

This PDF is a selection from an out-of-print volume from the National Bureau of Economic Research

Volume Title: Tax Changes and Modernization in the Textile Industry

Volume Author/Editor: Thomas M. Stanback, Jr.

Volume Publisher: NBER

Volume ISBN: 0-870-14483-9

Volume URL: <http://www.nber.org/books/stan69-1>

Publication Date: 1969

Chapter Title: The Cash Flow Effect on Modernization Outlays and the Influence of Depreciation Liberalization on Management Attitudes

Chapter Author: Thomas M. Stanback, Jr.

Chapter URL: <http://www.nber.org/chapters/c1192>

Chapter pages in book: (p. 68 - 91)

Chapter 5

THE CASH FLOW EFFECT ON MODERNIZATION OUTLAYS AND THE INFLUENCE OF DEPRECIATION LIBERALIZATION ON MANAGEMENT ATTITUDES

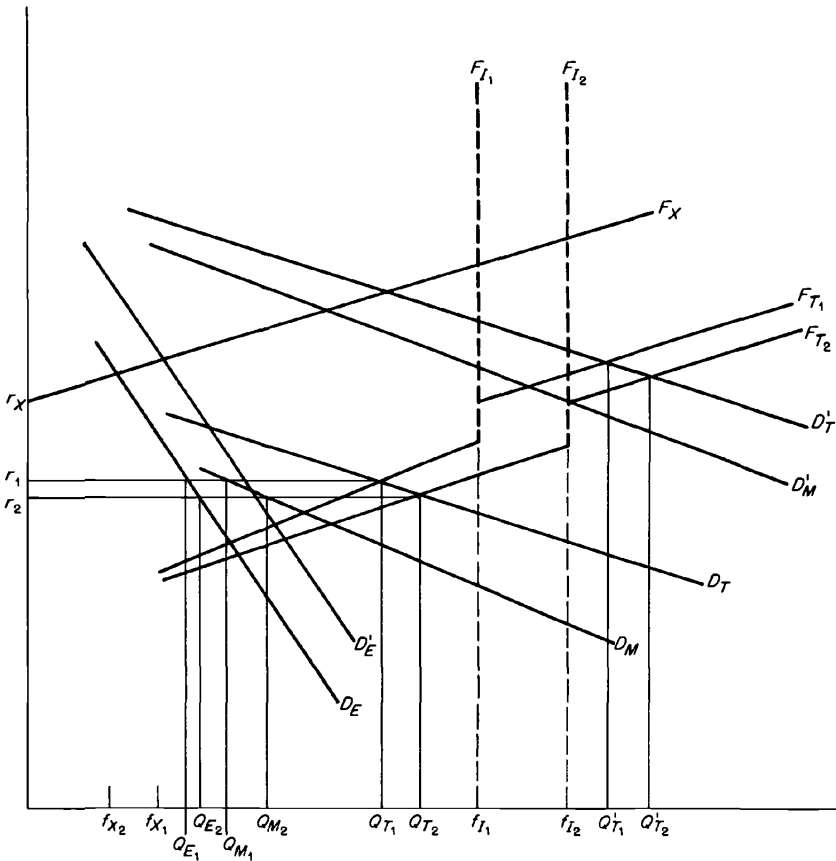
CHAPTER 2 discussed, in general terms, the influence of an increase in internally generated funds, resulting from depreciation liberalization, on the volume of investment in depreciable facilities. The purport of that discussion, broadly stated, is that if the cost of capital obtained from external sources is deemed to be substantially greater than that of internally generated funds, an increase in the amount of the latter will result in an expanded volume of capital outlay. The analysis that led to this conclusion, however, does not distinguish between the impact of additional internal funds on investment outlays in general, on the one hand, and that for modernization purposes, on the other. Our objective here is to examine the possibility that the increase in cash flow resulting from depreciation liberalization will differentially affect investment in modernization facilities as compared with, say, expansion projects.

THE THEORETICAL CASE FOR THE CASH FLOW EFFECT

In general, the optimum number of investment projects to be undertaken in a given period of time is thought to be determined by the intersection of the curve depicting the marginal cost of

funds and the curve depicting the marginal return on their use in acquiring production facilities. In Figure 1, this is the amount Q_{T_1} at the intersection of the curves F_{T_1} and D_T . The curve F_{T_1} is the sum of the curves F_x and F_{I_1} , the former depicting the marginal cost of funds obtained externally and the latter that of funds derived within the firm. For interest rates below r_x , F_{I_1} and F_{T_1} are identical. The curve D_T is the sum of the curve D_E and D_M , representing the marginal returns from the use of the funds to acquire facilities for expansion and for modernization, respec-

FIGURE 1. Effect of Change in Cash Flow on Modernization Outlays



tively. Total outlays, Q_{T_1} , in the period consist of Q_{E_1} of expansion outlays and Q_{M_1} of modernization undertakings, since these respective amounts yield marginal returns just equal to the marginal cost, r_1 , of funds in the amount Q_{T_1} . If depreciation liberalization results in an increase in internally available funds to F_{I_2} , the curve depicting the marginal cost of total funds becomes F_{T_2} . Ignoring the effect of the tax change on the profitability of capital outlays, the new optimum volume of investment is Q_{T_2} , consisting of Q_{E_2} of expansion projects and Q_{M_2} of modernization ventures.

The curves D_E and D_M have been deliberately drawn so that the shift in the curve F_I will result in a relatively large increase in modernization outlays and a relatively slight increase in expansion investment. That is, the D_M curve is far more elastic with respect to rate of return than is the D_E curve. There is little, if any, a priori basis for generalizing to this effect, i.e., for assuming that the demand for modernization facilities is more elastic with respect to rate of return than that for expansion facilities. It is only when this is the case, however, that an expansion of cash flow will be of particular significance for modernization as opposed to capital outlays in general.

In this example, incidentally, the firm appears to be dependent solely on internally generated funds since the optimum volume of investment, both before and after the tax change, involves no external financing. It is clear that this results from the magnitude of the assumed difference in the marginal costs of internal and external funds and the magnitude of total demand for funds to finance investment. If the curve D_T (hence its components) lay farther to the right, say D'_T , D'_M , and D'_E , the initial optimum volume of investment in the given period would be Q'_{T_1} , financed by f_{I_1} of internal and f_{X_1} of external funds. The increase in cash flow, in this case, would expand total outlays to Q'_{T_2} , of which f_{I_2} would be financed internally and f_{X_2} with funds raised outside the firm. Thus, an increase in cash flow is likely to lead to an expansion of total investment whether or not the firm has relied solely on internally generated funds.

THE CASH FLOW EFFECT IN PRACTICE

While this discussion has been framed in terms of close marginal calculations, in practice there may be the same kinds of results both in firms which use highly sophisticated approaches to the investment decision and in those which do not.

In the latter, unsophisticated management will have an "aversion" to using external financing stated as a policy against long-term debt or against using such financing except under restricted conditions. The firm will have analyzed investment opportunities to determine their "acceptability," but its analysis will be more informal and subject to elements of "judgment." Projects will be regarded as being more or less desirable rather than as offering some estimated rate of return (adjusted for uncertainty). Yet the effect should be roughly the same: additional internal funds will prompt additional expenditures.

The extent to which these additional expenditures will include modernization projects will depend on the firm's attitude about the relative desirability of alternative investment programs. In some cases, the firm may have a policy against outside financing of certain types of projects (e.g., modernization programs) while undertaking such financing on a limited basis in connection with facilities required for, say, development of new market areas or new products. The determinants of these two types of capital outlays are frequently, though not necessarily, quite different. An increase in the demand for the firm's products is generally thought to be the most significant factor influencing the demand for additional capacity. Modernization expenditures, however, are more likely to be impelled by technological change or deterioration in efficiency due to the age of existing facilities. Such differences in the source and nature of demand may be significant in determining policies toward financing these expenditures. It is entirely possible that management may adopt a policy of financing modernization expenditures out of cash flow but find it necessary or desirable to engage in equity or long-term debt financing when expansion of capacity is sought. Such a difference in policy is not

necessarily inconsistent. Outlays for expansion are much more likely to be very large than are outlays for modernization. New plant capacity is more frequently required in expansion, and a conservative management may view a new facility as justifying a permanent addition to the capital structure whereas modernization is seen as more properly accommodated out of the internal flow of funds. In such cases, expansion of internal funds may result in a relatively large increase in modernization outlays.

Apart from these considerations, the relationships between cash flow and modernization expenditures may appear to be highly variable for a number of other reasons. Past expenditures may have been "bunched" for technical reasons: because managerial time and attention may have posed constraints during certain periods and not in others; because there were competing demands for funds (including demands for additional capacity); because, from time to time, management may have regarded full expenditure of internal funds as unfavorable.

Indivisibility of Large Expenditures

Capital installations are frequently of such a nature that they cannot be divided into units whose costs match the availability of internal funds. In such cases, management has the option of either allowing cash to accumulate until a sufficient amount is available or of borrowing the needed amount. The firm with a high degree of aversion to debt is likely to immediately begin repayment of any debt incurred for this purpose. This course is not inconsistent with a policy in which management seeks to finance out of internal funds. Debt is regarded as a necessary and temporary evil, to be incurred only when absolutely necessary and to be tolerated only for as long a period of time as is absolutely necessary. Contrast such a policy to that of the company that deems long-term debt to involve little extra cost in terms of additional risk or otherwise, and therefore willingly, includes long-term debt as a part of its permanent capital structure.

In the case of the firm relying principally on internal funds, outside financing may be resorted to when modernization requirements are thought not to be postponable. These may arise when

there occur sudden changes in technology which so dramatically affect cost or quality that a large proportion of equipment must be replaced immediately if the firm is to compete. Such a situation would be regarded as an emergency justifying the use of long-term debt although the firm ordinarily eschews its use.

Restrictions Posed by Management and Production Requirements

The indivisibility of capital expenditures may frequently take the form of excessive demands upon management, serious interruptions of production schedules during periods of installation and "shakedown," or both. Executives who bear the burden of planning and executing the installation of new equipment typically have a variety of other managerial responsibilities. Managerial efficiency may require that equipment installations be bunched to avoid a continuous drain on executive time, attention, and energy. Similarly, capital installations may involve serious interruptions in production schedules. When such is the case efficiency again requires a bunching of capital expenditure.

Restrictions of this sort are more likely to be important to a small firm than a large one. A large firm may have a full-time staff assigned to the planning and execution of modernization projects. Moreover, if there are a number of plants it can go from one to the next in sequence as it carries out modernization. The result would be a much more even flow of expenditures which may be geared to cash flow if such is the firm's policy.

Competing Demands for Internal Funds

Capital expenditures compete with working capital requirements for available funds. As mentioned earlier, depreciation charges are not earmarked funds. All other things being the same, such charges serve to hold revenues within the firm, but they may be used for any legitimate business purpose. Increased availability of such funds may coincide with an urgent need to carry additional inventories, receivables, or cash. Thus increased cash flow from liberalized depreciation may not be considered as

available for modernization expenditures although the firm finances them out of internally generated funds.

Changes in Market Anticipations

In the previous discussion we have assumed a backlog of acceptable modernization projects. In practice, of course, market anticipations may deteriorate from time to time, casting doubt on the ability of the firm to utilize fully capital equipment or to sell output at prices which would justify the modernization expenditure. Such variations in anticipations may or may not be accompanied by fluctuations in cash flow due to changes in profits but they may logically be expected to adversely influence the capital expenditures (both modernization and expansion) of a cash flow budgeting firm. Comparison of past expenditures and cash flow might well show a decline in appropriations and expenditures prompted by adverse anticipations which in retrospect appear to have been entirely unjustified in terms of the actual (recorded) cash flow.

All of these factors and, doubtless, others combine to paint a picture of an investment process in a cash flow budgeting firm which is far more complex than depicted in the original sketch. We should expect, therefore, to find evidence not of a "pure" or simple cash flow firm but of one in which changes in cash flow are deemed by the firm's decision makers to play a major if imprecise role in determining the extent of modernization expenditures.

EVIDENCE RELATING TO THE CASH FLOW EFFECT

Generalizations of the sort presented above afforded the framework for examining during the interviews the effect of changes in cash flow on modernization investment. Executives of the firms included in the study were asked whether there are modernization projects which satisfy their investment criteria but are not undertaken because of financial constraints (question 14). The nature of these constraints was examined: were there particular conditions under which the company was willing to finance in-

vestment projects with outside funds or were there particular investment purposes for which such financing was deemed to be acceptable (question 18)? We also inquired more generally about the company's policy regarding financial structure: how much debt was acceptable at any given time (question 19)? Responses to these questions provide the context for analyzing the replies to our inquiries concerning the benefits which management perceived in liberalization of depreciation (question 25), and the firm's actual response to the depreciation changes in 1954, 1961, and 1962 (question 26). In addition to the interviews, company data are used in an effort to assess the effect of depreciation changes on cash flow and modernization outlays.

There are, of course, significant limitations on this sort of analysis. The sample is small and not scientifically stratified. The executives interviewed had neither precisely identical responsibilities nor experience. Certainly they were not equally objective or articulate. Questions were designed to bring forth as objective answers as possible but such answers are, of necessity, frequently expressions of opinion. Finally, there are limitations to the use of company data for this type of investigation.

Yet the material we obtained contains information about company experience which could not be gleaned by other means. While it does not permit us to quantify with any precision the influence of cash flow upon modernization expenditures, it does, nevertheless, afford us insights about the decision-making process as it pertains to modernization, and about the role of cash flow in that process.

On the basis of the interviews and associated materials, we have classified the firms in the study into four groups, in terms of the probable influence of cash flow in their modernization investments:

Class A, maximum cash flow influence, includes five firms, for which the evidence indicates that cash flow has been the principal limitation upon the volume of modernization expenditures.

Class B, strong cash flow influence, includes seven firms; here the evidence indicates cash flow has been a major factor determining the volume of modernization expenditures; cash flow,

however, does not appear to occupy the central role observable in type A.

Class C, weak cash flow influence, includes five firms; the available information indicates cash flow is of secondary importance in determining the volume of modernization expenditures for these companies.

Class D, virtually no cash flow influence, includes eight firms.

Within each of these groups, we have set up subclassifications pertaining to the firm's policy regarding the use of outside funds (principally debt), and whether limitations on the amount of internally available funds have checked modernization programs or the increased availability of internal funds resulting from depreciation liberalization has resulted in increased modernization expenditures.

Debt Policy

Although recognizing that a sharp delineation of debt policies may overstate differences in this respect among the firms, we have set up the following classifications:

Type 1: policy against use of long-term debt;

Type 2: policy of restricting debt to financing major projects such as new plants;

Type 3: no restriction with respect to amount of debt or purpose for which incurred;

Type 4: no established policy (these firms stated they had had no occasion to borrow long-term).

Although twelve of the twenty-five firms are classified as significantly influenced by cash flow (i.e., are classified as A or B) fifteen firms indicated a policy of either using no long-term debt whatsoever (type 1 debt policy) or of restricting their use of debt to finance major capital expenditures such as new plants (type 2 debt policy) [Table 4]. One of the twelve, however, reported no specific restrictions on debt (type 3 debt policy). On the other hand, not all of the firms showing a weak cash flow effect had an easy policy regarding debt; four of the thirteen such companies restricted their debt financing to certain major investment programs.

Nevertheless, the relationship between debt policy and influence of cash flow is very much what one would expect, as Table 4 shows. That is to say, one would expect firms which are heavily influenced in their investment decisions by their cash flow to observe severe restrictions in the use of debt, while in those firms for which cash flow is not an important determinant of investment, use of debt should be much less constrained. This is essentially what one sees in the table. To be sure, there are exceptions, as already noted, but the general pattern conforms closely with the a priori view.

This conclusion is not entirely borne out by the evidence pertaining to the amount of debt outstanding, however. Four of the eleven companies in which cash flow is highly influential and whose policies are strongly against debt (class A and B firms with type 1 and 2 debt policies) had outstanding debt; two of these companies, classified under the maximum cash flow effect, had between 15 and 24 per cent of their total capitalization in long-term debt. These facts do not, however, contradict the conclusion that debt policy conforms closely with the degree of cash flow effect. Even firms subject to the maximum cash flow effect may occasionally borrow, as pointed out above, in special situations. By the same token, firms with no cash flow influence may be debt free, not as a matter of policy, but because of an ample supply of internally generated funds relative to total financial demands.

Constraints Imposed by Availability of Internal Funds and the Response to Liberalized Depreciation

As previous discussion of the influence of changes in cash flow on modernization investment suggests, a very close relationship is not necessary between the degree of the cash flow influence and the extent to which the firm limits its modernization outlays by the amount of funds internally available. On the other hand, such a constraint would more frequently be operative in cash flow companies than in others; also, such firms might be expected to respond more substantially to the increase in cash flow

TABLE 4. Twenty-Five Textile Firms Classified According to Cash Flow Effect, Debt Policy,^a and Amount of Debt

	Total No. of Firms	Outstanding Debt as Per Cent of Total Capitalization				
		Zero	5-14%	15-24%	25-34%	35-44% Unknown
Class A. Maximum Cash Flow Effect						
Type 1 debt policy	3	3	-	-	-	-
Type 2 debt policy	2	-	-	2	-	-
Type 3 debt policy	-	-	-	-	-	-
Type 4 debt policy	-	-	-	-	-	-
Total	5	3	0	2	0	0
Class B. Strong Cash Flow Effect						
Type 1 debt policy	2	2	-	-	-	-
Type 2 debt policy	4	2	2	-	-	-
Type 3 debt policy	1	-	-	-	1	-
Type 4 debt policy	-	-	-	-	-	-
Total	7	4	2	0	1	0
Class C. Partial Cash Flow Effect						
Type 1 debt policy	-	-	-	-	-	-
Type 2 debt policy	3	2	1	-	-	-
Type 3 debt policy	1	-	-	1	-	-
Type 4 debt policy	1	1	-	-	-	-
Total	5	3	1	1	0	0

Class D. Virtually No Cash Flow Effect

Type 1 debt policy	-	-	-	-	-	-	-	-	-
Type 2 debt policy	1	-	-	1	-	-	-	-	-
Type 3 debt policy	4	-	-	1	1	-	-	-	2
Type 4 debt policy	3	3	-	-	-	-	-	-	-
Total	8	3	0	2	1	0	0	0	2
Totals:	25	13	3	5	1	1	1	1	2
Type 1 debt policy	5								
Type 2 debt policy	10								
Type 3 debt policy	6								
Type 4 debt policy	4								

^a Type 1 debt policy: policy against use of long-term debt.
 Type 2 debt policy: policy of restricting debt to major capital expenditures such as new plants.

Type 3 debt policy: no restrictions as to type of projects financed by long-term debt.
 Type 4 debt policy: no established policy. Firm has had no occasion to borrow long term.

resulting from depreciation liberalization. Results of the interviews substantially confirm these expectations, as the following two tables indicate.⁵⁷

TABLE 5. Distribution of Sample Firms by Cash Flow Effect, Constraint on Modernization Projects, and Response to Depreciation Liberalization

<i>Cash Flow Classification</i>	<i>Constraint on Modernization Projects</i> ^a		<i>Response to Depreciation Liberalization</i> ^b		
	<i>Yes</i>	<i>No</i>	<i>Yes</i>	<i>No</i>	<i>Other</i>
A	4	—	4	—	—
	—	1	1	—	—
B	1	—	1	—	—
	—	6	4	—	2
C	1	—	—	—	1
	—	4	2	—	2
D	—	—	—	—	—
	—	8	2	6	—
Total	6	19	14	6	5

^a Question 14: Are there modernization projects which meet your investment criteria but which you do not undertake because of financial limitations?

^b Question 26: Has your firm increased (or does it plan to increase) modernization outlays as a result of (a) more liberalized depreciation provisions of the 1954 Revenue Act? (b) shorter service lives (1961 and 1962 provisions)?

Among the five class A firms, four stated without qualification that there had been modernization projects which had met their criteria but which they had not undertaken in view of financial limitations. The fifth indicated that acceptable modernization projects had not been held up, but that in following an aggressive modernization policy, expenditures had been made that would not have been made without rapid depreciation.

Among the seven firms classified as type B one stated without qualification that there had been modernization projects which had met the firm's criteria but which had not been undertaken

⁵⁷ The evidence from questions 14 and 26 is summarized in Table 5. The essence of the testimony of each firm is presented in Table 6.

TABLE 6. Selected Information Relating to Influence of Cash Flow on Modernization Expenditures

<p>Question 14: Are there modernization projects which meet your criteria but which you do not undertake because of financial limitations? (2)</p>	<p>Question 26: Has your firm increased (or does it plan to increase) modernization outlays as a result of liberalized depreciation? (3)</p>
<p>Firm^a (1)</p>	<p>CLASS A. MAXIMUM CASH FLOW INFLUENCE</p>
<p>C</p>	<p>Yes. "When you're replacing spindles that cost as little as \$30 with ones that cost \$150 your dollars don't go far."</p>
<p>D</p>	<p>Yes. Executive gives as example the fact that the president recently stated that in view of increased cash flow the company could afford to spend heavily on air conditioning.</p>
<p>S</p>	<p>No. But notes firm has had an aggressive modernization policy.</p>
<p>E</p>	<p>Yes.</p>
<p>F</p>	<p>Yes.</p>

(continued)

TABLE 6. (continued)

Firm ^a (1)	Question 14: Are there modernization projects which meet your criteria but which you do not undertake because of financial limitations? (2)	Question 26: Has your firm increased (or does it plan to increase) modernization outlays as a result of liberalized depreciation? (3)
CLASS B. STRONG CASH FLOW INFLUENCE		
I	No. But notes firm has had an aggressive modernization policy.	<i>Other.</i> States 1954 regulation increased cash flow and helped make new plant possible earlier, but outlook has restrained spending in past three years.
V	No. But notes firm has had an aggressive modernization policy.	<i>Yes.</i> Executive stated 1954 law had limited effect because of purchase of used machinery; as regards 1961 and 1962 changes, there has "been a coincidence of increased need for and availability of cash."
J	No. But states elsewhere "there is plenty of room for increasing productivity."	<i>Yes.</i> Executive states that full amount of increased depreciation has been invested in plant and equipment.
L	No. Company has spent less than depreciation in recent years due to special internal factors. Cash flow has been set aside, but modernization requirements exceed cash availability.	<i>Other.</i> Executive says plans are firm to spend all of cash flow, accumulated and projected.

G	Yes.	Yes. Executive states company's expenditure policy is increased by cash flow.
P	No.	Yes. States that liberalization resulted in increased expenditure. Company has relied very heavily on depreciation generated funds for capital expenditures.
N	No.	Yes. Executive states he is "convinced" firm increased modernization expenditures as result of 1961-62 liberalization but "can't prove it."
CLASS C. WEAK CASH FLOW INFLUENCE		
K	No.	Yes. Executive is not sure, but feels that it probably has.
Y	No.	Executive states there has been no shortage of projects but principal limitation has been managerial time, also uncertainty as to market prospects.
M	No.	Executive states that it has not been a lack of suitable projects or cash restraints that has limited expenditure but rather uncertainty as to market outlook.

(continued)

Other. States neither 1954 nor 1961 regulation changes affected expenditures immediately. Company has had ample cash. But states "an increase in depreciation will automatically change the level of depreciation we're geared to." States "if it hadn't been for accelerated depreciation we'd never have been able to do the things we've done" without debt.

Yes. Executive states liberalized depreciation has caused increased modernization expenditure by increasing availability of cash.

TABLE 6. (concluded)

Firm ^a (1)	Question 14: Are there modernization projects which meet your criteria but which you do not undertake because of financial limitations? (2)	Question 26: Has your firm increased (or does it plan to increase) modernization outlays as a result of liberalized depreciation? (3)
O	No. Executive states there has been no shortage of projects but principal limitation has been managerial time rather than cash availability.	Other. States that liberalized depreciation (1961-62) has influenced timing of new mill. States new regulations have made it possible to spend out of depreciation rather than retained profits.
H	Yes.	Other. 1954 changes were very important but 1961-62 ones have not affected them significantly as yet. Company has five year plan for spending in line with policy to spend depreciation, however.
CLASS D. VIRTUALLY NO CASH FLOW INFLUENCE		
W	No. Company has idle cash due to profitability of other division. States there has been shortage of acceptable projects.	No.
Q	No. Company has not spent heavily. States management has been the bottleneck in past. But at present and in future will be number of acceptable projects.	Yes. There has been an improvement on pay-back (after-tax) which makes more projects acceptable. No cash flow effect.

- | | | |
|---|---|---|
| A | No. Has had abundance of cash until very recently and has spent heavily. | No. But in future borrowing will be less than otherwise would be the case. |
| X | No. | No. "It's helped us keep away from debt limit. Can't say how much it's influenced." |
| B | No. Executive states management has been the bottleneck not cash. | No. Executive states that 1961 liberalization has probably not affected modernization expenditure. Does not express an opinion on the 1954 regulation changes. |
| U | No. | Yes. States liberalized depreciation has increased modernization <i>only</i> because it has "pushed marginal projects over the line." |
| R | No. "Principal limitation has been that it takes time to get things done." | No. Executive says liberalized depreciation has "certainly helped" in its modernization program. Other evidence indicates probably effect has been to reduce borrowing. |
| T | No. Executive states, "yes, as regards brick and mortar but not as regards expenditures for machinery." | No. Does not feel recent depreciation liberalization has influenced modernization. |

^a Letters refer to firms coded as in Table 3, pp. 48-53.

because of financial limitations. Among the remaining six were four that indicated that expenditures had been increased because of the increased flow of cash arising out of liberalized depreciation. Another (classified "other") stated that increases due to the 1954 depreciation provisions made it possible to build a new plant earlier than planned although the company's sales and profit outlook had restrained spending in the three years immediately prior to interview. The remaining firm (also classified "other") had faced special problems of an internal nature. This firm (which over the years has been reluctant to make any use of debt) had set aside and earmarked cash accumulations for a major modernization drive which was scheduled to begin in the near future. The executive stated that capital requirements for the planned expenditures were well in excess of cash accumulations.

Within classification C, the interview responses point up the weaker cash flow effect. Only one of the five firms stated that there had been modernization projects which met company criteria but which were not undertaken because of financial limitations. In answering question 26, however, this firm (classified "other") stated that the 1954 depreciation changes had influenced company policy but 1961-62 changes had not yet influenced expenditures. In their answers to question 26 executives of the remaining firms stated that they felt that there had been some influence. One stated that liberalized depreciation had caused increased modernization expenditures; another that it "probably has." Still another stated that the firm had ample cash, but that it "gears" its capital expenditures to depreciation. The remaining firm stated that liberalized depreciation had influenced the timing of construction of a new mill, but noted that liberalized depreciation had made it possible to spend "out of depreciation rather than profits." The latter two of the four firms are classified as "other," the former two as "yes."

All of the eight class D firms stated that there were no modernization projects which were held up because of financial limitations (one firm qualified this by stating that there were "brick and mortar" projects which had been held up). In answering ques-

tion 26 two indicated that modernization had increased because of the demand effect (these two were classified as "yes"). Five of the remaining six answered that there had been no significant effect. The sixth stated that liberalized depreciation had "certainly helped" but elsewhere in the interview testimony indicated that the effect had been mainly to reduce borrowing.

Cash Flow Influence and the Size of the Firm

Although we find twelve of the twenty-five firms in our sample classified as strongly influenced in their investment decision by cash flow considerations, this may somewhat overstate the relative importance of the cash flow effect. Four of the twelve class A and B companies were small firms, five were medium size, and only three were large. Of the thirteen C and D firms, on the other hand, only two were small, six medium, and five large. There appears, therefore, to be some tendency for the cash flow constraint to be more important for smaller firms and for large companies to be less influenced by the availability of internal funds in their investment programs.

JOINT INFLUENCE OF THE DEMAND AND CASH FLOW EFFECTS OF LIBERALIZED DEPRECIATION

If we assume that firms which are strongly influenced by the demand effect are those using after-tax investment formulas (see Chapter 4) and those strongly influenced by the cash flow effect are classified as A or B it is immediately apparent that there is relatively little overlapping of the cash flow and demand influences. Among the A and B class firms only two (firms S and V) made use of after-tax formulas. The C and D classifications, which number thirteen firms, contain the remaining seven firms using after-tax formulas.

The combined number of interviewed firms which were significantly influenced by either or both the demand and cash flow effects would appear to be nineteen—twelve firms classified as A or B, plus the seven C or D firms which used after-tax formulas—or 76 per cent.

Once again we have a problem in adjusting these observations to recognize differences in the size of firms. We have seen above that the proportion of firms classified as A or B probably overstates the relative importance of the cash flow effect. On the other hand, it was noted in Chapter 4 that the proportion of firms making use of after-tax formulas appears to understate the importance of the rate of return effect. The tendency of these two biases to offset each other gives greater confidence in the use of a count of firms involved as a measure of the extent of influence of liberalized depreciation. Accordingly, we note that the total number of interviewed firms experiencing either the demand or cash flow effect from liberalized depreciation would appear to be nineteen, or roughly three-fourths of the firms in the sample.

POSSIBLE INFLUENCE OF LIBERALIZED DEPRECIATION
ON MANAGEMENT ATTITUDES

In Chapter 2 a third route by which liberalized depreciation may possibly act was noted: that of changing management attitudes in such a way as to influence spending for modernization. Such attitudes might relate to the determination of the amount considered appropriate for allocation to the modernization budget in contrast to other uses or to judging whether or not to replace equipment.

The influence referred to here is not related to the tax reduction *per se* but instead to the role played by enlarged depreciation *charges* made within the bookkeeping system in affecting managerial judgment. For such an influence to make itself felt there must be a change in depreciation accounting practices for financial and general administrative purposes along with a change for tax purposes. Secondly, it would be necessary for management to hold concepts regarding depreciation charges which would lead to the practices described.

The handling of depreciation charges has already been treated in Chapter 3. It was shown that twenty-four of the twenty-five firms followed the practice of using the same depreciation charges

for tax as for regular financial accounting purposes. Moreover, a majority of firms favored retaining such an arrangement in the future.

Thus it appears that the preliminary condition necessary if liberalized depreciation is to change management attitudes toward modernization expenditures does, in fact, exist. On the other hand, it is extremely difficult to assess the evidence that liberalized depreciation has acted significantly via this route. The difficulty arises from two directions. In the first place, the rationale for depreciation liberalization working through routes other than those already discussed remains obscure. Certainly the correct methods of determining the size of a modernization budget or of deciding whether or not to replace an existing piece of equipment are not those hypothesized under the "third route" discussed in Chapter 2. Secondly, it is difficult to determine from the evidence whether or not the influence on management attitudes comprise a force over and above the demand and cash flow effects already examined.

Depreciation as a Guide in Determining the Size of the Modernization Budget

Firms face competing demands for funds and for scarce managerial talent. It is often difficult to compute precisely the gains to be expected from modernization. Under such conditions management may make use of the rule of thumb that depreciation charges constitute a target for replacement expenditures. This rule might be used loosely to determine whether or not, over a period of years, an amount equal to accumulated depreciation has been spent or it might be applied as an annual minimum. In either case liberalized depreciation could serve to influence this budgetary target and consequently the amount spent.

Question 17⁵⁸ relates to the role of depreciation allowances in determining the size of the modernization budget. Fourteen of

⁵⁸ Question 17: Are depreciation allowances in any way earmarked or used as a guideline in determining the amount to be spent for replacement (i.e., modernization)? Discuss.

the twenty-five firms (56 per cent) stated that the amount of depreciation charges provided to some degree a basis for guidance in determining the size of the modernization budget.⁵⁹ Among these firms, seven indicated that depreciation charges provide a basis for determining the minimum acceptable amount to be spent for modernization rather than a target amount. The remaining seven indicated that depreciation charges are considered at least informally in establishing the size of the total budget.

Depreciation Reserves as a Criterion in Retiring an Asset

Here the argument is that management may be influenced to replace a given asset if it observes the asset to be substantially "written off" (i.e., depreciated) or to retain it if the accumulated depreciation charges are relatively small. In strict logic the amount of undepreciated value is irrelevant to the decision to replace a physical asset but, as has been pointed out in Chapter 2, management may nevertheless be influenced to take this view.⁶⁰

Although no question was systematically asked regarding this practice, executives of seven firms commented on it during the interviews. Six of the executives indicated that the amount of accumulated depreciation was a consideration in their firms and that accelerated depreciation acted to increase modernization because it caused equipment to be "written off" more quickly. An interesting aspect is that three of these firms are large, publicly owned companies and the fourth a well-known and highly profitable, medium-sized, publicly owned firm. In no case was this point of view held by all of the management team, but the executive interviewed indicated that the position was held by some and was significant.

It should be noted that this point of view is not necessarily one which is confined to firms of the cash flow type. It is a criterion for replacement of equipment which is equally applicable to the

⁵⁹ Of the remaining eleven firms two did not reply, two stated that depreciation and profits were considered together, and seven stated that depreciation was not a consideration.

⁶⁰ The undepreciated value is relevant, however, to the extent that it affects the calculation of losses resulting from disposal of the asset when computing corporate income tax liability. This point is not the issue here.

firm which confines itself to internal financing and to the firm that makes use of external sources of finance. Among the six firms whose executives indicated that the amount of accumulated depreciation was a significant consideration, two are typed as class D. One of these in particular was a highly aggressive user of external financing.