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CHAPTER VII

CAPITAL EQUIPMENT AND CONSTRUCTION IN RECOVERY

THE economic agents with whose price problems we deal in this and the following chapter are related to the processes of trade in ways quite different from those affecting the operations of primary producers and agents of fabrication. Primary producers enter into the main stream of trade as sellers, essentially. Their operations as sellers are sharply focused and specialized, while their buying operations are diversified and scattered. Fabricators are both buyers and sellers in relation to the main currents of commerce. It is in relative rather than in absolute prices that they are interested, in differentials between the prices of materials and of manufactured goods. Business considerations relating to current market conditions dictate both buying and selling operations. At the terminus of the stream of trade, where finished goods emerge, stand two groups whose interest is that of buyers: ultimate consumers and purchasers of capital equipment. Both groups are buyers of finished goods, and by both the goods purchased are put to their final use without further change of hands.[1]

[1] Primary producers and manufacturers are important purchasers of capital equipment. The distinction in the text is between primary producers and manufacturers as operators of the existing productive machinery and the same groups (plus others) entering the capital goods market as buyers of new productive machinery, using their own or borrowed funds. The distinction between the two functions is useful, because of the difference in motives and market behavior.

In buying capital equipment a manufacturer is, of course, concerned with

Problems of Recovery in Capital Goods Industries

The present chapter deals with recent changes in the prices of goods destined for use in capital equipment, and with construction costs. Unfortunately, we do not have comprehensive records of price changes among finished articles of capital equipment. Price quotations are available for some finished goods of this type (e.g., steel rails, motor trucks), but many of the 'articles of capital equipment, processed' here included are far removed from the machinery and other equipment in which they will perform their final functions. However, quotations on such processed goods intended for use in capital equipment furnish the best available information concerning price changes among articles of finished equipment. We employ these quotations as approximations to the desired measurements, supplementing them, where possible, with prices on finished goods proper.

SOME CONDITIONS IN THE MARKETS FOR CAPITAL GOODS

In dealing with goods that are to be used as instruments of further production we are concerned, of course, with one variety of producers' goods. Demand for capital goods, like that for all producers' goods, is a derived demand, derived from the demand for the final consumers' goods in the production of which the capital equipment will serve an instrumental role. Such derived demand (especially where durable goods are involved and where stocks may be accumulated) is variable, subject to wider fluctuations than is the demand for ultimate consumers' goods. This variability

the relation between the price he pays for the equipment and the prices at which goods to be manufactured will be sold. But the connection is much more remote than that between the prices of materials and prices of goods made from them.

characterizes the demand for capital equipment in even greater degree than for other producers' goods. But the demand for capital equipment possesses other important and distinctive qualities which help to explain the recent price history of these goods.

One of the most important of these qualities has to do with the market attitudes of the buyer of capital equipment. The business buyer of materials intended for fabrication and sale must continually consider the current prices of the finished or semi-finished goods he intends to produce. His current manufacturing differential must be maintained or his operating profits are reduced. This is not a deferred or problematical loss. The payment of too high a price for materials will cause an immediate and, ordinarily, a definitely predictable loss. Consequently, the buying of materials for fabrication is inevitably subject to constant pressure and to the keenest discrimination that business judgment can exercise. For an operating loss under ordinary conditions provides obvious and easily interpreted evidence of managerial incompetence. Business acumen and the full force of manufacturers' bargaining power are continually bearing on the prices of materials of fabrication. The situation is different, in respect of capital goods. (Highly competitive conditions of supply may exist, of course, but we are here concerned with the attitudes and practices of buyers.) The reason is found partly in the character and source of the funds used for the purchase of capital equipment, partly in the way in which capital costs enter into business and accounting practices.

Purchases out of capital funds, particularly in a period of prosperity, are not always subject to the scrutiny and careful balancing of relative values that mark the purchase of goods used in the ordinary course of production. The occasional nature of capital expenditures, as against the continuity of

purchase characterizing goods entering into fabrication, is a factor tending to lessen the effectiveness of the buyer's bargaining. Lack of standardization and the presence of patented features may restrict competition in the markets for certain types of capital goods. Again, unless business management is exceptionally alert and conscientious, wasteful practices are likely to creep into the expenditure of surplus funds, perhaps painlessly accumulated in prosperous years, or of capital funds acquired in other ways.[2] The checks to inefficient spending usually affecting the disbursement of current business receipts are likely to be absent under these circumstances. Waste and error are less immediately obvious. Of course, this relaxation of vigilance may not occur among the most carefully managed enterprises, but these concerns by no means monopolize the business field. There was probably some wasteful expenditure of business surpluses during the expansion preceding the 1929 recession.

Equally important, in reducing buying discrimination in the markets for capital goods, is the circumstance that capital expenditures affect production costs only indirectly, and with a time lag. High capital charges may create very real business difficulties, but the difficulties are removed in time from the initial act of spending capital funds for physical goods. There is not the immediate check to faulty spending that current manufacturing and selling operations provide, when operating costs are in question. One reason for this is found in the role played by the rate of interest, in determining the annual charges against the investment. A cost substantially higher than one which had been considered proper might be accepted with equanimity, if the rate at which capital were obtained could be cut somewhat. Indeed, since

[2] Tax systems, or methods of rate regulation if the enterprise be a public utility, may provide an actual stimulus to investment of surplus, with costs still further subordinated to other considerations.

the rewards of bargaining or of careful timing may be greater in respect of the interest rate to be paid than in respect of the factors entering into the market price of new capital equipment, more attention may be given to the former.

The durability of capital equipment is another element affecting market conditions. This durability puts owners and users of capital equipment in position to withdraw from the market, to defer purchases, a fact of great significance in trade fluctuations. The high elasticity of demand for articles of capital equipment (and for durable consumers' goods which are in some ways closely related to capital goods) is one manifestation of this ability to defer current purchases.

For these various reasons we would expect the market relations of capital goods to differ from those of other producers' goods and of consumers' goods. During periods of sharp demand, in particular, less efficient buying is perhaps to be expected, with a consequent enhancement of the market strength of sellers of capital goods. The tendency in this direction is strengthened by conditions on the supply side. Unlike the raw materials of manufacture, many of which are produced under highly competitive conditions by many individual units, articles of capital equipment are turned out, in the main, by relatively few large enterprises, exercising far greater control over supply. This circumstance intensifies those previously cited in tending to strengthen sellers and weaken buyers, in their usual market operations.

CAPITAL GOODS INDUSTRIES IN PERIODS OF REVIVAL; PROBLEMS OF RECOVERY, 1933–1936

The highly variable nature of the demand for capital goods, together with the technical conditions prevailing in most capital goods industries, causes wide fluctuations in their production. Feverish activity in periods of expansion

and sharp curtailment of activity in times of recession mark the cyclical behavior of capital goods industries. The upward movements of general business recovery and the reactions of recession have been accentuated, often dominated, by these changes.

Many factors determine the degree of activity of capital goods industries at any time. Outstanding are the opinions of business men concerning the need for new capital equipment, the cost and availability of investment funds, and price relations affecting the cost of capital goods. The state of business opinion as to the need for new equipment (which is in part determined by price conditions and interest rates) is the active element in the situation. Without a satisfactory outlook in this respect renewed activity after a depression is not likely to develop.

Business opinion on the need of new equipment is shaped by prevailing expectations concerning the volume of production and trade, and by the adequacy of existing equipment. Opinion at any time is far from uniform, in these respects. Quite apart from differences in different trades there are great differences among business men in astuteness, foresight and willingness to gamble on the future. One business man may expand his plant in the darkest days of depression, against the expectation of a consumer demand that is perhaps barely in evidence. Others will defer expansion until prosperity is nearing its zenith. So, also, there are wide differences among business leaders in their appraisals of the adequacy of existing equipment. The shrewd planner may see possibilities of efficiency in a new device that will lead him to scrap machinery still thoroughly adequate, by conventional standards, while less daring managers will use old equipment until it is more obviously outmoded. The actions of far-sighted men in expanding and modernizing industrial plants during periods of generally stagnant business or at

very early stages of revival were a powerful factor in stimulating recovery in the capital goods industries in pre-War business cycles.

The role of interest rates and prices in the markets for capital goods has been suggested in the preceding pages. The possibility of securing long-term investment funds at low rates is an important facilitating element in the renewal of activity in capital goods industries. During depression corporate surpluses are usually cut down, through the maintenance of dividend payments in excess of current income. Private saving continues, however, though in reduced volume, and investment funds accumulate. This accumulation, in the face of greatly lowered demand, brings low interest rates and helps to create conditions favorable to renewed activity in the production of capital goods.

The degree to which the prices of capital goods have declined, during recession, also bears upon the problem of recovery. In making a decision to replace or expand an existing industrial plant account must be taken of the costs of labor and equipment, in relation to the prospective volume of production and the selling prices of the products. Technical and investment conditions might be highly favorable to expansion in the capital goods industries, but high prices, relatively to the post-recession level of general prices, might be a barrier to a revival of activity. We have said that the price factor may be subordinated to other considerations, in the minds of buyers of capital equipment. This is particularly true of purchases made in periods of business prosperity. Buying in depression and the early stages of recovery involves a more careful weighing of costs. The price factor is likely to be given greater weight at such times, when business men contemplate the purchase or construction of capital equipment. (The deciding consideration remains, of course, present and prospective demand for output.) Some

power of adaptation on the part of capital goods industries to changed conditions on the price side is an important condition of general business revival.

All these circumstances and others peculiar to the existing situation bear upon the problem of recovery in capital goods industries after the severe recession of 1929–33. Our primary concern is with the cost and price aspects of this problem, but other elements may not be ignored. We must here briefly summarize certain conditions affecting the situation existing in 1932–33.

1. Behind the recession of 1929 lay almost a decade of activity in capital construction at relatively high costs. Available quotations on processed goods intended for use in capital equipment stood, in the early 'twenties, some 15 per cent above the general average of wholesale prices, on a 1913 base; in the last half of the decade this differential had fallen to 7 per cent. The costs of construction materials and of new construction generally were notably high. These were the elements among capital goods chiefly responsible for swelling capital costs. (Prices actually realized by the makers of goods for use in capital equipment, other than construction materials, do not appear to have been materially higher than the general level of wholesale prices during the decade of the 'twenties.) The recession brought reductions in the prices of capital equipment, but these declines were less than those affecting prices in general, and the differential advantage of capital equipment increased (see Chapters II and III).

2. Construction of capital equipment had increased at a rapid rate during the years preceding the recession. In 1929 the volume of capital equipment produced (including nonresidential construction and public works) was about 70 per cent greater than in 1922. This may be compared with a rise of 31 per cent in the output of total consumption goods,

including residential construction.[3] During this period of steady, not to say rapid, business expansion the production of capital equipment was adequate to meet all current requirements, and exceeded them in some lines. We entered the depression with a considerable volume of productive equipment, constructed at high costs in anticipation of rapidly increasing demand. The customary phenomenon of excess productive capacity during depression was accentuated as a result of this heavy pre-recession construction. This was true despite the sharp curtailment that the recession brought in the production of capital equipment and of durable goods in general.

3. Reference has already been made to the stimulation of the heavy industries through the accumulation of savings and the consequent reduction of long-term interest rates in the later stages of depression. The amount of free funds available for investment after the recession of 1929–33 was affected by several exceptional circumstances. (These were, of course, of varying importance at different stages of the depression and the recovery.) The practical cessation of foreign lending tended to increase the funds available for domestic purposes. On the other hand, incomes were more drastically reduced than in previous depressions, and saving by individuals was curtailed. Corporate saving was cut sharply by the drop in profits, and corporate surpluses were drawn upon very generally to maintain dividends. Borrowing on insurance policies, the cancellation of existing policies and a check to the preceding rapid advance in new business of life insurance companies reduced the amount of investment funds from this important source. The net effect of these changes was a substantial reduction in the fund of savings available for investment.

Yet, in spite of a decline in new savings and some reduc-

[3] See *Economic Tendencies in the United States*, p. 280.

tion in accumulated capital, saving continued, even during the worst years of the depression. The reservoir of investment funds available was never emptied. Working against the use of these funds, however, was the highly important factor of fear among prospective investors. Heavy losses through defaults tended to freeze the flow of new funds into active use. Revelations of questionable banking practices had the same effect. Doubts concerning the future of the monetary standard, and fears that loans would be repaid in depreciated currency, were a heavy depressant upon the activities of potential lenders. Finally, the desire to maintain a high degree of liquidity led financial institutions to oppose long-term commitments.

On the borrowing side, also, conditions were adverse to a resumption of active investment. The protracted character of the depression and uncertainty as to the future checked new investment in industrial plants. Later, more rigorous restrictions upon the issue of securities were blamed by some for tardy recovery, but it is impossible to determine just how important these may have been.

Other forces played upon the investment situation during the early months of recovery. In many industrial fields there had been important technological advances, of the kind that promote obsolescence and stimulate investment in new equipment. Depreciation had cut down somewhat the pre-recession productive capacity of American industry. The investment situation was affected, too, by the diverse price movements of this period. It is with this phase of the general recovery that the present inquiry is directly concerned.

Price and Cost Changes in Capital Goods Industries

The force of the revival that began in the spring of 1933 was felt, with varying degrees of lag, by all elements of the price system. Relative changes in the prices of building ma-

terials, of processed goods intended for use in capital equipment and of all commodities, at wholesale, are indicated by the measurements in Table 45.

TABLE 45

ARTICLES OF CAPITAL EQUIPMENT AND ALL COMMODITIES, PRICES AND PURCHASING POWER, JULY 1929—JUNE 1936[1]

A. MOVEMENTS OF WHOLESALE PRICES

	July 1929	*Feb. 1933*	*July 1933*	*Oct. 1933*	*May 1934*	*Sept. 1934*	*May 1935*	*Dec. 1935*	*Apr. 1936*	*June 1936*
RECESSION AND RECOVERY										
All commodities	100	62	72	74	77	81	83	84	82	82
Articles of capital equipment, processed	100	79	79	82	89	85	85	85	85	86
Building materials, total	100	76	84	88	89	87	86	88	87	88
RECOVERY										
All commodities		100	117	121	125	131	134	135	133	132
Articles of capital equipment, processed		100	100	104	112	108	108	108	108	108
Building materials, total		100	111	116	118	115	114	116	115	116

B. CHANGES IN PER UNIT PURCHASING POWER

	July 1929	*Feb. 1933*	*July 1933*	*Oct. 1933*	*May 1934*	*Sept. 1934*	*May 1935*	*Dec. 1935*	*Apr. 1936*	*June 1936*
RECESSION AND RECOVERY										
All commodities	100	100	100	100	100	100	100	100	100	100
Articles of capital equipment, processed	100	128	109	110	115	106	102	102	104	104
Building materials, total	100	123	116	118	116	108	104	105	106	107
RECOVERY										
All commodities		100	100	100	100	100	100	100	100	100
Articles of capital equipment, processed		100	86	86	90	83	80	80	81	82
Building materials, total		100	95	96	94	88	85	85	87	87

[1] For the full series of index numbers see Appendix IV.

'Articles of capital equipment, processed' and 'building materials, total', in this table, are mutually exclusive categories. Logically, most of the commodities in the latter group fall under the first, more general heading, but for some purposes a distinction is useful. The two groups were combined in certain tables in Chapters II and III.

The first push of recovery, which carried the wholesale price level up 17 per cent in five months, was not felt by the main group of processed goods intended for use in capital equipment. These remained unchanged in average price, 21 per cent below the July 1929 level. Building materials did advance, though less than the general index. By May 1934 the rise had extended to goods for capital equipment, and building materials had added to their earlier gains. During the four months that followed both groups declined slightly and the general price level advanced somewhat; thereafter, for a year and a half, practically no price changes occurred among these groups.

The movements of recovery are perhaps more significantly portrayed in Part B of Table 45. For both groups the shifting price relations of the recession brought gains of some 25 per cent in per unit purchasing power. The prices of capital equipment and building materials had declined, but their actual market values, per unit, had risen by reason of the much greater drop in general commodity prices. Their real costs, in terms of commodities in general, were prohibitively high at the low point of the depression.[4] Later movements were irregular, but they brought substantial reductions in the exchange value, per unit, of capital equipment and building materials. By June 1936 processed goods intended for use in capital equipment were but 4 per cent higher, in per unit worth, than in July 1929; building materials were but 7 per cent higher. The chief reductions in their relative standing were effected during the first spurt of recovery and

[4] This statement is based upon an examination of quoted prices. The prices actually realized by makers of articles of capital equipment were below the quoted prices, at the low point of the depression. This was a condition prevailing among manufactured goods in general. (*Cf.* Ch. VI.) The price disparity between processed goods intended for use in capital equipment and commodities in general, at wholesale, was therefore not as great as is indicated by the quoted prices.

during the summer of 1934 when drought conditions were giving a fillip to the prices of agricultural products.

The comparisons on the 1929 base, in Table 45, may be supplemented by others, on a pre-War base (Table 46). The purchasing power figures indicate that goods for capital equipment and building materials retained, in June 1936, a considerable advantage over commodities in general, though the wide margin of February 1933 had been reduced materially. The real worth, per unit, of processed goods for use in capital equipment stood 14 per cent higher than in

TABLE 46

CAPITAL EQUIPMENT AND BUILDING MATERIALS PER UNIT PURCHASING POWER, 1913–1936

	July 1913	*Feb. 1929*	*Apr. 1933*	*June 1936*	*June 1936*
Producers' goods for use in capital equipment, processed	100	107	134	113	114
Building materials	100	122	150	130	131

1913; building materials were 31 per cent higher.[5] This condition represented substantially higher costs than in pre-War days. Their relation to other factors affecting activity in the capital goods industries is discussed in a later section.

Additional information is available concerning cost changes in several important subdivisions of the capital goods market. The index numbers of building material prices, in Table 46, relate to but one type of building costs, and even

[5] The index numbers for processed producers' goods for use in capital equipment, which are constructed by the National Bureau of Economic Research, have been deflated by the National Bureau's index of wholesale prices. The indexes of prices of building materials were secured by splicing index numbers of the U. S. Bureau of Labor Statistics for the period 1913–29 with index numbers of the National Bureau for the succeeding years. The deflating index was obtained by splicing the 'all commodities' index numbers of the Bureau of Labor Statistics and of the National Bureau, for the same periods.

here the coverage is not complete. For certain structures measurements of changes in actual construction costs, including labor costs, are to be had. The problem of measuring such cost movements is troublesome, because of changing engineering practices, leading to shifts in the relative importance of labor and material costs, and difficulties in the way of measuring labor costs during a period of changing efficiency and shifting wage scales. General movements may be followed with reasonable accuracy, however.

Several indexes designed to measure changes in construction costs are brought together in Table 47. When labor costs are combined with the cost of three basic materials, as in the first set of measurements in this table, we secure an index showing a somewhat smaller decline during recession

TABLE 47

CONSTRUCTION COSTS AND WHOLESALE PRICES IN THE UNITED STATES, JUNE 1929–JUNE 1936 [1]

	June 1929	*Mar. 1933*	*June 1933*	*June 1934*	*Sept. 1934*	*Mar. 1935*	*Dec. 1935*	*Mar. 1936*	*June 1936*
RECESSION AND RECOVERY									
Basic materials and labor [2]	100	77	79	97	98	94	95	98	99
Construction of a standard concrete factory building [3]	100	87	88	93	93	93	93	94	96
All commodities, wholesale	100	63	69	79	82	83	84	83	83
RECOVERY									
Basic materials and labor [2]		100	103	126	127	123	123	127	129
Construction of a standard concrete factory building [3]		100	102	107	107	107	107	108	110
All commodities, wholesale		100	109	126	130	132	134	132	131

[1] The dates shown here differ from those in other tables because the index of costs involved in constructing a standard concrete factory building is available quarterly only.

[2] Index of the *Engineering News–Record,* which is based upon the costs of steel, cement, lumber, and the wage rates of common labor reported from about 20 cities. The prices are weighted on the basis of total production of steel, cement, and lumber, and the total amount of labor (man hours) used.

[3] Index of the Aberthaw Construction Company.

than that in the prices of materials alone, and a much more pronounced rise during recovery. From March 1933 to June 1936 the *Engineering News-Record* index of the cost of steel, cement, lumber and labor advanced no less than 29 per cent, as against a rise of 16 per cent in the index of building materials prices, at wholesale, from February 1933 to June 1936. Since the rise in the index of the *Engineering News-Record* started from a relatively high value in March 1933, these costs (which of course do not cover all building charges) in the summer of 1936 stood only 1 per cent below the 1929 level; general wholesale prices were 17 per cent below.

The costs of constructing a standard concrete factory building fell approximately 13 per cent during the recession, as compared with a drop of 37 per cent in general wholesale prices; these construction costs rose 10 per cent from March 1933 to June 1936, advancing to a level only 4 per cent below that of 1929.

The measurement of these changes with reference to a pre-War base involves a greater margin of error, as with all price and cost comparisons over long periods, but the results throw light on the present situation (Table 48). When recession

TABLE 48

CONSTRUCTION COSTS AND WHOLESALE PRICES IN THE UNITED STATES, 1914–1936

	1914	*June 1929*	*March 1933*	*March 1936*	*June 1936*
Basic materials and labor	100	232	179	227	231
Construction of a standard concrete factory building	100	190	165	178	182
All commodities, wholesale	100	151	95	125	125

started in 1929 construction costs of all sorts were far above the general level of wholesale prices, relatively to pre-War standards, and this margin of advantage was materially wid-

ened during the period of declining prices. Prices and wage rates are subject to a degree of control in this field exceeding that found in most areas of economic activity, and offer greater resistance to downward revision. The advances of recovery in construction costs were somewhat smaller than those in general wholesale prices, but they were sufficient to leave such costs in the summer of 1936 higher in relation to the general price level than in 1929. In June 1936 the average cost of basic construction materials (steel, cement and lumber) and labor, together, was more than twice as high as in 1914. When account is taken of all the costs of constructing a standard concrete factory building, the June 1936 level was approximately 82 per cent higher than in 1914. The level of general wholesale prices was 25 per cent higher. The difference is significant, even when account is taken of the difficulty of securing accurate measurements of changes in wages and prices over these twenty-two years, and of the corresponding margin of error in the results.[6]

[6] C. F. Lambert has constructed measurements of the cost of reproduction (new) of five types of public utilities plants, which may be used to supplement the Aberthaw index of the cost at different dates of building a standard concrete factory building.

INDEX NUMBERS OF THE REPRODUCTION VALUES (NEW) OF FIVE COMPLETE UTILITIES *

	1913	*1922*	*1929*	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*
Waterworks plant	100	176	180	177	167	153	159	176	176
Electric light plant	100	172	178	169	158	142	151	169	168
Street railway system	100	181	170	167	155	144	144	154	153
Natural gas plant	100	171	184	181	176	166	169	181	180
Artificial gas system	100	181	183	176	168	157	163	178	179
Wholesale prices	100	148	148	134	113	100	103	117	124

SOURCE: C. F. Lambert, *Engineering News-Record*, 'Construction Costs', (1936 ed.), p. 28.

* Includes a small fixed price for land.

The costs, in 1935, of reproducing four of the five plants here listed, were

Other scattered data relating to the price movements of capital equipment and construction during recession and recovery show diverse tendencies. Prices of automobile trucks declined 24 per cent from 1929 to 1933; there was no change from 1933 to 1935. Here is a reduction, up to the latest date, exceeding that in wholesale prices at large. If account could be taken of quality changes an even greater decline would be indicated. Farm machinery, at wholesale, declined in price some 11 per cent from 1929 to 1933, and rose, by 1935, to within 4 per cent of the 1929 level.[7] Equipment of this type increased in relative value during the period of recession and recovery.

	1929	*1933*	*1934*
Railroad construction costs			
Road	100	79	82
Equipment	100	82	91
Steam locomotives	100	88	94
Other locomotives	100	75	84
Freight train cars	100	78	89
Passenger train cars	100	88	94
Motor equipment of cars	100	88	94
Floating equipment	100	87	93
Work equipment	100	85	91
General expenditures	100	80	82
Total	100	80	84
Wholesale prices	100	69	79

SOURCE: Interstate Commerce Commission, Bureau of Valuation. The wholesale price index is that of the U. S. Bureau of Labor Statistics.

(*Footnote* 6 *concluded*)
about 5 per cent below the 1929 costs; costs for the fifth plant were only 10 per cent below. Equally significant is the fact that the 1935 costs for four of the five plants stand from 68 to 80 per cent higher than in 1913; the lowest figure, for natural gas plants, is 53 per cent higher. Wholesale prices were 24 per cent above 1913.

[7] The index numbers for trucks and farm machinery are those of the U. S. Bureau of Labor Statistics, which are based upon quoted prices.

Detailed figures on railroad construction costs and on the cost of railroad equipment are compiled by the Interstate Commerce Commission. The evidence is illuminating and is worthy of attention.

The three main elements of railroad construction costs fell from 1929 to 1933 by amounts ranging from 18 to 21 per cent. Road costs and general expenditures were only slightly higher in 1934, but equipment costs advanced materially, and stood well above the level of wholesale prices. There is some variation among the elements of equipment costs; non-steam locomotives were at substantially lower cost levels than other forms of equipment. This detailed cross-section of an important subdivision of capital costs is probably fairly representative of heavy equipment. Costs were reduced considerably, but the reductions lagged behind the fall in wholesale prices at large.

The price advance that started in 1914 was, in effect, a great tide, that carried up to new levels practically all the prices and costs that define working and trading relations. When it receded after fifteen years it left many elements of the price system at these high levels. The reasons are many, but here it is sufficient to note the natural tendency to go with a tide of rising values, and to fight the currents of the ebb, when prices are receding. When strategic position makes strong resistance possible on the part of certain economic elements, or when entrenched costs may not readily be reduced, successive flow and ebb are certain to leave just such major price discrepancies as existed in 1933, and which persisted, for many groups, into 1936. Among the elements marked by notably high costs in 1936 were those entering into the construction of permanent industrial equipment. Whether we judge these by 1929 or by 1913 standards we find prevailing costs in this field to be well above the level

of prices in terms of which most economic activities are now conducted.[8]

The discussion of price and cost changes among capital goods, with reference to the demand for new equipment, involves the question of obsolescence. Obsolescence, as distinct from the physical process of depreciation, may arise from invention, from improvement in designs or materials, from such a shift in operating conditions as is caused by changes in wage rates, or from a reduction of costs in the production of capital goods which enables producers to replace old equipment by new instruments carrying a lighter burden of capital charges. (The term 'replacement' is used, of course, with reference to the economy as a whole, since a producer already provided with equipment would not buy new equipment of the same type merely because the price fell. Competitive replacement, however, may substitute a low-cost producer, using new equipment, for a high-cost producer, with old equipment.) Thus a sharp reduction in costs may render obsolete much old equipment which, with respect to physical depreciation alone, might have long remained in operation.

Much of the capital equipment with which we entered the recession of 1929–32 had been produced at the relatively high costs of the preceding decade. The writing-down of the capital charges borne by such equipment is a painful process, seldom carried through rigorously in default of the actual reorganization of industrial enterprises. This writing-down

[8] Of course, we should recognize that improvements in the quality and efficiency of capital equipment might have paralleled and in some degree offset the advance in costs. Some tendency in this direction was undoubtedly present, and for many specific instruments actual declines in costs occurred. But the bulk of the commodities included in the group 'articles of capital equipment, processed' are not highly fabricated instruments; they are articles at an earlier and less specialized stage of fabrication. There is little reason to believe that quality changes in them would offset the price differences to which attention has been drawn.

was not carried through in any complete manner during the recession, and the recovery measures, in general, were aimed at the prevention of liquidation and reorganization. These measures may well have been thoroughly justified, in this respect, since wholesale reorganization effected over a short period may mean general economic demoralization. But the result was to leave the economy with a heavy burden of overhead charges, which tended to prevent a downward readjustment in the selling prices of finished goods.

We have noted one other method of effecting reduction in overhead charges after a general price decline, a method more gradual in its working and for this reason less painful in its incidence. If the costs of producing industrial equipment in the succeeding period of lower prices are reduced in proportion to the general price decline, the purchase of new equipment may be attractive and profitable, even in the face of sub-normal demand for consumers' goods and a considerable carry-over of old equipment. New, low-cost equipment in the hands of new business enterprises contributes in two ways to the enforcement of lower prices to final consumers. It carries lower overhead charges, and its product may be sold at lower prices. Furthermore, competitive pressure from this source forces the writing-down of the high charges that have been carried against the old equipment produced prior to the recession. Lower overhead charges and lower prices contribute to that stimulation of a higher volume of sales, of production and of employment that is the basic condition of enduring recovery.

The process is painful, of course, to those producers whose equipment was built at the high prices of the pre-recession period, but it is an essential part of the process by which a competitive economy may be made to function efficiently. The relatively high costs of new construction and of some forms of capital equipment that persisted in the face of the

great decline in general prices from 1929 to 1933 constituted a real obstacle to renewed activity in the capital goods industries and to the restoration of a normal volume of production and employment. The loose buying that is likely to occur in capital goods markets during prosperity is replaced by a sharper questioning of costs in depression. The quotations of 1935 and 1936 reveal a definite improvement in respect of the relative prices of commodities entering into capital equipment. The rise in the prices of other goods had reduced the margin of advantage enjoyed by goods destined for use in capital equipment. In so far as the prices of these goods represent the cost of finished equipment, substantial progress in price readjustment had been made. The costs of new construction, however, remained at relatively high levels in the early summer of 1936.

As a factor supplementing and supporting the improved price situation in capital goods industries in 1935 and 1936, definite obsolescence on the technical side became increasingly important. It is estimated that in 1925 some 44 per cent of the machine tools in use in American factories were over ten years old; in 1930, 48 per cent had passed this age limit. In 1935, 65 per cent of the metal working machines in the United States had been in use for more than ten years. This increase in the percentage of old machines in use resulted from a pronounced decline in the expenditures of manufacturers on the replacement of machine tools. Over the five years 1930–34 such expenditures are estimated to have been 42.6 per cent of similar purchases from 1925 to 1929.[9] Al-

[9] These estimates are based upon studies of machine tool obsolescence made every five years by the *American Machinist*. The 1935 estimates are based upon questionnaires sent to approximately 10,000 factories—about 7 per cent of the manufacturing establishments in the country in 1933. The actual figures for 1935 indicate that of a total of 1,345,447 metal machines 879,522 were over ten years old (see *American Machinist*, April 24, 1935).

though the latter were abnormally high the falling off is significant. There is no doubt that depreciation and obsolescence had been at work during the whole period of recession and depression, and that a potential replacement demand of considerable proportions existed in the capital goods markets in 1935.

Availability and Cost of Capital Funds

Direct market costs constitute but one of many factors that shape the decisions of prospective buyers and builders of capital goods. We have already referred to the influence of prevailing interest rates. It will be helpful, in considering the state of activity in capital goods industries during the last several years, to give some attention to variations in the amount of available funds.

Changes in some of the elements entering into the aggregate of funds available for investment are indicated in Table 49. These items fall far short, of course, of covering the entire field of savings, but they reflect changes in certain major elements. From 1930 to 1932 there was a steady depletion of savings, as here represented. Savings deposits declined, the assets of building and loan associations were reduced, and corporate surpluses were drawn upon heavily. (We have used, of course, a net figure for corporate savings. Many individual corporations may well have added to their surpluses in these years.) The amount of premiums received by life insurance companies kept up very well, but this favorable condition was partly offset by an increase, from 1929 to 1932, of almost one billion dollars in the amounts paid to policy holders on account of surrendered policies. Reductions in most of these elements persisted into 1933, but with lessened force. By 1934 savings deposits were increasing, the rate of decline in corporate surpluses had been greatly reduced, and

TABLE 49

CERTAIN MAJOR ITEMS OF SAVINGS IN THE UNITED STATES, 1929–1935

(*millions of dollars*)

	1929	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*
Total savings and other time deposits as of June 30 [1]	28,218	28,479	28,220	24,281	21,126	21,753	22,652
Change during year	—195	+261	—259	—3,938	—3,155	+627	+899
Building and loan associations, total assets, as of Dec. 31 [2]	8,695	8,824	8,412	7,745	6,972	6,450	5,889
Change during year	+679	+129	—412	—667	—773	—522	—561
Life insurance companies, total admitted assets, less premium notes and loans, as of Dec. 31 [3]	15,103	16,073	16,791	16,948	17,127	17,857	19,191
Change during year	+1,142	+970	+718	+157	+179	+730	+1,334
Annual corporate savings [4]	+1,423	—3,909	—5,877	—6,366	—2,796	—2,340	—1,443

[1] SOURCE: Savings Division, American Bankers Association

[2] SOURCE: U. S. Building and Loan League

[3] SOURCE: Spectator Co. The 1934 and 1935 figures are estimated on the basis of data compiled by the Association of Life Insurance Presidents.

[4] Based on Treasury figures and derived by the Department of Commerce. See *Survey of Current Business*, July 1936.

the premium receipts of life insurance companies were swelling again.

The actual supply of private and corporate savings was curtailed during the first years of recession. Indeed, with sharp reductions in earnings and incomes and heavy capital losses as a result of failures and defaults, this was inevitable. But saving persisted during the depression, and its effects are manifest in the records.

Some indication of the changes recession and recovery

have brought in the cost of short- and long-term funds is given in Table 50. When the recession began rates on short-

TABLE 50

BOND YIELDS, DISCOUNT RATES AND INTEREST RATES, 1929–1936

	July 1929	*Feb. 1933*	*July 1933*	*May 1934*	*Sept. 1934*	*May 1935*	*Dec. 1935*	*Apr. 1936*	*June 1936*
Bond yields [1]									
All bonds (60)	4.73	5.73	5.15	4.56	4.63	4.32	4.11	3.90	3.94
Industrial bonds (15)	5.09	7.60	6.16	5.29	5.22	4.65	4.44	4.38	4.44
Call loan renewal	9.23	1.00	1.00	1.00	1.00	.25	.75	.75	1.00
Prime commercial paper, 4–6 months	6	1¼–1½	1½–1¾	1	¾–1	¾	¾	¾	¾
N. Y. Federal Reserve Bank, discount rate	5.00	2.50	2.50	1.50	1.50	1.50	1.50	1.50	1.50

[1] As computed by the Standard Statistics Company.

term loans were relatively high, but long-term rates (as represented by average bond yields) were barely above the average for the eight years preceding. (The yield on 60 domestic bonds had averaged 4.72 per cent from 1922 to 1929.) The lowering of rates that depression usually brings is evident in the short-term series, which had fallen to very low levels by February 1933. The decline in bond yields and the corresponding reduction in the cost of new capital funds were checked by banking difficulties, domestic and foreign, in 1931 and 1932, and by a wave of fear that carried bond prices to unprecedentedly low levels. This is reflected in the high yields (particularly on industrial bonds) that persisted through 1933. By 1934 all rates were lower; short-term commercial rates fell below one per cent.

In spite of the persistence of low rates through 1935, activity was slow to revive in the markets for capital funds and in the heavy industries that are fed by them. On the financial side, this condition is revealed by the figures on new corporate issues in the United States. These records,

compiled by the *Commercial and Financial Chronicle,* are given here in millions of dollars. Between 1929 and 1933 the

	1929	*1930*	*1931*	*1932*	*1933*	*1934*	*1935*
New capital	8,639	4,944	1,763	325	161	178	404
Refunding	1,387	529	825	319	221	313	1,844
Total	10,026	5,473	2,589	644	382	491	2,248

issues of new capital—the significant figures with respect to new activity—fell to a negligible fraction of their normal volume; this low state persisted through 1934. In 1935, particularly in the latter half, the flow of investment funds into use quickened appreciably, and this movement carried into the next year. During the first six months of 1936 new capital issues of corporations amounted to 463 millions of dollars, a figure greater than that for any corresponding period since 1931. Totals remained low, by pre-recession standards, but savings were again moving into use.

PRODUCTION OF CAPITAL GOODS

The records of the physical volume of output provide the final index of activity in capital goods industries. Comprehensive statistics covering the production of finished capital goods of all sorts are not available, but the degree of decline in their production during the recession is indicated in Table 51. While the output of manufactured consumption goods was dropping some 20 per cent, from 1929 to 1933, the production of capital equipment declined by amounts ranging from 60 to 80 per cent, for the several types of activity represented in Table 51.

Against this background of recession in physical output we may view the events of recovery. For this period we lack the comprehensive index numbers of manufacturing output

TABLE 51

PRODUCTION OF CAPITAL GOODS, 1929–1933

	1929	*1931*	*1933*
Output of products of manufacture entering into capital goods [1]			
Capital equipment, general	100	49	40
Construction materials	100	57	42
Volume of engineering construction [2]	100	69	32
Volume of non-residential building (floor space) [3]	100	43	18

[1] Index numbers constructed by the National Bureau of Economic Research from records of the Census of Manufactures.
[2] Index constructed from the compilations of the *Engineering News–Record;* total value of engineering contracts awarded deflated by *Engineering News–Record* index of construction costs.
[3] Compiled by the F. W. Dodge Corporation from actual contract records in the 37 states east of the Rocky Mountains.

that are based upon Census records, but various representative figures serve to indicate the general nature of the changes. In following the movements of recovery we may use monthly data, drawn from several fields (Table 52).

TABLE 52

PRODUCTION OF CAPITAL GOODS, JULY 1929–JUNE 1936

	July 1929	*Feb. 1933*	*July 1933*	*May 1934*	*Sept. 1934*	*May 1935*	*Dec. 1935*	*Apr. 1936*	*June 1936*
Volume of engineering construction [1]	100	26	20	32	32	34	79	52	60
Volume of non-residential building (floor space) [2]	100	11	19	22	20	25	56	47	43
Cement production [3]	100	18	50	50	46	48	34	51	67
Iron and steel production [3]	100	24	66	66	27	52	65	80	81

[1] Aggregate value of contracts awarded, as compiled by the *Engineering News–Record,* deflated by the *Engineering News–Record* index of construction costs.
[2] Compiled by the F. W. Dodge Corporation.
[3] Published in the *Federal Reserve Bulletin;* not adjusted for seasonal movements.

The declines of recession, as measured on a monthly basis, appear to have been even more severe than the annual data indicate. With the first rush of recovery there was a notable pick-up in the non-construction fields. Of course, a large portion of the increased output of the iron and steel industry went into durable consumption goods (chiefly automobiles), and not into capital goods proper. The rise in this series undoubtedly exaggerates the true degree of recovery in the production of capital equipment. The estimated volume of engineering construction advanced slowly from the low point of the summer of 1933 through the spring of 1935. The last half of 1935 was marked by a very great rise, reflecting generally increased activity in the heavy industries. The measurements of this change relate to contracts awarded, not to actual construction, and therefore anticipate new activity. Furthermore, public works account for a large part of the advance in volume of engineering construction, as well as for some of the recovery in cement production.[10] Cement and iron and steel figures show further advances in the first half of 1936; engineering construction and non-residential building receded.

The protracted resistance of private industry, in the field

[10] In the six closing months of 1933 a total of 108 million dollars was spent on projects financed from public works funds; in 1934 approximately 965 million dollars; in 1935, 1,068 million dollars. The last figure far exceeds the sum of 404 million representing new corporate capital issues in the United States in 1935. Governmental activity in the construction of capital equipment in 1935 greatly exceeded that portion of private activity that is represented by the new capital issues actually recorded. Many issues are not included in this count, however, and much capital expansion is financed out of corporate surpluses and other private funds. There is no basis for an accurate comparison of governmental and private activity in this field.

Two forthcoming studies of the National Bureau of Economic Research (*Gross Capital Formation*, by Simon Kuznets, and *Measures of Capital Consumption*, by Solomon Fabricant) will throw light on changes in the volume of capital in the United States.

of capital goods, to the forces of recovery is reflected in the volume of non-residential building. Not until the last half of 1935 did this industry feel a real stimulus. In the first half of 1936 activity in the construction of industrial buildings remained more than 50 per cent below the 1929 level.

Comparison of Production and Price Movements, Durable and Non-Durable Goods

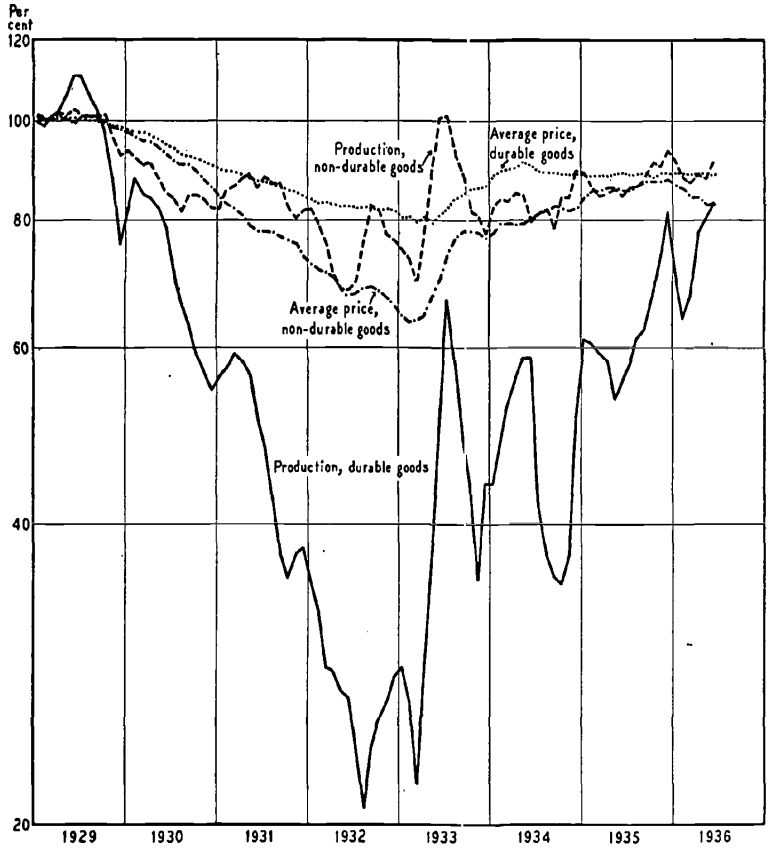
The category of durable goods is not the same as that of capital equipment, and precision of analysis is lost by treating the two as identical. The first of these classifications is, of course, the broader, including all capital equipment plus very important classes of durable consumption goods, such as automobiles, refrigerators, radios and residences. An essential difference between the two groupings is that capital goods are instruments employed in the production of further goods, which will in turn enter the market for sale to other producers or to final consumers. A piece of personal equipment may be just as long-lived, but its role in an economy marked by division of labor is fundamentally different, since its products do not enter the market. The conditions surrounding the production of the two classes of goods are somewhat similar, however, and they are alike in that the demand for both capital goods and durable consumption goods is relatively elastic. Their respective modes of behavior during periods of recession and recovery have much in common, and differ in similar ways from the behavior of non-durable goods. This contrast, in respect of price and production movements, is brought out in Table 53, and in Figure 14.

Sharply declining production and relatively well maintained prices characterized the behavior of durable goods during recession. Among non-durable goods production suffered less severely; the chief force of recession fell on prices. Reasons for the differences, as has been suggested, are found partly in the conditions of demand for these two classes of products. The buyers of

FIGURE 14

CHANGES IN PRICES AND PRODUCTION, MANUFACTURING INDUSTRIES OF THE UNITED STATES, 1929–1936

DURABLE AND NON-DURABLE PRODUCTS



Ratio scale

The base of each of the series plotted in the above chart is the average of that series for 1929. The indexes in Table 53 are on the July 1929 base.

TABLE 53

PRICES AND PRODUCTION OF DURABLE AND NON-DURABLE PRODUCTS OF MANUFACTURING INDUSTRIES, JULY 1929–JUNE 1936

	July 1929	*Feb. 1933*	*July 1933*	*May 1934*	*Sept. 1934*	*May 1935*	*Dec. 1935*	*Apr. 1936*	*June 1936*
Durable goods									
Average price, wholesale [1]	100	80	82	91	89	88	88	88	88
Volume of production [2]	100	24	61	53	32	49	74	71	75
Non-durable goods									
Average price, wholesale [1]	100	63	74	79	82	85	87	83	82
Volume of production [2]	100	73	101	84	78	85	93	88	91

[1] SOURCE: National Bureau of Economic Research; see Appendix IV
[2] SOURCE: Board of Governors of the Federal Reserve System, Washington; see *Federal Reserve Bulletin*

durable goods, whether for productive or personal use, may postpone their purchases and withdraw from the market to a degree that is not possible to buyers of non-durable goods, in general. This withdrawal from the market is forced upon buyers of capital equipment by declining demand for the consumption goods the equipment is designed to produce. It is the readiest alternative to buyers of durable consumers' goods when their incomes are reduced and doubts concerning their future spending power are instilled by general business recession and depression. Other conditions on the supply side work in the same direction. Producers of non-durable goods are, in general, less able to control supply and to protect prices than are producers of capital equipment and other durable goods. Perishability of product is, to some extent, a factor in this situation. More important, probably, is the lack of agreement and common practice among the many scattered producers of the raw materials that enter into non-durable goods.

The responsiveness of demand for durable goods to changes in real income and in economic outlook is reflected in the sharp rise in production during the early months of recovery. (This pick-up was felt primarily among durable consumers' goods,

rather than capital equipment.) The prices of durable goods, already relatively high, rose less than the prices of non-durable goods, which felt the chief stimulus of recovery. By the end of 1935 both sets of prices stood at approximately the same level, some 12 per cent below that of 1929. Thereafter the prices of non-durable goods declined somewhat. Despite sharp recovery in 1935 the output of durable goods remained well below that of non-durable goods, with reference to the 1929 level.

Factors Affecting the Revival of Capital Goods Industries, 1933–1936

Every business depression is marked by a reduction in the proportion of the productive energy of an economy that is devoted to the output of capital goods. Always in time of stress and emergency there is a concentration of activity upon goods of immediate need, a postponement of those efforts that come to fruition only after a relatively long wait. The reasons are numerous, and many are technical, but it is not incorrect to say that in such periods the time span in terms of which human activities are conducted is shortened. The making of capital goods involves the expenditure of effort which is later to be rewarded in the production of consumable goods. A sense of security, an approach to certainty concerning what the future may hold, are essential to such activity. When producers are uncertain as to the probable state of consumer demand, when investors are reluctant to make long-term commitments, when fears and doubts grip buyers, producers and lenders, then the immediate needs of the day take precedence over future possibilities, and all activities that point towards a more distant future are curtailed.

This means, of course, a shortening of the average time lag between the expenditure of economic effort and the act

of final consumption. Every industrial order is geared to activity involving a certain average time interval between effort and consumption. In general, with economic growth and steady technical improvement, this interval is subject to slow expansion. A continually increasing proportion of the available labor and equipment is used in the indirect activities of production that aim towards a future date. This change is slow, and the economic shifts required for adaptation to it may be effected without particular strain. But when recession and depression bring a sudden, sharp contraction in this interval, prompt and painless adaptation is impossible. Large numbers of men and machines are thrown out of work. Recovery requires either a restoration of the confidence and the technical conditions that make possible activity based on the longer time span, or adaptation to techniques resting upon the shorter (and less efficient) time span. The first of these is characteristic of the recoveries that occur in a progressive economy; it is with the conditions of such revivals that we are concerned, in reviewing the recent history of capital goods industries in the United States.

We may distinguish three aspects of a recovery of this type —reviving demand for consumers' goods, profit opportunities in the use of new capital equipment, and confidence essential to the making of relatively long-term commitments. During depression there is, of course, an actual diminution in the volume of consumers' goods produced, although a much larger proportion of the productive energies of society actually in use is devoted to their output. With recovery consumers' goods industries revive. In the present state of our knowledge of business cycles we may not say that this revival of consumer demand must necessarily precede renewed activity in the production of capital goods. Obsolescence, combined with low costs of funds and materials, may lead to renewed activity in capital goods industries while

consumer buying remains at depression levels. But such activity is promptly reflected in consumer incomes, and thereafter the process of revival is marked by reciprocal stimulation of activity in these two fields.

A host of factors affect the opportunities for profit in the use of new capital equipment. The expected market for the final product, the supply of existing equipment in relation to the present and potential demands upon it, the carrying charges it bears, the relative technical advantage enjoyed by new equipment, the costs of capital, materials and labor for its construction, are all elements of the situation. These vary in importance from time to time. Actual construction costs may be given slight weight at certain times, because relatively heavy advantages of other types exist. This appears to have been true prior to 1929, when high costs were cheerfully paid in the face of low capital charges and expectations of sharply expanding demand for final products.

'Confidence' covers those intangible elements that determine the time span in terms of which human calculations may be made, with reasonable expectation of fulfillment. It is essential to activity in the capital goods industries that they who solicit capital for the building of equipment have confidence in their ability to use funds profitably, over a period of time. This is the primary consideration, for it is the decisions of this group that determine whether available funds will be used or not. In addition, men with accumulated funds and with credit facilities at their disposal must have confidence that their funds will be returned to them, and the annual use-value received. Fears concerning the stability of social or political conditions and doubts relating to monetary or other economic matters may chill this confidence, shortening the interval for which men care to commit disposable funds.

The several factors just named are but a few of those that

affect industries devoted to the construction of industrial plants and the production of the capital equipment of society. Man's forward planning is embodied in the elaborate instrumental equipment that has no value except that which runs backward from the date of its future fruition. Forces released by consumer buying are centered upon the capital goods markets, and their fluctuations appear there in intensified form. A variety of technical influences, related to the process of saving and to the investment mechanism through which savings are converted into plant and equipment, affect economic processes in this area. Here is the heart of modern industrialism. Here are focused the little understood forces that shape the operations of modern economies and determine the living standards of populations.

Some of the economic conditions affecting capital goods industries prior to the recession of 1929 and at the low point of the succeeding depression have been outlined in this and preceding chapters. In summary of these points, we may note the following:

Relatively heavy production of capital equipment during the decade of the 'twenties was stimulated by the pace of industrial expansion and by the cheapness of long-term funds. This production was in some degree misdirected and wasteful, and may well have been excessive even in relation to the rates of growth characteristic of this period. We lack criteria that would make possible a definite judgment on this score. However, there can be no doubt that the check to this growth, and subsequent contraction, left productive capacity well in excess of the curtailed demand of the depression years.[11] Demand for consumers' goods

[11] The adverse effects of this condition during depression and the early stages of recovery were probably intensified by an exaggerated impression of its importance, and by a failure to give due weight to the factors of depreciation and obsolescence. 'Over-production' and 'excess capacity' are characteristic features of business depressions. The circulation in recent years

had to revive substantially, to supplement the processes of retirement and obsolescence, before the need for new equipment became imperative.

Reduction of carrying charges on plants and equipment during recession and depression was rendered especially difficult by reason of the relatively high costs of construction that had prevailed among capital goods during the post-War expansion, by the magnitude of the price decline from 1929 to 1933, and by the severity of the drop in output. High costs of materials and labor, which had looked inconsequential in the heyday of prosperity, meant capital charges altogether out of line with the prices of 1932 and 1933. The very severity of the price drop rendered it impossible, in general, to effect an adjustment of capital charges to the new price level by drawing upon reserves and contingent funds. Combined with this was the great decline in the number of units produced, which made the carrying charge on each unit much heavier than it would have been with a well-maintained volume of production.

In 1933 average overhead charges, per unit of goods produced by manufacturing industries of the United States, were about 11 per cent lower than in 1929. This was an appreciable reduction, in view of the obstacles faced, but it fell far short of equaling the changes among all other elements of the final selling price of manufactured goods.

Capital losses, the reduction of current income and the drain upon corporate surpluses as a result of maintaining dividend payments in the face of reduced earnings all served to lower the amount of savings available for investment during the depression years. Current requirements for new capital funds were reduced still more sharply, however. In relation to demand, there was no shortage of accumulated funds during the depression. There was, however, a period of profound financial fear, ushered in by the failure of the Credit Anstalt, in the autumn of 1931, and extending through the banking crisis of 1932–33 in the United

of fabulous accounts of the productive capacity of American industry may have helped to discourage new enterprise in this field.

States, when rates on long-term industrial loans were exceptionally high. Indeed, the average yield on domestic industrial bonds, as computed by the Standard Statistics Company, did not fall below 6 per cent from October 1931 to February 1934. In June 1932 it rose to a maximum of 9.17; again, in April 1933 it reached 8.27. Short-term rates were low during most of this period, but few long-term commitments were made.

Finally, we have noted the high costs of new capital construction during the depression. Building materials and many processed articles of capital equipment resisted the general price decline. Available wholesale price quotations indicate that by February 1933 these commodities were worth, per unit, in exchange for commodities in general, some 25 per cent more than in July 1929, and from 35 to 40 per cent more than in 1913. If account could be taken of improvements in quality, and of the actual prices realized by makers of capital equipment in the years of greatest depression, a greater fall in certain equipment costs would undoubtedly be revealed. But the general picture of a lagging adjustment of such costs to changing monetary values would probably not be altered. Construction costs were even higher than equipment costs. In March 1933 these stood from 20 to 40 per cent higher (relatively to general commodity prices, at wholesale) than in 1929, and from 70 to 80 per cent higher than in 1914. The world-wide rise in prices and costs from the pre-War level and the subsequent declines, in 1920–21 and in 1929–33, left capital costs in general and construction costs in particular on a high plateau.

Under these conditions recovery in the capital goods industries was abnormally retarded in 1933–36, in comparison with previous business revivals. The program of public works and a very considerable pick-up in certain industries producing durable consumers' goods (notably the automobile industry) brought increases in the production of cement and iron and steel, but the production of capital goods on private initiative definitely lagged.

We have discussed above three elements of recovery in the capital goods industries, reviving demand for consumers' goods, opportunities for profit in the use of new capital equipment, and the confidence essential to the making of long-term commitments. Between 1933 and 1936 consumer demand recovered notably. All available records—wage disbursements, department store sales, etc.—indicate definite improvement. Relief and benefit disbursements by the Federal government and disbursements connected with the public works program played a considerable part in this movement, but private industry contributed as well. This considerable improvement failed, however, to restore a volume of buying approaching that of 1929. In 1934 the total purchasing power of farmers was about 76 per cent of that of 1929; the aggregate purchasing power of manufacturing labor was approximately 73 per cent of 1929. In 1935 the corresponding figures were 83 and 81 per cent.[12] It is true that these were two of the most severely reduced elements of total consumer demand, but they were two of the most important, in aggregate volume. Even after three years of recovery the total flow of goods to consumers remained well below the pre-recession level.

Lack of confidence played a part in the stagnation of capital markets and the delayed recovery of capital goods industries during some stages of the revival from 1933 to 1936. Fear of continued liquidation and the urge for liquidity on the part of financial institutions were important in the early stages. Later, uncertainties connected with dollar devaluation and fears of inflation arising from the unbalanced state of the Federal budget affected some investors. These various doubts contributed to make prospective investors more careful than

[12] Both sets of figures relate to changes in estimated money income, corrected for changes in the prices of goods purchased.

they had been before 1929. Funds were not fighting for use, irrespective of risk and of the responsibility of the borrower. But credit reserves and savings were accumulating. By the middle of 1934 the pressure of funds seeking use had spread out from the short-term market (in which rates had long been abnormally low), and bond yields fell below the average of the eight pre-recession years. Lack of confidence on the part of lenders did not play any appreciable role thereafter.

After the panic phase and the period of monetary uncertainty were past, the delayed recovery in capital goods industries appears to have been due primarily to the failure of prospective borrowers to discern opportunities for profitable use of new equipment.[13] These opportunities were not present during the first two years of recovery, except in isolated areas, for two main reasons. In the first place, the productive capacity of the equipment in existence in 1929 was in general adequate to the requirements of the subnormal consumer demand. Depreciation occurred, of course, and definite technical obsolescence during the period of subnormal replacement from 1930 to 1936. But before obsolescence can become effective in stimulating the replacement of old equipment by new, the cost and carrying charges on the new, in conjunction with its efficiency, must offer a real advantage. This was not true, in general, of capital goods industries through the early months of 1935. The obsolescence that becomes real in terms of the actual accounting books of business, obsolescence that would lead to the retirement of the high-cost equipment carried over from pre-recession years, was retarded by the failure of capital costs to decline by amounts commensurate with the fall of prices in general. This was a second and po-

[13] Other factors were present. More stringent regulations concerning new security issues engendered some reluctance to borrow at one stage. The limitation of new equipment under certain N.R.A. codes may have been a minor contributing factor in a few industrial fields.

tent factor contributing to the delayed revival of activity in industries making productive equipment. By mid-summer of 1935 the cumulative effect of stronger consumer demand and of an improved relation between capital costs and general prices had combined to effect an appreciable improvement in this sector. The effects of this improvement were clearly evident in the subsequent stimulation of the heavy industries.