Introduction To Economics

Theory & Data

Dudley Jackson

INTRODUCTION TO ECONOMICS: THEORY AND DATA

DUDLEY JACKSON

Professor of Business Economics
University of Aston Management Centre

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Chapter guide

Chapter 1 begins by explaining why economics must be studied with data, and the first data to be considered relate to the *economic resources* of the economy: namely, *labour* and *capital*. We look first at data on the British labour force and on the population from which the labour force is drawn. We look at the distribution of people in the economy and at the growth and fluctuations in numbers. *En route* we consider some technical matters such as: the distinction between *stocks* and *flows*; how the population and the labour force are counted; why we use a *ratio*, or '*logarithmic*', *scale* to present certain data and how such scales work; how to deal with *compound growth*; and the useful 'Rule of 70' is explained.

Second, we look at data on the *capital stock*, explaining the important distinctions between *fixed* and *circulating* capital and between 'capital' and 'financial assets'. When we consider who owns what in the capital stock, we have to understand the *sectors* of the economy (both the concept of a sector and the actual sectors into which the economy is divided). We examine how the United Kingdom's *net* and *gross* capital stock is valued.

This involves a consideration of *depreciation* and the *perpetual inventory method*, which uses data on *fixed capital formation* and *retirements*. We look at all the relevant data because it is important to see how the capital stock grows.

Finally, we look at data on labour and capital together, both as they have grown in the past century and on their distribution among industries (or 'branches') of the economy. The purpose of this is to show how capital per worker influences output per worker. In order that we may systematically analyse such influences we consider the technical issues of *scatter diagrams*, *covariance*, *standard deviations*, and *correlation*.

The chapter ends, as do all chapters, with some *Exercises* designed to give you practical training and practice in finding, using and presenting data, and in applying the concepts you have learned. Exercise 1.2 contains the First and Greatest Commandment addressed to those who use data: namely, CHECK YOUR RESULTS!

Introduction

This book is intended to explain how a modern industrial economy works. This book is concerned with *economic concepts and theory*, because the first requirement is an understanding of the structure and activities of various economic organisations, and of how they interact. We are concerned also with *data*, because the second requirement is knowledge of the statistics which measure the economic activities of organisations. The book is also an introduction to economics, in that it starts from basic concepts, assumes no previous study of either economics or statistics, and tries systematically to cover most of what a beginner student is expected to learn about economics.

What does it mean to become an economist? All of us are familiar with the idea that one can open a book and read a page of *words* and thereby gain knowledge and understanding, but few beginner students of economics are accustomed to the idea that one can similarly open a book containing statistics and read a page of *numbers*; it is even more important to do this because most of the facts relating to an economy are in the form of statistics. The amount of statistical information that is published about the United Kingdom's economy is now extremely plentiful, and it is not possible to count oneself an economist unless one has developed the ability to read and 'make sense out of' such statistical information. The student should firmly put away any idea that consulting and working with such sources of data is an advanced or a difficult thing to do, especially in this era of inexpensive electronic calculators which help with the simple arithmetic required when interpreting tables. The notes to, and exercises on, the tables in this book and the source references should be studied, because they will show you both where you can find facts for yourself and also how to interpret them.

To find the statistics for yourself and to work with them is absolutely essential to becoming an economist. Unfortunately, many students of economics (and their teachers) do not appreciate this: they do not realise that becoming an economist is like becoming an athlete or a musician or a mechanic. This textbook is like a book on the theory of running or of music or of motor-cars; while it is undoubtedly helpful to study a book on the proper way to run, or play a musical instrument or repair a car, such study will not by itself make you into a runner, musician or mechanic. In order to do that you have to get out on the track and daily train your muscles by running, or practise a musical instrument, or work with cars. Exactly the same applies in economics: you have to practise your understanding by working with economic data; and if you do not do this, you can never hope to be a trained economist – just as you could never expect to be a trained athlete, musician or mechanic if you never practised.

In learning economics and using data the first essential is to understand a (fairly large) number of descriptive and analytic concepts, starting from the simpler concepts such as the labour force, the capital stock, value added, and so on. Inevitably, therefore, a textbook must start off with a considerable chunk of *description* and straightforward learning of concepts (just as you must develop your vocabulary when learning a foreign language). This is so that you can begin to understand in concrete terms the things with which economics is concerned; only after learning these concepts and these descriptions can we get to the *analytic* aspect of economics, which is concerned with seeing how all these things fit together in a working economic system. Analysis tends to be more exciting than (boring, old) description; but it is a great weakness in the present-day teaching of economics that students are not provided with an adequate understanding of the basic descriptive concepts of economics (let alone being required to practise their understanding of those concepts by working with the data). From this it follows that their ability to describe the working of an economy remains deficient, and so their ability analytically to understand the working of an economy is, even at the end of their course, most imperfect. Clearly this is a bad state of affairs: one would rightly not have much confidence in an athlete who collapsed exhausted after fifty yards, or a musician who could not get the right notes, or a mechanic who (a) could not describe to you the basic parts of a motor car, and (b) had never worked on motor cars anyway. For example, in learning about the important economic concepts of depreciation (on fixed capital) or stock appreciation (on circulating capital) it is essential first of all to have some (descriptive) understanding of the stocks of fixed and circulating capital in the UK economy.

The first things we have to study are the nation's *economic* resources: those resources which work mainly upon *natural* resources, such as raw materials, and upon the various processed forms of materials, to produce goods and services which people will purchase. By contrast, we are not particularly concerned with natural resources as such: this is not a textbook on economic geography, one of the purposes of which is to study the occurrences of such things as coal, oil and iron-ore, or where wheat may best be grown or dairy cows kept, and so on. Of course, such natural resources are extremely important to an economy, and it helps to know about the geography of things, just as it may help to know about the technology of mining or farming, but as economists we are more concerned with the *economic* aspects of the activities whereby these natural resources are obtained and processed into the goods which people wish to consume, such as electricity (from coal) or bread (from wheat).

Since the middle of the nineteenth century, economists have divided economic resources into three categories: land, labour, and capital. These have usually been called the factors (or agents) of production. One outstanding feature of a modern *industrial* economy is that agriculture accounts for only a small share of total output. For this reason we shall not be much concerned with land, which also has the distinction, among economic resources, of being non-reproducible and therefore incapable of being extended (apart from minor qualifications, mostly in the Netherlands, where land has been reclaimed from the sea).

The important distinction between stocks and flows

A general definition of 'resource' is: a means of supplying some want, a stock or reserve upon which one can draw when necessary. In studying economics, we shall be much concerned with the distinction between *stocks* and *flows*:

1. A stock exists *at* a moment in time.
2. A flow occurs *during* a period of time.

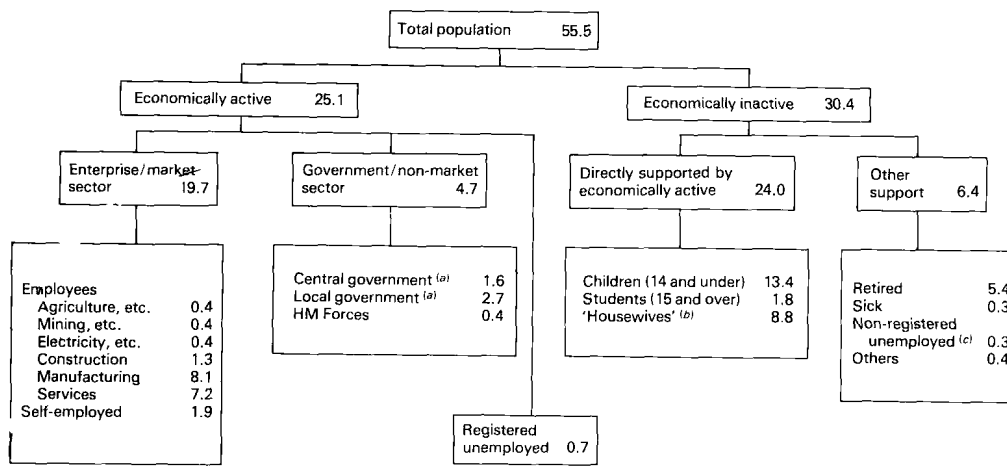
Any reference to a flow should always mention the period during which that flow occurred; any reference to a stock should always mention the date at which the stock existed. Wealth is a stock – for example, the amount one owns *at* any given moment; income is a flow – for example, the amount one earned *during* any given period. To say that a person's income is £5,000 is meaningless unless one adds 'per year' or 'per month' – two very different situations, indeed! To say that a person's wealth is £5,000 is imprecise but not completely meaningless because the listener will generally supply the implicit 'at this moment in time'. The student of economics should always state explicitly the nature of the variable referred to.

The relevance of this distinction to labour and capital as factors of production is that labour and capital are both stocks which exist at a moment in time; from these stocks a flow of productive services is obtained during a period of time. Thus the economy has a number of workers – a stock – from which it obtains a flow of man-hours of work per annum: the productive services of labour. Likewise, the economy has a stock of capital from which is also derived a flow of productive services: for example, so many hours of machine-time per annum. In this chapter we shall be concerned mainly with stocks.

The labour force and the population

The nation's stock of workers is drawn from among the number of people living in this country. If you look at Diagram 1.1, you will see that on the night of the 25/26 April 1971 (the date of the population census), there were 55.5 million people living in the United Kingdom.* Of these, approximately 25.1 million, or forty-five out of every hundred (45

DIAGRAM 1.1 *Distribution of the population of the United Kingdom in mid-1971 (numbers in millions)*



(a) Including educational and health services.
(b) Defined as economically inactive females aged 15 and over who were neither students nor retired persons.
(c) Calculated as the difference between the census unemployed and the registered unemployed.

Sources: Central Statistical Office, *Annual Abstract of Statistics, 1979 Edition* (no. 115), tables 2.4 and 6.1, pp. 11 and 154; CSO, *Social Trends*, no. 6, 1975, table 3.2, p. 82 and pp. 234–5; CSO, *National Income and Expenditure 1967–77*, table 1.11, p. 17; Department of Employment, *British Labour Statistics Year Book 1971*, tables 100 and 103, pp. 203 and 206.

* For convenience, we use the decimal point, and instead of writing 55,500,000 people, we write 55.5 *million* people; thus 0.7 million is 700,000, seven hundred thousand.

per cent) of the total population, were 'economically active', in the sense that they were either working or were out of employment (but who were registered as being available for work). The remaining 30.4 million, or 55 per cent of the total population, were 'economically inactive', in the sense that they were not working for pay and were not available for work.

Of the economically inactive, exactly half, 15.2 million, were children or students and another 8.8 million were 'housewives'. It may be assumed that all of these 24 million persons were directly supported by someone who was participating in the economy. Besides these, there were another 6.4 million persons who were supported in other ways, mostly from retirement pensions.

Our main concern is with the 25.1 million economically active people who were obtaining (or could obtain) their own and their families' livelihoods by working. Of these 25.1 million: 19.7 million were working in the enterprise/market sector of the economy; 4.7 million were working in the government/non-market sector; and 0.7 million were temporarily out of work because of unemployment. Like the economically inactive population, this last group has to be supported either from their own savings or (indirectly) by those with jobs, but as they are registered to be available for work the convention is to count them as economically active.

The word 'enterprise' in the term 'enterprise sector' is used in a broad sense to denote any undertaking which sells goods or services and whose activities are therefore not financed by compulsory levies. The distinction between the enterprise and the non-enterprise sector rests on the way in which the activity of the undertaking is paid for. If the activity is wholly or partly dependent upon some form of selling to voluntary buyers in the market, then the organisation is in the enterprise sector. If the activity is wholly independent of selling in the market and is paid for by compulsory levies upon people (such as taxes or local authority rates), then it is in the government or non-market sector.

The reason for making the distinction between the enterprise/market sector on the one hand, and the government/non-market sector on the other, is, first, that the activities of the government sector are largely supported by compulsory levies upon incomes produced in the enterprise sector. Second, to the extent that the annual expenses of government-sector activities are not covered by compulsory levies, the difference is met by government borrowing, and such borrowing has a special impact on the economy (these are both matters to which we subsequently return).

As you can see in Diagram 1.1, most of the 19.7 million persons working in the market sector are engaged as employees of enterprises. Relatively few, 1.9 million only, are listed as 'self-employed'. An employee is a person who works under a contract of employment with the employing organisation, the contract of employment being a contract *of service* in return for payment where the service is an *integral part* of the work of the employing organisation and where the manner of work is, at least to some extent, *controlled* by the employer. A self-employed person, on the other hand, works on his own account: there may be a contract *for services*, such as when an organisation reaches an agreement with a self-employed electrician to install some electrical wiring, but the electrician is not, in these circumstances, an integrated part of the organisation, nor is the way he does his work controlled by the organisation with whom he has such a contract. A self-employed person is a one-man (or one-woman) enterprise, independent of other enterprises; an employee does not have this status.

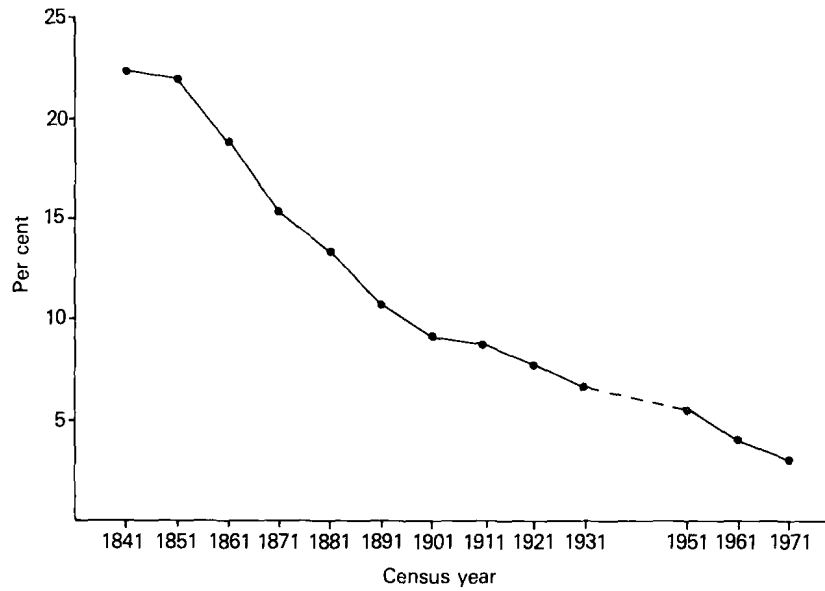
Nearly all of Britain's workers, then, are employees, and a large proportion, 10.2 million out of the 25.1 million economically active, or 41 per cent, are employees in the industrial sector of the economy, defining this sector to comprise: mining and quarrying (including, unless separately given, North Sea oil); electricity, gas, and water supplies; construction; and manufacturing. Therefore, when we speak of the British economy as an 'industrial market economy' we mean that it is an economy:

(a) where a large proportion of the economically active population derive their livelihood from work in industry, and
(b) where most of the economic activity takes place in the enterprise or market sector.

(The British economy is also referred to as a 'mixed economy' because of the importance of enterprises which are owned by the state, and we shall, in the next section, see precisely what this term means.)

In contrast to this industrial aspect of the economy, relatively few workers are engaged in agriculture, forestry or fishing: about 0.3 million of the 1.9 million persons counted as self-employed are in fact farmers or fishermen, making a total of 0.7 million engaged in agriculture, forestry or fishing, so that in 1971 a little under 3 per cent of the economically active population in the United Kingdom derived their livelihood from agriculture, forestry or fishing.* This is, of course, a great contrast with bygone decades and with the less-developed economies of today's Third World countries. Diagram 1.2 shows the steady decline since 1841 in the proportion of Britain's economically active population engaged in agriculture, forestry and fishing (either as employees or as self-employed workers). Behind this change lies all the vast panorama of Britain's economic history and the Industrial Revolution. (I mention this because it is the reason why we concentrate on the economics of the industrial enterprise to the relative neglect of the economics of farming.)

DIAGRAM 1.2 *Percentage of the total occupied population of Great Britain who were engaged in agriculture, forestry, and fishing at successive censuses*



Sources: calculated from B. R. Mitchell and Phyllis Deane, *Abstract of British Historical Statistics* (Cambridge University Press, 1962) pp. 60–1; B. R. Mitchell and H. G. Jones, *Second Abstract of British Historical Statistics* (Cambridge University Press, 1971) p. 37; Office of Population Censuses and Surveys, *Census 1971: Great Britain Economic Activity*, Part II (HMSO, 1975) table 4, p. 51.

The supply of labour is one important element in the growth of the economy. In the 125 years or so since 1851 the labour force of the United Kingdom has more than doubled from 12 million to 26 million. The figures in Table 1.1, which show these long-run changes in the United Kingdom's labour force, deserve to be studied with a little care because the labour

*0.7 *divided by* 25.1 *equals* 0.028 or 2.8 per cent: hence 'a little under 3 per cent'.

TABLE 1.1 *The labour force [a] of the United Kingdom, 1851 to 1980*

Year[b]	Total labour force (thousands)	Year[b]	Total labour force (thousands)
1851	12,050	1960	25,185
1861	13,090	1960[d]	24,586
1871	14,050	1961	24,815
1881	15,060	1962	25,060
1891	16,660	1963	25,186
1901	18,680	1964	25,370
1911	20,390	1965	25,554
1920	22,000	1966	25,650
1920[c]	20,688	1967	25,513
1921	20,120	1968	25,413
1931	21,920	1969	25,400
1938	23,580	1970	25,339
1951	23,841	1971	25,106
1952	23,925	1972	25,332
1953	24,053	1973	25,583
1954	24,346	1974[e]	25,684
1955	24,583	1975	25,909
1956	24,766	1976	26,134
1957	24,787	1977	26,305
1958	24,678	1978	26,414
1959	24,857	1979	26,419
		1980	26,314

[a] Comprising: employees in employment; employers; self-employed; HM Forces; unemployed (registered 1951–80).

[b] At census dates (generally late March/early April) 1851 to 1931 excepting 1920 and 1938 estimates; average of quarterly estimates (March, June, September, December) 1951 to 1980; unadjusted for seasonal variation.

[c] Excluding the Republic of Ireland from this year onwards.

[d] Using revised estimates of employees in employment from this year onwards (see *Department of Employment Gazette*, March 1975, pp. 193–205, and October 1975, pp. 1030–9).

[e] Using November unemployment figure to estimate December labour force.

Sources: 1851 to 1938, C. H. Feinstein, *National Income, Expenditure and Output of the United Kingdom 1855–1965* (Cambridge University Press, 1972) tables 11.8, 11.10 and 57, pp. 224, 227 and T126; Department of Employment, *British Labour Statistics Historical Abstract 1886–1968* (HMSO, 1971) table 118, p. 220; Department of Employment, *British Labour Statistics Year Book 1976* (HMSO, 1978) table 55, p. 122; *Department of Employment Gazette*, April 1979, table 101, p. 382; Department of Employment, *Employment Gazette*, September 1980, table 101, p. 1032; Department of Employment, *Employment Gazette*, January 1982, table 1.1, p. S7; note that some of these labour-force figures will be subject to revision when the results of the 1981 Census of Population become available in 1983.

force is a country's most important productive asset.* First we need to ask: what exactly is the meaning of 'labour force'? To answer this we need to know what is being counted and how the counting is done. Footnote (*a*) to the table explains very briefly the coverage of the statistics: the figures include employees in employment, their employers, the self-employed and the armed forces; everyone who was working for pay or profit. In addition it includes those who were unemployed but who were available (or looking) for work. It is

* In a table such as this, one is never going to be able to remember all the figures, so that one needs to develop a technique for 'extracting' the information in a form in which it can be remembered: for example, note that in 1851 the labour force was 12 million; by 1951 (a hundred years later) it was 24 million (in round terms); so, conveniently, the labour force had doubled in a century; by 1980, the labour force was 26 million. You could 'fix' this last figure in your mind by reflecting that 2¼ million people unemployed would then represent about 10 per cent of the labour force.

Censuses: counting the population and the labour force

How were the figures in Table 1.1 arrived at? Before 1951, we have only the decennial population census. The first population census was carried out in England, Wales and Scotland in 1801 (in Ireland in 1821) and decennially thereafter, with the exception of 1941. A population census is carried out by having trained enumerators go to every 'household' on a specific date to count the number of people living in the household, and to ascertain (at least) each person's sex, age and relationship (if any) to the head of household. Nowadays a lot more information is obtained, not only on people but also on household amenities, and because nearly every head of household is literate the census is conducted by the householder filling in a printed form which is collected, and checked, by an enumerator. The census-takers tried also to find out how people were making a living, and by 1851 they had devised a system for ascertaining and reporting who was economically active and in what occupation. So from 1851 and every ten years thereafter, we have a reliable assessment of the labour force. It is also possible to make estimates of the labour force for the years between the censuses, but these are estimates rather than actual counts and the table gives such figures only for 1920 (so that we can see the effect of the exclusion of the Republic of Ireland) and for 1938 (the year before the Second World War broke out).

From 1951 onwards we have annual counts of the labour force. By this time every working person in the United Kingdom was in the National Insurance scheme, and nearly every person (whether employed or self-employed) had a National Insurance card (on which were stamped his or her contributions and the employers' contributions, if an employee – some civil servants and Post Office workers paid contributions without using cards, but their numbers were known anyway). The cards were renewed annually, and every three months one-quarter of the cards were changed. By counting the number of cards exchanged each quarter, and by scaling up, it was possible to estimate the total labour force at four different times each year. In 1971, with the abolition of the card-stamping system (National Insurance contributions are now paid directly to the Inland Revenue along with income tax), a new system of counting the labour force had to be devised. The count is done partly through a census of employment taken in June each year* when each employer making income tax (Pay As You Earn – PAYE) returns to the Inland Revenue and employing three or more employees must fill in a form detailing the number of employees, with separate figures for males and females, full-time and part-time workers; the employer must supply separate figures for each given address (so that local and regional employment figures can be calculated) and is asked to give a brief description of the business activity at each address (so that the industrial distribution of employees can be analysed). The census excludes working proprietors and the self-employed, for whom separate estimates are made. The June census is normally confined to employers employing three or more employees, but every third year a full census is taken to include the 300,000 employers with only one or two employees. Unlike the card count, which was carried out on a sample of one-quarter of all workers four times a year, the June census is carried out on (nearly) all workers once a year, and estimates are then made (using other data and sample surveys) of the labour force at the other quarters. The census only counts employees if they were in employment in the census week; by contrast the card count

* Cuts in government expenditure mean that the employment census will now be taken once every three years.

the United Kingdom's 'economically active population'. It excludes people who made their living simply as property-owners and it does not include 'housewives'. Nor does it include the elderly who had 'retired' from the labour market; students also are excluded. It is, more or less, a measure of the supply of labour available to the economy, except that this supply can be, and has been, augmented by increases in the number of housewives going out to work.

Having established the basic data, we need to analyse the information. First of all, we

included everybody with a card even if they had worked only a part of the year. Because there are quite a number of part-year workers, especially among women, the June census gives a lower estimate of employees in employment. The census of employment is, however, a count of *jobs* rather than of *persons*: a person holding two different (presumably part-time) jobs with two different employers (or PAYE pay-points) would be counted twice; this was not the case with the card count, as each person had only one card.

In 1971 both the employment census and the card count were carried out in parallel. That year was also a population census year, so we may compare the figures from all three methods of counting employees in employment. Table 1.2 shows that the card count, probably because of its inclusion of part-year workers, returned a higher count of employees than did the June employment census. In turn, probably because the employment census counts jobs rather than people, it returned a higher count of 'employees in employment' than did the April population census (however, unemployment had declined a little between April and June). The lesson to be learned from all this is that most of the statistics one sees are *estimates* with a margin of error, and that some figures are more reliable than others. The purpose of going through these (admittedly important) labour-force figures at such length is to show you that in handling any data you must be on guard. For instance in Table 1.1, it might appear that the UK labour force had fallen between 1970 and 1971, but we now know that this is more likely to be the result of the switch to a new method of counting. Even the most obvious terms must be questioned. One might think that the term 'United Kingdom' was not worth thinking about, but this is far from being the case. Up until January 1922 the United Kingdom included Southern Ireland, now the Republic of Ireland, whose independence from the United Kingdom was formally initiated in December 1921 and formally approved in December 1922. The consequence of this is that up to and including 1920 statistics for the 'United Kingdom' generally include Southern Ireland; thereafter, they exclude it. Particularly when dealing with figures on employment or earnings it is necessary to be careful about geographic coverage because many of these statistics exclude Northern Ireland. Throughout this book (and in all official statistical publications):

Great Britain = England + Wales + Scotland

United Kingdom = Great Britain + Northern Ireland

TABLE 1.2 *1971 estimates of employees in employment in Great Britain*

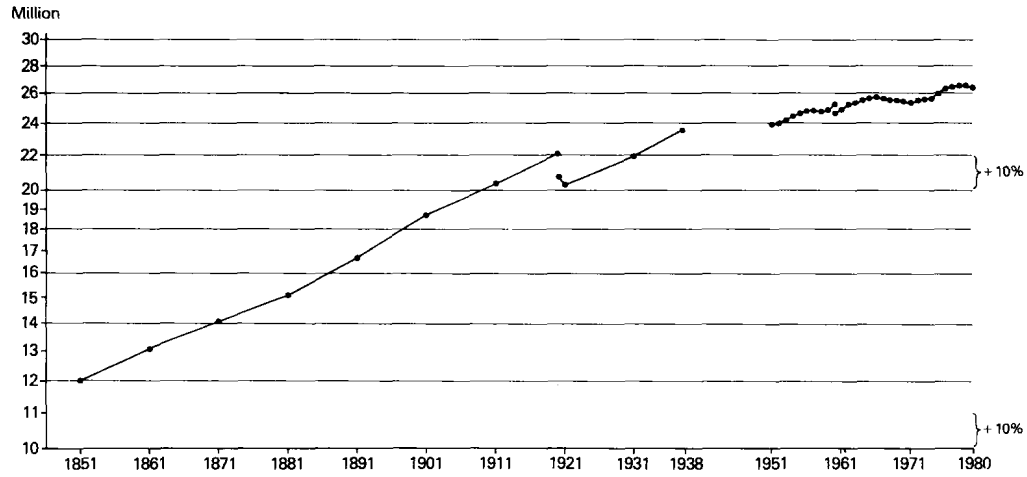
	Employees in employment [a] (thousands)		
	Males	Females	Total
National Insurance card count (June)	13,531	8,406	21,937
Census of employment (June)	13,424	8,224	21,648
Census of population (April)	13,340	8,150	21,490

[a] Excluding HM Forces and those in private domestic service.

Source: Department of Employment, *British Labour Statistics Year Book 1972* (HMSO, 1974) appendix I, table 1, p. 350.

should draw a graph. Diagram 1.3 shows the figures of Table 1.1 as points plotted on a scale and joined by straight lines to indicate the direction and extent of change. (Note that it would be cheating to join 1938 to 1951, because the wartime labour force did not lie on such a path.) Naturally, we expect that the labour force will grow; furthermore, we expect that it will grow at a *proportionate* or *relative* rate: that is, we do not expect it simply to expand by a constant *absolute* amount each year. In the 1850s the labour force tended to grow by about 100,000 a year but in the 1950s it tended to grow by about 150,000 a year.

DIAGRAM 1.3 *The working population of the United Kingdom, 1851 to 1980*



Using a ratio, or 'logarithmic', scale

Because we are concerned with the growth rate of the labour force, Diagram 1.3 is drawn on a 'logarithmic' or 'ratio' scale in the vertical direction. The years pass with even step, so the horizontal scale for years is marked on an arithmetic scale, and the graph paper on which Diagram 1.3 is drawn is called 'semi-logarithmic' paper because it has a log scale in only one direction ('double-logarithmic' paper has a log scale in both directions). Whenever you have a time series of data where growth is involved, then it is always advisable to plot the data on semi-log paper, because in this way one can readily discern changes in the rate of growth. The reason for this is as follows. An arithmetic scale uses distance (along a ruler) to represent *absolute* amounts while a logarithmic scale uses distance (along a ruler) to represent *relative* amounts. That is, along an arithmetic scale, a movement of 1cm will, wherever it occurs, represent the same absolute amount, say 10 units. Accordingly the increase from 10 to 20 will measure 1cm as will the increase from 100 to 110. Along a logarithmic scale, a movement of 1cm will, wherever it occurs, represent the same *relative* amount, say a change of one-tenth: so the increase from 10 to 11, an increase of one-tenth, will measure 1cm, and an increase from 100 to 110 (ten times bigger in absolute amount but still only a relative increase of one-tenth) will also measure 1cm; so, too, will the increase from 20 to 22 or 50 to 55, and so on. That is why the logarithmic scale has the appearance of getting 'squashed up' as you go up the scale: the ruler distance from 1 to 2, a doubling or an increase of 100 per cent, will be the same as the ruler distance from 2 to 4 or 4 to 8, and so on. So any slackening in the *rate* of growth will show itself immediately in a flattening of the line drawn on semi-log paper. This does not happen with arithmetic-scale paper, which can give a misleadingly optimistic picture.

We are not surprised by this, because the labour force was much larger in the 1950s than in the 1850s, so the increase in the *absolute* annual increase does not mean that the labour force is growing at a faster rate.

When we plot the labour force data in this way we can see that the growth of the labour force was pretty constant right from 1851 to 1938. We can also see that in the 1950s growth was a bit slower and that in the 1960s it was very slow indeed, but that growth then picked up in the 1970s. The trend growth rates shown in Table 1.3 indicate the accuracy of our visual analysis. Clearly, we have a major puzzle on our hands: why did the rate of

TABLE 1.3 *Trend growth rates of the UK labour force*

Period	Trend growth rate (per cent per annum)
1851 to 1911	0.88
1921 to 1938	0.93
1951 to 1960	0.58
1960 to 1970	0.29
1971 to 1980	0.58

Source: calculated by fitting an exponential function to data in Table 1.1; this technique is explained towards the end of Chapter 3.

growth of the labour force slow down so much (by historical standards) in the 1950s and 1960s, and why did it then speed up again in the 1970s? And what is going to happen in the 1980s?

In order to try to answer these questions we need to look in more detail at the post-war growth of the labour force and at its projections. Unfortunately, the labour-force projections exclude Northern Ireland, so we have to look at the figures for Great Britain only. Table 1.4 shows the figures at five-year intervals. The really startling feature of Table 1.4 is the extent to which the expansion of the labour force has depended upon women workers. In the period 1951 to 1971, nine out of every ten extra workers in the economy were women,* and in the coming decades women will again provide the greater part of the expansion of the labour force. Many of these women will be coming from the ranks of Britain's housewives, who in 1971 numbered over 8 million. We are looking at an enormous social revolution, and it is no wonder, with their growing importance to the economy, that women have demanded, and are obtaining, better treatment in the labour market than that which they used customarily to receive.

In the period 1971 to 1976, nearly all the labour-force increase was caused by women moving into employment, and in the projections for 1971 to 1991 (which include estimates of the non-registered unemployed), 71 per cent of the increase in the labour force will be caused similarly. The effect of all this is that while in 1951 women constituted 32 per cent of Britain's labour force, in 1976 they constituted 38 per cent and in 1991 they will probably constitute 40 per cent. The expansion of the labour force in these successive five-year periods has been, and is projected to be, very 'jerky', especially the male labour force: in 1951 to 1956 the male labour force rose by 405,000; but in 1966 to 1971 it fell by 602,000, and in 1981 to 1986 it is projected to rise by 439,000. Obviously, the British economy now suffers severe fluctuations in the growth of its labour force, due largely, but not entirely, to fluctuations in the growth of the male labour force. Why is this so?

The annual increase in the labour force will be equal to the annual number of new entrants to the labour market *minus* the number of people who retire (or otherwise withdraw) during each year from economic activity. Data on annual retirements and other withdrawals are not readily available – nor are data on the annual number of entrants to the labour force. These entrants will be drawn from three sources:

(a) the number of people born about fifteen years previously who were leaving full-time education and entering the labour force;
(b) the number of economically inactive adults who choose to enter into paid employment; and
(c) the number of new immigrants who seek work.

* Calculated as follows:

$$\frac{8{,}970 - 7{,}441}{24{,}926 - 23{,}239} = \frac{1{,}529}{1{,}687} = 0.906 = \text{nine-tenths}$$

TABLE 1.4 *Great Britain's working population,[a] 1951 to 1991*

June each year	Thousands					
	Stock at given date			Change (flow) between dates		
	Males	Females	Total	Males	Females	Total
Card count[b]						
1951	15,798	7,441	23,239	—	—	—
1956	16,203	7,953	24,156	405	512	917
1961	16,366	8,407	24,773	163	454	617
1966	16,558	9,027	25,585	192	620	812
1971	15,956	8,970	24,926	−602	−57	−659
Employment census						
1971	15,837	8,708	24,545	—	—	—
1976[c]	15,846	9,641	25,487	9	933	942
Projections						
1971	15,933	9,085	25,018	—	—	—
1976	15,914	9,954	25,868	−19	869	850
1981	16,164	10,570	26,734	250	616	866
1986	16,603	11,178	27,781	439	608	1,047
1991	16,868	11,401	28,269	265	223	488

[a] For the card count and the employment census, the working population comprises: employees in employment; employers and self-employed; registered wholly unemployed; and HM Forces (including those stationed overseas); the projections include, additionally to the categories just mentioned, the so-called 'unregistered unemployed' who describe themselves in censuses and surveys as looking for work even though not registered as unemployed (this particularly affects women); throughout students in full-time education are excluded.

[b] Unrevised card-count data; the revisions go back only to 1960, and there is no revised card-count data for 1971.

[c] The change in the working population between 1971 and 1976 was affected by the raising of the school-leaving age from 15 to 16 in the educational year 1972–3.

Sources: 1951 to 1961, Department of Employment, *British Labour Statistics Historical Abstract 1886–1968* (HMSO, 1971) table 122, pp. 224–5; 1966 to 1971, Department of Employment, *British Labour Statistics Year Book 1973* (HMSO, 1975) table 55, pp. 120–1; 1971 to 1976 (census), Department of Employment, *British Labour Statistics Year Book 1976* (HMSO, 1978) table 56, pp. 125–6 (this source contains some revised estimates for previous years – see appendix H in the 1975 *Year Book* – which have not been used here because they do not enable us to see the difference made by the change in 1971); 1976 to 1991, *Department of Employment Gazette*, April 1978, table 2, p. 427.

Of these three, the first source is overwhelmingly the most important, except that in wartime the number of economically inactive women entering the labour force can assume a temporary importance, and slowly in the long run women's increasing participation has boosted the supply of labour. Fortunately we do have information covering a long period on the annual number of births in Great Britain, and, making some small allowance for deaths and emigration between the ages of 0 and 15 or so, these births will, fifteen or so years later, largely determine the annual number of entrants to the labour market.

Diagram 1.4 shows the number of births registered during each year in Great Britain in the period 1855 to 1980 (from 1932 onwards, the figures relate precisely to the number of births actually occurring during the year, some births being registered in the year after they occur, but this is a minor matter). It is immediately apparent from the diagram that the First World War, the economic depression of the interwar period, and then the Second World War, have all caused the most extraordinary, and large, downward and upward movements in the annual number of births. This is not a textbook on the economic history