CHAPTER THREE

INTERRUPTIONS AND SUDDEN CHANGES IN STRUCTURE

FROM time to time interruptions occur in the relatively regular pattern of growth described in the preceding chapter. Particularly important interruptions are caused by periods of war and inflation, while nation-wide strikes, floods, or earthquakes cause interruptions that are usually relatively less important. We use the term "interruptions" purposely, because normally after the termination of the period of an interruption the tendencies of the preceding period are resumed. The old structure, however, is never fully restored; there are always some lasting consequences of an interruption.

Certain other events have as their main consequence not a temporary but a lasting change in the economy. Here we do not refer to the gradual changes that occur continuously and the most important of which have been described in the preceding chapter; we refer, in particular, to the rather sudden changes in the structure of the economy which occur from time to time, the more revolutionary changes which take place in a relatively short time, usually after a time of great internal tension—war, inflation, crisis. We shall indicate the economic aspects of such changes by the term "sudden changes in economic structure."

PERIODS OF WAR AND INFLATION

The most important periods of war in the nineteenth and twentieth centuries which have interrupted the regular process of economic growth were the period of the Napoleonic Wars (with the inflation of the assignats), the American Civil War (1861–65), during which the inflation of the greenbacks occurred, and the first and second world wars, both of which were accompanied by world-wide inflation. The Franco-German War (1870–71), which occurred shortly after the Civil War, as well as most of the other numerous wars which occurred during this long period, may be considered as of more local importance in duration and intensity. Wars themselves cannot be attributed fully to economic causes; on the other hand, a certain connection between wars and economic causes cannot be denied. Some authors have seen a link between the frequency of the occurrence of wars and the phase of the long waves, with wars more frequent in the ascending phase of a long wave and culminating in a large conflict at the crest of the long wave. It would seem at least doubtful whether the occurrence of World War II fits this theory.

Although, as has been said, the tendencies prevailing before a war will to a large extent be resumed after it has ended, each war has a number of lasting consequences. The increase in the public debt will lead, at least for a considerable time, to increased expenditure of interest and amortization. Expenditure for veterans, war widows, etc., will also continue for a long time. One of the lasting effects of World War I was the loss of foreign investments suffered by France in particular as a consequence of the annulment of all Russian debts. The loss of foreign investments and the increase of indebtedness of the main European creditor countries in World War II are more important examples of the same tendency. Wartime increases in the price level usually persist to a considerable extent after the war. Thus after World War I and up to 1929 the cost of living and the wage rate in terms of gold remained in most countries at approximately 60 per cent in excess of the prewar level. In countries where prices in national currency had increased much more than that, there were also permanent adjustments of the rate of exchange. The French franc depreciated to approximately 20 per cent of its prewar value after World War I, and the value of the German mark declined practically to nil. Sterling and the currencies of a number of neutral countries, however, returned to their prewar par value. Some of the shifts in income distribution, in particular the reduction in the share of those who were hit by severe inflation, also tended to remain after the end of the war.

Besides these more or less permanent changes brought about by World War I, there were many and important ones that proved only temporary. The abnormal state of public finance was overcome, even though with difficulty; rationing and cost-of-living subsidies disappeared; the backlog of residential construction was worked off, slowly in one country, faster in another; international trade was resumed to a large extent; and markets lost during the war were recovered. Even though absolute prices did not return to their prewar level, most relative prices did, and rates of real income approached their prewar level.

THE PERIODS OF INFLATION AFTER 1914 IN GERMANY AND FRANCE

The preceding remarks referred in particular to the periods of war. The periods of inflation, of which those of Germany and France after World War I may be quoted as an example, are of sufficient importance to be treated here in somewhat more detail. The period of active inflation in Germany started only after the end of the war. During the war the money supply and the price level had risen considerably but not excessively, considering the general situation. The rate of exchange of the mark in foreign markets had approximately been maintained. After the end of the war, however, a process of inflation started for which history knows no precedent.[1]

Despite the end of the war, government expenditure in Germany continued at a high level, due in part to the desire to subsidize the first necessities of life, in part to the reparations obligations of the Treaty of Versailles, and in part to extensive new social provisions which had been promised and without which a stable political situation appeared impossible. Finally, in 1923 the occupation of the Ruhr by France caused a wave of new large expenditures, among them indemnity payments to enterprises in the Ruhr area. In order to finance this level of

1. The inflations in Greece in 1944 and in Hungary in 1945–46 were of the same order of intensity.

expenditure, recourse was had to the banknote press to a very large extent.[2]

As a consequence of the inflationary pressure, the level of prices rose and so did the rate of exchange for the dollar; at some stages the first, at some stages the latter, was the higher. With certain interruptions this process of inflation lasted until November, 1923; by that time the increase both in prices and in the rate of the dollar was of the order of magnitude of one trillion (10^{12}). With the increase in prices, wage rates and share prices increased, although not fully proportionately. For a considerable time the prices of domestic commodities increased less than the rate of exchange and the prices of foreign commodities, although toward the end of the period of hyperinflation opposite tendencies made themselves felt, and the mark tended actually to become overvalued when it fell most rapidly. Share prices rose considerably less than commodity prices.

TABLE 12

THE GERMAN PRICE STRUCTURE IN HYPERINFLATION
PRICES IN TERMS OF GOLD, SEPTEMBER, 1923

(1913 = 100)

World:	
Wholesale prices	150
Germany:	
Wholesale prices	100
Cost of living	75
Real-wage rate	75
Share prices	20

* C. Bresciani-Turroni, *The Economics of Inflation* (London: Allen & Unwin, 1937), p. 41.

The figures in Table 12, expressed in gold, indicate the approximate position in September, 1923. The money supply increased but not in proportion to the price of gold; hence the gold value of the circulation decreased considerably. Since incomes in terms of gold declined by a moderate amount, the velocity of circulation of money increased very considerably. By the end of the inflation period, this velocity had risen to

2. In the period from 1914 to October, 1923, receipts from taxes were twenty-one billion gold marks, from loans fifty-three billion gold marks, and from the issue of Treasury paper (reflecting, on the whole, credit creation by the central bank) fifty-nine billion gold marks. There was futher large-scale credit creation by the private banking system.

ten to seventeen times the prewar figure. Toward the end of the period the fear of a further depreciation of money was so great that income was spent almost as soon as it was received.

In the period 1914–18 (the war period), as well as in the period 1920–21 when the government also issued large amounts of floating debt, the increase in the circulation was the leading factor in the inflation. In the periods 1918–20 and 1921–23, on the other hand, the depreciation of the mark, caused in part by speculation against it, was the dominating phenomenon.

Different periods may indeed be distinguished, with one phenomenon increasing more rapidly in one period and another in another period. If we indicate the money supply by M, the price level by p, and the rate of exchange of the dollar by r, the order of the rate of increase may be indicated as shown in Table 13.

TABLE 13

LEADING FACTORS IN GERMAN INFLATION, 1914–23

	Most Rapid	Intermediate	Least Rapid
1914–18	M	p	r
1918–July, 1919	r	M	p
July, 1919–February, 1920	r	p	M
February, 1920–May, 1921	M	p	r
May, 1921–December, 1923	r	p	M

The extreme changes in the monetary sphere also produced certain consequences in the commodity sphere. Through the end of 1922 employment rose to the absolute maximum; by the middle of 1922 unemployment amounted to only 0.6 per cent, an extremely low figure. After that an increase occurred, and by 1923 the unusually high figure, for that time, of 6 per cent was reached. Compared to 1913, production was at no time unusually high, since labor productivity was affected unfavorably by the low consumption level of the workers and by political tension; the large backlogs of orders, however, indicated that production was practically at capacity.

The production of investment goods in particular was stimulated; shipbuilding may be mentioned as one of a number of examples in this connection. Entrepreneurs, who made large profits and were afraid of the loss of value of money, invested heavily in capital goods. Many of these investments turned out to be useless after the end of the inflation period. Hyperinflation compressed the demand for consumption goods, and there was an important transfer of labor from the consumption goods industries to the investment goods industries.

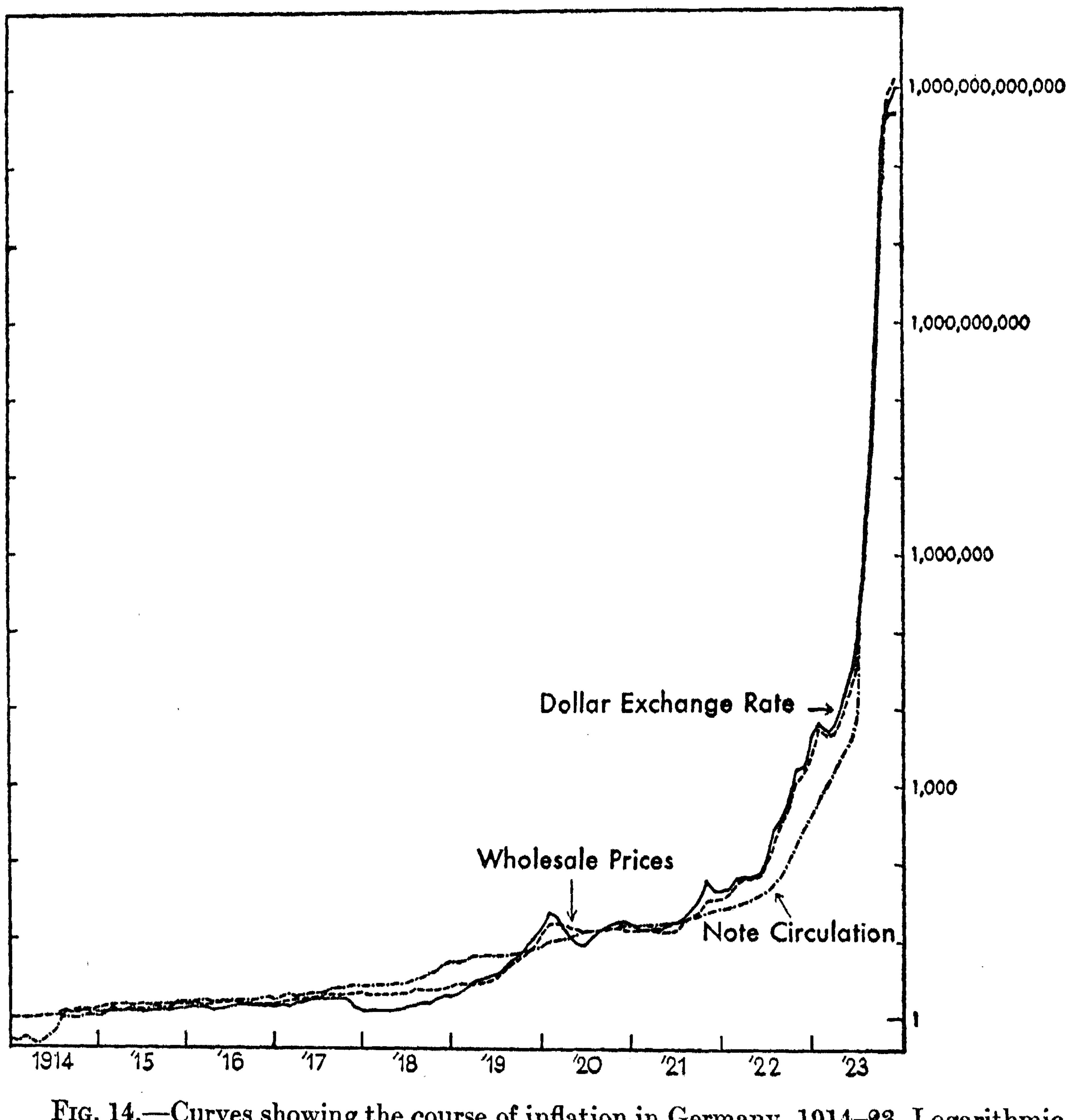

FIG. 14.—Curves showing the course of inflation in Germany, 1914–23. Logarithmic scale, August, 1914 = 1.

The quality of the commodities produced declined also. According to an index computed by the *Frankfurter Zeitung*, the quality of production had fallen to 64 per cent of the April, 1921, figure by October, 1923; after the stabilization of the mark, in April, 1924, it reached 124 per cent of the 1921 value.

Figure 14 shows a few salient series of the German inflation process. Clearly, this was a unilateral process which did not in itself lead to a reversal. The process was reversed from the outside as the social intolerability of inflation produced forces, by no means only economic forces, that terminated it. The attempts to stabilize the currency by the end of 1923 were not in advance certain of success. They were entirely experimental. The experiment succeeded; the mark was stabilized at one-trillionth of its original gold value, and a new currency unit, the Reichsmark, was introduced with a gold parity equal to that of the mark.

The postwar inflation in France was in intensity not comparable to that in Germany, but by normal standards of strong financial countries it was doubtless quite serious: the final stabilization in 1928 reduced the French franc to 20 per cent of the 1914 parity. As one of the victors of the war, France was in a somewhat better position than Germany; but the financial and economic problems she had to face were also very difficult. A considerable part of the country had been invaded during the war; heavy expenditures were made both during the war and afterward in connection with the service of the public debt, pensions, and social policies. There was much uncertainty concerning the economic future and in particular concerning the ultimate fate of the franc. In the process of inflation in France, as in Germany and in many other European countries, various factors were leading at various times.[3] A first impression of this is given by Figure 15, which indicates the index number of prices in terms of francs, the money supply, world prices in terms of dollars, and the rate of exchange of the French franc against the dollar. The comparison is easier for France than for Germany because the movements reverse themselves, and differences between the curves may easily be distinguished. During the war, when France was to some extent isolated from other countries and the French balance of payments was supported by English and American credits, the rate of exchange of the dollar did not change greatly, and the movement of prices was determined mainly by the money supply and tended to be proportional to it. After the war there was a short period during

3. A. Aftalion, *Monnaie, prix et change* (Paris: Recueil Sirey, 1927).

which price movements in those countries that remained on the gold standard or had relatively little depreciation were so strong that they also dominated French prices. This was the period of the strong price increase in 1919–20, followed by the sharp fall in 1920–21. In this period the typical cyclical phenomena dominated. The money supply did not determine but followed the fluctuations in prices, though less than proportionately, with

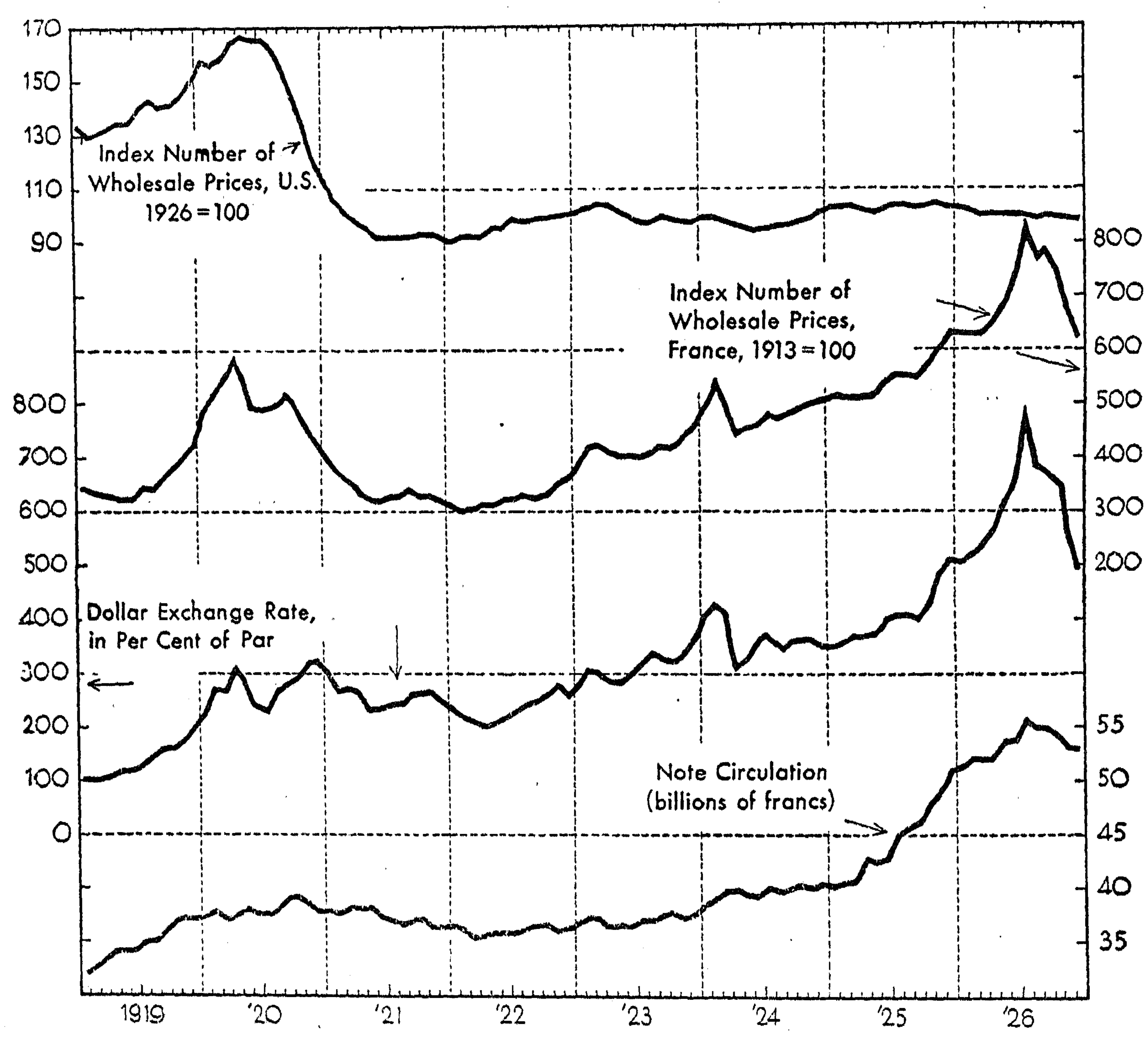

FIG. 15.—Curves showing the course of inflation in France, 1919–26

an increase of the velocity of circulation during the recovery period and a fall during the crisis and depression.

The disproportionality between the price level and the money supply continued in the period 1922–24, as fluctuations in the circulation lagged behind the fluctuations of prices by about five months in 1920–21 and by about one month in 1922–24. The latter period shows a high correlation between the price of the dollar and the price level of commodities. To obtain a good correlation for the entire period 1920–24, account must also be taken of the changes of prices in the United States. A comparison has then to be made between prices in France, on the one hand, and the product of the cost of the dollar in terms of francs and prices in the United States, on the other hand. The latter series fluctuated more strongly than the French price level since prices of French commodities showed a certain tendency to remain constant in terms of francs as long as the fluctuations in the exchange rate were not too great.

In the fifth period, 1925–26, the money circulation provided, again, an independent explanatory factor in the movement of prices, in addition to changes in the rate of exchange of the dollar.

MINOR INTERRUPTIONS

As examples of minor interruptions we may cite the periods of relatively minor wars such as the Franco-German War of 1870–71, the Boer War of 1899–1902, etc. Because of its quite interesting consequences, we select as our first example the effect of the American Civil War on the English economy. The main effect on England of the Civil War was the complete interruption of the supplies of cotton. As a consequence, the raw material of one of England's most important branches of industry became extremely scarce. We want to study the consequences of this scarcity in more detail. In contrast to the major part of this book we will now have to pay particular attention to one individual branch of industry.

Some of the relevant statistical series bearing on this period are shown in Figure 16. They lead to the following observations. As a result of the small supplies, the price of cotton rose very considerably in 1862; the increase continued in 1863 and led to a price level more than double that of normal. This level was again exceeded in 1864 and declined rapidly after 1865. In 1867 a new equilibrium was reached. During the same period the general level of wholesale prices showed practically no movement.

Because of the lack of supplies, imports declined sharply from 1861 to 1862. In contrast to what happened to prices, the lowest level of imports was reached in the first year. The movements shown by import statistics are also shown by data on the consumption of raw cotton, the production of yarns and cotton goods, the export of yarns and cotton goods, and the domestic consumption of cotton goods. Practically all these series show their lowest point in 1862. The continued rise of prices after that year should probably be explained by the fact that, as the scarcity lasted longer, demand became more intensive because the supplies of cotton goods in the hands of consumers were being used up.

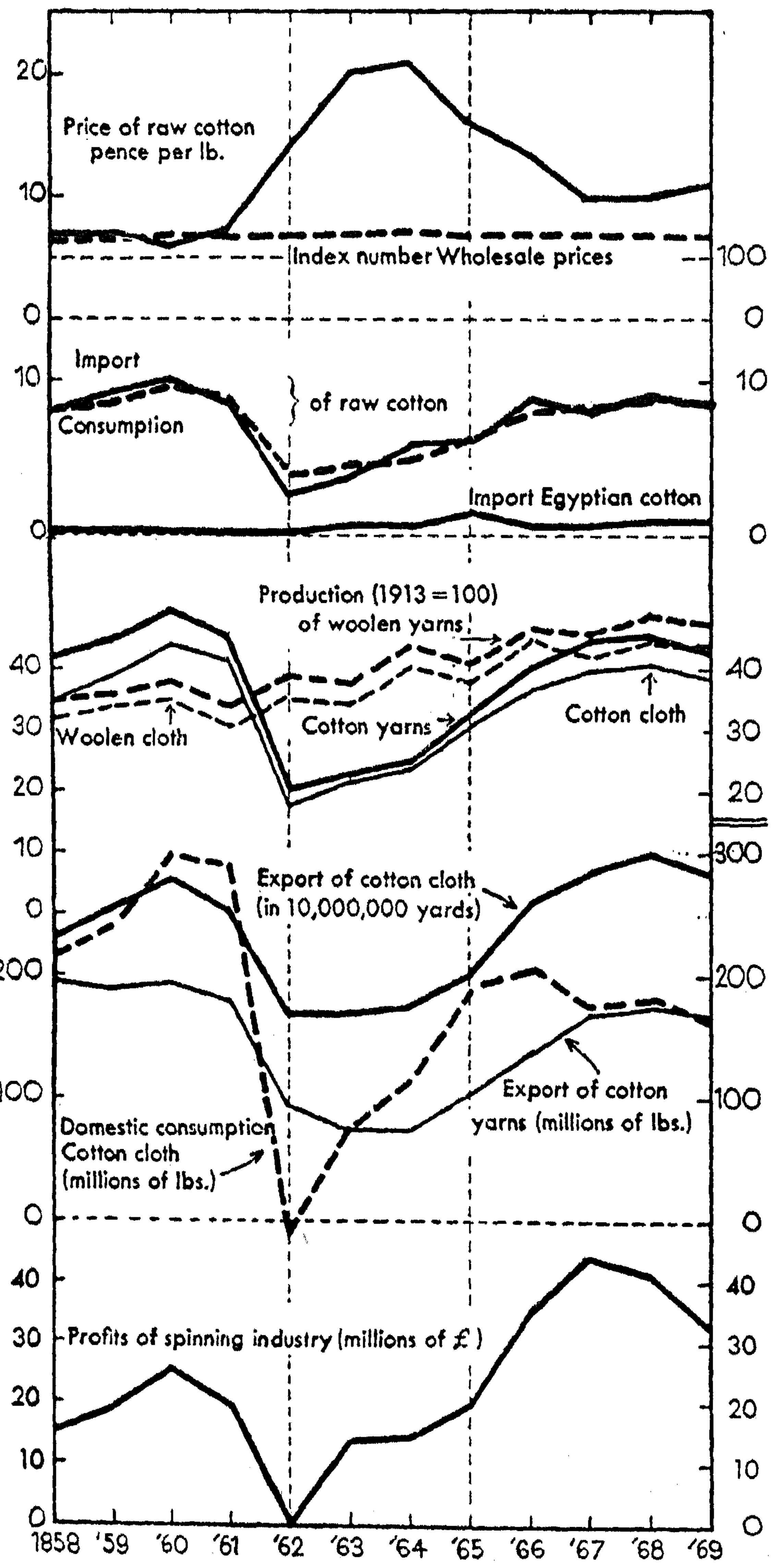

FIG. 16.—The "cotton famine" in England

An interesting detail is that the consumption of raw cotton in 1862 was somewhat higher than imports since stocks could be drawn upon; it is to be noted, however, that the margin available for use in this way was apparently not very great. To verify our assumption that the decline of 1862 and the low level lasting from 1863 to 1865 were caused by the scarcity of cotton and not, for instance, by a cyclical depression, certain figures concerning the production of woolen yarns and woolen goods are also shown in the diagram; they indicate a very regular development, with two-year cycles of very little intensity and no trace whatsoever of the sharp declines of the cotton figures.

The two main consequences of the cotton scarcity discussed so far, namely, the increase of prices and the decline in production, might have been expected; it would be difficult, however, to make any a priori statement about the effect of the scarcity on the profits of the cotton industry. These profits were affected by two opposing forces, namely, the increase in prices and the reduced turnover, and without further knowledge of the structural data it would not be possible to say which of these tendencies would be dominating. The curve of profits in cotton spinneries shows that the profits were unfavorably affected by the cotton famine.

We may, finally, point to one important secondary consequence of the Civil War, namely, the competing import of cotton from Egypt. This import was not very great in absolute amount, but its movement is of interest for two reasons. As might have been expected, it increased sharply in the years of the scarcity of cotton, without, however, making any considerable dent in that scarcity. And it remained on a higher level because cotton-growing, once started, remained an industry in Egypt.

A second interesting example of a minor interruption is provided by the period of the large coal strike in England from May to December, 1926. The relevant statistics are shown in Figure 17. From May to November, 1926, coal production ceased almost completely. One immediate consequence was that the export of coal declined practically to zero, although with a

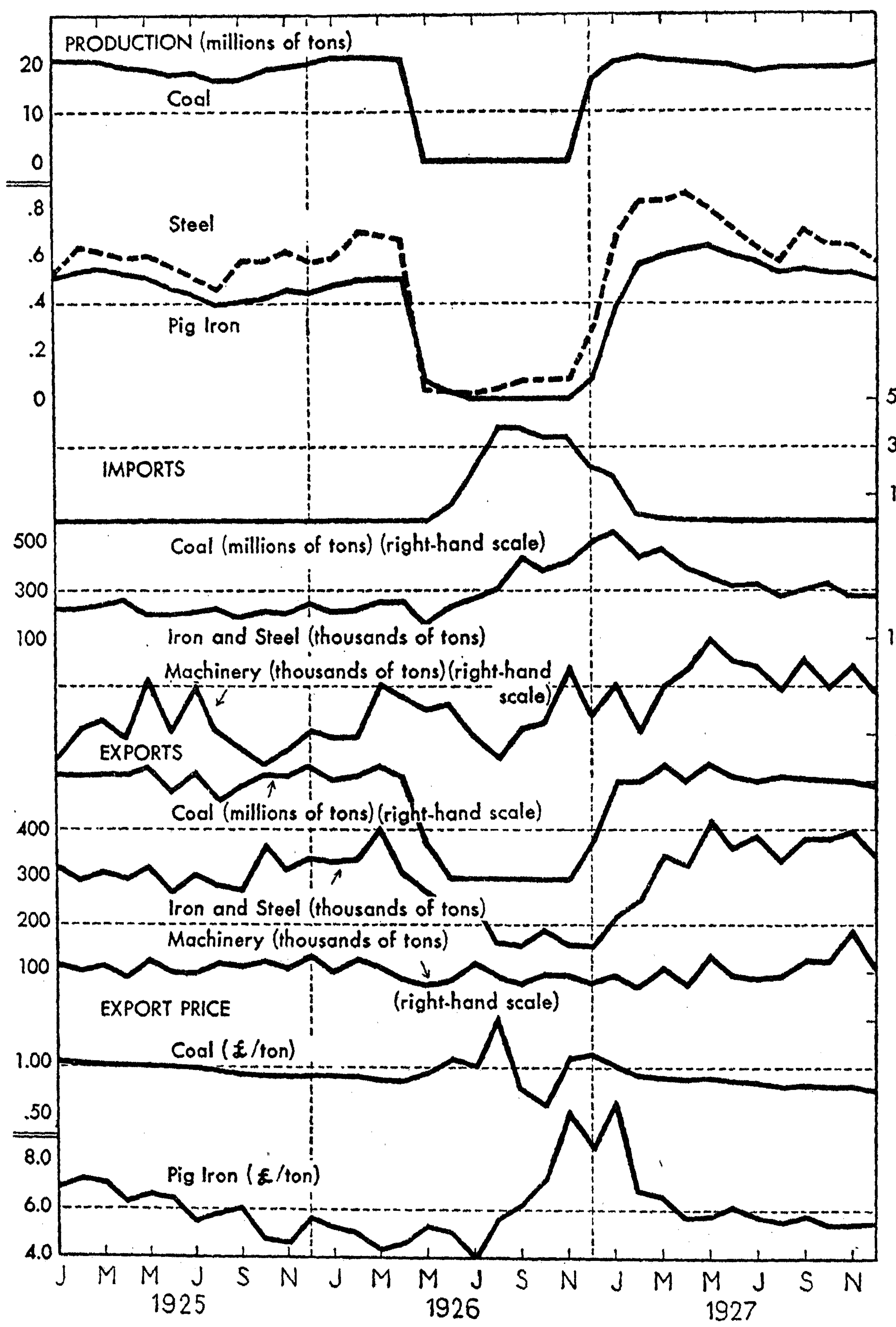

Fig. 17.—The 1926 coal strike in England

small lag; the recovery of exports showed the same lag. Partial compensation was provided by imports of coal; but it took until August, fully three months, before the imports curve flattened out, and as late as January, 1927, a rather considerable import of coal still occurred. The price of coal showed certain irregular fluctuations but did not, on the whole, show any pronounced increase, probably on account of the very active international competition in coal.

A further important consequence of the cessation of coal production was the interruption of the production of pig iron and steel that followed almost immediately. After the termination of the conflict, however, it took somewhat longer before the old level of production in these industries had again been reached. Then, it was immediately exceeded; there was a compensating increase in production which lasted until about the middle of 1927. The reduction in the production of iron was reflected also in changes in imports and exports of iron; imports increased and exports declined. The import and export statistics shown in the diagram refer not only to pig iron and steel but also to semimanufactured products of iron and steel. Owing to the greater degree of fabrication, the lag shown is somewhat longer than in the case of coal. Very little movement is to be seen in the import and export of machines, at one remove further from the source of the disturbance. Only a trace of a decline can be discerned in the export figures for machinery; random movements are much more pronounced. In contrast to the coal price, finally, the pig-iron price shows a pronounced increase, again with a lag of a number of months.

In summary we see that the disturbances in the different branches of industry are of smaller amplitude and occur with greater lag, the further the industry is away from the initial source of disturbance. In one case only, in the production of iron and steel, is a compensating movement shown by our statistics.

SUDDEN CHANGES IN ECONOMIC STRUCTURE

In the nature of things, it is impossible to make a sharp distinction between gradual and sudden changes in the economic structure. Certain changes may take place so rapidly that there is no room for doubt. Other changes, even if they take place over a very short period of time, will nevertheless require a considerable time to make themselves fully felt. Certain legal measures affecting the organization of industry may, for instance, take a considerable time to become fully operative. We shall nevertheless consider such changes as sudden changes, in particular if they are of considerable quantitative influence.

Two of the most important changes in structure of the interwar period may be referred to in more detail. They refer to the sets of measures introduced in Germany and the United States in 1933 and succeeding years. In both countries the changes in structure were to a considerable extent due to the long and profound crisis that affected the world economy from 1929 to 1932. The problems facing the two countries were the same in many respects: large-scale unemployment, great losses in industry, low agricultural prices, the difficult situation in public finance. The measures taken to overcome these problems were in part the same, but to a considerable extent they were different. Important differences were bound to occur in view of the important differences between the two countries in natural resources, international position, and public opinion.

In the structural changes that took place in Germany one of the main objectives initially was the reduction of unemployment. Some measures in this direction had been taken already by the governments which preceded the National Socialist regime; they were intensified thereafter. Among the recovery measures taken we may mention the execution of large public works, the provision of cheap credit through a system of rediscountable tax certificates, tax exemption for reinvested profits, compulsory labor service, etc. The public works program was followed by a rearmament program that, in the economic field, had the same effect. The amounts spent on it (ninety billion marks) were enormous.

As a result of these measures employment increased considerably. Production increased particularly in the metal industries and the building industries; initially, the production of consumption goods was also allowed to increase in order to satisfy increased incomes and to prevent a rise in prices.

Prices, however, were kept down, mainly by a system of price control which was continually extended. As a result of price control the reamament boom shows a pattern quite different from that of a normal recovery in that the normal parallelism between quantities and prices did not occur. The recovery was entirely in terms of quantities (compare Fig. 18).

The "multiplier" of the public works, that is to say, the ratio between total and primary employment created (the latter de-

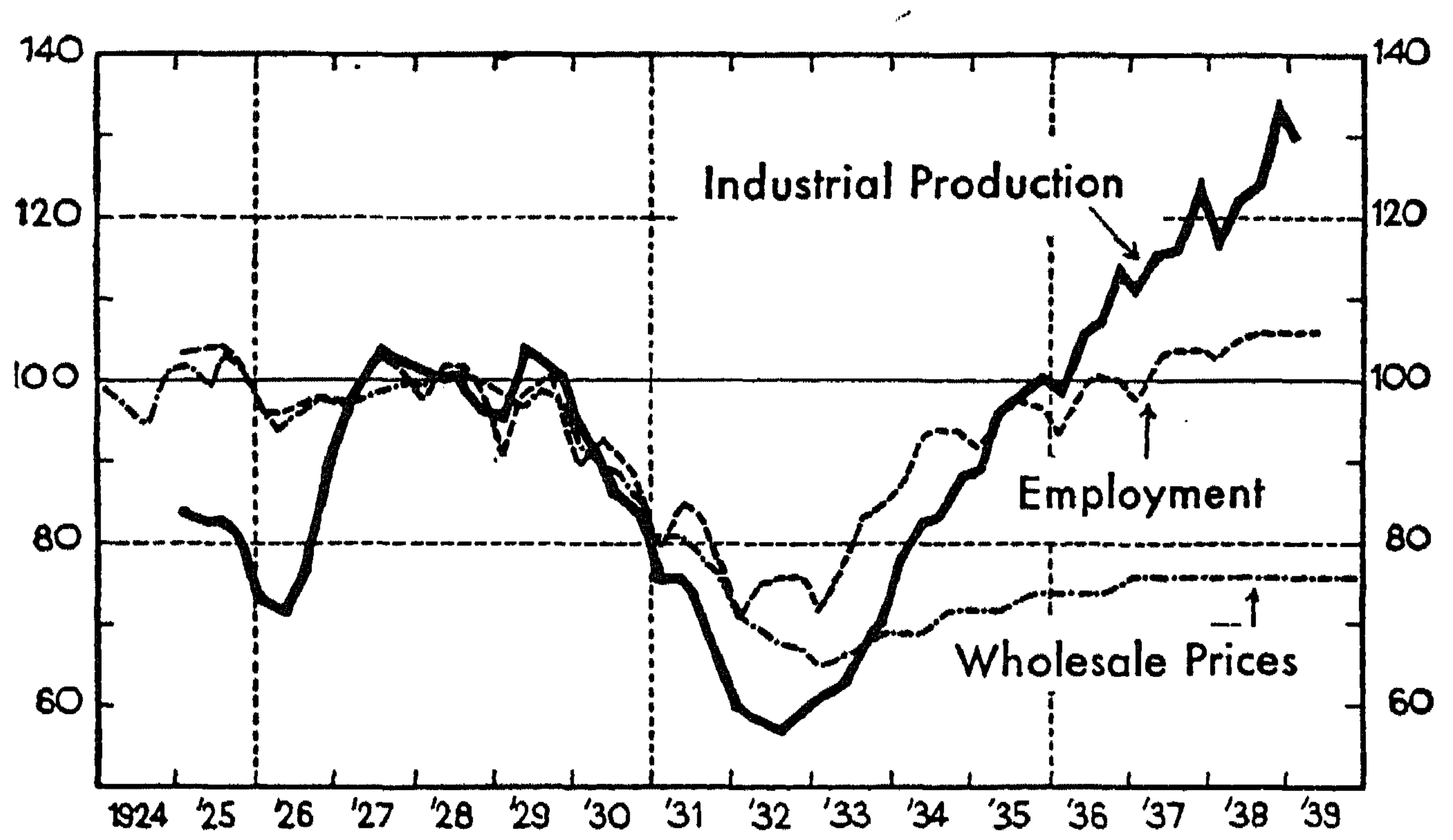

FIG. 18.—Certain business-cycle indicators for Germany, 1924–39 (index numbers, 1928 = 100).

fined as the increase in employment in the public works themselves and in the industries that produced the raw materials and the means of production for these public works), was quite low. This was due to the fact that a large part of the works were executed at very low wages in compulsory labor service; it was due, further, to the fact that a considerable part of the increased incomes was used to repay debts and, finally, to the weak reaction of private investment as a consequence, in part, of the existing investment controls.

The measures to combat unemployment were complemented by financial and commercial measures which were to protect the recovery policy from domestic and foreign financial difficulties. The charter of the Reichsbank was completely modernized in 1933; at that time open-market policy was officially recognized as an instrument of economic policy.

The service of foreign loans was reduced or stopped altogether. Imports were regulated by exchange control and, at a later stage, by an import-licensing system. Exports were promoted by export premiums. A number of different marks were created for special purposes, each with a limited usability of its own; there were security marks, travel marks, etc. The quotations for these special marks in foreign markets fell well below the official rate of the mark; the latter, however, was maintained in the calculation of import and export prices, partly in view of the strong popular feeling against devaluation after the experience of 1923. With practically no gold reserve, Germany kept its balance of payments in equilibrium by its exchange policy and managed to keep the official rate at par and also to stabilize the domestic price level. The isolation from world markets was so complete that the depression of 1937–38 hardly touched the German economy.

We may now discuss briefly the structural changes that occurred in the United States during the depression, in particular those under the "New Deal." In the early period after the assumption of power by President Roosevelt, many recovery measures had increased prices as their objective or as their consequence. The depreciation of the dollar, the agricultural restriction policies, the NRA codes and corresponding wage increases—all tended to raise prices and were intended to do so. It was hoped that by such measures purchasing power would be increased and recovery promoted.

These policies, however, did not prove particularly successful in stimulating recovery. After an initial increase, production declined rather sharply, partly as a reaction to undue optimism of the first few months of the New Deal, partly because high wages were considered as impairing profitability. Toward the fall of 1933 the emphasis was put on a different set of policies which were calculated to increase purchasing power directly by large-scale public works. In addition, large amounts were spent on unemployment relief and, at a later stage, on veterans' bonuses. The amounts spent for these purposes, in addition to those spent for agricultural relief, amounted to the sums shown in Table 14. The major portion of these sums was obtained by borrowing.

These direct injections of purchasing power helped to overcome the recession in 1933 and led to a recovery which was first hesitant, then pronounced (see Fig. 19). Partly as a consequence of the high level of expenditure in 1936 and the decline of expenditure from 1936 to 1937, there was a rather considerable depression in 1937. This recession, however, was of much shorter duration than that of 1929. The government resumed rather quickly its policy of compensating government expendi-

TABLE 14

RELIEF-TYPE EXPENDITURE IN THE UNITED STATES, 1933–37

Calendar Year	Amounts (In Billions of Dollars)
1933	1.3
1934	3.1
1935	2.7
1936	4.5
1937	2.3

ture, and possibly in part due to this policy the depression lasted for a brief period only.

It would appear that the initial recovery policies were too uncertain and also tended to some extent to antagonize employers. As a result the recovery was not so rapid as it might have been if a clear policy had been followed from the start.

In addition to recovery measures, the government adopted another set of policies, the purpose of which was to change the economic structure of the country.[4] The distinction is by no means a sharp one. The fact that the government accepted the responsibility for the level of economic activity and took measures in consequence of this responsibility was itself a structural change of greater importance than many of the individual reconstruction measures. Among the latter we may mention, first, the introduction of social security, particularly un-

4. For a further discussion of the concept of economic structure the reader is referred to Part II.

employment insurance and old age insurance. Both measures were patterned approximately on European examples.

Of particular importance were measures in the financial sphere. By heavy taxation of capital gains an attempt was made, apparently with some success, to limit the extent of stock-exchange speculation and thereby the influence of fluctuations in share prices upon the economy as a whole. Since this speculation, as we shall see, contributed considerably to the

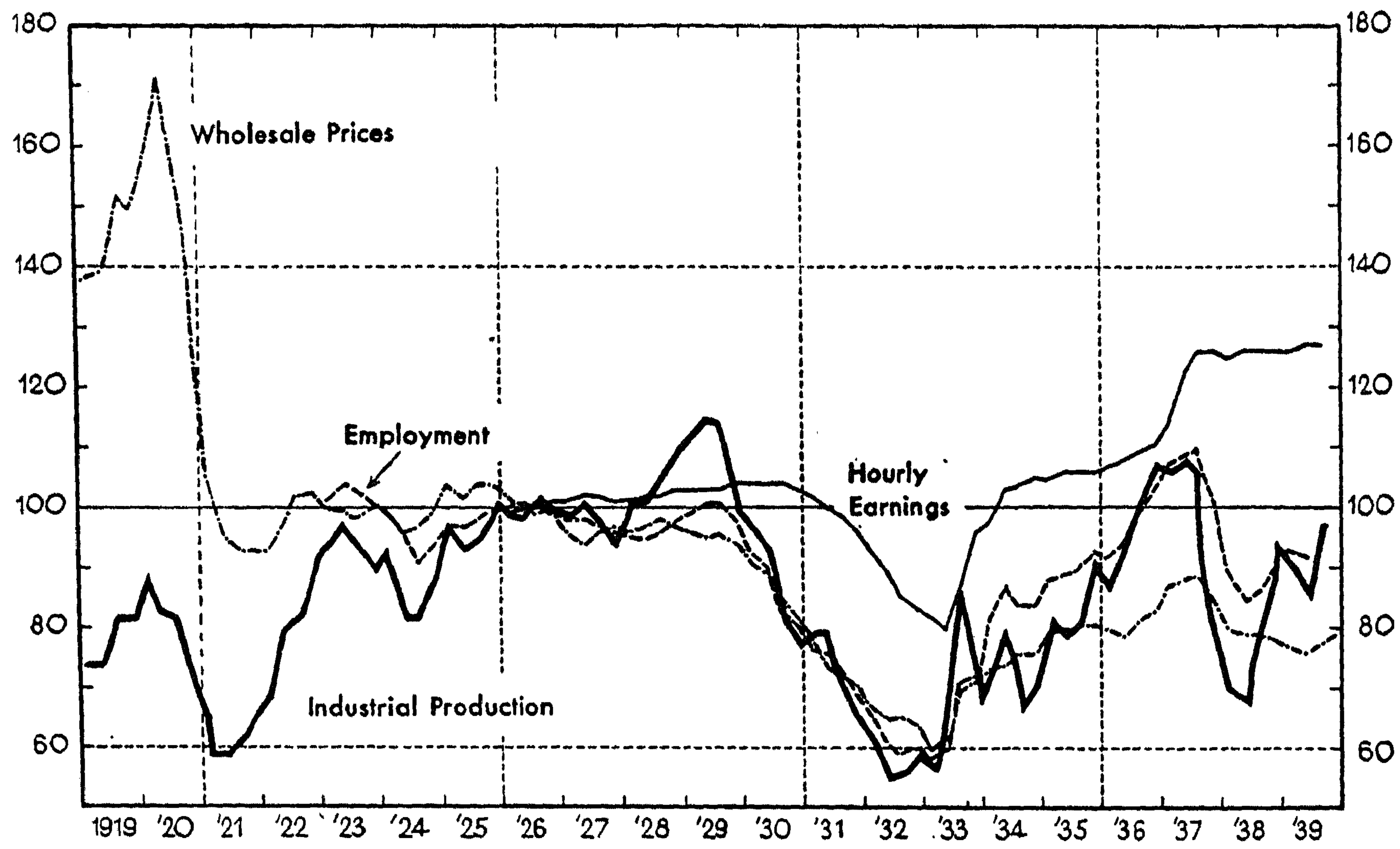

FIG. 19.—Certain business-cycle indicators for the United States, 1919–39 (index numbers, 1926 = 100).

crisis of 1929, these measures should be considered as of great importance.

Not so certain is the effect of the tax on undistributed profits. It may or may not have had favorable consequences for the stability of the economy. There is no question that the tax led to higher dividends in the years following 1936. In the depression years 1931–33 corporations had paid considerable dividends from surpluses accumulated during the preceding boom. It is doubtful whether this will be possible again in a later depression if additions to surplus are much smaller during boom periods.

In the period under consideration the reserve percentages of banks were changed a number of times; in particular, they were raised considerably in the beginning. Owing to the great liquidity, these increases had very little influence on the economy. However, the principle of the regulation by means of changes in reserve percentages is important and may be considered as a structural change of consequence.

Another important structural change was the regulation of agriculture by a system of premiums, fines for excess production, government purchases, etc.