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Chapter 1

THE NATURE OF THE STUDY

ONE OF the most frequently discussed tax reforms to encourage capital expenditures is the liberalization of provisions determining the computation of deductible depreciation charges. During the postwar period, two major reforms of this nature took place. The first permitted firms to use "accelerated" tax depreciation formulas (such as double declining balance and sum-of-the-years digits) which increase depreciation charges in the early years of the life of a plant or piece of equipment and decrease them in the later years. The second reform provided for the use of shorter service lives for tax purposes, thereby increasing depreciation charges during the course of the shortened tax life.¹

This study is primarily an investigation of the effects of such changes on modernization expenditures in the textile industry. In addition, attention is given to the effects within the industry of the introduction of investment tax credit in 1962 (see Chapter 7).

The investigation relies principally on in-depth interviews with executives of twenty-five textile firms, supplemented by data provided by most of these firms or gleaned from published financial reports. Background information was secured by interviews with executives of five leading textile machinery manufacturers and a number of persons with legal, governmental, engineering, or trade association experience closely related to the industry.

¹ These two forms of depreciation have similar but not identical tax effects. Both are discussed in Chapter 2. Another suggested approach to depreciation liberalization is to substitute replacement cost for original cost as the basis for making depreciation deductions. No action has yet been taken in the United States on this proposal, however. Cf. Norman B. Ture, *Accelerated Depreciation in the United States, 1954-60*, New York, NBER, 1967, p. 4, fn. 4.

The textile industry was selected for special study for two reasons. First, the industry not only benefited by the general liberalization of depreciation under the Internal Revenue Code of 1954 but also was permitted radical shortening of its permissible tax life on basic textile equipment under the provisions of a special tax procedure in October 1961.² The latter occurred three-fourths of a year earlier than the general depreciation reform under IRS Revenue Procedure 62-21, July 1962, and thereby provided an opportunity for observing the response to the availability of shortened depreciation lives over a somewhat longer period.

Second, the particular circumstances of the American textile industry suggested that an investigation into the effect of depreciation liberalization on modernization might be fruitful. Not only was the industry widely considered to be technologically backward—more so than most other U.S. industries—but, simultaneously, the opportunities for technical progress were deemed to be abundant due to significant advances in recent years.³ This set of circumstances—widespread obsolescence combined with abundant modernization opportunities—made the industry one

² The October 1961 change in Treasury regulations authorized firms in the textile industry to use materially shorter lives for purposes of computing depreciation on tax returns than those stipulated in the Internal Revenue Service Bulletin F which previously had been in force. We shall see in Chapter 3 that in practice this basis was by no means always the standard used for tax depreciation.

³ Whether or not the industry was technologically “backward” cannot be empirically established. It is clear, however, that the industry had passed through years of overcapacity during which rates of return on invested capital were very low and equipment was gradually worn out and retired from use. The history of the industry from 1919 until the years immediately after the Second World War was a classic demonstration of movements toward long-run equilibrium under conditions of overcapacity and a series of historical incidents which served to retain the condition of overcapacity. These incidents included the development of textile manufacturing in the South, the discovery and implementation of second (and, later, third) shift operation, and the development of the rayon and synthetics branch of the industry. Cf. Thomas M. Stanback, Jr., “The Textile Cycle: Characteristics and Contributing Factors,” *Southern Economic Journal*, XXV, No. 2, 1958, p. 187. John Kendrick’s estimates of capital input provide evidence of the quantitative decline of capital utilized within the textile mill products industry during the pre-World War II years. His capital input index for the industry in 1919 stood at 115.1 (the year 1929 equals 100). By 1937 it had fallen to 71.1; in 1948 it had risen to only 78.5, and in 1953 stood at 87.8. John W. Kendrick, *Productivity Trends in the United States*, Princeton, N.J., 1961, p. 469. See also “Age of Existing Equipment,” below, p. 9.

in which the operation of tax factors might most readily be observed.

SCOPE OF THE STUDY

Segments of the Industry Studied

From the outset this study has been limited to three sectors of the textile industry (i.e., textile mill products industry): cotton broadwoven goods, synthetic broadwoven goods, yarn and thread mills (cotton system spinning). These three groups comprised 49 per cent of the textile mill products industry in 1962 when measured in terms of production workers (43 per cent when measured in terms of value added) and accounted for 54 per cent of capital expenditures.⁴

The reason for restricting the study to these groups was that, in terms of processes and equipment used and economic conditions which surround the investment decision, they comprise a more homogeneous sector than do the remainder, yet offer a variety of experience for analysis.

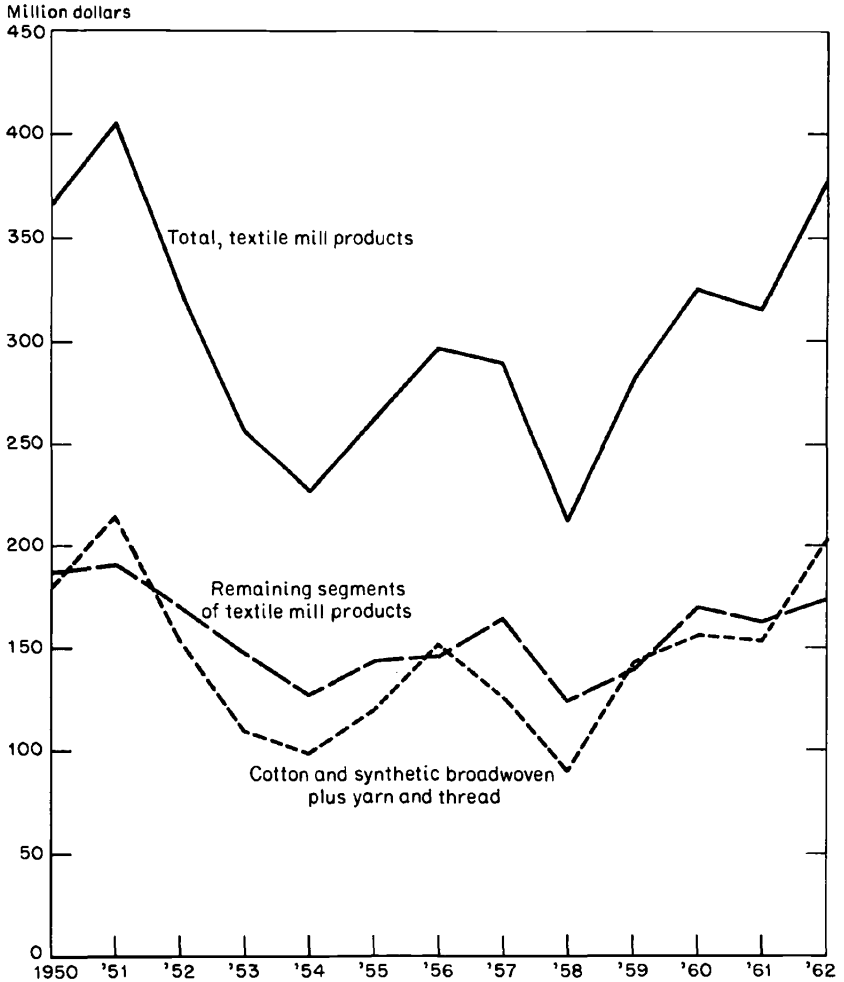
Chart 1 pictures graphically the capital investment experience of the industry since 1950, contrasting the three groups under survey with the remainder of the industry. Expenditures by the groups studied have dominated the pattern of total expenditures for the industry.

Firms Interviewed

Although the firms interviewed may not be regarded as comprising a scientifically stratified sample, every effort was made to select a useful cross section of those sectors of the textile industry under study. In selecting the sample we relied heavily upon suggestions by executives of the American Textile Manufacturers' Institute and of two textile machinery companies, as well as several textile executives possessing a broad familiarity with the industry. The executives were asked to suggest a list of firms which would include large, medium, and small companies, both publicly and privately held, and would represent the vari-

⁴ *Annual Survey of Manufacturers, 1962*, U.S. Department of Commerce, p. 32.

CHART 1. Capital Investment Expenditures; Total Textile Mill Products, Cotton and Synthetic Broadwoven Goods plus Yarn and Thread Mills, Other Textile Mills, 1950-62



NOTE: 1962 figures include capital expenditures for plants under construction.
SOURCE: U.S. Department of Commerce, Bureau of Census.

ous general types of cotton and synthetic fabrics produced as well as yarn and thread manufacturers. The list was also to include firms with highly aggressive modernization policies and those with relatively unaggressive ones as well. Finally, every effort was made to secure a geographically representative sample. Firms were interviewed in Massachusetts, New York, Virginia, North Carolina, South Carolina, Georgia, and Alabama.⁵

Among the firms interviewed, eight (32 per cent) may be classified as "large," with sales in excess of \$150 million in 1963, ten (40 per cent) as "medium" with sales of \$50-150 million, and seven (28 per cent) as "small," sales under \$50 million.⁶ Among the eight large firms six were publicly held, two closely held.⁷ Among the medium-sized firms, four were publicly held and six closely held. Among the seven small firms only one was publicly held. Twenty-one of the firms produced cotton or synthetic broad-woven goods or both. The remaining four specialized in yarns or threads.

Executives Interviewed

Persons interviewed were in every instance experienced, senior officials. Since the study had received the endorsement of the tax committee of the American Textile Manufacturers' Institute, executives were cooperative in granting interviews and entered into the interview process in an interested and helpful spirit.

In six of the firms contacted, the senior executive interviewed was president, in four other cases executive vice president, in still another case director of research and development (but very deeply involved in his firm's investment decisions).

⁵ Although a variety of experience in times of profitability was not a formal criterion, the evidence from company records indicates that there was, in fact, a high degree of representativeness in this regard. See pages 32-33.

⁶ The above definition of "large," "medium," and "small" in terms of sales volume is based upon analysis of published sales data for textile firms. Discussion with knowledgeable persons in the industry revealed that the classification is also consistent with general usage.

⁷ Firms are regarded as closely held if they were, entirely or predominately, owned and managerially dominated by a single individual or small group. In almost every instance the interview indicated clearly that the firm was either publicly held and sensitive to stockholder relations or closely held and insensitive to such relations.

In the majority of cases (fourteen of the firms), however, the senior executive interviewed was the financial officer, usually of vice presidential rank. As such he was familiar with company depreciation policy and investment practices and, interestingly enough, usually appeared to be quite conversant with textile technology and familiar with operating experience in the mill.

Interviews were not typically confined to one executive in each firm, however. In fifteen of the twenty-five firms more than one executive was interviewed. These other executives were sometimes financial officers, but in a number of instances were responsible for some phase of production.

Timing of the Interviews

The interviews were conducted during the spring and summer of 1963. This fact must be kept in mind as we assess the interview material, for it imposes certain restrictions upon the evidence. At the time of interview most firms had had substantial experience with the accelerated depreciation provisions of the 1954 Internal Revenue Code.⁸ On the other hand, while most of the firms had had roughly a year and a half of experience with the special depreciation provisions of 1961,⁹ they had had less than a year's experience with the new depreciation rules in IRS Revenue Procedure 62-21¹⁰ and the provisions of the investment

⁸ The Internal Revenue Code of 1954 provides for the use of accelerated depreciation allowances for all new, depreciable property, newly acquired after 1953, which is used in the taxpayer's trade or business. The depreciation provisions of the Code expressly authorize taxpayers to use the declining-balance method with an annual depreciation rate equal to twice the straight-line rate, the sum-of-the-years digits method, or any other method which would not result in cumulative charges during any year in the first two-thirds of the asset's life which would be in excess of those generated by use of the declining balance method. Cf. Norman B. Ture, *Accelerated Depreciation*, for a detailed explanation of these provisions.

⁹ On October 11, 1961, President Kennedy announced that thereafter taxpayers might base depreciation allowances for all basic textile equipment except finishing equipment on a service life of fifteen years and in the case of finishing equipment on a service life of twelve years. Prior to the announcement, the service lives suggested in the Internal Revenue Service's Bulletin F were twenty-five years and fifteen years respectively. The new estimated useful lives were applicable for all properties with a remaining useful life of more than five years. For assets previously acquired the method of writing off the remaining cost (undepreciated value) varied according to type of depreciation in use.

¹⁰ In July 1962 the Treasury Department issued Revenue Procedure 62-21, superseding Bulletin F and substantially revising the approach for determining

credit in the Revenue Act of 1962.¹¹ One of the investment credit provisions required reducing the depreciable basis of assets on which the credit was claimed by the amount of the credit. Since the credit was mandatory, this provision, in effect, mitigated the liberalizing of the depreciation rules under the 1961 and 1962 administrative procedures. The reduction-of-basis provision in the credit was repealed by the Revenue Act of 1964.

The timing of the study permitted observation of the opinions and reactions of the sampled firms during the early history of the respective tax changes. It is possible, however, that somewhat different answers might have been received had the interviews been conducted at a later date. There is substantial evidence, for example, that the initial response of firms to the availability of accelerated depreciation methods in the 1954 Revenue Code was quite limited and that the use of these methods increased year by year as more companies came to realize the advantages afforded by these provisions.¹²

The Questionnaire

All interviews were based on the questionnaire shown in Appendix A. Every effort was made, however, to avoid a mechanical presentation or rigid adherence to the questionnaire. The sequence of questions was altered on the spot, allowing the executive to move naturally from one topic to another, exploring each

useful lives. Applicability of the guidelines is at the taxpayer's election; he may, if he chooses, continue on the earlier guidelines.

The Revenue Procedure presents useful lives on a broad industry grouping rather than on the old Bulletin F item-by-item basis. In contrast with the 5,000 or so items in Bulletin F, the Procedure designates less than 100 asset classes; one class will normally cover substantially all the productive machinery and equipment used in an industry. Certain general purpose assets as office equipment fall into guideline classes that cross industry lines.

As originally issued, the Procedure permitted a taxpayer to use the suggested guideline lives without question for an initial three year period. After this period he might continue to use them as long as they are consistent with actual service lives as demonstrated by his retirement practice. The taxpayer is free to use shorter than guideline lives if he can demonstrate that retirement practice justifies such a policy. A subsequent ruling extended the initial three year period.

¹¹ As originally enacted, a credit against tax liability in the amount of 7 per cent of the cost of depreciable property other than structures was allowed, subject to certain limitations regarding the service life of the property and other factors.

¹² Cf. Ture, *Accelerated Depreciation*.

with as much thoroughness as time and his inclination would permit.

The questionnaire is divided into a number of sections. The first (initiation of requests for capital expenditure) is designed to provide an indication of the type of capital budgeting procedures employed, the second (the investment formula) to determine the type of formula used and the manner of its computation. The third section (other factors influencing the investment decision) explores a number of factors, other than straightforward computations of expected savings or increased revenues, which influence the investment decision; and the fourth (modification of old equipment versus purchase of new) focuses on a particular type of modernization expenditure problem: whether to modify existing equipment or to purchase new.

The questionnaire then turns to financial and tax matters. The fifth section (financial considerations: internal and external financing) is comprised of a number of questions designed primarily to determine the firm's experience and practices with regard to internal and external financing. The sixth (depreciation) explores the company's experience with liberalized depreciation—its understanding of possible benefits, its estimate of the actual influence of liberalized depreciation, its attitude toward further liberalization. The seventh (investment credit) contains similar questions relating to the investment credit. Remaining sections (corporate income tax, effect of cyclical fluctuations, and summing-up) permit comparison of the executives' reactions to proposed income tax changes with those already given in reference to depreciation liberalization as well as an assessment of the role of cyclical changes and of the major factors influencing modernization in recent years.

NATURE OF MODERNIZATION OUTLAYS AND
THE SUITABILITY OF THE TEXTILE INDUSTRY
FOR STUDY OF SUCH EXPENDITURES

Modernization outlays can be defined as those made to *replace* existing facilities with new ones which will afford reductions in

variable unit costs at the same level of output. Such outlays may be contrasted on the one hand with outlays for facilities to be used for increasing total output without reduction of units costs and on the other with simple replacement affording no production economies.

The distinction is often an easy one to make in the practical terms of the corporate executives interviewed in this study, but it is far from rigorous analytically. A capital outlay which reduces variable unit costs of a given level of output must free one or more inputs in the production process for additional income generation. For the same production budget, therefore, a greater total income flow can be generated as a result of the modernization outlays. In this sense modernization and expansion amount to the same thing. However, modernization outlays may result in somewhat different variable unit costs of output at some other rate of production, i.e., modernization outlays probably result in a change in the shape of the relevant cost curves, whereas expansion outlays change the position of such curves without altering their configuration. In real life, of course, modernization and expansion objectives probably are combined, or not distinguished, in investment programs more often than they are deliberately separated.

The textile industry is especially well suited for the study of tax influences on modernization-type capital outlays. Much of the equipment in use is old and change in the textile technology available for implementation has been rapid in recent years. Moreover, the nature of this change and of the production processes involved has made it possible for firms to modernize equipment on a piecemeal basis without facing the special difficulties involved in industries where entire plants must be replaced if modernization is to occur.

Age of Existing Equipment

The following estimate of the installation dates of machinery in use in 1960 was made available to the author by the American Textile Machinery Association.

	<i>Percentage Installed Prior to</i>			<i>Percentage</i>
	<i>1920</i>	<i>1940</i>	<i>1950</i>	<i>Installed</i>
Picking	36	69	86	14
Cards	73	81	90	10
Drawing	11	55	85	15
Combing	10	21	76	24
Roving	10	38	73	27
Spinning	22	59	81	19
Looms	27	45	75	25

Although this estimate may not take full account of modifications made to old equipment, it appears to indicate that a very large proportion of the basic equipment in all of the major textile production processes was not less than ten years old and in most of them twenty to forty years old. In itself, this observation does not prove that the industry has not made the most of its decision regarding capital facilities to be used in the various production processes. Financial considerations play an important role in connection with the decision to modernize, modify, or make do with existing facilities. The mere fact of engineering advance does not dictate the choice of modernization; the costs of implementing these advances in the production process may be so great that, given the conditions of demand for output, greater net returns may be realized by relatively minor modification of existing production techniques or even staying with existing processes than by undertaking replacement on a large scale. Economically speaking (i.e., from the point of view of profit maximization) the best capital program for the firm and industry might involve passing up the glamorous, technically superior production processes until they become competitive on a cost basis.

By the same token, a change in the system of financial constraints—for example, those resulting from liberalization of depreciation rules—might make practicable the implementing of hitherto unprofitable technical advances. It is in this connection that the present study focuses on the consequences of the 1961–62 tax changes on the state of technical advance in the textile industry.

Improvements in Textile Technology

All evidence points to a rapid rate of improvement in textile technology in the postwar period. For example, a Department of Commerce engineer interviewed in early 1963 estimated that, on an engineering basis, drawing equipment had increased in productive efficiency by 300 per cent since 1958, combers had improved by 138 per cent, and spinning equipment by 96 per cent. While no precise quantitative estimate was given, he also expressed the view that technical advance in looms was also high.

Further evidence, of the same sort but in greater detail, may be found in *Profit Life of Textile Machinery*, and in the Whiten Machine Works studies of output and labor inputs for a comparable mill in 1956 and 1961.¹³

Nature of the Production Processes

The production of cloth, though it involves a number of processes extending from the breaking of the bale, in the case of cotton, to the final inspection of the woven fabric, is not a continuous process industry. Textile engineers state that in no other industry are there as many machine processes which are comparatively independent of one another, i.e., an individual machine may be replaced independently of the remainder of the facilities.

Moreover, postwar developments in textile technology have involved improvements in basic processes and the development of auxiliary equipment rather than radical breakthroughs calling upon new engineering principles. In general, modern textile equipment is faster, more efficient, and turns out a higher quality product than the equipment which it replaces, but it nevertheless employs time-honored engineering principles. In spite of very dramatic breakthroughs in fiber technology and the textile industry's adoption of these new fibers, today's basic weaving, spinning, and allied processes are similar to those employed for

¹³ American Textile Machinery Association, *Profit Life of Textile Machinery* (prepared by Mildred Andrews), Vienna, Va., 1958; and *The Whiten Review*, December 1956 (pp. 9-19), March 1957 (pp. 26-36), December 1961, Whitensville, Mass.

many years. At the time of the interviews the automated mill existed only in prototype form and two of the most promising developments in textile technology, the shuttleless loom and automatic doffing, were being used only to a limited extent.¹⁴ As of the fall of 1965, some new mills were employing a significant degree of automation and automatic doffing was finding wider use. The industry anticipates very rapid technological advances in the years ahead.¹⁵

Still another consideration is the uneven progress of textile technology: development tending to focus first on one stage of production, then on another.

The result of this combination of circumstances is that mills have been presented with a series of modernization opportunities. The importance of each opportunity has varied from mill to mill depending upon the age and efficiency of existing equipment and on the product line produced. There seems to be general agreement, however, that for most firms the postwar years, especially those immediately preceding the interviews, were a period of more or less continuous opportunity for modernization.¹⁶

MODERNIZATION VERSUS MODIFICATION

Another result of the technological developments characteristic of the textile industry is that improvements in equipment design have frequently presented management with the alternative of modifying old equipment in order to incorporate some or all of the new design features rather than of purchasing new equipment.

Liberalized depreciation may, under certain conditions, act to alter the decision in such a way as to encourage replacement of

¹⁴ The doffing process is that of removing, and replacing, the "quills" from the spinning machines when they are filled with newly spun yarn. Until recently this was done entirely by hand.

¹⁵ For an interesting description of recent developments in textile technology see the series of three articles, "Textile Automation Mounts Worldwide," "Automated Textile Plants Grow," and "Textile Machinery Changes Speeded," *Journal of Commerce*, July 7, 8, 9, 1965.

¹⁶ For interview evidence see Chapter 4, pp. 56-58.

old equipment with new, modern equipment rather than modification.

An indication of the importance of modification as a method of modernizing is found in statistics of the American Textile Manufacturers' Institute on the number of cotton system spindles rebuilt or newly installed during the years 1960-63. Rebuilt spindles exceed new ones in each of the years as follows:¹⁷

	<i>New (000's)</i>	<i>Rebuilt (000's)</i>
1960	458	1,100
1961	382	831
1962	513	593
1963	426	552

Further, according to the Census of Manufactures, 53 per cent of shipments of textile machinery producers in 1954 and 52 per cent in 1958 were in the form of machinery parts.¹⁸ According to one leading textile machinery manufacturer, parts sales have comprised as much as 70 per cent of total sales in some years.

THE PLAN OF THE STUDY

The chapter which follows sets forth three possible routes by which liberalized depreciation may influence modernization outlays. Briefly, depreciation legislation may act to increase expenditures by increasing the *incentive* to spend (the demand effect), by making available a larger flow of internal funds on terms management considers to be favorable (the cash flow effect), or by altering management attitudes toward modernization expenditures as a result of the changes which occur in *bookkeeping charges* within the firm's accounting system.

Chapter 3 provides background information relating principally to the interviewed firms' experience in adopting the depreciation provisions of the Internal Revenue Code of 1954, the special tax

¹⁷ See "Ten Years of Cotton Textiles, 1954-64," a brochure published by American Textile Manufacturers' Institute, Inc.

¹⁸ 1958 *Census of Manufactures*, Vol. II, Part 2, p. 35, D15.

provision of 1961, and Revenue Procedure 62-21 (1962). It also presents evidence relating to executive attitudes toward treating depreciation charges differently for tax and accounting purposes, an important consideration in evaluating the third route noted above.

Chapters 4 and 5 then present evidence relating to the influence of liberalized depreciation upon the executive's decision to spend for modernization as it acts through each of the three routes.

Chapter 6 presents an evaluation of executive reaction to the investment credit during the short period that the credit was in force prior to the interviews. It also sums up the previous evidence and evaluates the combined influence of the two types of legislation. Finally, Chapter 7 summarizes the evidence and findings.