57¢ for catchers, 55¢ for weighers, and 89¢ for adjusters,[20] this would imply labor costs of 4.3¢ a thousand for one machine and 1.9¢ a thousand if six machines were operated.

Presumably minimum labor costs could be obtained with no more than six machines. This would imply a production of from 4,500 to 9,600 cigarettes per minute or from 0.6 billion to 1.4 billion per 300 eight-hour working days. The output of six machines cannot be accurately estimated, since various rates of operation are possible and the most efficient rate per man-hour may be at a relatively low rate per machine-hour. It seems likely, however, that maximum technical efficiency could be obtained with an output of about one billion cigarettes per year.

These figures make no pretense to accuracy. Consolidation of functions might allow minimum labor costs with two or three machines. Other parts of the process may require a larger output for efficiency than do the making machines. There may be problems of synchronizing making and packing machines which require more than the minimum making-machine output in order to attain maximum efficiency for the process as a whole. Yet packing machines are small relative to the total output of most firms, and most of the other machines for handling or cutting tobacco either are small by necessity or can be adapted to small operations. Whether minimum costs are found at 0.5 billion or at 5.0 billion does not

19. American Tobacco Company, Prospectus, April 24, 1942, p. 11.

20. 1940 industry average: T. P. Henson, "Earnings and Hours in Manufacture of Cigarettes, Chewing and Smoking Tobacco, and Snuff, December 1940," *Monthly Labor Review, 54* (January, 1942), 200.

matter greatly for our analysis of the industry. We observe that the processes of production are well fitted to moderately small scales of output and that there is certainly no reason to expect the very large firm to have advantages in production costs over the small- or medium-size firm. And even the cost advantage which we detect for the single machine factory does not seem sufficiently large to explain by itself the triumph of the larger firms.

Statistical Measures

The argument presented above is based upon the nature of the production process. Quantitative evidence of the relationship of manufacturing costs to size is presented in Table 42.

TABLE 42

Weighted Average Manufacturing Costs and Sales Volume by Type of Cigarette, Six Standard and Five Economy Brands, 1941–42 *

	Labor Cost Dollars per Thousand	Factory Overhead Dollars per Thousand	Mean Sales Volume Billions of Cigarettes per Brand
1941			
Standard brands	0.0747	0.0509	27.5
Economy brands	0.0672	0.0634	3.5
1942			
Standard brands	0.0822	0.0472	32.2
Economy brands	0.0850	0.0708	2.6

* *OTC*, p. 6.

We observe that labor costs were lower for the economy brands than for the standard brands in 1941 but were higher in 1942, while factory overheads for the economy brands were higher in both years. The change in relative labor costs for the two groups clearly provides no basis for imputing efficiency or inefficiency to small or large firms. The standard brand advantage in factory overhead is more consistent but is of minor extent, and we cannot tell how reliably it affects the individual brands in each group. It would be desirable to go behind the simple group averages to see how costs of the individual brands behave. Such individual brand data are not available, but Table 43 presents the results of calculations by the OPA which are more informative than the simple averages.

Neither Table 42 nor Table 43 shows any important cost advantage for the large firm. The difference in average factory overhead for the standard and economy brands was only 1.25¢ in 1941 and 2.4¢ in 1942. If we take the regression coefficients of factory overhead on brand sales

TABLE 43

Regression of Unit Manufacturing Costs on Brand Sales Volume, Eleven Regular-Size Brands, 1941–42 *

TYPE OF COST	b_{yx}	s_{yx}	r^2_{yx}	P
Labor				
1941	+.000275	.0086	.282	.09
1942	−.0000322	.0154	.002	.89
Factory overhead				
1941	−.000326	.0210	.084	.36
1942	−.000343	.0208	.125	.29

* b_{yx} is the coefficient of regression of cost in dollars per thousand cigarettes on brand sales in billions of cigarettes. It measures the average change in cost which accompanies a unit change in brand sales. It may be regarded as merely descriptive of the particular brand cost and sales data from which it was calculated or as an unbiased estimate of β_{yx}, the regression coefficient in a larger population of which those data constitute a random sample. The larger population in this case would be the population of cost-size relationships for all similar cigarettes which are made or which might be made in these or in other years.

s_{yx} is the standard deviation from regression. It is a measure of scatter about the regression line or of the extent to which the costs of the individual brands depart from the values which would be indicated for them by the regression equation. If s_{yx} were zero, this would mean that the cost of each brand was exactly as indicated by the regression equation and that the relationship between cost and sales volume was linear and perfectly regular. In contrast, a large s_{yx} implies a wide scatter of individual brand data about the regression line or a wide departure of individual brand costs from the "normal" marked out by the regression equation. s_{yx} may be regarded as descriptive of particular brand data or as an estimate of σ_{yx}, the standard deviation from regression in the larger population.

r^2_{yx}, the square of the Pearsonian correlation coefficient, is the proportion of the total variation in unit costs which is accounted for by the regression on brand sales. ("Variation" is the sum of squares of the deviations from the mean.)

P is of limited usefulness if we are merely attempting to describe specific data. If, however, we are estimating the characteristics of a larger population, P allows us to test the null hypothesis that $\beta_{yx} = 0$, i.e., that no real relationships exist between costs and sales and that b_{yx} merely reflects the way our particular data happen to fall. If we reject this hypothesis, we assert the existence of a real relationship between unit costs and sales volume. P is the proportion of random samples which would exhibit regression coefficients greater than b_{yx} even though drawn from a population of which the null hypothesis was true. Statisticians do not consider such associations significant and do not reject the null hypothesis when P is numerically greater than 0.05.

Based on *OPA*.

at their face value, they indicate an advantage of only 0.8¢ in 1941 and 1.0¢ in 1942 for a firm with sales equal to the standard brand mean over one with sales equal to the economy brand mean. It will be argued in Chapter XI that such cost differences are too small to provide a significant encouragement to the growth of large firms.

The existence of even this small advantage to size is extremely doubtful. Brand sales volume accounts for only a small proportion of the variation in unit costs, the standard deviations from regression are large, and

the regression coefficients do not differ significantly from zero according to the usual statistical tests.[21]

The meaning of these results depends partly on how we choose to regard our data and on what questions we are trying to answer. We may consider our measures of regression and the deviation therefrom as merely descriptive of the cost and size figures for 11 particular brands in two specific years. Alternatively, we may consider our data as indicating relationships between cost and brand size which would be generally valid for other years or for other brands. In statistical terms our data are samples drawn from a larger universe of cost-size relationships, and our measures of regression and deviation are estimates of parameters characteristic of that larger universe. If we adopt this second point of view, then our results indicate that the relations between cost and size for the 11 brands in 1941 and 1942 are so weak and unreliable that we have no reason to infer that any similar relationship would exist in other years or for other brands. The measured relationships are probably spurious.

If we are concerned merely to describe our specific data without attempting to draw broader inferences, there is no question of a spurious relationship between size and cost. For these brands and for these years,

21. There is, however, some evidence of a significant relationship between factory overhead and sales volume for other than the 11 brands. When additional brands are included in the regression calculations, we secure the figures in Table 44.

TABLE 44

Regression of Unit Factory Overhead on Brand Sales Volume, 19 Brands in 1941–42 and 23 Brands in 1942 *

Number of Brands	b_{ys}	s_{ys}	r^2_{ys}	P
19 brands				
1941	−.000756	.0225	.223	.04
1942	−.000735	.0221	.279	.02
23 brands				
1942	−.000858	.0215	.327	< .01

* Based on *OPA*. See note to Table 43.

The regression coefficients differ significantly from zero according to the usual tests, and it is probable that our results reflect a real cost advantage to the brands with larger sales.

These associations, however, reflect other influences than that of sales volume alone. Our original brands accounted for almost all regular-size cigarettes, and the larger samples include king-size and other special brands. The 23 brands include several which were newly introduced in 1942. It is usual in the industry to allocate plant overhead on the basis of the physical quantity of tobacco processed, and this would imply higher unit overhead for king-size brands. It is likely, too, that new brands would involve somewhat higher costs. All these brands had low sales volumes, and these considerations seem adequate to explain the closer relationship of cost to sales volume for the greater number of brands. The observed relationship does not conflict with our belief that large-scale production enjoys no cost advantage over small.

the measured associations exist, but the low proportion of variation accounted for by size and the high standard deviations from regression indicate that those associations are highly erratic. The costs of individual brands are subject to wide variations which far overshadow the regression relationships which hold "on the average." Whatever slight tendency there is for low costs to be associated with high sales is vitiated by exceptions in the case of individual brands. It is clear that some large firms must have higher costs than some small firms.

Although these results are consistent with our earlier analysis of the production process, it is surprising to find that the relationship between cost and size is so distant and unreliable. For although we would not expect size to yield significant cost advantages, there are other reasons to expect a close association. Cost advantages may lend competitive strength and thus encourage the growth of the low-cost firm. Or outstanding skill in management might lead both to competitive success and to cost reduction. Thus low cost might lead to large size, or the two might be associated even if neither directly affected the other. It is surprising that cost and size are not more closely related, and if they were we would be faced with highly ambiguous problems of interpretation. In a statistically observed association it would be extremely difficult to isolate the effect of size upon cost from the effect of cost upon size or to separate either of these from the association which existed wholly on account of a third factor like superior management.

We are, however, spared these problems by finding a complete lack of association, and we can draw reasonably confident conclusions concerning both the influence of size upon costs and the significance of costs for the triumph of size. The wide variation in cost-size relationships for individual brands which is not accounted for by regression indicates that size is not an important element in the determination of unit costs and that, in turn, costs are not an important element in determining competitive success. If these two propositions hold, it follows that the present dominance of the large firm is not to be explained by the advantages in production costs which it has been able to obtain.

Chapter X

DISTRIBUTION

DISTRIBUTIVE CHANNELS

Jobbers and Retailers

CIGARETTE MANUFACTURERS SELL to a limited number of direct customers, most of them jobbers who in turn resell to more than a million retail outlets. Many jobbers have a primary interest in distributing other products. In 1939 there were 5,637 tobacco wholesalers in the country, whose principal lines of business were as shown in Table 45.

TABLE 45

Tobacco Products Wholesalers: Number and Types of Business, 1939 *

Principal Commodity Sold	Number of Establishments
Tobacco products	2,717
Groceries	2,134
Confectionery	373
Other food	239
Beer, ale, wines, liquor	78
Drugs	64
Other	32
Total	5,637

* U.S. Bureau of the Census, *Census of Business: 1939,* Vol. II, *Wholesale Trade* (1942), 142–181.

The major cigarette manufacturers also sell direct to such large retail outlets as chain and department stores and to large ultimate users such as government bodies. In 1940 the Big Three had direct accounts with a total of 6,567 different customers.[1]

Some of the manufacturers maintain subsidiary selling companies or branch offices, and 32.9% of cigarette sales in 1939 were distributed by this route.[2] These cigarettes were, however, ultimately sold to the usual direct list, 95.2% to wholesalers, 3.6% to retailers, 1.2% to "others." [3] With minor exceptions, all cigarettes were handled through the regular jobbing trade.

1. *DX,* No. 1190.
2. U.S. Bureau of the Census, *Census of Business,* Vol. V, *Distribution of Manufacturers' Sales, 1939* (1942), p. 31.
3. U.S. Bureau of the Census, *Census of Business: 1939,* Vol. II, *Wholesale Trade* (1942), p. 128.

Retail outlets for tobacco products are exceedingly numerous and diverse in character. Cigarettes are sold as a matter of convenience in most food stores and eating places. One estimate of the number and types of tobacco stores in 1934 is given in Table 46.

TABLE 46

Tobacco Products Retailers: Number and Types of Business, 1934 *

Character of Outlet	Number
Eating and drinking places	251,473
Grocery stores (without meat)	188,738
Combination stores (groceries and meat)	166,233
General stores (with food)	66,701
Drug stores	56,697
Candy and confectionery	55,197
Cigar stores and stands	15,350
Delicatessens	6,554
Department stores	4,201
Total	811,147

* U.S. Federal Trade Commission, *Report on Resale Price Maintenance* (1945), p. 451.

Taking into account the growth of the country since 1934 and the wide use of vending machines, the total number of outlets is now undoubtedly over one million.

For the country as a whole, there are more than 175 retail outlets for each wholesaler. In some centers the number is even greater, and a class of subjobbers has developed to facilitate distribution to retailers. In 1940 in Detroit there were 30 regular jobbers and 125 subjobbers serving 12,000 retail outlets.[4] The secondary wholesalers do not, of course, secure their supplies from the manufacturer but from the smaller number of regular jobbers who are on the manufacturers' direct list.

The distributive channels operate with considerable efficiency. The continuous and reliable demand for cigarettes enables all distributive levels to handle high volumes with low inventory. Manufacturers usually keep on hand at the factory about 10 days' supply, adjusting their operations if fluctuations in brand demand should cause inventories to get out of line.[5] Further stocks are kept in scattered warehouses for rapid local delivery. Wholesalers and retailers usually turn their stocks over 40 or 50 times a year.[6] Expense per sales dollar is consequently low, amounting to 4.9% for all tobacco wholesalers in 1939.[7]

4. *In the Matter of Detroit Candy & Tobacco Jobbers Ass'n, Inc.*, 33 F.T.C. 1193 (1941).
5. *TP*, p. 3483, J. A. Crowe.
6. *TP*, p. 7271, V. T. Connor; p. 6607, A. M. Zolla.
7. U.S. Bureau of the Census, *Census of Business: 1939*, Vol. II, Wholesale Trade (1942), 51.

Terms of sale to jobbers are uniform among the leading manufacturers. Prices are quoted per thousand subject to a 10% trade discount and a further discount of 2% for cash in 10 days. The unit of sale is usually the case of 10,000 cigarettes, although cases of 12,000 are also packed. Freight is prepaid on all orders, and in some centers the manufacturers maintain storage warehouses from which quick delivery can be made. Jobbers may order from the manufacturers' salesmen or may order direct by mail or wire. A large proportion of business is handled by standing orders subject to infrequent change.

Resale prices of subjobbers, retailers, and ultimate consumers are usually determined by the local competitive situation. Unlike manufacturers' prices, which remain fixed for long periods of time, distributive margins vary frequently in response to market pressures. Competitive circumstances usually prevent excessive profits, and low costs of operation make the process of distribution relatively inexpensive.

Yet, though the services of wholesalers and retailers are cheap and efficient, they are also impersonal and incomplete from the point of view of the manufacturer. Neither the wholesaler nor the retailer has much opportunity or incentive to promote the sale of particular brands. Cigarettes are now sold at retail almost everywhere, are purchased when convenient, and the brand is selected by habit without intervention by the retailer. The function of the cigarette retailer is primarily to make change, and the function of the wholesaler is to provide the retailer with what the customers want. It is only infrequently that retailers can influence the brand which the customers select.

Still less frequently is there any ordinary incentive for distributors to favor a particular brand. Retailers commonly carry all major brands. Wholesalers usually carry all brands. In 1939, of the 6,567 different direct accounts sold by the Big Three, 5,336 were common to all three lists.[8] Prices of the various brands have usually been identical to wholesalers and retailers alike. Distributors have served as a common conduit for all cigarette manufacturers through which they ship their goods and exhibit them for sale. But the service they perform is one of delivery rather than one of salesmanship.

The Manufacturer's Sales Force

General selling pressure for individual brands is exerted by the manufacturers themselves through the medium of national advertising. Selling pressure at the point of sale is provided by the manufacturers' selling organizations, which vary in size among the companies. In 1940 Reynolds employed 1,166 salesmen. American had about 400, while Liggett and

8. *DX*, No. 1190.

Myers employed more than 300 in one of the three departments into which it divided the country.[9]

Salesmen make systematic rounds of both the wholesale and retail trades. They check inventory, accept orders, and occasionally sell small quantities off the truck for cash to retailers who are short on particular items. It is also their function to observe developments in the trade and to try to establish good will. So far as possible, they attempt to secure special treatment for their brands by arranging for drop shipments, special deals, and advertising allowances. Drop shipments are sent direct from manufacturer to retailer but are credited to the regular jobber's account. Straight goods are sometimes provided in this way as a convenience to out-of-the-way stores. More usually drop shipments are of prescribed weight, include a number of slow or new brands of smoking or chewing tobacco with a quantity of free goods. Through these and other special arrangements, salesmen try to get favorable treatment for their goods or at least to prevent favorable treatment to competitors. Attempts are also made to overcome the competitive neutrality of retail outlets by arranging for counter displays or other point-of-sale advertising. It is usual to pay for these services either in cash or in free goods.

Changing Functions

The general structure of the distributive system has been unchanged for many years. Immediately after the Civil War tobacco products were commonly sold through commission merchants in the large cities or were peddled to back country retailers directly from the manufacturer's wagon.[10] By the early 1880's, however, W. Duke Sons and Company was selling cigarettes directly to jobbers, while company salesmen solicited new accounts and kept an eye on competition. Duke, himself, made a practice of visiting the trade during his early invasion of New York, and the Trust later employed large selling forces.[11] Cigarettes have ever since been distributed through jobbers and retailers, watched over and serviced by the manufacturers' own salesmen. Yet in the last 70 years the relative functions of distributors and salesmen have greatly altered, and there have been important changes in the manufacturers' opportunities for control or profits through domination of distributors.

Under the Trust both the jobber and the retailer had important selling functions. Cigarettes were relatively new, and tobacco products were generally sold by career tobacconists. Both jobber and retailer were important factors in introducing cigarettes into new territory and in

9. *TP*, p. 3723, B. J. Sanders; pp. 6951–6952, W. A. Shevlin; p. 10432, E. H. Thurston.
10. Tilley, pp. 528–544.
11. See p. 23.

favoring particular brands. It was common for jobbers to do considerable advertising, and distributors functioned as independent merchants rather than as a delivery service.[12]

The selling force of the manufacturer was an active instrument for spreading the market for cigarettes and for gaining distribution of individual brands. The great multiplicity of brands required constant vigilance by the manufacturer if all were to be available, while the adjustment of inventories in the hands of distributors was a serious problem with the more perishable cigarettes of precellophane days. The selling force could check inventory, prevent stale goods from reaching the public, and, in general, impose some rational central control upon a highly complex flow of supplies. Salesmen provided direct contact between the manufacturer and the retail market and were active in stimulating favorable publicity and in observing the trend of popular taste. The sales forces were also important in trade espionage and in enforcing Trust policies upon the distributive trades.

From the earliest days, cigarette manufacturers attempted to exert selling pressures directly on the consumer, and the Trust increasingly assumed the burden of advertising formerly borne by distributors. In recent years this trend has gone much further and national advertising has reduced the importance both of distributors and of the sales force. It is no longer necessary to introduce cigarettes to new territories or to persuade dealers to carry particular brands. Cigarettes are carried everywhere, and the concentration of brand tastes forces almost all dealers to carry the major brands as a matter of course.

Once physical distribution was achieved, sales forces tended to contract. The American Tobacco Company employed 700 or 800 salesmen in 1920, when Lucky Strike was still of minor importance, but by 1940 the number had shrunk to 400.[13] The problem of distribution remains important for plug and smoking tobacco, which are put up in a multitude of small brands. The larger interest of Reynolds and Liggett in chewing tobacco is probably one reason for their larger sales forces. Salesmen retain the functions of facilitating orders, checking inventories for stale goods, and collecting trade intelligence.

Meanwhile, the jobber and retailer have lost most of their selling functions. Cigarettes as a commodity do not need to be urged upon the public, and distributors are neutral as between particular brands. Each wholesale or retail outlet must advance its own competitive interest, but for the major brands, distributors are now essentially shipping agents. Dealer cooperation remains important for minor brands, and persistent favoritism might have a significant effect even among the major brands,

12. *BC*, Pt. III, pp. 71, 171.
13. *TP*, p. 9300, Vincent Riggio.

but the counterpressures of salesmen insure that such favoritism does not often occur.

MARKET BEHAVIOR OF DISTRIBUTORS

Instability

With three distributive levels on which prices are free to move and with a fairly large number of competitors at each level, it is not surprising that tobacco distribution has a history of local price wars and of collusive agreements to repair the damage. In 1880, 300 New York dealers met at Cooper Union in order to "advance prices both in the jobbing and retail tobacco trade," because "prices have been so cut up lately by irregular competition that it has become absolutely necessary to make some advance for self-protection." [14] The following pledge was signed by 165 dealers:

> We hereby pledge our word of honor that we will not sell below the retail price-list established by the association or its Managing Committee; that we will aid, with all our power and ability, to prevent any dealer from underselling the established retail rates; that we will do all we can to bring the profits of our trade to a remunerative living rate; that we will not buy from any jobber, peddler, or manufacturer who sells to a retailer who sells at less than the price established by the association; that if any manufacturer will not aid in refusing his goods to a jobber or retailer who is selling under the established prices, we hereby solemnly pledge our word of honor not to handle any of the goods of his manufacture, under any consideration . . .[15]

This pattern of behavior has been repeated many times in later decades with minor variations in detail. The Trust has come and gone; the Sherman Act has been passed, neglected, enforced, and developed; the economy has changed in size and in structure; but the market behavior of tobacco distributors has changed very little.

Under the Trust there was little price cutting at retail except on plug tobacco. It was believed that cigarettes and smoking tobacco sold best at even-nickel prices, and though the more expensive brands or the larger sizes were frequently cut, the retail prices of cheap brands were usually well maintained. Distributors' margins thus depended on the wholesale prices charged by the Trust and could be established within the Trust's discretion. The Trust might desire wide or narrow margins according to competitive pressures but generally enforced a rough stability.

Even when retail prices were maintained, jobbers' prices were often free to vary, and after dissolution, when rising taxes forced all cigarette brands into higher price classes, the even-nickel preference weakened, and

14. *New York Times,* March 4, 1880, p. 8, col. 2.
15. *Ibid.*

retail prices, too, were free to vary independent of direct manufacturers' control. Prices on all distributive levels have since shown intermittent instability.

The explanation of this behavior is, of course, to be found in the structure of the trade. The low elasticity of cigarette demand is common knowledge, and the possibility of wider margins is always attractive. Retailers would prefer high prices to consumers, and jobbers would prefer high resale prices to retailers. The difficulty is that cigarette demand is inelastic only in total. Just as the demand for a single brand is elastic, so the demand for all brands at a single retail outlet is elastic, and there is a constant temptation to cut price, if only competing outlets will not cut. In the same way, retailers will buy from the cheapest jobber, and so each jobber has an incentive to shade prices for larger business, if only competitors will not cut in turn. Even when retaliation is expected, a price reduction may seem desirable if the retaliation is expected to be less effective than the initiating cut.

These considerations may be contrasted with those influencing the policy of manufacturers of cigarettes. Any of the major companies could greatly increase its sales by reducing price if only the others would not cut in reaction. It is perfectly obvious, however, that the others will respond immediately and that the response will be sufficiently effective to deprive the initial reduction of any competitive advantage. The very small number of manufacturers and the complete elasticity of brand demand makes it possible to predict the behavior of competitors and thus to avoid foolish action. It is also possible, if the manufacturers are so minded, to perfect and police collusive agreements. The inconvenient number of distributors deprives them of these prudential bars to unwise price reductions.

The distributive markets are sufficiently imperfect so that intermittent instability results. There are more than 6,000 jobbers in the country, but only a few serve any one area. There are more than a million retail outlets but only a limited number in one section of a city. The elasticity of substitution among competing outlets is not perfect, for each distributor enjoys locational advantages. His policy affects other distributors, and their policies in turn affect him to a degree which diminishes with the distance between their centers of business. Thus jobbers and retailers are in active competition in a limited but vaguely defined geographical market.

The number of distributors is small enough and demand elasticity for each is high enough so that each can affect the price at which he sells and so that each feels keenly any change in price by commercial neighbors. On the other hand, the number is sufficiently large and ill-defined and the elasticity of demand is low enough so that the behavior of competitors cannot always be accurately predicted, and collusive agreements are dif-

ficult to conclude or to enforce. It is not certain how wide an area a price cut will affect, how much retaliatory cutting will take place, or how effective the retaliation will be. If these uncertainties are optimistically regarded, price cutting may seem desirable, and a price war may start. Uncertainty may also, of course, have the opposite effect. Lack of knowledge leading to optimistic misestimate of the situation may precipitate cumulative price cutting in which all lose. When the fact of ignorance is recognized, motives of caution may direct the change to be avoided. Overoptimism leading to price wars may, by the unwelcome result, produce a later pessimism. Thus instability may lead to subsequent price rigidity, and the intermittent history of cigarette price wars suggests that this was in fact the case.

The Secular Decline in Margins

The recurrent instability of distributive margins suggests that the manufacturers have great power to influence retail prices. Where cumulative price cutting is so likely to start, it would be relatively easy, by the use of special deals or other bribes, to get a few distributors to cut prices and thus bring down the general level. When the Trust exercised direct control of distributors' margins, there were many complaints that it used its power to narrow them, and since the dissolution it has often been charged that the successor companies employ a similar degree of power to depress distributors' rewards. Margins have in fact declined during the last half-century, but it should be noticed that there are other influences besides manufacturers' policy which have tended to this result.

The decline in distributors' functions, as the cigarette industry has achieved maturity, and the relative simplicity of physical handling, with only a few major brands, have reduced distributors' costs, and these savings have generally been passed on in narrower margins. A similar influence has been exerted by the rise of large retail sellers who, with the increasing simplification of cigarette distribution, found it worth while to handle cigarettes as a convenience item along with their other principal items of business. Many such large customers enjoy the privilege of direct purchase, since to the manufacturer they present the same problem of shipping and billing as does a wholesaler. The effect, however, is to modify competitive pressures through the presence of one unusually low-cost seller. The chain store must perform for its units the same functions of division and delivery that the jobber performs for independent retailers. Department stores, however, do not require all of the same functions, since all products are offered for sale at a single location.

Perhaps more important than the low cost of the large retailer is his frequent incentive to charge low prices. Since the demand for cigarettes at a particular outlet is quite elastic and since the large retailer's interest

is in other commodities, cigarettes serve as an attractive leader to bring customers into the store. In the 1920's and 1930's there were frequent occasions on which such outlets sold cigarettes for less than the wholesale purchase cost.[16] The advantage which the mixed retailer derives from discriminatory low pricing on cigarettes has tended both to depress margins and to increase their instability. Cigarette prices serve as an obvious tactical weapon in interchain price wars and can be varied experimentally in the knowledge that only minor losses will be sustained if the experiment is unsuccessful.

A somewhat similar situation has sometimes occurred in the jobbing trade owing to the interest of many jobbers in other lines of merchandise. There have been complaints that confectionary and grocery wholesalers handled cigarettes as a side line, granting exceptionally favorable prices in order to secure customers for their more remunerative items.

Thus a number of influences have tended to reduce distributors' margins. From the earliest days the limited number of immediate competitors, the divergence between general and particular demand elasticities, and the uncertainty introduced by locational convenience have tended to make margins unstable. With the development of the industry the removal of margins from direct manufacturers' control has given free rein to the forces of instability, while the rise of large diversified retailers and the simplification of the services performed have exerted increasing downward pressure.

When Camel was introduced in 1913 to sell at 10¢ retail, the manufacturer's price was $3.53, while in the 1930's the manufacturer's price of the 10¢ brands was $4.19.[17] In 1910 the markups for the Trust's leading brand of domestic cigarettes ranged from 22% to 35% of the retail price, and a decade earlier, when competition was more active, margins were as high as 42%.[18] In 1934 the NRA code set the retail price of standard brand cigarettes at 13¢ a pack, two packs for 25¢, or $1.20 a carton.[19] The consumers' price thus ranged from $6.00 to $6.50 per thousand, while the manufacturer's net price was $5.38. The margin thus ranged from 10% to 17% of the retail price, according to the unit of sale. This markup represented the desires of the wholesale and retail trade and was probably in excess of those generally prevailing.[20] Exclud-

16. U.S. Federal Trade Commission, *Report on Resale Price Maintenance* (1945), p. 448; *Chain-Store Leaders and Loss Leaders,* 72d Congress, 1st Session, Senate Document No. 51 (January 15, 1932).

17. *TP,* p. 12270, H. C. Harrison; p. 12281, C. A. Vollmer, *GX,* No. 432; *DX,* No. 1195.

18. *BC,* Pt. III, p. 170.

19. U.S. National Recovery Administration, *The Tobacco Study,* p. 188.

20. The Federal Trade Commission estimated the average single package margin in 1934 at 21%, but the basis of the computation is not clear. Other estimates for 1937, 1939, and 1940 have been 21.3%, 21.5%, and 22.7%, respectively, but these apparently include state taxes in the distributor's margin. U.S. Federal Trade Commission, *Report of the Federal Trade Commission on Agricultural Income Inquiry,* p. 139.

ing state taxes, the single pack margin for 1942 seems to have been about 17%.[21] Lower margins have not been accepted gladly, and there have been frequent complaints in the last 60 years of oppressive action by manufacturers to depress them. In Part IV we shall consider the justification for these complaints, but for the present we may merely observe the fact of a decline in margins and turn our attention to the influence of distributive conditions upon the structure of the cigarette industry.

ADVANTAGES TO SIZE

Control

When jobbers and retailers served an active selling function, it was desirable to dominate them and to deny their services to competitors. The Trust, with 85% of most tobacco products, was well able to enforce such dominance. Difficulties in policing and dealers' resentment prevented the Trust from gaining complete control, and its success rested ultimately on other grounds. But aggressive domination of distributors was one of the methods by which Trust power was increased.

Since dissolution, distributor control has been less worth while and less possible. Since selling pressure depends on other things, it is not so important to control distributors, and although the successor companies together have as much power as the Trust, it cannot be wielded as effectively without grossly and obviously illegal conduct. The distributive trades are compelled to behave in some respects in accordance with the wishes of the manufacturers, but there have been no recent efforts to exclude minor companies from the services of jobbers and retailers.

The necessity of securing distributors' services does, of course, offer certain obstacles to the entry of new competition. Regardless of product or advertising, a new brand cannot succeed unless it is made physically available through distributors. It is necessary for a new manufacturer to incur expense in securing distribution before any revenue from sales is obtainable, and just as with plant and production costs, distribution requires some capital resources if entry is to be effective.

Yet, once a cigarette is initially established, it does not appear that a small manufacturer is at a disadvantage in securing further growth. The necessity of increasing the number of distributive outlets in order to gain wider geographical coverage involves some expenditure and means that a brand must grow rather slowly over time. Yet, if consumers like a brand, their preferences will gradually lead distributors to carry it without excessive expenditures on the part of the manufacturers. If a brand is growing, the expenses of further growth may be borne by current operations.

21. See p. 276.

Relative Markups

Once minimum physical distribution is attained, the small manufacturer does not seem to suffer any disadvantage in the terms on which he secures the services of distributors. Markups vary among brands and are commonly lower for carton purchases than for single packs, but there is no apparent discrimination against brands with low sales volumes. Discounts of 10% and 2% from the manufacturer's list price are standard throughout the industry, and the margins between net price and retail price are roughly the same for all types. Some classes of minor brands, in fact, appear to receive favorable treatment from jobbers and retailers.

The economy brands as a group are close substitutes for roll-your-own cigarettes as well as for the standard brands and for this reason appear to have a higher elasticity of demand than do the latter. This elasticity was especially noticeable in the 1930's when the price was 10¢ a pack, for apparently, even as under the Trust, the cheaper price ranges of cigarettes sold most easily at even-nickel prices. Accordingly, by familiar pricing considerations, distributors had an incentive to sell the economy brands relatively cheaply and especially to sell them at 10¢, although to the extent that the economy brands substituted for the standard brands, the distributors lost from one pocket what they put into the other. Distributors often accepted reduced margins on the economy brands, and in the 1930's the sales departments of the major firms were frequently concerned with such "discrimination" against the standard brands.

In the late 1930's, when economy and standard brand net prices were $4.19 and $5.51, respectively, the retail prices and distributive markups shown in Table 47 were common.

TABLE 47

Retail Prices and Distributors' Margins for Economy and Standard Brand Cigarettes, circa *1938*

	Retail Price	Distributive Margin	
	Cents per Pack	Dollars per Thousand	Percentage of Retail Price
Economy brands	10	0.81	16.2
Standard brands	13	0.99	15.2
Economy brands	11	1.31	23.8
Standard brands	14	1.49	21.2

Retailers sometimes sold the economy brands 4¢ cheaper than the standard brands, which implied much larger margins on the latter. The major companies made earnest efforts to prevent so large a differential,

and the economy brands were usually sold at only a 3¢ advantage. Yet, even so, their absolute markup was smaller, although the percentage markup was slightly higher. The economy brands, of course, represent something of a special case, but other minor brands do not appear to suffer from disproportionate distributors' markups, and it does not appear that the predominance of the large firm is due in any degree to an advantage in the use of these channels.

Expenses of Distribution

It does appear, however, that the large firms enjoy an advantage in the use of salesmen. Complete coverage of retail outlets, the management of point-of-sale advertising, and the servicing of distributors' stocks would require a larger sales organization than the smaller manufacturers can support. To some extent this difficulty can be met by restricting intensive sales efforts to particular regional markets and by expanding them to less rewarding regions only as the volume of sales and the volume of supportable expense increase. This appears to be only a partial solution to the problem of the very small firm, and it appears that such firms must do with less lubrication of the distributive machinery or must incur relatively larger expenses than the major companies.

In general it appears that the small companies spend proportionately more than large for selling expenses. From 1908 to 1913, as is shown in Table 48, the independent Turkish manufacturers spent about twice as much per thousand on selling as did the Trust or the successor companies.

TABLE 48

Turkish Cigarette Selling Expenses for Seven Independent Manufacturers and for the Trust and Its Successors, 1908–13 *

	Dollars per Thousand		Percentage of Net Price Less Tax	
Year	Trust and Successors	7 Independents	Trust and Successors	7 Independents
1908	0.25	0.60	3.8	7.9
1909	0.30	0.65	4.3	8.6
1910	0.37	0.61	5.3	8.9
1912	0.32	0.68	4.5	9.8
1913	0.31	0.70	4.5	9.8

* *BC*, Pt. III, p. 447.

In more recent years, similar relationships have held for the standard brand and economy brands as shown in Table 49 on following page.

TABLE 49

Weighted Average Selling and Administrative Expenses by Type of Cigarette, Six Standard and Five Economy Brands, 1941–42 *

Year	Dollars per Thousand		Percentage of Net Price Less Tax	
	Standard	Economy	Standard	Economy
1941	0.1228	0.1472	4.9	12.5
1942	0.0995	0.1546	4.0	12.5

* Based on *OTC*, p. 6.

We observe that these expenses are a much heavier relative burden on sales for the economy brands than for the standard brands and that the absolute costs per thousand for the economy brands are also somewhat higher. These differences in the cost averages for the two groups do not by themselves indicate the reliability with which the costs of individual brands are associated with size. Table 50 throws light on this issue.[22]

TABLE 50

Regression of Unit Selling and Administrative Costs on Cigarette Sales Volume, Nine Companies, 1941–42 *

Year	b_{yx}	s_{yx}	r^2_{yx}	P
1941	−.00253	.0800	.308	.12
1942	−.00322	.1024	.388	.07

* Based on *OPA*. See notes to Table 43, p. 243.

These relationships are not significant by the usual statistical tests, although they do not fall far short. The regression coefficients do not differ significantly from zero, and the standard deviations from regression are larger than the differences in average costs noted above. More than once in twenty times associations as close as this could be observed in repeated samples drawn from an uncorrelated universe. There is thus strong possibility that the observed association may arise by accident rather than by necessary cost behavior. The data are consistent with the hypothesis that selling and administrative overhead are not affected by the scale of enterprise.

Although the regression coefficient does not differ significantly from

22. Company size is more relevant than brand size to the issue of selling overhead. Brand size, in fact, shows a much less significant association with cost. We expect high overhead costs for a small firm, since the minimum lubrication of distributive channels requires fairly large total expenditures which must be spread over a small volume of sales. A small brand, however, may be only one of many produced by a large company, and since all lines of activity contribute equally to the support of overhead, the small brand need bear no unusual burdens. The fact that several of the small brands are made by fairly large companies causes the relationship between brand size and cost to be a poor measure of the advantage accruing to the large firm.

zero in either year, it is close to statistical significance in both years. It would not be unusual for associations as close as this to arise by accident in any one year even if there is no real relationship between size and costs. It would be less usual for such chance associations to appear in successive years. If we combine the probabilities from the two tests of significance, we secure $P = 0.052$, which is just short of the conventionally accepted significance level.[23] Only once in 20 times would associations as close as these be found by chance in repeated samples drawn from an uncorrelated population. This suggests that for these nine companies there is a real and systematic decline in selling and administrative overhead as the volume of sales expands. We may be disposed to accept this evidence since the nature of the business leads us to expect some such relationship to hold.

The magnitude of the advantage enjoyed by the large producer is, however, highly uncertain. The difference between the standard and economy brand cost averages was 2.4¢ per thousand in 1941 and 5.5¢ in 1942, but our regression coefficients suggest an advantage of 6.1¢ and 9.5¢ for the standard brands in the two years. The large standard deviations from regression and the doubtful significance of the regression coefficients imply that the differences between these measures of advantage are meaningless. We are barely able to detect a secure cost advantage to size and cannot hope to measure it with precision so far as concerns relationships in other years or for other brands.

It seems likely that the data in these two years overstate the advantage to the large firm. In 1941 and 1942 standard brand sales increased, while economy brand sales fell, and with relatively inflexible overhead, this should have meant a wider spreading of the costs in one case and heavier unit loading in the other. Moreover, declining sales may have called forth increasing sales efforts by the economy brands. To the extent that either of these influences was operative, unit cost differences reflected output changes rather than the inherent efficiency of particular scales of operation.

It should be noted also that the economy brands follow an entirely different market policy from that of the standard brands. Quality, price,

23. The method of combining probabilities is that given in R. A. Fisher, *Statistical Methods for Research Workers*, pp. 99–101.

The combination of probabilities is based on the assumption that each set of data is a separate random sampling from the same population of cost-size relationships. This is valid if we interpret our calculations as measuring the relationship between size and costs for these companies in these years and as providing a statistical estimate of the cost-size relationship which holds for these same companies in other years. If, however, we are concerned to measure the relationships between size and costs irrespective of firm identities, then our assumption is not valid and we are not justified in combining the probabilities for the two years. In both years we are observing costs for the same companies, and we have in fact succeeded in examining only one sample from the population of possible cost-size relationships.

and advertising are all lower, and the different approach to the market may imply different levels of sales expenditure from that which would be indicated by sales volume alone. The effect of size on overhead cost is thus somewhat obscured by differences in the nature of the product.

There are thus a number of circumstances which cause us to overestimate the influence of scale upon unit overhead or which merely confuse our estimates. It is not possible to arrive at a precise measure of the cost advantage to size, but there is good reason to believe that sales volume does affect costs and that the large producer derives some savings.

Still another possible source of advantage for the large producer is found in freight and shipping expense. Since all cigarettes are shipped prepaid at a price which is uniform throughout the country, any advantage in transportation facilities may result in a cost advantage. Carload shipments are rare, even for the major firms, but some advantage to size appears in Table 51.

TABLE 51

Weighted Average Freight and Shipping Costs by Type of Cigarette, Six Standard and Five Economy Brands, 1941–42 *

(Dollars per Thousand)

	1941	1942
Standard brands	0.0542	0.0574
Economy brands	0.0602	0.0634

* *OTC*, p. 6.

Further evidence on the reliability with which the costs of individual brands are associated with size is provided by Table 52.

TABLE 52

Regression of Unit Freight and Shipping Costs on Brand Sales Volume, 11 and 19 Brands, 1941–42, and 23 Brands, 1942 *

	b_{ys}	s_{ys}	r^2_{ys}	P
11 brands				
1941	−.000212	.0100	.146	.25
1942	−.000185	.0112	.126	.29
19 brands				
1941	−.000238	.0094	.141	.11
1942	−.000259	.0114	.152	.10
23 brands				
1942	−.000372	.0126	.210	.03

* Based on *OPA*. See notes to Table 43, p. 243.

The regression coefficient for 23 brands differs significantly from zero; the others do not. If we combine the two probabilities for the 19 brands, we secure $P = 0.06$, which suggests some relationship between cost and size.

It should be noted, however, that we secure these results only with a large number of brands. As was the case with factory overhead, we find that the relationship between shipping costs and size is more marked, the greater the number of brands examined, and at least in part, the increased correlation reflects the same factors we noticed earlier. The larger number of brands includes king-size types, which are heavier, occupy more space, and are more expensive to ship. Since they also have low sales, they increase the association between cost and sales when included in our calculations. For the 11 regular size brands, the relationships between cost and size are highly uncertain.

In any event, the large firm's advantage in freight and shipping costs is very slight. The difference between the standard and economy brand averages was 0.6¢ per thousand in both years and is clearly of negligible importance.

We thus observe that, while the large firm enjoys no secure advantage in production costs, it does enjoy savings in distribution. Lower freight and shipping expenses are a minor and uncertain advantage, but lower selling and administrative overhead is both more reliable and of much greater importance. We shall defer to the following chapter our consideration of how effective these distributive savings may be in contributing to the dominance of the large firm.

Chapter XI

THE DETERMINANTS OF SIZE

ADVANTAGES OF THE LARGE FIRM

WE MAY NOW DRAW together the threads of Part II with a summary account of the factors responsible for the heavy concentration of cigarette output in a few firms. In the preceding chapters we have examined in some detail the institutions of the cigarette industry and the conditions of material supply and of product demand within which the industry exists. We have found that in a number of ways large firms enjoy advantages over small and that the most important advantages concern the power to expand market outlets.

The technology of cigarette production imposes no barrier to the expansion of the individual firm. Costs are not adversely affected by size, and the only limit to the growth of the firm is set by the willingness of the market to absorb its output. Each firm finds its principal problem in expanding sales, and market characteristics are such that the large firm is better able than the small to retain existing customers or to acquire new ones.

As we have seen, the total demand for cigarettes exhibits a sharply rising trend, and although moderately responsive to changes in the national income, it appears to be little affected by changes in prices or in advertising pressures. The sales of individual brands, however, display marked sensitivity both to price and to advertising, and the volume of sales for any firm depends on its use of these competitive instruments. Whether markets are sought through price concessions or through advertising outlays, the large firm enjoys a considerable advantage over the small, and the established firm enjoys an advantage over the new entrant.

In part, the success of the large firm derives merely from superior strength and endurance. The large firm commands financial resources through the volume of its assets or through a diversified line of activities and can sustain losses over areas of the market or for periods of time which would prove fatal to a smaller and less well fortified competitor. Sharp price concessions or heavy advertising outlays can serve as reliable and effective competitive weapons, and almost certain success can be obtained if a firm is willing and able to bear the necessary costs.

Quite apart from superior endurance, however, the large firm enjoys an advantage in the cigarette market through the efficiency of large-scale advertising. Especially when national media are employed, the effective-

ness of advertising depends upon the total volume of expenditure rather than upon the percentage of sales price devoted to this purpose, and it does not appear that advertising efficiency declines at any level of outlay below that of the very largest firm. Since heavy advertising produces large sales, while the latter in turn provide the current revenues to support large expenditures, the large firm grows by its own success and develops selling pressures very much larger than those of the small firm. Moreover, since present sales depend in part on past sales, and since advertising affects both old and new customers, a given level of expenditure is more effective for the existing firm with a well-established market than it is for a newcomer with equal resources. Thus large firms win out over small, and once particular firms have achieved success, their position tends to be maintained.

Unusual advertising skill or unusual quality of product may enable a small firm to expand, but this merely results in the successful firms' becoming still another large firm. Although new firms may rise and old firms fall, the industry remains highly concentrated, and small firms as a group are not able, while remaining small, to displace the major producers.

The superior effectiveness of the large firm in applying market pressures is the most important reason for the concentration of cigarette output. Yet the large firm also enjoys certain other advantages of a minor sort. Some activities apparently are best carried out on a relatively large scale, and unit costs appear to be somewhat lower for the larger producers. We have found this advantage to be small in magnitude and somewhat undependable in operation, and it appears that if the large firm did not enjoy its advantage in applying market pressures, cost considerations would not require the organization of the industry in a few large firms.

The important elements in cigarette cost are summarized in Table 53 for the six standard and five economy brands. These two groups of brands differ widely in mean volume but also differ widely in quality, and many of the cost comparisons given are vitiated for our purposes because we cannot distinguish between those cost differences which result from different scales of operation and those which result from different qualities.

We have suggested earlier that the small manufacturer is under no disadvantage with respect to the large in buying leaf tobacco. Table 53 neither supports nor denies our expectation. The qualities of leaf purchased are so dissimilar that the differences in cost indicate nothing about the relative advantages in buying leaf of the same quality. Similarly, the low unit advertising outlays for the economy brands show nothing about the relative efficiency of expenditures on large and small volumes. The two groups of brands display completely different com-

TABLE 53

Weighted Average Net Prices and Costs by Type of Cigarette, Six Standard and Five Economy Brands, 1941–42 *

	Standard Brands Regular Size		Economy Brands Regular Size	
	1941	1942	1941	1942
Leaf tobacco †	$1.0515	$1.1516	$ .4804	$ .4906
Casing materials	.0265	.0283	.0356	.0356
Wrapping	.1588	.1522	.1469	.1512
Labor	.0747	.0822	.0672	.0850
Factory overhead	.0509	.0472	.0634	.0708
Total factory cost	1.3624	1.4615	.7935	.8332
Revenue stamps ‡	3.2500	3.2950	3.2500	3.2900
Freight and shipping	.0542	.0574	.0602	.0634
Total factory and shipping cost	4.6666	4.8139	4.1037	4.1866
Advertising	.2991	.2449	.1401	.0974
Selling and administrative	.1228	.0995	.1472	.1546
Total selling, administrative expense	.4219	.3444	.2873	.2520
Total cost	5.0885	5.1583	4.3910	4.4386
Net price	5.7419	5.7767	4.4328	4.5306
Net margin	.6534	.6184	.0418	.0920
Cigarettes sold (billions)	165.0	193.1	16.73	13.17
Number of brands	6	6	5	5
Number of companies	6	6	5	5
Average sales per brand (billions)	27.5	32.2	3.3	2.6

* *OTC*, p. 6.

† Leaf costs do not include interest charges.

‡ In 1942, revenue stamps were $3.25 per thousand cigarettes for 10 months and $3.50 per thousand cigarettes for 2 months.

petitive patterns. The standard brands, with high leaf costs, high prices, and heavy advertising, compete with the economy brands of lower quality, price, and advertising expense. Differences in advertising costs reflect differences in the product and in the approach to the market rather than any difference in the efficiency appropriate to various scales of operation. Our belief that advertising is most effective when used in large quantities depends upon other evidence than the simple difference in unit costs.

Expenditures for casing and wrapping materials may also be affected by differences in product quality, but, in any event, there is no evidence of an advantage to either group. The differences in mean costs for the

two groups of brands are very small, and the costs of individual brands show no significant association with sales volume. We suspect that the small manufacturer is on equal terms with the large in securing materials, and the data available do nothing to contradict this opinion.

When we turn to the remaining cost elements, the confusion introduced by varying quality and different market tactics is much less important. The cigarettes are of the same size and involve the same operations and the same general types of equipment. Labor, overhead, freight, and the amount of selling activity necessary to lubricate distributive channels should not be dependent upon product quality to any great extent. As we have seen before, there is no indication that labor costs are lower for the large firm, and there is only an uncertain and minor advantage in factory overhead. Shipping costs and general selling and administrative overhead afford somewhat more marked advantages. Table 54 summarizes these cost advantages in terms of the two general categories of direct and overhead costs.

TABLE 54

Weighted Average Direct and Overhead Costs by Type of Cigarette and Regression of Cost on Brand Sales Volume, Six Standard and Five Economy Brands, 1941–42 *

Type of Cost	Standard Brands Dollars per Thousand	Economy Brands Dollars per Thousand	b_{ys}	s_{ys}	r^2_{ys}	P
Direct †						
1941	.3142	.3099	.000175	.0288	.011	.76
1942	.3201	.3352	−.000307	.0340	.041	.55
Overhead ‡						
1941	.1737	.2106	−.00236	.0753	.272	.10
1942	.1467	.2254	−.00219	.0865	.321	.07

* Based on *OPA*. See notes to Table 43, p. 243.

† Direct costs include materials, labor, and freight and shipping expenses but exclude leaf costs and revenue stamps.

‡ Overhead costs include factory overhead and selling and administrative expenses but exclude advertising outlays.

We observe that the regression coefficient of direct cost on size does not differ significantly from zero and that the group averages rank in opposite order in the two years. Overhead costs for each year exhibit an inverse association with brand sales which is just below the standard level of statistical significance. If we combine the overhead probabilities, we find $P = 0.04$.[1] The regression coefficients differ significantly from zero, and it seems probable that there is a real relationship between brand sales and unit overhead.

1. See n. 23, p. 253.

The question remains, however, as to the effect these advantages may have upon the power and position of the large firm. We may note, first of all, that the relationship of cost to size is remarkably irregular and unreliable. Brand sales volume can explain only about 30% of the variation in unit overhead. There is much variation in costs among brands which does not seem to be associated with size variation, and even though size and cost bear certain regression relationships, there are wide departures from regression in the case of individual brands. Apparently, large size does not always or even usually produce low costs, and the possession of low costs does not always or usually lead to market success. There are other factors more important than size which are responsible for the low costs in particular firms, and there are other factors more important than costs which are responsible for the ultimate triumph of the large firm.

Even if we could ignore the irregularity of cost-size relationship, we would find the cost advantages too small to have an important effect upon the success of the large firm. Unit overhead for the standard brands was lower than for the economy brands by 4.3¢ per thousand in 1941 and 8.5¢ in 1942. The regression coefficients given above would indicate an advantage to the large firm of 5.7¢ and 7.7¢ in the two years.

Cost advantages of this magnitude may lend significant strength to the large firm's market position. With a heavy volume of sales such savings would make available current income with which to finance heavy advertising outlays, or the income could be saved up to support intermittent price warfare. In either case the cost advantage would reinforce the competitive superiority of the large firm.

We may note, however, that such an influence is of little real importance. The large firm can exert superior market pressure through advertising or through price warfare by virtue of its size alone, and a further advantage in cost would be welcome but unnecessary. On the other hand, it is only through these other forms of market pressure that a cost advantage of this magnitude can improve the competitive position of the large firm. If competitive position did not depend either on heavy advertising or on price warfare, lower costs would make little difference. Thus in this industry a cost advantage is either superfluous or ineffective as an encouragement to the large firm.

If we suppose cigarette firms to compete on the basis of price alone, yet without using price to force competitors out of the business, an 8¢ cost advantage would not greatly improve a firm's market position. The advantage is not enough to allow a reduction in retail prices, and a reduction in the price to jobbers would provide only a minor advantage with the distributive trades. If this were, in fact, the only disadvantage under which a small firm labored, it could easily enough meet such a price reduction and still earn adequate profits under the price umbrella raised by

the major companies. The advantage in cost of the large firm is not enough to allow it to undersell smaller firms in the ordinary course of trade. In fact, of course, this sort of nonaggressive price competition has never been employed, and cost advantages can have had an effect only as they added to the resources of the large company and thus enabled it more easily to apply market pressures. But this the large firm can do in any event, and cost advantages play only a subsidiary role.

Even this degree of significance can be attributed to lower costs only so long as we assume that there is a dependable and consistent advantage to size. As we have seen, there is considerable doubt whether some of these advantages to size exist at all, and there is clearly so much irregularity in cost experience from firm to firm that the lower costs of the large firm can have made only a minor and uncertain contribution to the present structure of the industry. The absence of any cost barrier to size is an important characteristic of the cigarette industry, but the position of the large firm depends primarily on its ability to dominate the market by one or another kind of selling pressure.

THE HISTORICAL PATTERN

Throughout the history of the industry, the concentration of cigarette production has depended upon the vigorous use of market pressures. The nature of these pressures, however, and the purposes to which policy has been directed have changed profoundly in the course of time.

While the industry was still very small, Duke was able to break in by making use of the resources accumulated in the firm's previous activity with smoking tobacco. Competitors were wealthier, but Duke made up for his deficiency in resources by the greater aggressiveness and skill with which he applied them. The early method of advertising by coupons and prizes and the importance of dealer cooperation for a new product made total advertising expenditures less significant than they have since become. Duke was able to incur heavy unit advertising costs and to make his goods attractive to distributors, while he was still fairly small. Yet, even at that time the relative size of company resources was an important determinant of competitive power, and it is probable that the existing firms could have defeated Duke had they shown sufficient vigor. They were, however, unwilling to sacrifice profits by extreme competitive maneuvers and by their restraint gave Duke his opportunity to forge ahead. Once Duke had achieved his position of leadership, his market skill and aggressiveness were reinforced by large resources, and the other interests in the industry had little choice but to do as he wished.

The original establishment of the Tobacco Trust thus depended on the vigorous application of price and advertising pressures which grew in effectiveness with the resources supporting them. The Trust used the

same tactics to restrain new competition and to attack it when it arose, and mounting resources enabled the Trust to maintain proportionate control and to increase its output in spectacular manner as the industry itself expanded. The cost advantage which Duke derived from machinery control and whatever savings the Trust may have enjoyed were significant primarily as they enabled Duke to apply extreme market pressure.

The present structure of the industry reflects the intervention of the federal courts. Four companies were established as going concerns, and each of them possessed the resources to defend its position. The spectacular accomplishment of Reynolds in replacing Lorillard as a leading manufacturer indicates the importance of innovations in product and in salesmanship, as does the later more modest growth of Philip Morris. But the essential structure of the modern industry was established by the dissolution decree, and small firms were able to make no progress for many years.

The stable dominance of three firms reflects the continued superiority of large organizations in applying market pressures. Since 1911 there have been important changes in competitive tactics and in the ultimate purposes of strategy, but the major firms retain control. The existence of several competitors of equal strength and the decree provisions against collusion or recombination have made unattainable the earlier aims of eliminating or joining competitors. As a result, the use of superior resources to finance price warfare has almost disappeared. Yet the market superiority of the large firm has, if anything, increased. The change to national advertising media has made the level of total advertising expenditure more important than ever, and heavy expenditures are supportable only by very large companies. It is significant that Reynolds' rise at the expense of Lorillard came at a time when the older price tactics were obsolete, when the newer advertising methods were still in the process of development, and that Reynolds was the leader in developing the new competitive methods.

For the past thirty years the efficiency of large-scale advertising has been the principal support of the large firm. Any other efficiencies to large-scale enterprise are of minor extent and uncertain reliability and at most can have exerted subsidiary influence. Cigarettes of comparable quality have generally sold at identical retail and wholesale prices, so that cost savings could not contribute directly to market position. Old Gold and Philip Morris were initially priced slightly higher than the regular brands, but this reflected the deliberate market policies of the two companies and did not represent an underselling of small by large manufacturers in any meaningful sense. With rare exception, price has been neutral in its effect upon competition, and any advantages to particular firms have been significant only as they affected the firm's ability to advertise.

Throughout the industry's history the concentration of output has depended on the nature of cigarette demand and on the opportunities which it offered to aggressive competitive tactics. Superior resources have enjoyed a significant advantage in the cigarette market at all times, as have superior selling abilities. Other sorts of efficiency of large-scale production or management have been of minor importance. At no time have large firms won out over small by a simple ability to produce and sell at lower prices in the normal course of trade. Price competition has never been anything but shock tactics in the use of superior resources. Punitive price cutting and advertising have served as alternative competitive weapons, and each gives an advantage to the company with the longest purse.

The rise and fall of particular firms have reflected past developments and particular personalities. The construction of the Trust depended on the aggressiveness of Duke. The dissolution decree established a new regime in the industry in which the number of competitors was specified and the identity of the leading firms already determined. Managerial policies have determined the later fortunes of these firms and the consequent rise of some secondary competition. The fact of concentration reflects the nature of cigarette demand. The number and identity of the present producers is the result of a complex historical process.

PART IV

MARKET BEHAVIOR

Chapter XII

THE SALE OF CIGARETTES

SCOPE OF PART IV

IN THE PRECEDING chapters we have examined the market structure of the industry and some of the factors which have made that structure what it is. Any industrial organization, however, must be judged by its results, and we have still before us the problem of how the cigarette industry operates and what effects it has upon the rest of the economy and on the public welfare. It is evident that the structure of the industry confers tremendous power upon a limited number of private interests. The exercise of that power is the subject matter of Part IV.

Not only is there great concentration of power; the incentive to use it is also great. The inelasticity of demand for tobacco products in general and for cigarettes in particular invites the raising of prices where the capacity to do so exists. The moderate elasticity of supply of leaf tobacco from year to year and the complete inelasticity in any one season offer possibilities of gain from depressing the price of raw materials. It would be strange if advantage were not taken of these opportunities, and the unusual profit history of the cigarette industry indicates that not all of them have been passed by.

The concentration of output in a few large firms makes possible the gathering of monopoly profits for one of two reasons: it makes collusive agreements easy to reach and easy to enforce if competing firms are so minded, or it allows the efficient pursuit of common aims without any agreement but solely by a circumspect regard for the interests and intelligence of competitors. For more than a half-century complaints have regularly been directed to the first type of policy, and the courts have twice held the major producers guilty of conspiracy at the expense of ultimate consumers, of tobacco growers, and of other elements in the industry. To be sure, the legal crime of conspiracy is not identical with "collusion" as economists understand that term, yet in the recent antitrust case, both the prosecution and the courts placed heavy emphasis upon alleged collusive activity by the major firms.

For the purpose of judging the economic effects of business behavior, it perhaps makes little difference whether that behavior is to be explained on collusive or noncollusive grounds. The injuries or benefits to the public welfare are much the same in either event. It may make a great deal of difference in the public policy which our analysis indicates. If unde-

sirable events are the result of collusion for which suitable penalties can be applied, the proper policy may be rather simply defined. If, on the other hand, the observed behavior of the industry flows naturally from its basic structure and environment, remedial intervention presents more difficult problems. We find it necessary, then, not only to describe industry behavior and to judge its economic results but also to weigh the relative importance of collusion and structure in causing behavior to be what it is.

PRICE CHARACTERISTICS

Wholesale prices of standard brand cigarettes have been sufficiently high to return large profits and have been consistently uniform and rigid. Since 1919 the net prices of Lucky Strike, Camel, and Chesterfield have been nearly the same, and from 1928 to 1946 they were identical. Discounts are uniform for all three companies, and tobacco products are shipped freight prepaid. Thus all jobbers have usually received all standard brands at exactly the same delivered price. Camel prices have changed only 12 times since 1923.

Retail prices are somewhat more variable than wholesale prices but exhibit an equal uniformity among brands. The manufacturers require jobbers to sell their brands no higher than those of competitors, and retailers, with few exceptions, sell them at the same price. There are price differences between various classes of cigarette, but these sell in different markets without severe interclass competition. The bulk of sales and the most violent competitive efforts are found among the standard brands, but prices remain uniform. Competition is carried on through advertising and other forms of sales promotion, but price competition is rare.

Uniformity

Uniform prices are, of course, no proof of collusion or of monopoly conditions. A perfectly competitive market, with many traders and a homogeneous commodity, establishes uniform prices through the automatic mechanism of supply and demand. Everyone can buy or sell as much as he pleases without appreciable departure from the going price. Thus no seller need accept less, while none can charge more without losing all his sales. No seller is large enough to exert significant influence on the market as a whole, and each adapts himself to the going price. The going price itself reacts in such a way as to harmonize the many shifting individual decisions to buy and sell. In such a market, prices are both uniform and flexible. In the organized commodity exchanges, which most nearly approximate in practice the conditions of theoretical perfect competition, prices change frequently in the course of a single day's trading.

Cigarette prices, in contrast, are uniform and rigid. Such prices may reflect market conditions, but they are not, like the flexible prices of perfect competition, the result of market forces over which the firm has no control. Rigid prices are likely to occur only when prices are set by the explicit decision of either buyer or seller. It is evident that cigarette prices are named by the manufacturers and that they are the result of conscious policy in the manufacturers' interest.

Of course, there are few industries which operate under conditions of perfect competition with automatic price fixing. Most businesses are faced with a sales problem which does not exist in perfect competition. Perhaps because of a small number of producers, or a differentiated product, or locational restrictions, or the lack of an organized exchange, there is no possibility of selling what the firm has to offer simply by accepting the going price. Sales must be fought for, and the weapons used in most reasonably competitive industries are competitive price reductions, quality variations, or competitive advertising. The cigarette industry, in common with many others, eschews price competition entirely and restricts its sales efforts to other kinds of pressure.

The question immediately arises whether the decision by all firms to maintain uniform prices represents agreement among ostensibly independent firms, and whether the consumer is consequently being defrauded of a kind of competition which he has a right to expect. The industry denies this with some fervor and claims that the exigencies of competition force identical prices.

From what we know of the elasticity of demand for particular brands, it seems probable that this claim is correct. The experience of American in 1918 and of Liggett in 1922 indicated that a higher retail price could not be supported on one standard brand than on its competitors.[1] If no company will maintain a higher price on its brands than that charged by competitors, then no one can succeed in charging a lower price so as to take advantage of interbrand elasticity. Whenever price changes are made, it is usual to give dealers a rebate for old stock if the price is lowered or to allow them an extra supply at the old price if the price is raised. Moreover, cigarettes are billed at the price when shipped rather than at the price when ordered. One reason for these measures is to prevent distributors from disrupting the even flow of supplies by speculative ordering or postponement of ordering in anticipation of price changes, but they also enable each company to make its changes effective on the same date as those of its rivals even if the decision is not taken until several days later. Thus each firm can prevent its rivals from obtaining even a temporary price advantage, and since none can obtain the advantage, none has an incentive to try. In this type of market situa-

1. See pp. 160–161.

tion, identical prices will result even in the absence of any agreement among competitors.

Even without these mutually reinforcing defensive measures, it is difficult to see how changes in retail prices could serve to adjust the ordinary competition among firms. The customary unit of sale is so small, and the burden of excise taxes so heavy that even a 1¢ change is a very large percentage of the manufacturer's net receipts. In 1942 the average retail price of a single package of cigarettes was 15.3¢, of which the federal government took 6.5¢ and the state government 1.2¢ in excise taxes.[2] The remaining 7.6¢ went 2.6¢ to distributors' margins, 3.8¢ to manufacturers' costs, and 1.2¢ to manufacturers' profits.[3] A 1¢ change in the price would thus have been equal to 6.5% of the selling price, 38.4% of distributors' margins, and 83.3% of manufacturers' profits. Changes of this magnitude are of the greatest importance to any business, and it is difficult to see how competitors could find it profitable to attract customers by retail price concessions.

Advertising, on the other hand, can be a much less expensive method of competition. Even large changes in advertising outlays may be only a fraction of a cent per package. Advertising is as unlikely as price to change the total consumption of cigarettes, but competing advertising campaigns to change the division of the market need not result in a purposeless draw. The effectiveness of a given expenditure depends on skill and good fortune in discovering an effective sales message, and each firm may hope to win. The very uncertainty of the outcome encourages advertising expenditures which would probably not be made if the results were known in advance. The fact that one advertising campaign cannot always be canceled out by a contrary campaign prevents mutual caution from restricting the volume of advertising in the same way that it restricts price concessions. Moreover, heavy advertising outlays by the leading firms make difficult the entry of new competition and thus serve a joint as well as a competitive function. For all these reasons it is evident why cigarette firms prefer to maintain identical prices and to compete through advertising.

Price competition is not necessarily either socially beneficial or evidence of genuinely competitive conditions. Monopolies have often found price warfare to be a powerful weapon with which to eliminate competitors, and the tobacco industry is no exception. The Trust was built by a series of price wars, and in recent years price cutting by manufacturers has been associated with the extreme exercise of monopoly power. When small price changes are so large a percentage of profits, price reductions may be useful in monopolist raids by a company strong enough to bear

2. *DA*, 1942, p. 81; 1944, pp. 89, 91. State tax is computed from total state tobacco collections divided by total cigarette tax-paid withdrawals in fiscal 1942.

3. *OTC*, p. 6. "Distributors' margins" is a residual item.

the losses. They are not a promising method of day-to-day competition among firms, all of whom expect to survive, at least for the time being.

This problem is complicated, however, by the existence of two levels on which cigarettes are sold. An identical price at retail is quite compatible with differing manufacturers' prices if distributors enjoy wider margins on some brands than on others. A cent a pack is 50¢ per thousand, and a wholesale price reduction of that amount or more will usually be passed on to the consuming public by competition among distributors. A smaller reduction is likely to be retained by the distributor, and it may be possible to secure favored treatment from distributors by charging a slightly lower net price than do competitors.

An opposite policy may be indicated by the importance of advertising. With any given retail price, a wider margin for distributors means a smaller excess over manufacturing costs and administrative overhead to be charged to profits or disbursed in advertising. Since advertising and dealer inducements are alternative methods of attracting customers, there is the problem of deciding in which direction funds can be most usefully employed.

Philip Morris followed both tactics in the 1930's by raising its suggested retail price more than its list price and thus obtained both larger receipts for itself and a bonus for the distributor. This was a peculiar situation in that the cigarette was new, that it pretended to superior quality, and that it was "trading down" on the reputation of an old expensive Turkish brand of the same name. Thus a select public would pay the higher retail price, and jobbers and retailers were induced to give the new brand special treatment. As Philip Morris has grown to acceptance by a wider market, the price appeal to consumers is no longer workable, and the same degree of special attention from distributors is no longer needed.

In the earlier years of the modern brands there were several attempts either to gain dealer support by wide margins or to finance advertising out of narrow margins. Lucky Strike, for example, was introduced in 1916 at a net jobbers' price after discounts of $3.72 against $3.62 for Camel. The differential in varying amounts persisted until 1919, and from 1922 to 1928 Lucky Strike was deliberately priced 5¢ higher than the other brands.[4] The excess was desired in order to support large advertising expenses on a sales volume which was much smaller than that of Camel.[5] Apparently, in this period of early growth the marginal efficiency of advertising was sufficiently high to compensate for some dealers' ill will.

In March, 1922, when Lucky Strike and Camel were cut from $6.62 to $6.00 net, Chesterfield followed only to $6.35. A difference in retail

4. See Table 55, p. 283.
5. *TP*, pp. 9122–9123, G. W. Hill.

prices followed and forced a further price cut to $6.09.[6] The 9¢ higher price on Chesterfield served to antagonize jobbers, while the same funds used in advertising apparently did not produce proportionate results. In October, 1922, when Camel was cut to $5.64, Chesterfield was cut further to $5.56.[7] At this time the Lucky Strike net price was $5.68, so that there was a different price on each of the three leading brands. In January, 1923, Chesterfield was raised to the level of Camel because "We did not think that we were getting sufficient benefit out of that lower price by ten cents per thousand which was commensurate with what it was costing us . . ."[8] In April, 1928, Lucky Strike followed a Camel cut to $5.29 net, thus eliminating the deliberate adverse differential. There had been many complaints in the trade about the excess, and the funds secured were held not worth the ill will. George Washington Hill commented on this differential and on the 1918 price rise:

> The result of these two experiences showed me definitely that, first of all, a slight differential in price was possible as between trade-mark brands; a differential small enough, as the 5 cents was, not to reflect in connection with the consumer, but such a differential would cause trade irritation and was undesirable for that reason. A large differential in price was practically, or was actually impossible unless a man wanted to sacrifice his business.[9]

Old Gold maintained a net price of $5.38 after the others had cut to $5.29 in April, 1928, but joined them at $5.64 in October, 1929.[10] There were no further differences among the net prices of the leading brands until October, 1946, when Camel was kept 3¢ below the Lucky Strike and Chesterfield price.

The gradual abandonment of different list prices raises no necessary inference of collusive action. American, Liggett, and Lorillard had tried departures from the Camel price and had found them not worth while. Nor is there inconsistency in the opinion that both an increase above and a decrease below Camel were disadvantageous for opposite reasons. It is entirely probable that the jobber and retailer had more power to discriminate against a single brand of which they disapproved than they had to encourage the sale of a favorite brand. Thus the extra advertising financed by a high net price might not be worth the trade ill will created, while the advertising sacrificed by a low net price was more valuable than the good will gained.

Whatever the validity of this reasoning, there can be no doubt that different prices to distributors became less productive as time went on. As the leading brands matured in public favor and as distributors be-

6. *TP*, pp. 10554–10555, J. W. Andrews.
7. *TP*, p. 11213, J. A. Gray.
8. *TP*, p. 10577, J. W. Andrews.
9. *TP*, p. 9125–9126.
10. *GX*, Nos. 295–300.

came delivery rather than selling agents, there was little the jobber or retailer could do to affect sales. A new brand like Philip Morris could gain greatly by special display. The established brands were necessarily carried by most distributors, were asked for by name, and there was no place for the retailer to intervene. A low price to the distributor would thus accomplish very little. On the other hand, it was worth while to secure advertising funds at the expense of distributors' ill will only so long as the marginal efficiency of advertising was high and so long as the current revenues would not otherwise provide adequate advertising funds. As Lucky Strike sales increased, advertising funds became adequate, a further increase in expenditures probably unproductive, and the reason for the higher price thus disappeared. Neither Liggett nor Lorillard was a sufficiently effective advertiser to make dealers' ill will worth while.

We conclude, then, that in this industry, with its few large firms and its high degree of interbrand elasticity, identical retail prices are indicated even in the absence of collusion. The lack of dealers' ability to influence brand sales makes wholesale price concessions unprofitable, while unusual exactions from distributors run an unnecessary risk of unfavorable treatment or even of adverse retail price differentials. Neither at retail nor at wholesale does there seem a place for "price competition" among the major companies.

Rigidity

Rigid prices are also to be expected in the cigarette industry. Prices are set by the administrative decision of one firm if the other firms adapt themselves to that decision. A change will be made and a new price selected only when one firm feels the change to be worth while. Every price cut will be followed, so there is no *competitive* advantage from a price cut. On the other hand, a price rise, unless it is followed, may involve grave competitive disadvantage. Customers will shift to those companies which do not follow, and owing to the persistence of brand habits, it may not be possible to recover this business merely by canceling the price rise. Thus a price rise is possible only when all companies are willing to go along and when the company which initiates the rise is fairly certain that the general opinion of the industry is sufficiently favorable so that a gamble can legitimately be taken. A price fall is possible whenever a single producer wishes it, but the fact that the gain must be shared makes the decision to cut attractive to any one only infrequently. Because of the different competitive considerations involved in a price rise from those involved in a price fall, there may be a considerable range of cost conditions which are favorable to no change at all. Prices may persist for considerable periods because no one has any incentive to change them.

In graphical terms the firm is faced with a demand curve which is

"kinked" at the existing price level, as is illustrated in Figure XXVIII.[11] Below the existing price, demand is only as elastic as the demand for standard brand cigarettes as a whole because of the certain knowledge that a cut will be followed. Above the existing price, it is much more elastic because of the fear that the customers will not follow a rise. The marginal revenue curve is discontinuous. Because of the discontinuous "gap" in the marginal revenue curve, there may be considerable shifts in

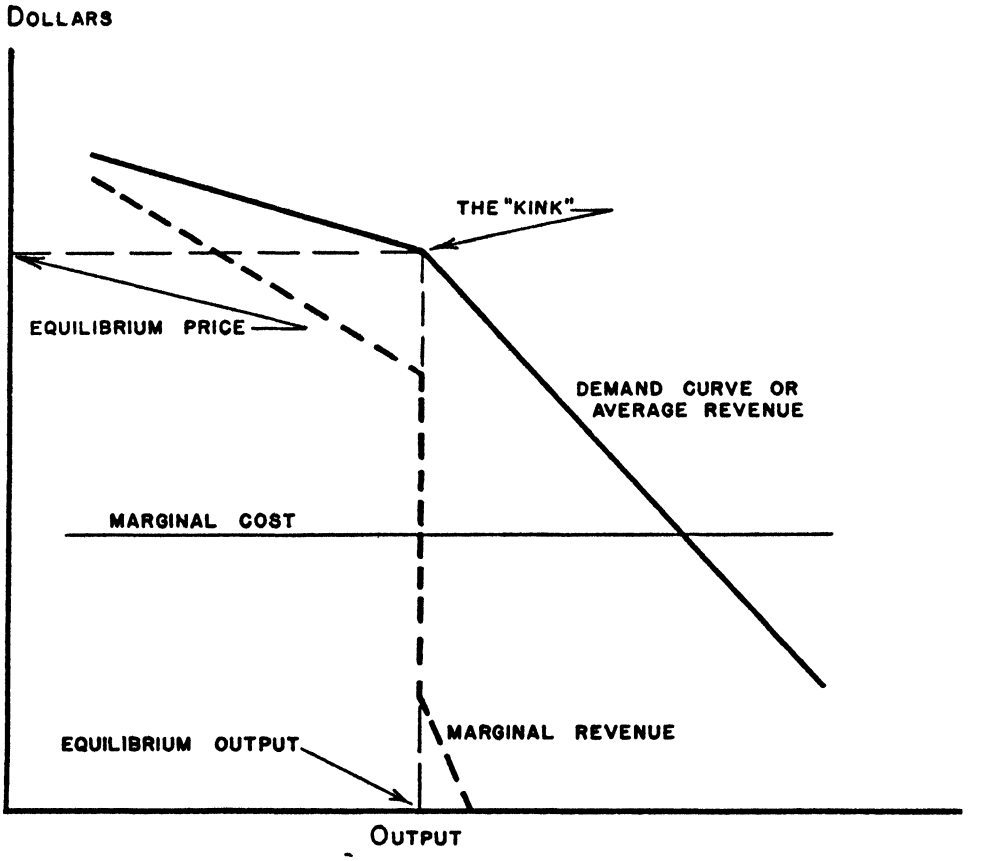


FIGURE XXVIII. The "kinked" demand curve of oligopoly.

demand and in marginal cost without a change in the equilibrium price. Marginal cost will be above marginal revenue for all lower prices and below for all higher prices. Thus, even though demand and cost conditions change, maximum profits are still obtained at the old price.

Stigler has suggested that the "kinked" demand curve is not characteristic of some oligopolies on the grounds that their prices are not more rigid than monopoly prices and that price changes are not followed or ignored in the proper pattern to establish the presupposition of a

11. P. M. Sweezy, "Demand under Conditions of Oligopoly," *Journal of Political Economy, 47* (August, 1939), 568.

"kink." [12] In the cigarette industry there are several instances of price changes which make it seem reasonable that firms should fear that a price fall would be followed while a price rise would not be.

One of these we have already discussed.[13] In the summer of 1918 Lucky Strike was selling at $5.59 per thousand net, or 30¢ above the Camel price. On October 1 the price of Lucky Strike was raised to $6.77, while Camel and Chesterfield held fast at $5.29. On November 11 American retracted the rise. Lucky Strike sales suffered seriously for several months, and American did not lead another price rise for many years. On February 25, 1919, Camels were raised from $5.29 to $7.06 net, while Lucky Strike raised only to $6.62. A month later Camel cut to $6.44. On July 30, 1946, Chesterfield prices were raised from $6.25 to $6.45. The other companies did not follow and the rise was canceled two weeks later. No price cut large enough to cause a difference at retail has ever been ignored. The facts that all important downward price changes have been followed, that some price rises have not been followed, and that the isolated initiator has been forced to retract suggest that the "kinked" demand curve is a realistic description of market expectations in the cigarette industry and that price rigidity is completely consistent with honest competition among the leading firms.

This explanation of price rigidity is based on the assumptions that competitors do not collude and are uncertain of each other's intentions. The observed fact of rigidity does not, of course, show that these assumptions are sound. Price rigidity is not an index of the absence of collusion. There are other reasons for price rigidity which apply as well to a complete, active, and rapacious monopoly as to a disorganized and uncertain oligopoly. Price changes will be made only if they are expected to be beneficial, but this implies a knowledge of the effects of a price change before the change is actually made. In any industry such knowledge is hard to obtain, and when the results of price changes are uncertain, it is the better part of valor to leave them alone. The fear of attracting new competition imposes a powerful restraint on prices even for a full monopoly, and uncertainty as to the maximum safe price may deter frequent experimentation. Moreover, a price must be in effect for some time before the results can be interpreted, and this alone implies some stickiness of prices. A monopoly or collusive oligopoly may have rigid prices for these various reasons. A competitive oligopoly may have rigid prices for the same reasons and also because of the uncertain reactions of competitors. Thus rigid prices cannot be regarded as evidence that collusion is absent, but neither do they indicate that collusion is present. Rigid prices are the mark of an industry where firms are large relative to the market and

12. G. J. Stigler, "The Kinky Oligopoly Demand Curve and Rigid Prices," *Journal of Political Economy, 55* (October, 1947), 432.

13. See pp. 160–161.

where, consequently, prices are set by administrative decision rather than automatically by market forces.

A further reason for unchanging cigarette prices is the peculiar cost structure of the industry. Almost half the net wholesale price goes to pay the federal excise tax, and with so large an element in cost completely fixed, it requires large proportionate variations in other cost elements to change total costs sufficiently to make price changes desirable. As we shall see, the manufacturers' net receipts, excluding the excise tax, maintain a rough relationship to leaf tobacco costs over a period of years, and though prices are completely rigid for many months at a time, it does not follow that they are impervious to market pressures.

PRICE LEADERSHIP

The Choice of a Leader

Our knowledge of the demand for cigarettes and of the structure of the industry leads us to the conclusion that identical and rigid prices are natural and perhaps necessary. There is still a problem of how these prices are arrived at and who sets them. The history of Lucky Strike and Camel prices presented in Table 55 provides clues to the way in which the market leader is selected.

In any industry the firm which initiates a price change may be selected by chance, by agreement, by the power of the strongest firm to enforce its decisions on the rest, by the fact that one firm prefers a lower price than do the others, or by simple habit and custom. In the cigarette industry it is evident that chance is not primarily responsible; the pattern of leaders and followers is too consistent. We shall, for the moment, ignore the possibility of collusion. The other elements of power, price preference and habit, are clearly evident in the history of the industry.

In the first decade after the dissolution of the Trust, prices were not identical or as stable, nor was leadership so consistent as it has since become. Wartime inflation prevented prices from remaining stable, and competitive maneuvers with new brands resulted in independent action by all three companies. Reynolds, however, quickly established such a lead as enabled it to enforce its policy on the other producers and emerged from the war and postwar readjustments as the usual price setter.

Camel was introduced at $3.53 net per thousand and was raised to $3.62 in July, 1916. In December, 1916, Lucky Strike was introduced at $3.72. On October 4, 1917, a rise in the tax from $1.25 to $1.65 per thousand caused Reynolds to raise its price to $4.01. The rise did not quite cover the tax increase, and net receipts after tax fell from $2.37 to $2.36 per thousand. A fortnight later, in response to a further tax in-

TABLE 55

Prices of Camel and Lucky Strike Cigarettes, 1913–49 *

(Dollars per Thousand)

Date Effective	Camel			Lucky Strike			
	List	Net	Net Less Tax	List	Net	Net Less Tax	Tax
1913	4.00	3.53	2.28				1.25
July 13, 1916	4.10	3.62	2.37				"
Dec. 22, 1916				4.00	3.72	2.47	"
Oct. 4, 1917	4.55	4.01	2.36				1.65
Oct. 19, 1917				5.00	4.65	2.60 †	2.05
Nov. 2, 1917	5.25	4.63	2.58				"
Mar. 1, 1918	6.00	5.29	3.24				"
Mar. 9, 1918				5.833	5.43	3.38	"
July 27, 1918				6.00	5.59	3.54	"
Oct. 1, 1918				7.50	6.77	4.72	"
Nov. 11, 1918				6.00	5.42	3.37	"
Feb. 25, 1919	8.00	7.06	4.06	7.50	6.62	3.62	3.00
Mar. 21, 1919	7.30	6.44	3.44				"
Nov. 1, 1919	7.60	6.70	3.70				"
Nov. 4, 1919				7.80	6.88	3.88	"
Nov. 22, 1919	8.00	7.06	4.06				"
Nov. 27, 1919				8.20	7.23	4.23	"
Dec. 18, 1919				8.00	7.06	4.06	"
Dec. 5, 1921				7.75	6.84	3.84	"
Dec. 31, 1921	7.50	6.62	3.62				"
Jan. 19, 1922				7.50	6.62	3.62	"
Mar. 4, 1922	6.80	6.00	3.00				"
Mar. 7, 1922				6.80	6.00	3.00	"
Aug. 24, 1922				6.20	6.08	3.08	"
Oct. 28, 1922	6.40	5.64	2.64				"
Oct. 31, 1922				5.80	5.68	2.68	"
Aug. 8, 1923				6.45	5.69	2.69	"
Apr. 21, 1928	6.00	5.29	2.29	6.00	5.29	2.29	"
Oct. 5, 1929	6.40	5.64	2.64	6.40	5.64	2.64	"
June 4, 1931	6.85	6.04	3.04	6.85	6.04	3.04	"
Jan. 1, 1933	6.00	5.29	2.29	6.00	5.29	2.29	"
Feb. 11, 1933	5.50	4.85	1.85	5.50	4.85	1.85	"
Jan. 9, 1934	6.10	5.38	2.38	6.10	5.38	2.38	"
Jan. 20, 1937	6.25	5.51	2.51	6.25	5.51	2.51	"
July 1, 1940	6.53	5.76	2.51	6.53	5.76	2.51	3.25
Nov. 1, 1942	6.81	6.01	2.51	6.81	6.01	2.51	3.50
Apr. 25, 1946	7.09	6.25	2.71	7.09	6.25	2.71	"
Oct. 7, 1946	7.35	6.48	2.99	7.38	6.51	3.01	"
July 22, 1948	7.75	6.83	3.32	7.78	6.86	3.36	"

* Compiled from *DX*, No. 1195; Cox, p. 199; *TP*, pp. 9120–9122, G. W. Hill; American Tobacco Co., *The American Tobacco Company and Its Service to the Public*, July, 1940, p. 26; Standard and Poor's Corporation, *Industry Surveys—Tobacco*, Sec. II (March 23, 1950), p. T4–4.

† Source error in applying tax corrected.

crease, Lucky Strike prices were raised to $4.65 net, which was a greater increase than the rise in tax. Net receipts after tax were now $2.60. On November 2 Reynolds adjusted to the new tax with a slightly lower net price of $4.63. On March 1, 1918, Camel prices were raised again to $5.29 net. Eight days later Lucky Strike rose to $5.43 and on July 27 rose further to $5.59. The adverse differential on Lucky Strike was now 30¢.

Up to this point Reynolds had exercised the principal initiative in setting prices, while American established related prices with a higher net return. American was first in adjusting to the second tax rise, but the subsequent adjustment by Reynolds must be regarded as dictated by the tax rather than as a competitive response to American. Camel sales were at this time very much larger than those of Lucky Strike and were growing rapidly. Sales in 1917 were nearly twice those in 1916, and the competitive relationship to Lucky Strike must have been less important than the pressure of taxes and rising costs.

In 1918, however, competitive relations changed. The rate of growth of Camel declined, while national production continued to grow. Lucky Strike business was very active despite the higher jobbers' price or because of the advertising which it made possible. In October American evidently felt strong enough to attempt a large price rise and did so with the disastrous results previously discussed. Both Reynolds and Liggett sat tight with an advantage of $1.48 per thousand, or almost 3¢ per pack, and American not only canceled the rise but lowered prices still further to $5.42, thus reducing the adverse differential from 30¢ to 13¢.

In February, 1919, with the new tax of $3.00 per thousand in effect, Reynolds raised prices from $5.29 to $7.06, or 82¢ more than the tax rise. American, no doubt smarting under its recent defeat and finding it necessary to repair its sales position, raised its net price only to $6.62. This was sufficient difference to occasion a cent difference in retail prices, and on March 21 Reynolds cut back. It is significant, though, that Reynolds cut not to the American price but below it to $6.44 net. Reynolds asserted its leadership, refused to accommodate itself to American's decision, and in effect gave American the choice of following or embarking on a price war in which Reynolds was the stronger.

On October 15, 1919, Liggett raised the price of Chesterfield to $7.80 list or $6.88 net. In November Camel was raised tentatively to $6.70 and then to $7.06 net, thus establishing Reynolds' independence of action while agreeing on the desirability of a rise. Liggett immediately adapted to the higher price. American, suitably disciplined, followed these changes with net prices 18¢ higher than Reynolds but in December cut again to set the Lucky Strike price equal to Camel.

Net prices of the major brands held steady at $7.06 until the end of 1921, when on December 5 American cut to $6.84. On December 31

Reynolds replied with a cut to $6.62 and cut again to $6.00 in March, 1922, and to $5.64 in October. American followed these cuts demurely, except that in August it kept its net price to jobbers 8¢ above the Camel price. In October the margin was cut to 4¢ and in August, 1923, was raised to 5¢. Meanwhile, in 1922 Liggett and Myers had experimented with net prices both higher and lower than Reynolds and had decided to maintain identical prices. Prices of the major brands were not changed again until 1928.

As the result of these developments, Reynolds was established as the regular price leader. Until the summer of 1946, when the industry was operating under the shadow of a Sherman Act conviction, Liggett and Myers never again attempted to change a price independently. From 1919 to 1946 no company other than Reynolds ever led a successful price rise. In the early years Reynolds was aggressive in setting price and in refusing to adapt itself to competitors' decisions. It had the power to force other companies to abide by its choice. Reynolds apparently preferred to operate at a lower level of prices than did American and hence was in a strategic position to insist on its own decisions. Once the pattern of behavior was established, it tended to perpetuate itself.

The element of preference as to absolute price levels deserves some elaboration. It is probable that different executive attitudes and personalities were responsible in part for the different behavior of the leading companies. Reynolds was not only the strongest and the most aggressive cigarette producer in the early period but also has consistently shown the most acute awareness of price. The management of the leading companies is derived directly from the old Tobacco Trust, and many of the executives seem never to have forgotten the lessons learned there.

The American Tobacco Company, after the dissolution, inherited Percival S. Hill as its first president. Hill had previously had charge of the cigarette branch of the Trust, while his son George Washington Hill had shown a marked flair for advertising in promoting the Pall Mall brand of Turkish cigarettes. The younger Hill was made vice-president-in-charge-of-sales in the reorganized company, and when the Lucky Strike blend was developed as a successful answer to Camel, it was he who exploited the slogan "It's Toasted" as the principal advertising message. When he succeeded to the presidency of the company in 1925, he brought with him a great skill and fanatical interest in advertising.

There is no doubt that in the second Hill American Tobacco had a genius in advertising technique. There is probably no one in business who has sold more goods, irritated a larger number of people, and, incidentally, made a larger personal fortune out of the distributive process than did George Washington Hill. His success came in part from a few basic principles. He believed in concentrating all promotional activities on a single brand and to do this leased minor brands to other companies. When

Pall Mall was reintroduced as a domestic blend, it was given to the subsidiary American Cigarette and Cigar Company where its promotion would not interfere with the sales effort on Lucky Strike.[14]

The principal secret of success seems to have been the sheer aggressive enthusiasm of the advertising copy directed to the general public. "It's Toasted." "Reach for a Lucky instead of a Sweet." "Nature in the Raw Is Seldom Mild." "Coming Events Cast Their Shadow Before." "Spit Is an Ugly Word, but It's Worse on the End of Your Cigar." The aggressive nature of these slogans and their ability to attract the eye, focus the attention, and impress the memory were not equalled by any other cigarette advertisers in the preradio era. And as advertising by radio has increased, American has again been outstanding. The maddeningly inane slogans are an insult to the intelligence, but they attract attention. "Lucky Strike Green Has Gone to War." "L.S./M.F.T." "In Market after Market . . ." "With Men Who Know Tobacco Best, It's Luckies Two to One." "So Round, so Smooth, so Fully Packed, so Free and Easy on the Draw" and the inevitable chant of F. E. Boone and L. A. "Speed" Riggs.

Compared with Lucky Strike advertising, other cigarette advertising seems tame and uninspired. "I'd Walk a Mile for a Camel" did well for a while after the First World War and is still dusted off for occasional use. "They Satisfy" for Chesterfield. But nowhere the profusion of bright, vulgar, aggressive, brassy, catchy slogans which American produced and which no one could ignore. Hill's advertising was conducted with enthusiasm, and no matter how absurd the message, it was always presented with a complete seriousness.

On the whole, Lucky Strike advertising was more effective than that of competitors, and it was very much more colorful. Even more pronounced than its success was Hill's faith in its effectiveness, and this is of some importance in explaining industry behavior. Hill was a genius at advertising, he enjoyed it and he believed in it with almost religious fervor. He often pointed out to his stockholders the stake which they had in advertising and inferentially in George Washington Hill.[15] The other companies cut their good will to $1, but American retained it on its books at $54 million, and Hill declared it to be the most conservatively valued item among the assets.[16] Selling is an active business and the most difficult task in the cigarette industry. Good will, which estimates the value of the ability to make sales, measures the soundest asset the company possesses and its surest guarantee of success and security.

This preoccupation with advertising has tended to make the American

14. See p. 83, n. 26; p. 91.

15. G. W. Hill, letter to stockholders, February 1, 1940.

16. G. W. Hill, "Good-Will—American Tobacco's Most Valuable Asset," *Printer's Ink, 157,* No. 5 (October 29, 1931), 64.

Tobacco Company less concerned with price adjustments as an ordinary instrument of competitive business policy. For most of the period from its introduction in 1916 to 1928, Lucky Strike was deliberately sold at a slightly higher jobbers' net price than were the competing brands. The higher price was desired in order to finance heavy advertising expenses, and it was only after brand progress made the extra income unnecessary and the continued complaints of distributors made the differential unwise that the price disadvantage was dropped.[17] Price and advertising are alternative ways of attracting customers, and American was likely to regard the latter as more effective and desirable.

Reynolds, on the other hand, while enjoying equally aggressive management, has been much more sensitive to the influence of price upon sales. Camel was introduced to compete with Fatima at a 5¢ lower retail price. There is evidence that Reynolds, like the others, has taken active measures to depress exceptionally high prices of leaf tobacco.[18] Reynolds, as we shall see, was more concerned than the other companies in cutting costs of distribution. It has been unusually active in granting schemes and deals on its smoking and chewing tobacco brands, and according to Hill, "Reynolds were the best users of pencils in the country, and Reynolds always wanted his brands sold cheaper than anybody—all of his brands." [19]

This difference in price consciousness was another factor in making Reynolds the usual price leader. For if Reynolds usually preferred a lower price than American, American would be unlikely to cut below Reynolds, while if Reynolds decided that a price rise was due, it was probable that American was even more willing to see it come. Thus Reynolds could enforce a price cut and could count on American acquiescence in a rise, while American usually had no incentive to enforce a cut and could not rely on cooperation in a rise. The evidence of a different price preference between the two companies is perhaps a little thin for us to regard this as a principal cause of Reynolds' price leadership, but in connection with the other factors previously mentioned it probably had some effect.

In contrast to American and Reynolds, the Liggett management has been unaggressive in many aspects of policy, and the role of price follower seems to suit it well. Liggett advertising has always been relatively subdued. It has never attracted attention as violently as has American, nor has it used Reynolds' perennial testimonial method. The effectiveness of Chesterfield advertising has varied over time and has sometimes succeeded by the aid of competitors. Market studies have revealed occasions on which Chesterfield sales increased because Lucky Strike advertising overstepped the bounds of reason, and Chesterfield publicity seemed hon-

17. *TP,* pp. 9122–9123, G. W. Hill.
18. See p. 340.
19. *TP,* p. 9179.

est and persuasive by contrast.[20] In other respects, too, Liggett has played a retiring role. In dealing with the jobbing trade, Liggett has been less aggressive than the others.[21] It has shown neither the Reynolds awareness of price nor the American enthusiasm for trade propaganda. In most aspects of policy one feels a consistent conservatism. Liggett has been content to let the other companies lead in spectacular activities and has turned its principal attention to producing an acceptable product and merchandising it with relative good taste.

This conservatism in management and the fact that Chesterfield has generally ranked third in volume of sales is ample reason to expect Liggett to act as price follower. After the initial policy of price experimentation, Liggett resorted to complete price imitation. In this, as in many other respects, Liggett prefers to operate in an environment created by someone else. This attitude was well expressed by E. H. Thurston, the vice-president-in-charge-of-sales for the St. Louis district, in his testimony at Lexington:

Q Has your company, the Liggett & Myers Tobacco Company, in the last 15 or 20 years, ever inaugurated a price change in the price of cigarettes, itself, Mr. Thurston?

A No. Never.

Q Has there been a reason for that, as far as you are concerned, as far as your knowledge is concerned?

A Only one reason: They are not leaders in the industry; they are in the third position, maybe second once in a while.[22]

To the extent that Reynolds could rely on other companies' following it up or down, there was no "kink" in its demand curve. Demand for Camel cigarettes was, at all prices, as elastic as the demand for all standard brand cigarettes taken together. There was accordingly no reason from oligopoly considerations for the price it set to stay constant, and the failure of Reynolds to change prices more often was probably due to the other motives of uncertainty previously discussed. For competitors, however, the knowledge that price cuts would bring retaliation and that price rises would not be followed implied a very strong "kink" and a strong motive not to attempt price initiative.

Price History

The discussion so far has been concerned solely with the explanation of uniform and rigid prices and of the fact that price initiative has usually belonged to Reynolds. We turn now to a consideration of the prices set

20. H. C. Link, "Psychologizing the Future," *Advertising & Selling, 24* (February 28, 1935), 27.

21. See p. 313.

22. *TP,* p. 10448.

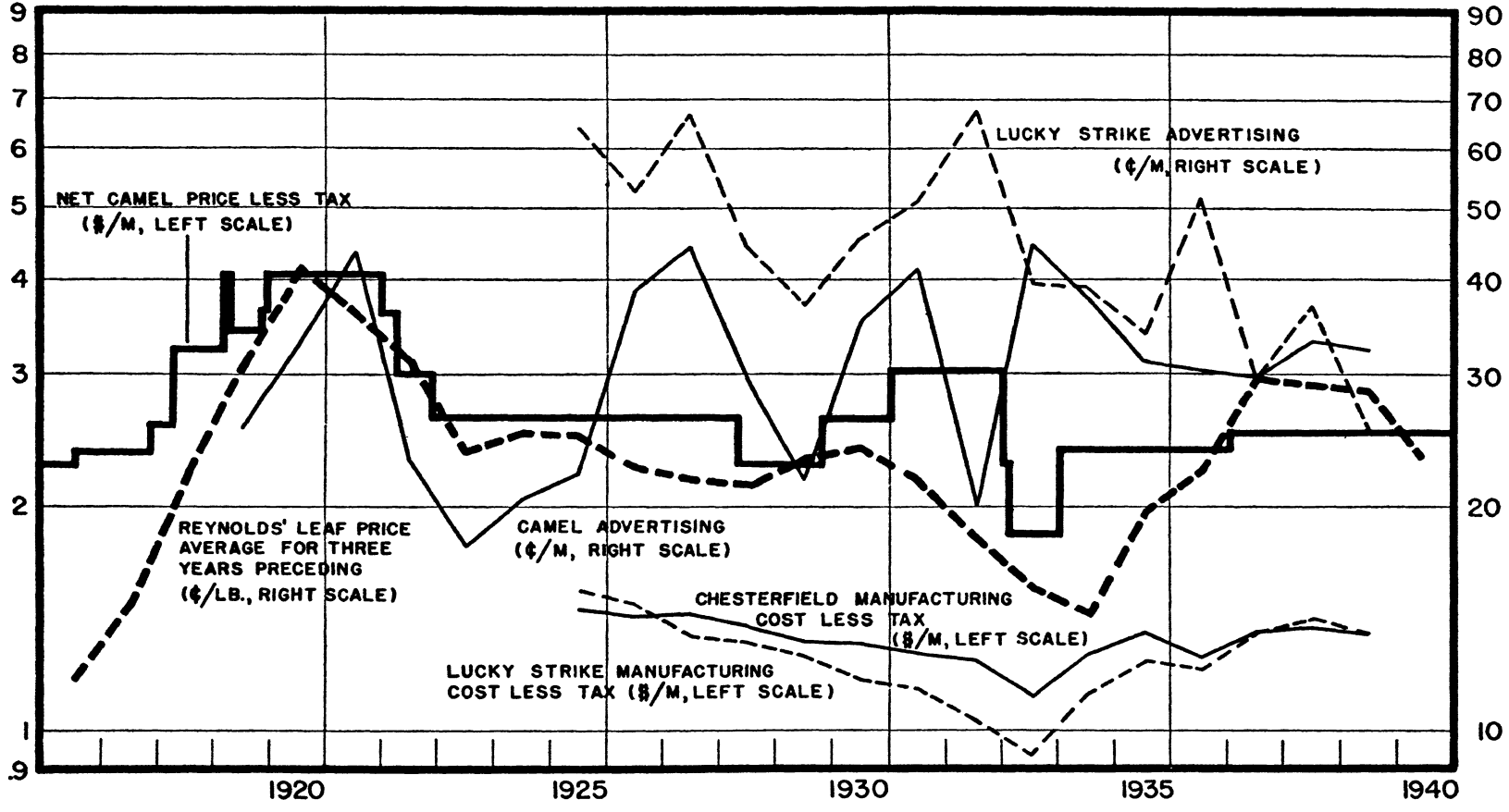


FIGURE XXIX. Factors affecting cigarette prices, 1916–40. Advertising includes expenditures for all products and includes free goods.

SOURCES: *TP*, p. 5730, J. R. Coon; *GX*, No. 638; *DX*, Nos. 1195, 1236, 1242, 1260. See below, p. 290, n. 23.

by the price leader and of two instances in which Reynolds did not initiate the change. Figure XXIX presents some of the factors involved.[23]

The changes in Camel prices from 1916 to 1923 are clearly associated with changes in leaf costs. After the war, leaf costs bore a generally higher relationship to net price than they did before the war. The permanently higher level of excise tax required a lower unit profit if prices were to be kept somewhere near the prewar level, and the higher volume of sales made this possible without a loss in total profits. The decline in prices after the war reflected both a fall in leaf costs and a decline in unit advertising expenses as increasing sales reduced the unit burden of somewhat reduced total outlays.

Constant prices from 1922 to 1928 accompanied a general decline in

23. The weighted averages of prices paid for tobacco by Reynolds in the 3 preceding crop years is used as an index of manufacturing costs. It is the accounting practice in the industry to charge out leaf used at the average cost for all leaf in the inventory. Since leaf is usually stored for 2 or 3 years before using, a 3-crop-year price average is a good approximation to inventory cost. The prices paid do not include processing or storage costs, so that they represent only a part of leaf costs, just as leaf costs represent only a part of total manufacturing costs.

That these average leaf prices serve as a reasonable index of manufacturing cost is shown by comparing them with manufacturing costs for Liggett and American available over a shorter span of years. The general trend is the same, although leaf prices are naturally more volatile than total manufacturing costs. The sharp upward swing in manufacturing costs for the other two companies at the same time that Reynolds' average inventory costs were falling in 1934 reflects the impact of processing taxes which added several cents a pound to the leaf cost charged in that year. In 1934 average inventory is not a good index of cost movements.

That Reynolds leaf prices somewhat overstate the degree of variability in its total manufacturing costs can be seen from Table 56.

TABLE 56

Reynolds' Unit Manufacturing Cost and Three-Year Average Leaf Prices in Selected Years as Percentages of the Same in Selected Base Years *

Year	Manufacturing Cost	Leaf Prices
1932 as percentage of 1926	82	76
1933 " " " 1926	73	68
1937 " " " 1927	99	137
1938 " " " 1928	105	136
1939 " " " 1929	100	119

* *TP*, pp. 4002–4003, 4016–4017, C. C. Ausband; *DX*, No. 1242.

It is apparent that other costs varied in much the same way as average leaf prices in the descent to 1933 but that the subsequent rise in leaf prices was much greater than the rise in other elements of cost.

The manufacturing costs series for Liggett and American are computed on the basis of percentage or absolute changes which appear in the trial record and on the assumption that manufacturing costs in 1939 were equal to factory costs in 1941. The basic data and the results are presented in Table 57.

leaf costs. At the same time, however, Camel advertising expenses increased sharply in response to heavy outlays by American.

In 1927 occurred an incident which foreshadowed later developments and which casts bright light upon competitive relationships in the ciga-

TABLE 57

Unit Manufacturing Costs, Chesterfield and Lucky Strike, 1925–39

	Chesterfield			Lucky Strike	
	1	2	3	4	5
Year	Difference from 1925 in Cents per Thousand *	Cost Less Tax in Dollars per Thousand §	Cost Including Tax as Percentage of 1925 †	Cost Including Tax in Dollars per Thousand ‖	Cost Less Tax in Dollars per Thousand
1925	——	1.457	100.00	4.539	1.539
1926	−2.4	1.433	98.62	4.476	1.476
1927	−1.4	1.443	95.90	4.353	1.353
1928	−8.0	1.377	94.94	4.309	1.309
1929	−15.0	1.307	93.69	4.253	1.253
1930	−15.0	1.307	91.91	4.172	1.172
1931	−20.0	1.257	90.93	4.127	1.127
1932	−20.5	1.252	89.02	4.041	1.041
1933	−34.0	1.117	86.55	3.928	0.928
1934	−20.0	1.257	90.84	4.123	1.123
1935	−10.0	1.357	93.50	4.244	1.244
1936	−20.0	1.257	92.79	4.212	1.212
1937	−9.0	1.367	95.96	4.356	1.356
1938	−7.5	1.382	97.37	4.420	1.420
1939	−9.5	1.3624 ‡	96.11	4.3624 ‡	1.3624 ‡

* *TP*, pp. 3801–3803, B. J. Sanders.

† *DX*, No. 701.

‡ *OTC*, p. 6. Manufacturing cost assumed equal to 1941 standard brand average factory cost.

§ Based on col. 1 and n. ‡.

‖ Based on col. 3 and n. ‡.

This assumption undoubtedly is in some error not only because of cost changes between 1939 and 1941 but also because the items included in manufacturing cost and in factory cost may not be identical. The assumption, however, serves to give a general magnitude to manufacturing cost and to compare cost changes for Liggett and American which are otherwise on a completely noncomparable basis. For the purposes for which we use them, no significant error is involved.

Advertising expenditures for Reynolds and American include expenditures on all products and include gratis goods which are given in drop shipments and special deals primarily to increase the plug and smoking business. It is unfortunate that we cannot procure a direct measure of cigarette advertising alone, but most expenditure is on the leading brands, and for purposes of comparison, total advertising expense per thousand cigarettes is not seriously misleading.

One further caution is necessary. Since all series are plotted on a logarithmic scale, percentage changes are more readily compared than absolute changes. Manufacturing costs and net price less tax are both referred to the same scale in dollars per thousand. Leaf costs and advertising expenses are plotted according to cents per pound or per thousand or in millions of dollars per year. The graph does not allow direct comparison of magnitudes of price, of leaf costs, and advertising, but the degree of movement is accurately presented.

rette industry. No price change took place in the continental United States, but a sharp price war occurred between the American Tobacco Company and its former subsidiary, the Porto Rican–American Tobacco Company.[24]

The Puerto Rican market bought the same major brands as the continental United States. There was also a wide sale of cheaper brands. While the standard brands were priced at 15¢ retail, Liggett and Myers sold Spur at 14¢ and Coupon at 10¢. Porto Rican–American had the largest volume of the cheaper brands, with Casino at 12¢ and Collectiva at 10 for 6¢. The net price to jobbers was $4.75 per thousand for Casino and Collectiva and $5.25 per thousand for the standard brands. All cigarettes were then taxed at $3.00 per thousand so that the net receipts after taxes were $1.75 for the cheaper cigarettes and $2.25 for the standard brands.

At this time American Tobacco employed a single jobber in Puerto Rico by the name of Gilles and Woodward. This company sold Lucky Strikes to subjobbers at $5.95 per thousand, while retailers paid $6.25. At 15¢ a pack this allowed retailers a profit of 75¢ per thousand.

On June 30, 1927, the Puerto Rican legislature increased the tax from $3.00 to $4.00 per thousand on all cigarettes whose net wholesale price less tax was between $2.00 and $3.00. This, of course, hit the standard brands but left the cheaper brands unaffected. There was no perceptible opposition to the new tax on the part of Porto Rican–American.

The initial effect was to push the price of Lucky Strikes to $6.25 net per thousand at wholesale and to 18¢ per package retail. American, however, reacted with vigor, and after two weeks of the high price Lucky Strikes were reduced to 12¢ per package at retail throughout Puerto Rico. The American export manager was sent to Puerto Rico to wage the price war. Although the cost of manufacture of Lucky Strike was more than double the cost for Casino, American supplied Gilles and Woodward with Lucky Strikes at $4.65 per thousand, c.i.f. San Juan, and, to grease the distributive channels further, agreed to guarantee any losses Gilles and Woodward might make up to $20,000 a year. To maintain the 12¢ price, losses were incurred all along the line. Gilles and Woodward lost $18,200 a month in August and September, while American itself had a monthly loss of over $10,000. The effect on Porto Rican–American was immediate and disastrous. The price of Collectivas and Casinos was cut to 95¢ net after taxes at wholesale and to 10¢ per package at retail. Where previous profits had been at the rate of $200,000 to $250,000 a year, Porto Rican–American was now losing money at the rate of $150,000 to $180,000.

Porto Rican–American promptly entered suit under the Clayton Act

24. *Porto Rican–American Tobacco Co.* v. *American Tobacco Co.*, 30 F.2d 234 (1929); cert. denied, *American Tobacco Co.* v. *Porto Rican–American Tobacco Co.*

and secured an injunction forbidding the American Tobacco Company to cut prices in Puerto Rico while it maintained higher prices in the United States. The American Tobacco Company appealed and seriously defended its conduct on the ground that it had proper cause to discipline Porto Rican–American because of the failure of the latter to cooperate in opposing an unfair tax. The Circuit Court of Appeals affirmed the injunction on the ground that the price war "was intended to punish, and, if possible, eliminate the appellee as a competitor." The Supreme Court refused to review the findings.

On April 21, 1928, the net price of Camels was reduced from $6.40 list, or $5.64 net, to $6.00 list, or $5.29 net. In financial circles this move was interpreted as a warning against a projected invasion of the American market by British tobacco interests, or as a countermove against the increasing success of Old Gold. Apparently the true explanation was that the high levels of advertising in 1926 and 1927 were not producing the required results. In the early months of 1928 Camel sales fell off sharply and "Bowman Gray, who was then president of the company, recommended . . . that . . . it was an opportune time for us to compete on a price basis rather than trying to spend money in advertising from which we were apparently not getting results, and so it was decided to spend less money on advertising and sell Camels at a lower price." [25] What was meant by competing "on a price basis" may perhaps be seen from the statement of George Washington Hill: "I have always felt that he was deliberately trying to stop my advertising money, to stop those advertising campaigns." [26]

American had embarked on a very heavy program in the preceding two years which involved a higher cost per thousand even though total expense was below that of Reynolds. American advertising was proving most effective and raised Lucky Strike sales from 14 to 19 billion between 1925 and 1927.

The Reynolds cut was probably intended to reduce Lucky Strike advertising and had that effect. Although the Lucky Strike cost per thousand remained above that of Camel, expenditure on both brands was cut. The looked-for effect on sales was not secured, however, for Lucky Strike sales increased to 37 billion in 1929, while Camel sales were constant at about the same figure. Reynolds decided that more advertising was necessary and raised the price back to $6.40 list, or $5.64 net, on October 5, 1929.[27] Hill was "very glad to follow, because I thought the $6 [list] price was too low." [28]

On June 4, 1931, occurred the mid-depression price rise which was the cause for so much subsequent trouble for the standard brands. Al-

25. *TP*, p. 11215, J. A. Gray.
26. *TP*, p. 9123.
27. *TP*, p. 11216, J. A. Gray.
28. *TP*, p. 9123.

though the rise to $6.85 list, or $6.04 net, seems in aftersight to have been a cardinal error, Reynolds' motives were perfectly reasonable. Although consumption of cigarettes had already ceased to grow, there was as yet no indication of a precipitate fall, and there was no previous experience to indicate that such a fall would occur. The rise amounted to a cent per package at the most, and it was thought that consumers would pay it. Reynolds was about to put all its packages in cellophane wrapping and, owing to a contract for delivery of all available wrapping machines, was confident of a period of months in which only Camels would appear in the improved packing. There was an obvious opportunity for a heavy advertising campaign to exploit the advantage, and the anticipated cost made the price rise worth while.[29] Reynolds probably anticipated no fall in general consumption and certainly expected no fall in its own sales. In anticipation of increased business, the company bought extra leaf supplies above its normal requirements.[30]

Although it has been the source of much innocent merriment, there is probably some substance to S. Clay Williams' statement that "Another part of our thinking was that if, under a situation like this we could undertake the enterprise that I have outlined and by that express our own courage for the future and our own confidence in our industry, and we might not hurt the tobacco growing situation in this country and probably would help it." [31] It was a period in which prosperity was "just around the corner" and there was much sloppy thinking, which later blossomed in the NRA, to the effect that price increases were a way to end the depression.

The other companies saw no danger in the move and followed with greater or less cheerfulness. According to Hill:

I have already expressed the view that my duty is to the public primarily, then to my consumers of my products, and lastly, to my stockholders. I am not unmindful that I am employed to make money for the American Tobacco Company. I naturally saw the effort to make some money, and, as I said before, our Lucky Strike business continued to show a growth for the entire year . . . In 1931 we peaked at 44 billion, so from where I sat I thought the public might absorb the 45-cent increase, and I followed Mr. Reynolds' lead.[32]

Liggett followed with somewhat less enthusiasm, according to G. W. Whitaker, vice-president-in-charge-of-sales for the New York department:

A Yes, we eventually followed it. It sort of came out of a clear sky. There didn't seem to be much reason for making such an advance. There was a good deal of discussion—well, an all-day discussion, I might say, as to what

29. *TP*, pp. 11851–11852, S. C. Williams.
30. *TP*, pp. 11854, 11901–11902, S. C. Williams; see Figure XXX, below, p. 333.
31. *TP*, p. 11854.
32. *TP*, pp. 9126–9127.

we should do. We finally concluded that we would have no advantage in not meeting it and that competitors would have an advantage in income which they could spend, if they wanted to, in promoting their products.

Q When you say there would be no advantage in not following it, do you mean that Chesterfield would go to the consumer at the same price as Camel or Lucky Strike?

A Yes.

Q Why is that true? Just explain that to the Jury.

A Well, a retailer would just assume we were going to raise it, and in any case he would say, "Well, it is not too much profit if I do raise the price," and we would be at a price disadvantage.[33]

Whatever the reasons, prices were raised and the great debacle was on. Cigarette consumption fell during 1931 and 1932. Reynolds' advertising campaign was discontinued after November, 1931, as sales decreased. American sales reached a peak in 1931 and fell sharply to 37 billion the following year in spite of advertising expenses per thousand the highest on record. It is interesting that American's advertising per thousand reached a ten-year high in the same year that Reynolds' advertising sank to a ten-year low. Camel sales sank rapidly, while Lucky Strike declined more slowly.

The companies had, of course, miscalculated the direction of demand, and the fall in cigarette consumption took them by surprise. It is not clear that the rise in price had anything to do with the general fall in consumption. There was some shift to roll-your-own cigarettes (American reduced the price of Bull Durham to encourage the shift) and a greater proportion of smokers reduced consumption. The income elasticity of tobacco consumption is enough to explain most of the decline in all cigarettes, while the elasticity of substitution between manufactured and roll-your-own was itself the product of depression. It is probable that much the same decline and substitution would have occurred even if the standard brands had retained their former price or had reduced it. From the point of view of all cigarettes taken together, the price rise was not even a mistake. Returning prosperity would revive manufactured consumption, and meanwhile the leading companies, with a larger margin, smaller volume, and smaller advertising, were enjoying their highest profits on record.

The great miscalculation of the standard brands was in putting a roof over the minor brands. Lower leaf costs made possible an acceptable 10¢ cigarette, and with the high prices of the standard brands, there was a rapid swing to the cheaper brands.[34] The loss of market position which

33. *TP,* pp. 10330–10331.

34. The economy brands were introduced at a list price of $4.75 per thousand, or $4.19 net, and most of them maintained this same price until the tax increase of 1940. They were usually sold at retail for 10¢ or 11¢ per pack. *TP,* p. 4050, L. G. Hanson; pp. 12270, 12282, H. C. Harrison; p. 12281, C. A. Vollmer.

this entailed was not repaired before the war, and the attempt to reverse the trend resulted in lower profits in succeeding years which more than made up for the record profits of 1931 and 1932.

In January and February, 1933, two cuts by American in rapid succession carried prices from $6.85 list, or $6.04 net, to $5.50 list, or $4.85 net. Strenuous efforts were made by the American sales organization to see that Lucky Strikes were reduced at retail to 10¢ per pack even though this allowed a markup to distributors of only 15¢ per thousand. American was now a larger producer than Reynolds and hence could lead prices at will without fear of retaliation. The use of price cuts to discipline competition was familiar to its managers both from the days of the Trust and from the more recent experience with Porto Rican–American. Hill gave a highly euphemistic account of his decision to cut:

> I said, "I am not cutting it to $5.50 in a month; I am not going to do it today, but January 1 we are going to $6 on Lucky Strike Cigarettes and some time in February we are going to $5.50, because I am going to change that cigarette curve. The public wants cigarettes; they want good cigarettes; they want cigarettes processed out of burley tobacco. Our price is too high. I am not changing that curve because of 10-cent cigarettes; I am changing it in spite of the 10-cent cigarettes. 10-cent cigarettes don't mean anything more to me than Camels, Chesterfields, or anything else, but the curve is the thing that interests me, for the protection of my business." [35]

This is scarcely credible. From what we know of the determinants of cigarette consumption, the trend of cigarettes was not in question. The current problem was one of invasion by the economy brands. American had engaged in punitive price action against Porto Rican–American and the American sales force followed the fortunes of the 10¢ brands with lively interest. During the latter months of 1933 Lucky Strikes were sold at a loss and the same was true of Camels.[36] There is no doubt that these sacrifices were incurred in order to defeat a particular group of competitors.

In this case, just as in the Puerto Rican affair, American policy was directed to change a whole market situation. In the earlier instance the effort to punish the offending competitor was halted only by court action. In the later case the counteroffensive against the new brands was stopped only when it seemed no longer worth while. Not all the effects of the 1931 price blunder were repaired, but the threat of new competition was repulsed, contained, and held within bounds which were not considered dangerous. In both cases the policy decisions were such as could only have been taken by a firm which was a power in its market and which was confident that the competitive situation could be altered to its advantage

35. *TP*, p. 9109.
36. *TP*, p. 9699, P. M. Hahn; p. 11224, J. A. Gray.

by the conscious exercise of that power. These were both cases of price competition, yet they were not on that account more desirable or less monopolistic than the normal industry practice of competing only through the medium of advertising and salesmanship.

With the enemy routed and with processing taxes and higher current leaf costs pressing upon prices, a rise was in order. In January, 1934, Reynolds took the lead by setting a net price of $5.38, which the others also adopted. In this same year Reynolds regained the industry lead in sales volume which it had lost to American in 1930 and held it until the war. Costs continued to rise throughout the 1930's, and in January, 1937, Reynolds led a new rise to $5.51 net. In 1940 a 25¢ rise in the excise tax was met by a price rise to $5.76 a thousand.

During the war two price rises were approved by the Office of Price Administration. An increase in tax to $3.50 per thousand was passed on to consumers by raising the net price to $6.01 in November, 1942. The manufacturers' net price after taxes was unchanged at $2.51. In April, 1946, the OPA granted another rise to $6.26.

With the abolition of price control, the industry was back on its own. Liggett attempted unsuccessfully to lead a price rise in the summer of 1946, while in October American led a successful price rise to $6.51 net. Reynolds stayed 3¢ lower. In July, 1948, American led a second rise to $6.86, while Reynolds again held back. The fact that American led may reflect the undeniable lead in sales which the company gained during the war. It is more probable that all these acts represented an attempt to break the industry behavior pattern as a defense against future Sherman Act proceedings.

THE DEGREE OF JOINT CONTROL

Does Collusion Exist?

All of the previous discussion has been conducted on the assumption that collusion is not present. We have observed uniform and rigid prices, price leadership, and market strategy and have interpreted them as if they were the result of the self-seeking decisions of firms operating in complete independence. We have found no difficulty in explaining the observed behavior in noncollusive terms.

This does not, however, prove that genuine competition exists. The results observed could equally well have come about by explicit agreement among competitors. It may seem something of a work of supererogation for firms to collude in order to bring about events which would occur even in the absence of collusion. However, there is always room for uncertainty and misunderstanding when firms work independently even

toward a common end, and agreement might yield more orderly results. Our present problem, however, is not whether collusion could exist but whether there is any reason for thinking that it does.

When we look for evidence of explicit collusion among the cigarette producers, it proves most elusive. The companies were convicted by the Lexington jury of conspiracy in restraint of trade, and although "conspiracy" has a restricted technical meaning, a great mass of evidence was submitted in support of the thesis that collusion was present. Since the evidence covered the whole pattern of industry behavior, it is not clear whether the jury concluded that there was collusion in the market for cigarettes taken alone.

Throughout the trial in Lexington the government failed to present any direct evidence of collusion in the setting of manufacturers' prices. The fact of parallel action on many matters was shown repeatedly and at length. The opportunity for collusion through the Tobacco Merchants Association of the United States and other trade organizations was demonstrated, but no evidence of real weight was presented to show that agreement had been made on any specific price at any specific time or place. The prosecution's case rested on identical acts from which the jury was asked to infer the existence of agreement or understanding among the parties.

Considerable emphasis was placed both by the prosecution and by the reviewing courts on the reasons advanced by company executives for following prices. Thus the Circuit Court of Appeals:

> All appellants give the same reason for being obliged to follow a price rise inaugurated by any one of them—that if they do not follow it, the others will have more money to spend on advertising. But all of them also explain that they must similarly follow a price cut or will lose business through sales, as otherwise the cheaper priced cigarettes would completely outsell their products. These explanations are patently inconsistent.[37]

With all respect to the learned judge, the explanations are not necessarily inconsistent or even improbable, and it is factually inaccurate to attribute this reasoning to all of the companies. Reynolds has never indicated that it felt it necessary to follow anyone else's price rise, and at the time of the trial there were only two instances on record where it had, in fact, followed. American, in the critical instances, indicated that it followed a rise because it wanted to. Only Liggett has stated that it would lose by a differential in either direction, and in Liggett's position there is much to be said for this opinion.

It is necessary to realize that advertising and price reductions are alternative ways of attracting customers, and it is not always and inevitably the case that the latter is the more efficient. The alternatives are exclusive

37. *American Tobacco Co.* v. *United States,* 147 F.2d 93, 114 (1944).

and there must always be some concern with the fact that an advantage in one direction must be bought by a disadvantage in the other.

Liggett's feeling that it must lose by a departure from the industry average in either direction seems peculiar but is not necessarily lunatic. Where price changes are small and will be absorbed in distributors' margins, it is likely that more harm can be done to an established brand by distributor ill will than can be gained by distributor good will. Liggett's experiments in 1922 with prices above and below the Camel price suggest that this condition exists, and a conviction that it does is consistent with the unaggressive and defensive mentality which the company has shown in many other ways.

There can be little doubt that large price differentials, enough to cause a difference in retail prices, are much more effective than advertising except under such peculiar conditions as those which attended Philip Morris promotion. This implies that price cuts must be followed and that advertising advantages would not force a company to follow a price rise. In fact, all important price cuts have been followed. Price increases have generally been in small amounts where there was at least some doubt of the influence on retail prices, and in some cases where larger rises were attempted, competitors did not follow. The price rises of 1931 and 1937 were sufficiently small so that the probable effect of a differential on Chesterfield retail prices may have been open to doubt.

It should also be noted that decisions to raise or lower prices are taken at different times, and the relative efficiency of advertising and price changes may vary over time. Thus cigarette sales in the first part of 1931 were very little below the record high of 1930. Although the country was depressed, depression had not yet hit the cigarette industry and it did not appear that the conditions of demand had fundamentally changed. It was not unreasonable for Liggett to conclude on the basis of previous experience that it had more to gain than to lose by following the rise. In 1933, on the other hand, the fall in over-all consumption, the rise in roll-your-own, and the rapid shift to the 10¢ brands indicated a marked price elasticity between cigarette groups and a fortiori between brands of the same type. Price elasticity was greater than it had been. Moreover, the price cuts in 1933 were large enough to cause a change of several cents at retail, and there is no possible doubt that Liggett was forced to follow the American cuts. There is no necessary inconsistency between the Liggett feeling that it was wise to follow the 1931 rise and the feeling that it was absolutely necessary to follow the 1933 cuts.

It is apparent in aftersight that if Liggett had not followed the 1931 rise, it would have received a considerable increase in sales, and it must have known that a price cut at the same time when Reynolds raised its price would have had that effect. It is difficult to see, however, what Liggett would have gained by such a move. If the sales shift did not occur,

Liggett would be out both advertising funds and additional profits. If the shift did occur, retaliatory action by Reynolds was sure to cancel the potential advantages. Additional profits were equally attractive to Liggett, and it had as much incentive as the other companies to welcome a price rise. Refusal to follow might have prevented the growth of the economy brands, but there is no reason to reproach Liggett for a lack of foresight which the industry leaders did not have.

Inferences of collusion were also drawn from the existence of rumors of impending cuts in 1932 and 1933 and from the fact that the Great Atlantic and Pacific Tea Company instructed its stores on February 10, before the second cut was announced, to sell the standard brands at 10¢ on the following day.[38] Price posters were made up by A & P before the change was made. The company claimed that it acted on a hunch, on the basis of unconfirmed rumors, without official notice of the impending price cut. This is unbelievable. A & P received heavy advertising payments from all three major companies, and there can be no doubt that American enlisted the aid of this company in launching a vigorous campaign to depress retail prices. It does not follow that there was collusion among the manufacturers. It seems possible that A & P informed its other clients of American's impending plans and that this was the source of the widespread rumors. This can scarcely have been according to Hill's wishes, however, if it was done at all, for there was nothing to gain and something to lose by letting competitors in on the secret. There may sometimes be an advantage to collusion in arranging a price rise. The collective advantage of all is then safe from the defection of any. There is no such advantage in informing rivals of a price cut. There is no specific evidence that American communicated its intentions, and every consideration of company interest suggests that it did not. There was no need for a "common plan" to eliminate the 10¢ brands. This was in the direct interest of the American Tobacco Company, and the company would undoubtedly have been entirely happy to do the job alone.

The courts also gave some emphasis to the uniformity and rigidity of prices and to the fact that "these changes in list prices have no relationship to costs of production or to economic conditions generally." [39] We have already seen that uniformity and rigidity are compatible with vigorous competition. The other complaint is nearly meaningless. Cigarette prices are not automatically set by autonomous forces of supply and demand, but that is true of any industry not in perfect competition. Prices are set by the companies and reflect cost and demand conditions and market strategies. These are all "economic conditions," and to say that cigarette prices bear no relationship to them is silly.

We find, then, nothing in the price policy of the cigarette industry which

38. *Ibid.*, p. 108; *TP*, pp. 7578–7581, G. F. Morrow.
39. 147 F.2d at 103.

leads us to infer collusion. Identity and rigidity of prices, price leadership, and the actual prices set would emerge naturally from the independent action of firms operating under these institutional circumstances. We must look to other aspects of the industry's behavior to find evidence of collusion.

Competition and Monopoly Power

The behavior of the cigarette industry so far discussed is consistent with active and vigorous competition among the major firms. Yet it is a peculiar kind of competition which gives rise to these results. Competition in the cigarette industry is competition among giants, and market behavior reflects the size and power of the competing firms as much as it does the vigor of the struggle between them. Each firm is large enough to affect the whole market situation, and each is aware that its competitors have similar power. Each firm has a healthy respect, whether sympathetic or hostile, for the power and intelligence of its opponents, and each in deciding policy must have concern both for immediate effects and for the competitive reactions which the policy is likely to evoke. Competitive forces are at work, but they are not, as in perfect competition, impersonal forces of supply and demand. The supply of leaf tobacco and the demand for cigarettes are only partly within the control of any firm or any combination of firms, but many of the competitive forces are not the equilibrating forces of the market but the private weapons of powerful firms which can be directed at will for private gain. Where the typical firm is so very large, the control of prices may be as complete as if full monopoly existed, and the prices set may be the same. It is relatively easy to predict what competitors will do even without explicit agreement. It is thus likely that the price will settle somewhere near the point which all manufacturers regard as most satisfactory to their collective and individual interests.

Moreover, as we have seen, potential competition by outsiders does not impose a close limit on profits. The immense requirements of capital, both for leaf inventory and to overcome the established market positions of the existing firms, constitute a considerable barrier to the entry of new competition. If profits are gigantic and prices extortionately high, it may appear worth while to break into the favored circle. It requires large means to be successful, however, and also when the existing firms are powerful, it requires a great willingness to venture funds on an undertaking of doubtful success.

Of course, the cigarette manufacturers are not free to set any price that they like. It is possible to set a price so high that consumers will be turned away from cigarettes entirely or that new competition will be attracted in spite of the obstacles. Very high prices afford competitors both the lure of high profits and the possibility of obtaining a market through lower

prices. The lure was effective and the possibilities exploited after the 1931 price rise. The cigarette industry is not wholly immune to the winds of competition.

As much can be said for the position of any outright monopoly. It is seldom that a monopoly can exist which needs fear neither the elasticity of demand nor the competition of potential producers or of close substitutes. If there should be any such monopolies, there is the fear of public action to prevent the exercise of the more extreme forms of extortion. It is only within limits that a monopoly can set price, and it is only within limits that cigarette firms can set their prices. In the areas of common interest the cigarette firms have the power to establish joint policy without explicit collusion but as surely as though they were joined in a contractual agreement. The actual development of policy in detail differs somewhat from that which a monopoly would yield, since some interests are competitive rather than joint, and the struggle over these modifies the equilibrium pattern.

Chapter XIII

POLICY TOWARD DISTRIBUTORS

THE MANUFACTURER'S PROBLEMS

THE MANUFACTURER'S MARKET policies in pricing and advertising cigarettes are fruitless until they have been implemented by the distributive trades. National advertising, it is true, appeals directly to the ultimate consumer, and distributors do not now perform the selling functions which once were theirs. Yet some advertising and promotion work is done at the point of sale, and jobbers and retailers are the channels through which goods are made physically available for retail purchase. It is through them that the pricing decisions of the manufacturer are brought to bear on the consumer. The manufacturer is concerned to secure additional sales promotion, to supervise a rapid and steady flow of supplies, and to establish acceptable resale prices.

Policies toward distributors reflect the extreme imperfection of the distributive markets. The national market in which jobbers buy the major brands is not purely competitive because of consumer brand preferences and because of the small number of companies, but it is quite perfect in the sense that communication is complete, that supplies are everywhere available, and that uniform net prices are established and are fully known. The retail market, in contrast, is divided into a million or more submarkets, geographically separated and with varying degrees of competitive immunity. This complexity and the imperfect communication between its parts make difficult the attainment of uniform results but also offer to alert management possibilities of improved market position or increased profit.

Before national advertising can sell any goods, physical distribution is necessary, and the early history of all brands was marked by strenuous efforts to achieve it. Duke's early success was largely based upon superior tactics with jobbers, and the Trust was later able both to distribute its own brands and, on occasion, to prevent the distribution of others. Attempts to blockade competitors have not been renewed since dissolution, but new brands still require efforts to increase distribution, and in the case of well-established brands, it is necessary to supervise an uninterrupted flow of goods in sound condition. Additional selling pressure from preferred display at the point of sale may be secured through dealers' good will or by outright payment. Finally, the width of distributors' margins may be regulated by controlling resale prices. The manufacturer may

achieve better distribution and better point-of-sale display by increasing margins, or he may increase profits or advertising funds by reducing them. These complex and partly opposed considerations have been differently regarded at different times, and during the history of the industry several patterns of market behavior have emerged.

TRUST POLICY

Under the Trust the jobbing trade was consciously used as an instrument of monopoly power, but there was no apparent attempt unduly to squeeze distributors' margins. These margins were undoubtedly lower after the formation of the Trust than they were in the bitterly competitive period just before. They were also lower in 1910 than in the first years of the decade, when many new brands were being launched. Even the 1910 margins on those brands for which figures are available do not seem small and were considerably wider than those common today.

The Trust did, however, attempt to gain control of distributors for its own purposes and to regulate resale prices. In October, 1891, the Trust raised the price to retailers of the Sweet Caporal class of cigarette from $3.80 to $4.00 and provided for a rebate of 50¢ per thousand to be paid periodically to "cooperating" retailers. The scheme was dropped in a few months because of the opposition of retailers who looked upon "all the manoeuvers by the American company as a roundabout way of screwing up prices." [1]

A new "factor agreement" with jobbers was introduced instead. American was to ship cigarettes on consignment, the cigarettes to remain American property until sold. Payment in full was required from the jobber with 2% for cash in ten days. A commission of 35¢ a thousand was to be paid on the cheapest class of cigarette retailing for $2.50 a thousand. Although this rate was adequate, payment was made periodically and could be withheld if the jobber's performance was not satisfactory. For any breach of the contract, and particularly if the company was "informed and believed" that a jobber was price cutting, it could refuse to consign additional goods, could withdraw consignments shipped but not sold, and all unpaid commissions on previous sales would be forfeit. The company paid freight, but the jobber agreed to pay all other expenses, to guarantee sales, and to abide by the list prices. Volume of consignments was to be determined by the Trust on the basis of reported sales. Any jobber who failed to sign the commission agreement could purchase cigarettes at the list price with freight prepaid but without commission.[2]

The power which this agreement gave over the distributive trades rendered it highly unpopular. There were protest meetings of indignant

1. *New York Times,* November 21, 1891, p. 1, col. 2; February 10, 1893, p. 3, col. 4.
2. *Ibid.,* November 17, 1893, p. 2, col. 4.

jobbers, and several states passed laws declaring such contracts illegal.[3] The first important legal attacks on the Trust in New Jersey, Illinois, and New York were occasioned by its attempt to dominate the jobbing trade. Although these suits were eventually defeated, the consignment method was abandoned in 1897. The Trust announced that future sales would be at the list price and stated that "It is our hope that the success of our business will warrant our making donations of money or merchandise to our customers from time to time in recognition of their interest in distributing our goods." [4]

Shortly after the consignment agreements were abandoned, the Trust devised another method of trade control which aroused a large proportion of distributors against it. A two-year price war in New York was subsidized by the Trust and conducted by several favored jobbers. One of these, Bendheim Brothers and Company, secured 60% of the business by 1899, by selling Trust products at cost, and then joined with several others to form the Metropolitan Tobacco Company. This company was then made the sole direct customer of the Trust in greater New York on condition that it should receive a 2% discount and should not resell above the list price. Two hundred previous jobbers were relegated to the role of subjobber. In 1904 the reins were tightened still further when Metropolitan refused to sell jobbers and serviced the retail trade directly or through subsidiaries.[5]

The value to the Trust of this arrangement is readily apparent. Distribution of its own goods was under strong central control. Independent distributors were greatly weakened. Products of independent manufacturers could be distributed in New York, either through inadequate independent facilities or through the Metropolitan Tobacco Company where they would receive less favorable treatment than the Trust goods.

The policy of the Trust seems to have been aimed both at securing its monopoly position by controlling distributors and at preventing indiscriminate price cutting. It was willing to reduce margins but preferred to do this in an orderly way by raising its own list prices. The desire to maintain the traditional even-nickel prices was probably the efficient motive.

More significant, however, was the attempt of the Trust to secure strategic control and to enforce discrimination against competitors. Although policy was not uniform, at times, and especially when competition was sharp, it was regarded by the Trust as an unfriendly act for a jobber to handle competing brands. In the early days the rebate and commission arrangements, by allowing the Trust to cancel distributors' profits on

3. *Ibid.*, March 31, 1897, p. 12, col. 5.

4. *Ibid.*

5. Complaint lodged with District Attorney, *New York Times,* January 4, 1914, Sec. II, p. 2, col. 6; *Locker* v. *American Tobacco Co.*, 194 F. 232 (1912); 197 F. 495 (1912); 200 F. 973 (1912); 218 F. 447 (1914). *BC,* Pt. I, pp. 309–310.

past sales, gave it enormous leverage to affect jobbers' policy. Later, when sales were made with straight cash discounts, the size of the Trust and the importance of its brands enabled it to enforce its will by refusing supplies to an offending jobber. Wholesalers were heavily dependent upon Trust brands and were forced to do business on Trust terms if they were to avoid severe loss.

In some cases the Trust held out the lure of higher commissions if jobbers handled its goods exclusively, while allowing small commissions if competitors' goods were also handled.[6] The Trust generally refused to deal with jobbers who favored competing brands, and on occasion jobbers who refused exclusive handling of Trust goods found themselves unable to secure them at any price whatever.[7] On the other hand, the United Cigar Stores, as one of the elements in the Duke empire, handled the goods of competitors as well as those of the Trust. Policy was not consistent but varied with the degree of competition encountered.

POLICY SINCE DISSOLUTION

Competitive Tactics

With the dissolution of the Trust, the denial of distributive facilities to competitors ceased to be a serious object of market policy. The successor companies possessed great power, but it was difficult for them to act together at the expense of outsiders, even if they so desired, and there was increasingly little reason for them to do so. Their principal competitive interest was in each other, and no one of them was strong enough to dominate distributors or to force discrimination in its favor. Moreover, the gradual transformation of distributors from selling agents to shipping routes made domination less worth while.

It was still necessary, however, to supervise physical distribution, and it was still possible to secure special favors in point-of-sale display or advertising. The manufacturers' sales forces attended to both these functions, and considerable competitive effort was expended. There have been some differences in the methods of the different firms.

The most elaborate efforts to obtain a sales advantage have been those of the American Tobacco Company. It is standard procedure for American salesmen to use a prepared sales talk in each store visited, to help the retailer set up displays, and even to wash his display window for him. In the early days, when Lucky Strike was fighting for distribution, American salesmen would take out an alcohol burner and heat a small quantity

6. *Whitwell* v. *Continental Tobacco Co.*, 125 F. 454 (1903). *Commonwealth* v. *Strauss*, 74 N.E. 308 (1905); 78 N.E. 136 (1906).

7. *People* v. *Duke*, 44 N.Y. Supp. 336 (1897). *New York Times*, April 7, 1896, p. 12, col. 6; April 9, p. 5, col. 4.

of tobacco in a pan. The released aroma was supposed to demonstrate the advantages of "toasting." [8]

George Washington Hill believed in what he called the "selling principle of demonstration," by which he meant intensive cultivation of a small group of dealers and customers who were shown the advantages of Lucky Strike cigarettes in a way which would render national advertising more effective.[9] Thus the toasting pan demonstration keyed into the emphasis on toasting in national advertising. Once the sales message was impressed upon a selected group, it was expected that the group would carry the message cheaply and effectively to a wider circle. The activities of the other companies have been less picturesque, but all have been designed to lubricate the distributive mechanism and to gain favored treatment for particular brands. Reynolds has been more active in offering special deals, while Liggett has, for the most part, been content to meet the moves of the others.

The imperfections of the distributive markets thus continue to stimulate the manufacturers' efforts to secure some sort of market advantage. To a large extent, however, these efforts are mutually offsetting and enable each of the major firms to avoid a competitive disadvantage rather than to gain a positive benefit. The principal effect of the manufacturers' sales forces is to compensate for market imperfections by assembling knowledge of the market which would otherwise be lost in locational complexity and by imposing central rational control on a process which might otherwise be chaotic.

Manufacturers have also shown a deep concern with resale prices, both for their direct effect upon the consumer and for their influence on distributors' behavior. As we have seen, Lucky Strike margins were deliberately squeezed for many years in order to secure additional advertising, while Philip Morris granted wide margins and encouraged high retail prices in order to gain dealer good will. It has been more usual for the major companies to maintain identical prices and identical distributors' margins. The absolute level of resale prices has not been so consistently a matter of concern, and at various times manufacturers' policies have been directed to widening dealers' margins and to working them down.

Resale Price Control

The American Tobacco Company, in the first postdissolution decade, made consistent efforts to restrict price cutting at wholesale and retail. In 1913 Percival Hill sent a letter to independent retailers in New England, who were then caught in a price war between two drug chains, deploring the price cutting and promising to "assist with our advertising

8. *TP,* pp. 9299, 9305–9320, 9327–9328, Vincent Riggio.
9. *TP,* pp. 9069–9071, 9096–9097, G. W. Hill.

campaigns those retail merchants who cooperate with us. We have decided therefore to confine our advertising schemes to the stores of those retailers who work with us." [10] The same concern with maintaining resale prices led to continued reliance on the Metropolitan Tobacco Company in the New York area.

For some time after dissolution all four successor companies kept Metropolitan as their sole direct customer. Independent interests, outraged by the half way measures of reform, were up in arms against this continued manifestation of the power of the "four-headed Trust." [11] Liggett and Myers opened its direct list to all legitimate jobbers in New York in June, 1912.[12] Early in 1914 the Department of Justice began an investigation into the effectiveness of the decree and received complaints from the independent distributors on the continued position of the Metropolitan Tobacco Company. In April, 1914, following a series of conferences between the department and the manufacturers, the other three companies decided to drop their exclusive supply of Metropolitan.[13]

The American Tobacco Company was not satisfied with the service it received from the New York jobbers. It claimed that the small jobbers did not do a good job of pushing products and did not deliver promptly or have enough salesmen. Price cutting by jobbers led to very narrow margins and caused retailers to withhold orders in anticipation of further cuts.

In November, 1914, a triple damage suit against American, brought by a jobber whom Metropolitan had squeezed out, was dismissed as showing no cause for action.[14] The court held that American was entitled to choose its own agents, and in January American reinstated Metropolitan as its exclusive direct customer in the New York area.[15]

Metropolitan arranged to sell subjobbers at a 2% advantage over retailers. This was not large but, according to Hill, was "about what they have been making under price-cut conditions." [16] An official of the American Tobacco Company commented:

I don't deny that if all the manufacturers were to distribute through exclusive agencies and the small jobbers were only able to make 2 per cent on their sales, they would have to go out of business. But with the American Tobacco Company alone doing this, the small jobber can keep a little stock of our goods for the convenience of customers like the grocer keeps sugar despite the fact that there is no profit in it and can push the goods on which there is a large margin of profit.[17]

10. *New York Times,* September 4, 1913, p. 2, col. 6.
11. *Ibid.,* January 4, 1914, Sec. II, p. 1, col. 1.
12. Cox, p. 251.
13. *Ibid.; New York Times,* April 15, 1914, p. 13, col. 5.
14. *Locker* v. *American Tobacco Co.,* 218 F. 447 (1914).
15. *New York Times,* January 19, 1915, p. 15, col. 1.
16. Cox, p. 252.
17. *New York Times,* [illegible]

It appears that this was an attempt not so much to squeeze distributors' margins as to secure efficient distribution through concentrated channels in which resale price could be controlled and through which strong promotion could be given Lucky Strike down to the final retail level. The arrangement did not prove satisfactory in the absence of the old monopoly control, and American abandoned exclusive sale in 1918.[18] Probably the failure to use the same channels as the other companies robbed Lucky Strike of full distribution and thus offset the special advantages which Metropolitan could offer.

During the war price cutting was not much of a problem, but price wars started again soon afterward. There were the usual efforts of jobbers to do something about it. In the early twenties the American Tobacco Company intervened actively in favor of jobbers' attempts to establish stable margins and used its power to discipline the uncooperative. In June, 1921, the company sent the following Circular No. 2783 to the trade:

It is of the highest interest to this company to maintain permanent means of distributing its brands of tobaccos and cigarettes by efficient and business like methods.

We can only expect to obtain and hold customers when it is possible for jobbers to sell our products profitably.

It is obvious that a jobber of our products, who sells at prices which would not permit of the tobacco business itself being profitable, or the business on our brands being profitable taken by itself, is a jobber who in the long run will be a detriment and not a benefit to our business as our customer.

Any jobber who sells our products without profit, or with such a small profit that it will not benefit him to continue permanently in the tobacco jobbing business on such a margin of profit, is not a distributor who can afford us a safe and permanent avenue of distribution, and, if by his persistent price cutting he discourages and destroys the interest in our brands with competing jobbers we may eventually be left without adequate means of thorough distribution in his locality.

For this reason we are convinced that for the future of our business we are bound to prevent as far as we reasonably and lawfully may such demoralization in the trade so far as our products are concerned. This does not mean price maintenance, but it does mean that where a jobber is not interested in making a fair and reasonable profit on our brands, and elects to sell our products, for motives of his own, at less than a living profit, we are forced to the conclusion that he is not sufficiently interested in our goods to make a desirable permanent customer, and we shall feel at liberty to remove him from our list of direct customers.

We trust that this policy will have the approval of all customers who are concerned with making a livelihood out of the tobacco business.[19]

The American Tobacco Company announced that where jobbers had agreed to maintain prices, it would withhold shipments from jobbers

18. Cox, *loc. cit.*

19. *American Tobacco Co.* v. *Federal Trade Commission,* 9 F.2d 570, 578 (1925).

who did not join the agreement or who broke it. In some cases the company's sales agents suggested the formation of jobbers' associations. In others the company gave its support to organizations started by the jobbers themselves.

In taking this position the American Tobacco Company was continuing the policy of the Trust and was acting in a manner which many manufacturers have thought desirable. In Canada the Imperial Tobacco Company has aided in similar price-fixing schemes by jobbers and retailers by withholding its goods from those who would not cooperate.[20] Lorillard and other tobacco companies have taken the same stand.[21] The American Tobacco Company's interest in price maintenance was probably to be explained by Hill's belief in advertising, his relative indifference to price, and the fact that Lucky Strike was still a relatively minor brand engaged in a fierce uphill struggle for distribution. Hill was likely to discount the appeal to consumers of a low retail price. Moreover, Lucky Strike advertising was based on funds secured by squeezing distributors' margins. If these margins were to be squeezed by a high net price on Lucky Strike, it was necessary that they not be unduly restricted by too low a retail price on all brands. Faced with the need for distribution and for advertising funds, it was natural for American to prefer high retail prices to low.

Yet it is clear that this was not the only policy which a powerful manufacturer's interest could dictate, and Reynolds did not conform to it. Reynolds had no problem of securing distribution of its overwhelmingly successful Camel, would find unusually low retail prices of that brand helpful in expanding sales, and may have believed that low prices on all brands together would increase consumption. If so, then narrow margins would offer the best combination of high unit profits and large sales. There was clearly no purpose in generally wide margins. Reynolds was not concerned to extract extraordinary unit advertising funds, while the suppression of retail prices to minimum competitive levels would make it difficult for American to set its higher list price and so to secure its extra funds. Accordingly, Reynolds was happy to see its products sold cheaply, whether competing goods were cheap or not. It did not attempt to discipline price cutters, and when American cut offenders from its direct list, Reynolds continued to supply them.[22]

American's displeasure was not enough to dominate the jobbing trade without cooperation from Reynolds, and price maintenance was soon discontinued. The effect of Reynolds' competition was reinforced by legal

20. Canada, Department of Labour, *Investigation into an Alleged Combine in the Distribution of Tobacco Products* (Ottawa, 1938), *passim.*

21. *State* v. *P. Lorillard Co.*, 181 Wis. 347 (1923); U.S. Federal Trade Commission, *Prices of Tobacco Products* (1922), pp. 6–8, 16–17.

22. U.S. Federal Trade Commission, *op. cit.*, pp. 6, 47; Cox, pp. 260–265.

action. The Federal Trade Commission instituted proceedings charging American, Lorillard, and a wholesalers' association in Philadelphia with unfair practices under the Federal Trade Commission Act.[23] The commission found the arrangements for maintaining and policing prices in Philadelphia to be unfair within the meaning of the act and ordered the company to desist from fostering agreements for resale price maintenance among its dealer customers. The order was appealed to the courts and in 1925 was set aside. Lorillard was included in the original complaint, but on the hearings, the commission held that Lorillard was not an offender. A similar situation in Wisconsin in 1921 gave rise to a suit against American, Lorillard, and a number of jobbers for conspiracy to restrain competition under the state laws.[24] The state sought injunctive relief, which was denied on the grounds that the practices had been abandoned and that the complaints consequently related to past acts only, for which injunctive relief was inappropriate.

Although American's defense prevailed, and it appeared that price maintenance of the type it desired was legal as the courts then interpreted the law, the policy was allowed to lapse. Litigation was expensive and risky, and while the appeal was pending, both the jobbers and American thought discretion was in order. And once the danger was past or at least temporarily repulsed, there was no attempt on American's part to begin again.[25] This may have been due to a fear of renewed litigation. It is equally probable that American came around to Reynolds' view of where the manufacturers' interest really lay. As Lucky Strike achieved increasing success, adequate distribution became less of a problem, and when Lucky Strike prices were set identical with Camel in 1928, an additional reason for sensitivity to distributors' opinion disappeared. The conversion of the American management is indicated by the fact that when, in the 1930's, many states passed resale price maintenance laws under the Miller-Tydings Act, Lucky Strike was not registered. Pall Mall was registered for a while in 36 states, which reflects either a regretful longing for earlier and happier days or the special problems of promoting a new and elegant brand. None of the major brands received protection under these acts.[26]

In the 1930's directly opposite complaints were voiced. Jobbers and retailers believed that, far from conspiring to maintain prices, the manufacturers strove for the lowest possible margins and were themselves responsible for some of the recurrent price wars of the period. The Lexington trial brought to light occasions which seemed to justify these fears,

23. *American Tobacco Co.* v. *Federal Trade Commission,* 9 F.2d 570 (1925).
24. *State* v. *P. Lorillard Co.,* 181 Wis. 347 (1923).
25. *TP,* pp. 9162–9164, G. W. Hill.
26. *TP,* pp. 9641–9642, P. M. Hahn; U.S. Federal Trade Commission, *Report on Resale Price Maintenance* (1945), p. 455.

although it must also be said that such instances were usually concerned with a sharp competitive struggle rather than with a mere monopolist effort to squeeze the distributor.

In the great struggle against the 10¢ brands in 1933 American made extremely vigorous efforts to see that the list price reduction was passed on to the consumer.[27] The sales force tried to establish a general price of 12¢, or 2 for 23¢, by persuasion and the use of price posters.[28] Special retailers, like A & P, who enjoyed large advertising allowances, sold the standard brands at 10¢, which implied a markup of only 15¢ per thousand over the manufacturer's price of $4.85.[29] Other cut-price activities were encouraged by special deals.[30]

The Lexington trial record showed other occasions on which the major companies subsidized individual retailers to reduce prices in order to bring down the general level by competition. These occasions usually arose because of the relative prices of the cheaper brands. Reynolds and Liggett believed that a differential of more than 3¢ at retail in favor of the economy brands was competitively harmful and tried to prevent it. American denied any interest in the prices of the economy brands,[31] but since it insisted on equal treatment with the other major brands, the result was effective unanimity. The argument presented to offending dealers was that a greater differential represented a much higher gross margin on the standard than on the economy brands and that this was unfair.[32]

If argument failed to move the offender, other pressures were applied. Direct customers sometimes were cut from the list of one of the major firms. There could be no direct control over retailers who were not direct customers, but sometimes these were induced to cooperate by special drop shipments, by gratis goods given for point-of-sale displays, or by paying other retailers to cut prices. The most fully documented case occurred in Denver from 1937 to 1939, when a distributors' association, operating under the state Fair Trade Act, enforced minimum prices which violated the 3¢ differential. The Reynolds district agent was especially active on this occasion in securing lower retail prices on Camel.[33]

The manufacturers have used the same methods to enforce identical retail prices on competing standard brands. Occasionally jobbers have given special prices on one or another of the standard brands, and retailers have done this rather more frequently. Sometimes this has occurred in connection with special advertising or promotional deals by one of the manufacturers, and there is some evidence that payments have been made

27. *TP*, p. 9176, G. W. Hill.
28. *GX*, Nos. 811–819.
29. *TP*, pp. 7578–7581, G. F. Morrow.
30. *TP*, p. 6579, A. M. Zolla.
31. *TP*, pp. 9132–9133, 9162–9169, G. W. Hill.
32. *TP*, p. 10302, G. W. Whitaker; p. 11456, E. A. Darr.
33. *TP*, pp. 7619–7950, C. C. Roe; *GX*, Nos. 895–989; *DX*, Nos. 990–992.

to induce bargain prices on Camel.[34] The reaction has usually been prompt and vigorous.

American has been adamant in requiring that its jobbers sell Lucky Strike no higher than competing brands and has asked cooperation from jobbers in securing equal treatment from retailers. Hill suggested to the president of the subsidiary American Cigarette and Cigar Company that it was the jobber's duty to prevent price differentials even if it were necessary on occasion "to sell subjobbers on drop shipment or from stock at the full discounts of ten and two percent." [35] There have been several cases where refractory distributors were denied the right of direct purchase. Cases of discrimination have been rare, and remedial action has seldom been necessary.[36] The knowledge of certain retribution has been enough to prevent many violations of company policy by distributors.

Liggett and Myers, on the other hand, has relied solely on argument to move jobbers and has used argument and compensatory deals to influence retailers. According to a sales department memorandum:

> We do not want any of the best of it or any of the worst of it in wholesale or retail prices. It is reasonable—thoroughly so, to expect any customer to sell our products which are billed at the same price as competitors' products, at the same price at which he sells the competitive products. Anything different from that is not right or fair, and any person who discriminates for or against us is not a good customer in our judgement. The same principle applies to the retail trade. We cannot stand a discrimination against us at retail. That being so, then we should not seek or tolerate a discrimination in our favor at retail. It follows that no deal is to be operated to reduce a retail price.[37]

According to G. W. Whitaker, vice-president-in-charge-of-sales for the New York department:

> . . . we have, we think, a rather cordial and close relationship with the retail trade. We try to be fair to them in all particulars, and I think they agree we are, mostly. A cut price on Chesterfields would be misleading to them . . . they would think unquestionably that we gave that dealer something to enable him to cut the price; in other words, their attitude would be that he didn't do it for nothing.[38]

Liggett has exerted very little pressure on the distributive trades, has never cut a direct customer for price discrimination, has restricted deals to retaliatory purposes, and seems to have taken a completely defensive attitude in competing on the distributive level.[39]

34. *TP*, pp. 9144–9145, G. W. Hill.
35. *GX*, No. 1015; *American Tobacco Co.* v. *United States*, 147 F.2d 93, 105 (1944).
36. *TP*, pp. 9139–9146, G. W. Hill.
37. *TP*, p. 10313.
38. *TP*, p. 10301.
39. *Ibid.*

Although they have been actively concerned with the relative prices of competing brands, the manufacturers do not seem to have given much recent attention to the absolute level of wholesale or retail prices. Since the early abandonment of price maintenance there has been no consistent policy either to raise or to lower dealers' prices. There was one instance in which a Louisiana jobber appropriated the entire 10% trade discount and blamed the erosion of this margin on Reynolds' use of desk jobbers.[40] A desk jobber maintains no storage or delivery facilities but relays orders to the manufacturer to be filled by drop shipment. The low prices charged for this service are supposed to have reduced the prices which the complaining jobber could charge his customers.

Except for a few instances of this sort, it appears that manufacturers have left the absolute price level to the forces of competition. Because of the over-all inelasticity of demand, it does not greatly matter what cigarettes sell for, and competitive conditions in the jobbing and retail trades have tended automatically to keep margins reasonably low.

The Effects of Market Power

We may raise questions with regard to distributive policy similar to those raised earlier concerning the general price policy of the industry. Does it indicate collusive action by the manufacturers at the expense of distributors? Is it part of a wider conspiracy to fix prices? What effect does the undoubted power of the manufacturers have upon the process of distribution and upon its economic results?

The use of common jobbers, the common attitude toward maintaining identical resale prices for the standard brands, the common view that 3¢ is the maximum allowable differential for economy brand retail prices, the common methods of disciplining jobbers and of influencing retailers are all urged as indications that the manufacturers have got together.

As in the case with general price policy, it seems unnecessary to assume collusion in order to explain the actions followed. The jobbing and retail systems represent a common pipeline to the consumer, not only for all tobacco manufacturers but also for many other lines of manufacture such as candy, toilet articles, and foods. It is not surprising that the major manufacturers resort to the same outlets. It is, in fact, surprising that 7.1% of all direct customers of the Big Three buy from only one of them, that 11.6% buy from two, and that only 81.3% buy from all three.[41] So long as each manufacturer wishes to avoid competitive disadvantage and insists that distributors must not resell on less favorable terms than they award his competitors, identical prices will result. That common experience should have taught the three major producers the importance of the

40. *TP*, pp. 6793–6843, Claude Harrison.
41. *DX*, No. 1190.

3¢ differential does not imply collusion. Nor is it surprising that the major companies find it useful to employ the same methods of influencing the retail and wholesale trades. The methods, in any event, are dictated by the circumstances.

Not only are the usual policies of the industry compatible with an absence of explicit agreement but there is little concrete evidence that agreement exists. In the Lexington trial it was disclosed that salesmen for Reynolds and for Liggett had conferred on the occasion of the Denver price war,[42] but this appears to have been a spontaneous and somewhat unusual incident. There is no evidence of any systematic use of salesmen to perfect collusive agreements among the companies. For the most part the selling forces keep a close watch on each other and engage in a mutual struggle for advantage.

In the absence of contrary evidence, it seems proper to interpret distributive policy as dictated by the individual interest and independent decisions of the competing firms. Yet also the manufacturers have strong common interests, and their small number enables them to adjust those interests even without explicit collusion. The manufacturers' sales forces oppose each other, yet without likelihood of serious triumph, and the intelligence they carry home improves the general knowledge of the market and makes possible a neater adjustment of policies where these are harmonious. The strong competitive struggle to avoid a price disadvantage at wholesale or retail results in a draw. It achieves the common objective of eliminating price as a market weapon and thus helps restrict the battle to the blunted swords of advertising. With or without collusion, the major firms are able to achieve their principal cooperative purposes, and the existence of explicit agreement would add nothing to the realities of the situation.

It should also be noted, however, that the manufacturers' joint power is not exerted at the distributors' expense. Even under the Trust margins were not seriously depressed, and since dissolution the only persistent efforts to control them were the abortive attempts at price maintenance in the early 1920's. Later moves to reduce margins were incidental to the competitive struggle with the economy brands. At other times distributive margins have been repressed by the distributors' own competition. The manufacturers have been in the happy position of possessing wide powers which have not had to be exercised because other market forces have produced the desired results without their intervention.

42. *GX*, Nos. 898, 912, 932, 942, 945, 983.

Chapter XIV

THE PURCHASE OF LEAF TOBACCO

COMPLAINTS OF MONOPSONIST OPPRESSION

The Issues

AS WE HAVE SEEN in earlier chapters, the major firms have great power in the market for cigarettes, and whether or not collusion exists, they are able to establish prices at a monopoly level. Yet there is not now and never has been any pronounced consumer dissatisfaction with cigarette prices. The long-suffering consumer does not find a slight price rise on so unimportant an item of expenditure cause for worry or agitation. It is significant that in the market for cigarettes it is the jobbers and retailers who have felt most aggrieved and have made the loudest outcry. The impact of monopoly upon earnings is more serious than its effect upon general expenditures.

In the same way the farmers who supply tobacco have long been concerned with the abuses of monopoly. Here again the pocketbooks of producers rather than of consumers are involved, and the reaction to real or fancied oppression is correspondingly violent. One would think, from the volume of protest over the years, that the principal use of market power in this industry has been to drive down the prices of leaf tobacco. It is the purpose of this chapter to examine the power of the major companies in the market for leaf tobacco and to draw some conclusions concerning the way in which this power has been exercised.

As we saw in Chapter VII, tobacco is produced on characteristically small farms. No farmer produces an appreciable part of the total supply in any one year, and so no farmer acting alone can determine the market price. His only control is over the amount he will plant from one year to the next. Decisions to plant, even before government crop control, were moderately responsive to price, and the reaction has been made more certain by official planning. Thus price reductions in any one year involve some loss in future supplies.

The farmer's decision to sell in any one year is determined by the perishability of raw tobacco and his urgent need for prompt payment. Raw tobacco cannot be held over to another season but is disposed of within the year of its harvest, and in earlier years the crop was sold for what it would bring. Tobacco prices cannot now fall below the floor established by government purchase and loan programs, but for higher prices it is still true that tobacco supply is completely inelastic in the short

run. The farmer has no individual bargaining power, and prior to crop control the only limit to low prices set by the conditions of supply arose from the tendency of farmers to abandon or restrict tobacco production if prices remained too low over a period of years.

In contrast to the weak bargaining position of tobacco growers stands the overwhelming power of the buying interests. Six companies buy more than four-fifths of the flue-cured crop, and it is easy for them to act as a unit either by collusion or by mutual regard for each others' interests. There is nothing to prevent the buyers from setting any price they choose in any given year so long as it is not below government support levels, and prior to the recent war even this restriction on their power did not exist. There are, however, many ways in which market power can be used, and complaints from the growing interests have concerned both the general power of the buyers and the particular policies they have followed.

The companies are accused of attempting to "support, build up, and maintain marketing systems and marketing conditions for leaf tobacco intentionally designed to deprive the growers thereof of any substantial bargaining power in connection with its sale." [1] They have been instrumental in maintaining the auction system and in defeating cooperative movements, and through their membership on tobacco boards of trade and the Tobacco Association of the United States, they enforce operating conditions to the disadvantage of the farmer. The speed of sales, market dates, and the number and location of markets are the principal unfavorable conditions complained of. It is said that the enormous leaf inventories of the manufacturers render them independent of the leaf markets in any one year and so increase their bargaining power relative to the farmer. This carries the implication that unnecessarily large inventories are carried for their effect upon monopsony power.

Within the marketing system so established, manufacturers are accused of combining to depress tobacco prices. The apparently competitive auctions are said to be rigged, and the buyers have understandings concerning the prices to be paid. The competitive struggle for tobacco does not set prices, and prices do not determine the allocation of tobacco among the companies. There is agreement to split tobacco up by percentage shares on each market. The companies have defined their grades in such a way that they are not interested in the same tobacco even though they bid on all of it in order to make each other pay the agreed top price and thus maintain competitive equality in costs. Or, when the same kind of tobacco is wanted, the buyers avoid competition by alternate buying. All of them bid, but on one market at one time one buyer will make the effective purchases, while at another time or at another market, the same kind of tobacco will be sold to another company. By these devices the

1. *United States* v. *American Tobacco Co.*, United States District Court for the Eastern District of Kentucky, Criminal No. 6670 (1941), Information, p. 14.

major companies avoid competing with each other, operate to mutual advantage in the market for tobacco, and put the grower at extreme disadvantage before monopsony power.

A large part of the voluminous record of the Lexington trial was taken up with these complaints, and the government's case depended heavily on the proof of this complex pattern of collusion. As in other aspects of the case, much of the conspiracy was to be inferred from a long history of common acts by the defendants, although there were also some evidences of explicit agreement. The evidence of conspiracy is so closely bound up with the detailed description of market policy that we may well combine the search for economic explanation with the evaluation of legal evidence.

It is clear that recent developments in agricultural policy have interposed the power of the government between the manufacturers and the farmers and that many of the alleged oppressive acts could now have little practical effect. We are, however, concerned to explain the behavior of the cigarette industry in its earlier years as well as in the more recent period since crop controls were introduced.

Control of Marketing Methods

We are already in possession of sufficient information to pass judgment on some of the charges. The companies deny that they have sabotaged other forms of marketing, express willingness to buy tobacco wherever the farmer chooses to sell it, and point to the large purchases made by Reynolds and Liggett from the pools. Whatever the degree of friendliness of the manufacturers to various marketing systems, it is evident that they are not responsible for the success of the auction system. The system evolved long before the present companies were founded and, in the flue-cured regions, antedates the Trust as well. Auction sale has many advantages, both for seller and buyer, in marketing so peculiar a crop as tobacco and does not depend for its existence on the favor of large companies. It does not seem that the auction system places the farmer at any additional disadvantage before the large purchaser. His bargaining power is negligible, to be sure, but this is the consequence of relative size rather than of the method of sale.

It is true, of course, that the flue-cured and Burley pools attempted to redress the balance of power by creating a single selling agent. American and Imperial were openly hostile to the development, and Reynolds and Liggett were not enthusiastic. It does not appear, however, that the manufacturers' opposition was primarily responsible for the decline of the pools. Poor management, lack of discipline among the members, and the attempt to exert monopoly power without control of supply were the efficient causes, together with the pronounced and vicious opposition of

warehouse and merchant interests. The large number of producers, the perishable nature of the crop, the variation in quality, and the difficulty in grading all make central control of tobacco sale difficult. The same factors which hinder the use of an organized commodity exchange with futures trading tend to penalize pool operations and to enforce the use of auction methods.

Given the system, however, the enormous power of the buyers is certain to affect the manner of operation. They and the warehouse interests determine operating rules through the boards of trade and, whether the results are good or bad, must take responsibility for them. Most of the rules are neutral as regards bargaining power and relate simply to efficiency and convenience. The old rule of retaliatory rejection is apparently a dead letter. The speed of sales is a moot question. No serious suggestions have been advanced as to what speed would be preferable and some authorities think it not too fast. There is also the conflicting consideration of cost, for purchase by individual inspection is inherently an expensive method, and volume of transactions is essential. The farmer, too, has some interest in speed since warehouse charges would probably be higher at a slower rate of sale. But it is apparent that there is some conflict of interest between farmer and manufacturer and that the will of the latter prevails. However, it is also worth repeating that the interest in speed is not confined to the major buyers and that, if they were less powerful, sales might be even faster than at present owing to the interest of every warehouseman in increasing the speed.

A similar problem arises in connection with the timing of the belt market dates. Climatic differences make some difference in timing necessary, while the desire to shift buyers results in stretching these differences to the limit. Georgia markets are crowded, and a considerable volume of tobacco must be trucked away at the season's end. Burley tobacco, on the other hand, is ready for sale as early as mid-November but must wait until the flue-cured markets slow down. Delay or overcrowding, which cause inconvenience to farmers, result in important cost savings to the buyers. The difficulty is that the advantages and disadvantages accrue to different parties, and the power and strategic position of the manufacturers make sure that, in case of conflict, the interest of the buyer shall rule.

The same considerations of adequate service and expense determine the number of markets and their location. Although farmers have an interest in adequate and convenient markets, the principle conflict of interest is between the manufacturers and ambitious commercial interests. A market cannot succeed without the Big Three, and they are frequently approached by promoters who wish to start another market or to secure an additional set of buyers for an existing market. The decision to grant or deny these requests has usually lain with Imperial in the flue-cured

regions and with Reynolds in Burley. The other companies have generally sought to avoid responsibility by pleading dependence on the actions of competitors.[2]

At the trial, American and Liggett claimed that their decisions were determined by competitive necessity.[3] It is essential that competitors not be allowed an advantage in leaf prices which could be turned into an advantage in advertising funds or in product price. Neither of them, therefore, can allow its major competitors to bid without itself being present to make sure unusual bargains are not handed out. Thus each firm must buy on all markets where competitors are present. On the other hand, neither of them can go on a market without the others since this will just mean lower prices on that market which will take unfair advantage of the farmer and subject the lone buyer to criticism. Reynolds officials did not advance the same argument. Are we to conclude from this that American and Liggett are nicer people than Reynolds?

The explanation in terms of real interest is obvious. Each firm must indeed buy on all markets where competitors are buying, and so all use the same markets. The tobacco markets are an institution available to all manufacturers just as are the jobbing and retail channels, and it is just as reasonable that manufacturers should buy on the same markets as it is that they should use the same jobbing houses. It is, indeed, more necessary to use common markets than common jobbers, for the latter are merely a convenience and a means of reducing costs of distribution for everyone, while common markets are necessary if tobacco is not to be obtained by some firms at a competitive advantage with violent effects upon the balance of power in the industry.

Although a single firm would suffer competitive disadvantage from staying off a market on which others are represented, it would enjoy no corresponding advantage from independently opening a new market. If the other firms immediately followed, the initiating firm would gain no advantage, while if they did not, farmers would soon take their tobacco elsewhere and the company's expense in opening the market would not have been justified by a brief period of low prices. It is only desirable to send buyers to a new market if most firms will act together, and this will happen only if the manufacturers as a group can gain from more buying outlets.

The cost of maintaining an additional set of buyers and the cost of additional prizing or trucking facilities are deterrents to encouraging

2. *TP*, pp. 1638–1639, E. T. Kirk; pp. 2200–2218, J. F. Strickland; pp. 3137–3144, C. M. Hitch; pp. 3163–3166, Wallace Harrell; pp. 3170–3172, L. V. Cawley; pp. 3176–3177, H. F. Smith; pp. 3253–3270, A. M. Seward; pp. 3297–3305, W. F. Clark; pp. 3316–3317, W. R. Knight; pp. 3337–3341, C. O. Hempfling; pp. 10925–10939, J. W. Glenn. *GX*, Nos. 36, 51, 78–88, 200–204. *DX*, Nos. 205–206.

3. *TP*, pp. 2070–2073, J. E. Farley; pp. 8934–8936, J. E. Lipscomb, Jr.; p. 10130, W. A. Blount; p. 12040, S. C. Williams.

new markets. On the other hand, if, as crops and demand increase, the established markets become overcrowded, the costs of purchasing may be less and leaf may arrive in better condition if new markets are opened to tap the supply. The considerations involved are not competitive among firms. All are concerned to establish the best marketing conditions for all the manufacturers, and all will act together even if there is no explicit agreement among them as to what the policy shall be. There will at least be a kind of "market opening leadership" analogous to the price leadership which we have discussed before. Imperial is the largest purchaser of flue-cured and Reynolds of Burley, and it is only to be expected that the decisions of these firms as to what is desirable would guide the others.

There is evidence, however, that mutual interests are cared for more explicitly than this. At the trial, American leaf men admitted occasional discussion of prospective markets or additional buyers with the Reynolds and Liggett Burley heads, while the latter two individuals conferred on at least one occasion.[4] The mutual interest of the manufacturers was clear, and they furthered that interest by joint action and agreement.

Most of the time, however, it is probable that communications between competitors are not this close and that there is no explicit agreement as to what shall be done about a given request for a market. On another occasion, for example, the Reynolds leaf head, in writing to his Burley manager, expressed worry that other companies might agree to an unnecessary set of buyers, "thinking we would block the proposition." [5] This is typically the kind of situation which confronts an oligopolist who has no direct agreement with competitors but who tries to advance the mutual interest by consideration of probable action and reaction. It emphasizes the point that oligopoly is more difficult to run than is monopoly or outright collusion, but it also makes it clear that the basic considerations and the final results may be much the same.

It is apparent, then, that the operating rules, timing, number, and location of markets are strongly influenced by the wishes of the large buyers. Someone, of course, must make these decisions, and it is not clear what differences would occur if other elements in the industry were the ones to make them. There appear to be some elements of conflict between grower and manufacturer and between warehouseman and manufacturer, and in these cases the manufacturer's interests rule. It is difficult to judge the seriousness of these conflicting interests. Where one is sacrificed, however, it represents the influence of superior market power, whether or not collusion is employed in the exercise of that power. In none of these cases, however, do the rules or the conditions imposed appear to weaken the bargaining position of the farmer below its already weak state.

4. *TP*, pp. 1757–1762, 1773–1775, 1815–1816, 1854–1855, 1858–1861, J. S. Dowd; pp. 8934–8936, J. E. Lipscomb, Jr.; pp. 3304–3305, W. F. Clark, *GX*, Nos. 48–49, 51–53.

5. *GX*, No. 37.

The manufacturers may impose costs or inconvenience on the other industry elements, but the marketing institutions and conditions do not increase the monopsony power itself.

Inventory Policy

It is difficult to take seriously the charges that buyers maintain large inventories in order to strengthen their bargaining position by making them independent of the market in any one season. The buyers do not need additional power, and inventories carried for this purpose would represent an unreasonable and unnecessary expense. Moreover, it is not clear that large inventories in fact decrease their dependence on market conditions.

Inventories are maintained to age the tobacco, to provide for blend consistency, and as insurance against crop failures or unexpected expansion of sales. Now, the maintenance of inventories for insurance reasons may allow some flexibility in buying behavior, but the necessity for aging tobacco introduces rigidity rather than flexibility into yearly leaf requirements. Leaf purchases in the current year determine the amount of tobacco available for manufacture two or three years later. None of the major companies can risk either a shortage or poor quality of tobacco in the future, and so the permissible variation in purchases in any one year is limited.

When inventories are rigidly maintained, the effects upon buyers of fluctuations in supply are precisely the same as if current purchases were directed immediately into current cigarette production. The effect on leaf buyers of a change in cigarette consumption will be even more marked than if inventories did not exist at all. If there were no inventories, buyers would, in the event of an increase in consumption, need to increase purchases of tobacco only to the amount of the rise in consumption. With inventories, however, a rise in consumption must be met not only by purchases to replace the excess tobacco used but also by purchases to build inventories to a higher level, appropriate to the new anticipated level of production. The technical necessities of aging suggest that a major portion of tobacco inventories must be maintained even if crops, qualities, and prices vary, and that consequently they introduce an element of urgent rigidity rather than flexibility into yearly leaf requirements.

Even those portions of the inventory which are carried for purposes of insurance do not contribute significantly to the buyers' monopsony power. Such inventories can obviously be varied to meet any unfavorable market conditions, whether those conditions involve insufficient supplies, poor qualities, or high prices. But if the buyers hold off the market on account of price and so draw down inventories, they have thereby sacrificed a part of their protection against general leaf shortages or against poor

qualities. It would not be safe to entrench upon inventories unless they were more than big enough to provide for these major risks, and while such oversize inventories may easily occur as a result of consumption changes which depress leaf usings below expectations or through other semiaccidental circumstances, it seems unlikely that the buyers would deliberately establish extra inventories in order to be able to hold off a high-priced market. Price can easily enough be controlled by the major firms even without the ability to hold off the market, and it would not be worth while for them to incur the expense of an additional and unnecessary advantage. Inventories are normally well maintained and are seldom drastically drawn down. Even during the recent war inventories remained remarkably high and testified to the urgent technical necessity of aging.[6] It does not appear that tobacco inventories are part of a plot to oppress the farmer or that they contribute significantly to the buyers' ability to work such oppression.

Dividing the Market

We come next to the charge that the major companies define their tobacco grades so as to avoid competing with each other or that they alternate in buying on different markets or at different times. The complaint of noncompeting grades is an old one. One of the objections to the dissolution decree concerned the fact that the distribution of brands gave the successor companies interests in different types of leaf.[7] The subsequent development of the industry and of a common interest in Burley-blended cigarettes quickly eliminated the particular division of the market complained of at the time. The fear has persisted, however, that the buyers have managed to retain this advantage and that, although all are now customers for flue-cured and Burley, they have succeeded in so defining their special grades that they still are not in competition on particular lots of tobacco.

A number of auctioneers, warehousemen, and farmers testified at Lexington that they could detect a different emphasis in the kinds of tobacco which each company bought and could often predict before a sale occurred which company would buy a particular basket.[8] A former Reynolds buyer stated that in the top cutter grades Reynolds bought thin light-colored leaf, American somewhat heavier, and Liggett the leafiest tobacco of the three. In the flyings, however, American tended to buy thinner tobacco than Reynolds.[9] One farmer testified that Reynolds emphasized the bottom lugs in flue-cured tobacco, that American bought a "grainy," better

6. See p. 234.
7. See p. 64.
8. *TP*, pp. 2759–2760, J. A. Breslin; pp. 2833–2834; John Scott; pp. 3075, 3080, Luther Humphrey; pp. 3345–3346, 3359, 3362, J. R. Duncan.
9. *TP*, pp. 2884, 2906, C. W. Donaldson.

burning leaf, while Liggett looked for a heavier tobacco from the middle of the stalk.[10] Another farmer stated that the Big Three emphasized different portions of the stalk with Reynolds lowest and Liggett highest.[11] A salesman for the Maryland Tobacco Growers' Association held that in Maryland tobacco Reynolds liked a heavy leaf, American preferred a shorter, lighter, more highly colored leaf, while Liggett bought more generally but emphasized short, red, smooth leaf.[12] The head of one of Universal's subsidiaries, which bought Maryland tobacco for Reynolds on commission, testified that Reynolds liked thin, leafy tobacco, that American preferred shorter leaf, and that Liggett bought both kinds but liked heavier tobacco than the others.[13]

The three companies claim to be in competition on all grades. It seems to be generally recognized that the export companies concentrate their buying both higher and lower on the stalk than do the domestic manufacturers. Imperial buys a very bright, hard-finished leaf which does not appeal to the domestic market. Much export tobacco is of low grades which are not regarded as cigarette tobaccos.[14]

The government made vigorous efforts to establish a difference in leaf grades in the course of the Lexington trial. Each of the companies was required to submit reports of its purchases by weeks on all markets for the 1938–39 season. They also submitted redried samples of each of their cigarette grades. The samples were then graded according to government standards and the buying reports were translated into government grades. A further subdivision was made by assuming that where purchases in the same grade showed a price difference of 1½¢ or more a pound, such tobacco was recognizably different to an expert buyer. On this basis, tables were offered purporting to show that the Big Three did not compete on the same market at the same time. They might buy the same tobacco on different markets at the same time, or on the same market at different times, but at any one time and place they bought different grades of tobacco.

The defense objected to these tables on the grounds that the samples submitted did not cover the whole of the grade from which they were drawn, that the samples were redried with consequent error in grading, and that the 1½¢ assumption was improper when there were so many other variables affecting price. The objections were upheld by the court and the offered tables were not accepted in evidence.[15]

10. *TP*, p. 3105, Autrey Carmichael.
11. *TP*, pp. 2993–2994, 3027–3031, R. G. Daniell.
12. *TP*, p. 5802, G. I. Gardiner.
13. *TP*, p. 5826, W. H. Winstead.
14. Fisher, p. 41. *TP*, pp. 1958, 1997, 2036–2038, T. W. Blackwell; p. 2111, J. E. Farley; p. 2273, T. A. Fulghum; p. 2383, G. A. Shelton; p. 2614, H. R. Pettus; pp. 3007–3009, R. G. Daniell; p. 3097, L. M. Lawson; p. 3110, Autrey Carmichael, p. 9004, J. E. Lipscomb, Jr.
15. *United States* v. *American Tobacco Co.*, 39 F. Supp. 957 (1941). Since these tables were excluded, they are not, like the rest of the trial record, public documents and may

The defense introduced positive evidence to prove that they were competitors for the same leaf grades. It will be remembered that, as a part of every auction transaction, the government grade is entered on the basket ticket along with the weight and the names of grower and buyer. These tickets are preserved as public records for a period of years. The defense secured all such tickets for the middle and eastern North Carolina belts in 1939. In that year only seven markets were officially graded in those belts and the tickets from six of them were analyzed and the results presented in tables. The market tickets filled almost 500 filing boxes, and the tables based on them are too voluminous to present here. It is enough to say that the tables indicated a high degree of common purchase by the three companies in most government grades for all six markets, for each market individually, and for each warehouse within markets. No compilation was presented showing variation in company grade purchases in the course of the season.[16]

Direct evidence on this question is not conclusive in either direction. The government tables are not available and, in any event, are based upon suspect assumptions. The company evidence shows competition for government grades but shows nothing about finer classifications or about alternate buying through time. The opinion of market observers shows nothing about cigarette grades. Since the major companies have different proportions of their business in cigarettes, smoking tobacco, and plug, it would be natural to have some difference in the kinds of tobacco bought. The critical question is whether there is specialization of grades bought for the same purpose, and general market opinions throw no light on that.

It seems likely, however, that some grade specialization exists. The complex and indefinable variation in quality provides obvious opportunity for opinions to differ. Company officials describe their grade criteria in terms which are completely mystifying to the layman, and buyers recieve five or more years of training before they are considered qualified to grade tobacco.[17] There is thus heavy reliance on informed judgment, and since each company trains its own buyers, it would not be surprising if the companies came to emphasize different factors in tobacco quality. The use of different systems for marking and classifying grades and the lack of established grade equivalents between companies, or between any company and the Department of Agriculture, suggest that such different emphasis has developed and that there are noncompeting grades.

On the other hand, it is highly improbable that the lines between these

not be published. They are, however, to be found as part of an "avowal of proof" in *GX*, Nos. 658, 782–794.

16. *TP*, p. 10733; *DX*, Nos. 1142–1145, 1156. For a detailed discussion of the evidence of grade specialization as brought out in the trial, see W. C. Baum, "Workable Competition in the Tobacco Industry," pp. 149–165.

17. *TP*, pp. 1681–1684, E. T. Kirk; p. 8913, J. E. Lipscomb, Jr.; p. 10177, W. A. Blount.

grades are sharply drawn, that they represent an agreed classification, or that their purpose or effect is to lower the price of tobacco in general. There is no doubt that a division and alternation of markets would put the farmer at the mercy of the buyer. But this proves too much, for the farmer in any one year is at the mercy of the buyers without such arrangements. By collusion or without collusion, the buyers have the power to set price, and a complex allotment of grades and markets would add nothing to that power. It would, moreover, be an extraordinarily difficult arrangement to make in any detail without giving the plot away. As a method of cheating the farmer, a scheme of this sort is like using a trip hammer to crack an egg.

PRICE POLICY

The Buyers' Version

This defense of the companies' position would not, I am sure, be approved by them, for it rests on their overwhelming power without such adventitious aids, and they do not admit to the possession of such power. The price of tobacco, they contend, is regulated by competitive market forces, and they deny the desire or the power to set prices. It is difficult to entertain this idea seriously in view of the obvious facts, yet the account which they give of their buying methods throws much light on the operations of monopsony power and on the limits within which it may be exercised.[18]

The major tobacco companies claim uniformly that they do not fix the price of tobacco and that their actions are in all matters limited by the actions of competitors over whom they have no control and about whose actions they have very little knowledge. They state that they do not attempt to manipulate the market or to adjust their tactics to it but reduce their buying activities to the mechanical level of replacing inventories. Hill explained the policy by reference to an experience when he first became president:

At that time we used up a good deal of our cigarette paper coming in from our mill in France, so they had use for a lot of francs, and they used to come

18. *TP*, pp. 1315–1339, E. G. Fagan; pp. 1210–1211, 1222–1223, 1240, W. E. Patton; pp. 1356–1366, 1396, Garnett King; pp. 1414–1417, 1422, O. S. Ransdell; pp. 1459–1464, H. A. Turner; pp. 1470–1474, 1480–1482, John Corlis; pp. 1488–1490, 1552–1555, 1569–1574, H. E. Coleman; pp. 1708–1721, E. T. Kirk; pp. 1753–1755, J. S. Dowd; pp. 1907–1913, 1936–1953, 1989–1990, T. W. Blackwell; pp. 2093–2103, J. M. Farley; pp. 2228–2236, 2240–2241, 2244–2248, J. F. Strickland; pp. 2265–2275, T. A. Fulghum; pp. 2362–2365, G. A. Shelton; pp. 2579–2585, K. R. Edwards; pp. 2618, 2628, H. R. Pettus; pp. 2863–2867, 2892–2893, C. W. Donaldson; pp. 2979–2989, Thomas Parry; pp. 8760–8764, C. F. Neiley; pp. 8859–8874, 8880–8884, 8896–8899, 8975–8979, 8985–8988, 9001, 9008, J. E. Lipscomb, Jr.; pp. 10169–10176, 10196, W. A. Blount; pp. 10828–10846, 10894–10898, 10902, 11055–11059, J. W. Glenn; pp. 11561–11563, 11758–11763, 11785–11796, 11805–11808, S. C. Williams.

down and ask me how many francs to buy. I didn't know anything about the francs, and I didn't think I could do better than the international bankers, so I went to the Auditing Department and said, "Look here, I don't want to be bothered about this thing. Figure up for me what happened for the last 10 years, supposing that every week on Tuesday morning we had bought the number of francs we required for replacement the week before. Now, figure out how much money we have lost as against what you fellows have been doing in doing your best to buy francs when you thought francs were cheap. Just figure what it would cost on the one hand or the other hand and then bring the sheets down to me." And if we had bought our usage of francs for the 10 years previous each week just as we required them for our red books and for our cigarette bobbins, we would have saved $180,000 as against the 10 years we were trying to be smart . . .[19]

And S. Clay Williams stated:

We have to have certain poundages of tobacco and we have to pay whatever they are bringing on the market to get them. We can't manufacture Camel Cigarettes this year because the inventory stands at a satisfactory price and, if tobacco happens to sell at two or three prices in the next crop, quit manufacturing until tobacco gets more reasonable in price. We have to keep the brands going. So talking about what you are going to pay for tobacco or grades of tobacco is as idle as talking about the weather. We can't do anything about it and we don't waste any time talking about it. But I don't mean we are not interested in whether the crop is going to sell high or the crop is going to sell low, whether it is a big crop or a little crop, but we know when we are helpless.[20]

None of the buyers admitted any control of tobacco prices except through the quantity purchased, and all denied that prices had any effect on the quantity purchased. They were manufacturers, not speculators, and did not attempt to make a speculative profit.

In all three companies leaf buying is in the hands of a separate department which conducts its business in essential independence of the rest of the company from the time tobacco is bid in on the warehouse floor until it is charged out to the manufacturing department. American vests these functions in a separate wholly owned subsidiary, American Suppliers, Inc., but the other leaf departments are equally separate in operation. Administration of the leaf department is closely coordinated with the other branches of the company when the annual decision to purchase is made.

Each June the management of the company considers the consumption of products in the preceding year and the consequent depletion of inventory. Leaf requirements are determined by the amount required to replace inventory usings plus an amount sufficient to restore inventories to their proper relation to consumption. Inventories are intended to average about two and one-half times the annual consumption. When busi-

19. *TP*, p. 9159.
20. *TP*, p. 11563.

ness is stable, requirements are the same as inventory depletion. Variations in inventory are permitted if crop quality is unusually good or bad, but the size of the crop or probable prices are supposed not to affect decisions to buy.

The fixed requirements are compared with the expected crop volume in order to determine the percentage which must be bought in order to secure the desired supplies. The buying staff is then told to secure this percentage of the offerings on each market unless or until otherwise directed by a supervisor. American usually gives its buyers a price range or price maximum for each grade based on prices the preceding year and on changes in crop size. There was some conflict in the testimony concerning the instructions issued by the other companies, but it appears that Reynolds has given no price instructions since 1936 and that Liggett discontinued such instructions for flue-cured tobacco after 1934 and for Burley after 1936. Imperial issues instructions in terms of percentages and price limits, while Export Leaf and Universal rely principally on price instructions sometimes modified by directions to increase or decrease purchases.

These methods of directing buyers have obvious advantages for the firm. Whether instructions are in terms of prices or percentages, they allow each company to draw evenly upon supplies from all markets and at all times during the season. Of even greater importance, they allow each firm to exert its market influence evenly over the whole range of market incidents. If specific quotas were set for each market on the basis of certain assumed supplies and the supplies turned out to be differently distributed, a company would find itself bidding prices in one market much above those which it had to pay in another. Not only might this result in higher total payments than would otherwise be required but also alert competitors could gain an advantage by transferring their purchases to the cheaper market. If any company attempted to secure its supplies from only a portion of the markets, the disproportionately high level of its demands would force it to pay higher prices, while competitors taking advantage of its absence from other markets would be able to secure tobacco at bargain rates. The even coverage of all times and markets by uniform price instructions or by the percentage method secures for the company a thorough sampling of all types and grades of tobacco offered, secures them at a price which is probably the lowest available, and ensures that no competitor can obtain such systematic advantages as would follow from an unequal distribution of bargaining weight.

With these instructions, the buyers bid on each market and a going price is soon established. It is only, of course, at the opening of sales that even a pretense of price innocence on the part of the buyers can be maintained. The opening sales in each belt provide an orientation point for pricing in that belt. Prices may, thereafter, rise or fall, but all buyers, whether or not they receive company instructions, have a good idea of

the general level of prices which tobacco "should" bring. And even the opening sale of most markets has some precedent to go on. Georgia markets are the first to open and help set the pattern for subsequent belts. In the Burley belt the market at Lexington opens three days before the other market towns, and price precedents are set there.

Once the selling season has started, the buyers are kept in line and their instructions are modified by supervisors. There is one supervisor to every score of buyers, whose duty it is to ride the selling circuit to observe and to instruct. Each buyer reports each day to his supervisor by mail, giving his volume of purchases, his average price, and the total sales on his market for that day. He also notes the other heavy buyers in order of magnitude and any unusual activity on the market such as the presence of competitive supervisors or higher officials. These reports are digested by the supervisor who reports in turn to higher echelons.

On the basis of these reports new instructions are issued to buyers from time to time. One purpose of these changes is to adjust buying activity to any difference between expected and actual crop sizes or grade composition. Another purpose is to keep the various markets in line with each other. If, as a result of special circumstances, two markets exhibit different price levels for substantially the same tobacco, buyers on the high market will be told to reduce their percentages and those on the low market will be told to increase theirs.

On each market a buyer bids for two purposes. He bids to secure his percentage requirements of each grade. And he bids to make sure that competitors pay at least as high a price for the tobacco which they buy. When two or more buyers are honestly interested in the same lot of tobacco, the two motives are not distinguishable. Bids are made in the hope of securing the particular lot of tobacco, and when it is knocked down to the high man, the others have the satisfaction that he paid for it more than they were willing to give. When, however, a lot of tobacco appeals to only one buyer, the others will bid without any expectation of buying but solely for the purpose of making him pay. It thus follows that, no matter what kind of tobacco is involved, all the buyers will bid unless the starting price is so high that bids designed merely to push up the price may have the unwelcome effect of actually buying the leaf. There is an aphorism in the trade to the effect that a buyer "sells more tobacco than he buys." This refers to the efforts of all major buyers to secure their own leaf cheaply, if possible, but on no account to permit competitors to secure their leaf more cheaply.

Leaf heads, supervisors, and buyers of all three major companies stated categorically at Lexington that, aside from the two cases just mentioned, tobacco prices play no further part in the tactics of tobacco buying or in the decision to buy tobacco. They even deny a primary interest in the absolute level of leaf prices. The one thing which must be avoided is a dis-

advantage in tobacco prices relative to competitors who could use any savings to cut prices or, more probably, to expand advertising. According to S. Clay Williams:

> It is not a matter of primary importance to us as to the figure at which we buy our requirements of leaf tobacco. That is not a matter of primary importance. We have sometimes bought it below 15 cents and we have sometimes bought it way up at 35 or 40 cents. We have sometimes bought a lot of piles at $1 a pound. What we pay is not of primary importance to us. It is what we pay with respect to what our competition pays.[21]

Evaluation

As a first step in judging these explanations of policy, it is interesting to consider their logical implications. It is seldom that the simplified model of perfect competition can be realistically applied to any particular market. However, the behavior of the cigarette companies, if they have accurately described it, is consistent with the assumptions of perfect competition, and we have already seen that the supply of tobacco is perfectly competitive. The product is not homogeneous, it is true, but the variation in quality is peculiar to the lot of tobacco and is not usually associated with a preference for a particular buyer or particular seller.

By their own statement, the companies buy without regard to price. The quantities desired are fixed whether the price is high or low. No attempt is made to set the price; that is left to the bidding process. This is the same conduct that we would have in a perfectly competitive market with completely inelastic demand. The demand of the major companies can be described by a vertical demand curve even though such curves usually apply only to markets with a large number of buyers.

We have already seen that the supply of tobacco in any one year is completely inelastic for all prices above the government support level. Before the war, supply was inelastic over all prices and, if we regard the conduct of the major buyers as typical of the demand side of the market, we had the unusual situation of a market in which both supply and demand were completely inelastic and in which each could be represented by a vertical straight line. But in such a market there is no equilibrium price in the usual sense. If the demand curve and the supply curve are different at any point, they will be different at all points, since they are parallel lines and will never meet. No matter what the price, the quantity supplied and the quantity demanded will be different, and there must be either an unsold surplus or buyers must be frustrated in their efforts to obtain their requirements. If, on the other hand, the supply and demand curves coincide, there will again be no equilibrium price. In that event there is no hindrance to all parties' carrying out decisions to sell or to buy. The proper

21. *TP*, p. 11786.

volume of supplies is forthcoming to meet the total demand, and the supplies are distributed according to the wants of the buyers. But this will happen no matter what the price. Any price is as good as any other price, for in all cases the quantity supplied will be equal to the quantity demanded, and there are no forces at work to establish any particular price.

This analysis clearly does not apply to the present tobacco market, for the downward elasticity introduced by support loans would allow a determinate equilibrium consistent with complete inelasticity of demand for all buyers, so long as buyers do not want more tobacco than exists. Supply can be represented by a horizontal line at the support price, extending from zero quantity to the total quantity produced and then turning vertically upward. So long as the vertical section of the supply curve lies farther to the right than the demand curve, the two would intersect in a meaningful equilibrium establishing both a determinate price and the quantities of tobacco which buyers would secure.

While this is a possible solution for the present time, it lacks general validity. Before the war the elasticity of short-run supply introduced by government loans did not exist. Supply was perfectly inelastic over all prices, and if demand was also inelastic, no determinate equilibrium could exist. Yet, even before the war, tobacco markets worked in a completely determinate way and produced the kind of results which all markets should. The supply was put on the market, and all of it was sold. The bidding distributed the supplies among the various rival buyers, and in the process, prices were established. It follows that our explanation of market behavior is wanting in some respects, since it fails to accord with observed results.

It must be emphasized that before the war the short-run supply of tobacco was both perfectly competitive and completely inelastic. No farmer could do anything about price except to reject sales which seemed to him to fall below the market average. He could not affect that average itself, and he had no choice but to offer his tobacco for what it would bring. The supplies on hand are determined before the market opens. There is very little abandonment of tobacco in its final stages of cultivation. It cannot be, and is not, held over by the farmer to another season. Before the war all of it was put on the market, and all of it was sold. We did, in fact, have a perfectly competitive, perfectly inelastic supply of tobacco to the auction floors. It follows that the errors in our explanation of market behavior must lie on the side of demand.

A part of the difficulty lies in our assumption that the behavior of the major buyers is typical of all buyers in the market. There are a number of buyers whose behavior is likely to be quite different. Government purchases may expand as in 1939 with the specific purpose of improving prices. The leaf dealers who buy a minor proportion of the crop are speculators by profession, and it is to be expected that they will buy more when

prices are low than when prices are high. The smaller domestic manufacturers and foreign buyers have less incentive to speculate than the dealers but less difficulty in speculating than the major manufacturers. None of them is concerned with bidding up the price which other companies pay. The small domestic manufacturers are not important enough to bother with their effects on the market, while Imperial or Export are not hurt if American or Reynolds get a bargain. Since they are not engaged in holding up a market for competitive reasons and need not fear buying out of step with competitors, it may be easier for them to withhold purchases at high prices and to increase them at low prices. Moreover, Export Leaf and some of the representatives of foreign government monopolies are buying for markets which have alternative sources of tobacco and in some of which demand is likely to be moderately elastic. Thus it may be that small domestic manufacturers, the leaf dealers, the foreign buyers, and, more recently, the government provide enough elasticity in the demand for tobacco so that the explanation given by the major manufacturers is valid. If this is so, competition among the major buyers maintains price equality among them and raises the absolute level of prices high enough to overcome the attraction of support loans and to discourage the marginal buyers from purchasing quantities of tobacco which the majors require to replenish inventory.

Another possible explanation of our difficulty is that the manufacturers do not behave as they say they do. They may adjust their purchases to price and thus speculate contrary to their professions. Or they may exert such monopolist dominance as to set price and allocate tobacco by administrative decision.

It is difficult to find quantitative evidence to indicate which of these possibilities is the true situation. Some measure of the elasticity of demand for tobacco by the market as a whole or by particular groups of buyers is desirable but seems almost impossible to obtain. A statistical study of the tobacco markets encounters, in extreme form, all the difficulties and ambiguities we noticed when investigating the elasticity of demand for tobacco products. Prices may affect the quantity demanded, but demand conditions may also affect price, and it is difficult to know, in any case, which relationship is in question. This is particularly so with the tobacco markets where we believe both demand and supply to be highly inelastic and unstable. A shift in either curve is likely to produce large variations in price unless offset by a compensating shift in the other curve. We are equally likely to find high prices associated with large purchases and with small according to whether supply changes, demand changes, or some combination of the two is the initiating factor. The separation of confounded influences presents serious problems which I have not been able to solve.

A partial answer to our questions is suggested by the data presented in Figures XXX and XXXI. In the former, arbitrary purchase quotas for R. J. Reynolds in both the Burley and flue-cured markets have been calculated, based on the June 30 inventory before buying starts and on the amount needed to increase that inventory to three times the leaf usings of the preceding year. This quota, the actual purchases, and the amount by which actual purchases fall short of or exceed the quota are compared with price movements. The quota fluctuates much more violently than do leaf usings, and the consistency with which purchases approximate the quota

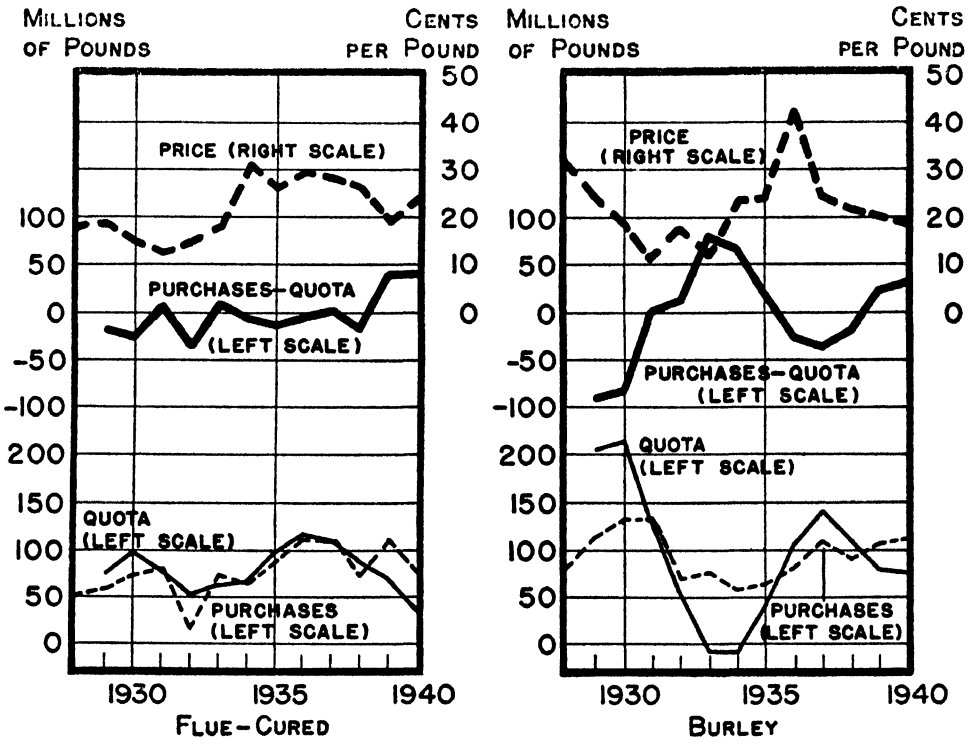


FIGURE XXX. R. J. Reynolds Tobacco Company: prices paid for leaf tobacco, leaf purchase quota, and purchases, 1929–40.

SOURCE: Table 58, below, p. 335.

suggests that, at least in Reynolds' case, there is some truth to the company's contention concerning buying behavior.

There are also, however, considerable deviations in particular years from the purchases indicated by mechanical application of the formula. In the flue-cured areas Reynolds' purchases were unusually low in 1932 and unusually high in 1939, while in the Burley areas purchases failed either to rise as high or to fall as low as the quota would have indicated. Some such deviations are only to be expected if we consider the nature of the formula. Changes in crop quality, erroneous forecasts of crop sizes,

or anticipations concerning future business which differ from the experience of the preceding twelve months would cause purchases even on a strict replacement basis to differ from the quota as calculated.

Differences between anticipations and experience are probably especially important in explaining the rather wide deviations of Burley purchases. The Burley buying season does not start until five months after the end of the fiscal year on whose experience the buying quota was calculated. In such a period it is possible for the business outlook to change

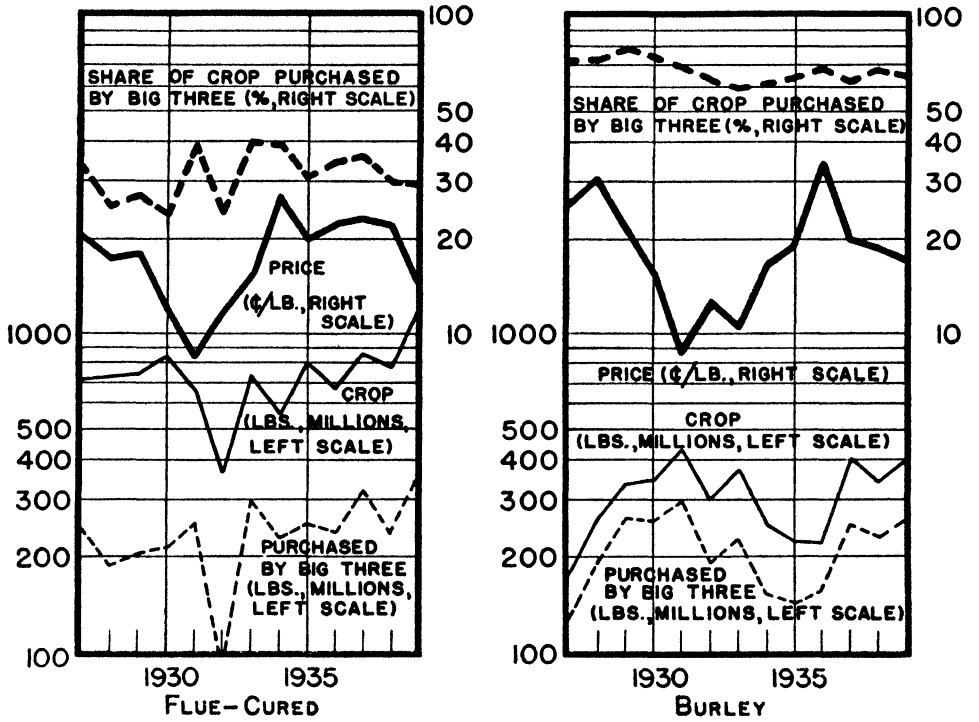


FIGURE XXXI. Crop sizes, leaf prices, and auction purchases by the Big Three, 1927–39.

SOURCES: *DA; GX;* Nos. 31–32, 40–43, 61–62; *DX,* No. 1242.

sharply, with consequent changes in buying behavior. For both tobacco types the quota is based on twelve months' experience, which is then projected to the future without change. Yet if business conditions alter during the twelve months, anticipations will be based upon the most recent experience, and the average results for the whole year will be more or less misleading. We notice that the major departures of actual purchases from the quota occur when the quota falls after a rise or rises after a fall, and this suggests that changing expectations account for much of the discrepancy. The fall in flue-cured purchases in 1932 probably reflects just such influences. During the 1932 fiscal year Camel sales rapidly declined, and if our quota were calculated on the basis of year-end experience rather

TABLE 58

Leaf Tobacco Replacement Quota and Purchases in Millions of Pounds and Prices Paid in Cents per Pound, R. J. Reynolds Tobacco Company, Crop Years, 1928–40

Type of Tobacco	Crop Year	Disappearance *	Three Times Disappearance Preceding Year	Inventory, June 30 †	Quota ‡	Purchases §	Purchases Minus Quota	Prices Paid §
Flue-cured	1928	67.5	a ‖	142.0	a ‖	52.4	a ‖	18.7
	1929	70.8	202.4	126.9	75.5	59.3	−16.2	18.7
	1930	66.8	212.5	115.4	97.1	72.9	−24.2	15.1
	1931	63.6	200.5	121.4	79.1	80.0	.9	12.2
	1932	54.9	190.8	137.8	53.0	19.6	−33.3	14.6
	1933	61.2	164.8	102.5	62.3	74.3	12.0	18.2
	1934	69.8	183.6	115.6	67.9	64.6	−3.4	31.2
	1935	78.7	209.4	110.4	99.0	88.8	−10.3	25.9
	1936	85.4	236.2	120.4	115.7	112.9	−2.8	29.4
	1937	86.7	256.1	148.0	108.2	109.6	1.5	28.2
	1938	79.1	260.0	170.9	89.1	75.0	−14.1	26.4
	1939	78.4	237.3	166.8	70.5	111.2	40.7	19.5
	1940	a	235.1	199.7	35.4	76.6	41.2	24.0
Burley	1928	105.9	a ‖	138.7	a ‖	80.2	a ‖	31.5
	1929	110.6	317.6	112.9	204.7	113.9	−90.8	24.4
	1930	94.8	331.7	116.2	215.5	133.8	−81.6	19.4
	1931	85.0	284.4	155.2	129.2	131.6	2.5	11.3
	1932	65.9	254.8	201.9	52.9	68.7	15.8	17.8
	1933	67.7	197.6	204.8	−7.1	74.2	81.3	12.7
	1934	77.9	203.0	211.3	−8.2	58.0	66.3	23.3
	1935	89.8	233.6	191.4	42.1	62.4	20.3	24.1
	1936	96.7	269.4	164.1	105.3	80.6	−24.7	42.7
	1937	90.3	290.0	148.0	142.0	109.8	−32.2	24.4
	1938	85.1	270.8	166.5	104.4	92.2	−12.2	22.0
	1939	89.3	255.2	173.6	81.6	105.2	23.6	20.2
	1940	a ‖	268.0	189.5	78.6	112.2	33.6	18.9

* Inventory, June 30, *plus* purchases *minus* inventory, June 30, following.

† Compiled from *GX*, No. 427. Converted to farm sales weight equivalent by reference to J. V. Morrow and Dudley Smith, *Tobacco Shrinkages and Losses in Weight in Handling and Storage*, U.S. Department of Agriculture, Circular No. 435 (July, 1937), p. 8.

‡ Three times disappearance preceding year *minus* inventory, June 30.

§ *DX*, No. 1242.

‖ Not available.

than on the basis of the twelve months' average, the quota would be very much lower, and the deficiency in purchases could easily disappear.

Not all deviations from the replacement quota are explained by the peculiarities of the quota itself. The rise in flue-cured purchases in 1939 coincident with a sharp price fall was an obvious attempt to secure a bargain under conditions which were not likely to be repeated. The in-

crease in purchases in 1933 reflected the marketing agreement of that year, by which, under pressure from the Department of Agriculture, the major companies agreed to buy extra supplies in order to bolster farm prices. There may have been other occasions on which prices have affected the extent to which purchases exceed or fall short of the purchase quota. There are few signs of any reliable relationships for flue-cured purchases, but Burley deviations exhibit a fairly close inverse correlation with price. It should be noted, however, that in 1937 Burley purchases continued to fall relative to the quota despite a large price drop. Since Burley deviations are usually associated with a turning point in the quota, and since this itself is a partial explanation of the deviations, it is uncertain how much trust we can put in the apparent association with price. Certainly the data presented in Figure XXX are consistent with Reynolds' account of its buying practices.

Adequate inventory figures are not available for the other major cigarette companies, so that a similar direct test of their buying performance is not possible. However, suggestive indications are given by Figure XXXI, which presents the relationship of price to crop sizes, to purchases by the Big Three, and to the percentage of the crop purchased by the Big Three.

There is a sharp positive correlation between flue-cured prices and the percentage bought by the Big Three from 1927 to 1930 and from 1934 to 1938. These were the same years in which Reynolds' purchases showed the closest association with the quota. All these relationships suggest an influence of Big Three policies upon the price, rather than vice versa. In 1931 both the absolute purchases and the percentage share of the Big Three rose, while prices fell sharply. This may indicate some elasticity of price response, but the rise in absolute purchases may be partly explained by the same optimism which led the Big Three to raise cigarette prices in this year, and the rise in their percentage share is adequately explained by a sharp contraction in purchases on the part of Imperial and Export Leaf.[22] In 1932 the Big Three contracted purchases sharply despite low prices, and only a reduction in the crop by more than half enabled flue-cured prices to rise somewhat above the record low of the preceding year. The recovery of purchases in 1933 reflects the marketing agreements of that year and a probable realization that bargain tobacco prices could not last forever. Except in 1933 and again in 1939 it is difficult to find any secure indication that the Big Three have adjusted their tobacco purchases in response to price.

In Burley, too, the share of the crop going to the Big Three moves roughly in the same direction as price, although the pattern is less pronounced and less consistent than in flue-cured. The absolute volume of Big Three purchases, however, bears a consistent inverse relationship to

22. *GX*, Nos. 111, 130.

price. This may be taken to imply some elasticity of demand. However, the three major companies buy such a large percentage of the Burley crop that their absolute purchases correlate closely with crop size, and it is not at all clear whether the inverse price relationship reflects the influence of low prices in stimulating purchases or reflects merely the effect of a large crop in producing low prices. The companies must, of course, restrict their purchases to what is possible. Some tobacco is useless to them regardless of price, and it is impossible to buy more than the crop allows, no matter what price they are willing to pay. It is difficult to know whether Big Three purchases of Burley are regulated directly by the quantities of leaf available or indirectly by the prices which leaf quantities establish. Clearly, however, it must be difficult to purchase leaf on a purely replacement basis when the Big Three take such a large share of the crop unless the marginal buyers have a remarkably elastic demand. Although it is possible to interpret Burley data in a manner consistent with the companies' account of their buying tactics, yet the facts fit less closely, and the account seems less reasonable than is the case with flue-cured.

The Limits to Monopsonist Control

There are, however, other general considerations of company interest and of observed price characteristics which suggest that the companies' version of their buying behavior is a fair approximation to the truth. It seems probable that on the whole the companies act in the tobacco markets as they claim to do and that with some modifications they do not exert an effective monopsony power against the farmer.

The instability of tobacco prices contrasts strongly with the rigidity of cigarette prices. The manufacturers have complete control of their own products, themselves determine the prices to be charged, and find it worth while to change them only at infrequent intervals. They have no control of tobacco supply, and no one names the price except through the process of competitive bidding. If the manufacturers had complete control of the tobacco markets, one would expect them to establish a take-it-or-leave-it price at a level which would insure continued supplies. Even if fluctuating supplies made it necessary to change an administered price from time to time, it should have a considerable measure of stability. The volatility of tobacco prices suggests that they are not administered, that they emerge from conflicting forces, and that if monopsony power is exerted, it is through very devious channels.

The often deplored contrast between the power of the buyers and of the growers has relatively little to do with the operations of the tobacco markets. The power of the buyers, if used rationally and with a cautious eye to the future, is less absolute than it seems. There is no doubt that, before the recent introduction of direct price supports, the manufacturers

would have been able by collusion or by independent action to depress the price of tobacco to almost any level that pleased them. It is doubtful that the results would have been worth while. A temporary advantage in cost would have been obtained at the expense of future adequate supplies and of serious threats to market position.

The balance of forces in the tobacco markets is not determined merely by the "bargaining power" of the manufacturers versus that of the farmers. The manufacturers must deal with the farmers in such a way that necessary supplies are forthcoming and with other buyers in such a way that the total supply is properly distributed. The tendency of farmers to reduce production or of the Department of Agriculture to enforce reduction confronts the companies with a considerable elasticity of supply from year to year. The presence of other buyers has always implied some elasticity of supply to the major manufacturers even in a single year, and there is now complete downward elasticity at the Department of Agriculture support price. Prices must be set high enough to encourage adequate production and high enough both to discourage other buyers and to prevent too great an expansion of government loans.

According to the usual analysis of monopoly, the monopolist, with control in both the market for input and the market for output, must base his policy on conditions in both markets. It may prove profitable to restrict the purchase of input and the sale of output in order to depress the price of the former and to raise the price of the latter. Both decisions must be taken at the same time and are, in fact, one decision. The essential means of affecting the price in either market is by restricting purchases in one market and sales in the other, and the restricted levels of purchases and sales must be consistent with each other.

It is clear that in the cigarette industry no restriction in leaf supply is permissible which would endanger the output of cigarettes. As we have seen, the elasticity of demand for the finished product is very low, and if the manufacturers were concerned to maximize short-run profits, a rise in cigarette prices would accomplish that end. They do not do so for fear of attracting new competition or of incurring public indignation. Even in the years before crop controls, a restriction of input in order to depress tobacco prices would have increased profits relatively little because of the higher elasticity of tobacco supply and would have involved greater dangers from an aroused public opinion. Farmers depend upon tobacco prices for their livelihood and react violently to real or fancied oppression. To the extent that the companies have feared public opinion in the cigarette market they must have been aware of the farmers' reactions to an even greater extent.

It must be emphasized that, even before crop controls and support programs were introduced, continuing restraints on tobacco prices could secure advantages of the second order of magnitude only. The maximiza-

tion of profits from tobacco prices is implicit in the decision on pricing and output for cigarettes. If the additional profits to be derived from exploiting the low elasticity of cigarette demand are not worth the risk which they entail, the smaller profits and greater risks from depressed tobacco prices are not likely to be sought after. High cigarette prices and low leaf tobacco prices in 1932 nearly wrecked the industrial leadership of the Big Three and cost them more in ultimate competitive efforts than they gained from temporary profit margins. The companies are not likely to try that policy again. Large profits can be safely earned only if the volume of sales is stretched to the utmost so that profits per unit will not offend the public or attract competition. In these circumstances no restriction of tobacco purchases which impairs quality or lessens output can be tolerated, and the principal tool of monopsony power has long been unusable.

The same considerations of elasticity of supply which have made an artificial depression of tobacco prices unwise have also made occasional high prices acceptable. If short crops or growing demand press upward upon prices, the high prices call forth the greater output and lower prices in succeeding years. In the years before crop controls, tobacco was a sufficiently attractive crop to farmers so that rapid readjustments occurred in response to rising prices, and the general level of prices stayed distressingly low. It was not necessary to exploit the farmer; he was self-exploiting. Government crop control has preserved the same responsiveness of production to price but at a higher level of prices, and loan programs have established short-run price floors. It is now not possible to exploit the tobacco farmer, where before it was merely unnecessary.

All these considerations lead us to believe that the manufacturers have not exerted and cannot exert a sustained monopsony pressure through the auction markets. Their size and number have long made it possible to tamper with prices, but price supports reduce the power, while long-run interests make it unnecessary and unwise. An honest competitive operation of auction sales serves the interest of the manufacturers best by securing supplies, by adjusting the level of future tobacco production, and by requiring all competitors in the market for output to stand on the same basis of leaf tobacco costs.

This does not mean, however, that the power of the buyers is wholly unexercised. Even though they must adapt themselves to market necessities, there are several ways in which they can manipulate the situation to their own advantage. The old Trust strengthened its position by bidding up the price of tobacco on local markets from which small manufacturers secured their supplies. These tactics disappeared after dissolution, but the special leaf qualities of the economy brands made possible a revival of similar methods. It is alleged that the Big Three bid up the prices of cheap tobacco grades relative to the more expensive during the 1930's, thus making more difficult the survival of the economy brands. It is claimed

that these purchases were not for the major manufacturers' own use but represented outright pre-emptive buying. The evidence of this behavior is by no means conclusive, but the possibilities are obvious, and it would not be surprising if the competitive opportunities were exploited.

The buyers have also found it worth while to impose some controls upon tobacco prices in general. Occasionally, great fluctuations in prices occur, and it is to the interest of the buyers to moderate the rises. Automatic replacement buying can operate only so long as there is some element of elasticity in the total market demand, and this usually means some other buying interest than the major manufacturers. It may frequently happen, especially on specific grades, in short crops that the requirements of the major companies are larger than the total available supplies. In this event no buying by rigid percentages could yield any stable price short of infinity, and some modification of policy is required. After the marginal buyers are discouraged, further rises in price do not bring the major companies any more tobacco but simply reflect a struggle over its partition. In such cases it is obvious that policy would be moderated and that either by collusion or by taking account of each others' actions some other form of allocation would be adopted. Up to a point, a rise may encourage increased output and freer supplies in following years, but this effect will be as large for a moderate price rise as for a very large one, and so it is to the buyers' interest to set a ceiling on prices.

There is ample evidence of occasional tactics by the major buyers to affect tobacco prices. In 1919 exceptionally high Burley prices broke late in the season, in part as a result of unfavorable exchange conditions for foreign buyers. Reynolds, Liggett, and American worked to reduce prices by holding off the market and by buying secretly through agents.[23] Neither of these methods has been employed in recent years. There was evidence at Lexington that ceilings on the top grades were maintained in certain years. Several grades of tobacco would sell for the same maximum price. Lots of tobacco, started by the auctioneer at the tacit ceiling, would be sold on a single bid. Lots of tobacco which buyers particularly desired would be claimed by bidding the ceiling price before the auctioneer had called the sale.[24]

These arrangements may have resulted from explicit collusion or from cautious competitive strategy. While all have an interest in seeing that competitors bid high, each is interested in securing tobacco as cheaply as possible, and when prices are high enough to encourage future supplies and to discourage marginal buyers, further price rises are undesirable. There is accordingly a tendency for prices to stay at their initial levels

23. U.S. Federal Trade Commission, *Report on the Tobacco Industry* (1920), pp. 58–88.

24. *TP,* pp. 2765–2769, 2794–2795, J. A. Breslin; pp. 2804, 2806, 2810, John Scott; pp. 2870–2871, 2899–2903, C. W. Donaldson; pp. 2922–2924, H. S. Robertson; pp. 2994, 2995, R. G. Daniell; pp. 3068–3069, F. L. Denton; pp. 3346–3347, J. R. Duncan.

if they prove compatible with the requirements of the various firms. American has become a sort of price leader in the tobacco markets. American alone of the major companies gives its buyers firm price instructions before the sale. The other buyers working on straight percentage instructions apparently adjust themselves to the American bids so long as this secures the required tobacco. In 1938 and 1939 American buying instructions given before the season started were generally within a fraction of a cent per pound of the price actually paid for each grade.[25] This is evidence either of extraordinarily good forecasting or exceptionally reliable price leadership. For the 1936 Burley crop, however, American's price instructions had to be revised within the first few minutes of sale, and many grades sold for a season average more than twice the preseason instructions.[26]

This upset of American buying instructions in 1936 has never been fully explained. The crop size was about the same as in the preceding year, and crop estimates throughout the season by the Department of Agriculture somewhat understated the actual supply.[27] This may have caused the companies to establish their buying percentages higher than was necessary and thus may have increased the upward price pressure. Out of this crop, which was unchanged as compared with the year before, both Reynolds and Liggett sharply increased their purchases, while the purchases of American and of all the marginal buyers declined.[28] It may be that the extraordinary rise in 1936 prices was necessary in order to discourage the marginal buyers and to make supplies available for Liggett and Reynolds. It seems equally likely, however, that the major companies had adopted inconsistent plans and that the refusal to adjust these plans precipitated a regular price war on the buying market.

It is clear that the major producers exercise a strong control over the operating conditions of the auction market and over the particular market results which occur. They have the power, now much diminished, to control prices in any one year, and they use that power to achieve stable relations among their own group. The power may be exercised through explicit collusion or through mere cautious policy. It does not make much difference. The power of the buyers stems from their size and number and is present so long as size and number persist, no matter what changes in the expression of power may occur. In so far as this power has disadvantageous effects on the farmer, it seems to be limited to a restriction on short-run price rises. The power to depress prices in the short run is now severely limited, and the power to depress them in the long run has never been as absolute as it seemed.

25. *GX*, Nos. 886–891F.
26. *TP*, p. 8892, J. E. Lipscomb, Jr.; *DX*, Nos. 1078–1079.
27. Unpublished monthly estimates supplied by Bureau of Agricultural Economics.
28. *GX*, Nos. 31, 39, 41, 130, 165.

Chapter XV

PROFITS

THE PROOF OF THE PUDDING

IN PRECEDING CHAPTERS we have seen that the major companies have little incentive to use their power to oppress distributors or farmers, but that in the market for cigarettes they enjoy collective monopolist dominance subject only to the minor and remote threat of potential competition. The small number of the major firms enables them to act collectively whether or not collusion exists, and the inelasticity of demand for standard brand cigarettes provides obvious occasion for the use of their market control.

There can be no doubt that the cigarette manufacturers have in fact secured monopoly profits. The figures mentioned earlier, 17.5% on tangible net worth for the three leading companies since dissolution and 12.1% on net sales for the American Tobacco Company over the same period, are far above competitive levels and bespeak a high degree of market control vigorously exercised. In Figures XXXII and XXXIII cigarette net profits, as a percentage of equity and of sales, are compared with comparable ratios for manufacturing corporations in general. In both cases the sustained elevation of profits provides clear evidence of monopoly power.

In Figure XXXIII there is some question as to which cigarette profit series is the better measure. No matter how figured, the rate of return on net sales is above usual manufacturing levels, but if excise taxes are omitted from the profit base, the profit ratio appears spectacularly higher. A large proportion of the purchase price for cigarettes is accounted for by excise taxes, and the profit accruing to the manufacturer is a much larger proportion of his net receipts after tax than it is of the price which the wholesaler pays. Tobacco companies maintain that excise taxes should be included in the profit base in figuring the rate of return. They argue that taxes are on precisely the same footing as other expenses and that to omit them is to present a distorted picture.

It seems, however, that distortion is greater when taxes are included than when they are excluded. Revenue stamps are purchased every day or two and are affixed to packages in the final stages of manufacture.[1] Normally, only a week or ten days' supply of finished goods is kept on hand at the factory, while other stocks are in transit or in manufacturers'

1. *TP*, pp. 3481–3483, J. A. Crowe.

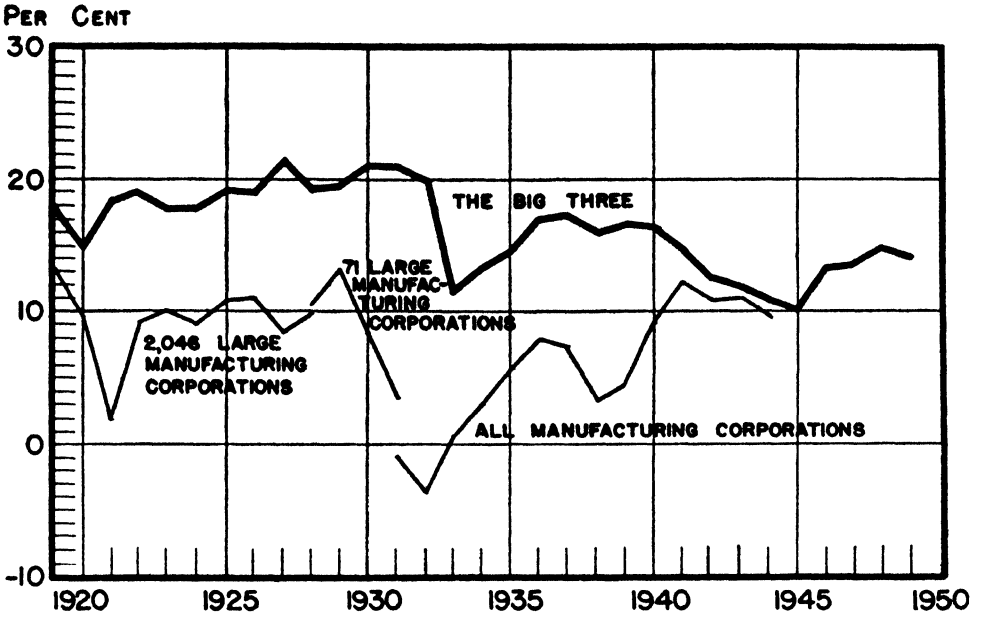


FIGURE XXXII. Ratio of net profits to equity, the Big Three and other manufacturing corporations, 1919–49. Does not include Reynolds, 1917–19.

SOURCES: Big Three: compiled from company reports. Other corporations: R. C. Epstein, *Industrial Profits in the United States* (New York, National Bureau of Economic Research, 1934), pp. 56, 615; U.S. Bureau of Internal Revenue, *Statistics of Income . . .*, Pt. II, 1931–44.

warehouses throughout the country.[2] Delivery from manufacturer to jobber may take a week, while the jobber has ten days in which to pay for his goods in order to claim the 2% cash discount. The manufacturer thus has funds invested at all times in about three or four weeks' worth of revenue stamps. Now, if we treat stamp expense as fully comparable to other expenses, it appears that the extremely low-cost operations of buying, fixing, and shipping stamps, together with the investment of funds for a few weeks, earn 10% or 12% on the investment made. This must be regarded as very good business indeed. To apportion profit in the same way on withdrawals from a four-week stamp investment, as on withdrawals from a three-year tobacco inventory, is a peculiar procedure, yet that is what the companies' position would require us to do.

Internal revenue regulations, of course, impose some drain on the cigarette companies' resources, and the practice of carrying very long stocks of leaf tobacco means that assets are exceptionally high relative to sales. For both these reasons we would expect that under any competitive conditions the rate of return on net sales less tax would be somewhat higher for the cigarette companies than for other lines of business. However, the extraordinary rate of return on equity indicates that the special ex-

2. *Ibid.*

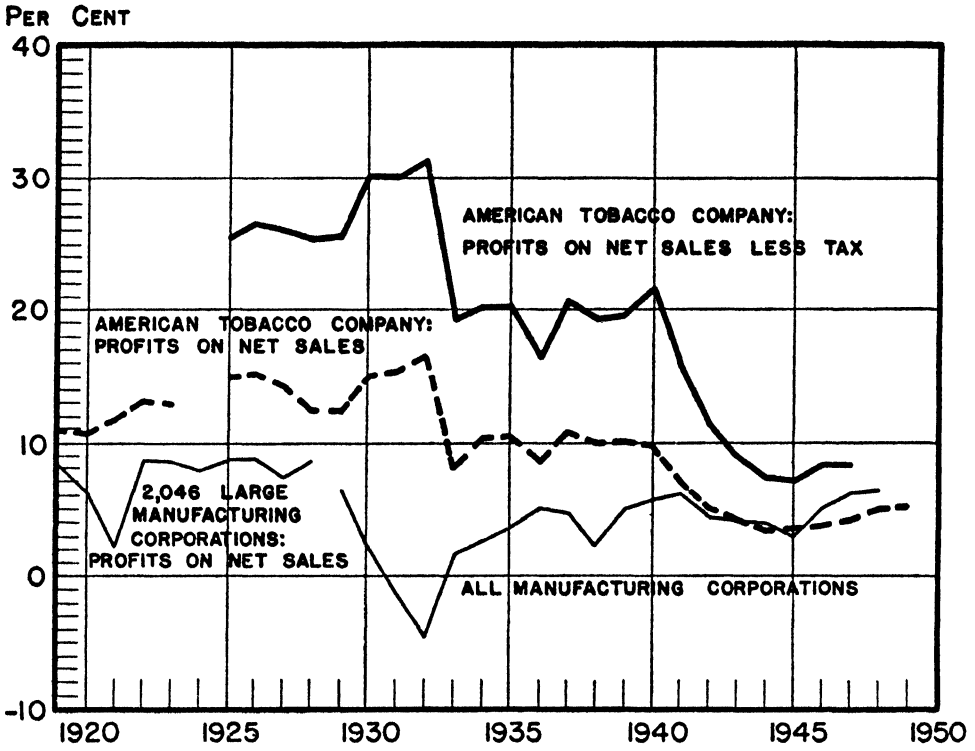


FIGURE XXXIII. Ratio of net profits to net sales, the American Tobacco Company and other manufacturing corporations, 1919–49.

SOURCES: American: company reports, *GX*, No. 638, Moody's. Other corporations: R. C. Epstein, *Industrial Profits in the United States*, pp. 620, 624, 634; U.S. Department of Commerce, *National Income Supplement to the Survey of Current Business* (1947), pp. 31, 41; U.S. Department of Commerce, *Survey of Current Business*.

penses of the cigarette industry are not sufficient to account for the higher earnings on sales. No matter which measure is used, cigarette profits are well above ordinary competitive levels.

To some extent, of course, large profits represent either the ability to please the public or the ability to reduce costs and so represent the reward for valuable service. In theoretical conditions of perfect competition, this would hold without question, for without ability to raise the price of the product or to depress the price of supplies, the perfectly competitive firm finds its only possibility of profit in greater efficiency. Large profits in such an industry represent payments to superior management which is in scarce supply. In conditions other than those of perfect competition, many other factors besides efficiency enter into the level of profits. Ability to please customers is one, although this may take the form, as J. M. Clark pointed out long ago, either of giving the public what they want or of making the public think they are getting what one has made them think

they want.[3] Beyond this, control of a market allows large profits to be earned by the proper manipulation whether of supplies or of products, and this often involves an extra payment for doing precisely those things which harm the general welfare. The cigarette industry has, it is true, catered to public taste and has given it a product of consistently high quality, but the very high level of profits earned over so long a period indicates that the entrance of new firms has been made very difficult and suggests that within the market so sheltered from the winds of competition prices have been adjusted to the manufacturers' benefit and the consumers' consequent loss.

THE TRUST AND ITS SUCCESSORS

The ratios of net profits to equity or to net sales allow useful and dramatic comparisons to be drawn between the cigarette industry and other lines of manufacture. In a number of ways, however, these ratios provide only an inadequate measure of cigarette profits or of the exercise of market power, and they are particularly unsatisfactory if we wish to examine how profits have changed over the years and to compare the experience of the Trust with that of the successor companies. The cigarette industry has undergone a number of fundamental changes in the course of its history which have directly affected the net return on equity or on sales and which consequently make the latter poor measures of changes in market control. Changes in the proportion of assets employed in the direct business cause profits to change without reference to events in the cigarette market, while changes in the proportion of total assets financed by debt and by equity capital occasion changes in the return on equity quite independent of cigarette earnings. In recent years high corporation taxes have diminished the profits which cigarette manufacturers have been able to retain, while they have not necessarily affected the companies' control of the market. Several profit ratios partly corrected for these distortions are presented in Figure XXXIV, while Table 59 gives average profit figures for significant periods of time, both for the successor companies and for the old Trust.

At first sight Figure XXXIV appears to contradict itself. The one earnings series available for almost the entire period since 1890, the ratio of net earnings before interest but after taxes to total net tangible assets, exhibits a pronounced downward trend throughout the history of the industry. Yet operating profits as a percentage of net sales less tax were higher for the American Tobacco Company in the 1930's than for the Trust in its most prosperous years. It thus appears that the industry has

3. J. M. Clark, *Social Control of Business* (1st ed. Chicago, University of Chicago Press, 1926), p. 149; (2d. ed. New York, McGraw-Hill, 1939), p. 127.

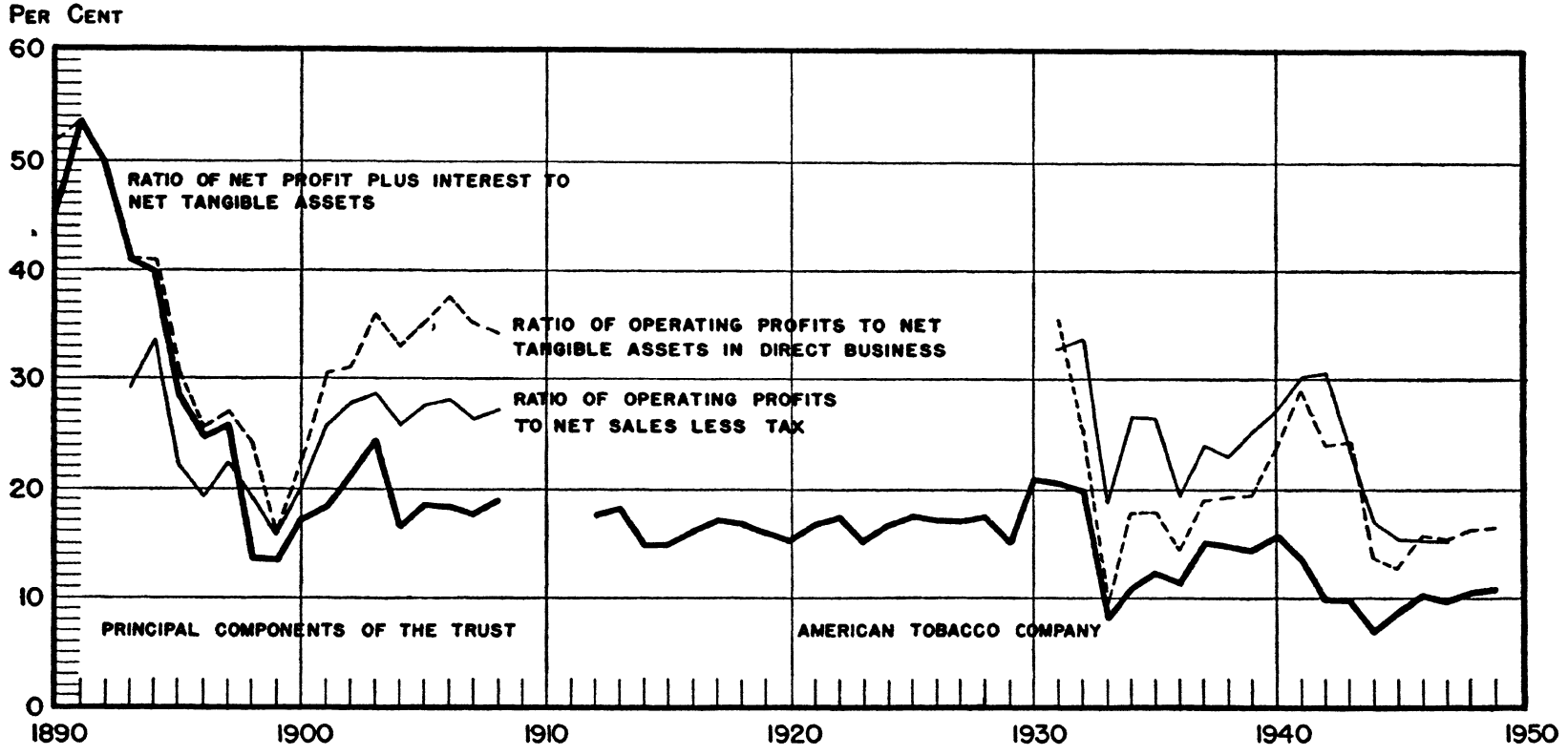


FIGURE XXXIV. Selected profit ratios for the Trust, 1890–1908, and for the American Tobacco Company, 1912–49. Net tangible assets equal book assets *minus* good will, treasury stock carried as an asset, and current liabilities; after 1931, *minus* subsidiary intangibles and *plus* the excess over book value of equity in nonconsolidated subsidiaries. Net tangible assets in the direct business equal book assets *minus* good will, current liabilities, subsidiary book value, and other investments. Operating profits are after depreciation but before interest payments and income taxes.

SOURCES: *BC*, Pt. II, pp. 73, 78, 80–81, 151, 232, 242; company reports.

TABLE 59

Selected Profit Ratios of the Trust and of the Successor Companies, Selected Years *

	TRUST	AMERICAN	LIGGETT	REYNOLDS
Net earnings (before interest, after taxes) as percentages of net tangible assets				
1890–1908	19.7			
1912–41		15.1	14.7	20.0
1942–47		8.9	8.9	12.0
Operating profits as percentages of net tangible assets in direct business				
1890–1908	32.7			
1931–41		20.8	17.3 †	23.8 ‡
1942–47		17.0	15.8	20.1
Operating profits as percentages of net sales less tax				
1890–1908	25.8			
1931–41		27.0	21.2 †	25.0 ‡
1942–47		18.5	17.9	18.4

* Trust ratios based on *BC*, Pt. II, pp. 73, 80–81, 151, 232, 242; Pt. III, pp. 51, 87, 129, 156, 182. Successor company ratios based on company reports.
† 1933–41.
‡ 1932–41.

become both more and less profitable as the years have passed. The changes in these series and in the relationships between them reflect the major important developments in the history of the industry with respect to technology, financial organization, consumption habits, competitive relationships, and public intervention.

In the early 1890's the invention of improved redrying methods made it possible for the Trust to carry larger inventories of leaf tobacco, and the consequent rise in inventories relative to sales caused a sharp fall in the rate of return on assets compared with the rate of return on sales. After 1894 the successive tobacco wars reduced all profit series, and when the wars were over, operating profits on sales and on tangible assets in the direct business recovered. At the same time, however, there was a great increase in the less profitable investment business of the Trust, and by 1908 only 36.9% of the Trust's tangible assets were employed in the direct domestic tobacco business. For this reason total net earnings as a percentage of total net tangible assets remained at a reduced level.

The dissolution decree had two principal effects upon the profitability of the American Tobacco Company. It was divested of much of its investment business, and by 1915, 70.2% of its net tangible assets were directly employed. On the other hand, competition was vigorous in the first post-dissolution years, and after Camels were successfully introduced the

American Tobacco Company was faced with a long and bitter fight for market leadership. The increased competition clearly reduced profits on the direct business, while at the same time the loss of the less profitable investment business left earnings on total assets almost unchanged.

As the industry achieved maturity and competitive relationships became more stable, the restraints on profits weakened, and in 1931 and 1932 the rise in Lucky Strike to industry leadership, together with the price rise of 1931, carried American's operating profits, whether measured on sales or assets, to levels comparable to those of the Trust's best years. The net return on total assets remained low, partly because of increased corporation taxes and partly because the reduced business in those years caused an increase in idle funds and in the investment business where returns at this time were extraordinarily depressed.

The cigarette price war of 1933 sharply reduced all measures of earnings, and the later recovery of operating profits on sales and on direct assets bears witness to the recovered position and the expanding business of the major companies in the late 1930's. Earnings on total assets rose much more slowly due to higher corporate taxes.

During the recent war high corporation and excess profit taxes depressed net earnings, while operating profits as a percentage of direct tangible assets or as a percentage of net sales less tax were reduced by mounting leaf inventories, by official price controls, and, more recently, by an exceedingly cautious pricing policy which has probably resulted from the antitrust conviction of 1941. At the present time cigarette profits are no higher than those of manufacturing industry in general.

A further characteristic of Figure XXXIV may be remarked. Under the Trust, operating profits were a higher percentage of direct tangible assets than they were of net sales less tax. The reverse was true for the American Tobacco Company in the 1930's. This reflects a relative growth of cigarettes compared with other tobacco products and the heavier inventories of leaf tobacco which their production required. Similar relationships may be noticed for the other successor companies in Table 59. In general, operating profits were as high a percentage of net sales less tax for the successor companies as they were for the Trust, but returns on direct tangible assets were lower. When both these profit measures are taken into account, it appears that the successor companies have been somewhat less profitable than the Trust. The expenses of competitive selling pressures, the somewhat greater danger of new competition in the absence of the Trust's cutthroat competitive methods, and, more recently, a certain timidity in regard to public opinion have restricted the degree of monopoly control. Even at these reduced levels, however, profits have remained extraordinarily high.

Owing to the longer time during which they have been in existence and to the much larger scale of the industry in recent years, the total

profits secured by the successor companies are much greater than those for the Trust. In the nineteen years from 1890 to 1908 the Trust earned $239.5 million on its direct domestic business including cigars and snuff.[4] In the thirty years from 1912 to 1941 the Big Three earned net profits after interest and taxes of $1,067.2 million.[5] The greater part of these profits represented monopoly control and monopoly pricing.

Large as these sums are, it is useful to compare them with the sums which the government has secured from tobacco taxes in the same years. From 1890 to 1908 excise collections were $1,796.2 million, while in the first thirty years after dissolution collections were $11,191.6 million.[6] Thus taxes on tobacco products were more than three times the profits of the Trust and almost seven times the profits of the three dominant successor companies. Of course, taxes are presumably collected for the public benefit, and no such presumption arises in the case of private monopoly. Moreover, no burden on one part of the economic system justifies the imposition of an unreasonable burden somewhere else. Nevertheless, the comparison of taxes and profits provides a useful perspective on what monopoly might accomplish and on what it has actually achieved.

4. *BC*, Pt. II, p. 238.
5. Compiled from company reports.
6. *CIR*.

PART V

CONCLUSIONS

Chapter XVI

THE GENERAL PATTERN OF EQUILIBRIUM

IN PARTS III AND IV we have examined in turn the factors which influence the market structure of the cigarette industry and those which influence its behavior. We have organized our analysis in this way because decisions on public policy, in which our ultimate interest lies, depend upon specific issues concerning structure and behavior. Moreover, some such arbitrary classification is required for expositional convenience in handling so complex a mass of phenomena.

Yet, now that we come to summarize our analytical findings and to construct a general theoretical account of the industry's nature and operations, we find that we cannot maintain a sharp distinction between structure and behavior or concern ourselves only with the influence of the former on the latter. The phenomena do not all fit neatly into the categories we have set up, and our Procrustean lopping in the interests of expositional convenience interferes with a balanced view of the industry taken as a whole. We will find it more useful to abandon separate consideration of structure and behavior, and instead to organize our argument in terms of the most important characteristics of the industry's environment and of the ways in which the industry has adapted to that environment.

ENVIRONMENT

As we have seen, the nature of cigarette demand has been responsible for many of the industry's outstanding peculiarities. Except for a brief period in the 1890's, the consumption of cigarettes has increased steadily since the Civil War and has displaced other tobacco products in the public favor. This continuous growth of demand has been borne along on fundamental sociological currents and has been affected little, if at all, by anything which the industry itself has done. In the short run, cigarette demand exhibits some sensitivity to changes in the national income but is almost wholly inelastic in its response either to price or to advertising.

The demand for individual brands is highly sensitive both to price and to advertising. Within the same price class the physical characteristics of competing brands are nearly identical, and consequently all are close substitutes. Yet substitution is limited by slight but definite consumer loyalties which rest in part on irrational grounds. The slightness of these preferences results in high price elasticity, while the irrational element

makes demand highly sensitive to advertising. Price cutting can be an efficient market weapon but invites retaliation and is most useful for a firm which is strong enough to bear losses and to force competitors to yield. Advertising is most effective when massive expenditures are employed to maintain and expand an already large business. Thus advertising is less fruitful for a new than for an old brand and for a small than for a large company, and this disparity has grown with the increasing use of national advertising media, which require large expenditures for even minimum effectiveness. Whether market pressures are applied through price or through advertising, the conditions of cigarette demand award considerable advantage to the concentrated resources of the large firm. These demand characteristics have been stable throughout the history of the industry, but on occasion major shifts in public tastes for particular kinds of cigarette, occurring without assignable reason, have exerted an important dynamic influence as well.

The unique characteristics of leaf tobacco supply constitute still another set of important environmental factors. Leaf is produced by a highly complex cultural routine, in regions where the substitution of alternative crops is limited either by soil poverty or by the requirements of the routine itself. The principal cost is unpaid family labor, although heavy fertilizer expenses are required in most regions. These cultural conditions result in the prevalence of very small farms and in a perfectly competitive supply which exhibits moderate elasticity from year to year. Because freshly cured leaf is perishable, the short-run supply by the farmer is completely inelastic. The elasticity of leaf supply to cigarette manufacturers has always been increased by the existence of alternative demands for other tobacco products or for export. In recent years crop controls have raised the long-run supply curve, while support loans have introduced complete downward elasticity at the support price into the short-run supply.

Freshly cured leaf not only is perishable but is of heterogeneous quality which cannot easily be reduced to standard grades. The consequent needs for expert evaluation and for packing, transport, and processing have been responsible for the rise of the auction system. The auction method provides effective compensation for the "imperfection" of the leaf market. It establishes efficient contact between the farmer and the manufacturer and also simplifies competitive relationships among manufacturers.

The technology of cigarette manufacture is almost neutral in its effects upon industrial organization. Costs of production are approximately the same at all levels of output, and the large firm is neither more nor less efficient than the small. The change from hand to machine methods of production removed earlier potential limits to size and for a time encouraged concentration by the competitive instability which it occasioned. This latter influence, however, was of only transitory importance. The techni-

cal necessity for aging the leaf, together with marked instability in annual leaf supply and rapidly growing product demand, has led the companies to carry heavy leaf inventories. These inventories are reflected in the high ratio of assets to sales and in the large proportion of borrowed money in the industry's financial structure.

All these circumstances of technology, of product demand, and of factor supply have exerted their influence, subject to the continual fear and fact of government intervention. Special excise taxes have grown with the years, and cigarette companies have been subject to the same levies on corporate profits as has industry in general. Internal revenue limits on package sizes have influenced market behavior. Crop control programs have changed the conditions of leaf tobacco supply. Wartime price controls set severe temporary limits to policy, and even anticigarette legislation once had temporary importance. Government has exerted its most important influence through the Sherman Act, which once recast the structure of the industry and which has seriously modified the purpose and methods of market policy at other times.

The outstanding personalities of the industry constitute another environmental influence. Of course, these men grew up within the industry in response to its peculiar requirements and the types of ability which it favored. Yet the appearance of such unique salesmen as James B. Duke, R. J. Reynolds, and George Washington Hill and the conspicuous lack of such abilities in some of the other companies indicate a high degree of imperfection in the supply of executive talent and suggest that this fact did much to determine the direction of industry development.

Finally, among important environmental influences must be listed the past behavior of the industry itself. At any given moment the adaptations which the industry can make to its environment are limited and directed by the adaptations which it has already made in the past. The accumulation of new limits and opportunities as the industry itself has changed has been an important determinant of the pattern of further changes.

ADAPTATION

Within this complex environment of material supply, product demand, and technical peculiarities and public policy, the structure and behavior of the cigarette industry have developed. Business strategy has been directed to the dual purposes of improved market position and higher profits. These are, of course, coordinate, not independent, aims. Profits depend in large part upon sales volume, and especially in this industry the firm's chief concern must be to maintain and expand market outlets. This is not an industry in which policy can be directed to maximizing profits

on the assumption that market position is fixed and given, for relative competitive positions, and indeed the general market structure, have themselves been the outcome of market policies.

Competition

In seeking wider markets cigarette manufacturers have employed a number of efficient competitive tools. Selling pressures can be applied by price concessions or by advertising. The introduction of machine methods, or more recently of new brands, has sometimes given a significant competitive advantage to the innovator. The integration of functions backward to the leaf markets and forward to the ultimate consumers has enabled some savings in cost and some increases in selling pressures. When the Trust replaced leaf dealers by its own buying force and when it assumed the principal selling function previously entrusted to distributors, it gained both in efficiency and in competitive market position. The pre-emptive buying of leaf and the ability to exact special concessions from distributors put the competitors of the Trust at a marked disadvantage. Control of patents, too, had temporary effects upon market position. Trade espionage, disparagement, and other forms of unfair competition found occasional use. Purchase of competing firms provided direct and immediate improvement in market position. Financial manipulations have sometimes served to direct the industry's profits into a restricted number of private pockets.

The use of these methods and the success which has attended them have determined the accomplishments of cigarette firms both as to market position and as to profits. Skillful and vigorous employment of market pressures has expanded the sales of successful firms and so also has increased their profits. Yet competitive measures are costly and thus serve to decrease unit profits. Strong market pressures have both favorable and unfavorable effects, and the problem of the firm has been to make decisions on prices and on competitive costs which would provide an optimum combination of unit profits and of sales volume.

Throughout the history of the industry these various instruments of market policy have given significant advantage to the aggressive use of massed resources and, in the absence of technological limits to scale, have enforced a heavy concentration of output in a few firms. Duke's skill and energy enabled him to rise to industry leadership even though his resources were at first inferior to those of his competitors, and once his genius was allied with more ample funds, the general advantages of size enabled him to drive to full monopoly. In this early period all competitive methods were used in outright warfare with the object of capturing complete industry control.

firms well able to stand upon their own feet, and the provisions against recombination made the old aim of complete monopoly impossible of attainment. Meanwhile, the gradual development of new standards of business conduct and the passing of laws against unfair trade practices destroyed the usefulness of some of the older competitive methods. Even under the Trust, concern for the possible implications of antitrust laws modified policy toward distributors and encouraged financial reorganization, and now pre-emptive buying, discriminatory prices, and other outright raiding tactics largely disappeared. Meanwhile, the maturity of the industry and the passing of ownership into many hands made stable income more desirable than large speculative gains.

As early commercial warfare gave place to more limited competition within the new framework of possibilities, price competition was abandoned. Price competition had previously been employed only as a tool of monopolistic exclusion, and for anything less than this it offered only the probability of mutually offsetting reductions with a consequent lowering of profit margins all around. Only the economy brands have attempted to compete through price, and in order to obtain a significant advantage, they were forced to use cheap leaf and could appeal only to a restricted market. Even so, the economy brands called forth the strongest competitive reaction from the major firms which had been seen since the dissolution. Only in 1927 and 1933 have the major companies used price as an active competitive weapon, and these were both examples of monopolistic raids, reminiscent of the old Trust. It is significant, too, that in 1933 price warfare was accompanied by a revival of the old Trust practice of exacting special treatment from distributors, and also, apparently, by a return to pre-emptive leaf purchase.

In ordinary competition, price tactics were entirely replaced by advertising. The great rise in expenditures in part reflected the increased functions which advertising had to perform. It also reflected the development of national media and the rise to public favor of a few leading brands, which together increased the productivity of vast expenditures. Increased advertising was itself largely responsible for the dominance of a few brands and thus was partly responsible for the increase in its own efficiency. Increased advertising served to simplify the process of distribution and to bring almost all selling activities within the control of the manufacturers rather than of distributors.

Although competitive methods changed, the importance of large financial resources remained, and the husbanding of funds to be used in advertising became a primary object of market policy. For firms of equal size, total advertising funds depended primarily upon the margin between unit leaf costs and the net price to jobbers.

Other costs and stockholders' dividend requirements determined the proportion of this margin actually available for advertising, but these

items would be roughly similar for the major firms. In stable competitive conditions it has been usual for the leading firms to maintain identical net prices and to strive through the auction markets for equal leaf costs. This would leave all competitors with approximately the same advertising funds per unit of sales.

There have, however, been significant departures from this pattern in cases where competitors were not of equal size. Thus, when Lucky Strike was still much smaller than Camel, it was sold at a higher list price and with heavier unit advertising outlays. Thus the dealer's irritation was balanced against the increased pressure which could be brought to bear upon the consumer. Philip Morris in its first years was sold at a higher list price, a still higher retail price, and with heavy unit advertising. The new brand thus appealed to dealers, while consumers were subject to both higher prices and to heavier advertising appeals. Old Gold has marked still another variation in the pattern by extremely heavy advertising outlays, financed by capital investment rather than out of current revenues. All these cases represent different balancing of various kinds of market pressure, but without resorting to price competition.

The attempt to keep identical prices—or at least to avoid all price disadvantage which is not deliberately assumed for the advertising advantage it confers—has depended upon different arrangements in the market for cigarettes and in the market for leaf tobacco. Cigarette prices are set by administrative decision in a market which is almost perfect in the sense that the leading products are nearly homogeneous and that the going price is fully known. In these circumstances it is easy to set the various prices equal, and the dubious gains from frequent alteration leave cigarette prices identical and rigid.

Leaf, on the other hand, is bought in a highly imperfect market. Because of heterogeneous quality and many small lots there is no thoroughly identifiable going price. The effects of imperfection are largely removed by the tactics of even market coverage and by the practice of forcing competitors at all times to pay equivalent prices for equivalent grades. Essential identity of prices is thus maintained even though there is considerable fluctuation and although the unambiguous administration of prices characteristic of the cigarette market is not attained. Similarly, the manufacturer must secure the services of distributors in a highly imperfect market. Distributors' markups may vary considerably from one outlet to another and, in the absence of countermeasures, would probably vary between brands. Continued vigilance on the part of the manufacturers' sales forces offsets this particular type of imperfection in much the same way that auction tactics counteract the imperfections of the leaf market. Occasionally, special favors may be secured by special deals, but usually the manufacturers' activities cancel out and leave the major

brands on a basis of substantial identity in the conditions of product distribution.

The competitive struggle among the major firms thus depends principally upon advertising policies and occasionally upon the subordinate but allied problem of slightly wider or narrower distributive markups. With this minor exception, price policies in retail, wholesale, and leaf tobacco markets strive merely for equivalent results, and the strongest efforts are employed to avoid a competitive disadvantage rather than to gain a positive advantage. Except for purposes of commercial warfare, price has not been regarded as a competitive weapon.

Cooperation

The major companies' principal interest in price is the cooperative one of seeing it set at a suitably remunerative level. Leaf prices depend upon crop quality and size and on the behavior of other buyers. Cigarette prices are set by price leadership and by the ability of large companies to work to a common end with or without explicit collusion.

The manufacturers' active concern with the absolute level of prices is confined principally to the wholesale prices of cigarettes themselves. Although the major companies possess considerable tactical power over farmers and distributors, and although they have occasionally worked to reduce the rewards accruing to each, they have not generally found it worth while to tamper with the absolute level of leaf tobacco prices or of distributors' margins. Crop controls have recently set new limits to the manufacturers' power, but even in earlier years the long-run elasticity of supply of leaf tobacco and of distributors' services limited the usefulness of monopsonist oppression. The low elasticity of cigarette demand made it preferable to accept leaf prices and distributive margins at whatever level competition produced and to maximize profits by setting the wholesale price sufficiently above leaf costs.

The margin between leaf costs and cigarette prices has generally been set with an eye to safety, as indicated by market experience. Too high a net profit margin attracts competition or public interference. Too large advertising funds may attract competitors who can secure a market by doing less advertising and by turning the difference into price concessions. The policy of the cigarette firms thus is directed to maintaining competitive price equality, to obtaining competitive advantage through advertising outlays, and to setting absolute prices in the joint interest as high as can be managed without inviting public intervention or the unwelcome reaction of new competitors.

In the early postdissolution years the initial instability of competitive relations and the energetic scramble of the successor companies to secure

a preferred position in a new and uncertain environment led to a sudden increase in advertising outlays and to a reduction in unit profits. As the industry achieved greater maturity and as the cooperative possibilities of the new order were realized and exploited, the excessive competitive activity declined. Continued dominance over the industry made potential new competition seem less threatening, while long experience in sparring with each other made possible a neater adjustment of mutual desires. Thus during the 1920's profit margins rose until the great experiment of the 1931 price rise. The result showed potential competition to be a real threat, and for several years margins were reduced in the interests of market position. There was considerable recovery by the end of the thirties, but price controls reduced profits during the war, and the shadow of monopoly convictions has since restrained profits even below the level of ordinary manufacturing industry.

The principal determinants of cigarette price policy are illustrated graphically in Figure XXXV. The curves presented are for the major brand producers taken together and are intended to illustrate the cooperative aspects of their policy from 1930 to 1935 rather than their competitive struggles against each other. Parts *A* through *D* exhibit four successive stages in the changing patterns of cost and price relationships, while Part *E*, comparing the first and last stages, indicates the net results of these developments.

In Part *A* the line DQD' is the long-run demand curve for standard brand cigarettes and MJM' is the corresponding marginal revenue curve. XQ is a portion of the short-run demand curve, which for purposes of simplicity is assumed to coincide with the long-run demand curve at prices below Q. CC' is the marginal cost curve. The interval l represents the maximum markup of price over cost which can exist without occasioning the entry of new firms in the long run and the consequent loss of market position. The very slight elasticity of the short-run demand curve XD' reflects the immediate variations in sales of the standard brands which would occur at various prices in view of existing alternative sources of supply. The very high elasticity of long-run demands at prices above Q reflects the ability of new competitors to make successful entry when the limiting markup l is exceeded.[1] Clearly, the equilibrium long-run price P_1 would be established at Q. A higher price P_2 would secure greater immediate profits but would be insupportable in the long run and would be established only by error or if the entrepreneurs decided that short-run profits were worth the loss of market position in the long run.

1. It should be noted that the "kink" in the long-run demand curve at point Q is not the same as that discussed above on page 280. There we were concerned with the market prospects of an oligopolist who knew or feared that his competitors would follow a price cut but would not follow a price rise. Here we are concerned with the situation of all existing standard brand manufacturers taken together who must fear the incursion of new competition if profit margins become too wide.

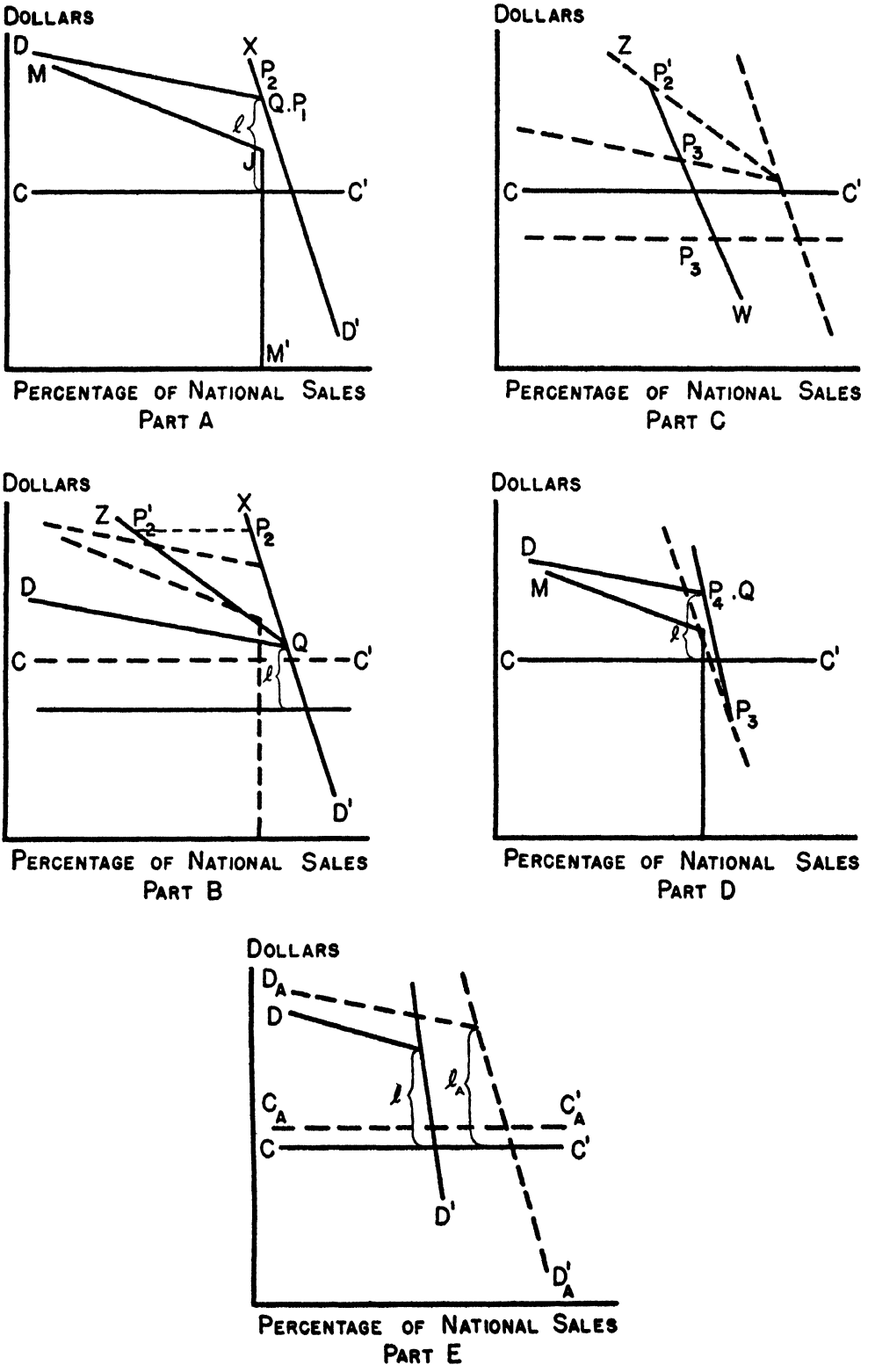


FIGURE XXXV. Aspects of cigarette price history, 1931–35.

If we suppose that Part *A* illustrates the condition of cigarette pricing in 1930 with prices at the long-run equilibrium P_1, then Part *B* indicates the changes in that situation which occurred after the 1931 price rise. New demand and cost conditions are indicated by solid lines, while dotted lines indicate the previous state of affairs. Apparently through overconfidence, the price P_2 was established above the former equilibrium position, while simultaneously reduced prices of leaf tobacco led to a fall in marginal costs. The impact of the Great Depression made consumers more careful of their spending habits and reduced the maximum equilibrium markup *l*. The "kink" in the demand curve at Q consequently occurred at a lower price, and for all these reasons the existing price of standard brand cigarettes was far higher than could be permanently supported. There was relatively little immediate decline in market position, but the intermediate-run demand curve ZQ, illustrating demand behavior after the lapse of a year, was much more elastic than the short-run demand, though less so than the true long-run demand curve. Accordingly, while price P_2 did not at first cause a loss in market dominance, the rapid rise of the economy brands diminished the market for the standard brands and changed their share of the national market to the position indicated by P_2'. Even with this fall in the share of the market, total profits for the standard brands were larger in the short run than they would have been had price been set at Q, and in fact were at near record levels. Yet clearly the immediate level of profits could not be long supported, and continued high prices threatened a further disastrous loss of market position. The economy brands were, of course, a different type of cigarette, which derived much of their appeal from depressed conditions. Yet no one could tell how long the depression might last, and there was always the danger that if the economy brand manufacturers achieved sufficient success, their new resources and experience might establish them as serious competitors in the standard brand field. Accordingly, the price cuts of 1933 occurred.

Part *C* illustrates the effects of the 1933 cuts and also indicates one good reason for the cigarette firms' failure to experiment more frequently with price policy. The intermediate-run demand curve ZQ of Part *B* was not reversible but instead assumed the position of ZW. The reduction in price to P_3 did not completely eliminate the 10¢ brands, although their sales were much reduced. The continued vitality of the economy brands in the 1930's and the improved position of Brown and Williamson and Philip Morris, which resulted in part from disturbed market conditions, left the Big Three with a reduced share of the total market, even after a year of very low prices. Meanwhile, marginal costs had risen once more, though not to the original level, and the major brands were selling at a loss.

The effects of the subsequent price rise to P_4 are shown in Part *D*. Again, the demand curve was not reversible, and the rise in price did not occasion an appreciable fall in the major brands' share of the market.

Part *E* indicates the net effect of all these maneuvers. As a result of attracting new competition the major brands sacrificed a portion of their market throughout the entire prewar period. The ready availability of the small producers, who had once demonstrated their ability to enter the market, was an apparent threat to the major firms and indicated a lowered maximum markup over costs, if market position was to be maintained. This circumstance, together with slightly lower leaf costs in the middle thirties, resulted in lower wholesale prices than had existed before the 1931 price rise.

The principle of cigarette pricing thus appears relatively simple. The margin between production costs and wholesale prices is determined by competitive threats, and the division of that margin between advertising outlays and profits depends both upon the need for market pressure and upon the exactions of stockholders. The perfect adjustment of these factors would involve a great deal of skilled balancing of margins, but of course such adjustments are not possible. The high degree of uncertainty present in all market estimates and the irreversibility of demand curves mean that precise adjustments cannot be made and that experimentation runs the risk of incurring permanent damage. These factors are adequate explanation of the rigidity of cigarette prices.

It is clear, however, that the pricing problem is simpler than is sometimes implied in discussions of monopoly, since there is no real problem of rigging markets or of neatly calculated price oppressions. The aim of policy is to maintain competitive equality with other firms and to achieve a joint unit margin which will not attract unwelcome competition. If this optimum margin can be found, it can be selected by the explicit decision of the firm in setting prices without any of the complex policy considerations which would be involved, for example, in an effort to control and depress tobacco prices.

SOME ASPECTS OF MARGINAL ANALYSIS

We may now consider the issue, raised at the beginning of this study, concerning the validity and usefulness of marginal analysis. We have found no characteristics of industry behavior which are inconsistent with the traditional approach, although we have observed some on which it did not shed much light.

It is well to repeat that marginalism is merely the logic of maximization and that wherever any problem of maximization arises, marginal analysis is valid by definition. Questions as to usefulness may still be raised. The marginal analysis of the firm is almost always concerned with defining rational conduct as that which will lead to maximum profits in view of existing cost and demand conditions. The principal decisions to be made concern the price to be set, the output to be sold, the input to be

bought, and in some cases the sales campaign to be undertaken. It is usually assumed that the firm's production function, the demand curve for its product, and the supply curves of its input factors are given and that these determine rational conduct uniquely and unambiguously.

This approach may, however, break down if the market situation is not given independent of the rational conduct which it is supposed to produce. The most profitable line of conduct in oligopoly depends upon what opponents will do, but their actions in turn depend on one's own actions. If competitors' reactions cannot be foreseen, one's own rational conduct is not unambiguously defined. Where mutually interacting strategies are concerned, rational conduct may not be a (conceptually) simple matter of maximization, and in this event, marginal analysis is inapplicable and invalid.[2]

This difficulty does not arise, however, if opponents' reactions are known in advance, and this, of course, has been true of the cigarette industry at all times when competitive relationships have been maturely developed. It may well be that the problems which Duke faced in his early days and the problems of reorganization immediately after dissolution cannot properly be analyzed in marginal terms, but in recent years the behavior of competitors has been easily foreseeable. It has been subject at most to the same kind of uncertainty which affects all market forecasts and has involved no significant problem of mutually interacting strategical repercussions. Accordingly, maximum profit behavior can be unambiguously defined.

Not only is maximum profit a meaningful concept in the cigarette industry but profits appear to have been a principal object of policy. Certainly the major firms have not achieved their earnings record through indifference to profit opportunities. We need not, of course, deny that other motives exist. The ambitions of executives for prestige and position have probably led to stronger competitive efforts among the major firms than either their individual profit interests or their joint concern with profits as a group would indicate. There is a further question as to just whose profit is to be maximized. Changes in market circumstance, in the political environment, and in the separation of ownership and control have changed the aims of management from the achievement of outright monopoly and capital gains to a more recent concern for restrained competition and stable profit. Yet, although the nature of profit maximization has changed, profit in some form has always been a principal concern, and the traditional analysis is consequently relevant.

It does not, of course, follow that the managers of the industry engage in subtle marginal calculations. Prices appear to be set on some principle of markup over cost, and uncertainty as to just what the markup should

2. John von Neumann and Oskar Morgenstern, *Theory of Games and Economic Behavior* (Princeton, Princeton University Press, 1944), pp. 10–12, and *passim.*

be is probably an important cause of rigid prices. The result of such behavior, however, is in approximate agreement with what marginal analysis would predict. In any event, marginal analysis is useful, principally because it enables the economist to handle equilibrium conditions unambiguously, rather than because it purports to give an accurate statement of how the industry executives themselves regard their decisions.

It should be noted, however, that the marginal analysis which is relevant to the cigarette industry implies different curve shapes from those usually presented in elementary textbooks. These usually assume a U-shaped average cost curve, a continuous demand curve for the product, and continuous supply curves for the input factors. In the cigarette industry the long-run average cost curve is flat and coincides with the marginal cost curve. The demand curve is probably strongly "kinked" at the going price level, being inelastic for all lower prices and markedly elastic for higher prices. The "kink" is partly explained by the uncertainties of oligopoly response discussed earlier and to this extent provides an explanation of why price followers follow. The price leader does not have the same reasons for a "kink" in his demand curve but is concerned, as are the rest, with the danger of new competition if profit margins get too high. The "kink" which this occasions sets a maximum limit to the price which the leader will set, while the fact of the "kink," together with uncertainty regarding its precise location, reflects strong motives for price rigidity. When the firms believe they are in full equilibrium, the demand at higher prices is rendered elastic, both by the fear of new competition and by the expectation that the existing competitors will not follow if the price is raised.

The supply curve of capital to the firms is apparently discontinuous, for advertising outlays are sometimes limited by the lack of available funds rather than by the declining marginal productivity of additional outlays. It is always possible, of course, to advertise with capital funds, as did Old Gold in its initial campaign, but this involves more far-reaching decisions, and the companies have generally preferred to finance their advertising with funds made currently available by market policy.

The most serious complaints against traditional marginal analysis concern its incompleteness. The usual analysis of the firm makes a sharp distinction between market structure and the behavior which follows therefrom and in general is better fitted to handle the influence of structure upon the behavior than it is to handle the very important causal reactions in the opposite direction. Of course, it is usually recognized that in the long run a firm's demand curve is more elastic than in the short, since high prices may attract new competition. Although these considerations serve fairly well to account for certain kinds of influence of policy upon structure, yet the usual analysis provides too narrow an account of the possible influences of policy upon the whole market situation.

Marginal analysis does not appear well fitted to handle the complex historical developments which we have observed. Marginal analysis is primarily static in its nature and is most successful in analyzing an equilibrium of influences at a given moment of time. Static analysis, however, assumes away the interesting problems of the path by which equilibrium is reached and of how equilibrium changes with the passage of time. In the preceding section, for illustrative purposes, we analyzed price changes from 1930 to 1934 in terms of a series of static equilibrium positions. Although useful, the device is exceedingly clumsy and was applied, moreover, to a relatively simple set of phenomena.

Many relationships in the cigarette industry cannot be so simply handled. We have been concerned with the influence of environment upon market structure and behavior and with the influence of each of these upon the others and back upon environment. Environment, structure, and behavior have all been involved in a complex, mutually interdependent equilibrium, which is moved through time by dynamic influences, some of which reflect changes in the environment itself and some of which reflect the influence of equilibrium conditions previously achieved. While marginal analysis is valid and illuminating for some aspects of the cigarette industry, it is not broad enough to cover all the relationships which we wish to examine, and for the industry's dynamic problems we have had to employ a more general historical approach.

Chapter XVII

ISSUES OF PUBLIC POLICY

THE POSSIBILITY OF REFORM

THE SECOND AMERICAN TOBACCO case, decided by the Supreme Court in 1946, presents an unusual opportunity for industrial reform.[1] The three leading cigarette manufacturers, one subsidiary, and thirteen officers stand convicted on charges of criminal violation of the Sherman Act. Although the fines imposed were relatively small, the industry is vulnerable to further civil proceedings designed to change its structure or behavior. The long delay without positive measures to follow up the criminal action indicates a doubt as to what remedies are desirable and suggests that it is easier to obtain monopoly convictions than it is to use such convictions for effective reform.

The ultimate sanctions of the act are fines and imprisonment in the case of individual violators and fines and dissolution in the case of corporations. The courts can debar an unlawful corporation from interstate commerce. Through the medium of consent decrees the courts can enjoin such other action as seems to them proper, so long as the company involved is ready to accept the restraint rather than to give up business entirely. The power of the ultimate sanctions, together with the flexibility of the consent decree, allows to the courts a wide measure of discretion in enforcing remedies if only proper and effective remedies can be found. A principal purpose of this study is to discover what changes, if any, in the structure or behavior of the cigarette industry would be desirable.

LESSONS OF THE TRIAL

In view of the criminal conviction, it might seem that proper policy is rather simply defined. The elimination of criminal behavior should solve the legal problem and presumably bring economic improvement. As we shall see, however, the conviction itself throws little light on the issues of desirable policy. A consideration of the trial and of the issues on which the verdict turned may help to bring the problems of policy into better focus and to indicate the nature of available alternatives.

1. *American Tobacco Co.* v. *United States,* 328 U.S. 781 (1946).

The Conspiracy Conviction

The defendants were convicted under Section 1 of the Sherman Act of a conspiracy or combination in restraint of trade and under Section 2 of conspiring to monopolize, of attempting to monopolize, and of monopolizing the trade in cigarettes. The conviction in all its parts was based upon a finding by the jury that conspiracy or combination existed among the defendants. Conspiracy to fix prices and otherwise to limit competition among the major firms violated Section 1, while conspiracy to exclude competitors from the business violated Section 2. If the jury's verdict was accurate, it would appear to be the proper aim of policy to force an abandonment of the conspiracy so as to free the beneficent forces of competition.

The problem, however, is not so simple, for although conspiracy was the central issue of the Lexington trial, it does not appear to have important effects on industry behavior. Company policies are dictated by economic circumstances, and the elimination of collusion, if it exists, would have little effect on their actions. It is doubtful, moreover, that collusion exists to any important degree.

In earlier chapters we surveyed the entire history of the cigarette industry and brought to bear upon the question of collusion all the evidence which could be found. We discovered few indications of explicit agreement but much common action. The Lexington trial disclosed several minor occasions, such as the Denver retail price war and the granting of additional sets of leaf buyers, on which overt communication occurred between agents of the major companies. No direct evidence was introduced to prove explicit agreement on any major area of business conduct. Instead there was presented a mass of detail showing common action by the companies, and on this evidence the jury brought its verdict of guilty. Yet we have found in all important instances that the conduct of the cigarette companies is perfectly consistent with the independent pursuit of individual interest.

One possible explanation of the Lexington verdict may be that the jury erred, that it found conspiracy where none existed or where evidence was inadequate. If this was the case, the conspiracy conviction obviously could provide no useful guide to industrial reform.

A second possibility is that the jury based its conviction on the evidence of overt communication regarding peripheral and minor matters and inferred more widespread communication and explicit agreement from the evidence of common action in such important matters as price. In this event the verdict was sound but again provides no guide to reform since the proven agreements relate to unimportant actions whose abandonment would be of no consequence, while the inference of wider collusion appears from our analysis to be suspect.

A third and more probable explanation of the Lexington verdict lies in a sharp difference between the common-sense meaning of "collusion" and the legal meaning of "conspiracy" as that crime has recently been interpreted by the courts.

The Nature of the Crime

The proof of conspiracy requires neither documentary evidence nor overt acts. The act of conspiring to an unlawful end is illegal without more and may be inferred from a pattern of behavior. No written contract need be charged, and even explicit agreement on the terms of association is not required in order to establish a crime.[2] It is enough that some "understanding" exist, that there be a meeting of minds to an unlawful end, in this case, to fix prices or to eliminate competition. But this matter of "understanding" is extremely difficult to define. If businessmen draw up a written agreement to fix prices, that obviously is collusion, but when is "understanding" collusive and when is it not?

I suppose that the basic requirement of collusive "understanding" is that acts be done by two parties through a mutual meeting of minds, i.e., as part of an implied bargain. "Understanding," in the sense of knowing the situation and acting accordingly, would not be collusive. But is the distinction valid or meaningful? One firm may attempt to further its own interests without any concern for the interests of competitors, yet, when competitors are large and powerful, it must always take those interests into account. They are a part of the economic universe within which the firm operates. If it fails to take proper account of them, it invites retaliation. If the entrepreneur can anticipate the reactions of competitors to his own acts, those anticipated reactions will condition his policy. Now, this implies a use of knowledge, of intelligence, of "understanding" in its noncollusive sense, and if all competitors make use of the same knowledge in the conduct of their separate affairs, "understanding" is noncollusive. Or is it? It may be possible to maintain that the results reached are obtained by wholly independent judgment the first time competitors come together, but after they have been in contact for a short period, the sureness of their knowledge of each other's actions increases, and the element of implicit bargaining increases. Each firm is taking certain actions in order to provoke certain reactions from its competitors and in order to avoid other possible reactions. Each firm's action is taken to secure action or nonaction by other firms, and it is difficult to draw any clear distinction between this exchange of acts and those involved in an explicit agreement. In time the exchange cannot fail to produce an atmosphere of partial cooperation and areas of agreement on institutions or policies which are obviously collusive in nature. But even without this, without more than a

2. 15 C.J.S. Conspiracy, §§ 40, 43.

careful consideration of enemy tactics, an implied bargain takes place. Actions undertaken to obtain actions are actions exchanged for actions, and this is all that is implied in collusive agreement.

It may be objected that the same kind of action to provoke action is involved in the strategic maneuvers of opposing armies and that one cannot regard warfare as collusion between enemies without grave violence to language and logic. But there is a difference in the cases. Military strategy is designed to harm the enemy or at least to increase one's own power relative to the power of the enemy. Strategy is successful according to whether it furthers this purpose, although some gains may be too dearly bought. Both armies cannot win, and although mutual fears of retaliation may prevent the use of gas, bacteria, or, let us hope, the atom bomb to wreak unlimited destruction, yet such areas of agreement are subordinate to a fundamental opposition of interests. War is basically competitive, and agreement and the restraints of the laws of war relate to details only.

The converse is true in the rivalry of the few large firms of the cigarette industry. There are important areas of conflict, but the basic problems are cooperative in their nature. There are divergent interests in the share of the business which each competitor will have, but all are interested in the largest possible profits for the industry. Each firm would be willing to sacrifice the profits of the industry if its own share of those profits could thereby be increased in greater proportion, but since the shares of the major competitors are changed only in detail and with difficulty, their competitive interests usually are subordinate to their common interests. A firm can gain at the expense of competitors, or all may gain together. In some areas of policy such as advertising, the principal interest is in gaining a relative advantage over competitors, but in other areas, and notably in price policy, cooperative considerations are of overriding importance.

Under these circumstances it seems that action taken in the knowledge that competitors will react in a certain way contains all the necessary elements of conspiracy. There may in individual cases be important differences in the degree of explicitness with which the agreement is drawn, but when policy is directed to a common end by a cautious exchange of actions, agreement in some form is necessarily present, and when the common end is illegal, the crime of conspiracy appears to be complete.

As Mr. Justice Douglas has remarked, "It is not necessary to find an express agreement in order to find a conspiracy. It is enough that a concert of action is contemplated and that the defendants conformed to the arrangement." [3] Of course each cigarette company in knowing its own interest in price policy knows also the interest of its competitors. All companies know that they will act together and they do act together so that a concert of action is in fact contemplated and the defendants do

3. *United States* v. *Paramount Pictures,* 334 U.S. 131, 142 (1948).

conform to the arrangement. Price policy must result in the fixing of prices and, so long as the companies defend their market positions, they necessarily intend the exclusion of potential competitors. Thus it appears that in technical legal terms conspiracies have existed directed to the two illegal ends as charged. According to this reasoning, not only may rational oligopoly behavior and explicit collusion yield the same market results but both may be equally subject to the law.

There is some doubt whether tacit agreement alone is enough to constitute conspiracy under the Sherman Act. Most cases which have been brought have relied on evidence of overt communication and explicit agreement, and I am aware of no case in which such a charge has not been made. In the Lexington trial the jury was continually asked to infer the presence of outright collusion, and the appeals courts emphasized apparent discrepancies in the defendants' accounts of their independent behavior. Yet recent cases involving "conscious parallel action" [4] imply a concern with cooperation in fact as well as with formal agreement, and a decision to extend the crime of conspiracy to cover the type of agreement reached by cautious poker-playing in the market would be consistent with the rule of reason in Sherman Act cases and consistent also with the treatment of conspiracy in other types of criminal law.[5] Only on this interpretation of the law does the cigarette conviction make sense, for otherwise it is either based upon error or limited to trifles.

Implications for Reform

If this is the correct interpretation of the law, however, it means that the conspiracy conviction provides no simple guide to industrial reform. For if rational oligopoly behavior is the same thing as illegal conspiracy, it makes futile a direct attack on the conspiracy itself. It would do no good to forbid the carrying out of the conspiracy, for consciously cooperative behavior is inherent in the market structure, and no change in market behavior consistent with the rational pursuit of company interest would eliminate the continuing conspiracy. So long as the companies remain in the present market structure, they must take account of their mutual dependence, and this involves them in the forbidden contemplated concert of action. What then are we to make of this conviction? What are the courts trying to accomplish?

Presumably a criminal prosecution seeks to prevent or to penalize some kind of illegal action, and where criminal behavior is inherent in the market structure, the law must be interpreted to condemn that struc-

4. *Triangle Conduit & Cable Co.* v. *F.T.C.*, 168 F.2d 175 (1948); affirmed by equally divided court as *Clayton Mark & Co.* v. *F.T.C.*, 336 U.S. 956 (1949).

5. For further discussion of these issues, see J. A. Rahl, "Conspiracy and the Anti-Trust Laws," *Illinois Law Review, 44,* No. 6 (February–March, 1950), 743–768.

ture itself. It would be absurd to condemn conscious parallel action and not to condemn the objective conditions which make it necessary.

Even so interpreted, however, the objectives of public policy are not entirely clear. If the law condemns market structure, does it condemn structure for its own sake or for certain undesirable results which are supposed to follow? If the latter, what are these undesirable results? What reforms are needed? If structure is condemned for its own sake, presumably public policy should work directly to modify it. If it is the results of structure which are condemned, then public policy may work either to modify structure, and thus to remove the causes of undesirable behavior, or to modify behavior itself while leaving structure unchanged.

Let us consider these possibilities in turn. Is the present structure of the cigarette industry undesirable per se? In what ways does it yield undesirable results? How could these results be remedied by enforcing changes in market structure or behavior?

THE CASE AGAINST MONOPOLY

Our first problem is to evaluate the effects of monopoly power. It is true that we do not have monopoly in the strict sense of that term since there are several sellers, but we have seen that the interests of the small number of producers are identical on the critical issues of pricing and that the cigarette companies in fact behave as though controlled by a single head. There is eager competition among them for the consumers' favor and for strategic market position, but in other aspects of policy they behave as one.

It is not sufficient to discuss monopoly results in purely economic terms. There are too many problems of political health and conflicting individual rights which arise in monopoly for us to be satisfied with economic answers alone. The full examination of political and social criteria lies beyond the scope of this study, yet economic policy depends so heavily upon noneconomic values that it is necessary to consider them briefly.

Noneconomic Objections

The oldest complaints against monopoly concern the exclusion of other sellers. The word was originally applied to the exclusive selling agency granted by royal patent and did not at first apply to market power gained by commercial means. The common law gradually developed in opposition to unreasonable restraints of trade, however derived, but retained its emphasis on exclusion of competitors as a basic evil because such exclusion was inequitable in itself against the person excluded and because it was thought to lead to undesirable market results. Even the earliest fighters against monopoly were aware of its consequences in terms of increased

price and debased quality, but the gravamen of legal offense remained exclusion, and where there was no exclusion of competitors the English common law did not reach restraints on competition.[6]

The sponsors of the Sherman Act were not concerned with such narrow grounds of complaint but sought in Section 1 to reach all kinds of collusive arrangements. So strong, however, was the legal tradition that Justice Holmes in his dissenting opinion in the Northern Securities case urged that the Sherman Act did not apply because no exclusion of competition was involved, but merely a union of existing competitors.[7] This interpretation of the law has not survived, but the exclusion of competition has remained an important criterion in monopoly convictions under Section 2.

This element of exclusion has not occupied an equally central place in economic thought. The analytical economist has been interested primarily in market results. Denial of free entry to an industry is indeed one of the methods by which market control is secured and market results affected, but it is not even the most important method, at least if exclusion is defined in a meaningful way, and it is primarily as a method that the economist views exclusion. The disabilities suffered by the businessmen excluded from an industry are not usually counted among the costs of monopoly. Yet the legal approach has been right in its insistence upon the importance of exclusion, for the monopolist's denial of opportunity to others is one of his most sinister effects.

This influence of monopoly is far more serious than would be indicated by the mere financial loss sustained by disappointed entrepreneurs, for by constricting entrepreneurial opportunities, monopoly undermines the economic controls and the types of individual career most favorable to a free society.

A freely competitive economy has seemed a desirable goal because it promises proper operation without the imposition of authoritarian controls. The activities of government may be restricted, and in the market place the individual must adapt himself to conditions of demand and supply but not to the whim of a superior. Monopoly replaces impersonal market forces by administrative decision, and this both subjects the individual to hierarchical control and raises the presumption that the decisions made will not be proper but will require government intervention in the public interest. Monopoly both stimulates the functions of government and reduces the freedom of the individual within the private sector of the economy.

Equally important are the effects of monopoly upon individual ca-

6. E. S. Mason, "Monopoly in Law and Economics," *Yale Law Journal, 47,* No. 1 (November, 1937), 34–49; S. C. Oppenheim, *Cases on Trade Regulation* (Chicago, West, 1936), pp. 10–13, 18.

7. *Northern Securities Co.* v. *United States,* 193 U.S. 197, 403–404 (1904).

reers. When monopoly power restricts the number of firms, individuals are precluded from the entrepreneurial function and become hired hands. When monopoly power creates mammoth industrial organizations, thousands of employees are subjected to central direction. The civil servant starts in at the bottom and works upward in the hierarchy. The employee of the established monopoly also starts at the bottom and works to the top. The two careers differ in details rather than in essentials. Government and railroad bureaucracy are much alike, and it may be wondered whether, in the long run, either is compatible with democracy. Can hierarchy in daily life support a strong political egalitarianism?

It is not suggested that either government or industrial careers need deaden individual initiative. The able man may fight his way up in either career, but there is something in the way in which these careers develop which is dangerous to democracy. The ability of a man to rise even to great heights is no adequate outlet for personal freedom and independence if it must be accomplished by dependence on other people within a framework which other people have established. The tendency is to breed overmuch respect for and dependence on status to the detriment of the general acceptance of responsibility and initiative upon which a vigorous democracy depends.

When monopoly diminishes the opportunities for entrepreneurial careers, it diminishes also some of the best training for democratic political life. Moreover, industrial bigness may work direct injury on the democratic process. Massed resources may yield political as well as economic power and may corrupt government or otherwise weaken popular sovereignty.

In all these ways, monopoly power and industrial concentration exert harmful influences upon society quite apart from their effects upon market results. If they can be established as valid complaints against the cigarette industry, they establish a prima facie case against its present structure, whatever its economic results may be.

It does not appear, however, that the political and social objections to monopoly can properly be applied to the cigarette industry. The major companies constitute an effective monopoly, and they are big business in terms of sales value and assets, but the number of their employees is relatively small, their corporate structures are simple, and they are not outstanding examples of industrial bureaucracy. Heavy inventories of leaf tobacco account for their size in terms of assets, and in this respect they rank about half way down the list of the 200 largest nonfinancial corporations. They employ about 10,000 men each, divided among the leaf-buying, manufacturing, and selling ends of the business.

If we were prepared to tackle other more outstanding examples of industrial concentration, it might be worth while to break up the ciga-

rette companies in order to further the cause of individualism. In the absence of a general movement to reduce industrial concentration, a decentralization of the cigarette industry does not seem urgent. In any event it should be noted that any practicable change in the structure of the cigarette industry would give only minor support to increased individualism. At the most, we could break the present companies up into 50 or 100 smaller ones and thus provide a few more entrepreneurial positions, but most of the employees in the industry would continue to work for someone else. Moreover, the increase in the number of entrepreneurial opportunities would be offset by the decline in the eminence to which anyone could rise, and it is not clear that individual opportunities would be greater than they now are.

We may leave to a later section the question whether the cigarette industry provokes undesirable government activity because of the bad results which unregulated monopoly produces. This objection assumes that competition yields better economic results than does monopoly and this is an issue which requires explicit consideration.

As far as concerns the other threat to political life through the pressure of massed financial resources, this seems to be of little importance. The present companies have been singularly impotent to prevent the rise in tobacco taxation and appear to wield significant political power only in their home states where their power is partly offset by the rival interest of the farmers.

It is difficult to make a strong case for reform in the structure of the cigarette industry on noneconomic grounds alone. Although the law condemns size and concentrated power, and although these may reach sufficient magnitude to be directly objectionable, it does not appear that the cigarette firms are large enough or powerful enough to be a suitable object of attack on these grounds alone. If the present structure of the cigarette industry is objectionable, it is not for its own sake but for undesirable market results which flow from that structure. What sorts of undesirable results might we expect?

Economic Objections

According to traditional analysis, the economic results of monopoly are inferior in several respects to those which a perfectly competitive industry would yield. The monopolist in his search for profits sets prices higher than the competitive level, and where demand is elastic, these high prices discourage consumption and result in the exclusion from the industry of resources which otherwise would be employed there. There is no guarantee that a monopoly will find it profitable to produce at the technically most efficient level of output. If the firm possesses a

U-shaped average cost curve, the monopolist may find it worth while to produce on either the downward- or the upward-sloping branch, and thus unit costs may be higher than they need be. If he operates on the downward-sloping branch, then excess capacity exists. The ability of the monopolist to do these things depends upon the exclusion of outside competition, and measures may be taken to reinforce the barriers to entry. The consequence is excessive profits. Thus the monopolist secures pay for the antisocial functions of restricting opportunity, increasing costs, and disturbing the proper allocation of resources. Our problem is whether and to what extent these common attributes of monopoly can be justly charged against the cigarette industry.

ECONOMIC EFFECTS OF THE PRESENT MARKET STRUCTURE

In Chapter XV we saw that the cigarette industry does in fact secure monopoly profits. For most of its history the industry has earned at more than double the rate for manufacturing corporations in general, and a reasonably effective reform would involve some narrowing of these margins. It should be noted, however, that monopoly profits present a somewhat different problem than do the other consequences of monopoly, for excessive profits affect primarily the distribution of incomes rather than the allocation of resources. While high costs represent actual waste from which no social good emerges, monopoly profits mean merely that some people receive income which might have gone to someone else. The problem is one of justice among groups in the economy.

This issue of justice, moreover, is somewhat clouded by the changes which have occurred over the years in the identity of the personal recipients of cigarette profits. Cigarette securities have become widely scattered among the general body of investors, many of whom paid for their stock at prices sufficiently high so that liberal dividends now represent only a normal return on their own investment. Much of the "unearned increment" of monopoly was appropriated long ago by the men who built the Trust, enjoyed its profits, and sold its securities at prices which generously capitalized the prospect of future earnings. Those ancient extortions cannot now be reached, and monopoly profits go to individuals for whom they do not represent a personally unjust reward. Of course, a vested interest in monopoly should not act as a bar to reform if either the proper distribution of income or the optimum allocation of resources requires it, and in particular there is no reason why the cigarette smoker should subsidize the stockholder. Yet there would be no point in reducing profits as an end in itself by measures which increase the waste of resources elsewhere. If monopoly profits in cigarettes can be reduced to the advantage of the consumer, this is a suitable object of policy, but the level of profits itself is not the sort of abuse which urgently requires remedy

apart from its effects upon other aspects of the industry and the economy.

The other traditional complaints against monopoly—high costs, excess capacity, and misallocation of resources—present more direct problems of economic efficiency. Yet some, at least, of these reproaches cannot lie against the cigarette industry. The firm does not exhibit a U-shaped cost curve. The small producer is as efficient as the large, and the long-run average cost curve is flat. We find some decline in selling and administrative overhead with increasing size of the firm, but the relationship is not marked, and there is no indication that such costs would be reduced for the large companies by any practicable expansion in output. Thus no burden of higher costs or of excess capacity is imposed on the industry by its pricing practices. Whatever excess capacity exists arises from expanding plant ahead of the demand or from fluctuations in output as competitive relations change. Such costs are the results of normal growth or of competitive activity and are not the sort of burden usually associated with monopoly.

The traditional effect of monopoly in distorting the pattern of resource allocation is equally little characteristic of the cigarette industry. According to the usual complaint, the monopolist sets prices higher than marginal cost and thus stops production short of the level which consumers would like to see. It does not appear, however, that cigarette output is in fact restricted. Each firm makes strenuous efforts to increase its own sales, and the elasticity of demand for standard brand cigarettes together is so low that no great expansion in consumption would occur if prices were lower. Thus actual pricing practice does not materially reduce cigarette production below the level which would occur with marginal cost pricing and does not distort the pattern of production or the allocation of resources. The cigarette industry must be declared not guilty of this particular offense.

There appears to be, however, a similar complaint which may be lodged against the cigarette industry. Are not the large advertising outlays a waste of resources for the economy as a whole no matter how beneficial they may be to the companies which employ them? Some small part of the expense serves merely to inform consumers of what is available and thus to make possible a more intelligent choice. The greater part of the expense is designed to capture the public attention, to foster brand loyalty, or to disrupt loyalties to competitive goods. There is no appreciable tendency for these expenditures to increase the total cigarette consumption, and it does not appear that this effect would be desirable if it existed. There is no social goal which indicates that tobacco consumption in itself is in furtherance to the social welfare, but in any event, advertising does not do this. It serves as a weapon in the competitive struggle, helps to shift consumers on an irrational basis among nearly identical commodities, serves to strengthen the power of the large producer vis-à-vis the

small, and is the principal instrument by which the present structure of the industry is maintained. The value of this last function may be debated, but the others appear of doubtful utility, if not actively undesirable. The major part of advertising outlays seems to be a social waste. Considerable sums are involved, for in most recent years the industry has spent about $50 million annually on advertising.[8]

This complaint is completely valid, however, only if we compare the behavior of the cigarette industry with that of a hypothetical industry operating in perfect competition. In such an industry, advertising could serve no economic function, and hence its use would be completely wasteful. This is not very informative, however, for perfect competition is not a possible form of organization for the cigarette industry, and in the market for cigarettes, advertising serves a function which may be worth the price.

It is a commonplace of elementary economic analysis that perfect competition requires, among other conditions, a large number of buyers and sellers and a homogeneous commodity. These requirements imply a third, that long-run marginal costs rise sharply at a low level of output, i.e., that there are technological barriers to large-scale enterprise. Rising marginal costs keep the firm small, while small size and a homogeneous product yield a perfectly elastic demand curve for the firm. The perfectly competitive firm has no appreciable effect upon price, no concern with price policy, and no problem of sales. It can sell any amount it wishes at the going price and needs only decide how large an output it is profitable to produce.

The cigarette industry obviously does not operate under such conditions. Long-run marginal costs do not rise, and there is no limit to the size of the firm except that set by the market. The products of rival manufacturers, although similar, are not identical in the public eye and cannot be made so. The firm cannot merely sell at a going price all it wishes but must fight for markets, and this is the function of brand names and advertising. If the sales function were not performed by these means, it would have to be performed by some others. Some arrangements must exist for allocating customers among competing firms, and firms will rely on advertising as long as they are free to do so. Under any form of competition the cigarette industry would presumably use some advertising,

8. There is, of course, an argument that, quite apart from the effects of advertising within this industry, there is yet an indirect benefit to the public in the way in which these expenses are made. Advertising payments serve to support periodical publications and radio broadcasts. Since much of this must go on, some other means of support would need to be found if advertising were curtailed, so that advertising does not represent a net waste of resources. The point may be admitted with the proviso that the publications and programs are often not worth while and that advertising itself may impose direct costs upon the public which are not accounted in the advertising budget. The cultural influence of modern advertising is a proper subject of investigation, but it lies far beyond the scope of this book. For present purposes we must restrict our attention to the direct economic influence on the cigarette industry and on its behavior.

so that not all of it can be identified as a waste of the present system. The real issue is whether the present cigarette industry devotes more resources to this purpose than need to be used or more than would be employed under some other form of competition. Let us consider whether any practicable reform in the structure or behavior of the industry would allow reduced advertising outlays without offsetting disadvantages.

POSSIBLE REFORMS

Alternative Structures

Any type of market structure which we might set up in place of the present oligopoly would show some kind of imperfection. We might consolidate the present firms into one to form a complete monopoly. We could break them up into somewhat smaller segments so that a few more firms appeared on the market. Or we could attempt a more far-reaching fragmentation of the present firms and their replacement by perhaps 50 or 100 small companies. In no case would perfect competition result. With a few more firms, oligopoly relationships would persist and the current situation would be changed more in appearance than in fact. With a large number of firms, the nonhomogeneous product would still provide some element of inelasticity in the demand for each. Brand names would continue and each firm would still have a problem of price and market policy. We would have, not perfect competition, but a case of Chamberlinian "monopolistic competition." [9]

If the cigarette industry were organized as a monopoly, there would be little need for advertising. Informative notices to improve knowledge of the market would be required, but there would be no point in heavy competitive expenditures. In this respect monopoly would be less wasteful of resources than is the present system. Profits would presumably be even higher under outright monopoly, but this would be no problem, for profits could be restricted by regulation. A government-owned monopoly would enjoy the same advertising savings and could either price to avoid profits or divert profits to the public treasury. It may be, however, that a single enterprise deprived of the stimulus of competitive activity would be less efficiently run and would care for the wants of consumers less carefully than do the present companies. Rivalry between brands, even when carried on by the wasteful methods of advertising, helps to keep the companies alert and resourceful. Some of these qualities are likely to spill over into other parts of the firm's activities and to lead to a better conduct of affairs than would occur in the somnolent decay of a full monopoly. Unless this doubt is removed, we cannot be sure that a full monopoly would be economically superior to the existing organization.

If the industry were reorganized with a large number of small firms,

9. E. H. Chamberlin, *The Theory of Monopolistic Competition* (5th ed. Cambridge, Harvard University Press, 1946).

profits would presumably settle at a competitive level, but there is serious probability that costs would be increased. The past half-century has witnessed a marked decline in distributors' margins made possible by the general growth of the cigarette business and by the establishment of a few leading brands with a steady volume of trade. Wholesalers' inventories normally turn over weekly, and retailers retain only a few days' supply. This rapid turnover allows a small markup per package. If the cigarette industry were composed of a large number of small firms producing many brands, it seems probable that inventories would be higher, storage space larger, bookkeeping more complicated, and a larger proportion of deliveries in broken cases and cartons. Distributors' costs would be higher, and some widening of distributors' margins would necessarily occur.

Distributors' margins would be likely to rise for another reason. With a large number of small brands, national advertising would be less effective, point-of-sale display and dealer preference would become more important, and dealers would assume once again some of the selling functions which they performed in the early years of the industry. These services would have to be paid for.

At the present time small companies distribute on as good terms as large because they can take advantage of a distributive network which is mainly concerned with a few large brands. Margins are based upon the costs of distributing the large brands, and distributors do not generally attempt to calculate the special cost of the minor brands but handle them on the same terms as the main part of their business. If the small brands were the main business, however, their higher costs would soon become evident, and margins would rise.

There is little likelihood that total advertising expenditures would be reduced. The economy brands involve less expenditure per thousand, but this reflects their lower quality and the fact that price is their principal appeal. If a large number of small companies were competing for the business of the present standard brands, there is no reason to think that unit advertising expenditures would be lower or that there would be any saving in total outlay. Moreover, other selling expenses would probably increase. As we have seen, there is some evidence that small companies incur slightly larger selling and administrative overhead expenses per unit of sales than do the larger companies. Especially if small firms were to reduce advertising outlays, it is probable that they would increase selling expenditures in other directions, and there is no secure prospect of over-all savings.

It is illuminating to compare the possible gains and losses from monopolistic competition as nearly as available quantitative data will allow. In 1939 the three major companies earned net profits after taxes of $73 million.[10] If we take this as twice the competitive level, possible savings

10. Company reports.

from eliminating monopoly profits would have been $36 million. In the same year these companies spent $41 million for advertising.[11] Distributive markups on their sales were about $160 million.[12] Thus a rise of even 25% in wholesale and retail margins would have more than erased the savings in monopoly profits. Any savings in advertising outlays would be highly problematical and could easily be offset if the rise in distributors' margins were larger than 25%.

The situation was more favorable to reform by dissolution in 1939 than it has been in more recent years. In 1949 cigarette profits were about the same as for all manufacturing industry, so that, if we suppose cigarette profits under competition to be comparable to manufacturing profits in general, a more competitive regime would have brought no savings. Meanwhile, distributors' margins for all cigarette sales had increased to about $708 million,[13] and the potential losses from wider unit margins were accordingly more serious.

The disadvantages of monopolistic competition are not exhausted by these distributive costs. Additional wastes could be anticipated in a rapid turnover of new firms. In the present stable oligopoly the existing firms remain in business for an indefinite period of years and even among the smaller fringe competitors there are relatively few firms which leave or enter the industry. Among significant cigarette producers, only the Riggio Tobacco Company has been founded since the dissolution. It is relatively easy to enter the industry as a purely technical matter. Machinery is easily available and leaf supplies are readily secured. The difficulties of invading an established market have restrained potential competitors in the past, but if no one had much of a market, this barrier to entry would decline. With freer entry, freer exits would also be likely, and business deaths should be plentiful. Now, of course, in theoretical perfect competition, complete mobility of the factors of production means that no losses are involved in entering or leaving an industry. In the real economy, however, resources are not mobile, and those which are applied fruitlessly represent a waste both to the individuals incurring the loss and to the economy as a whole.

Even when competitive fluctuations do not result in business failures, they are likely to involve some waste. Building ahead of a market or losing sales which a plant is prepared to produce implies excess capacity and idle resources. This type of excess capacity can also be found in the existing companies, but if a less concentrated industry were also less stable, such wastes would increase. Now, these disadvantages may be worth accepting in order to secure other advantages of competition, but

11. *TP,* p. 3841, B. J. Sanders; p. 5730, J. R. Coon. *DX,* No. 1260.

12. Based on sales data in Moody's and on an assumed markup of 17% of the retail price. See above, p. 255.

13. See p. 391.

for our present purposes we may note that in purely economic terms they represent yet another cost of a monopolistically competitive system.

A regime of small business might also result in lower quality products. The present leading brands are all of high quality and consistently so. The established companies must guard their reputations and dare not palm off shoddy merchandise. As the American Tobacco Company slogan has it, "Quality of Product Is Essential to *Continuing Success.*" With a smaller stake in the market, smaller firms might feel more free to experiment with quality depreciation. Neither a monopolistically competitive industry with its large number of semianonymous firms nor a monopoly with its security from outside competition needs have the same incentive to maintain quality which the present firms possess.

The present organization of the cigarette industry thus appears in favorable light when compared with possible alternative market structures. Perfect competition is not attainable. A full monopoly would offer probable savings but might lack adequate incentives to maintain quality. Monopolistic competition as the result of dissolving the present corporations would probably result in increased cost. On economic grounds there does not seem to be a strong case for reform in the structure of the cigarette industry.[14]

Regulation

There still remains for our consideration the possibility of reform in the industry's operations, independent of any change in market structure.

14. On the other hand, it should be noted that the cigarette industry does not exhibit certain advantages which have sometimes been ascribed to monopoly. Schumpeter has criticized the static analysis of monopoly for overlooking the dynamic purpose it can serve when integrated with an entrepreneurial drive toward innovation.* Monopoly power makes available funds for research and for improvements, while improvements provide the protection from competition which enables monopoly profits to be earned. In such cases, where monopoly finances improvement and where improvement is necessary to the survival of monopoly power, concentrated market structures may perform an essential dynamic function. The restrictive behavior of monopoly, to which traditional static analysis directs attention, is more than offset by the harnessing of monopoly privileges to dynamic technological advance.

This clearly is not the case with the cigarette industry. Here we have an essentially static competitive pattern which must indeed undergo occasional disturbances but which has within it no dynamic of its own. We have seen at length how the industry has adapted itself to changes in technology, in social environment, and in consumers' tastes, and the managers who have been most adept at adaptation have made great personal successes. Yet the industrial pattern is one of adaptation rather than innovation. The industry exploits a set of tastes; it does not create significant improvements. The industry in many ways fits the pattern of adapting given resources to given ends which traditional static analysis has emphasized, and though its cost and demand conditions deprive some traditional complaints against monopoly of their validity, the industry is equally innocent of any Schumpeterian advantages to monopoly.

* J. A. Schumpeter, *Capitalism, Socialism, and Democracy* (2d ed. New York, Harper, 1947), pp. 81–106.

Perhaps economic advantages can be secured by imposing some form of regulation. On most matters, clearly, no intervention is required. The industry produces a good product at minimum cost and in the proper quantities. Yet there may be room for intervention to correct the two principal abuses which the industry commits when judged by the welfare norms of perfect competition. It should be possible to see that excessive monopoly profits are not earned in the future, and some limit might be placed on the volume of advertising expenditure.

At present, net profit rates are not exorbitant, partly as the result of control, of taxes, and of timidity, and it should be possible to see that they do not again become so. Total profits have not fallen because a vast expansion in the volume of business during the war has compensated for lower unit profit margins. A restriction of profits to normal industrial levels would thus have little immediate effect upon stockholders' receipts but would operate primarily to prevent future bonanza earnings. It would not be easy to frame explicit profit regulation and to provide for its enforcement, but informal pressures can usefully be applied. A cautious price policy can be encouraged by the threat of renewed antitrust litigation if excessive profits indicate that the companies' monopoly power is again being exercised.

A moderate limit on advertising, on the other hand, would strike directly at the principal waste of the industry. A decline in advertising outlays might indeed be offset by a rise in other selling costs, but if selling activity in general were restricted, it should be possible to secure a real reduction in the resources employed in the industry. A considerable portion of the selling activities of the cigarette industry is mutually self-defeating and wasteful and could be eliminated without any real loss. Probably the best type of limit would be on the total expenditure per firm rather than any specified charge per unit of sales or any proportion of total expense.

Such an advertising limit would also have a beneficial effect on entrepreneurial opportunities. The advantage which the large firm enjoys by reason of its mere size would somewhat diminish, and it would become easier for exceptionally gifted advertisers to challenge the leaders. This might lead to some increase in the number of oligopolists and would at least encourage the use of new managerial talent. It is difficult to believe that a moderate increase in the number of leading firms would occasion any great difference in market behavior.

It probably would not be desirable, however, to restrict total advertising budgets below the level which a moderately large firm would choose to employ, for if advertising were drastically reduced or eliminated, the structure of the industry would be seriously changed. The chief support of the major brands would be removed, and they would be left to compete for the favor of the consumer with each other and with other brands

on the basis of their fine tobaccos, their lack of irritation, or their capacity to satisfy. There is every reason to believe that in the long run these claims to loyalty would prove insufficient to maintain the leadership of the present brands and that a large number of small firms and brands would arise. If industrial decentralization is desired, this would probably be the most nearly painless way to secure it. Yet it should be noted that the result would be to incur the disadvantages of monopolistic competition mentioned above, and it is highly unlikely that any net saving in the resources now devoted to advertising would result.

Still further improvement in the cigarette industry's behavior might be secured by adopting an ad valorem basis for the excise tax. For many years the Federal Trade Commission, some agricultural interests, and minor manufacturers have urged that the tax be based, not on weight, as at present, but on the wholesale price, and a recent proposal along these lines was passed by the House Committee on Ways and Means.[15] At present the economy brands pay as heavy a tax as the standard brands. With so large a percentage of cost absolutely fixed, a very large percentage reduction in leaf cost is required to effect even a 1¢ reduction in retail prices. In order to undersell the major brands by 20%, the economy brands have had to use leaf less than half as expensive. If the tax were proportional to the wholesale price, better tobacco could be used in the economy brands and their competitive pressure against the standard brands would be increased. Such a tax would remove a disproportionate handicap on the cheaper brands and would allow a finer choice by consumers among varying qualities of tobacco. There is, of course, no principle of public welfare which indicates that it is desirable to smoke cigarettes of inferior quality, but there is no reason why the public should not have that choice unclouded by internal revenue peculiarities.

It is unlikely that an ad valorem tax would have serious effects on the structure of the cigarette industry, although the immediate effect would be to help certain small manufacturers against the large. If the stimulus to cheaper brands were small, the competitive situation would be unchanged. If the stimulus were large, the major producers would undoubtedly enter the economy brand field themselves with every prospect of subduing it. The net effect of such a tax would appear desirable but not of great significance.

CONCLUSION

The conclusion of our study of the cigarette industry is more than a little anticlimactic. The possibilities of reform opened by the antitrust conviction of 1941 do not seem especially rewarding and the conviction itself seems to imply less regarding the past activities of the industry and is less

15. *New York Times*, May 4, 1950, p. 1, col. 6.

significant for its future than the legal turmoil which it has caused would suggest. We have found little reason to believe that collusion is an important factor in the behavior of the industry and it seems that it would make very little difference if it were.

Although there is an unusually good opportunity to reform the structure of the industry and although there is ample precedent in this industry for legal measures to secure greater decentralization, we do not find that it would be economically desirable or, according to political criteria, very urgent. The present concentrated market structure yields better market results than would any alternative structure with the possible exception of full monopoly and, while market control is exceedingly strong, the leading firms are not so large that their size is objectionable per se. The dissolution of the Tobacco Trust in 1911 seems to have produced desirable results, but there is no occasion for renewed major surgery on the structure of the industry.

We have found, however, that the behavior of the industry is not ideal. The rate of profit is usually excessive and a considerable proportion of the resources devoted to competitive advertising does not serve any justifiable economic purpose. Public policy could reasonably work to reduce the profit rates and advertising outlays.

A direct maximum limit to the total advertising expenditure allowed any firm would provide a simple and effective means of correcting one of the industry's faults. It would secure a direct reduction in resource wastage and would also serve to improve competitive relationships which are now excessively dominated by the possession of mere financial strength.

The restriction of profit rates is less easily achieved by simple legislative or judicial fiat, but it should be possible, with the threat of renewed antitrust proceedings, to make sure that profits as a percentage of net sales less tax do not rise far above ordinary industrial levels and that if a cigarette company wishes to increase its profits it must do so through a larger output rather than through a wider margin. The practicability of this type of limit is indicated by the cautious pricing policy of the industry since the war.

In general the results of this study tend to emphasize the problems of applying the Sherman Act rather than to resolve them. The legal case against the tobacco companies seems strong and even if technical characteristics of the crime of conspiracy cause the verdict to mean something else than appears on the surface, the verdict itself is consistent with the traditional Sherman Act opposition to the possession of unexerted power as well as to its abuse. For there is no doubt that the major companies do possess monopolistic powers, even though they are limited in their policies by strong market forces, and that their power has been exercised on occasion to bring injury to weaker competitors. The difficulty is that

the Sherman Act provides a condemnation of these things and the sanctions with which to reform them but does not provide the criteria for the reform. The law is clear enough when it prohibits outright collusion, but when it attacks power itself and the consequences of power, it does not set bounds to those transgressions which are regarded as unreasonable nor does it provide criteria for reform in the unreasonable cases.

The Sherman Act is of course expressed in extremely general terms and relies for its enforcement and for its meaning upon the successive accumulation of precedents in a case-by-case approach. This is a time-honored method of legal progress, but it runs into strange difficulties when juries must extract the truth from exceedingly complicated situations of fact and when judges must apply their acumen to technical matters in which they have inadequate training. Few judges or lawyers are also competent professional economists and even if they were, they would still be inadequate to the task. Lawyers and professional economists alike are still dominated by the economics of ten or twenty years ago, and even those who are working on the frontiers of the field are not fully prepared to give the type of advice on public policy which proper application of the Sherman Act requires. The analysis of the firm is still so rudimentary, our understanding of the dynamic forces in the economy so slight, and our pattern of economic and political values so unformulated that few of us can give more than tentative suggestions for the proper organization of the economy. Certainly, professional economists are not yet prepared to administer the industrial reforms which the Sherman Act makes possible, and the courts are unlikely to have significantly greater success. A long process of scientific investigation is ahead of us before we are fully competent to say how our economy operates, and we must know that before we can properly prescribe alternatives.

Are we to say, then, that the Sherman Act has taken us into a blind alley and that it must be relaxed or amended? Not necessarily, for it is often the case that an institution is valuable even when poorly adapted to its professed purpose. The Sherman Act is an inadequate guide to industrial organization but serves as a most useful influence upon it. It penalizes explicit collusion and thus helps preserve competitive relationships where these are useful. It makes market power the object of suspicion and encourages restraint in the use of power. Thus after the 1911 dissolution it was apparent that the cutthroat methods of the Trust were no longer practicable and competition expressed itself in other and generally more desirable ways. So, too, the second tobacco conviction has served to outlaw certain actions and to modify market behavior. There can be little doubt that quite apart from other evidence the predatory price war against the economy brands in 1933 helped to bring about the 1941 conviction and that sustained high profit rates had a prejudicial effect upon the jury. It is not likely that the major producers will resort to punitive price cut-

ting again in the near future, and the restrained profit history since the war is testimony to another type of caution. Thus, although no steps have yet been taken to follow up the criminal verdict with a civil suit, the second tobacco case has already had beneficial effects. Even though no great reforms in industrial structure have occurred or seem desirable, the criminal conviction has had effects more important than the mere levying of fines. The lower profit rates since the war have saved cigarette consumers many times the amount of the costs of prosecuting and defending the antitrust case, and this is a more worth while accomplishment than is likely to flow from further civil actions.

It is strange and unsatisfactory that criminal prosecution of actions which result from market structure should produce desirable results, while the planned reform of that structure does not seem desirable. But in the present state of knowledge this may be the best that we can do. We are not yet ready to blueprint a new economic order, yet the effects of the antitrust laws seem clearly desirable. The latent power of the Sherman Act is undoubtedly unpleasant for businessmen to live with, yet the act still appears to be, for all its untidiness, one of the most useful expressions of public policy.

Appendix

STATISTICAL NOTE ON CHAPTER I

DOMESTIC consumption of cigarettes is estimated directly from tax-paid withdrawals as reported by the Bureau of Internal Revenue.[1] Low levels of inventory are customary among manufacturers, wholesalers, and retailers so that the number of cigarettes upon which tax is paid is usually very close to the number actually purchased by consumers through normal trade channels.

The Production and Marketing Administration estimated consumer expenditure on cigarettes in 1948 at $3,369 million.[2] This implies an average retail price of $9.66 per thousand. Net wholesale prices of the leading brands were $6.51 per thousand for 7 months and $6.86 for 5 months in 1948.[3] Multiplying these prices by monthly tax-paid withdrawals and dividing by annual withdrawals, we secure a weighted average wholesale price of $6.66 for that year. Thus the average markup from wholesale to retail was 45% of the wholesale price. If we assume the proportionate markup to be the same in 1949 and apply it to the uniform $6.86 wholesale price which ruled in that year, we secure an average retail price of $9.95 per thousand. This price, together with annual tax-paid withdrawals, yields our estimate for domestic consumer expenditure through normal channels.

Total tax-free withdrawals are as reported by the Bureau of Internal Revenue. Cigarette exports include large quantities of cheap brands, and according to census reports the value of 22.8 billion cigarettes exported in 1947 was $59.9 million.[4] This implies an average export price of $2.63 per thousand in 1947, and if we assume the same export price to apply in 1949, we secure $51.4 million as the value of the 19.6 billion exported.[5] The remaining 13.7 billion cigarettes were withdrawn free of tax primarily for sea stores or for our armed forces overseas and are valued at the usual domestic net wholesale price of $6.86 per thousand less $3.50 federal tax. The total value of all tax-free cigarettes was thus $97 million.

Consumer expenditures on other tobacco products are as estimated by the Production and Marketing Administration.[6]

Gross national product and consumer nondurable expenditures are esti-

1. Data appear monthly in U.S. Department of Commerce, *Survey of Current Business,* and annually in *CIR.*

2. *DA,* 1949, p. 50.

3. Standard and Poor's Corporation, *Industry Surveys—Tobacco,* Sec. II (March 23, 1950), p. T4-4.

4. F. S. Everts and E. M. Evans, "Export and Import Trade of the United States in Manufactured Tobacco," U.S. Department of Commerce, Office of International Trade, *World Trade in Commodities,* VI, Pt. VIII, No. 16 (October, 1948), 4.

5. U.S. Department of Commerce, *op. cit., 30,* No. 3 (March, 1950), S-30.

6. *DA, loc. cit.*

mated by the Department of Commerce.[7] Total cigarette sales value of $3,599 million is compared with the first, and domestic expenditure of $3,502 million is compared with the second.

Federal excise taxes are reported by the Bureau of Internal Revenue.[8] State excise taxes on all tobacco products were reported by the Bureau of the Census to be $390 million for the 1949 fiscal year.[9] Twenty-seven states, which taxed only cigarettes, were responsible for $316 million of the total. The other states, which collected the remaining $74 million, taxed all products with minor exceptions. Their rates were about half the federal rate on cigarettes and about equal to the federal rate on other tobacco products.[10] Federal tobacco tax collections in 1949 were derived 93.3% from cigarettes and 6.7% from other tobacco products.[11] If the pattern of consumption in the states which taxed other tobacco products than cigarettes was the same as that in the nation at large, this would imply that 86.5% or $64 million of their tobacco taxes were derived from cigarettes. Thus total state cigarette taxes were about $380 million in the 1949 fiscal year, and since fiscal year tax-paid withdrawals were almost the same as calendar year withdrawals, this figure will serve as a reasonable estimate for the calendar year as well.

Corporate profits, income taxes, and interest paid out are based upon Tables 60 and 61. Table 60 presents relevant information for the five companies which publish financial statements.

TABLE 60

Sales, Income Taxes, Earnings and Assets, Five Companies, 1949 *

(Millions of Dollars)

Company	Tangible Assets	Net Sales	Net Profit	Interest	Income Taxes
American	650.5	859.0	45.7	9.0	30.4
Reynolds	528.5	746.4	40.5	4.9	28.5
Liggett	416.6	557.7	29.6	4.4	19.8
Philip Morris	156.3	249.0	14.6	1.1 †	9.5 ‡
Lorillard	100.6	153.5	6.3	1.0	4.4
Total	1,852.6	2,565.6	136.6	20.5	92.5

* Compiled from Moody's, Poor's, and company records.
† For year ended March 31, 1949.
‡ Estimated from calendar year earnings.

Table 61 presents estimates of company cigarette output. None of the companies publishes such information. As a result of the antitrust trial in 1941, brand sales data are available for most companies from 1925 to 1939 and for Camel cigarettes from 1913 to 1939. In more recent years the only

7. U.S. Department of Commerce, *op. cit., 30,* No. 2 (February, 1950), 8.
8. Monthly figures appear in U.S. Treasury Department, *Treasury Bulletin,* and annual figures in *CIR.*
9. *DA,* 1949, p. 59.
10. *Ibid.,* pp. 56–58.
11. *CIR,* 1949, p. 30.

sources of company or brand sales data have been estimates by individuals on the basis of government statistics, financial statements, and such information as the trade would divulge. Estimates of this sort by H. M. Wootten, published annually in *Printers' Ink,* have proved reliable and are the basis for Table 61. His estimates made in earlier years were generally substantiated when official figures were released in the course of the antitrust trial.

TABLE 61

Cigarette Production, Five Companies, 1949 *

(Millions of Dollars)

Company	For Domestic Market	For Export	Total
American	115.5	6.0	121.5
Reynolds	97.8	4.5	102.3
Liggett	70.0	8.5	78.5
Philip Morris	34.0	1.7	35.7
Lorillard	18.4	0.9	19.3
Five companies	335.7	21.6	357.3
National total	355.6	33.0	388.6
Added inventory	3.1		
National tax-paid withdrawals	352.5		

* Wootten, 1950, p. 27.

It will be observed that Wootten estimated tax-paid withdrawals to be 352.5 billion, whereas 351.8 billion was the number actually withdrawn. In making intercompany comparisons it seems best to ignore this slight discrepancy and to use Wootten's national figures in the interest of internal consistency even when slightly more accurate data are available from subsequent government reports.

According to Table 61, these five companies accounted for 357.3/388.6 or 91.9% of the national output. Applying the average domestic and export prices derived above, we secure $2,360 million as the value of cigarette sales for the five companies. From Table 60 we see that cigarettes accounted for 2,360/2,566 or 92.0% of total company receipts. Allocating profits, interest, and taxes to cigarettes on the basis of dollar sales and assuming the rest of the industry to have similar profit, interest, and tax experience, we secure our industry estimates for these items.

Total tax-paid withdrawals multiplied by the net wholesale price of $6.86 per thousand yields $2,414 million as the value of manufacturers' domestic sales. The difference of $1,088 million between this and the $3,502 million of consumer expenditure is the gross distributive markup. Subtracting $380 million of state excise taxes leaves $708 million as the margin to cover wholesalers' and retailers' costs and profits.

The estimation of leaf tobacco costs is rendered difficult both by paucity of information and by industry accounting methods. Inventories of cigarette leaf are usually held for two or three years and are charged out at average cost. This is not necessarily the same as the average purchase cost of the

particular leaf in stock, since leaf withdrawn reduces inventory value, not by its own purchase cost, but by the average value of all leaf in stock. It is not feasible to employ such a procedure in constructing our leaf cost estimate, but a rough approximation can be obtained by valuing leaf consumed at the average price received by farmers in the three preceding crop years.

According to the Bureau of Internal Revenue, 1,099 million pounds of leaf tobacco were used in the 386.8 billion cigarettes manufactured in 1948.[12] Thus, if tobacco content per cigarette was the same in 1949, the 388.1 billion manufactured in that year (385.0 billion total withdrawals plus 3.1 additions to inventory) involved the consumption of 1,103 million pounds. In the 1949 fiscal year the disappearance of Type 90, foreign-grown tobacco, was 44 million pounds.[13] Most of this type is Turkish cigarette tobacco and since cigarette production was almost the same in fiscal 1949 as in the calendar year, it seems reasonable to use this same figure of 44 million pounds as an estimate of the quantity of foreign tobaccos used in cigarette manufacture in calendar 1949. This leaves 1,059 million pounds as the quantity of domestic tobacco used in cigarettes. This figure, however, is in terms of "unstemmed processing weight," which is the weight of leaf after redrying and storage but before the midrib is removed. At this stage the leaf has lost some of its weight and consequently consumption figures cannot be directly compared with farmers' prices.

The simple average of the season average prices for the three preceding crop years was 46.5¢ per pound for flue-cured tobacco, 44.7¢ for Burley, and 48.1¢ for Maryland.[14] Taking into account the losses in weight to which these tobacco types are subject,[15] we find that each of these prices is equivalent to about 52¢ per pound of unstemmed processing weight. Thus the farm value of domestic tobacco used in the manufacture of cigarettes was about $550 million.

It should be noted that this estimate does not include any of the expenses of handling leaf tobacco after purchase from the farmer, nor does it include imported leaf. Only payments to farmers are included, yet the estimate is not one of payment received by farmers in any one year. It represents rather the payments to farmers which would have occurred had the leaf consumed been evenly purchased over the preceding three years.

This estimate obviously lacks precision. Even if all the data employed are correct, the accuracy of the estimate cannot extend to more than two significant figures. There is, moreover, reason to believe that we understate the value of leaf used. Grades of tobacco used in cigarettes are usually more expensive than those used in other products, yet we have employed average prices for all grades of flue-cured, Burley, and Maryland tobacco without regard to ultimate use. It does not seem possible to correct the estimate for this factor, and we must admit the presence of a disturbing error. Never-

12. *Ibid.*, p. 138.

13. *DA*, 1949, pp. 33, 66. Disappearance equals stocks on hand July 1, 1948, *plus* imports *minus* stocks on hand July 1, 1949.

14. *Ibid.*, pp. 9–10.

15. J. V. Morrow and Dudley Smith, *Tobacco Shrinkages and Losses in Weight in Handling and Storage*, p. 8.

theless, the estimate serves to indicate the general magnitude of the farmer's interest in cigarettes.

"Other manufacturing and selling costs" is a residual item which reflects the combined errors of all the other estimates. In particular, the uncertainty attendant upon leaf costs is fully reflected. The residual item includes all Turkish tobacco costs, all costs of purchasing, storing, and processing leaf tobacco in excess of payments to farmers, any other amount by which leaf costs as accounted by the industry exceed our estimate of farm value.

For details of the distributive network for tobacco products, see pages 246–247.

The value of tobacco products in 1900 was $283.1 million.[16] The total number of cigarettes produced was 3,644 million, of which 2,501 million were intended for domestic use and 1,145 million were for export. The Tobacco Trust, with 92.7% of the national output, had an average net price of $3.66 per thousand.[17] Assuming that all sales were at the same average price, output for domestic consumption was worth $9.2 million If we assume that the export price was equal to the domestic price less tax of $1.50 per thousand, the value of output for export was $2.5 million. The total value of all cigarettes produced in 1900 was thus about $11.6 million. This was about 4.1% of the census value of all tobacco products. There is some error in this estimate since independent (non-Trust) output was predominantly of expensive brands. Export cigarettes, on the other hand, were mostly cheap grades for Asiatic markets. The two sorts of error are partly offsetting.

Expenditure on cigarettes in 1900 is estimated from total domestic sales and an assumed consumers' price of $5.10 per thousand. In 1901 one of the Trust brands with a net price to jobbers of $3.59 was sold to consumers for $5.00. Another brand with a net price of $5.67 sold at retail for $7.50.[18] Since the average net price of all Trust brands was $3.66, we are probably not far wrong in assuming $5.10 as the average retail price for all cigarette sales. Since total domestic output was 2,507 million cigarettes, consumer expenditure probably amounted to $12.8 million.

16. U.S. Census Office, *Manufactures,* Pt. I (1900), p. cliii.
17. *BC,* Pt. I, pp. 329, 336; Pt. III, pp. 153, 155.
18. *BC,* Pt. III, p. 170.

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AVAILABLE information on the cigarette industry, more than on most industries, presents a pattern of bright light and dark shadow. The government's continuing interest in the industry as a source of excise revenue and as an important sectional agricultural interest has made available a large amount of accurate information on the industry as a whole. Acreage, yields, and prices of leaf tobacco are presented by the Department of Agriculture in great detail. Production of manufactured tobacco in various forms, leaf consumption, leaf stocks, and tax collections are reported with minute care by the Bureau of Internal Revenue. On the other hand, details of company operations have generally been shrouded in mystery owing to a passionate regard for secrecy by the major producers.

The financial statements of the leading companies have been models of discretion. From 1912 to 1923 only the American Tobacco Company published figures on the value of total sales. From 1924 to 1933 none of the companies disclosed this information. Income statements usually commenced with net profits after taxes and merely analyzed their distribution. Since 1934 SEC requirements have made financial statements somewhat more informative. For the later period, dollar sales are available for all major companies except Brown and Williamson, although there is seldom any disclosure of brands or even of classes of product.

Company detail has been made available primarily as the result of litigation or official investigation. The most important of these sources is the record of the antitrust trial in the United States District Court at Lexington, Kentucky, in 1941. For the early period of the industry, the reports of the Bureau of Corporations yield detailed information of great value. Besides the steady flow of litigation and official reports which throw partial light on the industry, there is a volume of monographic literature on particular phases of the industry, and endless trade gossip is to be found in trade journals and other periodicals.

There have been four general private studies of the industry in the past half-century:

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Jacobstein, Meyer. *The Tobacco Industry in the United States.* New York, Columbia University Press, 1907.

Cox, Reavis. *Competition in the American Tobacco Industry, 1911–1932.* New York, Columbia University Press, 1933.

Tilley, N. M. *The Bright-Tobacco Industry, 1860–1929.* Chapel Hill, University of North Carolina Press, 1948.

The first two are wholly obsolete. The third I have relied on for details of corporate organization and behavior in the period before 1930. Miss Tilley's

monumental history of Southern tobacco and Southern tobacco manufacture appeared after the present study had reached its first draft and was responsible for several changes. Her book is essential to anyone working in this field. Mention should also be made of W. C. Baum, "Workable Competition in the Tobacco Industry" (Ph.D. dissertation, Harvard University, 1949), which considers some of the same problems as this study and which has occasioned some modifications in my final revision.

The total quantity of available material is overwhelmingly large and of highly uneven quality. An exhaustive bibliography would require a second volume, and I have therefore restricted the following list to those works actually cited.

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