

What is Macroeconomics?

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The Theory of Economics does not furnish a body of settled conclusions immediately applicable to policy. It is a method rather than a doctrine, an apparatus of the

mind, a technique of thinking, which helps its possessor to draw correct conclusions.

J. M. Keynes

1.1 Overview of Macroeconomics

Unemployment, inflation, booms and busts, financial markets, interest rates, and exchange rates are everyday fare in the news. All these phenomena affect our well-being. This why **macroeconomics** is so exciting. Macroeconomics is more than just headlines, however: it is a fascinating intellectual adventure. The breadth of issues it covers is evidence enough of its inherent complexity. Yet, a few simple ideas can go a long way seeing through complex situations. Macroeconomics is also enormously useful. People, rich or poor, are affected as jobs appear or vanish and as prices change. Businesses can gain or lose large amounts of money when their environment changes, regardless of how well they are managed. Citizens want to understand what their governments are up to. Dramatic events like depressions, when overall economic activity is very far below average and unemployment soars, or hyperinflations, when prices are increasing at monthly rates of 50% or more, can tear at a society's social fabric, and yet can be prevented when policy-makers apply sound economic principles.

But are 'sound economic principles' valid? The events that started in 2007 and led to the Great Recession and the Eurozone crises have led some observers to conclude that macroeconomics needs to be overhauled. Yet it is also common to blame medical doctors for epidemics, and or messengers for bringing bad news, and that doesn't sound fair. Macroeconomists are in a similar situation today. We will argue that macroeconomics as a field has proved its mettle. To be sure, our understanding is very far from perfect. In particular, macroeconomists are not good at making forecasts and the profession has failed to see the crisis coming. Yet, the principles underlying our field made it possible to understand these dramatic events surprisingly well

as they unfolded. They also contained prescriptions for what needed to be done. When governments heeded this advice, the economic situation in fact improved. In any case, we did not experience the Great Depression of the 1930s, and we know why. Besides helping diagnose such situations, the material in this book will teach you humility: Some events, both economic and political, cannot be predicted. This includes banking and financial crises, which contain strong behavioural elements.

A key feature of macroeconomics is that it is geared to finding solutions. Its principles may look abstract at first, but they readily lead to policy prescriptions. These prescriptions are directly related to the observation of economic events with undesirable consequences, which in turn presumes agreement on what is to be measured and how measurements are made. Before the arrival of macroeconomics, concepts such the gross domestic product (GDP), the consumer price index, or the unemployment rate simply did not exist. Some of these concepts are presented in Section 1.2, many more will be introduced as we move through the book. The next step is to formulate a diagnosis. A key challenge at this stage is to distinguish between **business cycles**, or short-run fluctuations of output and employment, and long-run **trends**. This distinction, which is presented in Sections 1.3 and 1.4, shapes the structure of the book; both represent the subject of macroeconomics and the objective of macroeconomic policies. Equipped with these preliminary essentials, we can then examine in what sense macroeconomics is a science (Section 1.5) and how it helps us to reason about the world around us (Section 1.6). The chapter concludes with a preview of the book's contents (Section 1.7).

1.2 Macroeconomic Concepts

1.2.1 Income and Output

The most important indicator of a nation's economic well-being is a measure of its output and income during a given year, which is called the **gross domestic product (GDP)**. The concept will be discussed in greater detail in Chapter 2. GDPs are very large numbers, and it is good to develop a feel for their magnitudes. In 2015, the GDP of the UK in 2015 amounted to about 1.89 trillion pounds; in Germany, 3.02 trillion euros; in the Netherlands 0.68 trillion euros; in Denmark 1.981 trillion kroner.¹ Obviously, these numbers are related to country size, which is why we often look at GDP per capita, which range from 25,000 to 40,000 euros in the same year across the countries of Europe. We should be careful when comparing these data over time because GDPs can change for two reasons: (1) more is produced, and (2) prices of those goods change. We will learn in Chapter 2 how to deal with this issue using so-called *real* GDP numbers—at *constant prices*, so to speak. Table 1.1, which corrects for this using prices in the year 2000, displays the course of GDP over the past century.

A quick look at the table reveals that (1) most countries are characterized by steady growth of GDP over time, but that (2) there are significant and recurring fluctuations of GDP around its trend, called business cycles. We return to the distinction between trends and cycles in separate sections later. Another important observation is that small differences in average annual growth rates cumulate over time to huge differences in levels. A striking example: GDP per capita in Argentina was about 15% larger than that of Sweden in 1900; 110 years later, it had fallen to half the latter's value. The reason? While both grew over the period, Sweden's economy expanded at a 2.1% rate compared with Argentina's 1.3%.² Similarly, it is

striking to note how much poorer the Asian countries were in comparison to Western Europe and the US in 1900. Some of them caught up (Japan), or started to catch up recently (China after the late 1970s) while others still have not (Bangladesh).

A natural concern is whether GDP, or GDP per capita, is a good indicator of individual well-being. GDP says nothing about the distribution of income in the economy, which may also matter to its residents. Many researchers are now examining issues related to happiness and quality of life, not just economic output. One of the robust findings on research in this area is that while GDP is not everything, it is certainly one important determinant of economic and social well-being. Some evidence is provided in Figure 1.1, which displays on the vertical axis the results of coordinated public opinion polls. People were asked how satisfied they were with their lives. The horizontal axis corresponds to that year's GDP per capita in each country. The figures show that deep unhappiness is only found in poor countries. Yet, people in some countries seem to be poor and happy (e.g. Bhutan) while the French and the Germans seem less happy than the Danes and the Finns, who have similar standards of living. A number of explanations are currently being explored, but this is an entirely different subject!

1.2.2 Unemployment

One important phenomenon associated with cyclical fluctuations is **unemployment**, the fact that people seeking paid work cannot or do not find it, sometimes even when the economy is growing rapidly. The **unemployment rate** is the proportion of unemployed workers in the **labour force**. The labour force consists of those who are either working or are actively looking for a job. In comparison with the total population, the labour force leaves out young people who are not yet working, the old who are retired, and those who cannot or do not wish to work—or have given up hope of working.

¹ A trillion (1 000 000 000 000) (US usage) is 1 followed by 12 zeros (10^{12}).

² A useful rule of thumb is that a country growing at rate $g\%$ per annum needs about $70/g$ years to double in size.

Table 1.1 Real Income per Capita (GDP in euros, 2000 prices)

	1900	1913	1929	1950	1987	1992	1999	2002	2007	2010	2015	Av. growth rate
Austria	2,462	2,961	3,160	3,167	13,085	14,937	17,145	17,920	20,289	20,280	20,824	1.9%
Belgium	3,188	3,606	4,319	4,667	13,280	15,078	17,010	17,987	20,069	20,071	20,104	1.6%
Denmark	2,578	3,343	4,337	5,933	15,401	16,192	19,017	19,717	21,414	20,346	20,552	1.8%
Finland	1,426	1,804	2,322	3,634	13,144	12,837	15,931	17,152	21,051	20,008	19,582	2.3%
France	2,457	2,978	4,025	4,504	14,144	15,774	17,549	18,610	19,040	18,562	18,904	1.8%
Germany	2,550	3,117	3,462	3,316	13,417	14,433	15,737	16,399	18,066	18,018	19,420	1.8%
Italy	1,526	2,191	2,643	2,992	12,771	14,216	15,612	16,339	17,229	16,329	15,330	2.0%
Netherlands	2,925	3,459	4,861	5,124	13,447	15,165	17,966	18,493	20,854	20,489	20,715	1.7%
Norway	1,604	2,091	2,895	4,639	15,521	16,715	21,019	22,093	24,399	24,096	24,714	2.4%
Sweden	2,188	2,646	3,306	5,759	14,483	14,509	16,962	18,144	21,688	21,192	22,285	2.1%
Switzerland	3,275	3,645	5,410	7,745	16,912	17,800	18,590	19,179	21,175	21,534	21,944	1.7%
United Kingdom	3,838	4,205	4,703	5,930	13,154	13,785	16,650	17,817	20,183	19,158	20,311	1.5%
Canada	2,488	3,800	4,328	6,231	15,678	15,511	18,347	19,654	21,619	21,292	22,446	1.9%
USA	3,496	4,529	5,895	8,170	18,618	19,908	23,669	24,383	27,052	26,348	28,065	1.8%
Argentina	2,355	3,245	3,732	4,261	6,237	6,406	7,443	6,083	8,803	9,310	10,069	1.4%
Bangladesh	417	443	445	461	515	574	708	778	960	1,088	1,396	1.1%
China	466	472	481	383	1,484	1,822	2,702	3,586	4,857	6,299	8,948	2.6%
India	512	575	622	529	961	1,146	1,568	1,719	2,402	2,847	3,639	1.7%
Japan	1,008	1,185	1,731	1,641	13,887	16,648	17,597	17,918	19,505	19,005	19,699	2.6%

Source: www.eco.rug.nl/~Maddison/ and The Conference Board and Groningen Growth and Development Centre, Total Economy Database, January 2011, <http://www.conference-board.org/economics/TheMaddison-Project>, <http://www.gdcd.net/maddison/maddison-project/home.htm>, 2013 version. IMF, World Economic Outlook Database April 2016.

There are many reasons to be concerned about unemployment. A first reaction to the image of idle workers is one of lost production and income. At the same time, we need to ask whether the unemployed are able to find offers of work, whether they are turning down job offers, and if so, for what reason. Are the jobs that workers are searching at all, or are workers really unavailable for jobs on offer, perhaps because their expectations are unreasonable? Or are they simply frustrated not to find a job and have given up looking?

Unemployment is generally not a pleasant affair. Even with well-developed and efficient unemployment assistance programmes, long-term jobless workers can experience emotional stress and their skills may deteriorate. Even if they are not measurable, the social and psychological costs of unemployment are high for the affected individuals and for society as a whole. By that criterion, Europe has not done well over the last decades, as Figure 1.2 shows. The average rate of unemployment has grown inexorably to reach double-digit numbers. In the USA, in contrast, unemployment has closely

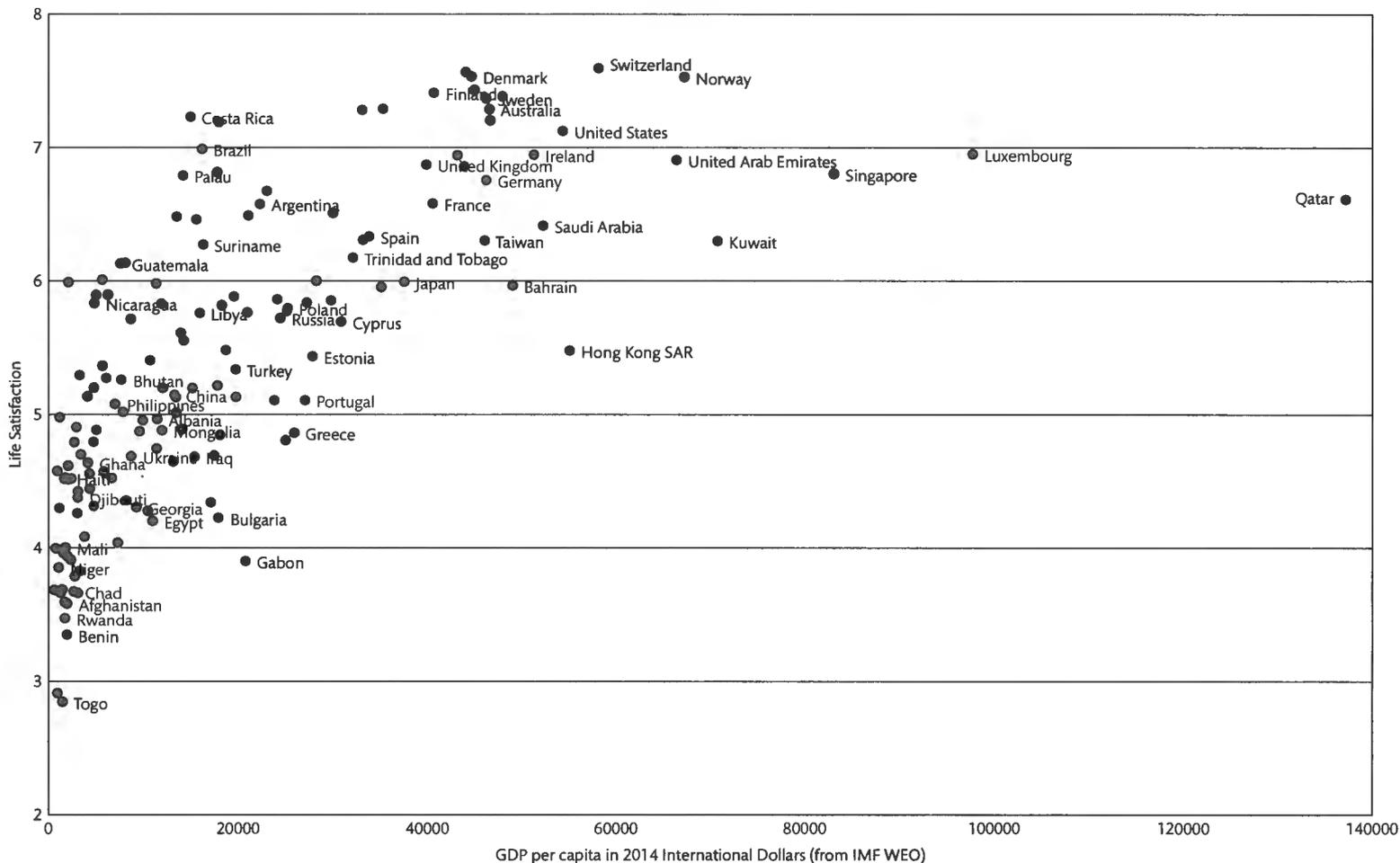


Fig. 1.1 GDP per Capita and Life Satisfaction in 2014

Money is not everything in life. While public opinion polls show a clear link between life satisfaction—a measure of happiness—and GDP per capita, that link is far from tight.

Sources: GDP per capita from World Economic Outlook, IMF; Index of satisfaction with life: http://en.wikipedia.org/wiki/Satisfaction_with_Life_Index

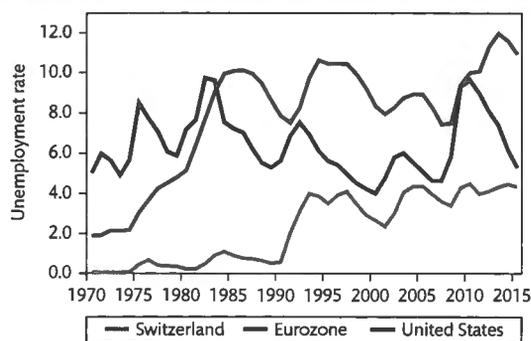


Fig. 1.2 Unemployment Rates in the Eurozone, Switzerland, and the USA, 1970–2015

The unemployment rate, measured as the proportion of workers who do not have a job but are looking for one, varies considerably across countries. In the USA, the unemployment rate moves tightly with the business cycle. In those European countries that use the euro today, unemployment rose markedly in the 1970s and 1980s and stayed there for a long time. In contrast, Switzerland avoided high unemployment for the entire period, but has also suffered a significant increase over the past two decades.

Source: OECD.

followed the business cycle, rising in periods of slowdown, declining when growth returned. At the same time, not all European countries have shared this misery, as the case of Switzerland shows. Chapters 4 and 18 will help explain these different outcomes.

1.2.3 Factors of Production and Income Distribution

The output of an economy, its GDP, is by and large the result of work effort by men and women combined with equipment—‘machines’, but also buildings and other structures. **Labour** and **capital** are the technical names given to the two main inputs, or **factors of production**.³ The distribution of total income between these two factors of production is often a political matter, even if it is largely determined by economic

³ Land, energy, intellectual property, and many other inputs also matter, but are quantitatively less important in macroeconomics and will be ignored to make matters simpler.

forces. The employees are paid in the form of salaries, benefits, fees, and bonuses. Governments take their share in the form of various taxes. What is left are profits, or the capital share of income. These profits go to the owners. In stock markets, ownership of companies, or shares, are traded in open markets and valued on the basis of the firms’ profitability. Figure 1.3 shows the fraction of total income in manufacturing that goes to labour, the **labour share**. It also plots the evolution of the stock market **index** over the same period, which tracks the value of shares in companies traded on the stock exchange or bourse. An index is an indicator of the evolution of some phenomenon over time, designed to take a standardized value (e.g. 1 or 100) on a particular date to highlight relative changes. The figure reveals a clear, but not perfect, inverse relationship between the labour share and average stock prices. When the share of income going to labour is high, less is available for the firms’ owners, and stock prices tend to be lower. While it would be premature to assert that one causes the other, it is certainly plausible that both are driven by common economic phenomena. In Chapter 8, we will see that depressed stock prices may adversely affect the accumulation of productive equipment and, ultimately, the growth and size of the economic pie itself.

1.2.4 Inflation

The consumer price index measures the evolution of the cost of a basket of goods meant to represent average spending by consumers. Its per cent increase is the rate of **inflation**. The inflation rate is usually stated in terms of percentage change per year, even when it is measured more frequently, such as every quarter or every month. Most of the time, inflation is low or moderate at rates ranging from just above 0% to 4%. In the 1970s, many European countries experienced double-digit inflation, with rates rising to 10%, 20%, or even more. In the 2010s, prices declined in a number of countries leading to negative inflation rates. In Latin America or in the transition countries of Eastern Europe, inflation rates of several hundred per

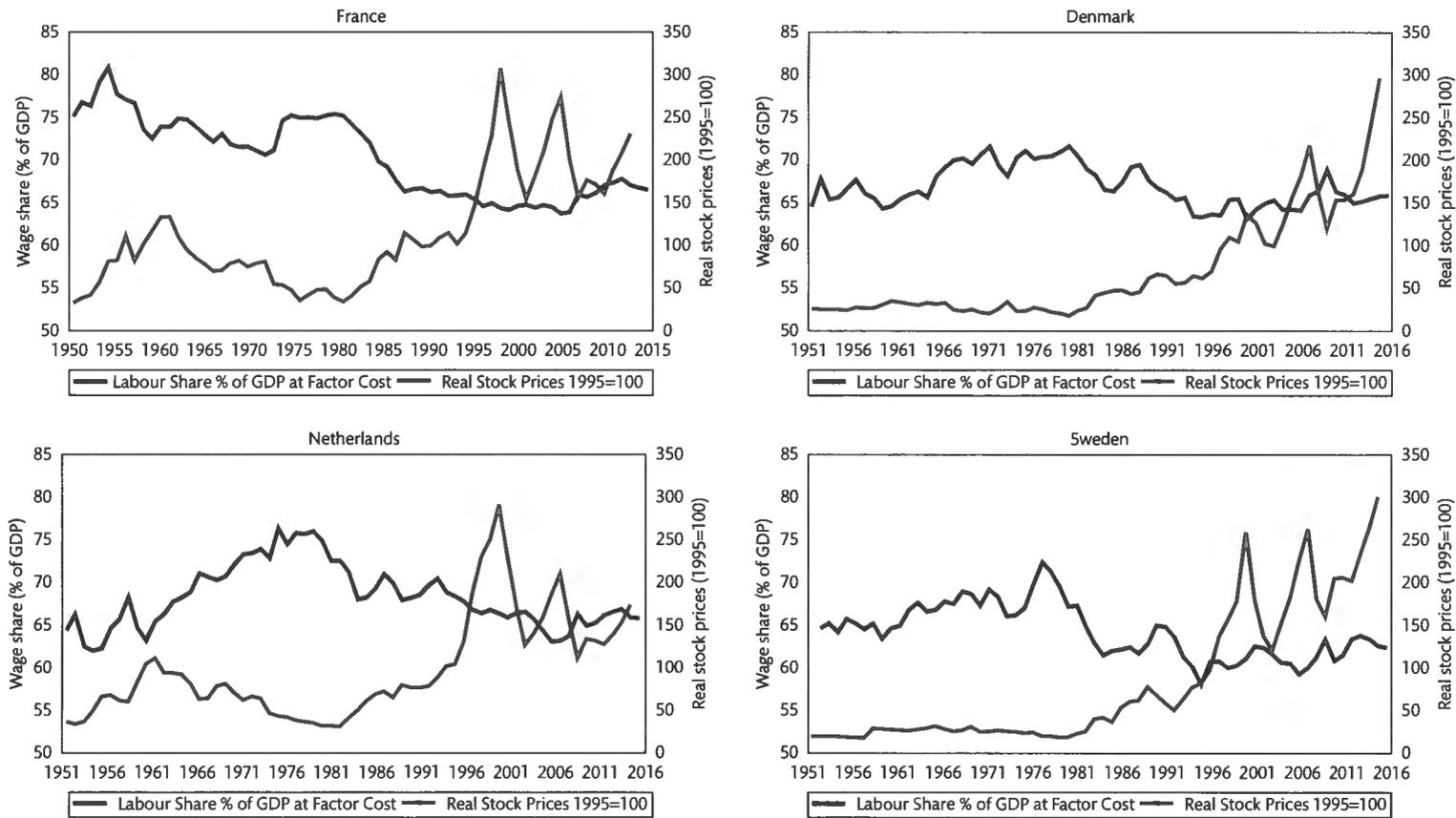


Fig. 1.3 Labour Share of Income in Manufacturing and Stock Prices, Four Countries, 1950–2016

Labour and capital share the fruits of the economic activity. The labour share is the fraction of economic output which is paid to workers in wages and other forms of compensation. The valuation of companies, reflected in stock prices, is negatively associated with the labour share. Real stock prices are computed as a share price index divided by the GDP deflator, a measure of the price level.

Sources: Labour share: AMECO database, European Commission; Stock prices: *Economic Outlook*, OECD.

cent were quite common in the 1980s. When inflation is very high it is usually measured on a monthly basis; the term **hyperinflation** describes situations when this monthly inflation rate exceeds 50%. A sign of exceptional economic distress, hyperinflation has been observed in Central Europe in the early 1920s, in Latin America in the 1980s, and in many countries which emerged from the collapse of the Soviet Union in the early 1990s.

In normal times, inflation is related to the business cycle. Figure 1.4 shows how the rate of inflation changes when the rate of **capacity utilization** varies. The rate of capacity utilization measures the degree to which companies are truly employing their available plant and equipment, and it serves as a good indicator of cyclical conditions. The inflation rate is generally **pro-cyclical**: it tends to rise when activity is high and declines in periods of slack. In contrast, the unemployment rate is **countercyclical**: it moves

against the cyclical behaviour of output, falling when output is growing rapidly and rising when output is growing more slowly or falling. The behaviour of inflation is investigated in Parts III and IV of this book.

1.2.5 Financial Markets and the Real Economy

Financial markets play a central role in modern economies. Either literally or with the help of sophisticated communications technologies, they represent arenas where buyers and sellers of financial assets such as bonds, stocks, currencies, and other financial instruments meet to trade. Together with banks and other financial institutions, financial markets gather resources from households and firms in the form of savings and lend them out to others who will spend them. One specific feature of these markets is the extreme day-to-day variability of prices at which financial instruments are traded.

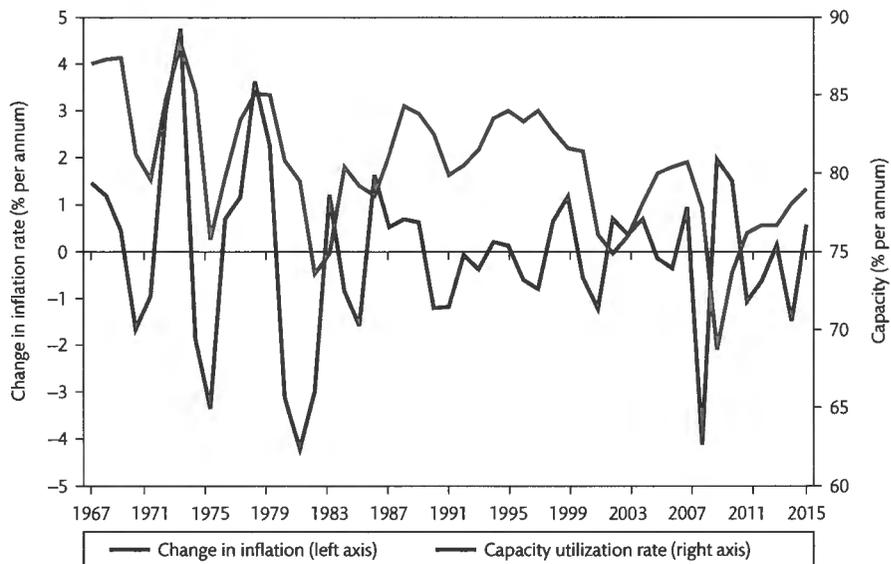


Fig. 1.4 Capacity Utilization Rates and Changes in Inflation Rates, USA, 1967–2015

When measures of the utilization of capacity indicate a high level of activity in factories, the rate of inflation tends to rise, i.e. prices rise at an increasing rate. Conversely, low levels of activity are accompanied by declining rates of inflation.

Sources: Bureau of Labor Statistics (CPI) and Federal Reserve Bank of Saint Louis (capacity utilization).

Physical investment, the accumulation of productive capital by firms, is intimately related to financial conditions. It is one channel through which financial markets affect the **real economy**. The other channel is consumption spending by households. Stocks—shares in corporations—represent one form of private wealth. When share prices rise, people feel richer and consume more. The real economy is contrasted with the financial or **monetary economy**: the former concerns the production and consumption of goods and services, and the incomes associated with productive activities. The latter deals with trade in assets, i.e. monetary and financial instruments. Chapter 11 brings the real and the monetary spheres of the economy together to understand how output and interest rates are determined from year to year. Chapter 12 explores these short-run linkages in more detail when the economy is open to international trade in financial assets. Chapters 13 and 14 bring together the issues of inflation, output, and **exchange rate** determination.

1.2.6 Openness

In the modern world, all countries engage in international trade by exporting and importing goods and services to and from each other. In addition, an increasing number of countries are also connected through trade in financial assets. One measure of a country's **openness**, or exposure to the various economic influences coming from the rest of the world, is the ratio of the average of its exports and imports to its GDP. Table 1.2 shows that openness has considerably increased over the past decades. This process of increasing trade and trade integration in goods, services, and financial assets over time is frequently called **globalization**. Smaller countries tend to be more open than larger countries, and indeed the USA and Japan are fairly closed by international standards. This is also the case of the European Union vis-à-vis the rest of the world, even though considerable trade integration has taken place among its member countries and with the rest of the world. Since mid-2004, the European Union has expanded to 28 nations to become an economic region of more than 500 million inhabitants. These

Table 1.2 Openness (ratio of average of exports and imports to GDP, %)

	1960	2015
Belgium	38.2	83.6
China	4.4	20.6
Denmark	33.3	50.1
Germany	19.0	43.0
Greece	12.5	30.0
Hungary	—	85.0
Ireland	32.4	111.0
Netherlands	47.9	77.2
Poland	—	48.0
Portugal	16.7	39.9
Spain	7.6	31.9
Sweden	23.2	43.1
Russian Federation	—	25.4
Switzerland	27.3	57.3
Ukraine	—	53.8
United Kingdom	20.9	28.4
United States	4.6	14.0
Japan	10.5	18.4
European Union	6.1	12.0

Sources: World Bank, OECD.

substantial enlargements have further accentuated the importance of international trade, financial, and policy links between EU member countries. The planned departure of the UK (known as Brexit) represents a historical reversal in this integration process.

As a consequence, no country's fate is truly independent of events that occur elsewhere, sometimes very far away. A good example is the financial crisis that began in the summer of 2007 in the USA yet spread in the aftermath not only to Europe and Asia but also to remote parts of Africa and South America. Chapter 19 looks more closely at these problems and potential solutions.

1.3 Macroeconomics in the Long Run: Economic Growth

Figure 1.5(a) displays estimates of GDP for France, Germany, and the UK since 1870. A positive long-run general tendency, or trend, clearly dominates shorter-run fluctuations. The trend rate of growth has been fairly stable, perhaps with a slight increase after the

Second World War. Another way of seeing this is to plot the natural logarithm of GDP against time, as in panel (b) of Figure 1.5. With this so-called **logarithmic scale** the slope of the curve is a direct measure of the annual growth rate: a constant growth rate would

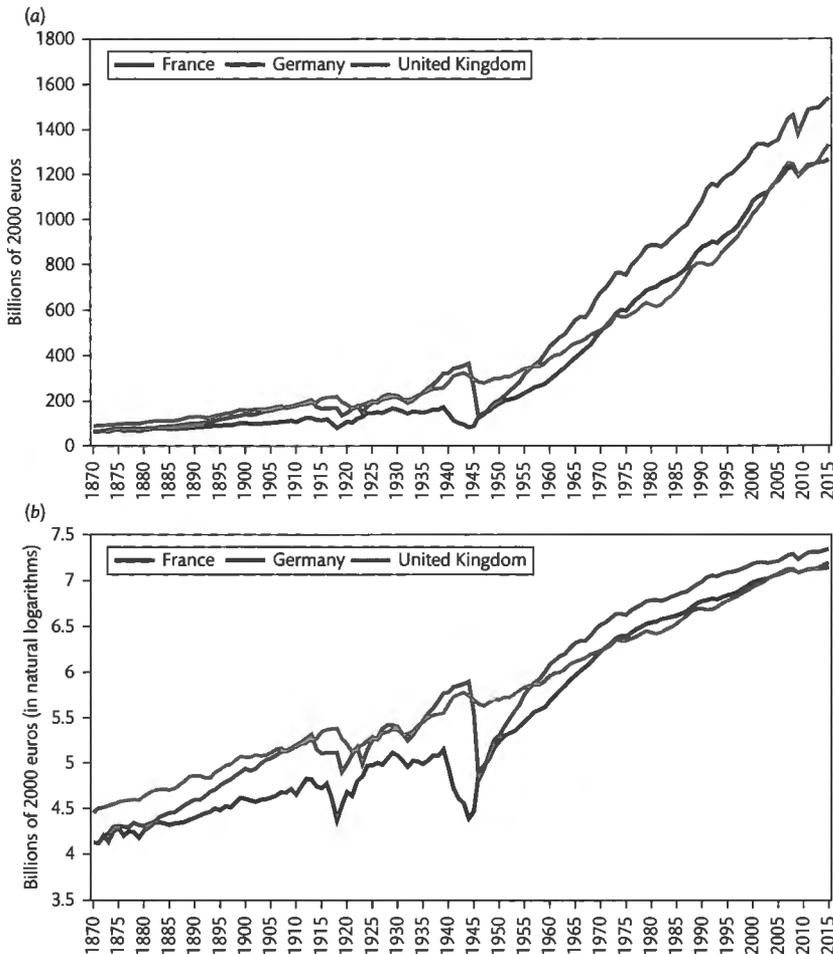


Fig. 1.5 Gross Domestic Product (GDP), France, Germany, and the UK, 1870–2015

National output and income, as captured by the gross domestic product, exhibits a robust growth trend. Growth tends to be exponential; that is, annual percentage increases are reasonably stable in the long run. This does not preclude significant year-to-year variations (panel *a*). When the data are displayed on a logarithmic scale instead (panel *b*), the slope of the curve measures the annual rate of growth.

Source: 1870–1949: Maddison (1991) (<http://www.ggd.net/maddison/oriindex.htm>); 1950–2015: Conference Board's Total Economy Database (<https://www.conference-board.org/data/economydatabase/index.cfm?id=27762>).

yield a straight line.⁴ In the long run, on average, we seem very close to a rather robust and steady trend.

This trend growth in total output implies remarkable increases in living standards. Let's take another look at Table 1.1. Note that per capita, or average, income increased to more than sixfold in Belgium since 1900, ninefold in Sweden, and 18-fold in Japan. Yet the growth phenomenon is not shared by all countries at all times. In Bangladesh, real income per capita rose by only 120% over the same period. Some countries have faced serious setbacks, such as wars and famines, while others have expanded rapidly. Some, like China and India, stagnated for many decades before suddenly entering a period of rapid increase in living standards. China poses a particularly interesting case because its explosive take-off was so recent, and because it was the world's most advanced economy 700 years ago.

Because of these momentous increases in standards of living, **economic growth** is one of the most exciting issues in macroeconomics. Chapter 3 explores in detail the reasons why economies grow. One reason is an increase in population, since more people can work and produce more output. Another is the accumulation of means of production: plant and equipment, roads, communication networks, and other forms of infrastructure make workers more productive. Most important is the development and harnessing of knowledge and technology to economic ends. The sharp acceleration of scientific discoveries towards the end of the eighteenth century is thought to have triggered the industrial revolution, and some believe we are now witnessing the onset of a new wave of advances related to information and telecommunications technology.

1.4 Macroeconomics in the Short Run: Business Cycles

While output and income have increased by staggering amounts over many decades, growth is not constant or even steady. Figure 1.5 shows that real output tends to fluctuate around its trend. This is even more apparent in Figure 1.6, which plots the quarterly rate of change in GDP for the UK. Quarterly data tend to accentuate the relative importance of short-run fluctuations. These sustained periods of ups and downs are called business cycles. One important challenge of macroeconomics is to explain such deviations of GDP from its underlying trend, referred to as the **output gap**. Why do these fluctuations occur and persist over periods ranging from three to 10 years, and what can be done, if anything, to avoid the disruptions that are associated with them? This is the common theme of Parts III and IV of this book.

While business cycles are hardly identical across countries and across time, they have a number of common features. These features are represented in **Burns–Mitchell diagrams**. The idea is simple. Imagine cutting up a curve like those depicted in Figures 1.5 or 1.6 into a set of cycles and superposing all these cycles on top of each other. To do this, it is necessary to identify calendar dates for cyclical turning points of output (GDP)—here we will be concerned with peaks, but the procedure can be used for troughs as well. Having identified those cyclical peaks, simple numerical averages of other macroeconomic variables of interest can be calculated around the calendar date of the output's peak. The behaviour of those variables around the turning points of output tells us something about whether the variables are leading—meaning that they can help forecast future turning points in output. More importantly, they can help inform the formulation of theories which will help us better understand how business cycles arise and develop over time. Box 1.1 provides more details on the Burns–Mitchell methodology.

⁴ For mathematically inclined readers, if $x(t)$, the value of x at time t , grows at constant rate g , defined as $(1/x)dx/dt$, then $x(t) = x(0)e^{gt}$ and $\ln x(t) = \ln x(0) + gt$.

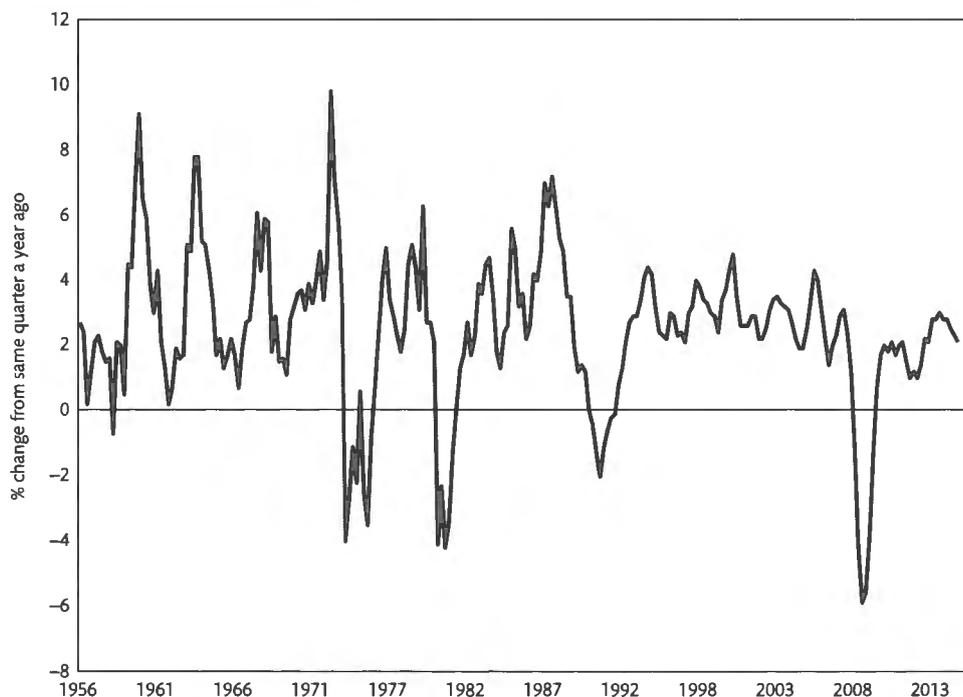


Fig. 1.6 Quarterly Gross Domestic Product, UK, 1956:1–2015:3

With growth rates, fluctuations of economic activity become more apparent.

Source: Office of National Statistics.



Box 1.1 Burns–Mitchell Diagrams, Now and Then

The fluctuations of economic activity in the rapidly industrializing economies of Europe and the USA attracted much interest in the early part of the twentieth century. In the 1920s and 1930s, the National Bureau of Economic Research (NBER) in New York was a centre of such research, associated with Gottfried Haberler, Simon Kuznets, Wassily Leontief, Allyn Young, and many other economic luminaries of the day. A common view of these researchers was that the emergence of powerful statistical methods made it possible to study economic phenomena in general, and the business cycle in particular, in a more scientific fashion.

Two NBER researchers, Arthur Burns and Wesley Mitchell, were somewhat sceptical of the statistical approach but committed to a data-driven, descriptive assessment of busi-

ness cycle regularities. Mitchell had already written a book in 1927 that more or less laid out the research programme, but together with Burns the project ultimately came to fruition after the Second World War. The idea was to reduce the time series of data to a sequence of cycles and then study the *average* behaviour of other important variables a number of periods before and after the peak of the average cycle. This highly data-intensive empirical approach was considered modern and useful, even if it was criticized in some quarters as ‘measurement without theory’.

The identification of business cycles is always a tricky procedure with some element of arbitrariness. We employ a particular method which has gained acceptance in recent years and apply it to eight advanced



Box 1.1 Burns–Mitchell Diagrams, Now and Then (*Continued*)

economies over about 35 years of quarterly data.⁵ The result is a reference cycle which appears in the first panel of Figure 1.7. The cycles identified by this procedure are used to produce the other panels of Figure 1.7, which give the behaviour of variables 10 quarters before and 10

quarters after the cyclical peak, usually stated in proportion to the average value over that period. In Figure 1.8, we present the original findings of Burns and Mitchell, who worked on primarily monthly US data from the late nineteenth and especially the early twentieth century.

1.5 Macroeconomics as a Science

1.5.1 The Genesis of Macroeconomics

Why do we observe cyclical fluctuations—ups and downs—in the level of GDP around its trend? Why is unemployment generally countercyclical, while changes in inflation appear procyclical? For a long time, economists paid little attention to such phenomena. In fact, it was believed that properly functioning markets would deliver the best possible collective outcome, to a good approximation at least, and that there was no point in looking into aggregate behaviour. This principle was called ‘*laissez-faire*’. Opponents of *laissez-faire* endorsed some form of **interventionism**—government support for particular markets and industries, including subsidies and protection from foreign competition.

This does not mean that business cycles were ignored completely. In fact, cycles of varying lengths were identified and studied, ranging from inventory cycles of one or two years’ duration to long-wave cycles lasting half a century. Box 1.2 provides details on these cyclical movements. Such cycles were seen as the cumulative outcomes

of disturbances such as discoveries, inventions, exceptionally good or bad crops, wrong bets by firms on goods that customers want to buy, or even changing tastes of consumers at home and abroad. Inflation was seen as the consequence of rapidly growing money stocks, first because of gold discoveries in the nineteenth century, afterwards because of reckless paper money creation by central banks. As will be seen in Chapter 16, much of this wisdom remains valid today. Yet the Great Depression of the 1930s, which spread throughout the world and sent millions into unemployment and misery, seemed too severe to be simply bad luck. Reflecting upon the Great Depression in 1936, British economist John Maynard Keynes published *The General Theory of Employment, Interest and Money*, a book that is often said to have started the field of macroeconomics. Keynes stressed the role of aggregate demand in macroeconomic fluctuations. His followers later persuaded policy-makers to engage in **aggregate demand** management, that is, to manipulate government demand in order to smooth out fluctuations, mainly to avoid protracted recessions.

⁵ The method is due to Harding and Pagan (2001) and can be summarized as follows. For a four-quarter moving average of the original series, define a peak as the quarter for which GDP is higher than the two preceding and the two successive quarters. In case two or more consecutive peaks are found, only the highest is retained. Next examine the highest and lowest points in a neighbourhood of the peaks. Now repeat

the procedure using an unweighted short-term moving average of the original series. In the neighbourhood of these intermediate turning points, troughs and peaks are determined in the unsmoothed time series. If these pass a set of additional restrictions on the magnitude of the fluctuation, they are selected as the final cyclical turning points.

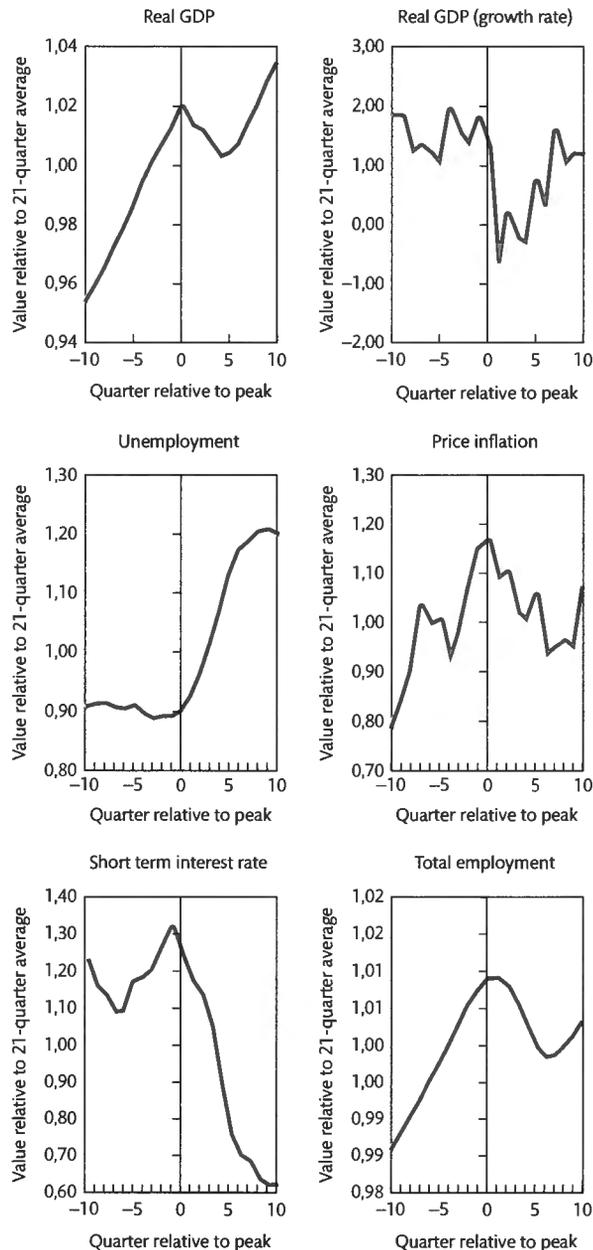


Fig. 1.7 Burns–Mitchell, Now: Eight Countries, 1970–2015

These six figures display the average behaviour of variables around cyclical peaks, where the cycle is measured using a procedure described in the text. The vertical line around zero shows the quarter in which real GDP reaches its peak (upper left panel). The peak is followed on average by a sharp drop in the growth rate of output (upper right panel). Unemployment is countercyclical, rising most after the peak in GDP has been passed, but is rising across cycles, indicating that average unemployment rates in the sample were increasing over time. The inflation rate is procyclical but lagging, peaking in the quarter after output. Short-term interest rates and employment are strongly procyclical.

Source: OECD; authors' calculations.

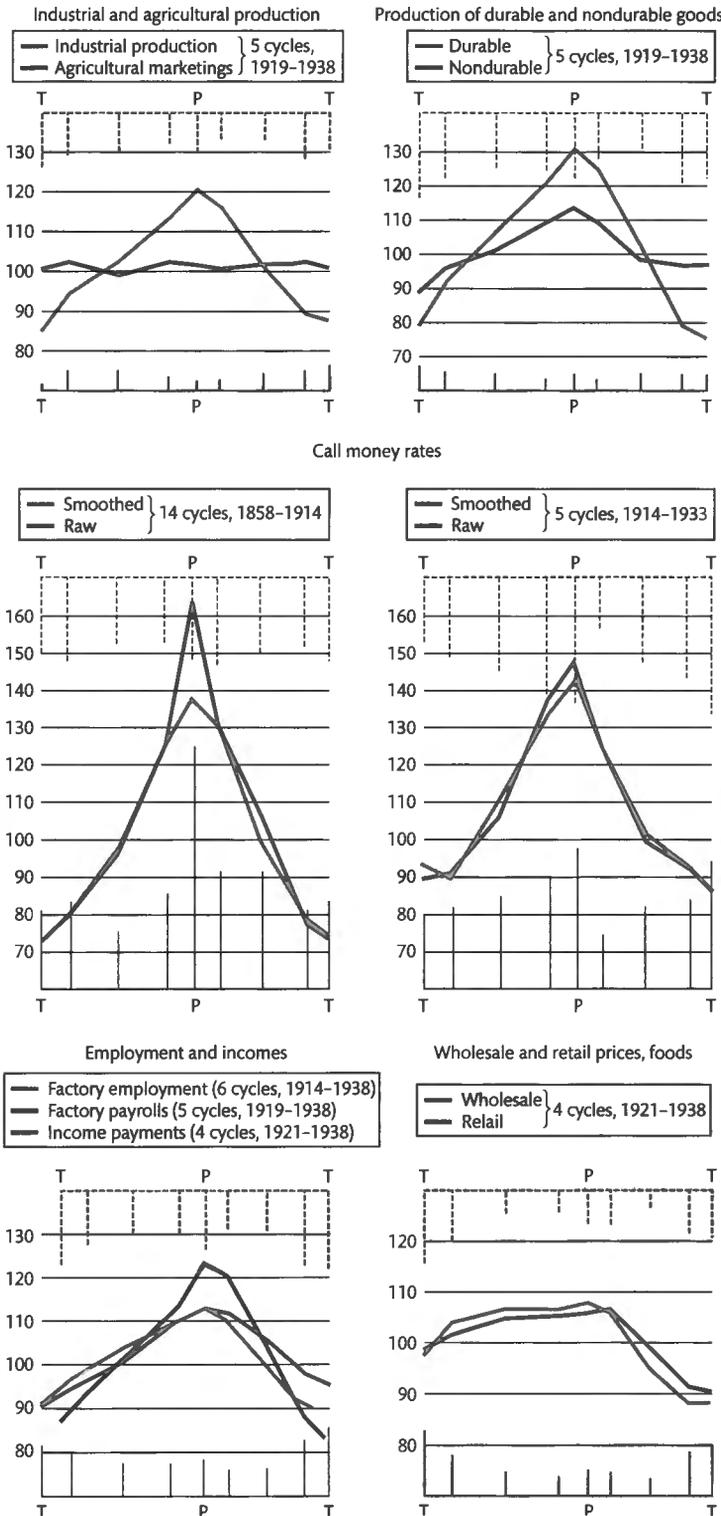


Fig. 1.8 Burns–Mitchell, Back Then: US Monthly Data, 1914–1938

These original figures document the work of Burns and Mitchell on US monthly pre-World War II data for industrial and agricultural production as well as durable and non-durable goods, interest rates, employment, payrolls, and food prices (GDP data did not exist at the time these diagrams were constructed). As in Figure 1.7, the cyclical peak is identified using a well-defined procedure, and averages of the cycles around that peak (denoted 'P') to trough (denoted 'T'). Production, employment, wages, wholesale prices, and interest rates are procyclical and coincident, while retail prices seem to lag slightly. The procyclical behaviour of interest rates became significantly less pronounced after 1914, which was the year after the US central bank, the Federal Reserve System, was founded. Source: Mitchell (1951).

An evaluation of the success of demand management policies is presented in Chapters 16 and 17. Since the Second World War, the amplitude of the business cycle appears to have diminished considerably, as can be seen in Figure 1.5. Of course, the global recession of 2008–2009, sometimes called the ‘Great Recession’, is a major setback. For centuries, earlier generations assumed that favourable periods of growth were inevitably followed by periods of declining activity. Following Keynes, concern initially centred on fluctuating demand. The attention then turned toward the **supply side**—meaning the productive capacity of an economy—and the efficient utilization of labour and capital resources. This applies especially to unemployment, which remains a big problem in much of Europe. These topics are the subject of Chapter 18.

Another remarkable change in the behaviour of the post-war economy concerns the general **price level**, or the cost of goods in terms of money. Until the First World War, prices were as likely to rise as they were to fall, as can be seen from Figure 1.9. Apart from war periods, the price level was trendless; over long periods of 20 to 50 years, the consumer price index—a measure of the average price level—was remarkably stable. One interpretation of the post-war era—a controversial one, as we

shall see—is that macroeconomics has led to more steady output growth at the cost of inflation. In the mid-1980s, concern with high inflation triggered a change of heart. In particular, most central banks have toned down demand management policies and refocused their energy on keeping inflation low. The crisis that started in 2007 is now forcing central banks to recognize that they have a broader duty than price stability; in particular, they have to be concerned with financial stability and the health of the banking system.

1.5.2 Macroeconomics and Microeconomics

The macroeconomy is just the sum of hundreds or thousands of markets, each of which is explained by microeconomic principles. Microeconomics is devoted to the study of prices of individual goods and of the markets where these goods are produced and sold. Why do we need two separate disciplines? To a great extent they are linked. Microeconomics is dedicated to the analysis of market behaviour of individuals. Macroeconomics is concerned with collective behaviour, the outcome of individual decisions taken without full knowledge of what others do. Thus macroeconomics should be built on microeconomic principles. This is how the field has



Box 1.2 All Kinds of Cycles

Business cycles, like comets, bear the names of their discoverers. Simon Kuznets (1901–1985) was a Russian-born US economist who received a Nobel Prize for his work on growth. Russian economist Nikolai Kondratieff (1892–1938) developed his theory of long-wave cycles in the 1920s before he was arrested and disappeared; the official Soviet Encyclopaedia then wrote about his work: ‘this theory is wrong and reactionary’. It was also in the 1920s that Joseph Kitchin (1861–1932), a South African statistician and gold trader, uncovered his own more rapid cycles of 2–4 years’ periodicity, which are associated with inventory movements, bank clearings, and wholesale prices. Clement Juglar (1819–1905), a nineteenth-century French physician, first studied cycles in

human births, deaths, and marriages before turning his skills to interest rates and credit conditions. These Juglar cycles—which involve fluctuations of investment spending, GNP, inflation, and unemployment—are perhaps the closest thing to the business cycle that we will study in this book.

Interestingly, one of the most robust and regular cycles in economic activity is the cycle that coincides with the seasons of the year. Movements of output in agriculture, manufacturing, construction, and tourism have obvious seasonal components which sometimes swamp business cycle fluctuations in magnitude, as do patterns in overall output associated with bank holidays, summer and winter weather, and harvests.

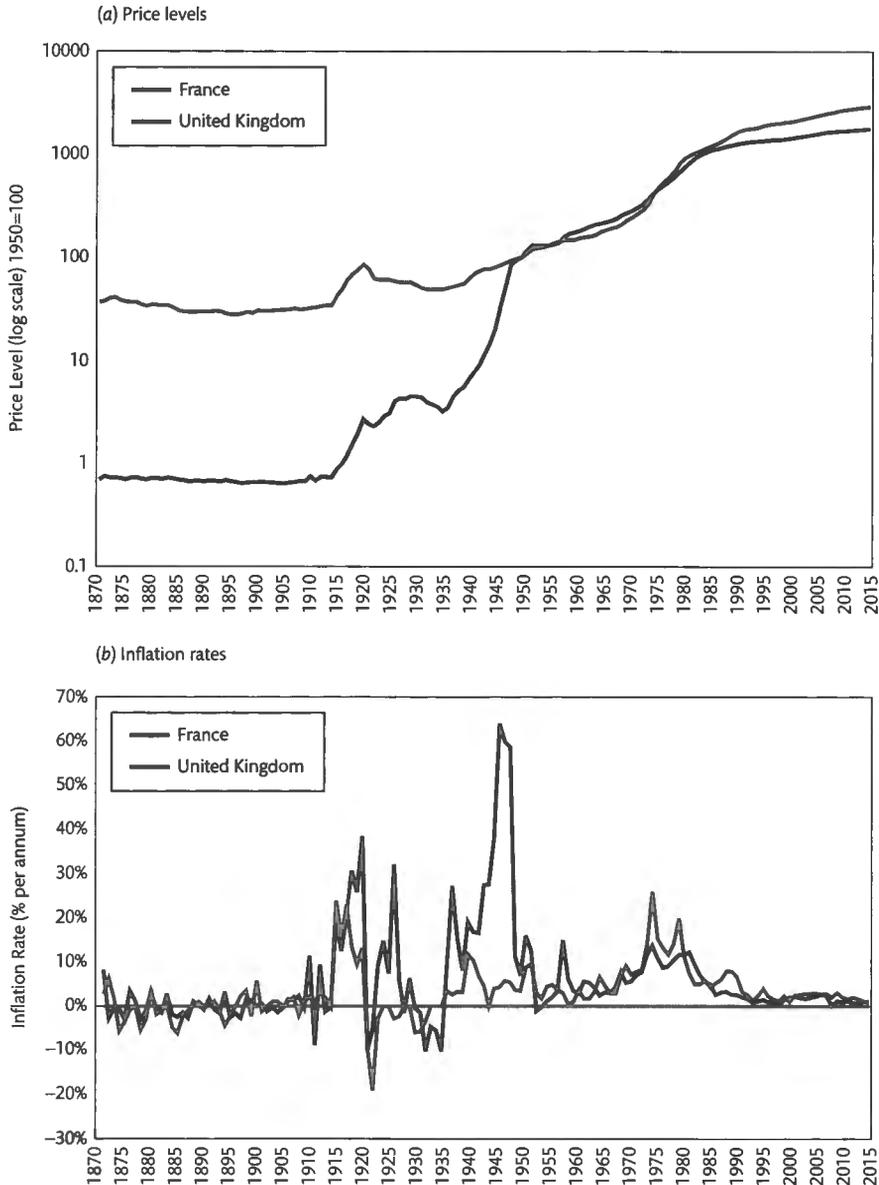


Fig. 1.9 Price Levels and Inflation Rates, France and the UK, 1870–2015

Until the outbreak of the First World War, the price level was stable, and inflation was close to zero on average. Since the Second World War, the price level has risen secularly, average inflation has been positive, high in the late 1970s and much of the 1980s, declining over the 1990s and becoming very low, close to zero, in the 2010s.

Source: Maddison (1991); OECD.

evolved over the past three decades. However, seeking to bring together all markets into one framework is a daunting challenge. In this book, we go half the way. We recall the microeconomic

principles that are needed to understand decisions like consumption and productive investment, as well as the overriding importance of budget constraints. Yet, we do not insist on

grounding the overall picture in these principles. We do so for two reasons.

First, bringing together microeconomic principles leads to considerable complexity. We believe that simplicity and clarity are an essential ingredient of a textbook. Of course, simplicity should not come at the expense of accuracy. It turns out that, at this stage of the development of the discipline, the complexity of the effort has led to a large number of arbitrary simplifications that do not ensure accuracy. Second, in creating macroeconomics, Keynes stressed the notion of **coordination failures**, which arise in decentralized markets as illustrated in the following example. A consumer wants to purchase a car, but her income is insufficient for her to do so. A car manufacturer could actually hire her to build cars, and with her salary she would then be able to buy one. That one sale, however, would not suffice to pay her salary, so other buyers would need to be found. In order to generate sufficient demand for her employment, several other individuals would need to be hired, perhaps in different industries. For this scheme to work, a considerable amount of coordination among producers and consumers would be required.

The *laissez-faire* principle is that prices and markets automatically and perfectly perform this coordinating role. Keynes' critique of markets was that sometimes they fail to produce the desired result as quickly as we would like to see. There may be many consumers wishing to buy goods and willing to work to produce them, and many firms that would benefit from hiring them if only they could be persuaded that their sales would increase. But this potential may not be realized and we have both recession (fewer sales) and unemployment (fewer jobs). Even if market forces tend to correct this imbalance—which they eventually do—the period of time necessary may be long enough to involve significant social costs. Macroeconomics started with the idea that prices and markets do not continuously resolve all the coordination requirements of a modern economy.

1.5.3 Demand and Supply

In its most concentrated form, macroeconomics boils down to separating events into two categories: (1) those that affect the demand for goods and services, and (2) those that affect the supply of those goods and services. The **demand side** relates to spending decisions by **economic agents**—households, firms, and government agencies—both at home and abroad. The principle of aggregate demand management policies is that the government can take actions to offset or smooth out those of private agents—firms and households—in order to dampen or eliminate fluctuations in total spending. The idea is to take the edge off recessions as well as booms. Two traditional demand management instruments are fiscal and monetary policy. **Fiscal policy** manipulates government expenditures or taxes in an attempt to affect the volume of national spending. This subject is studied in detail in Chapter 17. **Monetary policy** is directed at influencing interest and exchange rates, and more generally conditions in financial markets. This in turn affects spending on goods and services. Chapters 9 and 10 provides an in-depth analysis of money and monetary policy.

The supply side relates to the productive potential of the economy. The choice of hours worked by households, the productivity of their labour, and in general the efficiency with which resources are allocated in generating output, all affect an economy's aggregate supply. Accordingly, supply-side policies represent government's effort to increase an economy's long-run capacity as well as its overall efficiency. Frequently, this effort is about reducing or eliminating government-induced inefficiencies, which were introduced before the importance of the supply side was understood, or as the result of successful lobbying by interest groups. It is also about bringing idle or underutilized resources into productive uses. Unemployment policy—designed to fight the scourge of market economies—occupies a key role in the supply side. Chapter 18 explores these issues and shows how the government can improve or worsen the economic climate.

1.6 The Methodology of Macroeconomics

1.6.1 What is to be Explained?

Macroeconomics is concerned with aggregate activity, the level of unemployment, interest rates, inflation, wages, the exchange rate, and the trade in goods, services and assets with other countries. Before beginning to think about these questions, it is essential to be clear about what we want to explain and what we take as given, or outside the realm of analysis. The variables to be explained using economic principles are called **endogenous** variables. The other variables—those we do not try to explain—are called **exogenous** variables. This distinction is represented in Figure 1.10. Examples of variables often considered exogenous are policy instruments (the tools of fiscal and monetary policies), economic conditions abroad (foreign levels of activity and interest rates), the price of oil, and sometimes even domestic social conditions such as business optimism or trade union militancy.

The distinction between endogenous and exogenous variables is necessarily arbitrary. Many exogenous variables are not strictly independent of the endogenous variables. In fact, the book progresses in steps. Many variables initially are considered exoge-

nous and then progressively made endogenous, or endogenized. For example, fiscal and monetary policy decisions are often responses to the course of inflation or unemployment. While it is convenient to regard policy variables as exogenous, it is sometimes interesting and useful to understand how these exogenous variables themselves are determined. For example, we will often treat monetary policy as a systematic response to economic conditions.

1.6.2 Theory and Realism

Macroeconomics proceeds by making simplifying assumptions. We never literally believe in our assumptions, but we need them in order to see through the vast complexity of an economy. This is why the distinction between endogenous and exogenous variables is artificial. Truly exogenous variables are rare. Earthquakes are truly exogenous but what about climatic conditions or scientific discoveries and inventions? The task of systematically linking the behaviour of endogenous variables to changes in exogenous variables is accomplished by specifying relationships between all the variables of interest. You might say that economics—and in particular macroeconomics—is in the business of establishing relationships involving causality.

All these relationships, when brought together, constitute a theory. Almost by definition, in social sciences, theory must be an abstraction, an intentional departure from realism. If the real world could be understood without simplifying assumptions, theories would be unnecessary. The problem is not with economics, but rather with the world's inherent complexity. Karl Marx, who was no friend of conventional political economy, seemed to hit it on the head:

The body in its entirety is easier to study than are the cells of that body. In the analysis of economic forms, moreover, neither microscopes nor chemical reagents are of use. The force of abstraction must replace both. ((1867) Foreword to Volume I, *Das Kapital*)

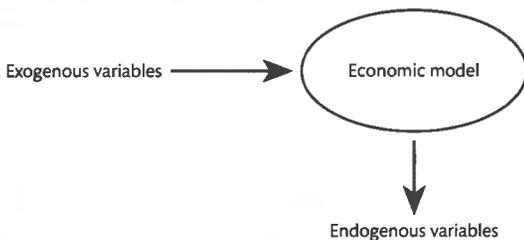


Fig. 1.10 Endogenous and Exogenous Variables

Endogenous variables are the object of analysis in an economic model. Exogenous variables are determined outside the economic model. The weather and political decisions are examples of variables generally considered to be exogenous.

Progress is made by weeding out those assumptions and theories that lead us to false conclusions. As time passes, some theories prove to be unfounded, while others gain acceptability. This process is long and complex, and far from complete. Because macroeconomics is a young discipline, a number of controversies continue, and this aspect is discussed in Section 1.7.

1.6.3 Positive and Normative Analysis

Macroeconomic analysis and policy are closely linked. Because a number of exogenous variables are under the control of government, it makes sense to ask what is good and what is bad policy. At its best, macroeconomics can explain the economy. For example, it can link particular events to exogenous events or policy decisions. This is **positive economics**: it refrains from value judgements. **Normative economics** takes a further step and passes judgement or makes policy recommendations. In so doing, it must specify what criteria are used in arriving at particular conclusions. This inevitably implies a value judgement. Economists generally like to make policy recommendations. As long as they are truthful about their own preferences and reveal their criteria, this is part of their professional activity. In this textbook, we will generally refrain from normative economic analysis.⁶ At the same time, we believe and hope that many readers will make use of their newly acquired knowledge to indulge in the normative side of macroeconomics: this is what makes it fun.

1.6.4 Testing Theories: The Role of Data

The generally accepted way of evaluating theories is to subject them to scientific testing. In macroeconomics, this means looking at the facts, i.e. at data. This is easier said than done, and there are a number of unusual difficulties. First, data often correspond to elusive concepts, as Chapter 2 will show. Second, constructing aggregate data implies enquiring into the behaviour of millions of individuals, who sometimes have good or bad reasons

to misrepresent the truth. Third, economics shares a predicament common to other social sciences: experimentation is not really possible—when observed, people often change their behaviour. Not only is it possibly immoral—no macroeconomist would wish to start a hyperinflation just to test a theory—but more crucially, many important variables simply are not observable. This is the case of people's expectations of the future, for example. Macroeconomists are forced to conduct empirical tests with the data that they have. They develop statistical techniques, often sophisticated ones, to deal with observation and measurement errors. They refine their techniques for gathering and analysing data. This allows the elimination of inadequate theories and the modification of others. The surviving theories will be those that withstand the test of time in this scientific process.

1.6.5 Macroeconomic Modelling and Forecasting

Economists are frequently asked to make forecasts. Governments, international organizations, and large financial institutions employ large teams of economists to prepare them. If macroeconomics were to be judged by the performance of forecasts, the verdict would not be unkind. However, the respectable track record of forecasters has been sullied by some large historical errors. Box 1.3 illustrates this fact by examining the accuracy of forecasts, after the fact, for the disastrous crisis years 2009 and 2010.

There are several reasons why economic forecasting is inherently difficult. First, even an excellent understanding of an economy's structure—how its endogenous variables interact—can fall victim to unexpected changes in exogenous variables. Good examples of this are the oil price increases of 1973 and 2000, their fall in 2015–2016, the high-tech crash of 2001 and, of course, the latest crisis. Second, expectations—which are volatile in nature—wield an important influence over the economy. Governments sometimes react to their own forecasts by implementing policies designed to prevent those forecasts from happening. Political changes occur quickly and can disrupt the economic environment. Finally, it takes time—often several months—to

⁶ Many are motivated by 'social conscience' to study economics. Much like idealistic health professionals who want to cure the sick, economists can also be interested in ways to provide relief to the disadvantaged and suffering.



Box 1.3 Forecasting the Crisis Years

Economic forecasts can be wrong, and often spectacularly so. Table 1.3 presents a few examples about the crisis years. The collapse of the investment bank Lehman Brothers in September 2008 triggered banking crises in the US and Europe. The result was a deep, unforeseeable recession in 2009. Determined action by governments and central banks often limited the recession to just one year. The table shows how forecasts of GDP growth have changed over time. We use the forecasts published every six months by the Organisation for Economic Co-operation and Development (OECD), an organization of industrialized countries. These forecasts usually reflect the consensus of professional public and private forecasters. The eventual outcome is also shown.

The Year 2009

The financial crisis began in mid-2007, but was hardly noticed and downplayed by most analysts at the time. This

know what has really happened at any given point, so forecasts are always based on provisional information which becomes more precise only with time.

Most forecasts are generated by computer-based models. These models resemble those that we present in this book. They consist of hundreds, sometimes thousands, of equations. Constructing these equations is a long and difficult task. The

explains why the initial GDP growth forecasts, produced in December 2007, were fairly optimistic. Six months later, in June 2008, concern started to grow for the US and Europe, but it was perceived that the rest of the world (here Japan and Korea) would not be much affected. The December 2008 forecast, after the Lehman collapse, became alarmist but, with hindsight, still much too optimistic.

The Year 2010

The initial forecasts, in December 2008, correctly expected that the recession would only last one year; they projected relatively modest but positive growth rates for 2010. However, as 2009 turned out much worse than expected, in mid-2009 forecasters became overly pessimistic and revised downward their numbers for 2010. The last forecasts, from December 2009, show that pessimism had declined, yet they remained too pessimistic.

exogenous variables must be guessed by forecasters before they can ask their computers for an answer. This introduces many margins of error. The models can never be fully reliable, and the exogenous variables may be difficult to pinpoint. For these reasons, the forecasters themselves take their results with a grain of salt, and often, when the outcome is not completely satisfactory, 'drop in' their own subjective factor to the results.

Table 1.3 GDP Growth Forecasts, 2009 and 2010 (% per annum)

2009	France	Germany	Japan	Korea	UK	USA
Forecast (Dec 2007)	2.0	1.6	1.8	5.1	2.4	2.2
Forecast (June 2008)	1.5	1.1	1.5	5.0	1.4	1.1
Forecast (Dec 2008)	-0.4	-0.8	-0.1	2.7	-1.1	-0.9
Actual Outcome	-2.7	-4.7	-6.3	0.3	-4.9	-2.6
2010	France	Germany	Japan	Korea	UK	USA
Forecast (Dec 2008)	1.5	1.2	0.6	4.2	0.9	1.6
Forecast (June 2009)	0.2	0.2	0.7	3.5	0.0	0.9
Forecast (Dec 2009)	1.4	1.4	1.8	4.4	1.2	2.5
Actual Outcome	1.4	3.5	4.0	6.2	1.3	2.9

Source: OECD, Economic Outlook.

1.7 Preview of the Book

1.7.1 Structure

The book proceeds in steps. Parts I–III build up an understanding of the measurement and the behaviour of the underlying economy. Part I is concerned mostly with defining terms and constructing a macroeconomic vocabulary. Part II studies the behaviour of the economy in the long run: growth and output, labour markets, and prices and exchange rates. Part III develops our understanding of macroeconomy in the short run, that is, from quarter to quarter or from year to year. This part spans many subjects, ranging from the demand of households and firms for goods and services, the financial system, the short-run determination of output, interest rates, and the exchange rate. It also extends the analysis to include the analysis of inflation, output, asset prices, and exchange rates over a longer horizon. It introduces a framework for thinking about inflation and the business cycle. Part IV then uses this framework to explore policy issues facing governments: demand management, fiscal policy, and macroeconomic policies designed to enhance long-run performance. The book concludes with an extensive look at the world international financial system, and the current state of economic thought.

1.7.2 Controversies and Consensus

Economists often make a bad name for themselves by quarrelling in public. Visible disagreements among economists frequently have to do with finer points, if not outright hair-splitting. This discourse is intellectually healthy, but misleading to outside observers, whose opinions are often based on accounts in the popular press and who are more apt to recall sensational talk-show appearances rather than sober analysis of theory and data. It is unfortunate that many disagreements have important policy implications. Perhaps as a result, politicians often see economics as a sort of debating event, with economists acting as advocates for one

particular ideology or another, and may even abuse economists' opinions to get a stamp of approval for a particular policy.

In this textbook we do not shy away from presenting some of the most important disagreements among economists, leaving the reader free to judge. Yet we do not dwell upon these controversies either, choosing to focus rather on the common ground. Because there is so much that is not controversial, it is best first to understand the broad areas of consensus. Box 1.4 provides more details.

1.7.3 Rigour and Intuition

The only possible scientific approach to the complexities of the real world is to employ the rigour of reasoning. However, to be useful, macroeconomics must be versatile and easily put to work when we want to understand particular events. This is why a great deal of macroeconomics amounts to the organized accumulation of intuition about particular phenomena. Our objective is, therefore, to leave readers with a natural understanding of how the economy functions. We do this by trying to draw robust yet simple conclusions from the various and often intricate principles presented. Such intuition is never completely rigorous, but can be useful in practice. Rigour plays a crucial role in telling us when our intuition is correct, and when it is leading us astray.

1.7.4 Data and Institutions

Macroeconomics is fascinating because it tells us a great deal about the world in which we live. It is not merely a set of abstract principles with interesting logical properties. Some theories will look odd at first sight, yet they capture key aspects of the real world. This is why at each important step we pause to look at facts. Facts can be data or particular episodes. Studying them carefully shows how theories work and shape our understanding of



Box 1.4 Macroeconomic Schools of Thought: A Primer

Almost from its beginning, macroeconomics has been divided into two main schools of thought. Keynesians (and their neo-Keynesian heirs) and monetarists (and neo-monetarists) continue to pursue the old debate about the role of the marketplace and government in society. Keynesians are more likely to believe that markets function imperfectly and that governments can and should use economic policy actively to combat recessions. Monetarists⁷ tend to reject this view, seeing politics and the power of bureaucracies as barriers to government efforts to steer the economy away from business cycles and more generally market failures, which they see as either unavoidable or of lesser importance. Given these premises, each school uses theories and data to build and support its case.

These labels are not exclusive. In the USA reference is sometimes made to saltwater versus freshwater macro-economists. Saltwater economists come from universities

located on the two US seaboards (Harvard, MIT, Yale, Stanford, Berkeley) and tend to defend the Keynesian legacy. Freshwater economists are more frequently associated with monetarism and *laissez-faire*; they hail from universities located near the Great Lakes, e.g. Chicago, Rochester, or Minnesota. In Europe, similar controversies characterize national, and increasingly European, debates. National traditions tend to make British and French economists more Keynesian, while German or Swedish economists are more monetarist. Dutch, Italian, and Spanish economists are hard to classify, having as many exceptions as examples for any rule. In recent years, the differences have tended to diminish, both among researchers and policy-makers and a synthesis was in sight. When the Great Recession came, a predictable new polarization emerged of views on theory and policy, as many economists mixed normative and positive aspects in their public pronouncements.

macroeconomic phenomena. It broadens our knowledge of important events that have shaped the lives of millions of people.

On the other hand, a graph or a table is no substitute for more rigorous analysis of the data. Merely demonstrating that two economic variables move closely together is a far cry from proving that one causes the other. Our motive in using data to illustrate economic phenomena is to give readers a feel for economics itself. On our website we offer a list of suggested reading for each chapter—which is by no means meant to be exhaustive—for those who want to learn more about the theory and practice of macroeconomics.

Finally, good economic theories must be valid under different conditions. At the same time, the response of different countries to economic shocks is often shaped by their particular economic and political institutions. These include their form of

government, the roles of labour unions and employers' associations, and regulations. The interplay of macroeconomic principles and institutions is an essential part of a proper understanding of the field, and this is why we spend a lot of time reviewing them. The economics of these institutions is, however, far beyond the level of this textbook.

1.7.5 Europe

Our textbook bears the subtitle 'A European Text'. Does this mean that we think that macroeconomics in Europe is fundamentally different from macroeconomics in the USA, Asia, or Latin America? Most certainly not! To the contrary, we take the view that macroeconomics is sufficiently global in scope to apply to economies around the world. On the other hand, we do wish to send a more subtle signal: we believe strongly that European economies have important distinguishing features that

⁷ The term 'monetarist' derives from the Latin '*moneta*' signalling their original emphasis on excess money growth as the sole cause of inflation. Now the term is sometimes

applied to those who advocate unregulated markets and criticize government intervention at both the microeconomic and the macroeconomic level.

make them hard to study through the lens of, say, the leading textbooks from North America.

There is much in Europe that warrants such a European emphasis. Rather than a collection of states under a federal government, Europe is a mosaic of nation-states, each with a sovereign macroeconomic policy-maker, but also with distinct preferences and endowments. The completion of the Single European Market, the creation of a monetary union, and the significant enlargement of the European Union increase the pres-

sure towards integration, raising specific new challenges along the way. To varying degrees, European countries also share a common view of the relationship between market forces and social justice. The attachment to fairness and economic solidarity is deeply ingrained in Europe's traditions and history, which explain why her labour markets differ so much from those in the USA. This observation alone warrants a markedly different perspective, even if the underlying theory is the same.

Key Concepts

- ◆ exchange rate
- ◆ macroeconomics
- ◆ business cycle
- ◆ trend
- ◆ gross domestic product (GDP)
- ◆ unemployment, unemployment rate
- ◆ labour force
- ◆ labour
- ◆ capital
- ◆ factors of production
- ◆ labour share
- ◆ index
- ◆ inflation
- ◆ hyperinflation
- ◆ capacity utilization
- ◆ procyclical and countercyclical
- ◆ real economy, monetary economy
- ◆ openness
- ◆ globalization
- ◆ logarithmic scale
- ◆ economic growth
- ◆ output gap
- ◆ Burns–Mitchell diagram
- ◆ laissez-faire versus interventionism
- ◆ aggregate demand management
- ◆ supply side
- ◆ price level
- ◆ coordination failures
- ◆ demand side
- ◆ economic agents
- ◆ fiscal policy
- ◆ monetary policy
- ◆ endogenous
- ◆ exogenous
- ◆ positive and normative economics

Media

Students can greatly benefit from reading daily the economic section of their newspaper. Some publications with high-quality analyses (but not free of prejudices) are (in English): the *Financial Times* and *The Economist*. There is also a wealth of information on the internet, but don't believe everything you read in Wikipedia!

Data are produced by national statistical institutes and central banks. Some international institutions produce comparable data and are of easy

access: the IMF's *International Financial Statistics* and its biannual survey *World Economic Outlook*, the OECD's biannual *Economic Outlook*, the World Bank's *World Development Report* and *Global Economic Prospects*, the European Commission's *European Economy*, and the European Bank for Reconstruction and Development's annual *Transition Report*. All maintain websites, more or less generous in allowing access to their data and publications.