

## II

### CYCLES IN THE BRITISH ECONOMY:

1790-1914

#### I

THE previous chapter sought to outline the broad pattern of growth to which the British economy conforms, over the century and a quarter from about 1790 to 1914. Within the framework set by the expansion of population and total production, an attempt was made to establish and briefly to explore five periods during which the nature of new enterprise, in Britain and throughout the world, is judged to have given a distinctive cast to the movements of real wages, commodity prices, interest rates, and the terms of trade. The present chapter seeks to move an approximation closer to the pattern of economic events as they actually unfolded, by examining short-period fluctuations in total industrial output and employment.

A reading of the evidence, statistical and qualitative, on the movements within the British economy in modern times, taken year by year, month by month, or week by week, leaves two enduring impressions. First, one is impressed with the uniqueness and variety of the story of economic life. The combinations of forces within the moving economy are, like those in political life, in an important sense always new and fresh. No year is quite like another year; and after a time one gets to know them like old friends. Contrast the lively impression to be derived from Tooke and Macpherson and the *Annual Register*, in the early days, and later the *Economist* and *Bankers Magazine*, with the story presented in conventional texts, or the view from the statistics alone. Second, one is impressed with the solid reality of the cyclical pattern which steadily recurs, in Britain, and then gradually widening, throughout the world from the end of the American Revolution to the outbreak of the First World War. No two cycles, of course, are quite the same; and one can trace, as well, certain long period changes in the character of cycles. But

it is evident that the whole evolution of modern society in the West occurred in a rhythmic pattern, which had consequences for social and political as well as for economic events.

## II

Table II sets out annual dates for the turning-points in British trade fluctuations from 1788 to 1914. For the whole of this era it is possible, on evidence available, to set down monthly turning-points, of reasonable accuracy, although that refinement is unnecessary for the level of analysis pursued here.<sup>1</sup> The annual dates do not necessarily define the year within which recovery or depression began.<sup>2</sup> The years are taken as analytic and statistical units, and are weighed as a whole. For example, it is likely that recovery, after the decline from 1792, began at about June 1794; on the whole, however, 1794 was a year of greater prosperity than 1793; and so the latter is marked as a trough year.

It should be emphasized that the year designated in this table is, in many cases, a matter for judgement. The pro-

<sup>1</sup> A. F. Burns and W. C. Mitchell, *Measuring Business Cycles*, p. 79, present turning-points in British trade cycles annually from 1792, quarterly and monthly from 1854-5. Monthly turning-points were established from 1790 to 1850 in the course of the forthcoming study directed by A. D. Gayer, *The Growth and Fluctuations of the British Economy, 1790-1850*. In the annual dates presented in Table II, the author has deferred to the Homeric researches of Burns, Mitchell, and their staff in several instances where his earlier calculations diverged from theirs. The setting of these dates is a matter of judgement; and little would be gained by opening this specialist sport to public controversy. Something, in fact, would be lost; for in the technique of measurement developed by the National Bureau of Economic Research these dates serve as the framework against which other statistical data are measured. Alterations in the framework involve laborious new calculations which are most unlikely to yield results of analytic significance. Unless new data are adduced, it is likely to prove useful and proper to accept the National Bureau dates as standard. The author, however, has retained the decline in 1801 as a cycle; and he has not judged the movement from 1901 to 1903 as, in net, an expansion.

The most serious error that might arise from the use of turning-point tables would be the assumption that, analytically, the cycles were of the same order, or represented necessarily comparable phenomena. As the National Bureau has been careful to emphasize, the definition of turning-points constitutes merely a preliminary working stage in the process of analysing cyclical phenomena.

<sup>2</sup> For an authoritative discussion of the problems involved in the setting of turning-points the reader should consult Burns and Mitchell, *op. cit.*, especially chap. iv.

cesses involved in the cyclical turning-points are complex; and they are woven in each case into unique historical circumstances. Perhaps more important, there are no accurate, continuous, and sensitive indexes of production, national

TABLE II  
*Annual Turning-points, British Trade Cycles, 1788-1914*

<i>Trough</i>	<i>Peak</i>	<i>Trough</i>	<i>Peak</i>
1788	*1792	1842	*1845
1793	1796	1848	*1854
1797	1800	1855	1857
1801	*1802	1858	1860
1803	1806	1862	*1866
1808	*1810	1868	*1873
1811	1815	1879	*1883
1816	*1818	1886	*1890
1819	*1825	1894	*1900
1826	1828	1904	1907
1829	1831	1908	*1913
1832	*1836	1914	..
1837	1839	..	..

*NOTE.* An asterisk (\*) indicates that the cyclical expansion thus marked was characterized by substantial long-term investment, at home and/or abroad; and that conditions of virtually full employment were reached. Of these, the most ambiguous case is that of 1907, where capital exports occurred, during expansion, on a considerable scale, but home investment was not sufficient to create conditions of full employment. In the case of most other cycles not marked by an asterisk (e.g. 1796, 1806, 1810, &c.) the primary impulse towards expansion lay in foreign trade. The cycle marked by a peak in 1800, a trough in 1801, is to be regarded as an interruption in the expansion from 1797 to 1802, rather than as a minor cycle confined to foreign trade. Similarly, the setback of 1861-2 is to be regarded rather as an interruption in a major cycle expansion than as a minor cycle contraction, being affected by the outbreak of the American Civil War.

income, or employment which might singly, or in some aggregate, be regarded as definitive of general trade movements, throughout these years. Hoffmann's indexes of production, and Beveridge's, until 1850, however valuable they may be, are, because of their constitution and weighting, dubious instruments for turning-point analysis.<sup>1</sup> And the

<sup>1</sup> Lord Beveridge's index, to 1850 (*Full Employment in a Free Society*, Appendix A; also *The Trade Cycle in Britain before 1850*, and a subsequent emendation, *Oxford Economic Papers*, 1940), invites two basic criticisms, both of which stem

*Analysis*

invaluable statistics for unemployment within the trades' unions, available from 1850, represent for much of the period so partial a sample of the total working force as to

from the role of the brick production and ship-building figures in his calculations. First, because of their large amplitude of movement, they tend to dominate the general movements of his index as a whole. Second, because they represent capital investment, of considerable period of gestation, they lag what are regarded here as the general movements of the economy, at both troughs and peaks, as follows:

<i>Turning-points, Table II</i>		<i>Turning-points, Beveridge Index</i>	
<i>Trough</i>	<i>Peak</i>	<i>Trough</i>	<i>Peak</i>
1793	1802	1795	1803
1803	1806	1804	1805
1811	1815	1812	1813
1819	1828	1821	1827*
	1839		1838-40
1842	1845	1843	1846

\* In the case of 1828 the fall in the indexes of capital goods' production used by Beveridge outweigh the rise in the volume of exports; on the judgement here the latter movement was the more significant. A decline in indexes of investment in the course of a minor cycle expansion is not inconsistent with our definition of a minor cycle.

These criticisms imply the view that the Beveridge index under-estimates the role of the volume of exports, in cyclical fluctuations of the first half of the century, and over-estimates the significance, for the economy as a whole, of brick production and ship-building, as well as certain other series reflecting capital construction. Hoffmann's index of production is subject to similar criticism. Both indexes, and any possible formal index constructed on the basis of known statistical data alone, for this period, suffer from the poverty of consistent quantitative evidence on production. For the eighteenth century, as well, and for earlier periods, it is likely to prove more satisfactory to exploit the quantitative evidence fully, whether in continuous series or covering a limited number of years, and to muster in addition all relevant forms of qualitative evidence, in the setting of turning-points.

It should be pointed out, however, that Beveridge's central purpose was amply served by his index; namely, to indicate the existence of a persistent trade cycle in Great Britain from the close of the eighteenth century. The result of its deficiencies, however, is to obscure the existence of minor cycles, to 1850, as well as to distort somewhat the timing and shape of the major cycles.

require cautious use.<sup>1</sup> The years given here are derived from an examination of a wide body of both statistical and qualitative evidence; but no absolute validity attaches to them. One might conduct fairly even-balanced, if not very fruitful, debate as to whether 1794 rather than 1793 was a trough year, or 1809 rather than 1810 a peak, and so on.

Leaving aside the technical problem of establishing turning-point years, or months, there is a prior issue of conception. How big a movement, in what indicators of production and employment, justifies the marking off of a formal trade cycle? The criterion employed here is that the movement be one which is evidenced by a significant change in direction of overall indexes of industrial production and employment, or such other reflections of those variables, covering particular segments of the economy, as are available. There are occasions, such as 1823, when the volume of exports declined; and in the twenties the volume of exports must be regarded as an extremely important element in the trade cycle. On the other hand, the evidence relating to total employment and production suggests that, in net, they increased in 1823. The mild downward impulse imparted from the export markets was overwhelmed in stronger domestic forces making for expansion; and thus no cycle is recorded between 1819 and 1825. An obverse case is that of the decline from 1800 to 1801, where the movements indicated in the various forms of data available are diverse, some indicating expansion, some contraction. On the whole, however, it has been thought proper to mark off a down-turn in that year, with

<sup>1</sup> The extent to which the pre-1914 trades' union unemployment figure may be regarded as representative was raised before the Royal Statistical Society in February 1923 (*J.R.S.S.*, 1923, pp. 154-205) by J. Hilton, in the course of an examination of the unemployment statistics derived from the Unemployment Insurance Acts. See especially pp. 154-3, 181-7; 197-8 (Pethick Lawrence), 200-3 (Ramsbottom). On the basis of comparative behaviour in the period of overlap between the trades' union figures and the more modern official compilation of insured workers unemployed, Hilton concluded that the trades' union figure appeared to be representative of general unemployment in years of low unemployment, but over-estimated unemployment in years of severe depression due to the heavy weighting of the engineering, ship-building, and other cyclically sensitive industries. See also A. L. Bowley, 'The Measurement of Employment: An Experiment', *J.R.S.S.*, July 1912; and Colin Clark, *op. cit.*, p. 232.

recovery following in 1802, during the brief Peace of Amiens. The analyst of cycles, like other historians, cannot be relieved of the burden of making arbitrary judgement, no matter how large or superficially comforting the mass of statistics with which he is able to surround himself.

### III

Table II distinguishes twenty-four cycles, over the period of 126 years. Both the initial and terminal dates are untidy points of demarcation. The year 1788 marks a mild trough in a long sequence of expansion begun after the end of the American War of Independence. There was a brief post-war slump; then revival started in foreign trade, gathered momentum from the middle of the decade, but was set back briefly in 1788; recovery then moved on to a considerable and general boom, reaching its peak in 1792. On the other hand, 1914 was the first year in a cyclical decline which would have continued, almost certainly, for several further years had war not intervened. The average duration of these 24 cycles, taken as a whole, and thus regarded implicitly as comparable units, is about 5.25 years.

The average figure for the duration of all cycles distinguished is not particularly meaningful, since these cycles differed significantly in character among themselves. The most important of these differences has been indicated in the accompanying table by distinguishing fourteen of the cycles with an asterisk, and designating them major cycles. A major cycle is defined by two related criteria: first, that, at its peak, conditions of relatively full employment were attained; second, that in its latter stages at least, persons and institutions proved willing to enter into long-term investment commitments, at home and/or abroad, on a large scale. In most cases an application of these criteria to the evidence clearly and satisfactorily distinguishes the major cycles.

Some problem is raised, however, by the cases of major cycles before 1825. On the whole, long-term investment played a lesser part in the economy in the earlier than in the later years of the era; and in addition, as noted in Chapter I,

the economic requirements of war, to 1815, diverted resources abnormally into foreign trade and agriculture. Nevertheless, the behaviour of brick production, as well as other indicators of long-term investment, justify the distinction of cycles reaching their peaks in 1792, 1802, and 1810. The not very impressive, but nevertheless real, post-war cycle, reaching its peak in 1818, also falls in this category of lesser major cycles.

Perhaps the most ambiguous of the cycles, however, lies not in the early years, but is that which reached its peak in 1907. Average unemployment in Britain in the peak year was almost 4 per cent., a considerably higher figure than for any of the other major cycle peaks after 1850; and, looked at closely, it is evident that domestic long-term investment was on a depressed scale throughout the upswing from 1904 to 1907.<sup>1</sup>

The minor cycles were characterized by limited general expansion which, for various reasons, gave way to depression before conditions of relatively full employment were reached. In most cases the primary impulse sustaining expansion, in the minor cycles, was confined to foreign trade; and although multiplier effects undoubtedly operated to spread the increase in production and employment, the economic system failed to move continuously upward to full employment. In some cases the downward movement can be traced, in part, at least, to an external event; e.g. the coming of Civil War in 1861. In other cases (e.g. 1828), the timing of decline appears in large part to proceed from a virtually autonomous short rhythm in foreign trade itself; although some of the minor cycles were supported by the completion of acts of investment, with long periods of gestation, undertaken in the peak years of the previous major cycle, and their end was accompanied by the final collapse of these waves of long-term investment.

In general, this dual distinction among cycles appears useful so long as the individual cycles are so well understood that their abstraction into categories is not compounded to advanced abstract conclusions which the raw historical evidence does not support.

<sup>1</sup> See above, p. 27.

Taking the major cycles apart, we find a consistent duration of about nine years;<sup>1</sup> and this duration does not vary significantly through time. From 1792 to 1900 the major cycles may be associated in 4 successive groups, of 3 each.<sup>2</sup> Although the individual cycles vary in length, the average for each of the 3 groups is remarkably similar: 8.7 years for the period up to 1818; 9.0 years to 1845; 9.3 years to 1873; and 9.0 years to 1900. The author can adduce no simple and persuasive reason why the rhythm of fluctuations in long-term investment should have remained so stable, at about 9 years, through the nineteenth century; but there seems little doubt concerning the reality of the phenomenon.

The minor cycles, of which ten are distinguished over these years, are consistently about four years in length; and these too exhibit no very significant change in their average duration over the century. It will be noted in Table II, however, that the minor cycles tend, virtually, to disappear from the array of trade cycles after 1860, excepting, of course, the special case of 1907. This characteristic of cyclical behaviour proceeds from the nature of the two types of cycles, as they have been defined, and from the character of the basic changes in the British economy over the century and a quarter: four minor cycles are in the first trend period, to 1816; three are in the second;<sup>3</sup> two in the third; none in

<sup>1</sup> The average duration of major cycles varies with the form of measurement. Measured from peak to peak (1792-1913) their average duration is 9.4 years; measured from trough to trough (1788-1914) their average duration is 9.0 years. The consistency of the duration is indicated, in the latter case, by an average deviation of 1.29 years.

<sup>2</sup> Measurement is here taken from 1792 to 1900, dropping, in effect, the first and last major cycles, because the major cycle trough preceding 1792 is not established; and because the final trend period, 1900-14, includes by our definition only one major cycle, that reaching its peak in 1913. Economically, as noted above (p. 36), the trough in 1914 is almost certainly artificial. The major cycle trough preceding 1792 probably falls in 1784-5; and the expansion to 1787 and the decline to 1788 would be accounted a minor cycle movement.

<sup>3</sup> A secondary cycle, after the peak in 1845, can be detected in the monthly data, running from a trough in Sept. 1846 to a peak in Apr. 1847. Analytically it shares some of the characteristics of the secondary peak (after 1836) in 1839, involving stimulus from both the completion of railway projects, earlier initiated, and from the export trade; but it is too slight a movement to justify inclusion among the annual dates. Such inconclusive secondary movements,



the fourth; and one in the fifth. The euthanasia of the minor cycle presents, in fact, no great analytic mystery.

#### IV

The minor cycles are distinguished here by the fact that they involved increases in production and employment arising preponderantly, but not exclusively, from increases in exports. In the first half of the nineteenth century textiles and other consumers' goods constituted the dominant element in British exports. Against the background of a rising world population and real income, and cheapened real costs of production, the amounts capable of being sold in world markets increased steadily, year after year: the demand curve for British exports shifted steadily to the right, and the supply curve as well. The markets through which British exports were sold abroad, however, were speculative in the sense that more or less was sent abroad, by individual merchants, depending on their information and judgements concerning stocks and prices in foreign markets at future times. In addition, because time lags were involved at various stages in the process of trade, current and expected conditions with respect to the price and the availability of credit entered the calculation.

Acting, in fact, on similar or identical intelligence, British merchants tended, roughly, to behave in the same manner. When inventories fell off, and prices rose abroad, word was received from overseas agents and fully circulated; and more goods were shipped from Britain. Such actions, individually taken, tended to reverse the conditions in foreign markets which justified the increased shipments, in the first instance; and the reversal could not be reported instantaneously, nor the production decisions which stemmed from it instantaneously reversed within Britain. And so the curve of British exports did not rise smoothly, in continuous accord with market conditions abroad. It moved upward, with occasional

among others, can also be detected in the course of the downswing of the seventies, the upswing of the later nineties, and the downswing following 1900, the latter movement having attained the dignity of a separate cycle in the calculations of the National Bureau.

set-backs, fluctuating about the imaginary line which, at any moment of time, would have represented the equilibrium volume of exports. There was, undoubtedly, a tendency for British foreign trade to fluctuate cyclically, in what we might call an inventory cycle.<sup>1</sup>

The rhythm of that cycle was, of its nature, relatively short; and, in times of peace and normal market relationships, the amplitude of its movement relatively mild. There are several reasons why this should have been so:

First, while there was undoubtedly an element of judgement about future markets, and future costs involved in the export trade, the period of time between a change in market conditions and the receipt of intelligence in London was not very great, even before the introduction of the cables.

Second, the flow of exports could be altered quickly and sensitively, with changed knowledge and judgement about future market conditions; a commitment to build a railway is binding over a number of years; commitments to manufacture and to ship textiles were capable of review and alteration in a matter of weeks or months.<sup>2</sup>

<sup>1</sup> Thomas Tooke's *History of Prices* is the best source of data on the course and the mechanics of short cycles in foreign trade, his account deriving vitality and authority from a long merchant's experience. The institutional arrangements, with their time lags, credit arrangements, and dependence on expectations, are described by N. S. Buck, *Anglo-American Trade, 1800-1850*: for the system of credit advances on consignments, and the 'interlacing of credits' and speculation with foreign trade operations see especially pp. 12-14, 23, and 39; for reference to the inventory nature of the foreign trade crises of 1816 and 1831 see pp. 138-9. For a recent analysis of the nature and possible causes of inventory fluctuations, partially relevant to this problem, despite its application to a closed economy, see L. A. Metzler, 'The Nature and Stability of Inventory Cycles', *Review of Economic Statistics*, 1941, and 1947, 'Factors Governing the Length of Inventory Cycles'.

<sup>2</sup> Buck, *op. cit.*, p. 102, notes: 'As it generally took from a month to six weeks to manufacture the goods and prepare them for shipment, merchants, who purchased from the manufacturers, were required to place their orders for goods fairly early'. To establish what Metzler, in his articles cited above, calls 'the planning period' one would, presumably, have to take into account the length of time from the placing of the order by the merchant to the receipt of the manufactured goods. This would include the period from transmission to receipt of orders, from overseas, as well as the period for shipment and delivery of the finished British products. In fact, shipments from Britain to the United

Finally, the demand for consumers' goods from peoples abroad was under fairly steady impulse to enlargement; the purchases of foreign merchants were, of course, sensitive to changes in British prices, and to general movements of demand within their own market regions; but behind them were enlarging populations, with increasing real incomes; and they were trading in consumers' goods.<sup>1</sup>

Together these forces made for a relatively short cycle, of mild amplitude, in the basic British exports of the first half of the century. And it is this type of inventory cycle which one could, almost certainly, trace back into the eighteenth century; and perhaps even back to medieval times. Its character stems from the nature of the merchant's trade.

From the late 1780's at least, however, this rhythm is woven into the longer and deeper rhythm of fluctuations in long-term investment. In the latter stages of the boom reaching its peak in 1792, for example, there was an expansion in canal- and road-building, agricultural inclosures, and an increased building of ships, houses, and factories. This element of long-term investment grew relatively as the economy became increasingly industrialized; and it grew notably after the ending of the French wars had lifted the burdens and removed the distorting pressures which war had imposed. Until the sixties, however, the short cycle can not only be detected but, on the judgements which entered the compilation of Table II, it had sufficient power

States tended to be concentrated in two periods of the year: "There were the spring shipments, from the middle of January until the middle of April, and the fall shipments, during the months of July and August (*idem*).<sup>1</sup> It is not unlikely that 'the planning period', fully analysed in this trade, would work out to something close to six months.

<sup>1</sup> The economies to which Britain sold its exports were themselves subject to cyclical fluctuations, as well as to secular growth; fluctuations in harvests, in their income from exports, and in their domestic industry. These fluctuations undoubtedly affected the demand for British exports; and they were both affected by, and influenced the course of, British cycles. Probably the optimum form in which to analyse these foreign trade fluctuations would be as an aspect of inter-regional trade, within a single economy moving to the rhythm of fully interrelated, if not synchronous, cyclical forces. What is essential to the argument here, however, is that, until about the fifties, the principal British exports were consumers' rather than capital goods.

to produce distinguishable general movements in total production and employment.

As industrialization progressed, however, and the metallurgical and engineering industries began to play an increased proportional role in the economy, the long-term investment cycle became increasingly dominant. This was the trend not only for Britain, but for certain key British markets on the Continent and in the United States; and thus the longer rhythm—the nine-year average—infected not only British domestic activities, but foreign trade as well. In 1808 to 1810, when Britain enjoyed a boom focused on Latin America, freed for trade by the Spanish Revolution of 1808, the goods sent out, as recorded in the famous quotation from McCulloch, were: textiles, cut glass, chinaware, hammers, and the inevitable skates for Rio de Janeiro.<sup>1</sup> From the fifties onward not only did railway-iron and other capital equipment go abroad, but the further industrial development of certain of the importing economies probably made their demand for British consumers' goods more sensitive to cyclical fluctuations than had been the case in earlier, more pastoral times.

The net effect of the British and world-wide transition towards capital development and industrialization was to overwhelm, in a sense, the minor cycle as an independent cyclical phenomenon. Its rhythm, however, can still be detected in the export figures for British textiles. Whereas, between 1848 and 1914, ten trade cycles can be marked off, there are some fifteen cycles which can be detected in the value of exports of cotton goods and yarn, with an average duration of somewhat over four years. In the early decades of the century the movement of textile exports might have been decisive to the contour of fluctuations in the economy as a whole; in the latter year it was simply one determinant of general fluctuations, and by no means the most powerful. But the short rhythm of its movement persists.

Thus, the statistical conclusion that the average duration of trade cycles increased after 1860 is to be understood in general as the shifting from a secondary to a primary posi-

<sup>1</sup> Quoted, Tooke, *op. cit.*, vol. i, pp. 276-7.

tion of the rhythm of long-term investment;<sup>1</sup> and a reduction in relative status within the world economy of the shorter rhythm which, for Britain, took the form notably of textile exports. From the beginning to the end of the era, however, the two rhythms are detectable in the evidence.

The two types of fluctuations did not pursue their course in separate and discrete channels. They were linked in at least four ways:

First, both partially depended, in their timing, on the state of the capital market; and their course related to conditions in the interwoven complex of credit markets in London and the provinces.

Second, and more broadly, the consumers' goods industries and capital goods industries competed for labour and raw materials in common markets; cost calculations which affected decisions in both stemmed from, partially, identical data.

Third, a part of British exports depended on the export of capital; and in most cases waves of capital exports occurred at the same time, and under the same general impulses that lead to long-term domestic investment.

Fourth, a source of the confidence and the funds for long-term investment were the increases in profits and in general income derived directly and indirectly from prior increases in the export trade.

For these reasons, among others, fluctuations within the British economy must be examined and understood as a whole, no matter how useful or illuminating the abstraction of elements within them may be for special purposes.

The shift in the balance and structure of the British and world economies, and thus the changed character of cyclical fluctuations, had consequences for the relative impact of the trade cycle on the economy and the society as a whole. At

<sup>1</sup> 1860 in no sense constitutes a sharp analytic line of demarcation with respect to the relative role of the two types of cycles. The coming of the railway on a very large scale in Britain in the forties affords a sharper conceptual breaking-point. Indeed, the minor cycle of the late forties is so slight a manifestation that it is not recorded in the annual turning-points; and that of the fifties (peak 1857) would, perhaps, not have stood out so strongly, but for the distortions imposed on the pattern of the decade by the Crimean War.

the beginning of the era Britain was, in agriculture, virtually self-sufficient, with only minor capital industries, and a foreign trade mainly in consumers' goods. By the end of the era Britain was heavily deficit in agriculture, with its industries closely tied, in both their domestic and foreign markets, to long-term capital development. Undoubtedly a larger proportion of the population felt the impact of the trade cycle on their lives and fortunes in 1910 than in 1790.

There is, further, good evidence for concluding that the amplitude of trade cycles, in both their expansion and contraction phases, increased after the French wars. From 1819 to 1848, however, covering the three great major cycles of the twenties, thirties, and forties, there appears to be no clear trend increase in the amplitude of cyclical movements.<sup>1</sup> From 1850 there is available the trades' union unemployment figures, which cover a gradually larger proportion of the labour force. It is difficult to judge whether the changing constitution of that index gives it a bias towards greater or lesser average unemployment, over time, and greater or lesser amplitude of fluctuation. The greater coverage in terms of industries which are less sensitive to cyclical move-

<sup>1</sup> In the course of the study *The Growth and Fluctuations of the British Economy, 1790-1850*, directed by A. D. Gayer, an index of trade fluctuations was constructed which, while not fully satisfactory for the definition of turning-points, is judged reasonably to reflect the amplitude of the cyclical movements. It exhibits the following behaviour from 1797 to 1848, for major cycles:

Trough to Peak		Peak to Trough	
	%	%	
1797-1802	15.1	4.2	1802-3
1808-10	12.7	10.8	1810-11
1816-18	24.6	11.3	1818-19
1819-25	45.7	39.7	1825-6
1822-6	41.8	29.0	1836-7
1842-5	49.3	50.0	1845-8

Unfortunately, data available to the author do not permit the extension of this index at the present time. Regarded analytically, the measurements from peak to trough for the last three major cycles are not comparable. Due to the lag at the peak, the waves of long-term investment took some time to subside. After 1825 and 1836, only one year of decline, measured by turning-points, occurred; after 1845, on the other hand, the trough is measured to 1848.

ments may well be compensated for by its greater coverage of, and the weighting given to, industries with a high sensitivity to cycles.<sup>1</sup> If one regards the unemployment figures as a uniformly representative sample, one is led to the conclusion that, while the trade cycle undoubtedly affected an increasing proportion of the population, the relative amplitude of cyclical movements in employment did not change in a systematic and significant way from 1850 to 1914.<sup>2</sup>

Unfortunately, the data are not now in such a form that the important gap from the forties to the fifties can be bridged by a continuous and satisfactory general index of cyclical fluctuations; nor have the measurements of particular series made by the National Bureau of Economic Research yet been fully mobilized on this problem. Tentatively, however, it would appear that the percentage movements in total employment and production do not exhibit a significant long-term trend variation, paralleling the growing industrialization of the British economy from, roughly, the 1820's to 1914.

A separate but related question concerns the possible relationship between the character of trade cycles and the trend periods, explored in Chapter I. It has long been believed that the trend periods after 1815 and 1873 were, in some sense, more depressed than the other three, whether that depression was associated with trends in the price-level or the more complex inner rationale of Schumpeter's Kondratieff process.<sup>3</sup>

<sup>1</sup> See above, p. 35, n.

<sup>2</sup> This is not to imply, of course, that all cycles, or even all major cycles, were of similar amplitude. The cycles varied among themselves in intensity; and there is, from the seventies to 1914, an apparent trend towards a diminished amplitude of cyclical movement in the unemployment index, which can be seen in the successive figures for peak unemployment in the various cycles: 1879, 11.4 per cent.; 1886, 10.2 per cent.; 1893, 7.5 per cent.; 1903, 7.8 per cent. Leaving aside the margins of error and biases that may exist within the unemployment series, it seems preferable to analyse these cases in terms of their particular environment than in terms of an indicated trend change in the nature of the trade cycle. See below, pp. 47-50.

<sup>3</sup> See Schumpeter, *op. cit.*, pp. 161 ff.; also J. Viner, *Studies in the Theory of International Trade*, p. 218; and W. C. Mitchell, *Business Cycles* (1927), pp. 407-12. For a recent interesting but inconclusive and partial test of this hypothesis see Burns and Mitchell, *op. cit.*, chap. ii, especially pp. 431-40.

There are many possible tests of this hypothesis of which two appear tractable within the limits of present data:

- (a) the dubious test, of comparing the proportion of years of increasing prosperity to years of increasing depression for cycles within the trend periods;
- (b) a superior test, where possible, of comparing the average level of unemployment for cycles within the trend periods.

The first test is of doubtful value because, if applied directly to this issue, it implies that all cycles designated by turning-points were comparable analytic units, of similar amplitude, and similar rates of expansion and contraction. In particular, the gradual disappearance of the minor cycle influences the measurements over this era in a manner such as to diminish the proportion of prosperous to depressed years.

This phenomenon occurs because the characteristic pattern of the minor cycle, based on the course of foreign trade, was one of a preponderance of years of prosperity to years of depression. The trend was strongly upward, and a single year of setback was usually sufficient to bring down inventories sufficiently to permit the resumption of an upward movement: e.g. 1819, 1826, 1829, 1832, &c. As this element loses its power to affect what are judged to be general movements of employment and production, the rhythm of long-term investment, more evenly balanced between expansion and contraction phases, stands forth, and the proportion of years of prosperity to years of depression tends to fall. This factor does not affect comparative measurements significantly as between the first two trend periods, to the mid-century. After that time, however, it becomes significant.

From 1793 to 1816 inclusive, 67 per cent. of the years are years of rising prosperity; from 1816 to 1848, 64 per cent.<sup>1</sup>

<sup>1</sup> In all such measurements a problem exists of establishing periods which both fall within the trend intervals being compared, and which represent an equitable balance of cyclical phases. The years chosen here are regarded as representing a fair comparison, although the fact that the trough years are counted at the beginning and the end of each period somewhat under-estimates the 'proportion of prosperity' in each case.



The impropriety of drawing any distinction between the two periods on the basis of this calculation is indicated by the fact that if, for example, the single year 1847 is regarded as one of rising prosperity, as the monthly data suggest might well be done,<sup>1</sup> the prosperity proportions become identical, as between the two trend periods.

Applied to the period after 1848, however, the measure yields a less steady result, as follows:

<i>Period</i>	<i>Prosperity Proportion</i>
	%
1848-68	67
1848-79	59
1879-94	59
1879-1904	54
1904-14	73

From these overlapping measures one might firmly draw the conclusion that in the seventies the relative periods of prosperity fell away, and rose again after the middle nineties. The evidence appears unambiguous, and the orders of magnitude substantial. And, indeed, such is the result one obtains if the cycles are regarded as analytically comparable units over the period 1848-1914.<sup>2</sup>

These measures of the 'prosperity proportion' should be contrasted with measures of the average level of business activity and of unemployment. For the period up to 1850 an index of general business activity has been constructed, on the basis of all available evidence, in which each year is rated from 0, a year of deep depression, to 5, a year of virtually full employment.<sup>3</sup> The average standing of years within each trend period was then calculated. The fairest measure, analytically, runs from 1793 to 1816; and from 1816 to 1848, all years of demarcation being cyclical troughs. The average standing of years in the first period is then 2.10, in the second, 1.95. Given the nature of the data, any very firm conclusions do not appear justified from this distinction in average standings.

<sup>1</sup> See above, p. 38, n. 3.

<sup>2</sup> This is the conclusion drawn, in more generalized form, by Burns and Mitchell, *op. cit.*, pp. 437-40, from Table 167; although they regard their results as preliminary and tentative.

<sup>3</sup> This index is reproduced in the Appendix to Chapter VI below, pp. 124-5.

An examination of the unemployment data from 1850 yields a similar inconclusive result. The most satisfactory measuring periods, analytically, are the following: 1855-73; 1874-1900; 1901-13.<sup>1</sup> For the first, the mid-Victorian period, average unemployment is 4.8 per cent.; for the second, the Great Depression, it is 4.9 per cent.; for the third, the pre-1914 period, it is 4.5 per cent. These figures, or any other reasonable analysis of the unemployment data, do not appear to justify the view that the Great Depression period was marked by significantly higher unemployment than the average from the mid-century to the outbreak of war in 1914.

The traditional conception, which associates falling-price trends with high secular unemployment, probably stems from a quantitatively inaccurate picture in our minds of the cyclical depression of the seventies and of the expansion of the early eighties, so far as the Great Depression is concerned; and, for the three decades after the French wars, from the

<sup>1</sup> These periods are taken because 1850 comes after the beginning of revival, in 1848; and 1914 is the first year of what would, almost certainly, have been a more protracted depression. The lack of any very great distinction between unemployment in the Great Depression period, as opposed to the trend periods which lie on either side, is indicated in the following supplementary calculations:

*Average Unemployment by Decades*

	%
1850-9	5.03
1860-9	5.16
1870-9	3.83
1880-9	5.61
1890-9	4.35
1900-9	4.83

*Average Unemployment by Cycles*

	%
1850-5	4.0 (1849, year of depression, lacking)
1856-8	7.5
1859-62	4.8
1863-8	4.9
1869-79	4.1
1880-6	5.9
1887-94	5.1
1895-1904	3.8
1905-8	5.3
1909-14	4.1 (downswing interrupted by war)

The overall average for unemployment, 1850-1914, is 4.69 per cent.

imprint of the falling price-curves of Peterloo, the Irish famine, the Chartists, and Engels on the forties.

In the seventies a surprisingly high level of activity was sustained from the beginnings of the downswing in 1873 to 1878-9. From 1874 through 1877, all regarded as years of 'depression' in the earlier measurement, average unemployment was only 3.1 per cent., as opposed to the 1850-1914 general average of 4.7 per cent.; and the behaviour of statistics of production, and other evidence, support this view of the period.<sup>1</sup> Prices, to be sure, were falling, and interest rates and profits as well; but the impact of depression, for Britain after 1873, like the preceding prosperity, came largely from abroad; and the country turned promptly, after 1873, to housing, ship-building, and other domestic enterprise of low expected yield; while the quantity of sales abroad, at lower but still profitable prices, was surprisingly maintained.

The years from 1879 to 1883 are regarded, usually, as a minor upward movement in a period of general depression. But the expansion in production was very real indeed; and unemployment was down close to 2 per cent. in 1882 and 1883. This expansion did not move, in its latter stages, into a phase of new adventurous investment. A floatation boom in electricity companies was about the best it could summon; and the economic system was not pushed, as in the special circumstances of the early seventies, to a phase of almost absolute full employment and rapidly rising prices. Moreover, in its muted character the expansion of the early eighties is related to what we have defined as the central quality of the Great Depression period, namely, the lack of high yield outlets for new investment. The years 1884-7 were probably the worst continuous sequence, from the point of view of unemployment, of any throughout this era. The expected yield on new investment was not as high as it had been in the seventies, or the fifties, although the position was in many ways similar to that in the sixties. The volume of investment was, however, sufficiently high over the Great Depression period as a whole to avoid a significantly greater

<sup>1</sup> See below, Chapter IX.

average level of unemployment than in the trend periods which preceded or followed.

This judgement, based on materials and an analysis that are patently subject to later refinement, is advanced not only because of its intrinsic interest in cyclical history, but also because it relates to an important implicit assumption that runs through much of the discussion of trends in Chapter I. If it is possible to assume, roughly, that resources were about equally employed, on the average, in the various trend periods, then the emphasis on the importance of the different types of investment outlay, as the decisive factor determining the trend course of the principal variables, is thereby the more legitimate.

## V

It is impossible, within the compass of the present volume, to examine systematically the typical cyclical behaviour of the major elements within the economy, and to explore the sort of trade cycle theory which appears best to account for their course. It may be useful, however, to present some interim observations on the cyclical behaviour of the British harvests, commodity prices, long-term investment, and the Bank of England.

For the period to 1850, clearly, and probably to the seventies, the domestic harvests played a significant part in British trade fluctuations. Theoretically, a good harvest, with a consequent fall in the price of bread, could be assumed to increase real wages, and thus to increase the demand for commodities other than bread; or, less likely, and mixed in its effects, it might reduce the resistance to a decline in money wages, making possible lowered marginal costs for entrepreneurs. On the other hand, an abundant harvest might be regarded as reducing the money incomes of the agricultural community, and thus decreasing its demand for non-agricultural commodities; for the demand for grain was highly inelastic, over this period. Undoubtedly fluctuations in the yield of the harvests did shift the demand curves for non-agricultural commodities within the community, although it is impossible on present evidence to trace those shifts in

detail. One emerges, simply, with the impression that an abundant harvest was a good thing for the non-agricultural community; a very mixed blessing for agriculture; and, in net, clearly a good thing for the country taken as a whole.

There is, however, a more solid approach to the effects of harvests in these years, and a more clearly definable set of effects, namely, those which operated through the foreign balance and the money market. A good harvest reduced the requirements for imports of grain; a bad harvest increased those requirements. The orders of magnitude of the outlays in a poor harvest year, as opposed to those in a time of domestic abundance, were very considerable. And an increase in grain imports served to put pressure on the money markets, to raise interest rates, and thus to discourage other forms of foreign trade, domestic commerce, and long-term investment. In addition, it set in motion strong forces in the labour market making for higher wages. A good harvest, on the other hand, tended to reduce the pressure on the foreign balance, to ease the money markets, to lower interest rates, and to free funds for other purposes.

The good harvests of 1797-8, 1820-3, 1832-5, 1843-4, and 1850-2 undoubtedly helped foster the major cycle expansions which were set in motion in those years; conversely, the high wheat prices and increased imports of 1795-6, 1800-1, 1810, 1817-18, 1824-5, 1836-7, and 1846-7 undoubtedly contributed to the pressure on the money market in those years of strain or crisis. The evidence is not such, however, as to justify the conception of a trade cycle detonated into its upward phase by a good harvest, operating through the foreign balance and the monetary mechanism, and brought to its close by an inadequate harvest and monetary stringency. Nevertheless, the harvests must be accounted, to the seventies, a significant permissive and contributory factor, which affected the timing of recovery, and which counted among the various strains within the economy which helped bring on the downswing. As Britain's harvest came to contribute a decreasing proportion of the total food supply, however, and foodstuffs were drawn from

an increasingly large number of sources, this factor appears to diminish in importance within the trade cycle.

It is a potent heritage of the quantity theory of money, in its less sophisticated applications, that commodity prices are believed to move in close conformance with trade cycles.<sup>1</sup> There is no very good theoretical reason why this conformity should have been assumed. The quantity theory provides that an increase in  $MV$  can result in an increase in  $T$ , the volume of trade, as well as in  $P$ , the level of prices. In fact, the early stages of most trade cycles in Britain in this era were accompanied by stagnant or falling prices: the early twenties, thirties, forties; the periods from 1848 to 1852, 1868 to 1871, and so on. Later in the era the conformity somewhat improves; but prices are, in general, a very inadequate index of British trade cycles before 1914.

The periods of falling or stagnant prices were, normally, the intervals when the largest increases in production occurred, and the greatest declines in unemployment. From 1868 to 1871, for example, an index of total production (1900 equals 100) rises from 52 to 60; while unemployment falls from 7.9 per cent. to 1.6 per cent. Prices, however, rise from 132 to 133, the rise being confined to the last quarter of 1871, to which point prices had, in net, fallen from 1868. From 1871 to 1873 production rises from only 60 to 64; unemployment falls only from 1.6 per cent. to 1.2 per cent.; but prices rise from 133 to 148. Thus, in the first phase, to 1871, a rise of production of eight points was accompanied by a one-point rise in prices; in the final years of expansion a rise of four points in production was accompanied by a price rise of fifteen points. And for the nineteenth century in Britain this relationship of prices to production and employment, in the course of cyclical upswings, is not exceptional.

The principal explanation for this phenomenon is, of course, that the early stages of expansion represent a condition of partially unemployed resources; and the latter stages represent more nearly full employment. But it is also worth emphasizing that, while it is often useful in business cycle

<sup>1</sup> For a late example of this view see Beveridge, *op. cit.*, appendix A, pp. 286-7.

theory to assume Marshallian short-period conditions and to ignore changes in fixed factors, the historian concerned with actual events, as they occur in time, cannot permit himself the luxury of that abstraction. The late Lord Keynes, in one of the stories on which we are now all brought up, is reported to have remarked that in the long run we are all dead. It is, however, a clear lesson of economic history, including the recent history of war economics, that the long period, in the Marshallian sense, can be very short indeed. Thus, in studying the movements of prices, even over relatively short periods in time, it is necessary to look at the changes in productive capacity and technique, and the productivity of labour, as well as at the supply of money, the state of effective demand, and the extent of unemployed resources. Changes in real costs undoubtedly served to restrain the tendency of prices to rise in the early stages of cyclical expansion.

One of the most consistent cyclical phenomena, throughout this era, is the tendency for long-term investment decisions to concentrate in the latter stages of the upswing of the major cycles. This appears to be true, not only of formal floatations in the capital markets, but to a considerable extent, also, of other forms of investment. From 1790 to 1850, over which period a great many statistical series have been subjected to analysis, with respect to their cyclical behaviour, brick production exhibits a significant average rise only in the latter stages of expansion of major cycles.<sup>1</sup> The cyclical behaviour of ship-building is similar, except that there were, on the average, declines in ship-building during the early

<sup>1</sup> These measures will be presented in the forthcoming study directed by A. D. Gayer, referred to earlier. For brick production, the measures are as follows. Stage I-III constitutes the early phase of expansion; III-V the late phase of expansion; V-VII the early phase of contraction; VII-IX the late phase of contraction.

*Averages and average deviations of per month rate of movement in the reference cycle stages of major and minor trade cycles*

		<i>I-III</i>	<i>III-V</i>	<i>V-VII</i>	<i>VII-IX</i>
Production of bricks	Major	+0.1 (0.2)	+1.6 (0.4)	0.0 (1.6)	-0.5 (1.8)
	Minor	-0.7 (0.7)	0.0 (0.4)	-0.6 (0.5)	-0.7 (0.4)

stages of both major and minor cycles; and as befits the tie between minor cycles and foreign trade, there was a substantial rise in ship-building during the latter stages of minor cycles, although a lesser rise than in the latter stages of major cycles.

With respect to the expansion of industrial plant, the evidence available is less systematic and must be pieced together industry by industry, cycle by cycle, from diverse forms of evidence. On the whole, the impression one receives is that the Industrial Revolution, regarded as a process of plant expansion and the installation of new industrial methods and techniques, lurched forward in a highly discontinuous way, with a high concentration of decisions to expand, or to improve technique, occurring in the latter stages of the major cycles.<sup>1</sup>

There are, of course, exceptions to this general pattern, some of considerable importance. The modern iron industry in Scotland, for example, based on Nielson's hot-blast, was founded in 1828 and grew steadily, for a considerable time, with apparently little relevance to the trade cycle.<sup>2</sup> Moreover, in several instances the result of the withdrawal from the capital market of the high-yield new investment, which had dominated the latter stages of expansion, and which had been discredited in the course of the turning-point and crisis, was to bring promptly into the market the low-yield type of investment which had been, as it were, starved out in the course of expansion.

It was the decision to undertake long-term investment,

<sup>1</sup> An interesting but extremely limited example of this pattern can be derived from figures given by E. Baines, *History of Cotton Manufacture*, p. 395. Baines gives the number of cotton mills in the Manchester district at three-year intervals between 1820 and 1832 as follows:

1820	.	.	.	.	.	. 66 factories
1823	.	.	.	.	.	. 72 "
1826	.	.	.	.	.	. 92 "
1829	.	.	.	.	.	. 95 "
1832	.	.	.	.	.	. 96 "

The greatest increase occurred in the latter stages of the major cycle expansion reaching its peak in 1825 (1823-5). Increase in the two subsequent minor cycle expansions (1826-8, 1829-31) was negligible.

<sup>2</sup> H. Hamilton, *The Industrial Revolution in Scotland*, pp. 179-83.



rather than the consummation of these acts, which has been noted as a particular but not exclusive characteristic of the latter stages of major cycle expansions. In fact, the period of gestation of many types of investment was such that projects undertaken in the boom were not completed until some time after the turning-point. And, as a result, the impact of depression, in its early stages, was cushioned by the necessity for completing projects earlier begun. A notable, but by no means unique, instance of this was the period 1845 to 1847. The mileage of new railway lines actually opened reached its peak in 1848, although the cyclical downturn came, clearly, in 1845. As noted earlier, this element of lag at the peak is quite generally typical of brick production and of ship-building.

In general, the nature of the trade cycle would suggest the likelihood that decisions to undertake long-term investment be concentrated disproportionately in the latter stages of expansion, rather than spread evenly throughout its course. One would expect a gradual growth in confidence concerning the future, as incomes rose, and a willingness to make commitments over increasingly long future periods. The first impact of recovery, for Britain, came normally through an increased demand for exports, especially of consumers' goods. This involved only short-term financing, usually from London, and thus relatively minor hostages to fortune. Then, gradually, one can trace the growth of daring, often leading to a concentration of interest in a particular line of new investment, at home or abroad, in the final stage of expansion. Mr. Hicks's elasticity of expectation increases.<sup>1</sup> The process is real, and can be quite sharply, if not quantitatively, delineated, stage by stage, in the evidence of cyclical expansions.

We turn, finally, to the behaviour of the monetary system in the course of cyclical fluctuations, and especially to the position of the Bank of England. The early stages of revival were normally marked by easy money conditions, and by falling rates of interest, short and long, inside and outside the Bank. To this tendency, as noted earlier, abundant

<sup>1</sup> J. R. Hicks, *Value and Capital*, p. 205.

British harvests contributed in several important instances. Credit advanced in all forms outside the Bank, for which evidence is poor, probably increased mildly in most such early stages; but the falling tendency of prices made it possible to finance an increased volume of transactions with a given supply of money. Within the Bank, bullion increased, bills and notes discounted decreased, and the Bank rate fell, or remained steady at a low level.

In the latter stages of expansion there was a gradual tightening in the market, and a tendency first for the market and then for the Bank rate to rise. Credit advanced outside the Bank rose sharply, and an increased amount of business came to the Bank as well, as other credit resources became more fully employed.

After the peak, interest rates continued to rise, but credit advances outside the Bank fell off. The Bank's discounts rose, often rapidly, as it fulfilled more or less adequately its role as *dermier resort*. Up to the turning-point the Bank had been gradually coming to share a proportion of the burden of financing expansion; after the turning-point it was meeting a crisis in confidence, an increase in liquidity preferences. The great financial crises of this era occur, almost without exception, after the downturn of the cycle; and in fact they result, largely, from the change in expectations which can be taken, analytically, if not statistically, to define the beginnings of the downturn. The nature of financial crisis, with its hasty liquidations and spreading of panic, accelerated the course of the decline in production and employment. It would, however, be incorrect to regard the financial crises of the nineteenth century as the mechanism by which prosperity was turned to depression.

The question still remains, nevertheless, as to whether the gradual tightening of the money markets, and the rise in interest rates, in the latter stages of expansion, well before financial crisis, played a decisive part in causing a changed view of the future, and the downturn. A full exploration of the mechanics of the upper turning-point is outside our present scope. The evidence suggests, however, that rising interest rates, like rising prices, symbolized an approach to

an unstable position of full employment, in the major cycles. They made cost conditions different from those which had been expected when various commitments were undertaken, and they carried psychological overtones as well; and the situation was also being altered by the completion of acts of investment, previously undertaken. From these basic alterations in the complex of forces determining the volume of investment, rather than from a short-term credit shortage, the turning-point appears to occur.<sup>1</sup> Like the supply of labour, or commodities, or fixed capacity, the short-term money supply set a limit to the extent to which expansion could proceed. But that limit was elastic, so far as money was concerned, more elastic, certainly, than for other factors of production. So long as confidence prevailed the money supply for domestic purposes appears to have been ample. In no cycle, over this period, does inelasticity in the supply of money appear to have been the decisive factor in determining the moment of the downturn.

It is, indeed, possible that the powers held by the Bank of England, in different hands, with different conceptions of central banking function, might have been so manipulated as to alter somewhat the timing and intensity of general cyclical fluctuations. In fact, however, playing a consistently passive role, the Bank more or less adequately fulfilled its function as protector of the reserve and as *dernier resort*; but in meeting the 'legitimate demands of trade', as conceived at different points in the cycle, the Bank, and the monetary system as a whole, would appear to have been an essentially negative element in the British trade cycles of this era.

<sup>1</sup> For a discussion of the upper turning-point in Britain in 1920, in terms similar to these, see A. C. Pigou, *Aspects of British Economic History, 1918-1925*, pp. 188-97.