CHAPTER TWO

LONG-RUN DEVELOPMENTS

IN THE descriptive part of this book we shall, on the whole, follow the conventional decomposition of time series into their components, referred to in chapter i.[1] We start, therefore, with a description of the broad outlines of the development, that is, with the trend movement, and in this chapter describe the long-run economic development since the beginning of the nineteenth century.

POPULATION

The rapid economic growth during the nineteenth century may be shown first by reference to population figures. In the

TABLE 3

GROWTH OF POPULATION IN FOUR INDUSTRIAL COUNTRIES, 1800–1930

	Around 1800	1930
France (1930 territory)	28	42
Germany (1930 territory)	22	66
England and Wales	9	40
United States*	5	123

* The rapid increase was due partly to immigration.

course of the nineteenth century the population of the world increased very rapidly, mainly as a consequence of reduced mortality rates. The figures in millions in Table 3 give a clear indication of this movement.

Toward the latter part of the nineteenth century the rate of increase slowed down as a consequence of birth control. Al-

1. Cf. p. 9, *supra*.

though the curve of a population, calculated on the basis of its marriage rate, fertility rate, and mortality rate for different ages and changing with time, is by no means a simple curve, it can for most countries be represented with a very high degree of approximation by a growth curve and for the early part of the period by an exponential curve. For certain countries, such as Germany, however, this approximation does not yield satisfactory results. In Germany the rate of increase of the population has shown a notable upward change after 1870 and after 1933.

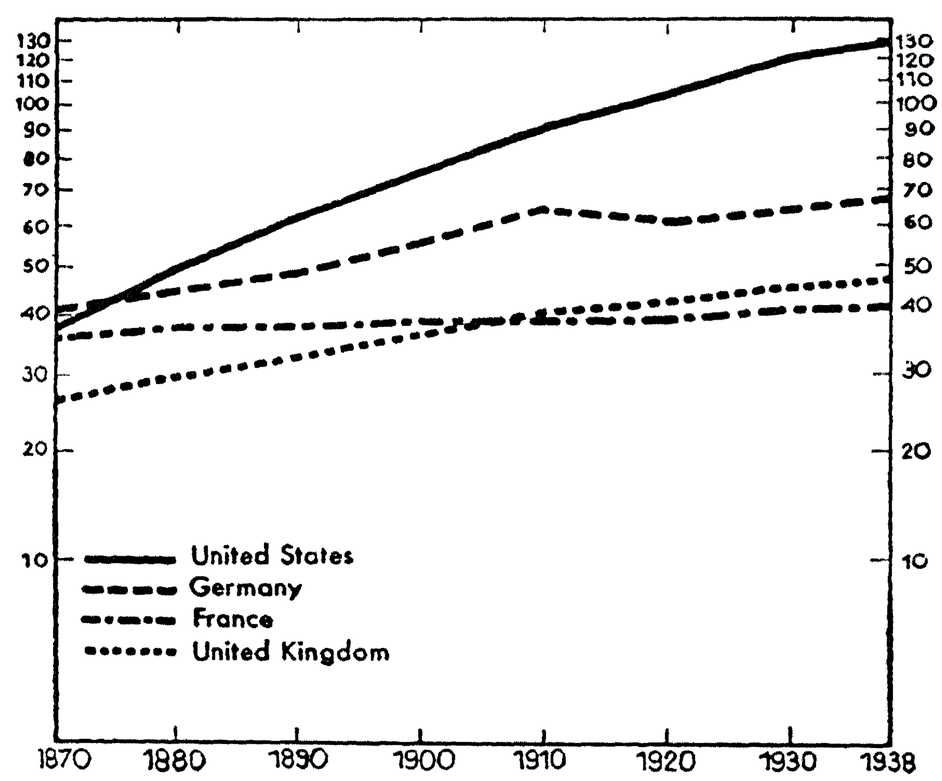

FIG. 10.—Population growth in the four largest industrial countries since 1870 (in millions).

Generally, however, the curves that indicate the growth of population are very smooth, as will be seen from Figure 10.

LAND

The availability of natural resources also increased in the nineteenth and, though in lesser degree, in the twentieth centuries. Most important in this respect was the opening-up of the natural riches of the United States. But in Europe, too, the area under cultivation, the capacity of mines, etc., increased. The same is true for other continents. A few of the available figures are shown in Figure 11.

PRODUCTIVITY

Running parallel with the increase of this factor of production, nature, and not always easily distinguishable from it, is the great increase in technical knowledge. This increase in technical knowledge showed itself not only qualitatively in the production of many new products. It also made itself felt quantitatively in that the same quantity of output was obtained by the use of smaller quantities of the factors of production. The fact of technical progress can easily be established if there is a reduction in the use of each of the factors of production;

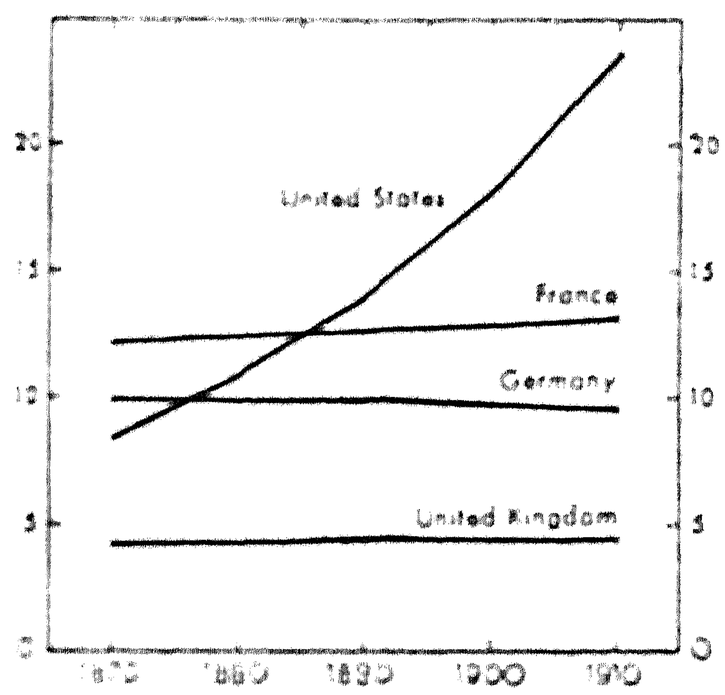

FIG. 11 Growth of the quantity of arable land in the four largest industrial countries. (Value at prices of 1890 in billions of dollars.)

sometimes, however, a decrease in the quantity of labor may be accompanied by an increase in the quantity of capital used. If the increase in capital represents less sacrifice as measured by current prices than the decrease in the quantity of labor, there is a net reduction in sacrifice. It must be realized, nevertheless, that at a given state of technical knowledge, different production processes are always possible—different combinations of the factors of production which, at a given level of prices for the various factors of production, involve different costs. In the simplest case in which there are only two factors of production, labor and capital, all these combinations may be represented by points on a curve; the co-ordinates of each point indicate the quantities of labor and capital used per unit of product. All

these points lie on one and the same "curve of technical possibilities." A switch from one of these possibilities to another may mean a reduction in total cost; yet it does not indicate technical progress. An exact definition of technical progress can therefore be given only as follows: Technical progress occurs when new combinations become possible that are cheaper than the cheapest combination possible before, at the given level of prices. One might also say that technical progress represents a change in the curve of technical possibilities, as a result of which a smaller quantity of one factor of production is necessary for any given quantities of the other factors of production.

There is no doubt that the quantity of labor per unit of product has on the whole gradually declined. In other words, the volume of output per unit of labor, or the statistical labor productivity, has increased. Between 1870 and 1914 this increase amounted roughly to the following percentages per annum: for Germany 1.8, for England 0.5, for France 1.1, and for the United States 1.1.

Very few figures, and on the whole rather defective ones, are available with respect to the quantity of capital and of natural resources used per unit of product and with respect to the development of these quantities over time. It would seem probable that the quantity of natural resources per unit of product, like the quantity of labor, has decreased and that the quantity of capital per unit of product has increased. It is possible, therefore, as Professor Douglas[2] believes, that there has been no real technical progress in the theoretical sense of the word. According to him the changes we observe are simply the forms in which labor and nature are replaced by capital; these are the previously unknown parts of the same "curve of technical possibilities." The mechanization of production (replacement of labor and nature by capital) would, according to Douglas, have taken place as a result of changes in relative prices: capital has become more abundant and thereby cheaper in relation to the other factors of production. Although this explanation is possible, it would seem to us more probable that actual technical progress has taken place.

2. Paul H. Douglas, *The Theory of Wages* (New York, 1924), pp. 209 ff.

The presence of capital in the form of capital goods with a long life-span leads to fixed costs that are practically independent of the volume of output. It is generally believed that the share of fixed costs in total costs has gradually increased. It is not easy, however, to find a statistical verification of this belief for production as a whole, and a recent study would rather tend to indicate that the reverse is true.[3]

THE STOCK OF CAPITAL

Population, natural resources of a country, and technical knowledge can generally be considered as data; but, for the quantity of capital goods available, this treatment is proper only in the short run. In the somewhat longer run the quantity of capital goods is dependent on economic activity itself and is therefore a variable to be explained by economic science. In the period under consideration the increase in the quantity of capital has been quite rapid. Before we give figures on this subject, we will have to dwell for a moment on the difficulties involved in the concept of "the quantity of capital goods." We consider as capital goods all commodities that have been produced and are to be used in further production. The stock of capital goods may be measured in different ways. A somewhat primitive way would consist in the counting of numbers and the weighing of physical quantities, for instance, counting the number of locomotives, ships, houses, and weighing the quantities of iron, stone, and timber incorporated in them. Such methods have great disadvantages. Some houses may be much larger than others. In weighing the quantities of raw materials used in their production, some allowance is made for this, but no account is taken of the fact that "one ton of iron" may represent commodities of quite different quality, such as iron bars or machines.

A less primitive method consists in measuring some aspect of

3. P. J. Verdoorn, *De Verstarring der Productiekosten* ("Increasing Rigidity of Cost of Production") (Rotterdam: Netherlands Economic Institute, 1943). Roughly speaking, this finding would be due to the fact that, although the quantity of capital per unit has increased and the quantity of labor (constituting chiefly variable-cost items) has decreased, their money values have moved proportionally because of the divergent price movements of the two factors.

the productive capacity of capital goods. Thus, one can measure the horsepower of a locomotive, the capacity of a ship, the number of rooms of a house. Obviously, this form of measuring is also not quite satisfactory. An old house and a new house with the same number of rooms do not have the same value. Moreover, this yardstick indicates only one aspect of the capital goods, whereas in reality more than one characteristic determines the importance of the capital goods for productive purposes. These measures fail in particular to reflect the depreciation which each capital good undergoes in the course of time.

All the various aspects of the significance of capital goods are reflected in their money value, as indicated either by the market price (for capital goods that have a current market) or by the book value. This measure also has its disadvantages, however. The value of money is not constant, and book values are often subject to peculiar considerations. The ideal method would be to distinguish a very large number of capital goods (one-year-old locomotives of type A, two-year-old locomotives A, three-year-old A's, etc.; locomotives B of all ages, etc.), evaluating them at the prices they have at some moment t and changing these valuations by means of the chain-index method. So far, however, insufficient data are available to apply this method.

The series in Table 4, computed by the Netherlands Central Bureau of Statistics, have therefore been based on a combination of the first and second methods of measurement, that is, measurement by number, size, or capacity.

The stock of capital goods of the categories indicated increased by more than 2.5 per cent per year for each of the countries shown, considerably faster than the increase in the population. This rapid increase was made possible by intensive saving. It may be assumed that in these countries over the period under consideration approximately 15 per cent of the national income was saved.

THE VOLUME OF OUTPUT

We shall now give some indication of the growth of some characteristic economic variables, starting with those of a phys-

ical nature. Within this group a distinction may be made between "flow" magnitudes and "stock" magnitude. Among the former we count such variables as production per year and consumption per year; among the latter, the stocks available at a certain moment of time. The most important general flow variable which would indicate the position of the economy as a whole is the total volume of production. A second very important variable is the total volume of labor performed, sometimes roughly indicated by the term "employment." Both variables have increased rapidly during the nineteenth century, the

TABLE 4*

AVERAGE INCREASE PER YEAR (IN PER CENT) OF CERTAIN CATEGORIES OF CAPITAL GOODS AND OF THE POPULATION, IN SIX COUNTRIES 1870–1910

	Germany	France	United Kingdom	Netherlands	United States	Sweden
1. Livestock	1.0	0.4	0.4	0.8	1.6	1.0
2. Industry	6.2	6.2	4.5	5.0	5.8	9.7
3 Railroads	2.9	2.5	1.5	1.9	3.2	5.3
4. Commercial fleet	4.8	2.0	3.5	3.5	2.5	3.7
5. Houses	0.6	0.4	1.5	1.2	2.5	0.9
6. Weighted average†	3.7	3.1	2.8	2.6	3.8	4.6
7. Population	1.1	0.1	0.9	1.2	2.1	0.7

* Netherlands Central Bureau of Statistics, *Maandschrift*, 1942, p. 113.

† Weighted in accordance with the importance of the five series in the national wealth around 1910 of the countries concerned.

former more rapidly than the latter on account of the increase in labor productivity. Employment would show a greater rate of increase if it were expressed in the number of days worked rather than in the number of hours worked, as the average working day has been considerably reduced. Even the number of hours worked has increased considerably. It should be noted that neither of the two measurements takes into account any possible changes in the intensity of labor. This magnitude, however, would be very difficult to define and even more difficult to measure, and opinions differ greatly as to its changes over time.

In the four main industrial countries the annual rate of increase of production between 1870 and 1914 was as shown in Table 5.

The rate of increase has not been constant. Thus, for British industrial production (excluding building) the average rate of increase over different periods has been estimated to have been as shown in Table 6. The development of a few index numbers of activity is shown graphically in Figure 12.

An important distinction in the series for total production is that between consumers' goods and investment goods. As shown by the figures in Table 7 for the United Kingdom over the last

TABLE 5

ANNUAL RATE OF INCREASE OF PRODUCTION IN FOUR INDUSTRIAL COUNTRIES, 1870–1914

	Per Cent
United States	4.1
Germany	3.4
England	1.6
France	1.5

TABLE 6*

ANNUAL RATE OF INCREASE OF INDUSTRIAL PRODUCTION IN THE UNITED KINGDOM, BY PERIODS

	Per Cent per Annum
1700–1780	0.9
1781–1913	2.8
1819–1913	2.6
1855–1913	2.0
1923–35	1.9

* W. Hoffmann, *Wachstum und Wachstumsformen der englischen Industriewirtschaft von 1700 bis zur Gegenwart* (Jena, 1940), p. 28.

two centuries, the latter series has increased at a faster rate than the former. These figures reflect the fact that capital per unit of product has increased. Since the production of investment goods is not of direct consequence for the satisfaction of human needs, the series of the production of consumers' goods is a better indicator of the development of human well-being than is the series of total production. A simple and useful indicator of the movement in the physical basis of human well-being is found in the volume of production of consumers' goods per capita per year. All available figures indicate that this series

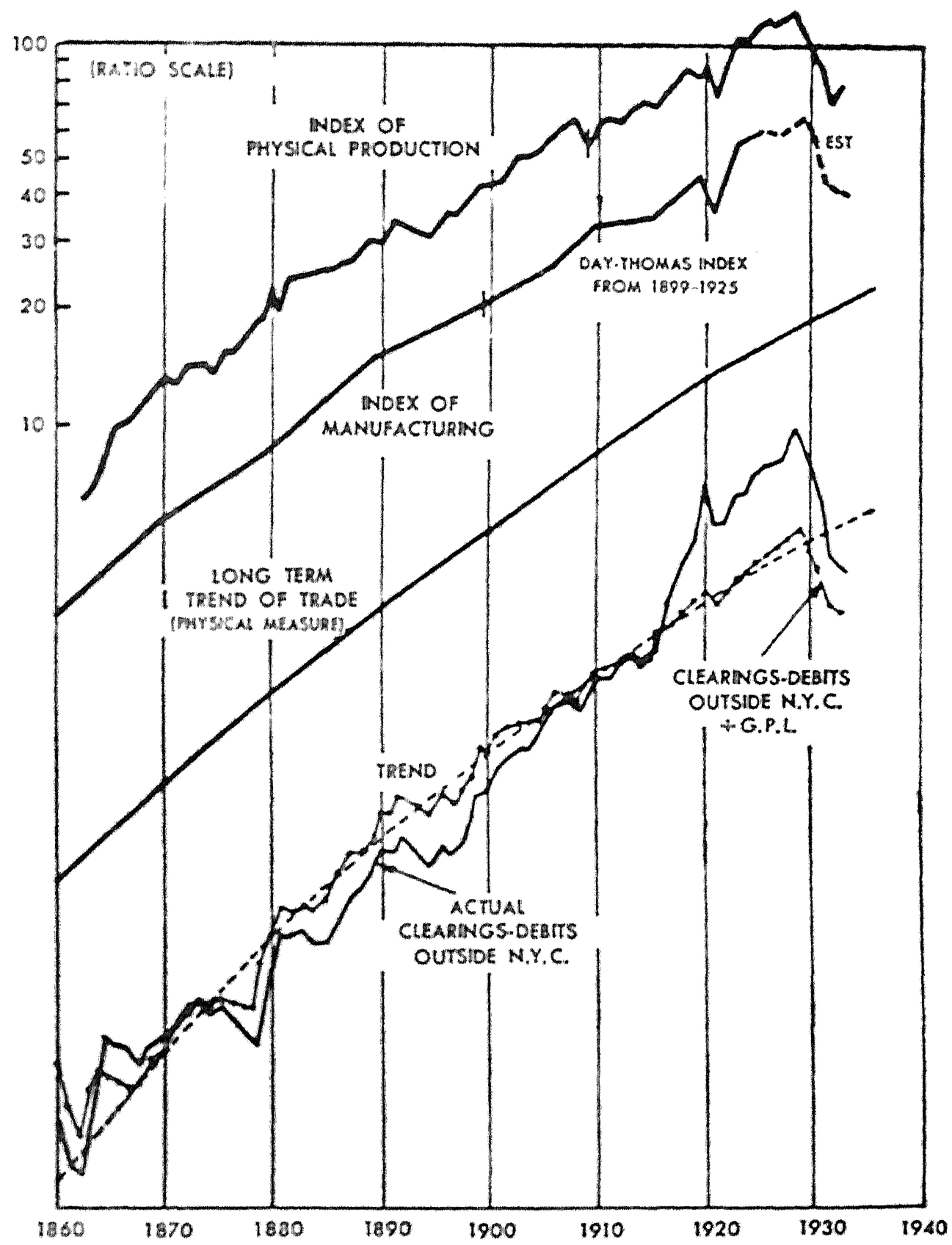

FIG. 12.—Rate of growth of production and activity in the United States. Source: Carl Snyder, "Commodity Prices versus the General Price Level," *American Economic Review*, XXIV (September, 1934), 394. (The three lower curves show [*a*] the dollar value of bank clearings and, for later years, bank debits outside New York City; [*b*] the same series deflated by an index of the general price level; and [*c*] a trend fitted to the deflated series.)

has also increased, although obviously at a slower rate than has the total production of consumers' goods.

Side by side with the series of production, those of the foreign trade of the various countries deserve attention. Until the first World War the development of international trade was somewhat more rapid than the development of production. This would reflect a tendency toward increasing international division of labor. Since World War I there has been a reaction to this development.

On the whole, less is known concerning the stock variables than concerning the variables indicating flows. We have already given some indications concerning the development of the

TABLE 7*

NET VALUE OF PRODUCTION OF INVESTMENT-GOODS INDUSTRIES IN PER CENT OF THAT OF TOTAL INDUSTRY IN THE UNITED KINGDOM, 1740–1924

1740	16	1881	47
1783	29	1907	58
1812	31	1924	53†
1851	40		

* W. Hoffmann, *Wachstum und Wachstumsformen der englischen Industriewirtschaft von 1700 bis zur Gegenwart* (Jena, 1940).

† On the basis of later data it can be ascertained that this reduction was only temporary.

stock of capital goods. Some information is available further, concerning the stocks of raw materials. Generally speaking, these stocks have increased less rapidly than the corresponding figures on production; this would indicate a certain rationalization in the use of inventories, made possible in part by more rapid means of communication and in part by improvements in the technique of production.

PRICES

After the physical magnitudes, we consider prices. Over the last century and a half, nominal or money prices do not show any pronounced general trend, but their movement shows very characteristically the so-called "long waves." If one considers prices over much longer periods than those we study here, a pronounced upward movement can be clearly observed from available fragmentary data on prices in past centuries.

In the nineteenth and twentieth centuries, however, no such tendency can be spotted; in fact, there are some indications of a falling long-run trend for prices of finished industrial products; but the validity of any price comparison of industrial goods over long periods of time is greatly affected by the qualitative improvement of many commodities. Long waves in prices are shown clearly by the fact that most price series show

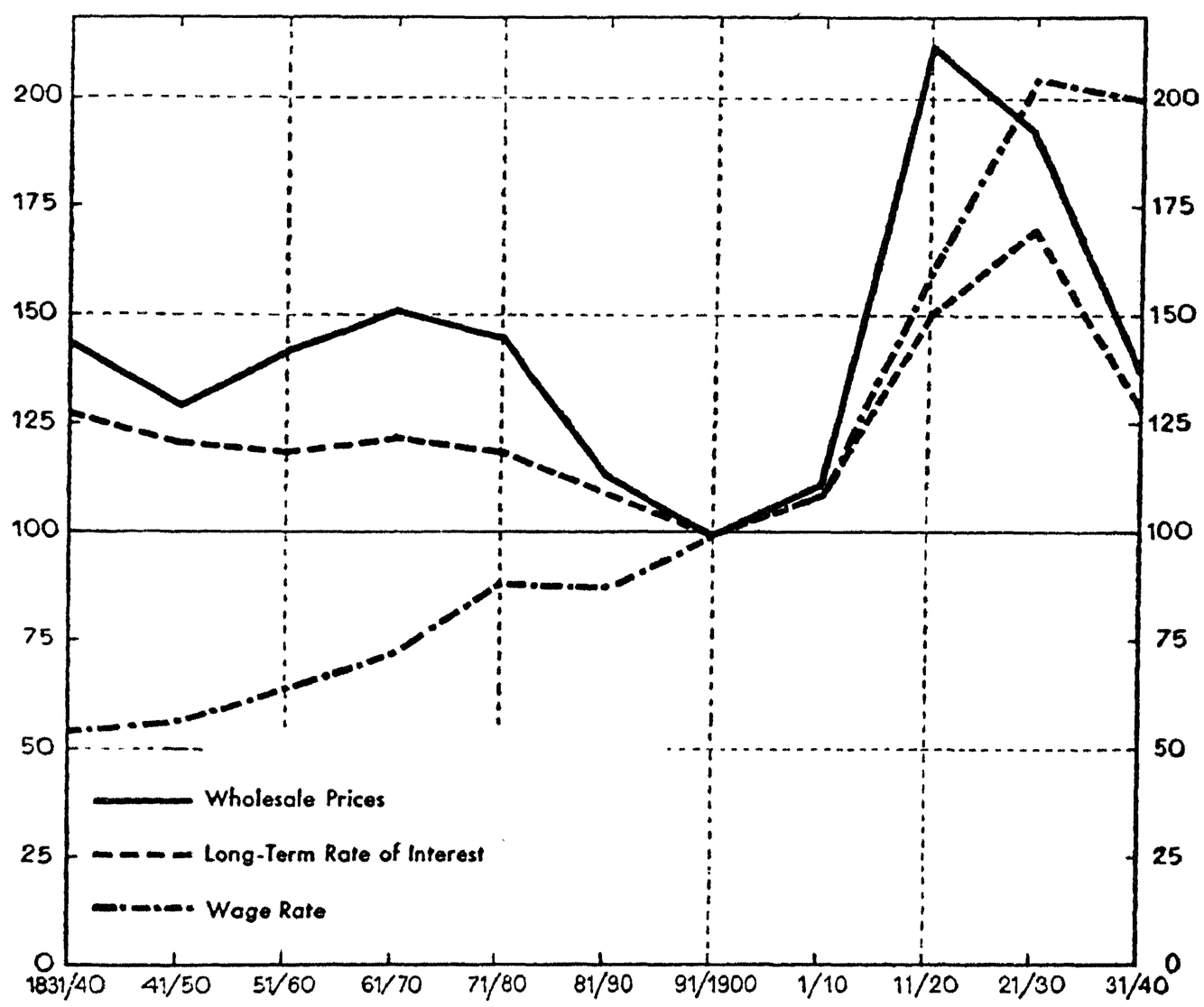

FIG. 13.—Long-run development of certain price series for the United Kingdom (1891–1900 = 100).

a peak around 1810, another one around 1873, and one around 1920; and troughs in 1850, 1896, and 1933 (see Fig. 13). The first peak comes shortly after the period of the Napoleonic Wars, the second one after the Franco-German War and the American Civil War, and the third one after the first World War. The first and the last one of these peaks were no doubt in part caused by the inflation associated with these war periods; for the peak of 1873 this is not so certain.

If, however, no definite trend can be discerned in the movement of nominal prices, a pronounced trend can be seen in relative prices. In particular, the ratio of the wage rate to the general price level has increased almost without interruption, if one abstracts from cyclical fluctuations. The real wage rate, in other words, has increased considerably. There is no pronounced tendency in the ratio between the rate of interest and the general price level. The long waves also show up in the movements of the rate of interest, in particular in the long-term rate.

FINANCIAL DEVELOPMENT

We may refer, further, to the developments of certain money amounts which are characteristic of the economy. We start with money flows and deal subsequently with money stocks. Important flow series are the value of national income and the shares of it accruing to the various factors of production. For practically all countries both total national income and its various components—income from labor, from capital, and from land—show a very pronounced tendency to increase. Even after allowance is made for changes in the general level of prices and for the increase of population, the series still show an ascending tendency, indicating a tendency for real income per head to increase. It is remarkable that the proportion of income going to the various factors of production has changed very little. The figures given for these proportions depend to some extent on the definitions and the methods of calculation chosen, and these are not the same for all countries; for the two countries, however, for which the most impressive amount of information is available—the United Kingdom and the United States—the percentage of income that goes to labor is remarkably similar and, at least in the United Kingdom, appears to have remained at nearly the same level for over a century (Table 8).

Among the stock variables in terms of money, national wealth and money and banking figures may be mentioned in particular. Here again all figures indicate a very pronounced upward trend. The figures shown in Table 9 refer to the period 1870–1910 which, although representing only a fraction of the

total period from 1800 to the present, is in many respects the most characteristic period of an undisturbed process of growth. More statistical data are available for this period than for earlier years, and certain comparisons are therefore possible which cannot be given for longer periods.

During this period national wealth apparently increased at approximately the same rate as national income, but for both

TABLE 8

NATIONAL INCOME AND ITS DISTRIBUTION

UNITED KINGDOM
(Billions of £)

	1843	1913	1938	1946
1. Total national income...	0.52	2.17	4.67	7.97
2. Labor income.....	0.33	1.36	2 92	5.22
3. (2) as per cent of (1).....	*63*	*62.5*	*62.5*	*65.5*

UNITED STATES
(Billions of $)

	1850	1910	1938	1946
4. Total national income...	2.21	30.5	67.4	178.2
5. Labor income.....	1.76	22.5	44.7	116.8
6. (5) as per cent of(4).....	*80*	*74*	*66.5*	*65.5*

TABLE 9

FINANCIAL DATA CONCERNING THE FOUR LARGEST INDUSTRIAL COUNTRIES IN 1910
(Index Numbers, 1870=100)

	Germany	France	United Kingdom	United States
National income.....	.....	182	194	454
National wealth.....	.....	154	183	572
Gold stock of central bank..	235	378	177	.....
Total gold stock in country.	.....	.....	160	1185
Note circulation.....	273	257	121	386
Total money supply.....	.....	.....	190	865
Foreign investments.....	710	306	271	*

* No figure shown, as in 1870 the United States was still a debtor country.

series the differences between countries were pronounced, the rate of increase being fastest in the United States and slowest in France. The development of the various components of national wealth was also quite divergent. The value of land in the national wealth of England decreased, whereas in Germany and France it remained approximately the same. On the other hand, the value of foreign investments increased greatly, well in excess of the increase in total wealth; but wealth in the form of domestic capital goods also showed a considerable increase during the period.

TABLE 10

DEVELOPMENT AND COMPOSITION OF MONEY SUPPLY IN THE UNITED STATES, 1860–1940*

	In Billions of Dollars			In Per Cent of Total		
	1860	1900	1940	1860	1900	1940
Gold coin	0.21	0.61	0.00	31	8	0
Other currency	0.23	1.47	7.85	33	21	14
Total currency	0.44	2.08	7.85	64	29	14
Demand deposits	0.25	5.11	33.17	36	71	58
Time deposits			15.80			28
Total	0.69	7.19	56.82	100	100	100

* Currency in circulation outside Treasury and Federal Reserve banks; deposits of all banks, excluding mutual savings banks. Deposit figures do not include interbank and U.S. government deposits.

The figures relating to monetary and banking statistics also show great increases. They show, further, important shifts among the various components with differences among countries which are much more pronounced than those in the field of production.

Most complete data are available for the United Kingdom. In this country the gold stock at the central bank increased much more rapidly than that of the country as a whole, indicating a concentration of gold in the central bank. The note circulation increased less than either of the two gold series and also less than total money supply, clearly indicating a substitution of deposit money for currency. This same tendency is also clearly shown by the figures for the United States in Table 10.

Whereas in the United Kingdom the money supply increased at approximately the same rate as the national income, it increased much faster than the national income in the United States, indicating apparently a relative extension of the money economy during the period.

In France, as in the United Kingdom, the note circulation decreased relative to the gold stock, whereas in Germany it increased.

In addition to banking statistics, it would be of great interest to have figures concerning the entire money and capital markets, including, for instance, the total value of bonds outstanding at various periods. With the exception of public debt data, however, this information is not available for most countries.

TABLE 11

TOTAL PUBLIC DEBT IN BILLIONS OF NATIONAL CURRENCY

	1870	1910	1930
Germany	0.4	5.0	10.4
France	12.3	32.8	480
United Kingdom	0.80	0.76	7.6
United States	2.44	1.15	16.2

Public debt figures show very clear differences between periods of peace and periods of war. As shown by the figures in Table 11, the total public debt was much larger in Germany and France in 1910 than it had been in 1870, whereas it declined during that period in the United Kingdom and the United States. From 1910 to 1930, however, the figures show an increase for all four countries.

CHANGES IN TREND AFTER WORLD WAR I

Public debt figures are not the only ones that show a different development since the first World War. In many other respects there was a change in trends. But the many disturbances to which the economies of most countries were subjected in the postwar years make it particularly difficult exactly to discern the new trends. It would seem that the previous tendencies to grow continued but became less regular and less intensive, in

any case with respect to the older industrial countries. On the other hand, in the U.S.S.R., in Latin America, in Japan, and in a number of other countries the development was rapid. The links between the various countries became on the whole somewhat looser, and as a consequence the general picture became less homogeneous. Economic nationalism put many obstacles in the way of increasing world trade, and tendencies in this direction were reinforced by the great depression. International trade declined somewhat in proportion to world production. Similarly, the significance of foreign investments declined. As a consequence of the many disturbances in the economies of various countries, the cyclical and incidental movements tended to dominate the long-run tendencies of growth which were so clearly visible in the period from 1870 to 1910. In a description of the interwar period, cyclical and incidental movements are of much more significance than the long-run trend; it is for this reason that we have confined ourselves in this chapter mainly to the period before World War I.

CHAPTER TWENTY

INDIRECT POLICIES. II. OTHER FORMS

INTEREST POLICY

WE SHALL deal in this chapter with the other indirect forms of business-cycle policy. We shall take up interest policy first. The rate of interest may be affected by the central bank's establishing its rates with the purpose of influencing the volume of credit and thus promoting stabilization of cyclical movements. This policy may be supported by open-market policy. Open-market policy is exercised by the central bank through the purchase or sale from the banking system of treasury bills or long-term government bonds. The purchase of government paper from the commercial banks will increase their balances with the central bank and hence their liquidity. In this way it will tend to reduce the rate of interest. Similarly, the sale of government paper by the central bank to the commercial banks will reduce the reserve position of the latter and hence tend to increase the rate of interest. Finally, interest policy may be performed by a large-scale conversion operation by the state in order to reduce the rate of interest on long-term loans. If this reduction is in excess of that which has occurred in the free capital market and, in particular, if it is accompanied by some degree of pressure, it may indeed be considered as a form of interest policy.

In a discussion of interest policy, a distinction should be made between the psychological influence in particular situations of a sudden change in the discount rates of the central bank and the general economic influence on the level of activity of changes in the rate of interest. An increase in the discount rate, in a period of business-cycle tension, may be interpreted as an emergency

sign and hence provoke a sudden crisis. Whether such action promotes stabilization may, perhaps, be questioned.

The effect of gradual changes in the rates of interest is not very great. The greatest effect is felt, of course, with respect to those forms of activity that are financed in part by credits, i.e., investment. A distinction should be made here between investment in inventories and investment in fixed capital. With respect to the former, no influence of the rate of interest can statistically be distinguished; with respect to the latter, some influence can be established. Statistical studies show, however, that only a small part of the actual fluctuations of investment in fixed capital in the past can be attributed to fluctuations in rates of interest.[1] In other words, rates of interest would have to show much more pronounced fluctuations to achieve stabilization of investment. For that reason, only a limited significance can be attributed to interest policy as a policy toward the stabilization of business cycles. This is due in particular to the fact that the rate of interest can never become negative; this puts a serious limitation on the stimulating effects of interest policy in the depression. In order to compensate the losses on new investment, a negative rate of interest would in fact be required.

With respect to the influence of the rate of interest on the stabilization of the business cycle, it may be admitted that any stabilization achieved by fluctuations in the rate of interest will be increased to some extent by the operation of the multiplier. If investments are somewhat more stabilized, the total value of production and hence the total profits will also be more stabilized via the operation of the multiplier. This would lead to a further stabilizing influence on investment.

If fluctuations in the rate of interest were to be used to stabilize investment, they would have to respond more rapidly and should lead investment, rather than lag behind fluctuations in investment, as they now do.

Experience would seem to confirm these views. It has sometimes been held that the interest policy, and in particular the open-market policy, of the Federal Reserve banks in the United States has, to a considerable extent, contributed to the stabili-

1. Cf. chap. xiii.

zation of the cycle after 1920. Figure 51 illustrates the events. During the periods indicated by small vertical lines, the Federal Reserve banks intervened by interest policy or open-market policy. Cross-hatching above the curve of industrial production indicates an increase of the rate of interest or the sale of government bonds; cross-hatching below the curve indicates a reduction of the rate of interest or the purchase of government bonds. In a number of instances, one might read from the diagram that, after cross-hatching above the curve, there was a downward turn of the curve and that, after cross-hatching below the curve, there was an upturn. But further consideration will show that this did by no means occur in all instances: in 1928, for instance, the policy was without effect; similarly in 1930 and 1931 and in subsequent years. Moreover, the period which elapses before anything happens is quite different; this would make it probable that the turning points were, at least in part, due to other factors as well.

An interesting example of business-cycle policy exercised by means of interest policy is the great conversion of government debt in England in 1932. On that occasion, the rate of interest on long-term government bonds was reduced from 5 per cent to $3\frac{1}{2}$ per cent. England after 1932 experienced an important economic recovery which was particularly strong in the building industry. It is by no means certain, however, that the rise in building activity should be attributed primarily to the reduction in the rate of interest, although that reduction was no doubt of importance. Other factors which promoted the expansion of construction, in particular residential construction, were the fall in the cost of living while money wages remained unchanged or increased, the increase in the number of families, and the increase in rents. A statistical explanation of the movements in residential construction, by means of multiple correlation and on the basis of the factors mentioned and fluctuations in building costs, shows that somewhat less than half the recovery in residential building in England may be attributed to the reduction in the rate of interest.[2] It is interesting to note that activity

2. Cf. J. Tinbergen, *Statistical Testing of Business Cycle Theories*, Vol. I: *A Method and Its Application to Investment Activity* (Geneva: League of Nations, 1939), p. 100.

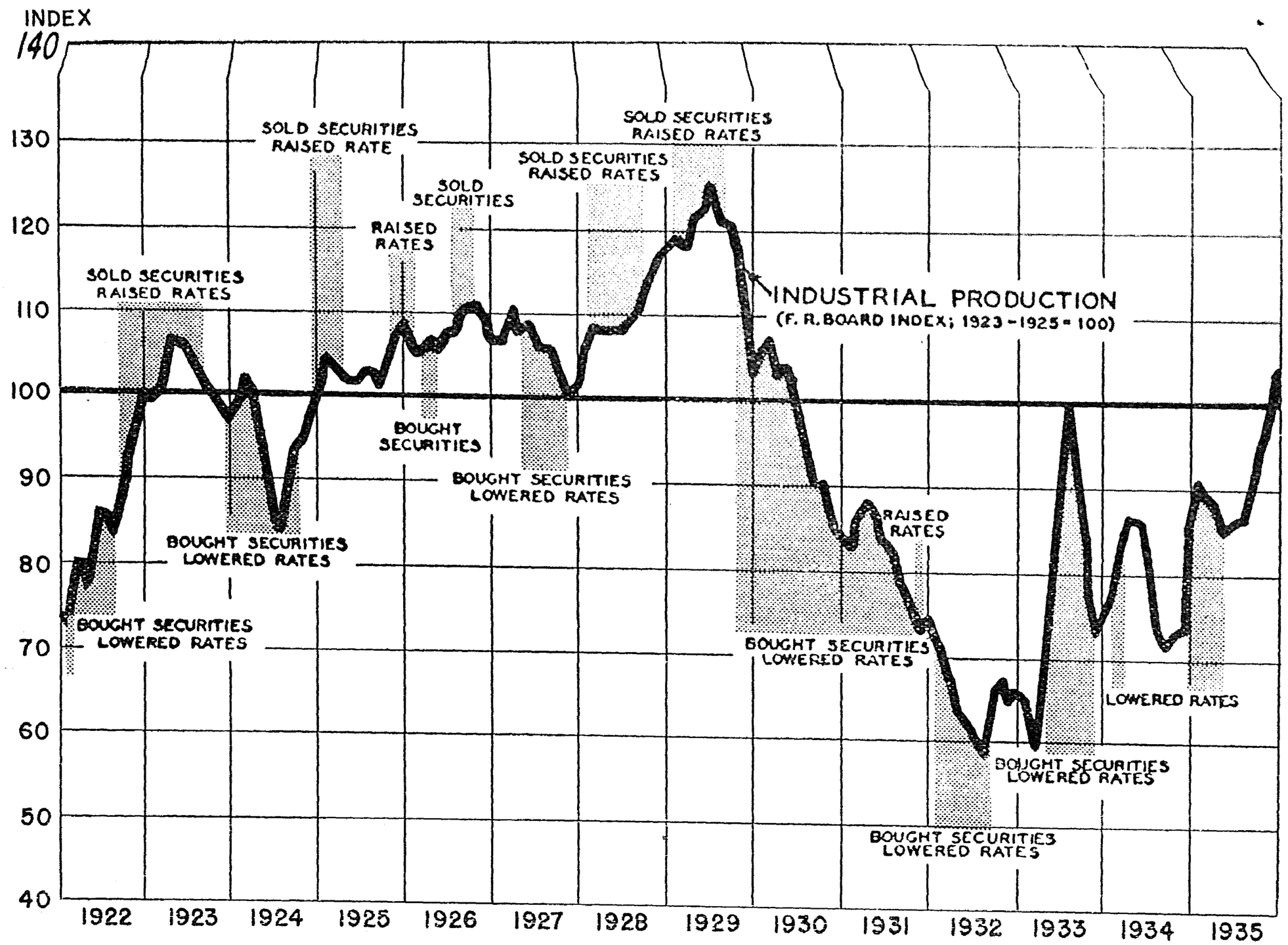

FIG. 51.—Industrial production in the United States and the policy of the Federal Reserve banks. Cross-hatching above the curve indicates an increase of the rate of interest and sale of government paper; cross-hatching below the curve indicates a reduction of the rate of interest and purchase of government paper. The width of the cross-hatchings indicates the period during which the policy was pursued. Source: W. Randolph Burgess, *The Reserve Banks and the Money Market*, (New York and London; Harper & Bros. [1946], p. 249).

did not increase after 1934, although the rate of interest continued to fall considerably from 1934 to 1935.

There is, further, the general experience of the depression years of the thirties, when an extremely low rate of interest in a large number of countries failed to produce any significant recovery. This would prove conclusively that, although the rate of interest may be a factor of some importance, it cannot be one of the main factors determining the level of activity. Not too much importance should therefore be attributed to interest policy as a form of business-cycle policy.

OTHER FORMS OF CREDIT POLICY

In conjunction with our discussion of interest policy, we want to say a few words about various other forms of business-cycle policy which are connected with the extension of credit and the size of the monetary circulation.

A simple form of credit policy is the rationing of credit in periods of rapid expansion. This policy can, of course, be applied only as an incidental policy, that is to say, only when there is too much credit expansion. It does not have as its counterpart a stimulating policy in periods of depression. Figuratively speaking, if systematic business-cycle policies may be indicated as bars which can be used both to push and to pull, this accidental policy is more similar to a rope, which can be used to pull but not to push. Nevertheless, this policy may be beneficial in the boom phase of the business cycle. In its practical application it is open to the objection that it will almost inevitably involve a certain degree of arbitrariness. Rationing leads inevitably to a certain rigidity, and it can never take full account of the different tendencies of different branches of industry or of different individual enterprises. It will, moreover, not restrain expansion which is self-financed. Finally, if rationing is exercised voluntarily by the individual banks, there may be differences of interpretation and execution which will give the policy a further arbitrary character.

A more uniform restriction of credit is obtained by a system of legal reserve percentages. These compulsory reserves exercise a certain restraining influence on credit in periods of high credit

tension; this restraint may then be reinforced by an increase in reserve percentages. Most countries do not have such legal coverage percentages, although banks tend to observe certain conventional ratios between cash and deposits. Since in all cases reserve percentages are only of the order of magnitude of 10–20 per cent and lower for time deposits, no strict regulation of the credit system can be achieved by them.

The 100 per cent money plan of Professor Irving Fisher goes much further in the same direction, in that it would require the banks to maintain reserves for 100 per cent of their deposits. This would imply that the regulation of the total money supply, including bank money, would be entirely in the hands of the central bank. Here again, however, it should be observed that the policy works in one direction only. It may limit the expansion of the quantity of money but not its reduction. The 100 per cent plan is no remedy against the destruction of money, which is such an important factor in economic crises.

For these reasons, the regulation of the flow of commodities and services and of the flow of money corresponding to it (the amount of purchases of commodities and services per unit of time) is more important than the regulation of the total stock of money. The regulation of the flows of commodities and services will be discussed primarily when we analyze direct policies. The restriction on the quantity of money in periods of too rapid increase of transactions may in this connection be considered as a useful, occasional restraining factor to limit inflationary tendencies.

Another form of monetary policy which may suitably be discussed at this stage is the commodity standard, advocated by Professor Goudriaan in Holland and by Mr. Benjamin Graham in the United States. The principle of this form of regulation is that the central bank would stand ready to buy and sell at a fixed price packages of warehouse claims for a certain assortment of raw materials. The packages would have a constant composition and would contain claims for the various raw materials roughly in proportion to their significance in world production or world trade. If the average level of prices were to fall below the buying price of the central bank, producers and trad-

ers would make up packages of the surplus materials and offer them for sale to the central bank. In this way, production would be maintained approximately at the normal level. If the price level were to increase above the selling price of the bank, it would be advantageous to purchase packages from the central bank and sell them in the free market. In this way, the average price level of raw materials and hence probably also the price level of finished products would be kept approximately constant.

The maintenance of the production of raw materials in periods of depression would provide a stimulating effect at that time. At times of tension, the sale of packages of raw materials by the central bank would be equivalent to an open-market policy in reducing the quantity of money. The raw-material standard would therefore seem to be a more important instrument for the regulation of the business cycle than the other forms of monetary policy discussed so far. It provides automatically both a brake in the boom and a stimulus in the depression; moreover, it would tend to stabilize the price level directly. Nevertheless, its effect is limited in various respects. At times of great scarcity of raw materials, the stock of the central bank might become exhausted before the price level had been stabilized; the restraining influence that the central bank may exercise by the sale of its packages of raw materials may not be adequate. It is possible, on the other hand, that the stimulus in the depression would be inadequate. This stimulus would indeed keep the production of raw materials at an approximately constant level; but it is conceivable that this would not be an adequate stimulus for the production of final goods. It is quite possible that after a number of years of a high level of investment, there would be such a satiation of the entire economy with capital goods that a reduction in demand would be inevitable. This reduction might well last for a number of years, even if the production of raw materials were maintained at a constant level. The demand for other products by the producers of raw materials is in total not very large, since the proportion of total world income they receive is relatively small. Stability of the average level of prices would no doubt be an important factor

toward stability of the economy as a whole, but any temporary satiation of the demand for capital goods, as described for instance by the echo principle, might not be much affected by it; nor would it eliminate instability in share prices, another important cause of cyclical fluctuations.

WAGE POLICY

Wage policy may consist either in fixation of the wage rate by the government at a level different from the rate that would have been established in a free market or by influencing the decisions of employers and employees through propaganda or more direct means, such as changes in the rate of unemployment assistance. The cyclical objective of wage policy would always be the stabilization of the level of employment. Three different wage policies may be considered.

1. The first policy advocated would be in the direction of a more pronounced and more rapid cyclical reaction of the wage rate to changes in the cyclical position of business; normally, wages respond both slowly and weakly to changes in the business-cycle position. A greater wage flexibility is advocated in order to achieve an adaptation of wage rates to changes in the profitability of industry. Such a policy would eliminate the rigidity of wages and would thus approximate more nearly the level in an economy without friction. The policy might be achieved by adjustment of wages to the cost of living index or to some index of wholesale prices. Such a policy has been advocated in the depression, on the ground that a greater demand for labor can be achieved only by a reduction in its price; but the policy has also been advocated for a boom period.

2. The opposite policy is advocated by others. They would desire an increase of wage rates in the depression, on the grounds that the depression is due to an inadequate demand for commodities and that an increase in income of the population at large, in particular of the working population, would increase that demand. An increase in hourly wage rates, it is held, would provide the required increase in income.

3. A third, and in a sense intermediate, policy advocates stability of wage rates. This would be accompanied by a gradual

increase in wages in accordance with labor productivity as a structural rather than a cyclical policy. This third policy is advocated on the grounds that by changes in wage rates so little effect can be achieved with respect to employment that the accompanying social friction makes such changes not worth the trouble. This implies, of course, that the fluctuations in employment should be eliminated by policies in other fields.

Discussions concerning wage policy, which have been particularly intensive since 1919, have gradually made clear, first qualitatively and later quantitatively, the relation between the wage rate and the volume of employment. This relation is more complicated than in the normal, partial theory of demand because the wage market is a "large market," that is, a market representing a very considerable part of the total economy and in which the position of the demand and supply curves is not independent of the exchange in the market itself; the simplified assumption of the independence of the demand and supply curves from the results of the exchange, which assumption is applicable to a small market, is therefore not permissible with respect to the labor market.

Because of this complicated structure, there is a large number of causal lines running from the wage rate to the volume of employment. An increase in wage rates, with constant methods of production, will increase the cost of production and hence make unprofitable certain marginal enterprises. On the other hand, the increase in wage rates will increase the income of those workers who were employed and continue to be employed. The demand for commodities exercised by them and their families will increase; this is a favorable factor for employment. The increased demand on the part of labor will be accompanied by a reduced demand on the part of the entrepreneurs. This offsetting factor, however, is relatively smaller, since the marginal propensity to consume of entrepreneurs is relatively small and since any investment entrepreneurs would want to make would usually be made anyway by the use of credit.

In addition to these more static influences, there are certain dynamic influences connected with changes in the wage rate. If the wage rate and hence prices increase, there will be a tempo-

rary stimulation of demand; a reduction of wages and prices, on the other hand, may lead to a speculative reduction in demand.

All these factors will make themselves felt in the relatively short run. Certain other factors operate in the somewhat longer run. Thus, in particular, an increase in wages that is considered as more or less permanent will lead to the introduction of labor-saving machinery that may not have been profitable before. The introduction of labor-saving machinery, however, may take a number of years, if it takes place gradually as old machines become obsolete.

It is clear, then, that a change in the wage rate will have both positive and negative influences on the level of employment. The question is how strong each of these influences is and in which direction the balance will be. Only statistical measurements can answer this question. Such measurements, to the extent that they have been made, would indicate that the positive and negative influences neutralize each other to a large extent. In the short run, the total effect may be considered to be slightly negative. Computations which were made for the Netherlands yielded an elasticity of employment with respect to the money wage rate somewhere between 0 and -1. It may be expected that for larger countries the effect would be less. For any small country there is always the relatively important effect via an increase in exports. Since the demand curve for exports will not be affected by changes in wage rates, one of the most important offsetting influences does not come into play as far as exports are concerned. The effect of a change in wage rates on exports is not so large, however, as is usually assumed. For many countries the effect of a reduction in prices of export products on the quantity exported has been found to be expressed by an elasticity in the order of magnitude of 1 or 2.

For a small country the total effect of a change in wage rates on employment is in any case somewhat negative, a lowering of wages leading to an increase in employment, and vice versa. This negative effect will be reinforced by the long-run effects. With respect to business-cycle policy, these further effects may be disregarded. Nevertheless, on the basis of the negative total effect, a policy of wage increases in a depression is not desirable.

In view of the minor magnitude of the effect there is much to be said for a policy of wage stability: the relatively small increase in employment that may be achieved by a severe reduction in wages would not justify the many social frictions which would inevitably accompany such a reduction.

No strong economic objections could be held against a policy that would consist in a variation of the wage rate proportional with the cost of living; one might have social objections against such a policy on account of the friction that would accompany it, but this friction itself would not seem to be altogether inevitable. Stronger social objections would seem to be in order against a policy which would make wages fluctuate with wholesale prices, unless wholesale prices themselves were considerably more stabilized than they now are.

It is clear, in any case, that one cannot expect any wage policy to stabilize employment during a business cycle. Wage policy may at best affect the profit margin per unit of product and hence make production more or less attractive to the entrepreneur; but fluctuations in this margin have only a limited and indirect influence on the volume of production. In other words, there may be a business cycle purely in terms of quantities on which prices and profit margins exercise very little influence. This possibility is also reflected in the fact that our simplest cyclical models (Examples I–IV) did not incorporate the wage rate or the price level but were conceived simply in terms of total income and the total value of output.

The experience of the last twenty years with wage policies would seem to confirm our views. Pronounced cases of wage policy can be found in Germany, the United States, and France.

In Germany all wage rates were reduced by 10 per cent in 1931 by a decree of the Brüning government. In the United States under the New Deal the wage rate was increased suddenly in the spring of 1933 by approximately 20 per cent. In France, too, the Popular Front government of Blum raised the money wage rate a number of times with sudden jumps. These cases are of particular importance in the determination of the short-run effects, because they occurred so suddenly, whereas the other economic variables that affect employment moved

much more gradually. Theoretically, one would expect to see a sudden change in employment after a sudden change in the wage rate, the change in employment reflecting the isolated effect of the change in the wage rate. In actual fact, the effects of a sudden change in wages may still be distributed over more than one month; but even if the effect on employment were not entirely abrupt, a quite rapid change in employment would be expected. Yet, in none of these three cases could such a change be observed, and this fact would tend to support the belief that the total effect of changes in wage rates on the level of employment is not great.

A study by Kalecki[3] showed that with respect to France a number of the other factors practically did not change in the period he studied; the negative conclusion on the effectiveness of changes in wage rates would therefore seem to be even better founded with respect to France than with respect to the other two countries.

The relatively skeptical conclusions concerning the effectiveness of wage policy as a form of business-cycle policy would force us to pursue even more actively other forms of business-cycle policy in order to stabilize employment.

PRICE POLICY

We may consider as price policy both the indirect policies affecting prices by means of the monetary circulation and the volume of credit and the more direct forms. The latter consist of (*a*) valorization schemes, that is, purchases and sales of commodities at a fixed price, which we have discussed in connection with monetary policy, and (*b*) price fixation and price control. In this section we shall deal with the latter two policies.

Whereas in the case of valorization the government endeavors to exercise an influence on prices by regulating the quantity supplied or demanded, this is usually not the case when a policy of price fixation is pursued. But some direct intervention in the market may be necessary to make the regulation of prices effective. The fixation of prices may be quite rigid, when the gov-

3. M. Kalecki, "The Blum Experiment," *Economic Journal*, XLVIII (March, 1938), 26–41.

ernment fixes a specific price for each article; or it may be in a more flexible form, when the government issues certain regulations for the calculation of prices on the basis of certain cost components.

The objective of price policy is normally to maintain a given price level or a very gradual movement of prices. With respect to business-cycle policy the level of prices that is stabilized is of less importance than the fact that an attempt is made to stabilize prices.

The level at which prices are stabilized may, however, be of great importance from other points of view; it would, for instance, be undesirable to stabilize prices at a level far from that of free competition. The possibility of monopolistic or semi-monopolistic exploitation of consumers is one of the greatest objections to price fixation. It should further be borne in mind that stabilization of prices does not in itself guarantee a stable volume of output. If the prices of only a few commodities are stabilized, while those of other commodities continue to show cyclical fluctuations, the fluctuations in the output of the commodities whose prices have been stabilized will be reinforced: in the depression their prices will be relatively high, thus reducing demand; in the boom they will be relatively low, thus stimulating demand.

But even if the prices of all commodities were stabilized, this would not in itself be sufficient to eliminate fluctuations in production. We discussed this point when we dealt with the commodity standard which exercises a more direct influence on production, at least on raw-material production. A policy of price stabilization may be credited with the elimination of certain speculative fluctuations in the demand for commodities. Yet other fluctuations may continue to make themselves felt. Cyclical fluctuations in quantities may continue when prices have been stabilized, for instance, as a consequence of the operation of the echo principle, but also for other reasons. The stability of prices that prevailed in the United States from 1923 to 1929 did not prevent the sharp crisis of 1929.

The most important difficulty with respect to price policy is that it can be effective only if the quantities produced are also

brought under control. This, however, would lead to one or another form of more direct business-cycle policy, which we shall discuss later (chap. xxii).

EXCHANGE-RATE POLICY

Exchange-rate policy is a particular form of price policy which, however, is logically different from the forms of price policy discussed so far. Exchange-rate policy applies to an individual country and cannot apply, of course, to the economy of the world as a whole. It consists in the manipulation of the rate of exchange, either by the government or by the central bank or by both in conjunction. Formally, this may take either the form of a change in the gold content of the currency unit (Irving Fisher's "Compensated Dollar"), in which case one speaks of "devaluation" if the value of the currency is reduced and of "revaluation" if the value of the currency is increased; or it may take the form of changes in the value of the currency with respect to certain other currencies, without a formal change in the price of gold. In that case the words "depreciation" and "appreciation" are normally used to describe a reduction and an increase, respectively, in the value of the currency under consideration.

The objective of exchange-rate policy is normally not primarily cyclical but rather incidental. Very often depreciation occurs under pressure, as a result of the condition of a country's balance of payments. A policy of appreciation has been followed in a number of cases for not much more than prestige considerations. A more systematic manipulation of the rate of exchange, however, has also been discussed in the last decades. The primary objective was then to combat the depression and increase the level of activity by raising the domestic price level and reinforcing the country's competitive position vis-à-vis other countries. The complement of this policy, namely, an increase of the rate of exchange to put a brake on activity in a boom period, has hardly ever occurred; this policy has been practiced, however, during war or in a postwar world-wide inflation, to protect a country from the rise of prices abroad (Sweden, Canada, New Zealand).

Exchange-rate policy is a form of price policy that operates on all prices of a country. In terms of the national currency, devaluation or depreciation will tend to raise the prices of all exported and imported commodities and hence also of most domestic commodities. The extent to which, and the speed with which, the latter will increase will be very different. As a rule, prices of commodities with a purely national market and which contain little imported materials will increase only slightly. The same will apply to the prices of the domestic factors of production, such as labor and land. Hence, profitability will normally increase, and this will stimulate the volume of output. The prices of export commodities will normally increase somewhat less than the price of foreign currencies, and export products will become cheaper, in terms of foreign currencies, than competing products of other countries. This will stimulate exports, and this stimulus will be transmitted to other industries as the export industries will increase investment and as the workers in export industries, receiving higher incomes, will demand more consumption goods. As a consequence of this, imports will also tend to increase. It is probable, although not quite certain in all cases, that, as a result of these various factors, the balance of payments will improve; but in any case there will be an increase in output, in employment, and in the volume of consumption.

All this applies to one country only. As a first approximation it may be said that the advantages which accrue to the country which depreciates are obtained at the expense of other countries and that the effect of depreciation or, for that matter, of appreciation is negligible with respect to the volume of world output.

Two qualifications should be given, however, with respect to this statement, one unfavorable with respect to the volume of world output and one favorable.

a) Depreciation may be followed by countermeasures on the part of other countries who feel injured by it. Such countermeasures may not only reduce or even nullify the advantages obtained by the country which depreciated first; they may also be in the form of restrictions on international trade which will reduce the welfare of the world as a whole.

b) On the other hand, devaluation of all currencies means an increase in the value of gold. This will tend to increase the value of all gold holdings and hence to improve the reserve position of central banks. This increased liquidity will have a certain expansionary force. The increase in the gold price will also make gold production more profitable, stimulate wage increases in that industry, and generally exercise an expansionary tendency. On account of its expansionary effect via gold holdings and gold production, a successive round of depreciations of various countries may exercise a slightly beneficial effect on the world business cycle.

It is not clear in which direction the balance of these two factors will operate for the world as a whole. But since for the world as a whole other stimuli for the business cycle with much less dubious effects are possible, we should prefer these other measures. If an increase in the world price of gold is desired, this can be achieved by a decision of all countries who are members of the International Monetary Fund, under one of its "Articles of Agreement."[4]

We may start our discussion of the experiences of exchange-rate policy in the past decades by referring to a few cases of appreciation. Guided by prestige considerations, the United Kingdom appreciated the pound sterling in 1925 to its prewar gold value. The view has now fairly generally been accepted that this appreciation caused a long-drawn-out depression in the United Kingdom, which offset the effects of the world-wide recovery from 1925 to 1929. This opinion, however, is not easily verified on the basis of statistics. A much more clear-cut opinion can be formed with respect to the not so well-known cases of Denmark and Norway, which appreciated at about the same time, also on prestige grounds. These appreciations were even stronger than that of England; the rates of exchange of the two currencies were raised by approximately 50 per cent within two years. If one compared the cyclical development in these two

4. Article IV, sec. 7, ". . . the Fund, by a majority of the total voting power, may make uniform proportionate changes in the par values of the currencies of all members, provided each such change is approved by every member which has 10 per cent or more of the total of the quotas."

countries in this relatively quiet period with those of other countries or with those of the world as a whole, it becomes quite clear that industrial production in Denmark and Norway was retarded as a result of this policy.[5]

Against these few cases of appreciation, a large number of depreciations and devaluations occurred, starting in 1929. The general cyclical development of the world at that time was much more complicated; the simple comparisons of the twenties

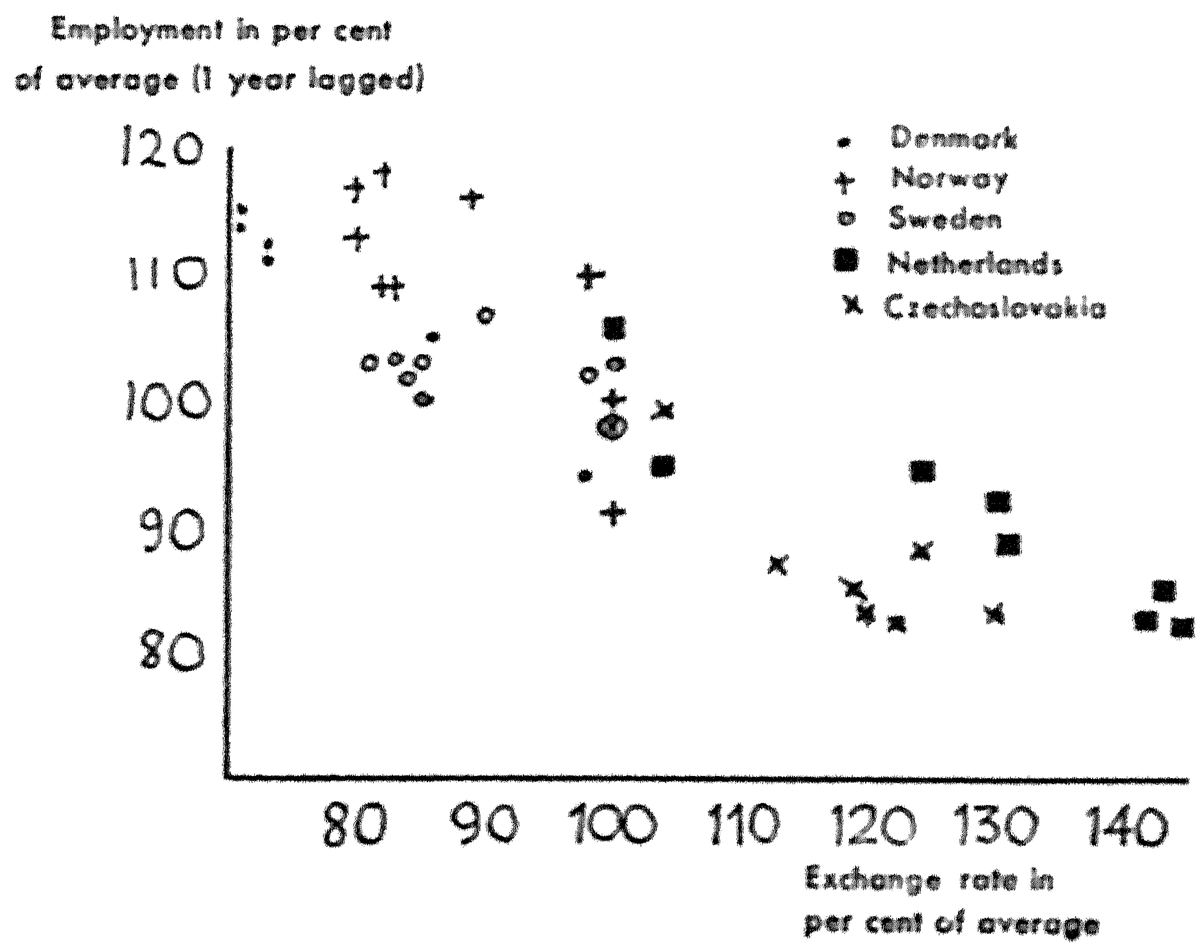

FIG. 52.—The relation between the rate of exchange and the volume of employment for the period after 1929. Both the rate of exchange and the volume of employment for each country are expressed for each year as a percentage of the average for the five countries concerned.

are therefore no longer possible, except perhaps for two of the later depreciations, namely, those of Belgium in 1935 and the Netherlands in 1936. It is in any case remarkable that in both countries employment shows a sudden upsurge very shortly after the depreciation.[6] A more reliable comparison for other countries can perhaps be made as in Figure 52. In this diagram the relative rate of exchange and the relative level of employment are plotted for each country, compared with the average

5. Cf. Fig. 31.

6. Cf. Fig. 32.

for the group of countries considered, with a lag of one year between the relative rate of exchange and the corresponding relative volume of employment. The diagram would provide a way to measure the magnitude of the effect of depreciation. Without a lag, the comparison is less clear and the correspondence between the figures less good.

The experience of individual countries would seem to indicate, therefore, a rather strong beneficial effect of devaluation and an equally large unfavorable effect of appreciation, with respect to employment. It would be much more difficult to isolate

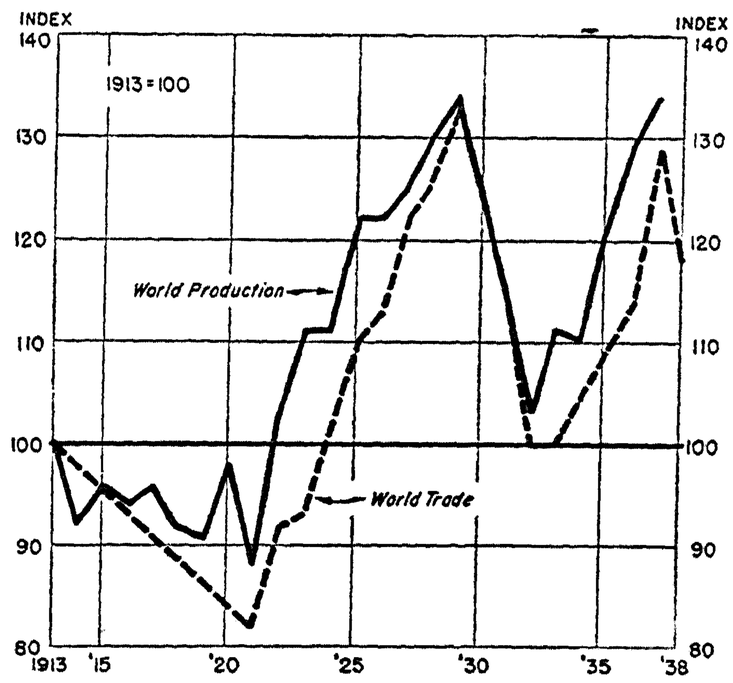

FIG. 53.—The volume of world production and the volume of world trade, 1913–37 (index numbers, 1913 = 100).

the effect on the world cycle of the series of depreciations in the thirties. It might be observed that shortly after the depreciation of sterling (in September, 1931), namely, in the first half of 1932, the world depression became worse. It might be observed also that, again shortly after the depreciation of sterling, namely, from the middle of 1932 on, a recovery in the world economy could be noted. But so many other factors were responsible both for the decline in 1931–32 and for the 1932–33 recovery that an isolation of the effects of the relatively minor factor of depreciation would be impossible.

In this connection, it is interesting to compare the development of the volume of world production and the volume of world trade (Fig. 53). It will be seen that, while the two series

increased by the same amount between 1913 and 1929, the volume of trade lagged somewhat since that time compared to the volume of production, even before 1932. Up to 1936 the discrepancy is quite pronounced, but in the boom year of 1937 the volume of trade catches up again with the volume of production.

STOCK-EXCHANGE POLICY

We want to consider in this section all measures of economic policy which have as their objective the formation of prices on the stock exchange, measures whose purpose will generally be to stabilize the prices of shares. A large number of measures may be taken with this same objective, of which some will require much more detailed administration than others. Thus, (1) the increase of margin requirements will be a very global measure. On the other hand, (2) the fixation of maximum quotations is a somewhat more detailed policy, since it will require a system of allocation when demand at the maximum price exceeds the supply. Other measures are (3) taxation of speculative profits, (4) the prohibition of transactions by insiders, and (5) the registration of all share holdings above a certain minimum.

The result of the first measure mentioned, the increase in margin requirements, might be relatively minor. True, it would eliminate part of the speculative demand, and this may be helpful in periods of boom speculation; but even a relatively weak speculative demand may disturb the equilibrium. The institution of maximum quotations is a more effective measure because it would radically eliminate the possibility of making excessive profits on the stock exchange, except in unofficial dealings. Heavy taxation of speculative profits by means of a capital-gains tax would achieve nearly the same result without imposing rigidity on the market, as maximum quotations would do. The prohibition of forward transactions in shares by insiders may eliminate certain speculative movements altogether; it would be hard to estimate what the effect of this would be on the general development of share prices. The registration of shares, if complemented by other means, may lead to an almost complete control of the stock exchange; but this would lead us into the field of direct business-cycle policy. If the obligation to

register were in itself to exercise a preventive influence, the effect of this policy on the share market might be important.

The effect of a reduction in speculative profits on the developments of the business cycle may be illustrated by a change in one of our cyclical models, e.g., in Example III. Let us assume that, in contrast to the earlier form of that model, now only half the increase of income between the first and the second quarter will be considered as income in the third quarter.[7] Assuming again the same disturbance of equilibrium in the first quarter, the numerical values then run as shown (all figures in deviations from the average).

EXAMPLE III′

Quarter	0	1	2	3	4	5	6	7	8
Expenditure		0	18	25	26	24	21	17	14
Income	0	20	28	29	27	23	19	15	12
(Increase in income) ÷ 2		10	4	1	−1	−2	−2	−2	−2

Continuing this computation, one will find the following figures for income: 9, 6, 3, 1, −1, −1, 0, 1, etc. It will be seen that the cyclical movement is now heavily damped with a maximum deviation of income of 29, instead of 64 as in Example III.[8]

Some experience of policies to regulate the Stock Exchange, during periods of a relatively normal business cycle, was gained in the United States after 1933, when in particular the policies under 1, 3, and 4 were applied. Despite great liquidity, the movements of the Stock Exchange remained within relatively narrow limits during that period. This, however, may also be attributed to the very moderate economic expansion in the thirties. Certain statistical investigations would lead to the conclusion, however, that the measures to limit speculation did have a noticeable effect.

7. If the speculative income were eliminated altogether, Example III would be replaced by Example I.

8. Cf. Fig. 54.

CONCLUSIONS

The conclusions of this chapter would seem to be that from an international point of view the various forms of indirect policy discussed can have only a very moderate effect. From a national point of view, exchange-rate policy may be most successful, whereas in a country where the speculative tendencies are great, an appropriate stock-exchange policy may be of relatively great importance. Only very moderate results may be expected from interest or wage policy. Credit-rationing may restrain booms, but it cannot be operative in the reverse sense. Among the various forms of monetary policy, the commodity standard offers most attractive possibilities, but it will also not always be effective nor will it, or any other form or price stabilization, necessarily prevent cyclical fluctuations in quantities at constant prices.

These conclusions imply certain assumptions concerning the quantitative extent of the forms of policy discussed. We consider, for instance, an interest policy of a conventional extent, e.g., an increase or decrease of the rate of interest by one half of 1 per cent or, at most, 1 per cent, compared with what it would have been in a free market; a wage policy which would make wages fluctuate, for instance, with the cost of living; changes in the rate of exchange by 10, 20, or 30 per cent. If the policies were to be applied in much stronger doses, the results might be nearly proportionately increased, but in many cases this will not be possible. The effects would also depend on the speed with which the policies are applied.