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# THE CONCEPT AND ECONOMIC SIGNIFICANCE OF REGULARIZATION OF BUSINESS INVESTMENT

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AS I UNDERSTAND my assignment, it is to sketch a general theory to serve as a background for the analyses of regularization of business investment in particular industries and individual companies which follow. My discussion has four parts:

1. Concepts
2. Significance for cycle theory
3. The theory of capital budgeting
4. Cyclical policies

## *Concepts*

### BUSINESS INVESTMENT

In common usage, "investment" refers to outlays one makes in order to participate, as an owner or a creditor, in the income of other enterprises. In this paper I use "investment" in a technical sense, to refer to outlays made by a business firm for operating facilities expected to produce income to that enterprise.<sup>1</sup>

Business investment refers to the capital expenditures of private business enterprises, as distinguished from those of government and from comparable "investment" by consumers (durable goods purchases).

Business investment should be defined in terms of economic behavior, rather than in terms of accounting convention or tax law. The criterion is the inflexibility of the commitment involved, that is, the rate of turnover in cash. From the standpoint of management in planning and controlling the company's internal investments this is the correct criterion. Capital expenditures may thus be defined as outlays that take several years to produce an equivalent return of cash. Their value to the company during this period is usually much

<sup>1</sup> This distinction gets fuzzy when a firm acquires a substantial part of the stock of another enterprise. The line can be drawn on the basis of motive, that is, according to the degree of participation by the parent firm and of integration of operations. More commonly the line is drawn arbitrarily at 50 per cent stock ownership.

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above the amount the asset can be sold for; that is, they tie up capital, and over long periods. They involve more uncertain forecasting judgment and company-wide thinking than do outlays for short-lived assets such as inventory, or for frequently recurring maintenance needs.

By this criterion of inflexibility of commitment, outlays for certain intangibles, such as major research on new products and new methods, advertising that has a cumulative effect, education of executives, and the development of dependable distribution connections, logically fall in the category of capital expenditures. They are all outlays for facilities that tie up capital inflexibly over a long period. But few companies treat these intangibles as part of their capital facilities.

Even in the case of physical facilities, however, most companies define capital expenditures, for budgeting purposes, not by the criterion of flexibility, but by the test of "sound accounting," i.e., whether the company's accountants, either for stockholder reporting or for income tax reporting, classify the outlay as capital or as expense. The disparity between my concept and common practice hinges largely on the relative size and the tangibility of an asset rather than on its economic nature. The advantages of abiding by convention and of having a monistic, all-purpose classification are, I suppose, viewed as outweighing the greater relevance of the broader conception (i.e., that based on flexibility of the commitment) in the planning and control of capital expenditures.

The definition of investment (gross private investment) used for national-income analysis differs from the one I have suggested, and from that used conventionally for financial reports, and from that used for tax reports. It is confined to tangible assets but includes some short-lived tangibles, which are expensed. It also includes *changes* in inventory, and some consumer expenditures, e.g., housing.

Thus we may distinguish four rival concepts of business investment, differently based. The bases are: flexibility of commitments; accounting conventions of the firm in reporting its income to stockholders; Bureau of Internal Revenue regulations governing determination of federally taxable income; and Department of Commerce reporting of national income.

Which of these four concepts is most appropriate for our purposes? Our underlying concern in regularization of business investment is the achievement of greater stability of over-all economic activity. Consequently, we are primarily interested in those busi-

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ness outlays that tend to destabilize our economy, whether they result in tangible facilities or intangible ones. The key to instability is managerial discretion as to the timing of the outlay. For this, neither tangibility, tax impact, nor accounting treatment matters so much as does the rigidity of the commitment in terms of the rate of turnover in cash. Surprisingly enough, I like my definition best.

If what contributes to economic instability is the compelling question, the concept of investment should be extended to include consumers' expenditures for durable goods or for intangible facilities that tie up capital over long periods. Thus besides housing, which in national-income analysis is included in private capital formation, it should also take in major consumer durables, and investments in education and the like. Such consumer investments are, however, excluded from consideration here since our concern is with capital formation by business enterprises.

### REGULARIZATION

Regularization of business investment is a simple concept. But it has shades of meaning which may be distinguished in two planes: pattern and means. In pattern, regularization may be thought of in three alternative ways, as: (1) merely reducing the amplitude of swings, i.e., making capital expenditure more stable either than it has been or than it otherwise would be; (2) making it absolutely level cyclically (presumably with an upward trend and seasonal fluctuations); (3) making it fluctuate contracyclically, offsetting fluctuations in other sectors of gross national product, as a means of achieving greater regularity of the economy as a whole. Desirable as contracyclical or even level-trend investment may be, the practical impossibility of these two patterns will, I think, lead most of us to use "regularization" to refer to the first pattern concept, namely, reducing cyclical fluctuations.

As to means of attaining greater regularity, it is hard for me to think realistically in terms of filling the valleys with investments that would not otherwise be made at any time, or in terms of throwing away the chopped-off peaks of investment. Consequently, I think, we are concerned primarily with the rearrangement of the time pattern of substantially the same capital outlays. Rearrangement can take two forms: anticipation, the pulling-back into a depression period of investments that would otherwise be made in the next boom; and postponement, the pushing-ahead of boom-period investment into the next depression. Both forms are significant.

*Significance for Cycle Theory*

Perhaps the most important development in economics in this generation has been the concept of underemployment equilibrium. Prior to 1930 most economists thought that the natural position of the economy was one of full employment. Such periods of unemployment as did exist were caused by interference in the free functioning of the economic system. The assumption was that the demand for any good was controlled by its price. No shortage of any good could exist if the price was allowed to rise high enough and no surplus could exist if the price was allowed to fall far enough. Consequently unemployment was caused by artificially high wages; a drop in wages would cause employers to use more labor. Production created its own demand. If the recipient of income did not spend it on consumption, he would, with the insignificant exception of hoarders, invest it (either directly or by making his savings available to others who would invest it). Thus the amount of economic activity which produced the income would take place again and production would perpetuate itself. However, this view neglected the possibility that the desire to save might be greater than the desire to invest. Consumers might increase their rate of saving. With consumption decreasing, there would not be enough sound new investment to put the increased savings to work. Unwanted inventories of consumer goods would cause manufacturers to curtail production and reduce employment. Since demand for labor depends on demand for goods, employment would continue to decline until income was reduced to such a level that net savings were equal to intended investment.

The same sort of thing would happen if the first impulse came from a drop in the desire to invest. Decreased employment in investment goods industries would result, and would lead to decreased consumption and decreased employment in consumer goods industries. Employment would decrease until saving out of the new lower incomes came down to the level of intended investment; that is, until all goods being produced were either being sold or *voluntarily* put into stock.

Excessive desire to save would not force down interest rates and thus encourage investment enough to take up the slack, as had been thought earlier. Liquidity preference theory viewed interest, not as the reward for saving (postponing consumption), but rather as the reward for giving up liquidity. Recognition of the speculative

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motive for holding cash led to a realization that the rate of interest is only a minor influence on saving and on most investment decisions.

Modern economic theory has stressed the basic importance of consumption demand in influencing investment decisions. Several economists, notably Samuelson, Harrod, and Hicks, have incorporated J. M. Clark's acceleration principle into the Keynesian system and have produced models which fluctuate in the manner of business cycles. The most recent and highly developed of these is expounded in J. R. Hicks' *A Contribution to the Theory of the Trade Cycle* (Oxford: Clarendon Press, 1950).

Hicks splits investment into two parts: autonomous and induced, where induced investment is the direct result of an increase in economic activity and autonomous investment is all other investment. Starting from an underemployment equilibrium, a spurt in autonomous investment will cause an increase in consumption, in accordance with the Kahn multiplier. This greater activity will induce investment, which will cause increased consumption, which will induce more investment, etc. Thus economic activity will continue upward until one of the following developments takes place: the amount of investment induced by further increases in economic activity tends to diminish relatively, so that the upward impulse dies out; a monetary stringency occurs and prevents new investment which would otherwise be made; or the economy reaches the temporary ceiling of its ability to produce and thus stops expanding, except through natural increase in working force or productivity. Once the rate of increase decreases, the bloom is off the boom, since induced investment depends on the acceleration of economic activity. When the rate of acceleration decreases, induced investment decreases, causing a further decrease in the acceleration, etc., until induced plus autonomous investment are not large enough to support the high level of income. Hitting the ceiling ends acceleration, or at least reduces it materially, and this will cause a downturn. During the recession, negative induced investment exists in the form of failure to replace machinery at a rate equal to depreciation.

The downswing may be ended, according to Hicks, by a weakening of the accelerator on negative induced investment, or by a spurt in autonomous investment, but in any case it can go no further than the floor under economic activity which is partly established by autonomous investment. Once the downward momentum is stopped, an upturn will ensue.

Whether or not they accept a theory of the type of Hicks', it is

probable that most economists now think that the motivating force in economic fluctuations is investment. Consumption and saving have been viewed as relatively stable functions of income, while investment may fluctuate wildly.

It should be recognized, however, that since consumption is a much greater quantity than investment, small percentage changes in consumption are as important as relatively large percentage changes in investment. The consumption function (or schedule of the propensity to consume) has shown considerable instability over the past fifteen years. These gyrations may be mainly traced to the imposition of wartime control and the releasing of pent-up demand after full civilian production was resumed. Consumer durables—that is, consumption items with investment characteristics—played a dominant role in these wartime shifts in propensity to spend. Again, an increase in the propensity to spend money on consumer durables played a large part in the post-Korean boom. But this, also, was an abnormal situation, induced by the fear of wartime shortages and the expectation of a wartime boom. This kind of military disturbance of the stability of the consumption function makes one wonder how “abnormal” it will be in the future we face. Economists have not paid enough attention to shifts in the consumption function.

It is still apparent, however, that business investment plays an important role in economic fluctuations. It is undeniable that investment is highly unstable and highly destabilizing. To Keynesians, it is investment that determines the level of income. If investment remains at a low level for a long period, underemployment equilibrium results. If investment fluctuates, a cycle results.

Investment is also a causal factor in economic fluctuations to most of the modern non-Keynesians. The business cycle is generally viewed as a cumulation of a number of forces acting largely upon the motive to invest. During the upswing, forces build up which will eventually call a halt to the increasing tempo of investment and bring on the downturn. During depression, forces build up which will cause an upturn in investment and thus initiate the upswing.

There is much agreement among economists on the vital causal role of fluctuations in business investment in business cycles. What can be done to stabilize investment?

### *The Theory of Capital Budgeting*

Business investment has been viewed, in the preceding section, as a broad aggregate in the context of general economic analysis. The

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behavior of this investment aggregate depends primarily on the capital expenditure decisions of individual firms.

The mechanics of the Keynesian system require a little modification and expansion if they are to fit into a scheme of planning that could be used by a large American firm in planning and rationing its capital expenditures.

Our principal hope of finding out what can be done to regularize business investment lies in understanding better the managerial problems of planning and controlling capital expenditures. It is becoming conventional to label this area of decisions "capital budgeting." The term "budget" does not connote that the investments of the firm can or should be predetermined for any time period. Instead it refers to the process of projecting investments and selecting the most desirable ones.

### FOUR QUESTIONS

To get a clearer view of the essentials of the process, we shall outline an analytical framework that will systematize management's approach to this problem. Capital budgeting precipitates four questions:

How much money can be profitably invested in the company?

How much capital will be available?

How should this capital be rationed among rival investments?

How should its investment be timed cyclically?

The problem of cyclical timing of a firm's capital expenditures cannot be divorced from other phases of the decision-making process in capital formation. If the company's capital demand and supply could be forecast and planned for a cycle ahead, a clean separation of timing strategy would be conceivable. But this kind of long-range investment planning requires unattainable foresight.

Ideally, capital expenditures should be planned for several years ahead as an integrated part of the company's long-term program. But projections become increasingly indefinite as they stretch into the future, and as a practical matter it is usually necessary to budget capital expenditures over a one-year, or at most a two-year planning period. Cyclical considerations are an intimate part of each yearly survey of a firm's investment opportunities and supply of funds.

### DEMAND FOR CAPITAL

The underlying requisite for effective capital expenditure planning is the opportunity to invest money internally at high rates of return.



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Such opportunities are, in a sense, a by-product of efficient management, but also need to be sought out systematically. Consequently, a survey of the company's capital requirements built up from the roots of the smallest operating unit is usually the first step in capital budgeting.

The demand for funds for investment within a company can be viewed as a schedule of relationship between the amount to be invested and the prospective rate of return. In the development of such a schedule, individual investment proposals showing estimated yield should be arrayed in a ladder of capital productivity, summarized on a company-wide basis for a specified planning period. Table 1 illustrates the firm's demand schedule for capital, and chart 1 diagrams this demand schedule.

TABLE 1  
DEMAND SCHEDULE FOR CAPITAL

<i>Prospective rate of return (per cent)</i>	<i>Volume of proposed investments</i>	<i>Cumulative demand</i>
Over 100	2	2
50-100	38	40
25- 50	200	240
15- 25	1,200	1,440
5- 15	3,400	4,840

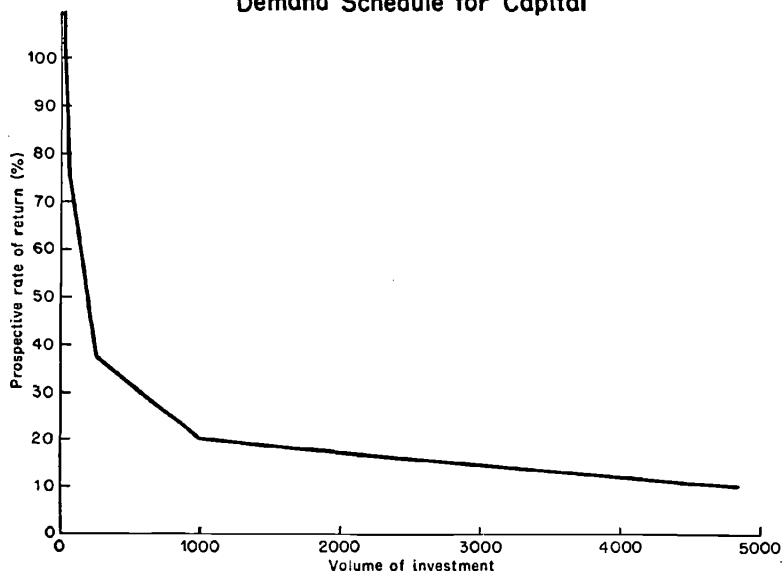
From Joel Dean, *Capital Budgeting*, Columbia University Press, 1951.

Profitability of investment may be measured in several ways: as payback, average level net return on investment, or discounted return on investment. The economically correct measure of profitability is the discounted rate of return, which takes into account the time schedule of outlays and receipts over the economic life of the project. It is frequently feasible to develop approximations to this ideal measure that are good enough to produce better estimates of the economic productivity of the project than payback or level return estimates. Table 2 illustrates the method and compares its results for two machines, both priced at \$2,000 and both with a four-year payout.

The vital practical problem in capital budgeting is to obtain reasonably accurate and comparable estimates of return on investment, with adequate allowances for risk and strategy. The demand schedule derived therefrom shifts with changes in general business conditions and with the fortunes of the firm. And it is these shifts

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Chart 1  
Demand Schedule for Capital



From Joel Dean, *Capital Budgeting*, Columbia University Press, 1951.

TABLE 2  
RATE OF RETURN ON INVESTMENT

Year	Machine A			Machine B		
	Annual income	Discount factor <sup>a</sup>	Present value of income	Annual income	Discount factor <sup>a</sup>	Present value of income
<i>y</i>	<i>I</i>	<i>d</i>	<i>I x d</i>	<i>I</i>	<i>d</i>	<i>I x d</i>
1	500	0.9309	465	500	0.8976	488
2	500	0.8052	403	500	0.7204	358
3	500	0.6966	348	500	0.5781	287
4	500	0.6024	301	500	0.4639	230
5	500	0.5211	260	500	0.3723	183
6	500	0.4508	225	500	0.2988	149
7				500	0.2398	118
8				500	0.1924	94
9				500	0.1544	75
10				500	0.1239	60
	Total present value		\$2,002			\$2,000
	Rate of return		14.5%			22.3%

<sup>a</sup> Based on continuous compounding. All receipts assumed to flow at uniform rates during the year.

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in the firm's demand for capital that are the major cause of fluctuations in private capital formation.

For simplicity, the firm's demand schedule has been conceived here as including only capital projects to be initiated during the coming year. This means that it should include only those investments whose productivity will never be higher than in this year. Those that will improve if postponed should go into future budgets. Those that will deteriorate if postponed should be put in this year's demand curve. This simple conception concentrates on a project's rivalry with alternative investments to be made in a given year. It ignores another dimension of rivalry—namely, that with alternative investments likely to be more profitable if made in subsequent years.

If future investments are to be included in this year's demand curve, it becomes necessary to conceive of patterns for storing funds for later use. This storage can be in cash equivalents, or in investments that have high cash-to-cash turnover even though comparatively low prospective rate of return. The cost of maintaining liquidity for future use is an offset to the improvement in profitability of a later-year investment over a present-year investment. Rejecting a 20 per cent return today in order to save money for a 40 per cent return two years hence involves carrying costs. Conceiving of demand for funds in the time dimension, therefore, requires an exploration of the alternative time patterns of investment in terms of requisite liquidity. It ties capital budgeting intimately into the long-term cash budget by imposing dual standards: productivity and cash payout.

Tax expectations also have a bearing on the timing of investments in projects where substantial parts of outlays are, for tax purposes, expenses. If the marginal tax rate is 82 per cent this year, and expected to be 60 per cent next year, an asset that can be written off slowly by depreciation charges is more expensive than one that can be totally written off against this year's income.

### SUPPLY OF CAPITAL

A company, in addition to exploring and measuring its demand for capital funds, must face the problems of determining where the money will come from. Two sources, internal and external, may be distinguished. A company's chief internal sources of supply of funds for capital expenditures are depreciation and retained net profits. To distinguish between these two in the apportionment of internal investment is illusory. The chief managerial problems in respect to

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internal sources are forecasting the amount of cash that will be generated, and deciding how much of earnings to pay out in dividends and how much to plow back in capital expenditures.

Dramatic increases in price level throw doubt on the replacement adequacy of depreciation allowances based on historical cost and make extracurricular allowances and outright increases in amount plowed back necessary to assure replacement.

Inflation can cause conventional accounts to seriously overstate real economic earnings. Thus, not only is the depreciation held out inadequate for replacement, but the earnings plowed back look bigger than they are. Many large companies have, in the inflation after World War II, paid out dividends in excess of real earnings, quite legally and quite unknowingly. The result is that capital expenditures which appear to have come out of retained earnings have actually come out of real working capital. This illusion of accountancy may have caused business investment to be somewhat higher in the postwar inflationary boom than it would have been if the low level of real earnings had been generally recognized.

Retained earnings are a major source of capital funds. Plow-back policy is affected by many considerations, such as opportunities for investment inside the company as opposed to opportunities outside, regularity of stockholders' income, reserves for contingencies and growth, and the effect of plowing back on cost of capital from outside.

The pivotal consideration in external supply of funds is the cost of capital. In theory it should signal the appropriate amount and timing of dividend payouts that restrict internal supply and also indicate when and how much recourse should be had to external supply. Hence cost of capital has an important role in fluctuation in business investment.

To estimate a firm's cost of capital involves determination of market values of securities, costs of flotation, and capital structure. Cost of capital is affected by many factors over which management has some control—company policy on plowing back, capital structure, level of market at time of issue, size of issue, amount raised, and market fame of company. Projections of future costs of capital, therefore, have a wide band of control, its width depending partly on the stabilization of these variables by company policy.

Aversion to permanent external financing is quite common. Apparently it stems from fear of personal-income-tax leakages, notions that autonomous financing is more respectable, and distaste for pos-

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sible restrictions. The aversion can cut off a large reservoir of funds for exploiting opportunities.

Autonomous capital formation raises questions of broad economic policy which have an important practical bearing upon the cyclical pattern of business investment. The undoubted efficiency with which some big companies apportion funds within the fold may more than compensate for the fact that individual operating units do not have to meet the market test for funds. But this efficiency cannot be relied upon to overcome the injury to our resource allocation system when the corporation as a whole invests money internally at prospective rates of return that depart significantly from its external long-run cost of capital.

### CAPITAL RATIONING

A company's demand for investment funds typically exceeds its supply. Hence it is necessary to ration capital, screening individual proposals, ideally on the basis of prospective rate of return (after allowance for risks).

The essence of capital rationing is to rank investment proposals in a ladder of profitability and find a rejection criterion by which to cut off the projects that would not be sufficiently profitable. Theoretically, this cutoff rate of capital productivity could be automatically determined by the intersection of the firm's demand and supply schedules for capital. However, for administrative reasons, rejection rates must be set by management, by rough forecasts of the intersection rate. Crude as they are, these forecasts when related to the firm's cost of capital can provide some basis for decisions on dividend policy and on recourse to outside financing. Another role of the cutoff rate is to weed out projects that have too low a profitability to justify further consideration.

A third use is to implement a long-run capital budgeting plan designed to avoid marginal investments of low productivity in times of slack investment demand. Funds thus conserved can be invested for higher returns when demand turns up again.

For example, the cutoff rate for expenditures in all phases of the business cycle might be stabilized regardless of short-run shifts in demand and supply. In this form, the rejection rate is a rough substitute for the kind of budgeting that would include rivalry of projects to be undertaken at different dates. It requires, however, a projection for an integral business cycle of both the total demand schedule and the total internal supply schedule. Making this projec-

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tion is worth while only when the firm's capital sources for the cycle as a whole are so inadequate, when compared with demand, that the long-run cutoff point is far above the cost of capital.

### FLUCTUATING EFFECTIVE CUTOFF RATE

The rate of return which will equilibrate a company's demand for funds with its supply will fluctuate with shifts in its capital demand and supply schedules. The equilibrium rate cannot be determined with precision, since this requires forecasts of shifting demand and supply functions.

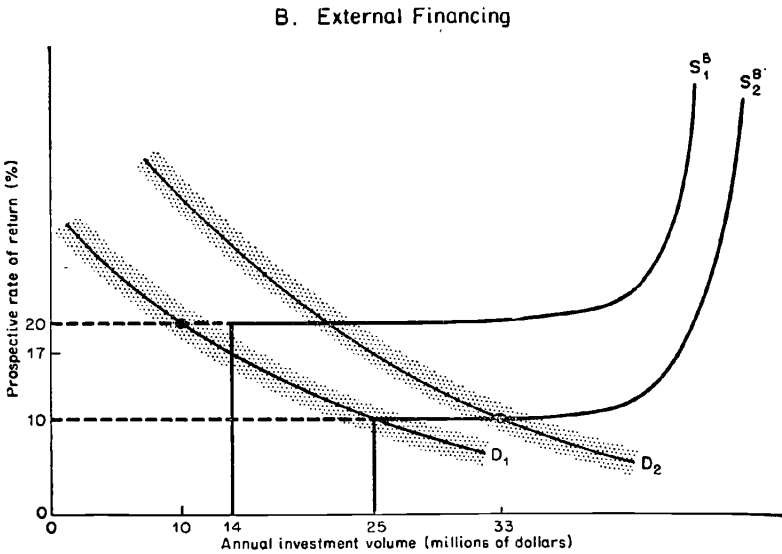
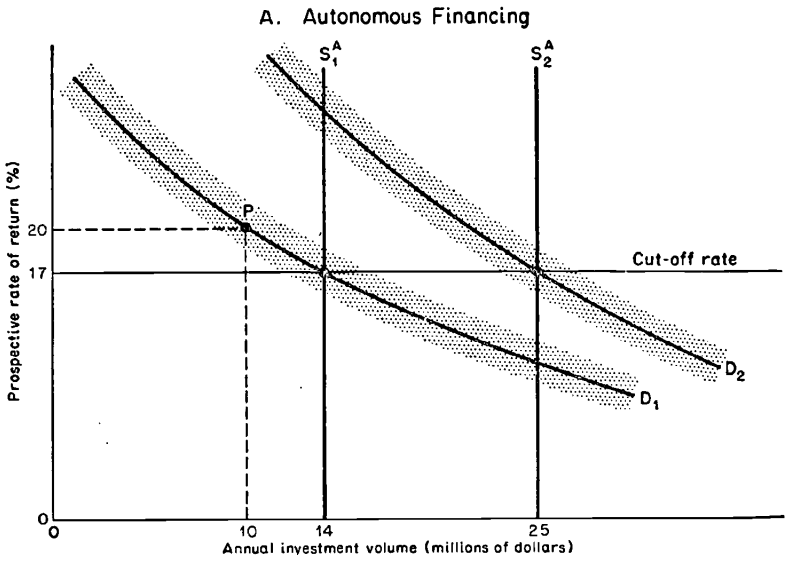
A fluctuating effective rate can pinch-hit for it. This administered rate is more than merely a guess at the rate that would clear the firm's capital market. It embodies other considerations. The underlying reasons for moving the effective rate up and down include variations in the supply of funds available to the company for capital expenditures; speculations on price changes for capital equipment; fear of general declines in business, which produces a high liquidity preference; and informal deflation of earnings rate estimates.<sup>2</sup>

In formulating a theory of the effective cutoff rate, two situations need to be distinguished: that of an autonomous firm, determined to limit itself to internally generated funds for permanent financing of capital expenditures; and that of a firm willing to go outside for additional funds, either occasionally or regularly. The distinctive nature of the budgeting problem stems from the distinctive behavior of the supply curves in these two cases.

In autonomous financing, the company supply curve is a shifting vertical line (see chart 2). Cyclical shifts in a company's demand curve are likely to be accompanied by parallel shifts in its supply curve, since the volume of investment prospects is related to current income. This parallelism tends to reduce the amplitude of cyclical fluctuations in the cutoff rate, insofar as it is determined by intersection. It is not possible to generalize about the relative level of the cutoff rate in boom and prosperity, since this depends on the

<sup>2</sup> During boom periods, anticipations concerning future earnings tend to become inflated, despite herculean efforts topside to keep middle management's feet on the ground. Some companies have informally deflated these oversanguine boomtime earnings prospects by raising the effective rate. Thus, one oil company has taken the position that declines in the price level of petroleum products will convert an apparent one-year payout proposal into a two-year payout proposal. Hence, the effective rate should be high when petroleum prices are high.

Chart 2  
Fluctuating Effective Cut-Off Rate



From Joel Dean, *Capital Budgeting*, Columbia University Press, 1951.

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swing of supply and demand curves relative to each other. When supply fluctuates more than demand, the intersection cutoff rate will be higher in depression than in prosperity.

A good case can be made for high cutoffs in depression, since management's interest points toward stabilizing dividends, which increases the volatility of the supply curve. The nature of a particular boom also affects cyclical disparity in the cutoff rate. In the boom after World War II, pent-up demand for capital goods made the demand curve for many firms exceptionally high, and tended to boost the cutoff rate. At the same time, real earnings were exaggerated by reported earnings, because of inflation. Companies that were aware of this viewed their supply curves in a way that further lifted their cutoff rates.

A company that is willing to get outside capital has a flat supply curve that probably turns up sharply at some point. This cost-of-capital curve moves up and down cyclically, probably in the opposite direction from shifts in the company's demand for funds. In depressions, cost of capital is high, and demand low. In prosperity, cost is low, whereas demand has shifted to the right. Cost of capital, used in conjunction with the demand schedule, should signal when dividends can be allowed to restrict internal supply, and when and how much recourse should be had to external supply.

### BASIC MINIMUM RATE

An adjunct to the fluctuating effective rate is a basic minimum rate of return, the purpose of which is to keep the company from making investments that cannot earn enough to pay their cost of capital. The minimum rate should be set by anticipating future cost of capital. If the company can bridge a gap with short-term borrowing, so as to raise permanent capital at a low-cost time later, this floor rate will be lower than the current or the long-period average cost of capital.

### STABLE LONG-RUN CUTOFF RATE

An alternative to this team of fluctuating effective rate and minimum rate is a cyclical policy founded on a stable long-run cutoff rate that is the same for all phases of the business cycle. The purpose is to avoid having to pass up high profit prospects in times of high demand because funds were squandered on low-return investments in periods of low demand. In effect, this system tries to put the next



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ten years' investment opportunities on a single demand curve, to compete for the ten-year supply of funds.<sup>3</sup>

The long-run cutoff rate is not a logically complete approach to cyclical capital budgeting. Investments this year do not necessarily compete with investments to be made four years hence, particularly if they have high cash payout rates. Moreover, this simple solution cannot include the time dimension of competition for capital, i.e., the same project at alternative dates. Nevertheless, there is much administrative value in the long-run rate. Long-run planning in terms of alternative investment schedules must usually be limited to budgeting for the few grand schemes that dominate company ambitions. Planning for smaller projects becomes lost in uncertainty as the planning period is extended. The alternatives are too numerous and interrelated to be plotted out in detail. It is here that the long-run cutoff rate can be brought into use, in the routine budgeting of these lesser proposals. If management has established a broad view of the company's future, the long-run rate can be made a time-saving device for tying the minor parts into an integrated scheme.

The theory of capital expenditure control just outlined is idealized.<sup>4</sup> Yet it can be approximated in practice, and probably is. At least, this kind of thinking is found in some large corporations. Capital expenditures are cut back when depression is here, or is expected soon, by pulling the purse strings through various devices instead of (or in addition to) raising the effective cutoff rate of return. But the results, for cyclical fluctuations, are the same. The costs and risks of stabilized capital expenditure are recognized, even though they may not be set forth so elegantly as in a scheme of time rivalry built into demand and supply functions that are based on rate of return.

### *Cyclical Policies*

The desirability, from the standpoint of maintaining high and stable employment and national income, of reducing the amplitude of the

<sup>3</sup> The empirical foundation for this kind of theoretical solution is frail. In a dynamic technology it is hard to foresee even the investment opportunities, to say nothing of their return. Forecasts of cash-generating ability depend for accuracy on projections of national economic activity over heroic distances into the future. Moreover, the long-term future cost of capital from outside can only be guessed from the past by assuming that the capricious stock market will follow historical patterns in the future.

<sup>4</sup> The analysis is worked out more fully in my book *Capital Budgeting*, Columbia University Press, 1951.

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swings in capital expenditures by private firms is clear; but only by a conscious revision of capital expenditure policies can regularization of a firm's investment be brought about. The practical issue management faces is how far the firm can go in regularization without incurring more cost and risk than its obligation to stockholders warrants.

The major issue before this conference is whether stabilization of business investment is primarily the job of private management or primarily the job of government. Can the executives of a company, while discharging their profit-making obligations to stockholders really do much in the way of reducing fluctuations in the firm's capital expenditures? This is the first question, since we want government's role to be confined to activities that cannot be effectively performed by the private sector of the economy.

In answering this question we must assume that substantial fluctuations in economic activity will occur in the future. Otherwise, there is no point to this conference. This does not necessarily mean that we expect future cyclical fluctuations to be exactly like past ones. Basic changes in our institutions, notably the evolution of big government and the division into two bellicose worlds, will make future fluctuations different and possibly less pronounced. But it is not proper at this point in the analysis to assume that government will have to take over the job of investment stabilization, or that it will develop effective policies which will do away with cyclical fluctuations. This possibility of default should be ruled out of order at this point, since how much of the job of stabilization of capital formation will have to be taken over by government is what we seek to find out in this analysis. And how government might do this job is an entirely different issue. The question then is: To what extent can these future fluctuations in business activity and in private capital formation be reduced by the action of private management in regularizing the individual firm's capital expenditures?

Decisions on capital expenditures get closer scrutiny by the board of directors (who usually represent owners) than any other kind of top management decisions. Consequently it is proper first to examine the desirability of an investment regularization policy using the traditional criterion of profit maximization. There are some possibilities of investment stabilization in the area of profit neutrality where indeterminacy and ignorance give management some timing latitude within its profit-making obligations. There are also some possibilities in the realm of managerial philanthropy, i.e., in aiming

at less than maximum profits so as to make a contribution to the social good. But these are, in my experience, an unimportant source of stability. Consequently, this paper is primarily concerned with how far management can go in stabilizing capital expenditures without breaching its stockholder obligation to make the most money it can within the rules of the game.

In the foregoing discussion of capital rationing, two alternative cyclical policies for capital expenditure budgeting were noted. The first used a fluctuating standard of minimum acceptable profitability which for the autonomous firm not only would rise and fall with variations in its cost of capital, but also would, at cyclical crests, rise significantly above its cost of capital because of the inadequacy of self-generated funds to meet boom capital demand. Thus wide swings in the standard of marginal productivity would be contemplated. For a firm willing to supplement internal funds from outside, the swings in the cutoff rate over the cycle would be determined by fluctuations in its cost of capital, which would pulsate with conditions of the security market.<sup>5</sup> The alternative policy is a constant rejection rate which does not fluctuate cyclically, being formulated to clear the firm's internal capital market for the cycle as a whole by balancing capital demand with self-generated supply. For a firm that raises capital funds outside, the cyclically stable rejection rate would be determined by its projection of future long-run cost of capital.<sup>6</sup>

Either of these policies will result in wide fluctuations in the level of investment activity, since it is visible demand, which is highly volatile, rather than a vague guess about long-run demand, that determines this year's outlay. When these fluctuations are added up for all industry, they are clearly a powerful destabilizing influence on the level of economic activity.

Our problem is to find out how far the management of an individual firm can go in damping the fluctuations in capital expenditures that result from cyclical shifts in the firm's capital demand and supply schedules.

In making this decision, management must be governed primarily by the effects of investment stabilization on profits. Hence it must

<sup>5</sup> Over a period similar to the last twenty-five years, for example, the combined cost of capital (equity and debt) that an established, large manufacturer might have to pay might be expected to fluctuate between 6 per cent and 30 per cent. The range would differ considerably among companies.

<sup>6</sup> For example, 15 per cent might be a forecast for a manufacturing firm based on a study of that company's investment market experience of the last quarter century.

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try to estimate the prospective gains and the prospective costs of undertaking more capital expenditures in depression and less in prosperity.

### INDIRECT GAINS

The gains possible for the firm from stabilizing capital expenditures are both indirect and direct. Indirect gains arise to the degree that stabilization of the individual company's investment brings about more stability of the economy as a whole. Such stabilization reduces fluctuations in demand for the firm's products and permits more predictable and stable operations. If all firms were able and willing to make their capital expenditures stable, there is no doubt that a substantial reduction of general economic fluctuations would result.

This would bring a legion of benefits, including greater stability and predictability of demand, production, and employment; more orderly capital markets; and more foreseeable cost of capital. But such resultants would be predicated on widespread acceptance and conformity, which, without compulsive incentives, are highly improbable.

It seems to me, therefore, that indirect benefits stemming from the atomistic contribution to stabilization that is made by a single firm's regularization of its investment will be negligible. Benefits that are produced by an "imitation effect" on the regularization of other firms' investment are so unlikely or at least so highly conjectural that they cannot be taken seriously in a company's economic calculations.

### DIRECT GAINS

A variety of direct gains, which are not dependent on greater stability of the whole economy, are possible. Regularization of the firm's capital expenditures can, as noted earlier, be achieved either by pulling back into depression the investments that would be made in a later boom, or by postponing boom-period investments until the next depression. The direction of regularization does not matter as much for appraisal of gains as for appraisal of losses. But direct gains are usually visualized in terms of pulling capital outlays back.

Increasing the proportion of investments made at cyclically low price levels can lead to savings in acquisition and construction costs. Some indication of savings from cyclical price cuts can be found in the *Engineering News Record* index of construction costs and the Marshall-Stevens index of equipment costs. The *Engineering News*

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*Record* index, for example, fell by 30 per cent from 1920 to 1922 and by 24 per cent from 1929 to 1932. However, in mild depressions such as those of 1923-1924, 1926-1927, and 1937-1938, construction costs fell very little (less than 2 per cent). In the Marshall-Stevens index, equipment costs showed smaller declines than construction costs in general; but such an index, not taking account of informal concessions below quoted prices, usually understates the amplitude of fluctuations.

Moreover, there are potential cost savings in the unhurried planning, purchase, and development of new facilities. During the downward swing of the cycle, business is slack and the rate of activity is low. In such times, suppliers give a maximum of free service extras, construction forces tend to have higher productivity, the engineering staff can devote ample time to long-run plans, and executives can survey the project more closely. The result is higher quality, better scheduling, and closer integration of the new investment into the existing organization.

A further incentive to a smoother pattern of investment is the availability of capacity in the early stages of recovery. Advantages of starting expansion programs in advance of a period of prosperity derive from the long gestation periods typical of big construction jobs. To realize these advantages fully, it is necessary to forecast the rate of recovery from the depression. Moreover, they are often whittled down when the bottleneck factor is not plant capacity but some other input factor, such as steel or skilled labor. Rather than gain being due solely to greater capacity, a part comes from having a more modern, lower-cost plant when demand resurges.

Another possible gain from stabilizing capital expenditures, perhaps not inconsiderable, is that smaller errors of optimism might be made in appraising capital productivity than frequently characterize boomtime estimates of rate of return.

### COSTS OF REGULARIZATION

Offsetting these gains from stabilization is a formidable list of extra costs in a stabilized investment program. In assessing such costs, management needs to distinguish two aspects of this stabilization problem: the decision whether in boom periods to postpone outlays until the following recession, and the slump-period decision whether to invest now rather than in the upswing.

During peak activity, many expenditures cannot be postponed without dire strategic consequences. In this category are defensive

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investments to fend off competitors who are invading markets with new products. Product obsolescence is a particularly important deterrent to cyclical stability where style changes are frequent and involve heavy outlays.

An automobile manufacturer, for example, cannot in prosperity postpone the retooling needed to keep his cars competitive in style and performance. This competitive compulsion in investment timing usually applies to innovations. Few modern producers have a sufficiently long and certain research lead over potential competitors to gamble by delaying commercialization of a new product for the sake of speculative gain on facilities or for philanthropy. Whether most innovations hit the market in prosperous times or depressions is not at issue. The question is whether management has much latitude in altering the timing of the investment they cause.

If, in prosperity, the current volume of orders exceeds capacity, the likelihood that long delivery delays will shift customers to competitors who may be able to hold them far into a recession is a compelling strategic reason for capital expenditures. In the postwar boom, when shares of the market were virtually determined by productive capacity, and when companies had a good chance of retaining a captured share, many of them constructed additional plant capacity at penalty prices in order to expand or to hold a share of the market they had won.<sup>7</sup> In these instances, plant additions were an economical way to buy a share, as opposed to the slow, grueling method of battling for it in a buyer's market. Only if the heavy costs of winning that market position in the normal competitive tussle were overshadowed by lower acquisition costs in depression and the prospect of technological advances in the interim would postponement be economically desirable.

There are, beside the strategic risks of boom-period expenditure postponements, costs and risks inherent in spending at the trough of the cycle. These can be roughly grouped as follows: a reduction in the present worth of a fluctuating stream of earnings; the increased risks of obsolescence of products and processes; the higher cost of funds; the increased risks of insufficient liquidity; and the hazards of imperfect foresight.

<sup>7</sup> For example, there was a stage when capacity to produce governed shares in the automobile market, and the proved propensity of motorists to trade in on the same brand assured retention of a share if future models could be kept competitive.

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### DISPARITY IN PRESENT WORTH

The gross profits from an investment will usually be higher in prosperity years than in depression. Since the value of an income dollar at a distant date is less than at a near date, the value of an investment is less when its near years are lean than when they are fat. Consequently, if the acquisition costs of an investment are the same in prosperity as in depression, the present value of its stream of earnings will be higher if it is acquired in prosperity than in depression.

The amount of this disparity in present value depends on the amplitude of the fluctuations in profits, the rate at which future earnings are discounted to present value, and the length of the projected economic life of the asset. The sensitivity of the value of an investment to its cyclical timing increases with volatility of earnings. Sensitivity also rises sharply with the rate of discount.<sup>8</sup> The effect of the economic life of the assets on the disparity in present value is a complicated relation between the life of the investment and the length of the cycle. A description of this relation is beyond the scope of our discussion, but it is clear that a shorter life span involves greater risks in cyclical timing, because small deviations from the optimum date of purchase take more value from an investment that will last through two cycles than from one that will last through five cycles.

Table 3 illustrates the impact of two of the three factors mentioned—cyclical amplitude and rate of discount—on cyclical shifts in the present value of an investment. It shows the difference between the present value of the prospective earnings stream of an investment made at the peak of prosperity, and the present value of an identical stream for the same investment made in the trough of depression (assuming prices, technology, cost of capital, etc. constant). The calculation is for an investment of a twenty-year life, when earning cycles last four years. The difference is expressed as a per cent of present value of the investment when made at peak prosperity. The true disparity in values is understated, because the cost of capital is assumed to be the same in prosperity and depres-

<sup>8</sup> A criterion of quick payback (e.g., return of investment in two years) is a crude expression of a high time-discount rate, which accentuates disparity in present worth. In effect, it usually considers only the current phase of the cycle, discounting distant revenues down to zero.

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TABLE 3  
CYCLICAL SENSITIVITY IN VALUE  
OF A NEW INVESTMENT

Rate of discount <sup>b</sup> (in per cent)	PER CENT CHANGE IN PRESENT VALUE OF INVESTMENT FROM PROSPERITY TO DEPRESSION <sup>a</sup> WHEN THE AMPLITUDE OF THE CYCLE <sup>c</sup> IS:		
	0.5	5.0	10.0
4	0.065	0.650	1.290
10	0.400	3.960	7.760
20	14.770	88.730	122.930

<sup>a</sup> Present value of investment made in prosperity minus present value of investment made in depression as per cent of prosperity investment value.

<sup>b</sup> Rate at which future earnings are discounted to present value.

<sup>c</sup> Ratio of peak earnings minus trough earnings to average earnings, for example,

$$\frac{\$700 - (-\$300)}{\$200} = \frac{\$1,000}{\$200} = 5.0$$

sion, though it is likely in fact to be lower for investment in prosperity.<sup>9</sup>

### RISKS OF OBSOLESCENCE

If technology is advancing rapidly, equipment acquired years ahead in anticipation of a boom may become obsolete before it does the expected work.<sup>10</sup> (Equipment brought into production shortly before a boom collapses may meet the same fate.) Thus to pull investments forward into the lean years not only gives them a lower value but may also significantly increase the ever-present risk of

<sup>9</sup> This analysis of disparity in present worth necessarily oversimplifies, since cyclical policy on capital expenditures is hounded by various kinds of uncertainty: (1) Unknown future cyclical fluctuations: Forecasting future pulsations of the earnings of a proposed investment is necessarily rough and inaccurate as to timing and amplitude of fluctuations. But precise foresight is not required. When discount rates are high, all that is required is recognition of a boom and belief in depression. (2) Unknown longevity: All facilities have uncertain economic lives and some live long. Longevity merely reduces the importance of this present-worth deterrent to stabilization. It doesn't obviate or reverse it. And uncertainty about length of life has no systematic effect on its importance. At high discount rates, which are common, distant earnings have little present worth anyhow. (3) Longevity gestation period: When facilities require many months to get into operation there is danger that projects planned in prosperity may not come into production until depression. This may cause some inadvertent valley-filling, but is not a systematic influence toward stabilization.

<sup>10</sup> The costs involved are not less real when hidden by hand-me-down idleness. Newest equipment goes into highest-grade service and hence may get used even in slack times; existing equipment sometimes gets demoted down successive ranks of stand-by status (particularly in public utilities). Premature retirements to stand-by and excessive reserve capacity are costly, too.



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unforeseen obsolescence. A further cost of such contracyclically planned investment may also be the physical deterioration of unused capacity with the passage of time; but since most modern equipment gets outmoded before it is worn out, this would rarely be a net addition to obsolescence.

### COST OF CAPITAL

Another limitation on stabilizing investment expenditures takes the form of a higher supply cost of funds. Since internal funds depend on retained earnings and dividend policy, and external funds are subject to the changes in the amount and cost of the capital that is offered by the market, there are pronounced cyclical swings in both internal and external availability of capital. Companies that refuse to go to the money market for funds are subject to cyclical fluctuations in internal sources. Firms without aversion to external sources of funds also experience shifts in their supply schedule, coming additionally from fluctuations in the current cost of capital. Particularly violent are the changes in earnings-price ratios and dividend-price yields of common stocks.

Thus nearly all companies must expect pronounced cyclical shifts in supply of funds for capital formation.<sup>11</sup> To stabilize investments, a firm must raise or save funds in booms that it can carry over to depressions, or else must borrow on short term in depressions in anticipation of raising funds in booms. If prosperity earnings are saved for depression spending, there is a cost of carrying funds, which must be levied on interim projects or on the depression investment itself, or on both. The other solution, borrowing for contracyclically timed investments, would be for most firms impossible or extremely expensive, since it would run completely counter to the philosophy of commercial banking.

### LIQUIDITY PREFERENCES

A still further limitation, not easily separated from some of the preceding, arises from the cyclical changes in liquidity preferences that stem partly from general uncertainty in periods of depression. Going against the cycle requires intelligence, courage, and con-

<sup>11</sup> These fluctuations can be reduced and the average cost of capital lowered by varying the proportion of debt to equity opportunistically to fit security-market fashions in favored types of security. When prices of common stocks are low, bonds are a more appealing type of financing; but this kind of arbitrage is an important possibility for only a few industries.

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fidence. When the general situation looks bad, prospective earnings on capital expenditures lose their luster and in the general gloom are heavily discounted. The fear that cash will be needed for operations if the depression becomes worse breeds timidity and compels hoarding. Cyclical changes in uncertainties and in management's appraisal and treatment of them are to a degree an autonomous cause of cyclical fluctuations, but it is impossible to separate real uncertainties from illusions born of the disasters of the Great Depression.

### POOR FORECASTING

A final compelling deterrent to stabilization is the risk from imperfect foresight as to future demand. Few boards of directors would, or probably should, have the audacity to authorize large capital expenditures in the depths of a depression on the expectation that expanded capacity would be needed in a later upturn. Serious errors could be made with respect to the level and geographical pattern of sales, the character of the product, and the nature of the technology.<sup>12</sup> The savings that could have been made from depressed prices and construction costs can be insignificant as compared with the hazards arising from inadequate forecasts of demand and technology. The earnings on distant revenues must compete at their discounted present value with alternative opportunities. But more important are the risks that long-range sales forecasts will prove too bold and that changes in products and technology will make the new plant obsolete before it is really put to work.

Uncertainty plays a large role in the cyclical fluctuation of internal investment opportunities. The notion that opportunities are much richer in prosperity is widespread and understandable. The amount of added capacity needed for a current boom can be foreseen with much greater clarity and certainty than the amount needed for a vaguely distant boom. Forecasts about the latter may be discounted down to nothing.

It is conceivable that when business is booming, when investment funds are plentiful, and when labor rates are rising, the search for investment opportunities is more intense. As a result, more opportunities are found—but not because more are there. Cyclical changes in the optimism with which prospective profitability is viewed are

<sup>12</sup> For example, who could have foreseen in 1938 the importance of the automatic transmission in automobiles today? Who can now foresee how fast television will displace radio and motion pictures?

probably quite pronounced and may account for much of the shift in demand schedules. This is particularly true when conjectures about the future are inadvertently or explicitly based on an assumption that present conditions will continue indefinitely. Unless great care is taken to purge estimates of this propensity, profitability will look much better in prosperity than in depression.<sup>13</sup>

*Conclusions*

The desirability of a policy of stabilizing capital expenditures cyclically depends upon a balance of the company's gains, principally potential savings in acquisition costs, against the losses, costs, and uncertainties of long-range anticipations. It is impossible to avoid speculating on price level fluctuations in any effort to alter the cyclical timing of capital expenditures, and it is important to realize that whatever gains come from successful speculation do so at the expense of foregone earnings and savings during the period of postponement, carrying costs during the period of anticipation, increased risks from imperfect foresight, and sometimes lost strategic opportunities.

There are some kinds of investments for which management has latitude in timing. Replacement investments provide some freedom because earnings, which come mainly from savings in maintenance, usually rise gradually with age (though they are affected by fluctuations in volume). The cost penalties of delayed replacement are, therefore, not always prohibitive. It is particularly feasible if the company owns many similar, relatively small units (e.g., an automotive fleet). Scheduling such replacement investments at a fairly uniform rate is common. (And they might even be scheduled anti-cyclically.)

Uncertainty about the prospective earnings of a project does not, as some have thought, make its cyclical timing a matter of managerial indifference. There are many projects for which rate of return is not calculable. Some of these are postponable, e.g., some employee welfare investments. But many, and probably most, of these "strategic" investments do not have much timing latitude. Our analysis indicates that uncertainty is a major cause of cyclical fluctuation of

<sup>13</sup> For example, the assumption that boomtime prices of crude petroleum and of its products would continue indefinitely was not uncommon in capital expenditure proposals in one oil company. The president had to issue a ukase that all price conjectures be based upon a ten-year historical average, rather than on the then current (1948) levels, to bring about the needed deflation of profitability estimates.

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investments and is a major barrier to alteration of their time pattern, since it blows up the importance of the near future and discounts the distant future heavily.

Will better management of capital expenditures make them more stable cyclically? I don't think so. There is much room for improvement in the concepts and projection techniques used in capital budgeting by most large firms. But the improvements are, in my experience, more likely to accentuate cyclical fluctuation than to smooth them.<sup>14</sup>

From the standpoint of the individual firm the causes of cyclical fluctuations in investment are deep-rooted and inescapable. The shifts in the firm's schedule of demand for and supply of funds dictate a pattern of investment. Departures from this pattern for the purpose of stabilizing capital expenditures will result in gains that are relatively small and dubious as compared with the ensuing large and certain costs and risks. Of course, the possibility of stabilizing capital expenditures differs among firms. In general, those with rapid and foreseeable growth and financial strength are most able to make such changes. But even for them, a voluntary reduction of earnings and increase of risks would be involved.

Hence if government is to induce stabilization of private capital formation, the incentives and compulsions must be great indeed; and if an individual firm does much about it without such changes in the rules of the game, sacrifices in earnings and loss of security will probably result.

## C O M M E N T

EDGAR M. HOOVER, Council of Economic Advisers

It seems agreed that achievement of more regularization in business investment could be expected to alleviate though not to eliminate

<sup>14</sup> Correction of price level distortions in the measurement of profits by conventional accounting is a peripheral example of better capital management. More exact knowledge of the company's real economic earnings might temper capital formation during an inflationary boom by making executives realize the extent to which boom earnings are fictitious. But knowledge of real earnings in the post-World-War-II period would have worked in the direction of making investment by autonomously financed companies more cyclical. Real earnings in 1948 were much lower than reported earnings; hence real plow-back rates at the cyclical crest were higher than management realized. Such knowledge could cause more niggardly dividends in periods of rising prices, and more ample dividends in periods of declining prices. A policy of stable dividends over the cycle, if it gained widespread acceptance, would tend to accentuate cyclical fluctuations in internal funds available for capital formation.

cyclical swings; and that ways of furthering the regularization of investment should be sought on both the demand side and the supply side of the capital markets. Let me begin by referring to Dean's analysis of the supply side.

The significant part of the supply curve, of course, is the section that cuts the demand curve. Dean's hypothesis is that this section of the short-run capital supply curve is vertical at all phases of the cycle for firms which make a practice of relying basically on internal sources of funds—a category of firms that appears to include quite a large proportion of the total. Such a firm's investment budget is held to be limited by the amount of internal funds available, and all approved projects should have a prospective yield considerably above the "cost of capital," represented by the initial flat part of the supply curve. This amounts to saying that the cost of capital, for most internally financed firms, is a concept without significance and not worthy trying to measure. Moreover, it means that when such a firm racks up its various proposals for investment, there is no need to determine the absolute rates of return on them—the ranking is all that matters, since the cutoff is made in terms of total amount of outlay rather than any minimum marginal rate of return. In many situations, it must be a much simpler matter to rank projects than to gauge their returns and compare them with an estimated capital cost figure. Possibly the attractions of this simpler procedure help to account for the wide use of budgetary rules involving maximum outlay criteria (such as internal funds minus more-or-less fixed dividends, or formulas based on depreciation accruals or on rigid rules about liquidity) in preference to minimum returns criteria.

There is room for further investigation here. More on the basis of impressions than of informed judgment, I doubt that the case of vertical supply curve intersection is as common as Dean suggests. It would be useful to check the hypothesis that the internally financed firm characteristically determines its investment budget without regard to the absolute level of prospective returns from the marginal project. One might ask a number of firms, for example, why they did not invest more, and then single out for special investigation those that used only internal funds. If they saw no further projects warranting outlays of funds, this would seem to indicate an exception to Dean's generalization. If they did not invest more because of inability to get more capital, it would then be in order to find out whether this reflects reluctance to trim dividends, to

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lower standards of liquidity, to undertake external financing as such, or to borrow. Jacoby and Weston's paper discusses the various factors and their rationale in considerable detail. Some empirical studies like those of the McGraw-Hill Publishing Company have made a contribution in this field by asking firms how their investment plans would be affected by such factors as a higher price for new stock (i.e., a lower cost of external equity capital).

To give any broad answer to the problem of investment regularization, such inquiries would of course have to cover various stages of the business cycle and various types of firms.

Another interesting point in Dean's capital supply analysis starts with the familiar fact that after a rise in prices, depreciation accruals based on original cost are generally inadequate to finance replacement of plant and equipment. Depreciation is understated by business accounts—or at least by those accounts accepted for tax purposes—and profits are overstated. This phenomenon has been very much in evidence since the war, and seems likely to appear to some extent during most boom periods in view of the characteristic cyclical behavior of construction and equipment costs. What is its effect on boom-period investment?

Dean suggests that the postwar overstatement of profits arising from this factor served as an added stimulus to investment by making the outlook appear even rosier than it was. If so, this factor works *against* regularization of investment; and we might be led to recommend the wider use of replacement-cost accounting as an indirect way of encouraging such regularization.

But it must be recognized that the accounting distinction between depreciation and profits is quite irrelevant when a firm budgets its investment on the basis of total internal funds available, without reference to cost of capital or the prospective marginal level of returns on investment—the situation Dean apparently considers characteristic.

Moreover, various authors of the papers for this conference have pointed out that one of the common rules of thumb by which firms determine investment budgets is the matching of investment outlays with depreciation accruals. More generally perhaps, depreciation is used as a sort of floor or minimum subject to addition or modification as the investment budget takes shape—but in any event it rates as one of the main elements taken into consideration. Now to the extent that depreciation determines investment budgets, an

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understatement of depreciation in boom times would seem to lead to a reduction of the amount of investment, and overstatement of depreciation in depression periods would be a stimulus to investment. As such, the characteristic cyclical discrepancy between depreciation and replacement costs would be a systematic factor *encouraging* regularization of investment.

I come now to what is probably the most important point I have to discuss. In looking over the various analyses of investment-determining factors presented in Mr. Dean's paper and others prepared for this conference, one is struck by the importance attached—rightly, I think—to the factors resting fundamentally on uncertainty. Uncertainty is probably the main reason for reluctance to commit resources to fixed investment in advance of a known need, and for the effort to maintain a more liquid position in bad times than in good. Uncertainty is the basis of many of the rules of thumb used for appraising investment opportunities—such as the short-pay-off criterion—which place great emphasis on quick turnover and proximate profits and discount the more distant future nearly or wholly to the vanishing point. Uncertainty is one of the factors contributing to what several writers have characterized as a bias against external financing in general and debt financing in particular. It seems obvious that the possibilities for investment regularization depend to a large extent on whether uncertainty itself could be reduced, and whether the evaluation of uncertainty could be made more rational.

A "hindsight study" of investment behavior might throw new light on these possibilities. Suppose selected firms were asked to look back over their investment behavior of a considerable past period, and to reconstruct it as they now wish it had been. Presumably, with the benefit of full hindsight, such an ideal investment series would be quite different from the actual. It would be instructive to see how much cyclical regularization might emerge. The differences between the hypothetical and the actual series would measure the effect of all the factors of uncertainty, error, and irrationality involved in shaping the actual pattern.

One might then identify which of the errors in investment timing were due to mistaken forecasts of market conditions, thus getting an approximate measure of the influence of that factor. Other sources of error, such as wrong forecasts of the cost of capital, might also be explored and evaluated in the same way. At some point in this inquiry, perhaps as a final residual, would emerge a series of dis-

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crepancies chargeable only to irrational behavior, such as the application of a short-pay-off criterion without recognition of its limitations, or unquestioning adherence to a policy of not using external funds.

Whether such a study has ever been made, I do not know. If not, it might be worth trying. The results should be useful not only to the investigator—in throwing light on ways in which regularization might be furthered by changes in financing and investment practices, changes in tax laws, better forecasting methods, or otherwise—but also to the respondent himself and to other businessmen, by pointing up the importance of those factors over which they do have some control even in an atmosphere of uncertainty.

Such a study might usefully complement and extend a related type of investigation, in which some pioneer work has been done recently: the analysis of reasons given for revisions of investment plans. A major study along this line was reported on by Irwin Friend and Jean Bronfenbrenner in the December 1950 issue of the *Survey of Current Business*.

It has been found appropriate in the analysis of investment program revisions to distinguish two groups of causes for such revisions: (1) errors in forecasting cyclical or irregular changes such as sales, prices, costs, or technological opportunities, and (2) systematic errors, or biases, related to the character of the industry, the length of time covered by the forecast (e.g., systematic understatement of long-range investment programs), the size of firm, the size of project, etc. The rather large discrepancies between anticipations and actual realized investment, for periods of a year or longer, suggest that regularization of planned investment is by no means equivalent to regularization of actual investment. To achieve the latter, it would be necessary not merely to stabilize somehow the original budgeting of investment, but also to make the budgets firmer.

One final point. Dean explicitly assumes that regularization of business investment would not affect in any important way the average level of such investment over the whole cycle. He says: "We are concerned primarily with the rearrangement of the time pattern of substantially the same capital outlays."

Although I agree that this seems to be a practical approach to the problem from the standpoint of the individual firm, I do not think the statement should be allowed to pass without some reserva-



tions. My own opinion, which I realize is in disagreement with that of many estimable economists, is that regularization might increase the long-run average level of investment substantially, i.e., that additions to investment in depressions would not be fully offset by reductions during boom periods. Consider for a moment our latest genuine depression—the 1930's. If we had kept nonfarm employment and working hours from sagging between 1929 and our entry into World War II, the total output for the decade of the 1930's would have been about one-third higher than it actually was. Needless to say, this is a very rough and hypothetical calculation. But surely some of this huge amount of unrealized production and consumption would have played a part in speeding up national economic growth and would have put us permanently further ahead. If investment is related to the long-run growth of output, as is generally agreed, our investment of the past has been geared to the progress of a machine that often slows up. Over a whole decade, the machine was missing on one cylinder out of four.

This leads to a point, however, on which there seems to be fairly general agreement: that while the regularization of investment would be highly advantageous for business as a whole, and the costs of achieving it might be regarded as an excellent investment from the standpoint of the national economy, we have here another of those cases in which the common benefit offers no adequate incentive to individual efforts to realize it.

This is not to deny altogether the possibilities for regularization of business investment through private action alone. Some of the irregularity in business investment may be traced to irrational behavior, and the exposure of this fact might lead to greater regularization as a part of sound profit-seeking business policy. Still another part of the irregularity of investment may be traced to the errors and deficiencies of forecasting—with improvement in forecasting techniques, this might be lessened.

But I suspect that neither irrationalities nor readily avoidable forecasting difficulties account for any major share of the instability that exists.<sup>1</sup> Most of it reflects, as Dean suggests, the exercise of rational business judgment and the use of nearly as reliable information about the future as is generally obtainable. That being the case, the possibilities for attaining greater regularization would seem to lie mainly with government, which may be able by various devices

<sup>1</sup> In some cases, indeed, sound and informed business policy might call for more cyclical peaking than has actually been practiced.

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to make it profitable for business to smooth out its investment activities. Mr. Hart's paper develops these possibilities in some detail.

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One of the penalties of consistency is repetition. I am sorry that what I say here will probably sound familiar to those who have read my other works. Nevertheless, the task of combating error has no end, and since the general approach which I have stood for can be misunderstood in so many different ways, I think it worthwhile to state once more why I do not feel that the "regularization of business investment," in the sense in which the phrase is apt to be understood, can really be achieved by business action alone except through measures almost worse than the disease of fluctuation itself.

Like R. H. Tawney, I hold that the "practical" thing for a man in difficulty to do is not to proceed as rapidly as possible in the wrong direction. On the contrary, it is absolutely essential that we sit down and try to figure out what our problem is and where we plan to go. If we do not do that, we are likely to find ourselves involved in frantic but useless activity. Now, first of all, what is the problem, and second, what is it that we are trying to obtain?

I cannot help feeling that in the minds of some people interested in the notion of the regularization of business investment there still linger traces of Thorstein Veblen's notion that the business cycle is solely the result of the profit-seeking activity of business enterprise. As you know, I have spent a good deal of space in my books showing that this is not the case. The key distinction, I submit, lies in the difference between pure and perfect competition and, with some apologies, I would like to repeat once more the terminology which I use in this connection. Perfect competition, as I define it, means an absolute lack of friction. Everybody has perfect knowledge. Everybody can be everywhere at once. There are no obstacles to adjustment and so on. As is now well recognized, even this involves an ambiguity since an absolutely frictionless economy would be likely to vanish in a flash of atomic energy; but let us let that pass. By perfect competition, we shall merely mean a condition in which everybody would have full knowledge, everybody could be everywhere at once, and resources could move without obstacle in any desired direction.

Pure competition, on the other hand, means simply a perfectly elastic demand curve for the product of the individual firm. And the

really important point is that while competition can sometimes be pure or nearly pure, it can never be perfect. Clear thinking requires that we distinguish between those obstacles to adjustment which inhere in the *nature of the universe* and those obstacles to adjustment which spring from the *organization of the market*. Now, bearing this distinction in mind, what is the source of the problem of investment irregularity?

One of the basic fallacies of much left-wing thought is the idea that the pattern of consumers' expenditure never changes except when a businessman advertises a new product. It is often tacitly assumed that without business interference the pattern of wants would move in a perfectly symmetrical, predictable manner; for example, the output of every product would increase at a normal ratio of, let us say, 5 per cent. Unfortunately, this idea is entirely mistaken. It is in the nature of the functioning of a growing society that the various expansion trends of individual industries *must* be unsymmetrical. Given varying income elasticities of demand, it follows of necessity that, in a society which highly values relative freedom of market choice and therefore permits more-or-less free expenditure, consumers will spontaneously and necessarily shift the proportions of their expenditure on various goods as output grows. Luxuries become necessities and erstwhile necessities disappear. Thus we must think of a growing society as composed of a number of widely varying rates of change of individual output. Only by the greatest of good luck would these total movements spontaneously add up to a smoothly expanding total. But the problem does not stop there. Not only does the rate of consumers' expenditure vary, but also these rates accelerate and decelerate. Stocks are accumulated and cut down. New inventions come in. Production functions are constantly being disturbed. It is impossible, therefore, for a society in which there is a substantial approach to real freedom of consumers' choice to expect always to have spontaneous constant full employment.

But the ultimate reason for such fluctuations is not "impurity" of competition, but imperfection of competition. I deplore the English terminology which lumps together a hypothetical power of instantaneous adjustment with the simple presence of a large number of competitors. If we *did* have a power of instantaneous adjustment, it might well be true that as we developed new wants the businessman would anticipate them instantaneously, and idle money would not pile up. In consequence net unemployment could not exist. But

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since this is not the case under pure competition, as we find it in this world, since instantaneous adjustment is indeed an absolute impossibility, we see that the ultimate cause of the business cycle lies not in business enterprise but simply in the value of consumers' choice, within a growing market, plus irreducible frictions of adjustment.

The constructive way, it seems to me, for business to deal with this problem is to admit it and to point out the real nature of the difficulty. I feel it would be extremely bad public relations to give the public any idea that business *by itself* could handle the problem. I would not deny Mr. de Chazeau's thesis that business by self-planning could attain a *degree* of "regularization," but I do deny that this degree of regularization would be sufficient to avoid the business cycle. The only way to have an absolute guarantee of *ex ante* stability would be to set up what I have called the "traffic cop" method of stabilization. That is to say, a central licensing bureau would have to be created which would have the job of licensing *in advance* the various investment projects. It would be necessary to give such a bureau not only the power to hold back certain investments but probably also the power to initiate investments in order to maintain a smooth, constant flow. This analysis is set forth in great detail by Beveridge in his *Full Employment in a Free Society*, and I can scarcely improve upon it; but I do want to mention one point which has not, I think, been brought up in the discussion of this conference. That point is that the actions which a single business may take to regularize *its* investment may well have the effect of unregularizing the investment of some *other* business and, therefore, that it is absolutely necessary, if *ex ante* over-all stability is our aim, to set up a central clearing house to coordinate. The problem has been worked out quite elaborately by Mordecai Ezekiel in his *Jobs for All*.

I do not dispute the mathematical logic of these schemes. On the contrary, they seem to me impeccable as long as we stick to purely arithmetic reasoning. My objections relate rather to sociological and cultural matters. What must never be forgotten is that the central traffic cop board would be obliged to decide on the future prosperity and importance of every section of the economy. For example, should diesel engines be permitted in order to use Oklahoma's oil or should a quota of steam engines be required to create demand for Pennsylvania's coal? These and a hundred similar questions would be bound to arise, and the likelihood, in my opinion, is that of a

general industrial stalemate. Again there is the political point. With such central control over economic life can a really effective political opposition develop?

Now, if what I have said is true, why do certain people still want to establish "regularization" and to set up "regularization" schemes? There are, it seems to me, several strains of thought. First, there are some who have been led astray and who really do think that the business cycle is the result of faulty managerial decisions. Second, there are some, I cannot help feeling, who wish to use regularization as a means of setting up a cartelized organization of industry. Third and finally, there are some who wish to avoid government intervention and government deficit finance at all costs.

The first point to bear in mind in this connection is that even if one were willing to swallow the inevitable cartel features which a program of general regularization would make necessary, this would probably not avoid the need for some government action and some deficit finance. The effect of such a program would probably be greatly to reduce the margin of risky new investment which is needed for full employment. Yet if that component of the gross national product is removed, will it not be necessary for the government to create purchasing power? Otherwise a deflationary gap would be created and the economy would be forced into unemployment equilibrium. Some government investment therefore appears to be the inevitable concomitant of *any* regularization scheme.

But there is a basic confusion in thinking about the compensatory Keynesian policy advocated by people of my persuasion. This confusion, in my opinion, results from scrambling together the consequences of deficit finance *as such* and the consequences of deficit finance *accompanied* by certain other policies. If I may use a rather rough and ready simile, one may think of deficit finance as the oil which is added to the machinery. The trouble with the left-wing school is that it insists upon putting in no oil unless accompanied by an appropriate quota of sand and monkey wrenches, that is, by policies hostile to the environment necessary for enterprise. The weakness of the conservative policy on the other hand is that while it would eliminate the monkey wrenches and sand, it would probably object to the oil, too. I do not propose an indiscriminate use of deficit finance. There are many other measures—some of which, like changes in price and in interest rates, are somewhat neglected in the papers of this conference; but deficit finance and government investment remain essential tools in emergency. The problem of

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stabilization for capitalism in the future, therefore, seems to me to be whether we can educate people to the need for *some* government action to help stabilize capitalist society, without this gospel becoming the basis for measures which will *destroy* capitalist society.

I do not know whether a perfect solution can ever be worked out for this dilemma, but of one thing I am sure. Since I am convinced that business cannot by itself, through self-planning, avoid the business cycle, it would be extremely dangerous for the businessman to lead people to believe that he has assumed such a responsibility. Since he cannot possibly carry out the task, his assumption of responsibility will only boomerang violently when the next depression occurs. "No responsibility without power" is an ancient maxim of political thought. Is it not just as applicable to the case of business enterprise as to any other?

