

The  
Economist

# Guide to Economic Indicators

Making Sense of Economics

Sixth Edition



# **GUIDE TO ECONOMIC INDICATORS**

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**The  
Economist**

# **GUIDE TO ECONOMIC INDICATORS**

**Making Sense of Economics**

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Gross domestic product (GDP) and gross national product (GNP) or gross national income (GNI), as it is sometimes referred to now, are similar measures of total economic activity. GDP has slightly wider international usage and the term is used in this book to mean either GDP or GNP/GNI unless the context makes it clear that the reference is to one in particular. Precise definitions are given on pages 28–29.



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# 1 Interpreting economic indicators

An economist is an expert who will know tomorrow why the things he predicted yesterday didn't happen today.

Dr Laurence J. Peter

All politicians seem able to demonstrate that their party presided over the fastest economic growth, the biggest fall in unemployment or the lowest inflation. Common sense suggests that they cannot all be correct. How can you interpret such claims?

This book shows how economic figures can be manipulated to demonstrate almost anything. More important, it explains how to read them, cut through any media hype and make up your mind about what they show, requiring no prior knowledge of economics or statistics. It deals with all the most important economic indicators and answers questions such as the following.

- **What are they?** What are GDP, the invisibles balance, the terms of trade, the labour force?
- **What do they cover?** What is included in retail sales data, what is not in GDP, who is in the labour force?
- **What is their significance?** What do GDP, capacity utilisation or the terms of trade tell us?
- **Where and when are they are published?** Should you look for weekly figures from the central bank, monthly information from a private organisation, quarterly numbers from the Department of Commerce, and so on?
- **How reliable are they?** Reasonably reliable in the case of spending by a particular government department, reasonably unreliable in the case of the size of the labour force. Who knows how many people not registered as unemployed would come forward if jobs were suddenly available?
- **Will they be revised or are the first-reported figures set in stone?** For example, GDP data are revised endlessly, consumer-price data rarely.
- **How should they be interpreted?** The most important question.

## Why interpret economic figures?

There are as many reasons for interpreting economic indicators as there are published statistics. You may want to:

- get the best return on investing your money;
- measure companies and their products;
- judge if the time is right to give the go-ahead to a new capital investment project, to launch a takeover or to move into new markets;
- get a better understanding of how an economy is performing;
- judge the government's economic policies;
- obtain a feel for an unfamiliar economy;
- compare several countries;
- make a forecast; or
- simply obtain a better understanding of the news.

## The countries

This book takes a global view and is intended as a guide to interpreting economic indicators worldwide.

Since it would be cumbersome if not impossible to list figures for all countries, the tables generally show data for the 15 largest industrial countries. Where appropriate, totals or averages are also shown for the OECD and the European Union (see definitions below).

The same 15 countries form the basis for the economic and financial indicators published in *The Economist* each week. This book therefore provides the background to these figures and the historical data behind the up-to-the-minute information.

**America.** If at times undue attention seems to be given to America, it is because the American economy occupies such a dominant position, accounting as it does for about one-fifth of world output and over one-third of the output of the industrialised countries.

Bankers, financiers and politicians worldwide depend on economic events in America. For example, apart from the direct effects on the major financial markets, a change in the dollar's exchange rate affects the prices of many internationally traded commodities such as oil, and influences trade balances worldwide, especially those of the 30 or so countries with currencies directly pegged to the dollar.

**Country groups.** In the early 2000s total world economic output was

Table 1.1 **World output and trade, 2004**

	<i>Countries no.</i>	<i>World</i>	
		<i>GDP %</i>	<i>Exports %</i>
<b>Advanced countries</b>			
USA	1	20.9	10.3
Japan	1	6.9	5.7
Germany	1	4.3	9.5
France	1	3.1	4.8
Italy	1	2.9	3.9
UK	1	3.1	4.8
Canada	1	1.9	3.4
Other advanced countries	22	11.6	29.2
<b>Developing countries</b>			
Africa	48	3.3	2.2
Asia	23	24.6	11.1
Middle East	14	2.8	3.9
Latin America and Caribbean	33	7.5	4.2
<b>Total developing countries</b>	<b>118</b>	<b>45.4</b>	<b>28.2</b>
<b>Countries in transition</b>			
Central and Eastern Europe	15	3.4	4.3
CIS and Mongolia	13	3.8	2.7
<b>Total world</b>	<b>175</b>	<b>100</b>	<b>100</b>
<b>Miscellaneous groups</b>			
G7	7	43.8	40.8
EU	25	20.9	40.0
Euro area	12	15.3	31.3
Heavily indebted poor countries	27	0.9	0.3
Sub-Saharan Africa	45	2.5	1.6
Newly industrialised Asian economies	4	3.5	9.4

Note: The GDP shares are based on the purchasing-power-parity valuation of country GDPs. Exports include goods and services.

Source: IMF



around \$32,000 billion a year at market exchange rates and \$45,000 billion a year at purchasing power parity. Table 1.1 shows how this was split among advanced and developing countries, and various other groups which are sometimes used as a basis for analysis. The terminology and definitions are internationally accepted and are used by the World Bank (IBRD) and the International Monetary Fund (IMF), among others.

**Developing countries.** Of the 175 countries in Table 1.1, the 118 developing countries account for over one-third of world output. Of these the 48 sub-Saharan African states account for one-fortieth of world output. Many of them are debt-laden, with slow economic growth and low income per head. They are used in this book as an example of one of the extremes of economic performance.

**Asia.** At the other extreme, the four Asian newly industrialised countries (NICs) – Hong Kong, Singapore, South Korea and Taiwan – account for over 3% of world output. Their economic growth rates – and those of China (the world's fourth largest economy), Indonesia, Malaysia and Thailand – were among the highest in the world in the 1980s and 1990s, up to the Asian crisis of 1997.

## **Key regional and economic groups**

### ***Group of Seven (G7)***

Canada, France, Germany, Italy, Japan, the UK and the United States, which together accounted for over 60% of world GDP in 2004, measured at market exchange rates; over 40% using purchasing-power parity exchange rates. The G8 includes Russia.

### ***European Union (EU – 25 countries)***

Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the UK. In May 2004 these 15 were joined by Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia and Slovenia.

### ***Euro area (12 countries)***

Eleven of the EU's member states (Austria, Belgium, Finland, France, Germany, Ireland, Italy, Luxembourg, the Netherlands, Portugal and Spain) adopted a single currency, the euro, on January 1st 1999. Greece joined on January 1st 2001. Economic statistics for the euro area, as well

as national economies, are published in *The Economist* each week. Some key data on the euro area countries are in Table 1.2.

**Advanced countries** (IMF definition - 29)

EU members plus Australia, Canada, Iceland, Japan, New Zealand, Norway, Switzerland and the United States, plus the four newly industrialised Asian economies and Israel.

**Organisation for Economic Co-operation and Development** (OECD - 30)

The EU and other G7 countries plus Australia, Iceland, New Zealand, Norway, Switzerland, Mexico, South Korea and Turkey. The term industrial countries is used in this book to refer to the OECD. Strictly speaking the two are not quite the same since the OECD includes Turkey and Mexico, but the difference is negligible: those two countries account for only 3% of OECD economic output.

**Sub-Saharan Africa**

African countries without a Mediterranean coastline.

**Organisation of Petroleum Exporting Countries** (OPEC - 11)

Algeria, Indonesia, Iran, Iraq, Kuwait, Libya, Nigeria, Qatar, Saudi Arabia, United Arab Emirates and Venezuela.

**Newly industrialised Asian economies** (4)

Hong Kong, Singapore, South Korea and Taiwan.

**Visegrad four**

Czech Republic, Hungary, Poland and Slovakia.

**Commonwealth of Independent States** (CIS - 12)

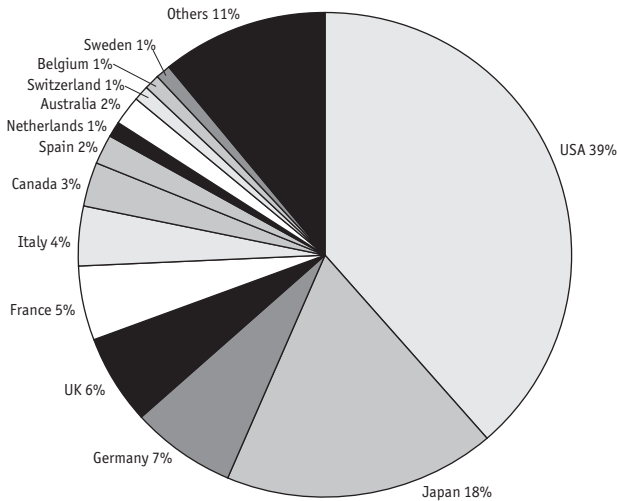
Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine, Uzbekistan.

**The indicators**

This book groups the major economic indicators together in chapters to highlight linkages and aid interpretation. These groups, which are not mutually exclusive, cover the economy and economic growth, population and employment, government fiscal policies, consumers, investment and savings, industry and commerce, external flows, exchange rates, money and interest rates, and prices and wages.

**Industrial countries' GDP**

% of total, 2004



Source: OECD

**The briefs.** Each chapter begins with a short introduction followed by a series of briefs covering the key indicators. Each brief begins with a few lines summarising the indicator, its significance, what to look for, the source, and so on. These summaries, which are necessarily general, focus on what might be expected from a major industrialised country, such as the United States, Britain, Germany or Japan, when the economy is in relatively good shape.

**Time periods.** To aid interpretation, most of the tables show average rates of growth or another appropriate average over various time periods. These cover a 30-year period and provide useful yardsticks for judging future trends.

**Germany.** Unification took place in October 1990 but it was only in 1993 that a wide range of consolidated figures was produced.

**Soviet republics.** The break-up of the USSR in 1991 increased the number of independent economies. Table 1.3 shows the relative size of the republics in 2004.

Table 1.2 Euro area countries, 2005

	<i>Population m</i>	<i>Density population per sq km</i>	<i>GDP \$bn</i>	<i>GDP per head \$ at purchasing- power-parities</i>	<i>Exports of goods and services % of GDP</i>
Austria	8.1	97	307.0	33,615	51.7
Belgium	10.4	339	372.1	31,244	87.2
Finland	5.2	15	193.5	31,208	38.7
France	60.7	110	2,105.9	29,316	26.1
Germany	82.6	231	2,797.3	30,579	40.2
Greece	11.0	83	222.9	22,392	20.8
Ireland	4.0	57	199.7	40,610	79.4
Italy	57.3	190	1,766.2	28,760	26.3
Luxembourg	0.5	180	34.2	69,800	157.0
Netherlands	16.3	399	625.3	30,862	71.2
Portugal	10.1	109	183.4	19,335	28.6
Spain	41.2	82	1,126.6	26,320	27.5
Total	307.3	123	9,926.6	28,888	37.7

Sources: IMF; UN

Table 1.3 The former Soviet republics, 2004

	<i>Population, m</i>	<i>GDP, \$bn</i>
Armenia	3.0	3.1
Azerbaijan	8.3	8.5
Belarus	9.8	22.9
Estonia	1.3	11.2
Georgia	4.5	5.2
Kazakhstan	15.0	40.7
Kyrgyzstan	5.1	2.2
Latvia	2.3	13.6
Lithuania	3.4	22.3
Moldova	4.2	2.6
Russia	143.8	581.4
Tajikistan	6.4	2.1
Turkmenistan	4.8	6.2
Ukraine	47.5	64.8
Uzbekistan	26.2	12.0

Source: World Bank

## Sources of information

Countless economic figures are published every day in the news media and in various special reports, such as those circulated by investment advisers and financial institutions. The information is necessarily selective, so that readers may wish to go back to the original source of the statistics.

**National sources.** Apart from the various trade organisations such as the US Institute for Supply Management or the Confederation of British Industry (CBI), each country has its own sources of official statistics.

Sometimes the appropriate government department is self-evident; for example, labour statistics generally come from the department of employment or labour. For data which affect more than one department, such as GDP or balance of payments figures, good sources include the central bank or a central statistical agency, such as Germany's Federal Statistics Office or France's National Institute of Statistics and Economic Studies (INSEE). In America the Commerce Department is the most comprehensive source of data.

Key statistical publications produced by official bodies in the 15 countries focused on are listed below. In general central bank sources contain monetary data and the other sources cover more general figures, but there is usually some overlap between the two. These official sources frequently include a summary of the major private-sector figures.

**International sources.** International organisations publish various national and international data, frequently in standardised or semi-standardised form, within a few weeks of their original release. Key sources include the following. Website details are given in the Appendix on page 221.

- **OECD.** The monthly *Main Economic Indicators* includes output, prices and trade in the OECD's 30 member and a dozen non-member countries. The numbers are often rebased (for example, to 2000 = 100), but are derived from the original national data. *Periodic Economic Surveys* and special reports provide data and analysis relating to economic developments in one member country or to one group of indicators such as employment data.
- **IMF.** The monthly *International Financial Statistics* covers monetary data and many other figures such as GDP and trade for the 183 IMF member countries.

- **UN (United Nations).** The *Monthly Bulletin of Statistics* includes some production and trade figures for a wide range of countries in more detail than IMF figures. Data on the production of various commodities are interesting.
- **European Commission.** The monthly *Eurostatistics* contains comparative data for EU member countries, while the quarterly *European Economy* includes statistics and ad hoc reports.

## Useful national statistical publications

### **Australia**

Reserve Bank: *Report and Financial Statements; Statistical Bulletin*  
 Australian Bureau of Statistics: *Monthly Review of Business Statistics; Digest of Current Economic Statistics*

### **Austria**

National Bank: *Annual Report; Mitteilungen*  
 Statistical Office: *Statistische Nachrichten*

### **Belgium**

National Bank: *Annual Report; Statistical Bulletin*  
 National Institute of Statistics: *Bulletin of Statistics*

### **Canada**

Bank of Canada: *Review*  
 Statistics Canada: *Canadian Economic Observer*

### **Denmark**

National Bank: *Reports and Accounts; Monetary Review*  
 Statistics Denmark: *Statistical Bulletin*

### **France**

Bank of France: *Statistiques Monétaires Définitives; Statistiques Monétaires Provisoires; Quarterly Bulletin*  
 National Institute of Statistics and Economic Research (INSEE): *Monthly Statistics Bulletin; Informations Rapides*  
 Ministry of Economics, Finance and Budget: *Les Notes Bleues; Statistics and Financial Studies*

### **Germany**

Bundesbank: *Monthly Report; Supplements to the Monthly Reports*  
 Federal Statistical Office: *Aussenhandel, Reihe 1, Wirtschaft und Statistik*

### **Italy**

Bank of Italy: *Annual Report; Economic Bulletin; Statistical Bulletin*  
 Central Institute of Statistics: *Monthly Bulletin*

### **Japan**

Bank of Japan: *Economics Statistics Monthly*

Bureau of Statistics: *Monthly Statistics of Japan*

### **Netherlands**

Netherlands Bank: *Annual Report; Quarterly Bulletin*

Central Bureau of Statistics: *Statistical Bulletin; Monthly Financial Statistics (Financieel Maandstatistiek); Social-economisch Maandstatistiek; Maandschrift (Monthly Bulletin)*

### **Spain**

Bank of Spain: *Annual Report; Statistical Bulletin*

National Statistical Institute: *Monthly Bulletin of Statistics; National Accounts of Spain*

### **Sweden**

Bank of Sweden: *Yearbook; Quarterly Review*

National Institute of Economic Research: *The Swedish Economy*

Central Bureau of Statistics: *Monthly Digest of Swedish Statistics; Statistical Reports*

### **Switzerland**

Swiss National Bank: *Annual Report; The Swiss Banking System; Monthly Bulletin*

*Message of the Federal Council to the Federal Assembly*

### **UK**

Bank of England: *Monetary and Financial Statistics*

Office for National Statistics: *Monthly Digest of Statistics; Economic Trends; Financial Statistics*

### **United States**

Board of Governors of the Federal Reserve System: *Federal Reserve Bulletin*

US Department of Commerce: *Survey of Current Business*

US Treasury Department: *Treasury Bulletin*

## **Interpretation**

These are the first questions to ask when you come across any economic indicators.

- **Who produced the figures?** Was it a reliable government agency such as Statistics Canada or a recently established market research company?
- **Will the data be revised?** If so by how much? For example, America's GDP growth in the first quarter of 2006 was revised upwards from 4.8% to 5.3%.
- **To what period do the figures relate?** For example, American

retail sales of \$320 billion would be excellent for a month, appalling for a year.

- **Are the data seasonally adjusted?** If so is the adjustment reliable? For example, an increase in sales of umbrellas in the wettest month on record will not necessarily indicate a lasting improvement in the fortunes of umbrella companies.
- **What were the start and end points for changes?** For example, the change in unemployment between a recession and a boom will look much more impressive than the change between boom and slump.
- **What about inflation?** For example, a 2% increase in spending is rather disappointing if prices rose by 5% over the same period.
- **What other yardsticks will aid interpretation?** For example, total population, employment or GDP. A 5% rise in the number of jobs is not such good news if the working-age population expanded by 10% over the same period.

Chapter 2 runs through some critical ideas about numbers and their interpretation. Chapter 3 describes how economic activity is measured and comments on yardsticks and reliability. Chapters 4–13 cover the indicators themselves, as previewed above.



## 2 Essential mechanics

Please find me a one-armed economist so we will not always hear “On the other hand ...”

Herbert Hoover, US president

This chapter looks at some basic methods of interpreting numbers and some of the common associated problems. It also lays the groundwork for analysing any kind of economic data.

### Volume, value and price

When interpreting economic figures it is important to distinguish between the effects of inflation and changes in the real level of economic activity. Indicators measure one of three things:

- **volume**, such as tonnes of steel or barrels of oil;
- **value**, such as the market value of steel or oil produced in one month or year; or
- **price**, such as the market price of 1 tonne of steel or 1 barrel of oil.

The relationship between these three is simple. *Volume* times *price* equals *value* (see Table 2.1).

There is one possible complication. If the volume of oil or steel produced each year is valued in the prices ruling in, say, 2000, the result is an indicator of output in “2000 price terms”. Such a series is in money units, but it is a volume indicator because it provides information about changes in volumes not prices. This is known also as output in constant prices, real prices or real terms.

The value of oil output measured in actual selling prices is known as a current price or nominal price series or a series in nominal terms. Thus:

- **values, current prices, nominal prices and nominal terms** include the effects of inflation; while
- **volumes, constant prices, real prices and real terms** exclude any inflationary influences.

Table 2.1 OPEC crude oil production and prices

	<i>volume</i>	×	<i>price</i>	=	<i>value</i>
	<i>Production m barrels</i>		<i>Price \$/barrel</i>		<i>Value of production \$bn</i>
2001	11,174		23.1		258.3
2002	10,542		24.4		256.8
2003	11,244		28.1		316.0
2004	12,039		36.1		434.0
2005	12,350		50.6		625.4

Sources: BP Statistical Review of World Energy; OPEC

In Table 2.2 column A shows the money value of annual US economic output (gross domestic product or GDP, see page 28), which reflects changes in both output and prices. The next two columns disentangle these factors. Column B shows the volume of output with all goods and services measured in 2000 prices. Column C indicates the path of inflation (but see the comment on current-weighted index numbers below).

The value of output rose in 2004–05 (from \$11,734 billion to \$12,487 billion), yet in terms of the prices ruling in 2000, real output hardly moved over the same period (from \$10,756 billion to \$11,135 billion).

Price indicators used to convert between current and constant prices (to deflate) are sometimes called price deflators.

- Current price series divided by constant price series ( $\times 100$ ) equals the price deflator.
- Current price series divided by price deflator ( $\times 100$ ) equals the constant price series.
- Constant price series times the price deflator ( $\div 100$ ) equals current price series.

Any series of numbers can be converted into index numbers, as described below for the constant price series in Table 2.2 column E.

**Step 1** A reference base is selected, 2000 in this case.

**Step 2** The value in the reference base is divided by 100 ( $9,817 \div 100 = 98.17$ ).

Table 2.2 US GDP

	<i>Current prices</i> <i>\$bn</i> <i>A</i>	<i>Constant 2000 chained dollars</i> <i>\$bn</i> <i>B</i>	<i>Price deflator index</i> <i>2000 = 100</i> <i>C</i>	<i>Current prices index</i> <i>2000 = 100</i> <i>D</i>	<i>Constant prices index</i> <i>2000 = 100</i> <i>E</i>
1996	7,816.9	8,328.9	93.9	79.6	84.8
1997	8,304.3	8,703.5	95.4	84.6	88.7
1998	8,747.0	9,066.9	96.5	89.1	92.4
1999	9,268.4	9,470.3	97.9	94.4	96.5
2000	9,817.0	9,817.0	100.0	100.0	100.0
2001	10,128.0	9,890.7	102.4	103.2	100.8
2002	10,469.6	10,048.8	104.2	106.6	102.4
2003	10,971.2	10,320.6	106.3	111.8	105.1
2004	11,734.3	10,755.7	109.1	119.5	109.6
2005	12,487.1	11,134.8	112.1	127.2	113.4

Source: US Commerce Department, Bureau of Economic Analysis

**Step 3** All numbers in the original series are divided by the result of step 2.

For example, the index value for 1997 is  $8,704 \div 98.17 = 88.7$

### Index numbers

Index numbers are values expressed as a percentage of a single base figure. For example, if annual production of a particular chemical rose by 35%, output in the second year was 135% of that in the first year. In index terms, output in the two years was 100 and 135 respectively.

Index numbers have no units. Chemical production in the second year is referred to as 135, not 135 tonnes or 135%. The advantages are that distracting units are avoided and changes are easier to assess by eye. The arithmetic is straightforward, as shown in Table 2.2.

**Composite indices and weighting.** Frequently two or more indices are combined to form one composite index. For example, indices of consumer spending on food and on all other items might be combined into one index of total spending.

**Base weighting.** The most straightforward way of combining indices is to calculate a weighted average using the same weights throughout. This is known as a base-weighted index, or sometimes a Laspeyres index after the German economist who developed the first one. The following is an example of a base-weighted price index for single-person household consumption of wine and cheese each week.

### Base data

Item	— Price —		Quantity consumed	
	1995	2005	1995	2005
Wine	9.00	10.50	5	6
Cheese	5.00	8.00	2	3

Where prices are in, say, dollars and quantities are litres of wine/kilos of cheese:

#### *Weekly expenditure in 1995*

$$\begin{aligned}
 &= (1995 \text{ quantity of wine} \times 1995 \text{ price of wine}) \\
 &+ (1995 \text{ quantity of cheese} \times 1995 \text{ price of cheese}) \\
 &= (5 \times 9.00) + (2 \times 5.00) \\
 &= 45.00 + 10.00 = 55.00
 \end{aligned}$$

#### *Weekly expenditure in 2005, based on 1995 quantities*

$$\begin{aligned}
 &= (1995 \text{ quantity of wine} \times 2005 \text{ price of wine}) \\
 &+ (1995 \text{ quantity of cheese} \times 2005 \text{ price of cheese}) \\
 &= (5 \times 10.50) + (2 \times 8.00) \\
 &= 52.50 + 16.00 = 68.50
 \end{aligned}$$

$$\text{Index number for 1995} = 55.00/55.00 \times 100 = 100.0$$

$$\text{Index number for 2005} = 68.50/55.00 \times 100 = 124.5$$

**Current weighting.** The problem with weighted averages is that weights usually need revising from time to time. With the consumer prices index, spending habits change because of variations in relative cost, quality, availability, and so on. One way to proceed is to calculate a new set of current weights at regular intervals, and use these to derive a single long-term index. This is known as a current-weighted index, or occasionally a Paasche index, again after its founder. The following is an example of a current-weighted price index for single-person household consumption of wine and cheese each week.

**Base data**

Item	— Price —		Quantity consumed	
	1995	2005	1995	2005
Wine	9.00	10.50	5	6
Cheese	5.00	8.00	2	3

Where prices are in, say, dollars and quantities are litres of wine/kilos of cheese:

*Weekly expenditure in 1995, based on 2005 quantities*

$$\begin{aligned} &= (2005 \text{ quantity of wine} \times 1995 \text{ price of wine}) \\ &+ (2005 \text{ quantity of cheese} \times 1995 \text{ price of cheese}) \\ &= (6 \times 9.00) + (3 \times 5.00) \\ &= 54.00 + 15.00 = 69.00 \end{aligned}$$

*Weekly expenditure in 2005*

$$\begin{aligned} &= (2005 \text{ quantity of wine} \times 2005 \text{ price of wine}) \\ &+ (2005 \text{ quantity of cheese} \times 2005 \text{ price of cheese}) \\ &= (6 \times 10.50) + (3 \times 8.00) \\ &= 63.00 + 24.00 = 87.00 \end{aligned}$$

Index number for 1995 =  $69.00/69.00 \times 100 = 100.0$

Index number for 2005 =  $87.00/69.00 \times 100 = 126.1$

Neither base weighting nor current weighting is perfect. Base-weighted indices are simple to calculate but they tend to overstate changes over time. Current-weighted indices are more complex to produce and they understate long-term changes.

Current-weighted price indices reflect changes in both prices and relative volumes, while base-weighted versions record price changes only. The price deflator in Table 2.2 is actually chain-weighted, ie the weights are adjusted each year and the indices are linked.

Mathematically, there is no ideal method for weighting indices; expediency usually rules. Most commonly indices are a combination of base-weighted and current-weighted. A new set of weights might be introduced every five years or so and the new index then spliced or chained to the old index. Table 2.3 shows how two indices are joined.

It is essential to know the basis for the weighting, as illustrated above.

Table 2.3 Chaining index numbers

	<i>Old index</i> A	<i>New index</i> B	<i>Old index rebased</i> C	<i>Chained index</i> D
1999	100		62	62
2000	110		69	69
2001	121		76	76
2002	133	83	83	83
2003		91		91
2004		100		100
2005		110		110

### Chaining index numbers

- Step 1** Identify one period when there are figures for both indices; 2002 in Table 2.3.
- Step 2** For this period, divide the new figure by old figure;  $83 \div 133 = 0.62$ .
- Step 3** Multiply all old figures by the result; each figure in column C = figure in column A  $\times 0.62$ .
- Step 4** Put the rebased data with the new figures to create one long run of data.

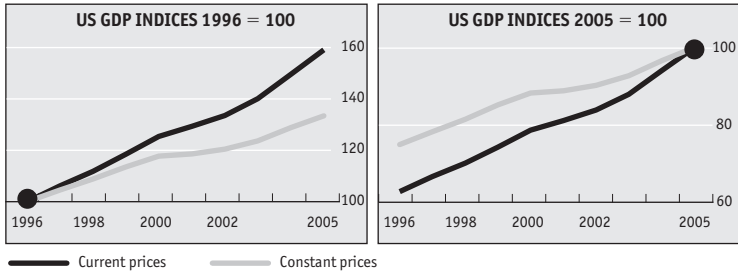
**Effects of reweighting/out-of-date weights.** To show the effects of reweighting, consider GDP (total output) based on 1990 weights when, say, manufacturing accounted for half of all economic activity. If in 1990 manufacturing grew by 6% while all other activity was static, initial 1990 figures showed total GDP rising by  $6 \times 0.50 = 3\%$ . By 1995 the results of a major survey were available and GDP from 1988 was reweighted to take account of the fact that the manufacturing sector had shrunk to a mere 10% of total GDP. As a result the revised figure for total growth in 1990 was  $6 \times 0.10 = 0.6\%$ .

This is obviously an extreme example, but index numbers can easily become distorted if one item is much less or much more significant than the others. For example, demand tends to grow most rapidly for goods and services which increase least in price, and so on rebasing these items are allocated larger relative weights.

When looking at index numbers it is a good idea to check when they were last rebased and ask whether any component is increasing or decreasing in relative importance. The same approach should be taken to constant

## Index numbers

Illusory convergence



Source: US Commerce Department, Bureau of Economic Analysis

price series, such as the GDP data in 2000 dollars in Table 2.2, because these are essentially index numbers with a base value other than 100.

**Convergence.** Look out also for illusory convergence on the base. Two or more series will always meet at the base period because that is where they both equal 100 (see Figure 2.1). This can be highly misleading. When you encounter indices on a graph, the first thing to do is check where the base is located.

### Measuring changes

If an index of stockmarket prices rose from 1,200 to 1,260, you could say either that it rose by 60 points or, alternatively, that it increased by 5%.

Stating the increase as 60 points (an absolute measure) is simple and straightforward. Yet to interpret the figure it must be judged against another figure, such as the starting level. A rise of 60 points in an index standing at 120 is much more dramatic than an increase of 60 points in an index which started at 12,000.

The percentage change (a relative measure) is easy to interpret. It indicates the size of a change when the starting level is 100. Percentages therefore provide a consistent yardstick for interpreting changes.

**Calculating percentages.** This is a matter of simple arithmetic. Basic rules for calculating percentage changes are given below. The various operations in the examples are similar. They are designed to minimise the number of key strokes required when using a calculator. Multiplying or dividing by 100 and adding or subtracting 1 can be done by eye.

**1 To find one number as a percentage of another**

	<i>General procedure</i>	<i>Example 1</i>	<i>Example 2</i>
	Y as % of X	150 as % of 120	120 as % of 150
<b>Step 1</b>	Divide Y by X	$150 \div 120 = 1.25$	$120 \div 150 = 0.80$
<b>Step 2</b>	Multiply by 100	$1.25 \times 100 = 125$ →150 is 125% of 120	$0.80 \times 100 = 80.0$ →120 is 80% of 150

**2 To find the percentage change between two amounts**

	<i>General procedure</i>	<i>Example 1</i>	<i>Example 2</i>
	Change between X and Y as % of X	change between 120 and 150 as % of 120	change between 150 and 120 as % of 150
<b>Step 1</b>	Divide Y by X	$150 \div 120 = 1.25$	$120 \div 150 = 0.80$
<b>Step 2</b>	Subtract 1	$1.25 - 1 = 0.25$	$0.80 - 1 = -0.20$
<b>Step 3</b>	Multiply by 100	$0.25 \times 100 = 25.0$ →150 is 25% greater than 120	$-0.20 \times 100 = -20.0$ →120 is 20% smaller than 150

**3 To find a given percentage of an amount**

	<i>General procedure</i>	<i>Example 1</i>	<i>Example 2</i>
	X% of Y	125% of 120	80% of 150
<b>Step 1</b>	Divide X by 100	$125 \div 100 = 1.25$	$80 \div 100 = 0.8$
<b>Step 2</b>	Multiply by Y	$1.25 \times 120 = 150$ →150 is 125% of 120	$0.8 \times 150 = 120$ →120 is 80% of 150

**4 To find an amount after a given percentage increase or decrease**

	<i>General procedure</i>	<i>Example 1</i>	<i>Example 2</i>
	Y increased by X%	120 increased by 25%	150 reduced by 20%
<b>Step 1</b>	Divide X by 100	$25 \div 100 = 0.25$	$20 \div 100 = -0.2$
<b>Step 2</b>	Add 1	$0.25 + 1 = 1.25$	$-0.2 + 1 = 0.8$
<b>Step 3</b>	Multiply by Y	$1.25 \times 120 = 150$ →150 is 25% greater than 120	$0.8 \times 150 = 120$ →120 is 20% less than 150

**Basis points.** Financiers deal in very small changes in interest or exchange rates. For convenience one unit, say 1% (that is, 1 percentage point), is often divided into 100 basis points.

- 1 basis point = 0.01 percentage point
- 10 basis points = 0.10 percentage point
- 25 basis points = 0.25 percentage point
- 100 basis points = 1.00 percentage point



## Common traps

**Units and changes.** Do not confuse percentage points with percentage changes. If an interest rate or inflation rate increases from 10% to 13%, it has risen by three units, or 3 percentage points, but the percentage increase is 30% ( $3 \div 10 \times 100$ ).

**Up and back.** A percentage increase followed by the same percentage decrease results in a figure below the starting level. For example, a 50% rise followed by a 50% cut leaves you 25% worse off.

- \$1,000 increased by 50% is \$1,500.
- 50% of \$1,500 is \$750.

**Starting levels.** A 10% pay rise for chief executives earning \$500,000 a year puts an extra \$50,000 in their annual pay packets. The same percentage increase for cleaners on \$10,000 a year gives them a mere \$1,000 extra.

The importance of the base from which changes are calculated is also illustrated in Tables 2.4 and 2.5.

Using Table 2.4, it could be claimed that in February 2006 the 12-month rate of inflation fell from 10% to 0%. In fact all that happened is that the increase a year earlier fell out of the 12-month comparison. In this example, shop prices changed just once during the period January 2004–February 2006, perhaps owing to an increase in the rate of sales tax or VAT.

Table 2.5 shows that orders in the third quarter of 2006 were down from the previous quarter. However, the figure for the previous quarter was unusually high, and the third-quarter figures were better than the first quarter's and any quarter of 2005. When comparing data over several years it is easy to overlook the distortion that can arise from using an unusually high or low starting or ending value.

## Growth rates

If consumer spending rises by 1% a month, by how much will it increase over a full year? Not 12%, but 12.7%. Each month expenditure is 1% greater than the month before and each percentage increase is calculated (compounded) from a higher base. Thus 12.7% a year is the same as 1% a month annualised. It is important to distinguish between the following terminology (numerical examples from Table 2.5).

Table 2.4 When did inflation fall?

<i>Consumer prices index</i>		<i>% change over</i>	
		<i>1 month</i>	<i>12 months</i>
<b>2004</b>			
January	100	0	0
February	100	0	0
<b>2005</b>			
January	100	0	0
February	110	10	10
March	110	0	10
<b>2006</b>			
January	110	0	10
February	110	0	0

Table 2.5 Choosing the period for comparison

	<i>Orders £bn</i>	<i>Over four quarters</i>	<i>% change from fourth quarter 2000</i>	
			<i>actual</i>	<i>annualised</i>
<b>2005</b>				
1st quarter	33.3			
2nd quarter	33.8			
3rd quarter	34.3			
4th quarter	33.6			
Average for year	33.7			
<b>2006</b>				
1st quarter	34.3	3.0	2.1	8.6
2nd quarter	36.0	6.5	7.1	14.8
3rd quarter	35.2	2.6	4.8	6.4
4th quarter	32.9	-2.1	-2.1	-2.1
Average for year	34.6	2.7		

- **12-month or 4-quarter change.** This compares one month or quarter with the same one in the previous year. For example, orders rose 2.6% between the third quarters of 2005 and 2006.
- **Change this year.** This compares the latest figure with the very end of the previous year. For example, when third-quarter figures

for 2006 were published, commentators might have said that orders had risen by 4.8% over the three quarters to the third quarter of 2006.

- **Annualised change.** This is the change which would occur if the movement observed in any period were to continue for exactly 12 months. For example, orders rose 6.4% annualised during the first three quarters of 2006.
- **Annual change.** This compares the total or average for one calendar or fiscal year with the previous one. For example, orders in 2006 were 2.7% higher than in 2005.
- **Change to end-year.** This compares end-year with end-year: for example, orders fell by 2.1% over the four quarters to end-2001.

**How to use Table 2.6.** Locate in column 1 any observed rate, say a 1% monthly increase in consumer prices. If this rate continues, prices will double after almost 70 months (column 2) and increase by 12.7% in a year (final column). If the 1% change took place over one quarter (three months), the doubling time is 70 quarters (column 2) and the annual rate of increase is 4.1% (column 3).

Table 2.6 shows annualised rates for a selection of simple rates. American commentators tend to focus on annualised rates. This makes it easy to compare monthly or quarterly changes with perhaps more familiar annual rates, but it can be highly misleading. Many economic figures bump around from month to month, and annualised rates exaggerate erratic fluctuations. A mere 0.1% change in a month adds 1.2% to the annualised figure. Columns C and D of Table 2.7 (see page 26) compare simple and annualised changes and show how annualising can emphasise erratic fluctuations.

Each week the economic indicators pages of *The Economist* show changes in indicators such as industrial production and retail sales as the percentage change over 12 months.

Table 2.6 Annualised and doubling rates

<i>Observed % rate</i>	<i>Doubling time</i>	<i>— Annualised rate if the observed rate is —</i>	
		<i>quarterly</i>	<i>monthly</i>
0.1	693.5	0.4	1.2
0.2	346.9	0.8	2.4
0.3	231.4	1.2	3.7
0.4	173.6	1.6	4.9
0.5	139.0	2.0	6.2
0.6	115.9	2.4	7.4
0.7	99.4	2.8	8.7
0.8	87.0	3.2	10.0
0.9	77.4	3.6	11.4
1.0	69.7	4.1	12.7
1.1	63.4	4.5	14.0
1.2	58.1	4.9	15.4
1.3	53.7	5.3	16.8
1.4	49.9	5.7	18.2
1.5	46.6	6.1	19.6
1.6	43.7	6.6	21.0
1.7	41.1	7.0	22.4
1.8	38.9	7.4	23.9
1.9	36.8	7.8	25.3
2.0	35.0	8.2	26.8
2.5	28.1	10.4	34.5
3.0	23.4	12.6	42.6
3.5	20.1	14.8	51.1
4.0	17.7	17.0	60.1
4.5	15.7	19.3	69.6
5.0	14.2	21.6	79.6
5.5	12.9	23.9	90.1
6.0	11.9	26.2	101.2
6.5	11.0	28.6	112.9
7.0	10.2	31.1	125.2
7.5	9.6	33.5	138.2
8.0	9.0	36.0	151.8
8.5	8.5	38.6	166.2
9.0	8.0	41.2	181.3
10.0	7.3	46.4	213.8
11.0	6.6	51.8	249.8
12.0	6.1	57.4	289.6
13.0	5.7	63.0	333.5
14.0	5.3	68.9	381.8
15.0	5.0	74.9	435.0
16.0	4.7	81.1	493.6
18.0	4.2	93.9	628.8
20.0	3.8	107.4	791.6

## The arithmetic for dealing with growth rates

### 1 To find the growth rate over several periods when the rate over one period is known.

	General procedure	Example 1	Example 2
	r% per period over n periods	0.3% per month for 12 months	7.5% per year for 10 years
<b>Step 1</b>	Divide r by 100	$0.3 \div 100 = 0.003$	$7.5 \div 100 = 0.075$
<b>Step 2</b>	Add 1	$0.003 + 1 = 1.003$	$0.075 + 1 = 1.075$
<b>Step 3</b>	Raise to power of n	$1.003^{12} = 1.037$	$1.075^{10} = 2.061$
<b>Step 4</b>	Subtract 1	$1.037 - 1 = 0.037$	$2.061 - 1 = 1.061$
<b>Step 5</b>	Multiply by 100	$0.037 \times 100 = 3.7$ →Growth of 0.3% per month annualises to 3.7% a year	$1.061 \times 100 = 106.1$ →Growth of 7.5% per year equals a 106.1% increase over 10 years

**Note on step 3.** Raising a number to the power of n is a shorthand way of saying multiply it by itself n times. For example,  $2^3 = 2 \times 2 \times 2 = 8$ . Use the calculator key marked  $x^y$  (the letters might be slightly different) to perform this operation. If there is no  $x^y$  key use logarithms (the LOG and  $10^x$  or LN and  $e^x$  keys). Replace step 3 with the following.

<b>Step 3a</b>	Take the log	$\text{Log } 1.003 = 0.0013$	$\text{Log } 1.075 = 0.0314$
<b>Step 3b</b>	Multiply by n	$0.0013 \times 12 = 0.0156$	$0.0314 \times 10 = 0.314$
<b>Step 3c</b>	Take the antilog	$\text{Antilog } 0.0156 = 1.037$	$\text{Antilog } 0.314 = 2.061$

The formula for these calculations is  $[(1 + r/100)^n - 1] \times 100$  or, for PC spreadsheet users,  $(\text{EXP}(\text{LN}(1 + r/100)*n) - 1)*100$ .

### 2 To find the growth rate over one period when the rate over several periods is known.

	General procedure	Example 1	Example 2
	r% over n periods	3.7% over 12 months	106.1% over 10 years
<b>Step 1</b>	Divide r by 100	$3.7 \div 100 = 0.037$	$106.1 \div 100 = 1.061$
<b>Step 2</b>	Add 1	$0.037 + 1 = 1.037$	$1.061 + 1 = 2.061$
<b>Step 3</b>	Raise to power of $1/n$	$1.037^{1/12} = 1.003$	$2.061^{1/10} = 1.075$
<b>Step 4</b>	Subtract 1	$1.003 - 1 = 0.003$	$1.075 - 1 = 0.075$
<b>Step 5</b>	Multiply by 100	$0.003 \times 100 = 0.3$ →Growth of 3.7% per year equals 0.3% per month	$0.075 \times 100 = 7.5$ →Growth of 106.1% over 10 years equals 7.5% per year

**Note on step 3.** If your calculator does not have an  $x^{1/y}$  key, use logarithms (the LOG and  $10^x$  or LN and  $e^x$  keys). Replace step 3 with the following.

<b>Step 3a</b>	Take the log	Log 1.037 = 0.0158	Log 2.061 = 0.314
<b>Step 3b</b>	Divide by n	0.0158 ÷ 12 = 0.0013	0.314 ÷ 10 = 0.0314
<b>Step 3c</b>	Take the antilog	Antilog 0.0013 = 1.003	Antilog 0.0314 = 1.075

The formula for these calculations is  $[(1 + r/100)^{1/n} - 1] \times 100$  or, for PC spreadsheet users,  $(\text{EXP}(\text{LN}(1 + r/100)/n) - 1) * 100$ .

### Moving averages

One way to smooth out erratic fluctuations is to look at an average. When reviewing, say, total high street sales in June, you might take an average of figures for May, June and July. A sequence of such averages is called a moving average. Column E of Table 2.7 (page 26) and the footnote show the calculation of a three-month moving average for a short run of data.

The moving average can average any number of periods. A five-year moving average helps to smooth out the economic cycle described on pages 51–55, although a lot of data would be needed to calculate it. Moreover, the more periods covered by a moving average, the slower it will be to show changes in trend.

### Seasonality

Most economic figures show a seasonal pattern that repeats itself every year. For example, prices of seasonal foods rise in the winter, sales of beachwear increase with the onset of summer, and industrial production falls in the months when factories close for annual holidays.

**Seasonal adjustment.** There is a simple numerical process called seasonal adjustment which adjusts raw data for the observed seasonal pattern. Briefly, if sales or output in February are typically 85% of the monthly average, the seasonal adjustment process divides all observations for February by 85%.

Many published figures are seasonally adjusted to aid interpretation, but it is important to remember that seasonal adjustment is not infallible. For example, in a particularly cold month energy use increases by more than the amount expected by seasonal adjustment, while more building workers than usual are temporarily laid off. The

Table 2.7 Analysing seasonal and erratic influences

	Retail sales index A	% change over			3-month moving average	
		1 month B	1 month annualised C	12 months D	Index E	% change from 12 months ago F
<b>2004</b>						
Oct	119.2					
Nov	120.2	0.8				
Dec	121.8	1.3			120.4	
<b>2005</b>						
Jan	121.6	-0.2			121.2	
Oct	130.7	-0.5	-5.8	9.6		
Nov	133.4	2.1	27.8	11.0		
Dec	134.4	0.7	9.3	10.3	132.8	10.3
<b>2006</b>						
Jan	129.2	-3.9	-37.7	6.2	132.3	9.2

Note: Calculations for January 2006:

Column B:  $[(129.2 \div 134.4) - 1] \times 100 = -3.9\%$

Column C:  $[(129.2 \div 134.4)^{12} - 1] \times 100 = -37.7\%$

Column D:  $[(129.2 \div 121.6) - 1] \times 100 = 6.2\%$

Column E:  $(133.4 + 134.4 + 129.2) \div 3 = 132.3$

Column F:  $[(132.3 \div 121.2) - 1] \times 100 = 9.2\%$

adjusted figures might be erroneously taken to suggest that energy use or unemployment was rising when the underlying situation was very different. Climatic and other influences might be overlooked when viewing the economy from the comfort of seasonally adjusted data.

**Coping with seasonality and blips.** Table 2.7 indicates some problems of interpreting data which are subject to erratic or seasonal influences.

- The figures in column A are an index of retail sales. At first glance it appears that sales in January 2006 were very poor, since there was a 4% decline from the previous month (column B). It seems that this interpretation is confirmed because the 4% fall is worse than the 0.2% decline in the same month a year earlier.
- The percentage changes over 12 months (column D) give some

encouragement. They indicate that the trend in sales is upward, though growth over the 12 months to January 2006 (6.2%) was slacker than in the previous few months (around 10%).

- Column F smooths out short-term erratic influences by comparing sales in the latest three months with sales in the same three months a year earlier. This suggests that the fall in January was not as severe as it appeared at first glance, with the 12-month growth rate remaining at close to 10%.

This final interpretation is the correct one. Indeed, a full run of figures would show that sales fell in January only because this was a correction to an exceptionally steep rise in the earlier few months.

Commentators are inclined to interpret blips as changes in trend. In general you should examine a run of data, form a view about the trend, and stick to it until there is clear evidence that the trend has changed.



### 3 Measuring economic activity

GDP should really stand for grossly deceptive product.

*The Economist*

**T**otal economic activity may be measured in three different but equivalent ways.

Perhaps the most obvious approach is to add up the value of all goods and services produced in a given period of time, such as one year. Money values may be imputed for services such as health care which do not change hands for cash. Since the output of one business (for example, steel) can be the input of another (for example, automobiles), double counting is avoided by combining only “value added”, which for any one activity is the total value of production less the cost of inputs such as raw materials and components valued elsewhere.

A second approach is to add up the expenditure which takes place when the output is sold. Since all spending is received as incomes, a third option is to value producers’ incomes.

Thus output = expenditure = incomes.

The precise definition of economic activity varies. The three main concepts are gross domestic product, gross national product and net national product.

**Gross domestic product.** GDP is the total of all economic activity in one country, regardless of who owns the productive assets. For example, Britain’s GDP includes the profits of a foreign firm located in Britain even if they are remitted to the firm’s parent company in another country.

**Gross national income or gross national product.** GNI, a term which has replaced GNP in national accounts, is the total of incomes earned by residents of a country, regardless of where the assets are located. For example, Britain’s GNI includes profits from British-owned businesses located in other countries.

**Net national income.** The “gross” in GDP and GNI indicates that there is no allowance for depreciation (capital consumption), the amount of capital resources used up in the production process due to wear and tear, acci-

dental damage, obsolescence or retirement of capital assets. Net national income is GNI less depreciation.

The relationship between the three measures is straightforward:

$$\begin{aligned}
 & \text{GDP (gross domestic product)} \\
 & + \text{net property income from abroad} \\
 & \text{(rent, interest, profits and dividends)} \\
 & = \text{GNI (gross national income)} \\
 & - \text{capital consumption (depreciation)} \\
 & = \text{NNI (net national income)}
 \end{aligned}$$

**Capital consumption.** Capital consumption is not identifiable from a set of transactions; it can only be imputed by a system of conventions. For example, when investment spending of \$1m on a new machine is included in GDP figures, national accounts statisticians pencil in depreciation of, say, \$100,000 a year for each of the next ten years. This gives a stunted view of productive capacity. After five years the machine might still be producing at full capacity, but the national accounts would show it as capable of producing only half the volume that it could when new.

### Choosing between GDP, GNI and NNI

Net national income (NNI) is the most comprehensive measure of economic activity, but it is of little practical value due to the problems of accounting for depreciation. Gross concepts are more useful.

All the major industrial countries now use GDP as their main measure of national economic activity. America, Germany and Japan, which had until the early 1990s focused on GNP, now use GDP. The difference between GDP and GNI or GNP is usually relatively small, perhaps 1% of GDP, but there are a few exceptions; for example, in 2001 Ireland's GDP was 19% bigger than its GNI, owing to the profits earned by foreign investors in the country. In the short term a large change in total net property income has only a minor effect on GDP. When reviewing longer-term trends, it is advisable to check net property income to see if it is making GNI grow faster than GDP.

### Net material product

Some countries in the past, mainly centrally planned economies, used net material product (NMP) to measure overall economic activity. NMP was less comprehensive than GDP because it excluded "non-productive services", such as banking, government administration,

health and education, and was quoted net of capital consumption (depreciation). As a rule of thumb, NMP was roughly 80–90% of GDP.

*Did the American economy start to recover in the second quarter of this year [1991], or was it stuck in recession? America's real gross national product (GNP), the measure that is watched by the government and Wall Street and splashed across newspaper headlines, fell by 0.1% at an annual rate in the second quarter. However, gross domestic product (GDP) rose by 0.8% at an annual rate. By coincidence, the Department of Commerce has just decided that from November [1991], when the third-quarter figures will be released, it will concentrate more on GDP than on GNP.*

*Cynics might claim that the switch to GDP is a bid to fiddle the figures. In fact it is America's first step to bring its national accounts into line with most of the rest of the world.*

*GNP is probably more useful in comparing the relative levels of income per head in different countries, but GDP provides a better guide to changes in domestic production – and hence is the better tool for steering economic policy. Because net income from abroad tends to be volatile, the two measures can often move in completely different directions from one quarter to another. Over longer periods, however, the two measures usually fall into step. Indeed, since the third quarter of last year [1990], America's GDP and GNP have both fallen by exactly the same amount. The government cannot boost its flagging growth rate simply by revising its figures; that requires a revision of its policies.*

The Economist, September 21st 1991

## **Omissions**

### **Deliberate omissions**

There are many things which are not in GDP, including the following.

- **Transfer payments.** For example, social security and pensions.
- **Gifts.** For example, \$10 from Aunt Agatha on your birthday.
- **Unpaid and domestic activities.** If you cut your grass or paint your house the value of this productive activity is not recorded in GDP, but it is if you pay someone to do it for you.

- **Barter transactions.** For example, the exchange of a sack of wheat for a can of petrol.
- **Second-hand transactions.** For example, the sale of a used car (where the production was recorded in an earlier year).
- **Intermediate transactions.** For example, a lump of metal may be sold several times, perhaps as ore, pig iron, part of a component and, finally, part of a washing machine (the metal is included in GDP once at the net total of the value added between the initial production of the ore and its final sale as a finished item).
- **Leisure.** An improved production process which creates the same output but gives more recreational time is recorded in the national accounts at exactly the same value as the old process.
- **Depletion of resources.** For example, oil production is recorded at sale price minus production costs and no allowance is made for the fact that an irreplaceable part of the nation's capital stock of resources has been consumed.
- **Environmental costs.** GDP figures do not distinguish between green and polluting industries.
- **Allowance for non-profit-making and inefficient activities.** The civil service and police force are valued according to expenditure on salaries, equipment, and so on (the appropriate price for these services might be judged to be very different if they were provided by private companies).
- **Allowance for changes in quality.** You can buy very different electronic goods for the same inflation-adjusted outlay than you could a few years ago, but GDP data do not take account of such technological improvements.

Some of the exclusions can be identified elsewhere. For example, environmental costs are seen in statistics on pollution and most countries report known oil or coal reserves (although these estimates may be over-optimistic or clouded by genuine ignorance about the size of underground reserves).

One other point to note is that the more advanced government statistical agencies include in GDP an allowance for the imputed rent paid by home owner-occupiers. This avoids an apparent change in national output because of any switch between owner-occupation and renting.

## Surveys and sampling

Many of the figures which go into GDP are collected by surveys. For example, governments ask selected manufacturing or retailing companies for details of their output or sales each month. This information is used to make inferences about all manufacturers or all retailers. Such estimates may not be correct, especially as the most dynamic parts of the economy are small firms constantly coming into and going out of existence, which may never be surveyed.

Sample evidence is supplemented by other information, including documentation required initially for bureaucratic purposes such as customs clearance or tax assessment. Such data take a long time to collect and analyse, which is why economic figures are frequently revised even when they are several years old.

## Unrecorded transactions

GDP may under-record economic activity, not least because of the difficulties of keeping track of new small businesses and because of tax avoidance or evasion.

Deliberately concealed transactions form the black, grey, hidden or shadow economy. This is largest at times when, and in countries where, taxes are high and bureaucracy is smothering. Estimates of the size of the shadow economy vary enormously. For example, differing studies put America's at 4-33%, Germany's at 3-28% and Britain's at 2-15%. What is agreed, though, is that among the industrial countries the shadow economy is largest in Greece, at perhaps 30% of GDP, followed by Italy, Portugal and Spain, while the smallest black economies are in Japan, Switzerland and America at around 10% of GDP.

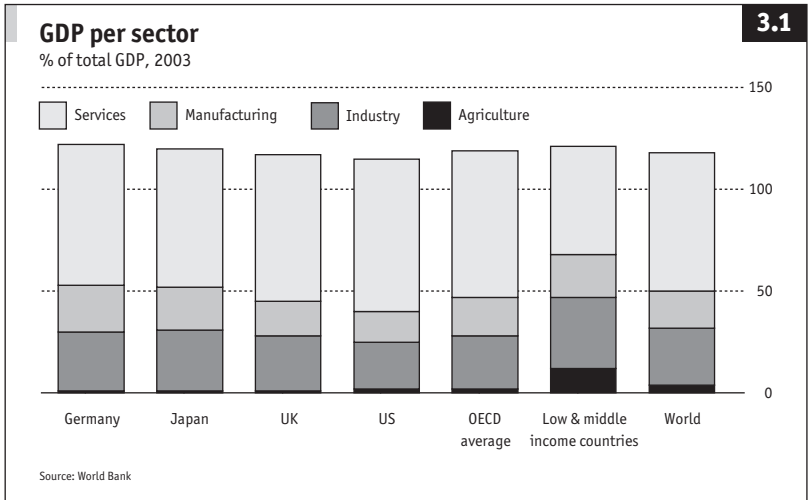
The only industrial countries that adjust their GDP figures for the shadow economy are Italy and America and they may well underestimate its size.

## Output, expenditure and income

### Output

The output measure of GDP is obtained by combining value added (value of production less cost of inputs) by all businesses: agriculture, mining, manufacturing and services. Output data are usually presented in index form (that is, with a base year such as 2000 = 100).

**Sectors.** In general countries have larger agricultural sectors in the early stages of economic development. The manufacturing sector's share of



output increases as the economy develops and services take the largest share of output in mature economies.

Highly detailed data are often available. The production of tens or hundreds of goods and services industries may be recorded separately. For example, there will probably be an appropriate index in the GDP output breakdown to allow you to compare the performance of, say, a furniture manufacturing company with that of the industry as a whole. The industrialised countries generally publish more detailed (and more up-to-date) statistics than less developed countries.

**Classifications.** Economic information has to be categorised, but the correct classification is not always self-evident. For example, should the production of man-made fibres from petroleum be recorded under textiles (as they generally used to be) or chemicals (as they are now)?

Standards have been introduced to deal with these problems and provide consistency. Industrial production, retail trade, imports and exports are classified according to standard themes. Many countries now follow the United Nations' international standard industrial classification (ISIC), while European countries tend to use the similar EU *Nomenclature générale des activités dans les Communautés Européennes* (NACE). These are fairly detailed and they need revision from time to time.

For example, if the standard industrial classification (SIC), which was introduced in the UK in 1948, had not been revised several times,

computer manufacturing would be classified under office equipment, which is part of non-electrical engineering.

When making sectoral comparisons between two or more countries, try to find out if the sectors are made up of the same industries, otherwise there may be inconsistencies in the comparison.

## Expenditure

The expenditure measure of GDP is obtained by adding up all spending:

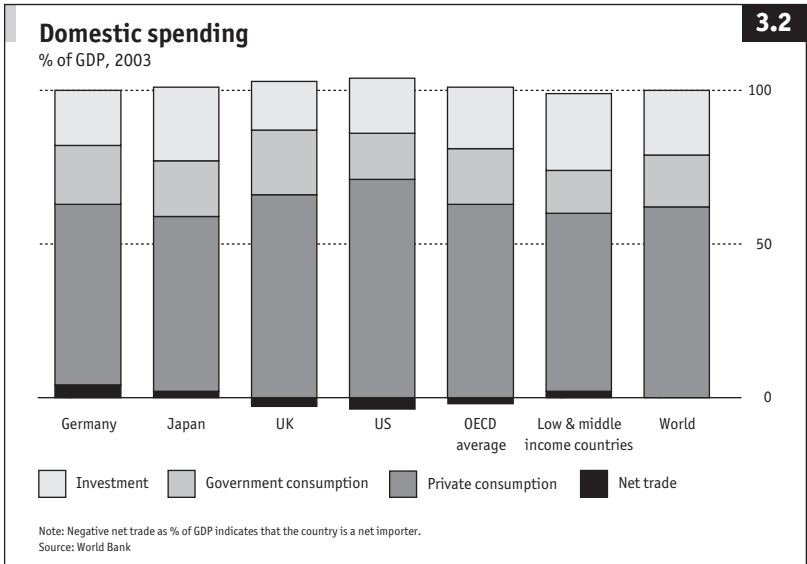
$$\begin{aligned} & \text{consumption (spending on items such as food and clothing)} \\ & + \text{investment (spending on houses, factories, and so on)} \\ & \quad = \text{total domestic expenditure} \\ & + \text{exports of goods and services (foreigners' spending)} \\ & \quad = \text{total final expenditure} \\ & - \text{imports of goods and services (spending abroad)} \\ & \quad = \text{GDP} \end{aligned}$$

**Government consumption.** The level of government spending reflects the role of the state. Government consumption is generally 10–20% of GDP, although it is higher in countries such as Denmark and Sweden where the state provides many services. Changes in government spending tend to reflect political decisions rather than market forces.

**Private consumption.** This is also called personal consumption or consumer expenditure. It is generally the largest individual category of spending (but see exports, page 36). In the industrialised countries consumption is around 60% of GDP. The ratio is higher in poor countries which invest less and consume more.

**Investment.** Investment is perhaps the key structural component of spending since it lays down the basis for future production. It covers spending on factories, machinery, equipment, dwellings and inventories of raw materials and other items. Investment averages about 20% of GDP in the industrialised countries (see Chart 3.2), but is over 30% of GDP in East Asian countries.

**Consumption or investment?** There are some anomalies in the identification of consumption and investment. Government spending on roads, defence and education is generally scored as consumption rather than investment. Consumer spending on cars and other durable goods



(items with a life of over one year) is considered to be consumption. Capital goods purchased by a financial institution and leased to an industrial company are also usually classified as consumption. Thus consumption tends to be overstated and investment under-recorded.

**Total domestic expenditure (TDE).** Consumption plus investment is known as total domestic expenditure. This is a useful concept because it measures domestic spending, some of which goes on imported goods and services. It under-records sales because it does not include those goods and services sold abroad (exports).

**Total final expenditure/output (TFE/TFO).** Consumption and investment plus exports of goods and services is known as total final expenditure. This takes account of the fact that some consumer and investment goods and services are purchased by foreigners.

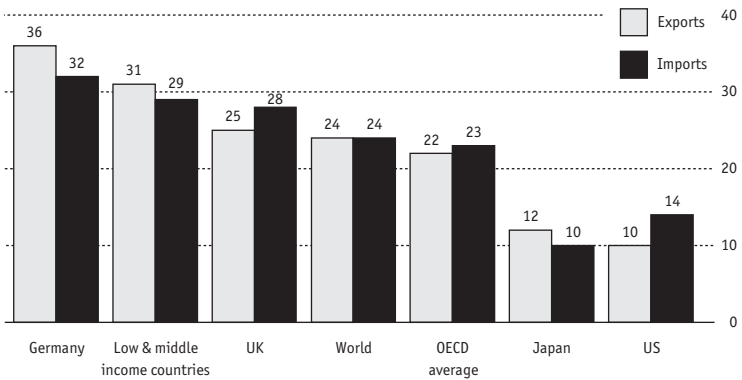
Another way of looking at this is as total final output: the value of home-produced and imported goods and services available for consumption, investment or export.

TFE and TFO are identical in coverage. The difference is in the terminology, which depends on whether the emphasis is on output or spending. Since some expenditure goes on goods and services originating



## Trade in goods and services

% of GDP, 2003



Sources: OECD; World Bank

overseas, TFE/TFO has to be reduced by the amount of imports of goods and services to give total output.

**Exports and imports.** Exports generate foreign currency income, while imports are a leakage of domestic spending into another country's production. These external transactions can have an important effect on GDP.

Some countries have a low dependence on external trade. American imports are about 15% of GDP and exports over 10%. Other countries, especially those on the Pacific rim, are heavily dependent on external flows. Hong Kong and Singapore, both trading economies, have imports and exports each of which are 100–200% of GDP (many imports are re-exported). These are open economies, while America and Japan are relatively closed (see Chart 3.3). Open economies have greater opportunity for export-led growth but are also more vulnerable to external shocks.

### Income

The income measure of GDP is based on total incomes from production. It is essentially the total of:

- wages and salaries of employees;
- income from self-employment;
- trading profits of companies;

- trading surpluses of government corporations and enterprises; and
- income from rents.

These are known as factor incomes. GDP does not include transfer payments such as interest and dividends, pensions, or other social security benefits. The breakdown of incomes sheds additional light on economic behaviour because it is the counterpart to expenditure in what economists call the circular flow of money. It also provides a useful basis for forecasting inflation.

**Accounting conventions.** Incomes data are collected from figures which are based on common accounting conventions, rather than the principles of national accounting. One result is that reported company profits include any increase or decrease in the value of inventories. A value (as opposed to a volume) change does not represent any real economic activity, so this stock appreciation is deducted from total domestic income to arrive at GDP. Britain's Office for National Statistics now uses a definition of profits that excludes the change in the value of stocks, so no stock-appreciation adjustment is shown in national accounts.

### Discrepancies

In a perfect world, the output, expenditure and income measures would be identical. In practice there are discrepancies owing to inevitable shortcomings in data collection, differences in the reported timing of transactions and the shadow economy. The discrepancy between any pair of measures is typically up to 1–2% of GDP. It can be much larger than this, as it was in many countries in the mid-1970s when data collection was complicated by sharp oil price increases and rapid inflation.

Since output, expenditure and income data are, by and large, collected independently, the safest approach is to take the average of the three as indicative of overall economic trends. Not many governments, however, publish such averages and it may not be practical to calculate them. Consequently it is usually necessary to focus on one.

The output measure is usually the most reliable indicator of short-term developments (that is, up to one year) as the survey data are fairly concrete. For longer periods the expenditure measure is probably better, mainly because the weights used to aggregate the output indicators are updated at infrequent intervals and they become out of date. The income measure is usually the last available and least reliable.

## Prices

### Market prices, factor cost and basic prices

Many transactions are subject to taxes and subsidies. Sales tax or value-added tax (VAT) and subsidised housing are obvious examples. The expenditure measure of GDP records market prices, which includes these taxes and subsidies. The income and output measures are generally reported at factor cost (that is, they exclude taxes and subsidies). The relationship is simple:

$$\begin{aligned} & \text{GDP at market prices} \\ & \quad - \text{indirect taxes} \\ & \quad + \text{subsidies} \quad \left. \vphantom{\begin{array}{l} \text{GDP at market prices} \\ - \text{indirect taxes} \\ + \text{subsidies} \end{array}} \right\} \text{factor cost adjustment} \\ & = \text{GDP at factor cost} \end{aligned}$$

**The factor cost adjustment.** The factor cost adjustment (the net total of taxes and subsidies) enables the income, expenditure and output measures to be converted freely between factor cost and market prices. This allows consistent comparisons and highlights the effect of government intervention.

**Basic prices.** Britain's official statisticians now call the basic output measure of GDP "gross value added (GVA) at basic prices". This includes subsidies and excludes taxes (such as VAT) on products only. GVA or GDP at factor cost also excludes taxes on production, such as business property taxes. The statisticians consider GVA at basic prices to be a better measure of short-term movements in the economy than the old factor-cost measure.

**National conventions.** Americans tend to measure economic activity at market prices right through to the net national product stage. They then adjust for taxes and subsidies to reach national income at factor cost. Thus a reference to American GDP probably means GDP at market prices. In Britain, the "headline" measure of GDP is at market prices. However, GVA at basic prices is also reported. The only way to be sure is to check the basis of the figures in question.

### Current and constant prices

GDP figures are reported in current and constant prices.

- Output data are generally collected in both current and constant prices. The constant price figures for each industry are obtained

by valuing current output in the prices applicable in a given base year; say, 1990 or 2000.

- Expenditure data are mostly collected in current prices. They are converted into constant prices by the same adjustment process used with output data, or – slightly differently – by deflating each component by an estimated price indicator. Once the current and constant price versions of the expenditure measure are available, they are used to calculate an overall deflator (that is, the price index) which is used with the income measure.
- Income data are collected in current prices and converted into constant prices using deflators derived from the expenditure measure.

**The deflator.** The GDP deflator calculated from expenditure data at factor cost is also known as the implicit price deflator. This is a handy measure of economy-wide inflation trends, but it is affected by changes in the composition of GDP (see page 219).

Adjusting for inflation is less reliable at times when prices are changing rapidly. Small errors in the measurements of current values and prices can combine to create large errors in the constant price series. Make it a rule to question the accuracy of price deflators. For example, 12% nominal GDP growth with inflation of 10% results in approximately 2% real growth in GDP. If inflation is actually slightly higher, at 11%, real GDP growth is halved to a mere 1%.

## Putting it in context

### Population

The notes on omissions (pages 30–32) suggest that output figures are a dubious guide to the quality of life. Nevertheless, total output per head (that is, GDP divided by the size of the population) is used as a broad indicator of living standards. A rise in real GDP that is greater than any increase in population is taken to indicate an improvement in economic well-being. However, if, for example, real GDP increases by 3% while the population expands by 5%, the economy is “worse off” (that is, real GDP per head has declined).

### Purchasing power

Output per head in current prices is a useful guide to levels of economic activity when making snapshot comparisons between countries. Since it is necessary, however, to convert the figures into a common

currency, the underlying message can be distorted by exchange-rate effects.

The best solution is to use output per head on a purchasing power parity (PPP) basis, which adjusts for national variations in the prices paid for goods and services. This is not easy to calculate accurately, but some intergovernmental agencies such as the World Bank and OECD produce estimates. Their figures show, for example, that although Britain's GDP per head is higher than that of Canada if converted into dollars at current exchange rates, after adjusting for variations in prices the spending power of the British is well below that of Canadians.

### **Employment**

Another way of measuring relative activity is with output per person employed. This is an important measure of productivity which is discussed extensively in Chapter 4.

### **Reliability**

Some problems of obtaining information by surveys and samples are outlined above. In addition, the rush to publish information often means that figures are revised several times as new information comes to hand, perhaps causing major changes in interpretation. For example, industrial production figures may be based initially on sales and output data and adjusted later to take account of changes in inventories not caught in the sales figures.

Statisticians go to great lengths to account for these and other problems. The techniques employed are reasonably reliable, at least in the more developed countries. It is important to remember, however, that published figures for GDP, average earnings, prices, and so on are only estimates.

Moreover, the basis on which some figures are calculated by less scrupulous governments does not stand up to close examination. Consumer-price indices are particularly vulnerable. They may include only selected subsidised goods and services and omit those which increase in price too rapidly.

## 4 Growth: trends and cycles

When your neighbour loses his job, it's a slowdown; when you lose your job, it's a recession; when an economist loses his job, it's a depression.

Anon

Chapter 3 focused on national income as a snapshot of economic activity. This chapter considers the changes in economic activity over time. The introduction outlines the basic issues which affect growth. The GDP briefs explain how to interpret indicators of overall activity. The productivity brief shows how employment and investment lay down the basis for long-term growth. Finally the brief on cyclical indicators indicates the way that many economic series fluctuate around the trend.

### Trends and cycles

Economic developments should be judged in the context of trends and cycles.

**Trends.** The trend is the long-term rate of economic expansion. The industrial economies have enjoyed a growth trend for decades or even centuries. Since the second world war the volume of goods and services that they produce has grown by 3-4% a year in general. Chart 4.1 shows the 1990-2006 trend for the American economy.

**Cycles.** The cycle reflects short-term fluctuations around the trend. There are always a few months or years when growth is above trend, followed by a period when the economy contracts or grows below trend (see Chart 4.1).

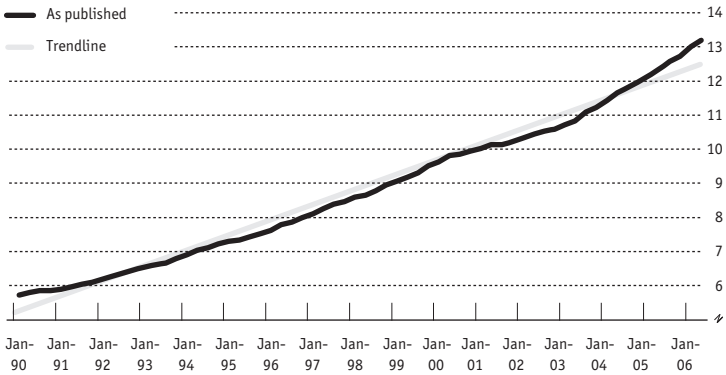
### Sources of growth

**Long-term growth.** In the long term the growth in economic output depends on the number of people working and output per worker (productivity).

Clearly there are limits to changes in the size of the population and the number of people in employment. But only an extreme pessimist can see an end to long-term productivity improvements. Output per worker

**US trends and cycles**

US GDP at market prices, \$trn



Source: US Bureau of Economic Analysis

grows through technical progress and investment in new plant, machinery and equipment. Investment and productivity are therefore the basis for continued and sustained economic expansion.

The Productivity brief (page 51) quantifies the relationship between employment, investment and growth. It is important to distinguish between economic growth, which may reflect nothing more than an expanding population, and overall economic welfare which, if measured by the volume of goods and services produced per person, improves only if output grows faster than the population.

See GDP and GDP per head, pages 43–51.

**Short-term cycles.** The brief on Cyclical indicators (page 54) explains the way that economic growth fluctuates around the trend. The brief is important because it lays the basis for interpreting many economic indicators. For example, a downturn in housing starts or an increase in inventories may signal a recession perhaps 12 months hence.

**The circular flow of incomes.** Firms and households are the backbone of an economy. Firms employ people to make goods and provide services. This gives households their incomes. Household spending provides the rationale for the existence of firms. Thus the circular flow continues; in short, output = income = expenditure.

There are leakages from and injections into the circular flow. Money

is taken out of circulation when people buy imports, save or pay taxes. This means less spending, so firms sell fewer goods and services. Money is put into circulation when people run down their savings or borrow, when governments spend their taxes and when foreigners buy exports. These actions boost spending, so firms sell more goods and services.

All leakages and injections affect spending power and influence savings and investment decisions. These may be thought of as causing cyclical variations while productivity determines long-term growth. Life is never simple, of course, and productivity depends on investment, which in turn depends on many factors including the cycle itself.

### **Inflation and volumes**

Higher demand can easily result in inflation. For example, if employers increase wages without raising output, and if the extra incomes are spent in full, prices will be pulled up (demand-pull inflation) but there will be no increase in real welfare.

The effects of inflation are wide and far-reaching. They are particularly relevant when analysing small parts of the economy in great detail, such as when projecting earnings and share prices for one company. For assessing the economy as a whole it is better to focus on the volume of output rather than its nominal money value, and to think in volume or inflation-adjusted constant price terms. These concepts are discussed in Chapter 2; Chapter 13 reviews inflation in detail.

### **Nominal GDP**

<b>Measures:</b>	Total economic activity in current prices.
<b>Significance:</b>	Describes the total level of production. Use as a yardstick for measuring “economic achievement” or other indicators (such as the current-account balance as a percentage of GDP).
<b>Presented as:</b>	Quarterly and annual totals – more rarely, monthly.
<b>Focus on:</b>	Totals. Use factor cost when reviewing output or incomes, market prices if looking at expenditure patterns.
<b>Yardstick:</b>	The OECD total was \$50,415 billion in 2004.
<b>Released:</b>	Quarterly, 1–3 months in arrears; frequently revised.

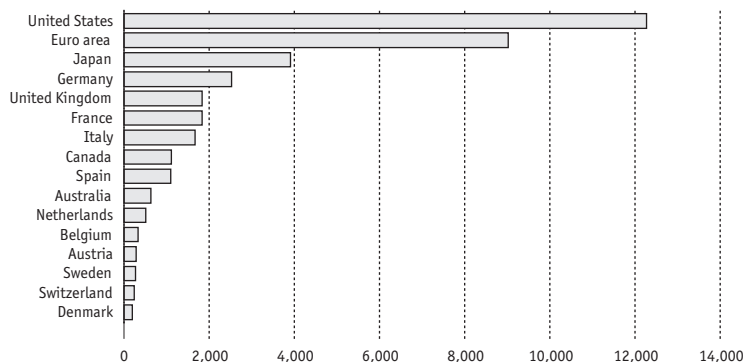
### **Interpretation**

Nominal GDP or GNI (GNP) is used to measure total economic activity. The choice between the two depends largely on national conventions (see page 29). Where GNI/GNP is higher than GDP it indicates net investment income from abroad.



**Total GDP**

PPP basis, 2005, \$bn



Source: IMF

Table 4.1 **Nominal GDP, 2004**

	<i>% of total</i>	<i>\$bn</i>	<i>\$PPP<sup>a</sup></i>	<i>GDP bn<sup>b</sup></i>	<i>GNI bn<sup>b</sup></i>	<i>GNI as % of GDP</i>
Australia	1.3	637	601	865	544	85.4
Austria	0.6	295	263	237	264	89.5
Belgium	0.7	357	314	287	326	91.2
Canada	2.0	993	1,047	1,290	905	91.1
Denmark	0.5	245	179	1,467	220	89.8
France	4.1	2,046	1,759	1,645	1,888	92.3
Germany	5.5	2,755	2,440	2,216	2,532	91.9
Italy	3.4	1,725	1,627	1,387	1,513	87.7
Japan	9.1	4,587	3,741	496,050	4,734	103.2
Netherlands	1.2	608	488	489	523	86.1
Spain	2.1	1,041	1,029	837	919	88.3
Sweden	0.7	351	257	2,573	322	91.9
Switzerland	0.7	359	229	446	366	102.1
UK	4.2	2,133	1,753	1,165	2,013	94.4
US	23.3	11,734	11,570	11,734	12,168	103.7
EU	25.7	12,946	11,926	-	-	-
Euro area	19.0	9,602	8,694	7,733	8,637	89.9
OECD	100.0	50,415	33,194	-	30,915	61.3

a Purchasing power parity. b National currency.

Sources: IMF; OECD; World Bank

The annual total GDP ranges from under \$1 billion in some African countries to over \$12,000 billion in America. For countries at similar stages of development, magnitude depends largely on population size. (See GDP per head below and Real GDP, page 46.)

## GDP per head

- Measures:** Output per person; GDP divided by population size.
- Significance:** Used as an indicator of overall economic welfare.
- Presented as:** Quarterly and annual totals.
- Focus on:** Nominal totals; changes in real terms.
- Yardstick:** The OECD average was \$32,340 per head in 2005.
- Released:** Annually, sometimes quarterly; well in arrears; frequently revised.

### What to look for

Output per head is a good guide to living standards. It implicitly allows for qualitative factors such as literacy or health although these are not covered directly.

In 2005, annual output per head was below \$200 in some African states, and a mere \$97 in Myanmar, while the world average was around \$9,100. The output per head of the rich industrial countries was at least 3 times greater than the average. After adjusting for variations in purchasing power, the gap between the richest and poorest countries looks narrower. Even so, the richest countries' output per

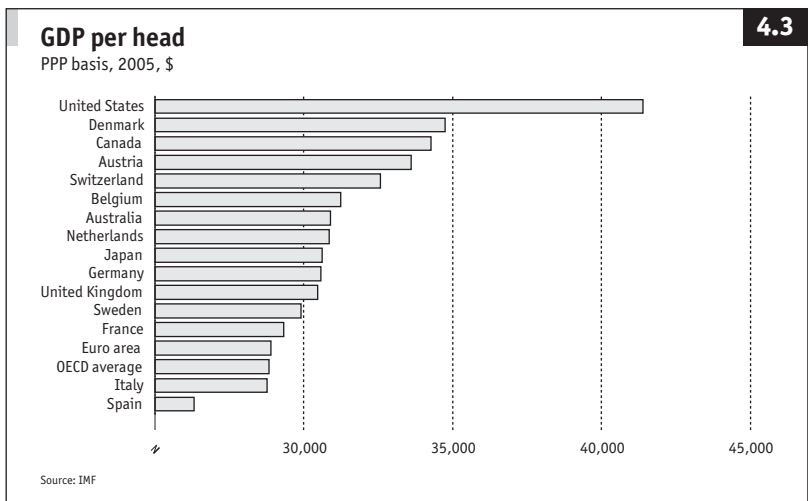


Table 4.2 GDP per head, 2005

	\$	\$, PPP	National currency	Real GDP annual % change	
				1995–2005	2005
Australia	34,714	30,897	45,447	2.7	1.2
Austria	37,528	33,615	30,125	2.1	1.8
Belgium	35,750	31,244	28,698	2.0	1.4
Canada	35,064	34,273	42,464	2.6	2.0
Denmark	48,000	34,737	287,381	2.0	3.2
France	33,734	29,316	27,079	1.9	1.0
Germany	33,922	30,579	27,230	1.4	0.9
Italy	30,450	28,760	24,443	1.3	-0.1
Japan	35,787	30,615	3,937,004	1.1	2.7
Netherlands	38,333	30,862	30,771	1.9	0.9
Spain	27,226	26,320	21,855	3.4	2.8
Sweden	39,658	29,898	295,434	2.8	2.3
Switzerland	50,524	32,571	62,807	1.3	1.7
United Kingdom	36,599	30,470	20,105	2.7	1.3
United States	42,101	41,399	42,101	2.5	2.6
Euro area	36,247	28,888	29,096	3.0	1.8
OECD average	32,340	28,839	–	2.9	2.5

Sources: IMF; World Bank; OECD

head was nearly 3 times the world average (nearly \$30,000). Malawi's was a mere \$596.

If real GDP per head increases it indicates an improvement in overall economic well-being.

## Real GDP

**Measures:** Total economic activity in constant prices.

**Significance:** Most useful for tracking developments over time.

**Presented as:** Quarterly and annual totals.

**Focus on:** Percentage changes, annual or over four quarters.

**Yardstick:** The OECD average was 2.9% a year growth during the period 1995–2005.

**Released:** Quarterly, 1–3 months in arrears; frequently revised.

## What to look for

Real (constant price) GDP or GDP figures reveal changes in economic

output after adjusting for inflation. These should be put in the context of the cycle (see Cyclical indicators, page 54). Strong economic growth following a recession may simply indicate that slack capacity is being put back into use (see Unemployment and Capacity use, pages 66 and 115).

Strong growth when the economy is already buoyant may indicate the installation of new capacity which will add still more to future output (see Investment, Chapter 8). However, excess growth at the top of the cycle may bubble over into inflation and/or imports (see Chapter 13).

Developing countries have the capacity for faster GDP growth than more mature industrial economies. Real growth of around 3% per year is good for America and Europe. The newly industrialising countries of the Pacific rim, for instance, achieved much higher rates in 1999 and 2000. Before the Asian crisis of 1997, they even managed at least double that.

### **The inflation/output trade-off**

The change in real GDP plus the change in the deflator (see page 39) approximately equals the change in nominal GDP. For example, if real output rises by 3% and inflation is 5%, nominal output has risen by about 8%. Some economists argue that aggregate demand determines nominal GDP and that there is a trade-off between real output and inflation: each can rise by any amount so long as the total equals the change in nominal output. Higher inflation therefore means lower growth in output.

### **World cycles**

For the industrialised world, 1960, 1968, 1973 and 1979 were peak years for economic activity. There was another peak around the start of the 1990s, but it was unusual in that it was staggered across countries (see Cyclical indicators, page 54). The subsequent trough was followed by a long period of growth in OECD countries, to 2000. Table 4.3 shows examples of economic growth rates within each cycle, which provide useful yardsticks for judging future growth rates.

**Industrial economies.** The 1960s were a period of rapid expansion, due at least in part to technological advances and freedom from external shocks. The 1973 and 1979 oil price rises caused temporary setbacks. Japan was perhaps more badly hit by the first; Europe and America suffered more from the second. Growth was rapid again in the mid-late 1980s. The mid-decade fall in oil prices and policy responses to it may

Table 4.3 **Five world cycles**  
Average annual % change in real GDP

	<i>Five cycles</i>					<i>Cycles disaggregated</i>							
	<i>1968-73</i>	<i>73-79</i>	<i>79-90</i>	<i>1990-2000</i>	<i>2000-05</i>	<i>down 1973-75</i>	<i>up 75-79</i>	<i>down 79-82</i>	<i>up 82-90</i>	<i>down 90-93</i>	<i>up 93-2000</i>	<i>down 2000-02</i>	
Australia	5.3	2.6	3.1	3.4	3.9	1.8	3.0	2.0	4.2	3.9	4.7	3.6	
Belgium	5.6	2.3	2.2	2.2	1.9	1.3	2.8	2.4	2.8	1.2	3.2	0.8	
Canada	5.4	4.3	2.8	2.8	3.2	3.5	4.7	1.0	4.0	0.5	4.7	2.6	
France	5.5	2.8	2.1	1.9	1.9	1.4	3.5	3.2	3.0	1.1	3.2	1.6	
Germany	4.9	2.3	2.0	1.9	0.9	-0.6	3.9	0.3	3.4	3.2	2.4	0.7	
Italy	4.6	3.7	2.4	1.6	0.8	1.3	4.9	2.4	3.0	0.6	2.5	1.1	
Japan	8.8	3.6	4.1	1.4	1.8	1.0	4.9	4.3	4.8	2.3	1.6	-0.1	
Netherlands	4.7	2.6	1.7	2.9	1.1	1.9	3.0	-0.1	3.5	2.3	4.1	1.0	
Spain	6.6	2.2	2.8	2.7	4.0	2.9	1.9	1.7	4.1	1.2	4.1	3.2	
Sweden	3.8	1.8	1.9	1.8	2.8	3.0	1.2	1.4	3.0	-2.1	4.1	1.5	
Switzerland	4.6	-0.2	2.3	0.9	1.2	-2.8	1.1	2.5	3.1	-0.5	1.9	0.7	
UK	3.3	1.5	2.1	2.3	2.9	-1.1	2.9	-0.8	3.7	0.6	3.9	2.1	
US	3.0	2.6	2.6	3.2	3.2	-0.9	4.3	0.1	4.6	2.9	4.6	1.3	
EU15	4.7	2.4	2.2	2.0	2.6	0.0	3.6	1.7	3.5	1.4	4.3	1.9	
OECD	4.2	2.8	2.7	1.9	3.2	-0.4	4.4	1.5	4.2	2.3	3.5	1.3	

Note: These peaks and troughs identified may differ from those identified by national authorities.

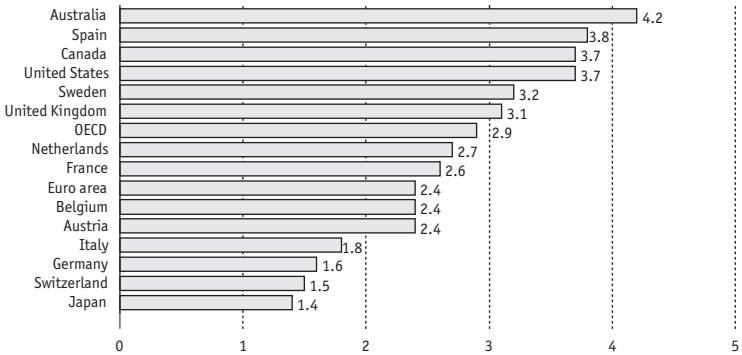
Sources: IMF; OECD

have helped extend the cycle, but many countries failed to get total output back up to trend.

**Developing countries.** The oil producers enjoyed rapid growth rates in the 1970s and suffered the greatest setbacks in the 1980s. Broadly similar patterns were recorded by many Latin American and African countries, with the slowdown in the 1980s reflecting the debt crisis, a lack of inward investment and shortages of foreign exchange. East European countries also had feeble growth in the 1980s, reflecting the shortcomings of their planned economies.

**GDP growth**

Real GDP, average annual % change, 1994–2004



Source: World Bank

**GDP: output**

- Measures:** GDP according to sector (agriculture, mining, manufacturing and service industries).
- Significance:** Provides analysis of total output at a high level of detail.
- Presented as:** Quarterly and annual totals.
- Focus on:** Real growth rates.
- Yardstick:** Overall real growth in the GDP total.
- Released:** Quarterly, 1–3 months in arrears; frequently revised.

**What to look for**

Compare the percentage change in each sector with the overall percentage change in GDP. A sector which is growing faster than the average is making a very positive contribution to growth. A sector which is growing less rapidly than the average is clawing it down.

A change in a dominant sector has a larger effect on total activity than a change in a smaller sector. For example, in the industrial economies a 1% rise in services boosts GDP by more than a similar increase in agriculture. Indeed, the mature industrialised countries have been undergoing a shift from manufacturing to services. In the OECD countries, services' share of output rose from 45% in 1960 to 72% in 2003.

In general developing countries depend more on agriculture or, if they are at a later stage of development, manufacturing.

Chapter 9 reviews individual indicators of output.

Table 4.4 **Dominant sectors**  
Output as % of GDP, 2004

		<i>General trend</i>
<i>Agriculture</i>		
Guinea-Bissau	63	less developed
Central African Rep.	56	↓
<i>Manufacturing</i>		
Swaziland	39	developing
China	35	↓
<i>Services</i>		
Luxembourg	80	developed
USA	76	

Source: World Bank

## GDP: expenditure

- Measures:** GDP according to category of spending (consumption, investment and net exports).
- Significance:** Provides detailed analysis of total spending.
- Presented as:** Quarterly and annual totals.
- Focus on:** Real growth rates.
- Yardstick:** Overall real growth in the GDP total.
- Released:** Quarterly, 1–3 months in arrears; frequently revised.

### What to look for

As with the GDP output breakdown, compare the percentage change in each category of spending with the overall percentage growth in GDP in the same period.

**Personal consumption.** Growth in this category often leads a general recovery from recession, encouraging manufacturers to invest more. However, if consumption grows faster than the productive capacity of an economy, imports are sucked in and inflation rises. Personal consumption typically accounts for 60% of GDP in industrial countries, so a change in consumption has a big effect on total output.

**Government spending.** This reflects, to some extent, politics rather than

market forces. Its share in GDP is higher in countries where the state provides many services. A short-term increase in government spending can provide a stabilising boost to the economy, but in general it diverts resources from productive growth.

**Investment.** This is a key component, contributing to current growth and laying down the foundation for future expansion. Look for spending on machinery (which produces more output) rather than, say, dwellings.

**Changes in stocks.** These can be erratic. They decline when demand is growing more rapidly than production (a good sign at the beginning of a recovery, potentially inflationary at the end) or when manufacturers and distributors are squeezed and are trying to cut the cost of holding stocks. Inventories tend to rise when demand slows.

**Exports and imports.** Exports contribute to overall GDP growth; higher imports reduce the increase in output relative to the growth in demand. A sudden increase in import penetration (imports divided by GDP) suggests that consumer demand is growing faster than the domestic economy can cope with (overheating). A longer-term increase in imports relative to exports may imply a decline in the competitiveness of domestic producers. Imports that are substantially larger than exports may point to exchange-rate problems.

## Productivity

- Measures:** Output for one unit of labour or capital.
- Significance:** Indicator of efficiency and potential total economic output.
- Presented as:** Index numbers.
- Focus on:** Trend, especially relative to other countries.
- Yardstick:** OECD average growth in real GDP per hour worked was 2.2% a year during 2000–04.
- Released:** Sometimes monthly, often two months in arrears; frequently revised.

## Overview

Productivity measures the amount of output that is produced with given amounts of factor inputs (mainly land, labour and capital). Land is basically fixed and capital is very difficult to measure, so attention tends to focus on labour productivity. This can be defined in various ways. The most common are as follows.



Table 4.5 Sources of economic growth in industrial economies

Annual % change

	<i>Golden age 1960-73</i>	<i>Inflation &amp; slump 1973-79</i>	<i>Consolidation 1979-89</i>
Technological progress	2.8	0.6	0.8
Factor substitution <sup>a</sup>	1.3	0.9	1.0
Total labour productivity	4.1	1.5	1.7
Labour input <sup>b</sup>	1.1	1.4	1.0
Total output	5.2	2.9	2.7

a Growth in the capital:labour ratio  $\times$  the share of profits in national income.

b Growth in employment corrected for (falling) hours worked per week.

Source: World Bank

- Output per worker = total output divided by total employment.
- Output per man hour = total output divided by hours worked.

Labour productivity reflects capital investment and offers a guide to capital productivity. A company using high-tech machinery will probably produce more per person than a company using nineteenth-century steam technology (such as in eastern Europe). Other factors which affect labour productivity include social attitudes, work ethics, unionisation and, perhaps most important, training. These are not measured directly by economic statistics.

### The arithmetic of growth

Economic growth reflects growth of the labour force plus growth of labour productivity.

Labour productivity in turn depends on new investment (which raises the capital:labour ratio, which is known as factor substitution in economic jargon) and technological progress (which increases output for a given capital:labour ratio).

Table 4.5 shows a special analysis of sources of economic growth in terms of four economic cycles (see Cyclical indicators, page 54).

### Interpretation

Productivity figures can be calculated in money terms, but they are generally produced as index numbers. As a result, analysts often look at changes over time and disregard the important question of the base

**Table 4.6 Growth of productivity**  
Average annual % change in real GDP per worker

	<i>Five cycles</i>					<i>Cycles disaggregated</i>							
	1968-73	73-79	79-90	1990-2000	2000-04	down 1973-75	up 75-79	down 79-83	up 83-90	down 90-92	up 92-2000	down 2000-02	
Australia	2.6	1.8	1.2	2.3	2.0	1.7	1.8	2.2	0.7	3.6	2.0	2.4	
Belgium	4.9	3.3	2.7	1.9	1.4	2.4	3.7	3.2	2.4	1.8	1.9	0.5	
Canada	2.4	1.5	0.9	1.8	1.0	0.8	1.9	1.0	0.9	1.4	1.9	1.7	
France	4.3	3.2	3.0	2.2	1.8	2.4	3.6	3.5	2.7	2.0	2.2	2.2	
Germany	4.3	3.6	2.2	2.4	1.3	3.5	3.7	1.5	2.6	3.6	2.2	1.7	
Italy	4.9	3.7	1.9	1.7	0.2	1.9	4.5	1.4	2.3	1.0	1.9	0.0	
Japan	7.7	3.5	3.3	2.1	2.0	3.4	3.6	1.9	4.2	2.2	2.1	1.6	
Netherlands	4.1	3.0	2.0	1.6	0.0	5.9	1.6	4.0	0.9	2.2	1.4	0.6	
Spain	5.7	4.1	3.1	1.3	1.3	3.8	4.2	4.3	2.4	1.8	1.2	1.5	
Sweden	3.0	1.7	1.2	2.2	2.5	1.9	1.6	0.8	1.4	1.8	2.4	1.9	
Switzerland	3.1	1.4	1.1	0.5	1.1	0.6	1.9	0.9	1.2	-3.1	1.4	1.3	
UK	3.1	2.5	1.8	2.8	2.1	0.6	3.4	3.5	0.8	4.0	2.5	1.8	
USA	0.7	1.1	1.3	1.6	2.8	0.9	1.2	1.1	1.5	2.2	1.5	2.4	
EU15	4.2	3.3	2.3	2.2	1.3	2.5	3.7	2.6	2.1	2.8	2.1	1.3	
OECD	2.9	2.6	1.9	2.1	2.2	2.1	2.8	1.5	2.1	2.3	2.1	2.0	

Sources: IMF; OECD

from which the index numbers are calculated. If this was a period of high or low productivity, changes will be distorted.

Nevertheless, trends are important. If output per person increases by 5%, an identical increase in wage rates may leave profitability unchanged. Indeed, since total labour costs (including, for example, the cost of providing recreational facilities for workers) may increase less rapidly than wages, profitability may actually improve. (See Wages and Unit labour costs, pages 210 and 213.)

**Cycles.** Productivity is highly cyclical since employment and capital are less flexible than demand and output. When production falls after a peak in economic activity, employment declines less rapidly and output per head plummets.

When demand for goods and services increases after a recession, slack capacity is called into use and productivity rises rapidly.

## Comparisons

When comparing absolute levels of productivity (rather than trends) remember that productivity also depends on technology and costs. Companies in Asia have a lower dollar value of output per person, but can still be more profitable than European or American companies because labour costs are cheaper in Asia.

Exchange-rate changes are also important for international comparisons of competitiveness (see page 162).

## Cyclical or leading indicators

**Measures:** The economic cycle.

**Significance:** Useful tool for short-term predictions of economic activity.

**Presented as:** Index numbers.

**Focus on:** Trends.

**Yardstick:** Look for turning points.

**Released:** Monthly, at least one month in arrears; frequently revised.

## Overview

In developed economies at least, GDP progresses erratically around its long-term growth trend. There are periods when growth spurts ahead, followed by periods of recession. This variation is known as the economic, business or trade cycle. It repeats every five years or so, although no two cycles are ever of the same magnitude or duration.

The cycle has four phases: expansion, peak, recession and trough.

**Expansion.** When demand first increases, for whatever reason, it gathers momentum automatically. The first sign is often a rundown in inventories. Output then rises faster than demand while these are rebuilt (see Stocks or inventories, page 103). Companies take on unemployed workers, who spend their new income on postponed purchases of consumer goods. This creates more demand and so companies employ more people, and so the process continues (the multiplier). Before long producers come up against capacity constraints. If they are confident that demand will remain buoyant (expectations), they invest more in new plant and machinery, which generates even more demand (the accelerator).

**Peak.** The upward momentum cannot continue indefinitely. Eventually output hits a ceiling owing to bottlenecks and supply constraints. Demand for investment funds may push up interest rates to the point

where new investment is not profitable, or at full employment there may be no more workers to take on. Consumer demand may be steady, but the fall in investment demand pulls back the level of total output.

**Recession.** With investment demand falling, producers of capital goods start to cut back on labour. Higher unemployment reduces consumer demand. The inventories, multiplier, expectations and accelerator principles work in reverse and so the economic contraction gathers momentum.

**Trough.** Output will not fall indefinitely. It will stop at some minimum level (a trough or depression) because employees retain jobs and spending power where they work in government or in industries supplying food, basic essentials and perhaps export goods. Unemployment and welfare payments, past saving and new borrowing enable other consumers to buy essentials.

Slack demand for investment funds may pull back interest rates making new or replacement investment attractive, at least for the industries providing basic essentials. And with consumer demand steady, investment demand begins to lift the economy again.

In America a recession is technically defined as two consecutive quarters of falling GDP. The snag with this is that if GDP plunges steeply in the first and third quarters of a year, but rises slightly in the second and fourth quarters, then officially an economy has escaped a recession, even though output may end the year sharply lower. Some economists prefer to define a recession as a year-on-year fall in output. Others talk about a “growth recession” when a country’s GDP growth rate falls below its long-term productive potential. In Japan, for example, annual growth of less than 3% has commonly been called a recession.

Table 4.7 shows dates for peaks and troughs in selected countries.

## Causes

There is no general consensus about what causes cycles or even about what is a cause and what is an effect. Major influences include fixed investment and inventory cycles, external shocks and well-meaning or perhaps self-interested government policies. It is not unknown for the government of the day to engineer an economic boom just before an election, thus setting the cycle in motion. Expansionary policies aimed at reducing unemployment followed by contractionary policies to limit the

Table 4.7 Peaks and troughs in GDP

Month/year

	<i>Peak</i>	<i>Trough</i>	<i>Peak</i>	<i>Trough</i>	<i>Peak</i>	<i>Trough</i>	<i>Peak</i>
Australia	3/89	2/92	3/94	1/97	1/00	1/01	
Austria	12/90	12/93	1/95	11/96	–	–	5/00
Belgium	2/92	11/93	2/95	8/96	2/98	2/99	12/00
Canada	4/89	3/91	1/95	6/96	3/00	12/01	–
France	1/90	8/93	3/95	1/97	–	–	11/00
Germany	2/92	7/93	12/94	2/96	3/98	2/99	5/00
Italy	12/89	12/93	12/95	12/96	10/97	5/99	12/00
Japan	10/90	10/93	3/97	12/98	8/00	11/01	–
Netherlands	12/90	12/93	2/95	12/96	–	–	6/00
Spain	12/91	4/93	12/94	12/96	–	–	2/00
Sweden	4/90	4/93	4/95	10/96	–	–	6/00
UK	9/88	5/92	9/94	2/99	8/00		–
USA	1/89	3/91	1/95	1/96	6/00	12/01	7/02

Note: These peaks and troughs identified by the OECD may differ from those identified by national authorities.

Source: OECD Leading Indicators and Tendency Surveys

inflationary consequences can cause severe cyclical swings. Moreover, measures to cool a boom may be imposed when automatic contractionary forces are already in motion, thus hastening the downhill slide.

### Cyclical patterns in economic indicators

Cyclical patterns can be detected in many economic series. Peaks and troughs do not fall in step. This means that indicators which turn in advance of GDP can be used to predict economic developments. The following timings indicate roughly what might be expected in a standard cycle in an industrial economy.

(Some economists argue that interest rates are a lagging indicator. They are included here as a leading indicator since most people are familiar with the idea of, say, lowering interest rates to boost a flagging economy.)

**Leading indicators.** Interest rates pass their low point and begin to rise about 18 months ahead of a peak in output.

Business confidence, share prices, housing starts and companies' financial surpluses peak 8–16 months ahead of output. Consumer

credit, car sales and manufacturing orders peak about six months ahead. Retail sales peak 2-3 months in advance.

**Coincident indicators.** GDP establishes the reference point for the overall cycle, while other indicators which peak within a month or two of GDP are used to confirm that the economy is turning.

**Lagging indicators.** Manufacturing capacity utilisation peaks about a month after total output. Job vacancies peak about three months later, growth in average earnings after four months and growth in unit labour costs after five months. Productivity and unemployment stop falling and turn upwards six months after the peak in overall activity, and inflation peaks at about that time also. Investment, order backlogs and stocks peak around 12 months after output.

### **The cyclical indicators**

Several countries and OECD statisticians have combined groups of economic indicators into composite cyclical indicators. Generally trends are removed, erratic fluctuations are smoothed, and the series are combined into weighted averages in index form.

The components of the indices vary, reflecting changes in economic habits and analysts' understanding of the economy. For example, in the early 1990s America downgraded the role of share prices after it was found that an increase in stockmarket values was taken as an indicator of an upturn, which prompted share buying and pushed up the leading indicator still further.

**Interpretation.** Use composite indicators as a guide to the cycle. Leading indicators turn 6-12 months ahead of GDP; coincident indicators turn with it; lagging indicators turn perhaps six months later.

Watch mainly for changes in direction in leading indicators and use coincident indicators to confirm the change. Most composite indicators are used only to identify turning points. However, American indicators are scaled so that percentage changes are broadly suggestive of the magnitude of fluctuations in the overall level of economic activity.

Composite indicators are frequently published when only a few components are available and are revised in subsequent months as more information comes to hand and as component indicators are themselves revised. The composites should be interpreted with care and supplemented by examination of individual economic series.

## 5 Population, employment and unemployment

Work is the refuge of people who have nothing better to do.

Oscar Wilde

**T**his chapter contains a series of population and employment briefs. Among other things, they highlight the following points.

**Trends.** The first things to check when assessing longer-term economic trends are employment, productivity and investment. The brief on Productivity (page 51) shows their relationship to growth.

The size and age structure of the population provides an indicator of long-term pressures on the economy. GDP must grow at least as fast as the population if output per head is not to decline, while an increasing number of people of working age may signal enhanced productive potential, or higher unemployment.

**Cycles.** Unemployment is an excellent indicator of the state of the economic cycle. High unemployment (compared with the average over the past few years) suggests a recessionary gap. Low unemployment at the top of the cycle is broadly indicative of inflationary pressures. Note, however, that unemployment lags behind the cycle by perhaps six to 12 months (see Cyclical indicators, page 54).

**Services.** The services sector accounts for 60–70% of output in the major industrialised countries, but it is relatively neglected among the commonly followed indicators of output. Employment provides a useful guide to activity in the sector.

**Incomes.** Employment data provide guides to personal incomes, wages and unit labour costs (see pages 86, 210 and 213). These are the basis for measuring GDP on an incomes basis and they help when assessing inflationary pressures.

## Population

- Measures:** Total number of people in a country.
- Significance:** Yardstick for minimum GDP growth.
- Presented as:** Total number.
- Focus on:** Age structure and changes.
- Yardstick:** The OECD population grew by 0.9% a year between 1995 and 2005. Average annual growth of 0.5% was forecast for the period 2005–2020.
- Released:** Annually.

## Overview

Real GDP must grow as least as fast as the population if living standards are not to fall. This may not be too hard in the industrial countries, where populations are expected to grow by less than 1% a year or even fall in 2005–2020. It will be more difficult in sub-Saharan Africa, where populations will increase by around 2.3% a year over the same period. Developing countries elsewhere are likely to expand a little less rapidly, except for some Arab states and China. The population of China is projected to grow by 0.6% a year in 2005–2020.

Table 5.1 **Population**

	<i>Total 1995 m</i>	<i>Total 2005 m</i>	<i>Annual growth 2005–20 %</i>	<i>Area '000 km<sup>2</sup></i>
Australia	17.9	20.2	1.0	7,682
Belgium	10.1	10.4	0.1	31
Canada	29.3	32.3	0.9	9,971
France	58.2	60.5	0.3	544
Germany	81.7	82.7	0.0	358
Italy	57.3	58.1	-0.1	301
Japan	125.5	128.1	-0.1	378
Netherlands	15.5	16.3	0.3	42
Spain	39.9	43.1	0.2	505
Sweden	8.8	9.0	0.3	450
Switzerland	7.0	7.3	0.1	41
UK	57.7	59.7	0.3	243
US	269.6	298.2	0.9	9,373
OECD	1,088.2	1,180.9	0.5	30,243

Sources: World Bank; UN



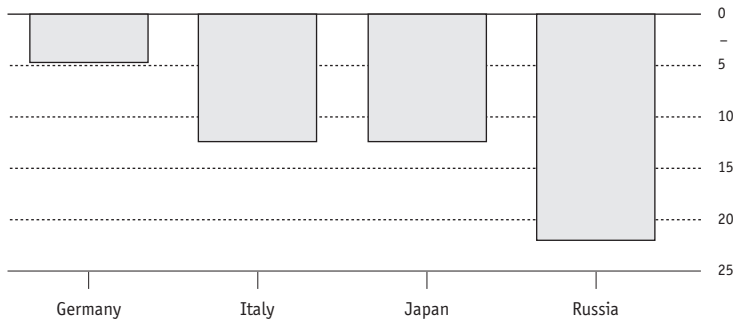
Migration and the age structure have important effects on output (see Labour or workforce, page 61).

### Incredible shrinking countries

During the second half of the 20th century, the global population explosion was the big demographic bogey. Robert McNamara, president of the World Bank in the 1970s, compared the threat of unmanageable population pressures with the danger of nuclear war. Now that worry has evaporated, and this century is spooking itself with the opposite fear: the onset of demographic decline. The shrinkage of Russia and eastern Europe is familiar, though not perhaps the scale of it: Russia's population is expected to fall by 22% between 2005 and 2050, Ukraine's by a staggering 43%. Now the phenomenon is creeping into the rich world: Japan has started to shrink and others, such as Italy and Germany, will soon follow. Even China's population will be declining by the early 2030s, according to the UN, which projects that by 2050 populations will be lower than they are today in 50 countries.

#### Population forecasts

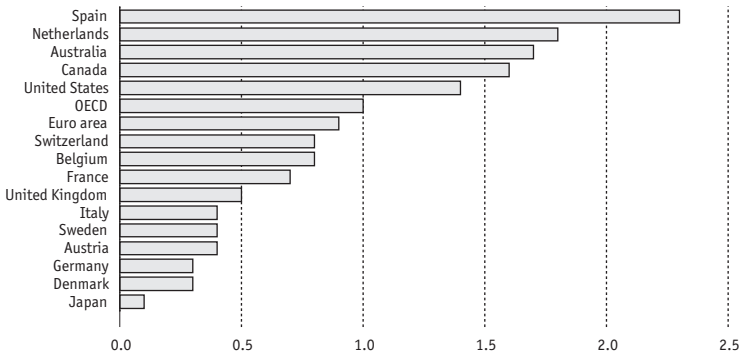
% fall 2005–50



*The Economist*, January 7th 2006

**Growth in the labour force**

Annual % change, 1994–2004



Source: World Bank

**Labour or workforce****Measures:** Employees plus self-employed plus the unemployed.**Significance:** Indicator of maximum potential output.**Presented as:** Total number.**Focus on:** Structure and changes.**Yardstick:** Average annual growth in the OECD labour force was 0.5% in 2000–04.**Released:** Monthly, at least one month in arrears; see Employment, page 64.**Definitions**

The labour force or workforce is the number of people employed and self-employed plus those unemployed but ready and able to work. The grand total is sometimes known as the economically active population. The components of the labour force are notoriously difficult to measure (see also Employment and Unemployment, pages 64 and 66).

The labour force is defined variously to include, for example, people whose age in years is over 15 (Italy, Canada), 16 (America), or in the range 16–64 (Sweden) or 15–74 (Norway).

There is a tendency to focus on the civilian labour force (that is, excluding the armed forces). Spain includes professional military personnel but excludes conscripts from its regular figures.

**Changes in the labour force**

The things to watch for are the three factors which affect the size of the

Table 5.2 **Labour force** (including armed forces)

	Size 2004 m	— Annual average % change —				— Female particip. rate —	
		1980–89	1990–99	2000–04	2004	1994	2004
Australia	8.9	2.6	1.2	0.6	2.1	56.4	62.6
Austria	3.9	0.8	1.1	1.0	-1.7	58.8	60.7
Belgium	4.2	0.1	1.3	0.3	1.6	44.8	53.0
Canada	15.1	2.3	1.1	0.3	0.4	61.0	68.4
Denmark	2.8	0.8	-0.2	0.0	-0.9	67.1	72.0
France	25.3	0.5	0.6	0.4	0.7	50.8	56.7
Germany	39.8	0.7	0.7	0.9	1.3	54.7	59.9
Italy	23.1	1.0	-0.1	1.2	-0.3	35.4	45.2
Japan	66.8	1.3	0.7	0.3	0.1	56.5	57.4
Netherlands	7.5	1.5	1.8	0.9	1.2	52.6	65.0
Spain	16.8	1.3	1.5	1.1	2.4	31.5	49.0
Sweden	4.6	0.5	-0.6	0.1	-0.5	70.7	71.8
Switzerland	3.9	2.2	1.0	1.0	1.1	65.6	70.3
UK	28.9	0.8	0.0	0.3	0.3	62.1	66.6
US	137.6	1.7	1.5	0.3	2.0	65.2	65.4
Euro area	134.0	0.8	0.8	0.8	1.1	47.0	54.9
OECD	428.1	1.3	1.0	0.5	1.3	52.9	55.6

Source: OECD

labour force: population, migration and the proportion participating in economic activity.

**Population.** Birth rates in most industrial countries fell to replacement levels or lower in the 1980s. Meanwhile, earlier population growth boosted to record levels the number of 15–24 year-olds entering the labour force (exceptions include Japan and Switzerland). This implies an older workforce and higher old-age dependency rates (the number of retired people as a percentage of the population of working age) in the future. Output per employee must grow for GDP per head to remain constant. By 2010 15–20% of the population in industrial economies will be over 65 years of age.

Developing countries have young populations with 30–40% under 15 years. This suggests an expanding working-age population with potential problems for housing and job creation.

**Migration.** In the industrial countries inflows of foreign workers increased since the late 1980s and a substantial number of illegal immigrants were granted amnesty in America, France, Italy and Spain. Foreign-born persons account for over 5% of the labour force in America, Germany and France; around 20% in Switzerland and Canada; and over 25% in Australia.

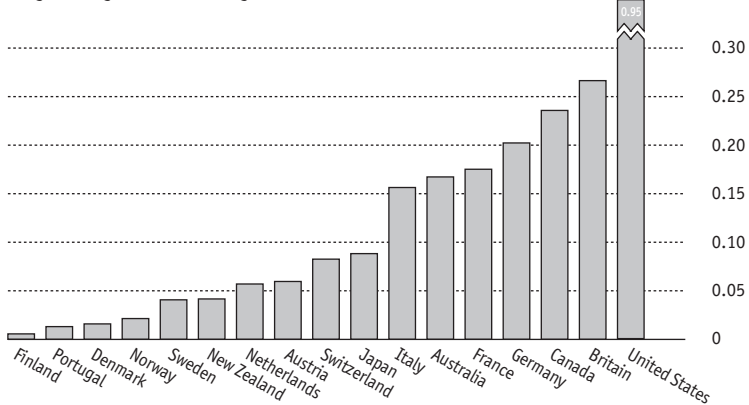
Inward migration may be a bonus for some economies. For example, the unification of east and west Germany boosted that country's productive potential. However, large numbers of refugees seeking asylum can have significant adverse effects on income per head.

Wealthier developing countries, especially oil producers, have large proportions of foreigners in their labour forces. Workers frequently make a substantial contribution to the balance of payments in their home countries by remitting savings from their salaries.

### Immigration

Immigration to America rose by more than a third in 2004, according to the OECD, which counts only migrants on long-term resident visas. It also rose sharply in Britain and Italy. In the 12 months after EU enlargement in May 2004, 83,000 migrants from the new member states registered to work in Ireland, equivalent to 4% of its labour force.

Long-term legal inflows of foreigners, 2004, m



Source: OECD

The Economist, June 17th 2006

**Participation.** Participation rates (the labour force as a percentage of the total population) generally increased in the 1980s and 1990s with earlier retirement for men, especially in France, Finland and the Netherlands, generally offset by more married women entering the labour force, especially in America, Australia, Britain, New Zealand and Scandinavia.

Women account for a smaller proportion of the workforce in predominantly Muslim countries (30%) and a greater proportion in Africa (around 40%) where they traditionally work on the land.

## **Employment**

**Measures:** Total employment = employees in employment plus the self-employed.

**Significance:** Indicator of current output potential.

**Presented as:** Totals.

**Focus on:** Structure and changes.

**Yardstick:** OECD employment grew by 1.1% a year between 1993 and 2003.

**Released:** Monthly, at least one month in arrears.

## **Data collection**

Measuring employment is tricky. The main sources of data are censuses and surveys of population and employment. Household surveys are generally the most reliable since surveys of employers tend to double count people with more than one job.

Most countries conduct household surveys; some monthly (Australia, Britain, Japan, the United States and Canada), some quarterly (Belgium, Greece, Italy, New Zealand) and some less frequently still (Turkey). Figures for months between main surveys are based on employment surveys or are estimates or interpolation.

Apart from the definitional problems mentioned in the previous brief, other distortions and international inconsistencies arise owing to factors such as the method of counting home workers and domestic servants, part-time staff, people with more than one job and those temporarily ill or laid off. Full employment is usually defined as the workforce less the natural rate of unemployment. (See also Unemployment, page 66.)

## **Basic analysis**

The level of production depends on the number of people employed, hours worked, education, training and the quality of capital equipment. (See also Productivity, page 51.)

Table 5.3 Total employment

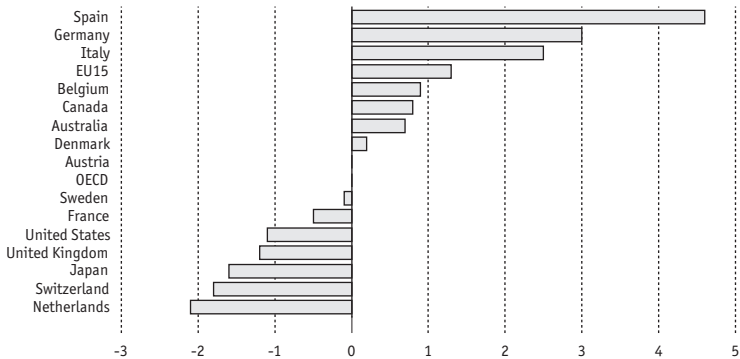
	Total 2005 m	Annual average % change						2004	2005
		1961-69	1970-79	1980-89	1990-99	2000-05			
Australia	10.0	2.7	1.6	2.4	0.0	0.7	1.9	3.5	
Austria	4.1	-0.6	0.2	0.5	...	0.2	-0.3	0.3	
Belgium	4.3	0.7	0.2	0.0	1.0	0.0	0.6	0.9	
Canada	16.2	3.6	2.9	2.0	-0.1	0.6	1.8	1.4	
Denmark	2.8	1.0	0.6	0.5	0.2	-0.3	0.0	0.6	
France	24.8	0.9	0.6	0.2	-0.1	0.7	0.0	0.4	
Germany	38.8	0.2	0.1	0.4	0.2	0.0	0.4	-0.2	
Italy	22.3	-0.4	0.5	0.4	0.1	0.7	1.5	0.7	
Japan	63.6	1.5	0.8	1.1	0.1	-0.2	0.2	0.4	
Netherlands	8.1	1.3	0.3	0.7	1.9	0.2	-1.0	-0.6	
Spain	19.0	0.8	-0.1	0.1	0.8	0.7	3.9	4.8	
Sweden	4.3	0.7	1.0	0.7	-1.6	-0.2	-0.4	1.0	
Switzerland	4.2	1.6	0.0	1.8	0.0	0.8	0.3	0.1	
UK	28.7	0.2	0.3	0.6	-0.1	0.4	1.0	1.0	
US	141.7	2.0	2.4	1.7	0.3	-0.3	1.1	1.8	
EU15	170.8	...	...	...	0.2	0.3	0.9	0.9	
OECD	522.3	0.9	1.0	1.0	0.1	2.2	1.3	1.1	

Source: OECD

## Growth in employment

Annual % change, 1995-2005

5.2



Source: OECD

Hours worked consists of core hours and overtime. There is a tendency for core hours to decline as economies mature and workers demand more leisure.

### **Interpretation**

Employment and unemployment are highly cyclical. When demand increases, companies first tend to increase overtime. They take on more employees only when higher demand is perceived to be strong and durable. When demand turns down, hours are cut before jobs.

Watch hours worked and overtime for early signals, and employment for confirmation. Survey evidence (see Business conditions, page 110) indicating plans to take on or lay off workers may also provide early warning of changes in employment.

Try to identify to what extent an increase in payrolls represents second jobs. These limit employers' ability to increase output. A high number of second jobs with low unemployment suggests that any increase in consumer demand may be inflationary.

**Sectoral trends.** Where employment figures are available by sector, they provide a rough-and-ready guide to output trends in various parts of the economy. Employment in services is an imperfect but useful indicator for that sector since output data for service industries are hard to find.

### **Unemployment and vacancies**

**Measures:** Total = people out of work but ready and able to work. Rate = unemployment as a percentage of the labour force.

**Significance:** Indicator of spare labour capacity (and wasted resources).

**Presented as:** Total number, percentage.

**Focus on:** Structure and changes.

**Yardstick:** The OECD standardised rate of unemployment averaged 6.8% between 1995 and 2005.

**Released:** Monthly, at least one month in arrears.

**Total unemployment.** Based on people registered as unemployed (Austria, Switzerland) or claiming benefit (Belgium, Britain) or on survey evidence (Britain again, and many other countries). Surveys tend to make better indicators because they catch people who would take employment if work was available but who are not registered as unemployed.

Distortions and international inconsistencies arise owing to factors

Table 5.4 **Unemployment**

Standardised definition, as % of labour force

	<i>Unemployment rate</i>						<i>Long-term unemployed<sup>a</sup></i>	
	<i>1985</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2005<sup>b</sup></i>	<i>1994</i>	<i>2004</i>
Australia	8.3	6.7	8.2	6.3	5.1	5.2	36.3	20.7
Austria	...	...	3.9	3.6	5.2	5.2	18.4	27.6
Belgium	10.1	6.6	9.7	6.9	8.4	8.1	58.3	49.6
Canada	10.6	8.2	9.6	6.8	6.8	6.8	17.9	9.5
Denmark	6.6	7.2	6.8	4.4	4.8	4.9	32.1	22.6
France	9.7	8.5	11.1	9.1	9.5	9.9	38.5	41.6
Germany <sup>c</sup>	7.2	4.8	8.0	7.2	9.5	11.3	44.3	51.8
Italy	8.1	8.9	11.2	10.1	7.7	7.8	61.5	49.7
Japan	2.6	2.1	3.1	4.7	4.4	4.6	17.5	33.7
Netherlands	7.9	5.9	6.6	2.8	4.8	4.9	49.4	32.5
Spain	17.7	13.1	18.8	11.4	9.2	9.2	56.2	37.7
Sweden	2.9	1.7	8.8	5.6	...	5.8	25.7	18.9
Switzerland	...	...	3.5	2.7	4.5	4.5	29.0	33.5
UK	11.2	6.9	8.5	5.4	4.7	4.6	45.4	21.4
US	7.2	5.6	5.6	4.0	5.1	5.1	12.2	12.7
EU15	...	8.1	10.0	7.6	7.9	8.2	48.4	42.4
OECD	...	6.1	7.3	6.2	6.6	6.7	35.5	32.0

a Those unemployed for 12 months or more as % of total unemployed.

b National definition. c Data up to 1990 refer to Western Germany.

Sources: IMF; OECD

such as students claiming benefits during vacations, the treatment of people temporarily laid off, discouraged workers who do not declare themselves available for work and people who have part-time jobs but who are looking for full-time employment.

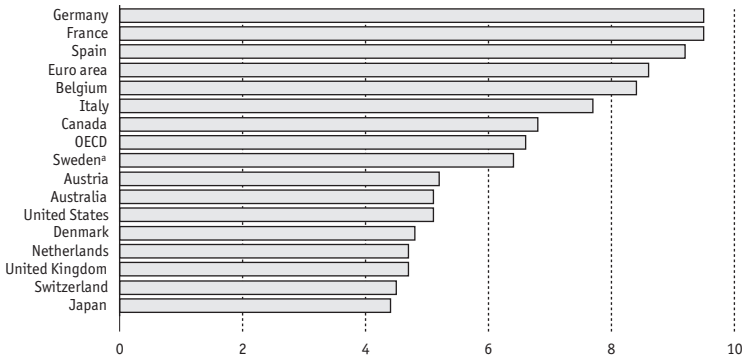
**The unemployment rate.** Usually defined as unemployment as a percentage of the labour force (the employed plus the unemployed). National variations are rife: Germany excludes the self-employed from the labour force; Belgium produces two unemployment rates expressing unemployment as a percentage of both the total and the insured labour force.

By changing the definition, which governments are inclined to do, the



## Unemployment

Standardised rates, % of labour force, 2005



<sup>a</sup> 2004  
Source: OECD

unemployment rate can be moved up or, more usually, down by several percentage points.

The International Labour Organisation (ILO) and other international organisations produce standardised unemployment rates which differ from national figures but which provide a consistent basis for cross-country comparisons. The 2005 figures in Table 5.4 show differences between standardised and national rates.

### Total unemployment

Unemployment never drops to zero for various reasons.

- **Frictional unemployment.** There are always people changing jobs and temporarily recorded as unemployed. Their number might be reduced by better information flows (bringing together vacancies and the unemployed) and training.
- **Structural unemployment.** This indicates people whose skills and locations do not match job opportunities, usually because they were trained for industries which are collapsing under competition from modern technology and/or imports. Structural job losses can best be reduced through retraining and improving labour mobility.
- **Seasonal unemployment.** Agriculture, construction and tourism are especially vulnerable to seasonal variation.

- **Residual unemployment.** This is the hard core of people who are virtually unemployable, perhaps owing to their inability to integrate with the modern world.

### **The natural rate**

Economists argue that there is a natural rate of unemployment (NRU) or non-accelerating inflation rate of unemployment (NAIRU), at which the demand and supply for labour are in balance.

The basic premise is that an increase in demand can be translated into higher employment only up to the NAIRU, at which point employment stops growing and the increase in demand spills over into higher inflation.

Estimates of the NAIRU are subjective and vary from country to country and over time, depending on the level of minimum wages, benefit rates, payroll taxes, unionisation and demographic factors such as the age structure of the labour force.

### **The cycle**

There is a clear cyclical pattern in unemployment. As demand increases, companies take on more workers and unemployment decreases. When there is no more labour available (when the NAIRU is reached), demand bubbles over into inflation or imports. Strong consumer demand is less likely to be inflationary if the unemployment rate is well above the NAIRU rather than close to it. During the mid- and late 1990s, unemployment continued to decline in America and Britain below the unemployment rate previously thought to be the NAIRU, with few signs of inflationary pressure. Economists therefore think that the NAIRU declined in these two countries during the 1990s.

### **Longer-term trends**

Unemployment in the industrial countries started to rise again in the early 1990s. It reached more than 8% of the labour force in 1993 and 1994, and has since fallen back to over 6%. The rate is higher in Europe (7.9% in 2005) than in America (5.1%), where flexible labour markets and strong economic growth have pulled unemployment down.

The structure of unemployment helps to identify problem areas. In 2005 long-term unemployment in Europe (those unemployed for more than six months) was 61% of total unemployment. However, it was lower in Japan (49%) and in America (20%).

### **Other clues**

The monthly change in unemployment is a good guide to economic developments. Compare the last 2-3 months with the average change in the same period of the previous year. Most figures are seasonally adjusted, but watch out for the effects of severe weather or industrial disputes.

Other figures, such as weekly claims for unemployment benefit, job advertisements for help wanted and vacancies, provide a useful back-up to unemployment figures.

Regional unemployment figures provide a guide to structural unemployment since they highlight the relationship between job losses and the location of known twilight industries.

## 6 Fiscal indicators

Blessed are the young, for they shall inherit the national debt.

Herbert Hoover

**F**iscal indicators are concerned with government revenue and expenditure, which are significant influences on the circular flow of incomes (see pages 42-43). Taxes and duties take money out, while spending is an injection. In any one day or year the American government spends more than any other government, company or other organisation anywhere in the world.

Fiscal activities allow governments to provide services, redistribute incomes and influence the overall level of economic activity. They are one of the government's tools for controlling the economy. Others include monetary policy (see Chapter 12) and direct intervention and controls over wages, prices and industrial activity.

### **Level of government**

Various problems of definition arise because of different treatment of financial transactions by central government, local authorities, publicly owned enterprises, and so on.

In an attempt to standardise, international organisations such as the OECD focus on general government, which covers central and local authorities, separate social security funds where applicable, and province or state authorities in federations such as in North America, Australia, Germany, Spain and Switzerland.

Watch out for fiscal fraud: spending can be shifted to publicly owned enterprises which are generally classified as being outside general government. Net lending to such enterprises is part of government spending, but it is not always included in headline expenditure figures.

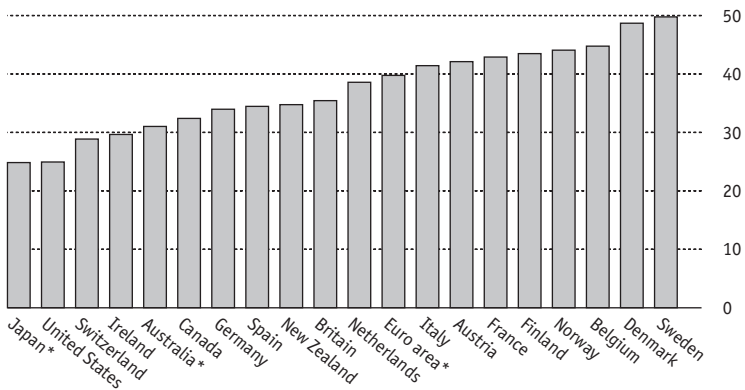
### **Timing**

Many governments run their accounts on a calendar-year basis. Britain, Canada and Japan have financial years which cover the 12 months to March 31st; Australia's fiscal year runs to June 30th; and America's ends on September 30th.

### Total tax revenue

Sweden's government collects more tax revenue relative to the size of its economy than any other rich country. According to the OECD, Sweden's government took in the equivalent of 50% of GDP in 2004. That is almost twice as high as the total tax revenue in America and Japan, which both collect around 25% of GDP. In the euro area, tax revenue, on average, reaches 40% of GDP.

2004, estimate



\*2003  
Source: OECD

The Economist, October 22nd 2005

### Public expenditure

- Measures:** Spending by the government.
- Significance:** Affects aggregate demand, size of the budget deficit.
- Presented as:** Monthly and annual totals in current prices.
- Focus on:** Total, trends.
- Yardstick:** OECD average public expenditure was 40.7% of GDP between 2000 and 2004.
- Released:** Monthly, at least one month in arrears.

### The cycle and the automatic stabiliser

Government spending provides services including law and order, defence, education and health, roads, and so on. Such spending is an injection into the circular flow of income and has a considerable effect on aggregate demand. It is a stabilising influence to the extent that payments

of welfare benefits increase when unemployment rises, which helps to maintain consumer spending.

### Classification

Public spending may be classified in several different ways.

- **By level of government:** central and local authorities, state or provincial authorities for federations, social security funds and public corporations.
- **By department:** agriculture, defence, trade, and so on.
- **By function:** such as environmental services, which might be provided by more than one department.
- **By economic category:** current, capital, and so on.

Breaking down the economic effect of public spending into current and capital spending is a useful way to interpret it.

### Current spending

Major categories of current spending include the following.

- **Pay of public-sector employees:** this generally seems to rise faster than other current spending.
- **Other current spending:** on goods and services such as stationery, medicines, uniforms, and so on.
- **Subsidies:** on goods and services such as public housing and agricultural support.
- **Social security:** including benefits for sickness, old age, family allowances, and so on; social assistance grants and unfunded employee welfare benefits paid by general government.
- **Interest on the national debt.**

Interest payments reflect the size of the national debt (see page 83) and the level of interest rates. In 2004 net interest payments ranged from 5.0% of GDP in Greece to -3.7% in Norway.

Social security transfers do not directly create output and are not included when measuring GDP. Their size reflects the level of state support, demographics and the economic cycle. Payments are mostly financed by specific employers' and employees' contributions. Where these are passed through a separate social security budget, headline spending figures are lower. National accounting conventions also affect

the figures. For example, the British government counts the working families' tax credit, a means of support for low-paid people with children introduced in 1999, as a deduction from tax revenues. The payment it replaced, family credit, was counted as social-security expenditure. The effect of the change is to reduce the headline spending figure.

Subsidies are caught in the market price measure of GDP, but are added back in as part of the adjustment to a factor cost basis. They range from less than 1% of GDP in America and Japan to nearly 5% in Sweden.

Other current spending on pay and other goods and services makes up the "government consumption" component of GDP on an expenditure basis. This exceeds 20% of GDP in countries such as Sweden and Denmark where many services are supplied by the government rather than the private sector.

### **Capital spending**

Capital spending is mainly fixed investment in infrastructure and dwellings. Note that some spending is arbitrarily classified as current spending even when there is a considerable capital outlay, such as in defence. Also current spending on things such as education, industrial training, and research and development might be regarded as investment although they are never classified as such in economic figures.

This capital spending is part of investment in the expenditure measure of GDP. Public-sector investment ranges from around 1.5% of GDP in Britain and America to 5% in Japan.

### **Patterns and targets**

Monthly public spending figures are rarely seasonally adjusted, although there is often a definite pattern of spending during the fiscal year. Eliminate this by comparing the latest 2-3 months with the same period 12 months earlier, or the fiscal year to date with the same part of the previous year, but note that the smoothing effect will be smaller at the start of the year (perhaps covering only two months) than the end (when perhaps 11 months are included).

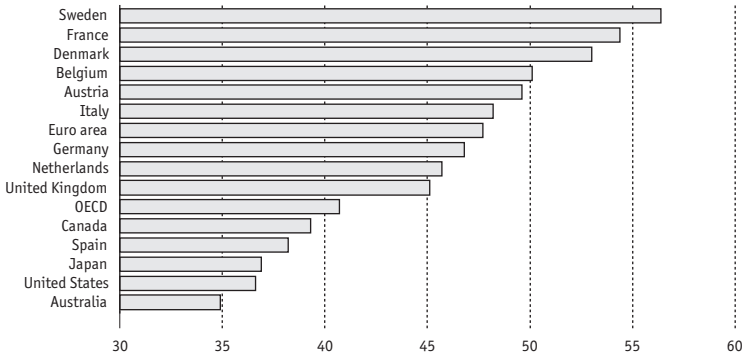
The year-to-date comparison is useful for judging spending in relation to budget projections. For example, if in the first six months of the fiscal year spending is 5% up from the previous first half and expenditure is projected to rise by 2% during the year as a whole, it is a fair bet that the government is overspending. However, watch for any erratic items which distort the seasonal pattern.

Spending tends to rise above target if the economy grows more slowly

## General government spending

6.1

% of GDP, 2005



Source: OECD

than expected. Always ask whether government economic forecasts are realistic when looking at expenditure projections.

### Prices

Monthly government spending figures are always presented in nominal money terms. Judge their influence on the real level of economic activity by deflating them. For example, if government consumption rises by 10% and inflation is 6%, the real level of such consumption is approximately 4% higher.

Choosing an appropriate deflator requires care. Table 13.1 shows that prices in the public and private sectors can increase at different rates. If public servants tolerate larger price rises than private individuals, then prices in the public sector will rise faster than in the private sector. If the public sector is facing a cash squeeze, then prices may rise more slowly in the public sector.

Quarterly and annual spending figures are available in volume terms. The consumption component can be found in GDP data, although public investment is not usually distinguished separately from private investment in the main GDP breakdowns.



Table 6.1 **General government spending**  
% of GDP, 2003

	<i>Total</i>	<i>Defence</i>	<i>Education<sup>a</sup></i>	<i>Health</i>
Australia	34.9	1.84	4.85	6.41
Austria	49.6	0.78	5.73	5.07
Belgium	50.1	1.28	6.29	6.32
Canada	39.3	1.17	5.17 <sup>b</sup>	6.92
Denmark	53.0	1.52	8.51	7.47
Euro area	47.7	1.74	5.09	7.13
France	54.4	2.54	5.63	7.71
Germany	46.8	1.42	4.77	8.68
Italy	48.2	2.47	5.63	6.77
Japan	36.9	1.88	4.75	6.31
Netherlands	45.7	1.00	3.58	6.40
Spain	38.2	1.60	5.09	6.12
Sweden	56.4	1.10	4.45	5.49
Switzerland	36.4	1.77	7.66	8.01
United Kingdom	45.1	2.84	5.32	6.86
United States	36.6	3.78	5.71	6.78

a 2002 b 2001

Sources: OECD; World Bank

## Government revenues

- Measures:** Government receipts mainly from taxes and duties.
- Significance:** Affects aggregate demand; finances (partly) government spending.
- Presented as:** Monthly and annual totals in current prices.
- Focus on:** Total; trends.
- Yardstick:** Compare with spending (see Budget balance, page 79). OECD receipts averaged 38.4% of GDP between 1995 and 2005.
- Released:** Monthly, at least one month in arrears.

### Overview

Government revenues are raised largely through taxes, social security contributions, fees or charges for services and some miscellaneous sources such as interest on government loans. A few governments also conduct trading activities which generate income.

For the industrial countries as a group in 2003, personal income taxes, payroll taxes (largely social security) and taxes on spending each accounted for 24–31% of the total tax take. The remaining 17% came mainly from taxes on company profits and property.

**Asset sales.** One other source of income is receipts from the privatisation of activities previously undertaken by the public sector. In some countries, such as Britain, the receipts are classified as “negative expenditure”. Either way, they have a one-off effect on public finances which is perhaps akin to selling the family silver and should not be mistaken for an underlying improvement.

### The cycle and the automatic stabiliser

In addition to financing government spending, taxes have a major effect on economic activity.

They also have an important automatic stabilising influence. The government tax take increases and helps to moderate consumer demand when more people are earning and spending more at the top of the economic cycle. Similarly, the tax take declines during recession and to some extent helps to offset falling wage incomes.

### Progressive or regressive

- **Progressive taxes** take a larger proportion of cash from the rich than from the poor, such as income tax where the marginal percentage rate of tax increases as income rises.
- **Proportional taxes** take the same percentage of everyone’s income, wealth or expenditure, but the rich pay a larger amount in total.
- **Regressive taxes** take more from the poor. For example, a flat-rate tax of £200, such as Britain’s controversial and short-lived poll tax, takes a greater proportion of the income of a lower-paid worker than of a higher-paid worker.

### Direct or indirect

**Direct taxes.** These are levied directly on people or companies. They include taxes on personal and corporate income, capital gains, capital transfers, inheritances and wealth; and royalties on mineral extraction.

Direct taxes are usually charged at percentage rates; frequently they are progressive. Payroll taxes tend to be regressive if considered separately from the associated social security benefits.

As mentioned in the previous brief, social security payments are mostly financed by specific employers' and employees' contributions. Where these are passed through a separate social security budget, headline revenue figures are lower. But Denmark's social security bill is mainly met from general taxation, which depresses the apparent level of social security revenues.

**Indirect taxes.** Levied on goods and services, these include the following:

- Value-added tax (VAT) charged on the value added at each stage of production; this amounts to a single tax on the final sale price.
- Sales and turnover taxes which may be levied on every transaction (for example, wheat, flour, bread) and cumulate as a product is made.
- Customs duties on imports.
- Excise duties on home-produced goods, sometimes at penal rates to discourage activities such as smoking.

Indirect taxes tend to be regressive, as poorer people spend a bigger slice of their income. They are charged at either flat or percentage rates. Flat-rate duties do not rise with inflation and have to be "revalorised", usually in the annual budget, if the government is to retain its real tax-take.

GDP at market prices includes indirect taxes, which increase selling prices and have to be subtracted as part of the adjustment to a factor cost basis (see page 38).

### **Monthly figures**

As with spending figures, revenues are usually published monthly in nominal values. Erratic movements can be smoothed out by taking several months together. They can be converted into real terms using the same deflator that is used for public expenditure.

When comparing revenues against budget projections, remember that revenues will tend to be below expectation if the economy grows more slowly than forecast.

## Budget balance, deficit, surplus

<b>Measures:</b>	Net total of government spending less revenues in one month/year.
<b>Significance:</b>	Indicator of government's fiscal stance.
<b>Presented as:</b>	Monthly and annual totals in current prices.
<b>Focus on:</b>	Totals; trends.
<b>Yardstick:</b>	The average OECD deficit was 3.2% of GDP during the 1990s and 1.0% in 2001.
<b>Released:</b>	Monthly, at least one month in arrears.

### Overview

**Balanced budgets** (revenues equal spending) sound prudent but may not always be in the best interests of economic management. Perfect balance is hard to achieve anyway, because of the automatic stabilisers in spending and revenue.

**Budget deficits** (spending exceeds revenues) boost total demand and output through a net injection into the circular flow of incomes. As with personal finances, a deficit on current spending may signal imprudence. However, a deficit to finance capital investment expenditure helps to lay the basis for future output and can be sustained so long as there are private or foreign savings willing to finance it in a non-inflationary way.

Deficits are more common than surpluses. In the 1970s and early 1980s many OECD governments went on a borrowing binge, often with adverse consequences. High levels of government borrowing tend to push up interest rates and so may crowd out private-sector investment. The average budget deficit of OECD countries crept up in the early 1990s. However, after peaking at 5.0% of GDP in 1993 it fell to zero in 2000 (see Table 6.2 on page 82). In that year, 16 of the 30 countries in the OECD ran a surplus. Helped by strong economic growth, America's deficit of 5.9% of GDP in 1992 became a surplus of 1.7% in 2000. Several European countries tightened their budgetary policies in order to meet the criteria to join the euro. Sweden, which is not yet a euro member, turned an 11.9% deficit in 1993 into a 2.1% surplus in 1998.

The biggest deficit in absolute terms is that of Japan. Having had a surplus of nearly 2% of GDP in the early 1990s, Japan had a deficit of 7.4% of GDP, or ¥38 trillion (\$350 billion), in 2000.

**Budget surpluses** (revenues exceed expenditure) may be prudent if a government is building up a large surplus on its social security fund in order to meet an expected increase in its future pensions bill as the

population ages. However, a surplus may be undesirable if it takes too much money out of the circular flow.

The world's largest relative budget surpluses (20–40% of GDP) have been run by Kuwait after the 1970 oil price hikes and Botswana, as a result of income from the sale of oil and diamonds respectively. The receipts come from foreigners rather than the domestic circular flow, so the surpluses manage to stimulate even though they appear deflationary. Other countries' surpluses tend to be smaller, typically up to 5% of GDP.

**Tighter or looser.** Fiscal policy is said to have tightened if a deficit is reduced or converted into a surplus or if a surplus is increased, after taking into account the effects of the economic cycle. A move in the opposite direction is called a loosening of fiscal policy.

### **The cycle and the automatic stabiliser**

There is an automatic stabiliser built into the budget balance. Surpluses reduce or tip into the red and deficits grow during a recession when tax revenues fall and welfare spending increases. This helps to maintain aggregate demand. The opposite happens during an economic boom.

The cyclically adjusted budget balance is the normal balance with cyclical fluctuations removed. This helps to identify the underlying fiscal stance, but such figures should always be regarded with suspicion because it is difficult to get the adjustments right.

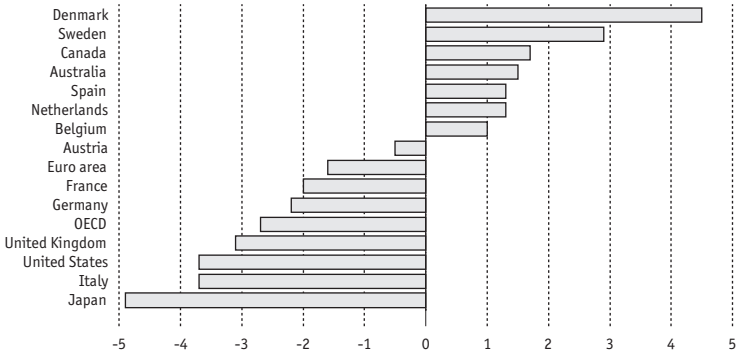
### **Definitions**

There are three main ways of looking at the budget balance. One is the published headline balance which depends on national definitions and accounting practices. The other two are the borrowing requirement and net savings, both of which are usually tricky to identify precisely from published figures.

**The borrowing requirement.** The net total of government spending less revenues is the gap which has to be financed by borrowing or which allows debt to be repaid. The announced budget balance in Britain used to be exactly this figure: the public-sector borrowing requirement (PSBR), or for surpluses the public-sector debt repayment (PSDR). However, the PSBR (renamed the public-sector net cash requirement) has now been downgraded in favour of the “current balance” (see below).

## Budget balances

% of GDP, 2005



Source: OECD

In most countries the precise definition varies depending on what is included in the “budget”. There are two important areas to consider.

- **Level of government.** Headline budget figures for the United States are for federal government only and for France cover just central government. At the other extreme, those for Germany cover federal, Länder and local authorities, and Switzerland’s include federal, confederations, cantons and local government.
- **On or off budget.** Many government activities fall outside the normal budget, including lending by government agencies and government farm crop or export insurance, as well as government-guaranteed borrowing by publicly owned enterprises and government-guaranteed lending by private-sector bodies. Two other specific examples worthy of note are the American savings and loan rescue plan which was expected to cost over \$100 billion in 1991–96, and the German Treuhand agency, which among other things was authorised to borrow DM25 billion (about \$15 billion) in 1990–91 to help to restructure and privatise east German industry.

**Net savings.** The balance of current spending and receipts indicates the public sector’s net savings: the extent to which the public sector is adding to or subtracting from the circular flow of incomes. This differs

Table 6.2 **General government budget balances**

Surplus or deficit (-) as % of GDP

	1990	1995	2000	2004	2005	<i>Net financial liabilities, % of GDP, 2005</i>
Australia	-1.0	-2.8	0.3	1.2	1.5	-0.5
Austria	-2.8	-5.4	-3.0	-0.2	-0.5	41.9
Belgium	-7.5	-3.2	-0.4	0.8	1.0	86.1
Canada	-6.5	-4.3	2.3	0.6	1.7	26.3
Denmark	-0.8	-2.6	1.4	2.9	4.5	7.5
France	-2.4	-4.5	-1.5	-2.9	-2.0	44.0
Germany	-4.0	-2.7	-1.9	-2.7	-2.2	58.4
Italy	-12.0	-6.5	-2.6	-3.4	-3.7	98.6
Japan	1.0	-5.2	-7.2	-5.6	-4.9	36.9
Netherlands	-7.1	-3.3	-0.1	-0.6	1.3	38.1
Spain	-5.4	-4.8	-1.3	0.3	1.3	30.8
Sweden	2.8	-4.3	4.2	2.1	2.9	-12.4
United Kingdom	-2.5	-5.2	1.1	-3.6	-3.1	40.6
United States	-4.7	-2.4	1.1	-4.4	-3.7	45.8
Euro area	-5.8	-4.2	-1.8	-2.3	-1.6	55.2
OECD	-4.0	-3.6	-0.8	-3.3	-2.7	46.4

Source: OECD

from the budget balance in that it includes only current, not capital, transactions. Britain's current balance corresponds to the government's net savings.

### Monthly figures and targets

Budget balances are usually published monthly in nominal values. Erratic movements can be smoothed by taking several months together. They can be converted into real terms by deflating spending and revenue separately.

When comparing cumulative budget balances with projections, remember that deficits tend to expand if the economy grows more slowly than forecast.

## National debt; government or public debt

- Measures:** Long-run cumulative total of government spending less revenues.
- Significance:** Inter-generational transfer, interest payments add to borrowing.
- Presented as:** Annual totals in current prices.
- Focus on:** Total, particularly as a percentage of GDP; trends.
- Yardstick:** Varies widely; see text.
- Released:** Mainly annually; not easily found.

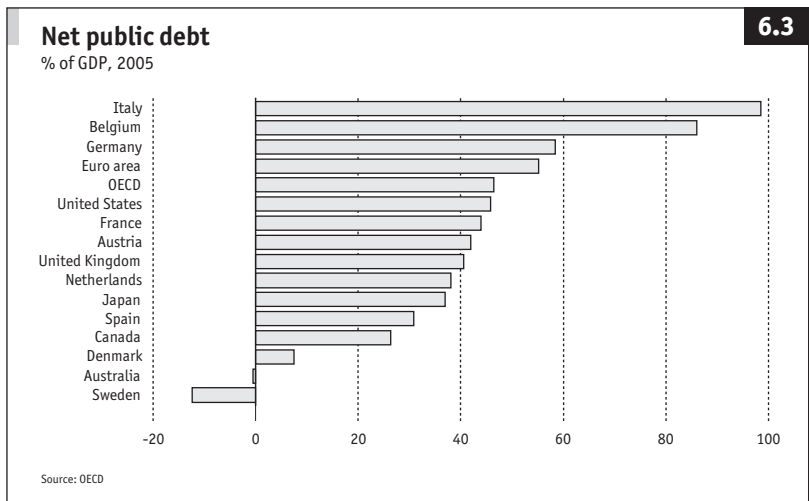
### Overview

The public or national debt is the cumulative total of all government borrowing less repayments. It is financed mainly by citizens and may be seen as a transfer between generations. This contrasts with external debt (see page 146) which has to be financed out of export earnings.

### Size of debt

Chart 6.3 shows the relative size of various national debts in 2001. Belgium and Italy headed the list with debt that was almost as much as their annual GDP.

The debt is often understated since governments carry various liabilities which do not show on their balance sheets. For example, public-sector pensions are usually unfunded, that is, paid out of current income rather than from a reserve created during the individual's working life as happens with private-sector pensions.





Economic theory provides few clues to the optimum ratio of public debt to GDP. Trends over time are often a better measure of a government's creditworthiness than the absolute level of debt. A country with an ever-rising debt ratio is clearly heading for trouble.

## 7 Consumers

Live within your income, even if you have to borrow money to do so.

Josh Billings

### Overview

Consumers are important since personal consumption accounts for between half and two-thirds of GDP.

In general, if consumers' incomes increase (perhaps because of wage rises or tax cuts) they will save some and spend the rest. The part which is spent becomes income for someone else, who in turn spends and saves. The process is repeated and the multiplier effect makes everyone better off, provided that the growth in spending goes into extra production rather than higher prices.

At the same time, the proportion of consumers' income that is saved provides the finance for investment, which is essential for future production, income and consumption.

### Consumers, persons and households

For the most part, economic analysis is most effective if focused on a clearly defined group of economic agents, such as households. However, national accounting practices vary and figures are not generally available for such neat units. Terminology can become cloudy.

- **Household.** A group of people living under one roof and sharing cooking facilities.
- **Consumer sector and personal sector.** These terms are generally used interchangeably and are usually defined to include: households and individuals; owners of unincorporated businesses; non-profit-making bodies serving individuals; private trusts; and private pension, life insurance and welfare funds.
- **Private consumption.** The same as personal consumption since, by national accounts definition, companies do not consume. But businesses invest, so private (personal plus business) investment is different from personal investment.
- **Total consumption.** Personal (private) consumption plus government consumption.

## Personal income, disposable income

<b>Measures:</b>	Personal sector total income and income after tax.
<b>Significance:</b>	Basis for consumption and savings.
<b>Presented as:</b>	Money totals.
<b>Focus on:</b>	Growth rates.
<b>Yardstick:</b>	3% a year in real terms.
<b>Released:</b>	Mainly quarterly, monthly in USA; 1–3 months in arrears.

**Personal income** is current income received by the personal sector from all sources. The bulk is wages and salaries, but the total also covers rents (including the imputed rental value to owner-occupiers of their homes), interest and dividends (including those received by life insurance and pension funds), and current transfers such as social security benefits paid to persons and business donations to charities.

**Personal disposable income (PDI).** Personal income after the deduction of personal direct taxes and fees (such as passport fees), and current transfers abroad. The figures in Table 7.1 give an indication of the composition of income and disposable income in the United States.

**Real personal income and PDI.** Personal incomes and personal disposable income are occasionally quoted in nominal terms, that is, before allowing for inflation. Real personal income and real PDI are incomes adjusted for inflation. Consumer prices can be used if no other deflator is available. Loosely, if incomes rise by 5% and prices increase by 3%, real incomes are 2% higher.

### International comparisons

International comparisons are affected by differences in the provision or treatment of private pensions, life insurance, social security, household interest payments, and current and capital transfers.

In general PDI is reasonably consistent internationally, but personal income is less so. For example, British personal income includes employers' social security contributions and excludes employees' contributions. Both sets of contributions are deducted from personal income to arrive at PDI. In America social insurance payments are excluded from both total income and disposable income. Thus British personal income is inflated slightly relative to that in America, but PDI is on the same social security basis in both countries.

Similarly, personal income in Britain includes net interest receipts. In

Table 7.1 **Personal income, outlays and savings in the United States, 2005**  
\$bn

Wages and salaries	5,712.3
of which:	
Goods-producing industries	1,117.4
Services	3,623.3
Government	971.6
Proprietors' income	938.7
of which:	
Farm	20.8
Non-farm	917.8
Rental income	72.9
Interest income	945.7
Dividends	511.7
Transfers	1,525.3
Less social-insurance contributions	425.8
Less taxes, etc.	1,207.9
<b>Personal disposable income (PDI)</b>	<b>9,029.9</b>
Total deductions	9,072.0
of which:	
Personal consumption	8,745.7
Interest payments	205.9
Transfers to government	74.8
Transfers overseas	45.6
<b>Personal savings</b>	<b>- 42.1</b>
<b>Savings ratio (savings as % of PDI)</b>	<b>-0.5</b>

Source: US Department of Commerce

American income includes interest received on savings but interest paid on loans is treated as part of expenditure. In this case American income and PDI are both inflated relative to Britain's.

### Interpretation

Incomes are affected by the economic cycle. In general it is advisable to look for sustainable growth in real incomes – too rapid an increase may be inflationary (see Chapter 13). The main components are as follows.

**Income from employment.** The major influence on personal income. The total depends mainly on the number of people in employment, hours worked (see Chapter 5) and their pay (see Chapter 13).

**Income from self-employment.** The next most important component of PDI. Self-employed incomes are linked to the general health of the economy. They will increase when nominal GDP rises.

**Interest and dividends.** Dividends are sensitive to company profits and the state of the economy, while interest payments obviously move in line with interest rates. When borrowing is high relative to savings, an increase in interest rates can mean a fall in net interest income. Generally an increase in interest rates boosts PDI because in most countries (Britain is the main exception) the personal sector has more assets with adjustable interest rates than liabilities.

**Taxes and benefits.** Changes in the rates of tax or benefits have a rapid effect on PDI (but not, of course, on personal income). The magnitude will depend on the nature of the change; see Chapter 6.

## **Consumer and personal expenditure, private consumption**

**Measures:** Spending by persons.

**Significance:** Key component of GDP.

**Presented as:** Money totals.

**Focus on:** Growth rates.

**Yardstick:** The OECD average real growth in consumer expenditure was 3.2% a year during the late 1970s and 1980s and 2.5% during the 1990s and early 2000s.

**Released:** Quarterly with GDP figures, monthly in USA; frequently revised.

### **Overview**

Consumer expenditure is personal (mainly household) spending on goods and services. Thus it includes imputed rents on owner-occupied dwellings; the outlays which would be required to buy income in kind; and administrative costs of life insurance and pension funds. It excludes interest payments; the purchase of land and buildings; transfers abroad; all business expenditure; and spending on second-hand goods, which reflects a transfer of ownership rather than new production.

Strictly speaking, expenditure takes place when goods are purchased, while consumption may take place over several years. For example, the benefit derived from a car or television is enjoyed (consumed) over

several years. In practice it is hard to measure consumption and the term is used loosely to mean expenditure. Thus consumer expenditure, personal expenditure and private consumption are all the same thing.

### Significance

Spending by consumers accounts for between half and two-thirds of GDP. Arithmetically a 1% rise in consumer expenditure contributes to around a 0.6% increase in total GDP, all else being equal, which it rarely is of course. In particular some of the extra consumer spending will go into higher imports.

### Spending decisions

Personal income is either spent or saved. Decisions about consumption are intertwined with decisions about savings (see next brief).

The best guesses at what determines spending and saving are the broadly similar permanent-income hypothesis and life-cycle hypothesis, which suggest that consumption is linked to income over a lifetime. Young and old households have a high propensity to spend their income, while those in mid-life save for retirement. In addition, households tend to run down savings or borrow to maintain consumption during a recession (spreading spending over their lifetimes).

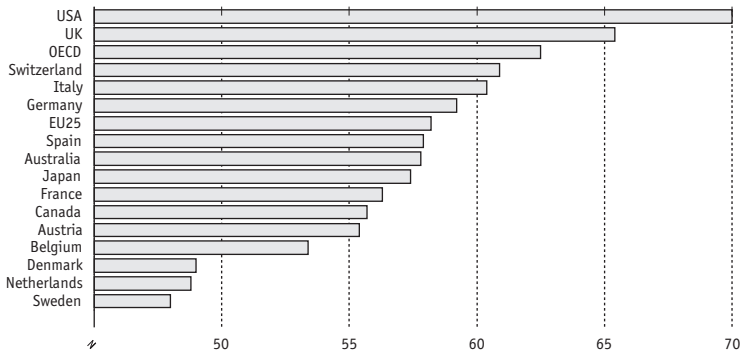
Major influences on the level of consumption include the following.

- **Incomes.** In general higher personal incomes allow more spending.
- **Price expectations.** Experience shows that consumers tend to save more (and spend less) during periods of high inflation (see next brief). They may bring spending forward, however, if they expect a one-off increase in prices because of inflation or higher indirect (sales) taxes.
- **Interest rates.** Higher interest rates push up the cost of existing loans and discourage borrowing and, perhaps, encourage savings, all of which depress spending. Nevertheless, higher interest rates also redistribute income from young mortgage payers to their elders whose deposits are greater than their borrowings and who may spend their additional interest income.
- **Consumer credit.** Easier consumer credit may encourage borrowing, which translates directly into higher spending.
- **Wealth.** A rise in asset values, such as share or house prices, may make consumers feel wealthier and inclined to spend more.

### Consumer spending

7.1

% of GDP, 2005



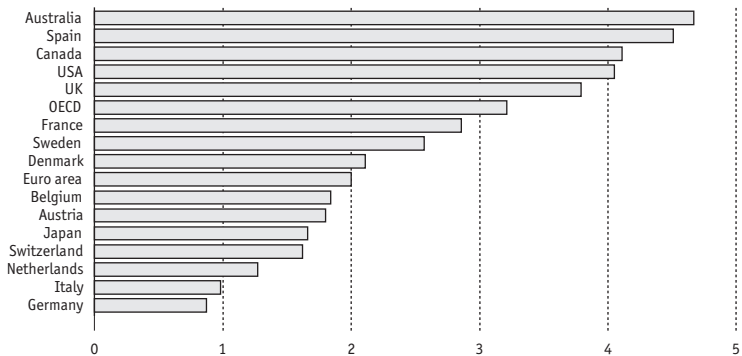
Sources: IMF, OECD

- Stock level and price of durables.** Consumers tend to regard durables such as cars and electrical appliances as wealth. A sudden end to a period of restricted supply of durables as in eastern Germany in 1990, or a fall in their prices, may encourage a temporary consumer boom. This may set up replacement cycles, with bouts of spending on durables every few years.

### Growth in consumer spending

7.2

Annual average % change, volume, 2000–05



Source: OECD

Table 7.2 Consumer spending

	— % of GDP —		— Real annual average % change —			
	1995	2005	1975–84	1985–94	1995–2004	2005
Australia	60	58	2.7	2.9	2.4	0.2
Austria	56	55	2.6	2.7	1.6	1.4
Belgium	54	53	1.9	2.4	1.7	1.3
Canada	57	56	2.6	2.6	3.4	4.0
Denmark	50	49	1.6	1.9	1.5	3.8
France	56	56	2.2	1.8	2.3	2.1
Germany	57	59	2.1	2.9	1.2	0.2
Italy	59	60	3.0	2.3	1.8	0.9
Japan	55	57	3.5	3.5	1.0	2.2
Netherlands	49	49	1.8	2.5	2.4	0.2
Spain	60	58	1.1	3.0	3.7	4.4
Sweden	50	48	0.6	1.6	2.4	2.4
Switzerland	59	61	1.1	1.3	1.5	1.5
UK	64	65	1.7	3.3	3.6	1.7
USA	67	70	3.2	3.1	3.8	3.5
EU25 <sup>a</sup>	58	58	2.1	2.6	2.3	1.6
OECD	61	63	3.0	3.1	3.0	2.7

a EU15 up to 1995.

Source: OECD

- ▣ **Social factors.** These may encourage saving to allow bequests or retirement spending.

## The cycle

There is a cyclical pattern in consumer expenditure. The most volatile component is spending on durables: goods with a life of over one year such as washing machines, furniture and cars.

When economic conditions are tight, spending on durables can be cut more readily than spending on non-durables such as food and heating. Thus there is a stable core of spending on non-durables, and a fluctuating level of spending on durables which moves in line with the economic cycle.



## International comparisons

Total spending is affected by the level of services provided by the state. For example, in Belgium and France, where health care is initially paid for by the user, the outlays are included in consumer expenditure. Where health services are more or less free at the point of use, as in Britain and Nordic countries, no entry appears under consumer spending. In developing countries a greater proportion of spending is on essentials such as food.

## Interpretation

The focus should be on real percentage change. Some countries, such as America, publish monthly figures in nominal terms, which may be deflated by consumer prices to obtain a feel for the real growth. For example, if nominal personal spending grows by 6% and consumer prices rise by 4%, spending has risen by about 2% in real terms. Changes in spending on durables can be an early signal of developments.

Retail sales (page 125), car sales (page 119) and consumer confidence (page 94) also provide leading indicators of spending patterns.

## Personal and household savings; savings ratio

**Measures:** Savings by households.

**Significance:** Key component of total national savings.

**Presented as:** Money totals and as a percentage of disposable income.

**Focus on:** Trends.

**Yardstick:** The OECD average savings ratio was about 7% during the late 1990s and early 2000s.

**Released:** Quarterly or annually; frequently revised.

## Overview

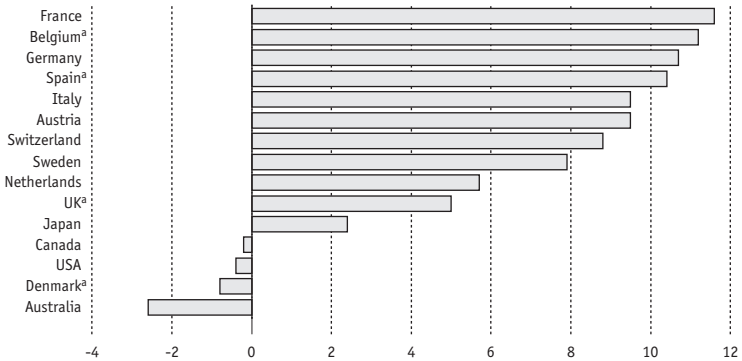
Personal savings, an important chunk of national savings (see page 105), are personal disposable income less personal consumption. Many governments also produce savings data for households alone. The household savings ratio is household savings as a percentage of household disposable income.

The household or personal sector's financial deficit or surplus (the net balance of deposits and loans) is different from savings. For this reason consumer borrowing – which influences spending and saving – can be considered separately (see page 88).

## Net household savings

7.3

% of disposable household income, 2005



<sup>a</sup> Gross saving rate includes depreciation.  
Source: OECD

### International comparisons

Household savings ratios are shown with national savings in Table 8.3. Household savings ratios vary widely between countries. For example, in 2005 net household savings were -0.4% of household income in the United States and 11.6% in France (see Chart 7.3). There are a number of reasons for this.

As far as definitions are concerned, the calculations depend on the treatment of consumer durables, private pensions and life insurance payments, social security, household interest payments, capital transfers and depreciation. Adjusting for such factors can change savings ratios by several percentage points.

Other factors which account for a large part of the remaining difference between the Japanese and American ratios include the age structure of the population and the labour force; the distribution of incomes; the availability of consumer credit; the tax treatment of savings; the social security system; and economic variables such as those discussed below.

### Influences on household savings

The experience of the industrial countries in recent decades highlights some factors which affect savings. Note that savings appear to be relatively unaffected by changes in interest rates.

**The 1970s.** Economists were confounded by the rise in savings which

accompanied the high inflation of the 1970s. Theory said that with falling real disposable incomes and negative real interest rates the savings ratio should have fallen. It seems that households save more during high inflation in order to maintain the real value of their savings.

**The 1980s.** Savings ratios fell in the 1980s for several reasons. There was lower inflation; stockmarkets were rising; in some countries higher house prices boosted personal wealth and so encouraged spending; financial liberalisation made borrowing easier; public pensions improved; and the population was ageing (older people save less).

**The 1990s.** Perhaps the most striking feature of savings trends in the 1990s was the continuing fall in America's already low household savings rates. This figure turned negative in 2005, that is American households' expenditure exceeded their incomes. One reason may be that Americans felt wealthier because of the rise in the stockmarket. Or prolonged economic growth may have made them more optimistic about future earnings.

### Interpretation

See National savings, page 105, for hints on interpretation. Note that the ageing population (see Population, page 59) is likely to reduce savings rates.

## Consumer confidence

- Measures:** Consumers' perception of their economic well-being.  
**Significance:** Determines short-term spending/borrowing/savings plans.  
**Presented as:** Usually index numbers.  
**Focus on:** Trends.  
**Yardstick:** Watch for changes in direction.  
**Released:** Monthly, one month in arrears.

### Overview

Survey evidence of consumer perceptions is valuable as a leading indicator. In general, the more optimistic consumers are, the more likely they are to spend money. This boosts consumer spending and economic output.

Surveys of consumer confidence are conducted by private sector organisations such as the Conference Board in America and GfK in Britain and universities such as the University of Michigan. The results are presented in index form or as percentage balances (of consumers feeling more optimistic less those feeling less optimistic).

**Other indicators**

Other popular indicators of consumer confidence include:

- The misery index I. The rate of consumer-price inflation plus the unemployment rate.
- The misery index II. The rate of consumer-price inflation plus annual interest rates.

In each case the higher the number, the more miserable consumers are assumed to be. However, once inflation falls below zero or close to it, the misery index becomes less meaningful. Falling prices can have damaging economic effects.

## 8 Investment and savings

Saving is a very fine thing. Especially when your parents have done it for you.

Sir Winston Churchill

### Overview

Investment deserves special attention because it is so important for the future health of an economy. It lays the basis for future production.

Investment is spending on physical assets with a life of more than one year. This should be distinguished from financial transactions which are known as investment in everyday language but which are – from an economic viewpoint – savings.

It is conventional to say that businesses invest while individuals consume. If a household buys itself a personal computer, this is recorded in the national accounts as personal consumption. If a business buys the same model, the spending is classed as investment. The rationale is that the household uses a PC for “pleasure” while a business uses it in the production of future output. A company’s stocks of raw materials and goods are classed as investment.

### The circular flow of incomes

Chapter 4 (page 42) outlined the concept of the circular flow of incomes. Savings and investment are often considered to be the most important leakage and injection. It is easiest to understand their significance through an example.

Imagine a simple system in which firms produce \$100m of goods a year. Suppose that households save \$20m. Output is \$100m, incomes are \$100m and consumption is \$80m. Since the firms sell only \$80m of their output, the remainder is left in stock at the end of the year. The \$20m increase in stocks is classed as investment spending. In order to meet their wage bills, the firms have to borrow \$20m from the banks where the households saved their \$20m. Output is \$100m, incomes are \$100m, and total spending is \$80m consumption plus \$20m investment which equals \$100m.

The leakage of \$20m for saving is matched by an injection of \$20m for investment. Investment (in stocks or fixed assets) can take place only when some consumption is deferred. By definition, investment = savings.

**Table 8.1 Investment and savings**  
% of GDP

	<i>1992-99</i>	<i>2001</i>	<i>2003</i>	<i>2005</i>
<b>World</b>				
Saving	22.0	21.2	20.7	22.0
Investment	22.5	21.4	21.0	22.2
Total saving/investment	44.5	42.6	41.7	44.2
<b>Industrial countries</b>				
Saving	21.6	20.4	19.1	19.4
Investment	21.8	20.8	19.9	20.9
Total saving/investment	43.4	41.2	39.0	40.3
<b>USA</b>				
Saving	16.4	16.4	13.4	13.6
Investment	19.0	19.1	18.5	20.0
Total saving/investment	35.4	35.5	31.9	33.6
<b>EU25</b>				
Saving	21.1	21.2	20.5	20.9
Investment	19.8	21.0	20.1	20.9
Total saving/investment	40.9	42.2	40.6	41.8
<b>Japan</b>				
Saving	30.6	26.9	26.2	26.8
Investment	28.1	24.8	23.0	23.2
Total saving/investment	58.7	51.7	49.2	50.0
<b>Developing countries</b>				
Saving	23.7	24.2	27.2	30.3
Investment	25.4	23.8	25.4	26.4
Total saving/investment	49.1	48.0	52.6	56.7
<b>Newly industrialised Asian countries<sup>a</sup></b>				
Saving	33.8	29.9	31.4	31.8
Investment	31.1	25.3	24.5	25.7
Total saving/investment	64.9	55.2	55.9	57.5

<sup>a</sup> Hong Kong, South Korea, Singapore, Taiwan.  
Source: IMF

Of course there is no automatic mechanism which ensures that the amount that households wish to save matches the amount that firms wish to invest. Investment and savings are each determined by different factors which are discussed in the following briefs.

**Economic effects of imbalance.** Loosely, if planned savings exceed planned investment, stocks pile up and companies cut back their production: GDP falls. If planned savings are less than planned investment, companies produce more to meet the extra demand and GDP rises. (See Cyclical indicators, page 54.)

**The golden rule.** It is difficult to identify the ideal level of saving and investment. Less saving means more consumption today but less investment and so less future consumption. Economists talk about the “golden rule” which maximises the consumption per head of all generations. Significantly, an IMF study suggests that America’s national savings in the period 1986–90 were only half the amount required by the golden rule.

**National savings and investment.** All sectors of the economy save and invest. Real life is not as simple as business investment and household savings. Table 8.1 shows flows of funds around the world. The following briefs discuss the topics in more detail.

## **Fixed investment and GDFCF**

- Measures:** Spending on goods with a life of more than one year.  
**Significance:** Contributes directly to GDP, lays basis for future output.  
**Presented as:** Value, volume and index numbers.  
**Focus on:** Volume trend.  
**Yardstick:** OECD average fixed investment grew by 5.5% a year during the period 1995–2000 and by 2.0% a year during the period 2000–05.  
**Released:** Quarterly, 1–3 months in arrears; frequently revised.

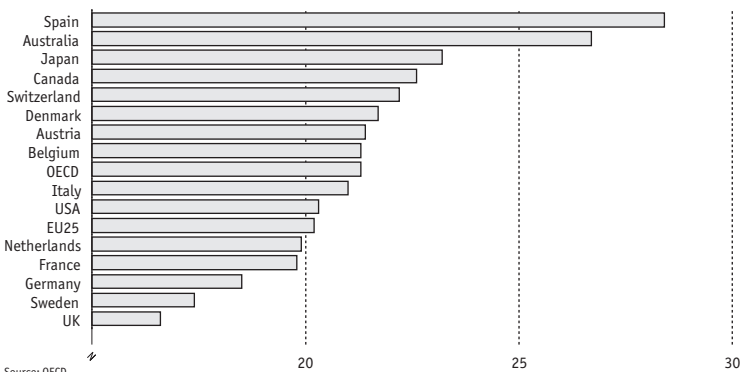
### **Overview**

Fixed investment is spending on physical assets. Total investment is fixed investment plus investment in stocks of raw materials and goods (see Stocks, page 103).

Physical assets include infrastructure such as roads and docks; buildings such as dwellings, factories and offices; plant and machinery; vehicles; and equipment such as computers. These generally provide the potential for higher output in the future. The economic (as opposed to

**Real fixed investment**

% of GDP, 2005



the social) benefit of dwellings and some infrastructure is more arguable, but most infrastructure boosts economic efficiency. For example, new roads help to get delivery teams back for more work rather than crawling at 10kph through the world's congested cities.

**Investment and consumption.** By convention, only businesses invest. All personal spending is consumption for national accounts purposes, except the purchase of new dwellings. These have such a long life that they are classed as investment. Most government spending, including that on defence equipment, is classified as consumption (see page 34).

**GDFCF.** Economists pompously call new investment in physical assets "gross domestic fixed capital formation". Gross because it is before depreciation; domestic because it is at home rather than overseas; fixed because it does not include stocks; and capital formation since it distinguishes physical from financial investment.

Fixed investment is rarely shown net because of the problem of accounting for capital retirements and obsolescence.

**Interpretation**

Fixed investment accounts for an average of around 20% of GDP in industrial economies. So as a crude rule of thumb, a 1% rise in fixed investment adds around 0.2% to GDP in the same period, all else being constant.



Table 8.2 Real fixed investment

	% of GDP, 2005					Annual % change	
	— Construction —					1995–2000	2000–05
	<i>Machinery &amp; equipment</i>	<i>Non res'l</i>	<i>Residential</i>	<i>Other</i>	<i>Total</i>		
Australia	8.3	5.1	6.4	7.1	26.9	5.2	6.9
Austria	8.4	7.5	4.1	1.2	21.3	2.9	0.4
Belgium	...	...	...	...	21.3	3.9	2.0
Canada	8.8	6.1	5.9	1.5	22.3	6.7	4.9
Denmark	9.0	4.1	4.9	3.8	21.8	6.3	3.0
France	6.7	4.8	3.4	4.3	19.2	4.5	1.7
Germany	7.8	3.9	5.5	1.3	18.5	2.4	-2.3
Italy	7.2	5.2	4.2	2.4	19.0	3.5	1.2
Japan	9.4	8.5	3.5	2.9	24.3	-0.5	-0.3
Netherlands	7.9	5.9	7.3	3.2	24.3	5.2	-0.6
Spain	7.9	8.1	7.3	5.1	28.3	7.1	5.1
Sweden	8.4	3.9	2.6	2.4	17.4	5.1	2.1
Switzerland	...	...	...	...	22.2	2.4	0.4
UK	6.9	4.5	3.1	1.3	15.7	6.1	2.7
USA	7.8	4.1	5.4	3.0	20.3	7.9	2.6
Euro area	8.5	5.3	4.6	2.5	21.0	4.1	0.9
OECD	...	...	...	...	21.3	5.5	2.0

Sources: OECD; Eurostat

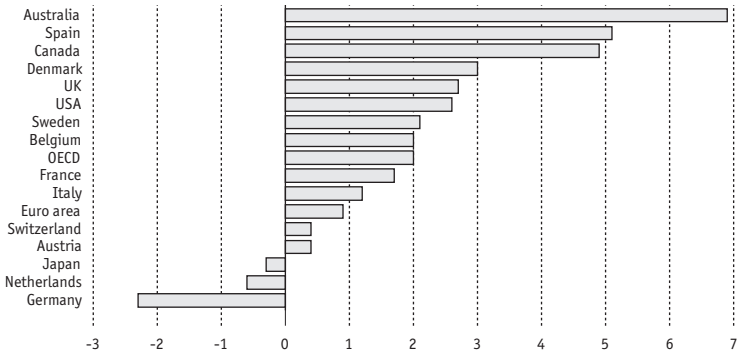
The potential for future output will also be boosted (see Productivity, pages 51–54), especially by investment in plant and machinery. Table 8.2 shows that this is typically 7–9% of GDP.

The direct relationship between investment and output is complex. Investment is shown gross and the increase in productive capacity will be less after allowing for depreciation, and so on, but in developing countries at least, a given change in investment this year can be used as the basis for a moderately reliable forecast of the change in GDP next year.

**The cycle.** Investment is highly cyclical. Firms are more likely to invest if they are operating at a high level of capacity, if they expect demand to remain high and if interest rates are low. (See Business conditions and Capacity use, pages 110 and 115.) When these conditions are reversed,

### Growth in real fixed investment

Annual average % change, 2000–05



Source: OECD

businesses are likely to cut back on fixed investment. However, investment projects have long lead times and a cut in new investment does not automatically imply a fall in total investment spending.

A 1% increase in demand may be translated into a greater than 1% increase in output if firms respond by increasing investment spending. (See “accelerator principle” in Cyclical indicators, page 54.)

**Government intervention.** Government incentives for investment should be treated with caution as they can be counter-productive in the long run. Tax subsidies make poor investment projects viable.

Changes in government investment spending should also be scrutinised. In more mature economies government expenditure can crowd out private-sector investment with detrimental effects, but in developing countries public and private investment are often complementary.

**Other indicators.** GDP investment figures are released with a lag. Other indicators should be used for advance signals, especially investment intentions, construction spending, housing starts, auto sales, manufacturing production and imports of capital goods.

**Sectoral.** Investment is classified by ownership rather than end-use. Sectoral investment figures should not be taken at face value. Investment by service companies may reflect spending on goods which are subsequently leased to industrial firms.

## Investment intentions

<b>Measures:</b>	Plans for capital spending, sometimes just in manufacturing.
<b>Significance:</b>	Investment adds to current and future GDP.
<b>Presented as:</b>	Value, volume totals or changes.
<b>Focus on:</b>	Trend: planned volume increases.
<b>Yardstick:</b>	Look for planned increases of several percentage points.
<b>Released:</b>	Monthly, one month in arrears.

### Overview

Governments and trade associations such as the US Institute for Supply Management and the Confederation of British Industry publish the results of surveys of investment intentions. These may be wholly subjective (“Do you expect more or fewer capital authorisations over the next 12 months?”) or misleadingly quantitative (“How many dollars’ worth of capital spending will you undertake in the calendar year?”). See also Business conditions, page 110.

### Value and volume

Where surveys are in value terms, the first step should be to consider how closely the figures relate to volumes. Respondents tend to indicate the value of investment after allowing for any expected price increases, so the totals should be deflated to arrive at the planned volume increase. As a crude deflator use producer prices. If these are rising by 5% and companies expect the value of their investment to increase by 7%, the volume of investment will be about 2% greater. If inflation is accelerating or decelerating, use the consensus view (at the time of the survey) of expected inflation for the period ahead.

### Outcomes

Intentions are rarely turned into spending on a one-for-one basis. Investment intentions surveys tell you something about future trends in the economy, but at the same time you should interpret the survey results in the light of developments in the economy. For example, a rise in interest rates after a survey may lead to a lower than announced level of investment.

## Stocks (inventories)

<b>Measures:</b>	Stocks held by producers and distributors.
<b>Significance:</b>	Indicator of demand pressures; potential sales.
<b>Presented as:</b>	Value and volume totals and changes.
<b>Focus on:</b>	Totals in relation to sales, changes.
<b>Yardstick:</b>	See text.
<b>Released:</b>	Quarterly, sometimes monthly, 1–3 months in arrears; frequently revised.

### Overview

Stocks or inventories are materials and fuel, work-in-progress and finished goods held by companies.

The book value of stocks changes for two reasons.

- **Stock appreciation** is an increase in the money value of stocks owing to inflation. It adds to nominal income (the inventories can be sold at a profit) but there is no addition to real output.
- **Stockbuilding** (or destocking) is a change in the physical volume of inventories. It reflects the production of goods and affects nominal and real output.

Data are generally collected in value terms and deflated into volume terms using assumptions about accounting practices, stockholding patterns and price changes. The breakdown between the physical change and stock appreciation can be unreliable, especially during periods of rapid inflation.

### Cycles

In general the level of stocks rises as national income increases, but there are wide fluctuations which reflect the economic cycle.

Stocks are a buffer between production and consumption. When demand increases unexpectedly, the first sign is a decrease in inventories before manufacturers can respond by increasing output. Alternatively, if an increase in demand is expected, stocks may be built up in advance ready to meet the extra demand. Either way, production can increase faster than demand for short periods during restocking or stockbuilding.

Stocks accumulate when demand turns down unexpectedly; production might fall faster than sales as excess stocks are consumed.

**Inflation.** Stocks of raw materials react violently to expected changes in world commodity prices (see also page 197).

### **Interpretation**

The stocks:sales ratios at each stage of activity (manufacturing, wholesaling, retailing) are important leading indicators.

If the ratios are higher than normal (look at a long run of figures), this implies that production and imports will be cut unless demand increases. If the ratios are lower than normal the implication is that production and imports will rise unless demand falls (but note that stock ratios fell sharply in the industrial countries during the 1980s because of better stock control techniques such as just-in-time). If the ratios are low and there are capacity constraints (high capacity utilisation and/or low unemployment), the excess demand might go into higher inflation or imports.

High or low stocks:sales ratios all the way through the economy give fairly clear signals. Different ratios at different stages imply bottlenecks or structural problems. For example, a low ratio in retailing and a high ratio in manufacturing may indicate that an increase in consumer demand has not yet fed through to manufacturers, or it might suggest that domestic producers cannot provide the required goods and the excess consumer demand is going into imports.

Surveys (see Business conditions, page 110) provide useful evidence about companies' perceptions of their stocks. If, say, manufacturers think that their stocks are too high, they will cut production over the next few months unless demand increases.

### **GDP**

It is not the total level of stocks but the change in the rate of stockbuilding which affects the GDP expenditure measure. An increase in stocks reflects extra output that has not been consumed. Note, however, that a fall in the level of stocks can lead to an increase in GDP if the rate of destocking slows.

The effects of changes in stocks are limited when measured over several years, but stockbuilding is highly volatile quarter-by-quarter. Accordingly, changes in the rate of stockbuilding can be a major influence on demand and GDP. The snag is that stockbuilding is the trickiest component of GDP to forecast.

## National savings, savings ratio

- Measures:** Total savings in an economy.
- Significance:** Major influence on investment and interest rates.
- Presented as:** Totals; percentage of GDP.
- Focus on:** Trends.
- Yardstick:** The OECD average was around 20% during the 1990s and early 2000s.
- Released:** Quarterly with GDP figures. Total savings = investment.

### Overview

Savings (deferred consumption) affect investment (the basis for future output and consumption). For the economy as a whole it is the national savings rate which is important: the sum of savings by the private sector and the government.

Gross savings are the savings required to finance gross investment. Net savings are those required to finance investment net of capital consumption. The national savings ratio is savings as a percentage of GDP.

### Private savings

Private savings are the sum of savings by persons and companies. (See also Personal savings, page 92.) Company savings are cyclical since businesses hold liquid reserves to cushion themselves against the economic cycle and to provide funds for expansion.

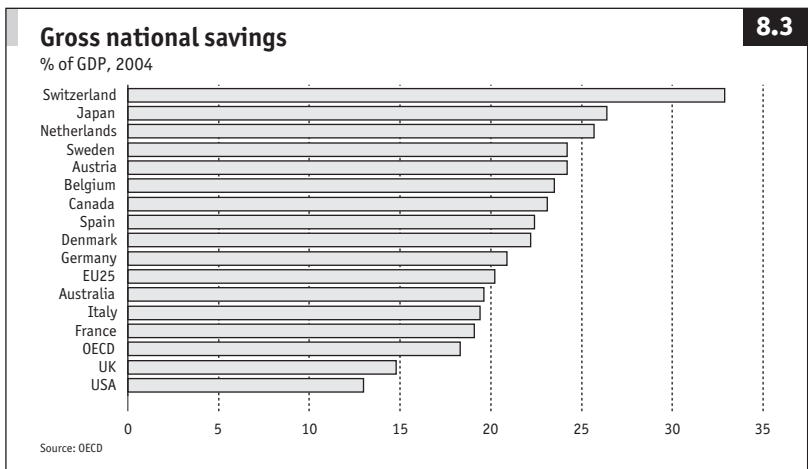


Table 8.3 Savings ratios

	Households <sup>a</sup>				National <sup>c</sup>			
	1990	1995	2000	2004	1990	1995	2000	2004
Australia	9.3	4.8	2.7	-3.0	18.1	17.8	19.2	19.8
Austria	13.3	10.9	8.4	8.3	23.9	20.8	22.4	24.2
Belgium <sup>b</sup>	15.4	20.5	14.4	10.7	23.6	25.4	26.0	23.5
Canada	13.0	9.2	4.7	1.4	17.6	18.6	23.9	23.1
Denmark <sup>b</sup>	-0.6	1.3	-1.9	2.9	20.3	20.4	22.6	22.2
France	9.3	12.7	11.4	11.8	21.6	19.1	21.6	19.1
Germany	13.9	11.0	9.2	10.5	26.1	21.0	20.2	20.9
Italy	24.0	17.9	9.2	11.5	20.7	21.6	20.0	19.4
Japan	13.9	11.9	9.5	6.9	33.8	29.5	27.9	26.4 <sup>d</sup>
Netherlands	13.0	9.8	1.8	7.3	27.4	29.1	28.7	25.7
Spain <sup>b</sup>	10.1	12.3	8.0	7.2	23.0	22.5	22.3	22.4
Sweden	1.2	8.7	3.3	8.6	21.4	20.5	22.4	24.2
Switzerland	9.6	11.6	11.8	8.9	33.7	29.9	35.0	32.9 <sup>d</sup>
UK <sup>b</sup>	8.0	10.0	5.0	4.4	16.2	15.7	15.0	14.8
USA	7.0	4.6	2.3	1.8	15.3	15.5	17.7	13.0
Euro area	17.3	13.6	10.1	11.1	20.2	20.5	20.2	20.2
OECD	...	...	...	...	21.5	21.1	19.6	18.3

a Net household savings as % of disposable personal income.

b Gross household savings as % of disposable personal income.

c Gross national savings as % of GDP.

d 2003

Source: OECD

## Government savings

Government savings are general government revenue less current expenditure. Government capital spending is classed as investment. Thus although the budget balance is often taken as a proxy for government savings, there can be a large difference between the two (amounting to, for example, 5.0% of GDP for Italy during the early 1990s).

Government savings or, frequently, dissavings reflect political decisions and are largely cyclical. Budget cuts in the industrial countries led to higher government savings or lower government dissavings as a percentage of GDP in several OECD countries in the 1990s.

## National savings and the investment gap

A net inflow of foreign capital implies that domestic savings are less

than domestic investment: foreigners' excess savings fill the gap. A net outflow of capital implies that domestic savings are bigger than domestic investment. Net foreign savings are conveniently defined as the balance on the current account of the balance of payments with the sign reversed (see Current account, page 141).

Current-account deficits indicate the extent to which domestic investment is financed by foreign savings. For example, the American current-account deficit (averaging 5% of GDP in 2000–05) represented a net inflow of foreign savings of the same proportion.

### **Interpretation**

Trends in domestic savings are an important indicator to watch. The comments in this chapter suggest that an increase in domestic savings rates would be no bad thing.



## 9 Industry and commerce

If economists were any good at business, they would be rich men instead of advisers to rich men.

Kirk Kerkorian

Partly for historical reasons, there is an abundance of economic indicators relating to industry and commerce in general and manufacturing in particular. These provide useful, timely signals of activity, but it should be borne in mind that their coverage is relatively narrow.

### Interpretation

Industrial and commercial indicators provide a guide to both the output and expenditure measures of GDP. These should be used in conjunction with cyclical indicators (page 54) to assess overall economic activity.

**Output.** The main clues to output include manufacturing and industrial production, car production and sales, construction spending, housing starts, and wholesale and retail sales.

Table 9.1 shows the relative importance of the main sectors. Note that services account for 67–77% of output in the major industrialised countries, according to the OECD, but they are relatively neglected among the commonly followed indicators of output. Employment (page 64), consumer spending (page 88) and government consumption (page 34) also provide clues to services.

It is value added that matters: the value of output less the cost of raw materials and other inputs. This is what manufacturing and industrial production figures measure, but the other indicators are before the deduction of input costs.

**Expenditure.** The main indicators of industrial and commercial expenditure are fixed investment and investment in stocks (see Chapter 8).

Fixed investment figures are available only after a lag. This chapter will show that business conditions, construction spending and housing starts provide a useful advance guide; so do manufacturers' production of capital goods and net imports of capital goods. Manufacturing,

Table 9.1 **Output by sector, 2004 or latest**

	————— % of GDP —————				Average annual —— % change, 2000–04 ——		
	<i>Agriculture</i>	<i>Manufacturing</i>	<i>Industry</i>	<i>Services</i>	<i>Agriculture</i>	<i>Industry</i>	<i>Services</i>
Australia	3	12	26	71	-2.8	3.7	3.7
Austria	2	20	31	67	0.6	1.8	0.9
Belgium	1	18	25	73	1.3	0.3	1.8
Canada	2	17	29	68	-1.5	0.5	3.5
Denmark	2	16	25	73	0.2	-0.8	1.7
France	3	14	22	76	-0.6	1.0	1.6
Germany	1	23	29	70	-0.1	-0.1	1.3
Italy	3	20	28	70	-0.8	0.2	1.2
Japan	1	21	31	68	-2.2	-0.1	0.6
Netherlands	2	15	26	72	0.1	-0.6	1.0
Spain	4	16	29	67	-0.4	2.8	3.1
Sweden	2	21	29	69	2.5	3.1	1.4
Switzerland	1	20	29	70	...	...	...
UK	1	...	26	73	1.2	-0.1	2.9
USA	1	15	22	77	-0.7	0.0	2.5

Sources: World Bank; Statistics Canada

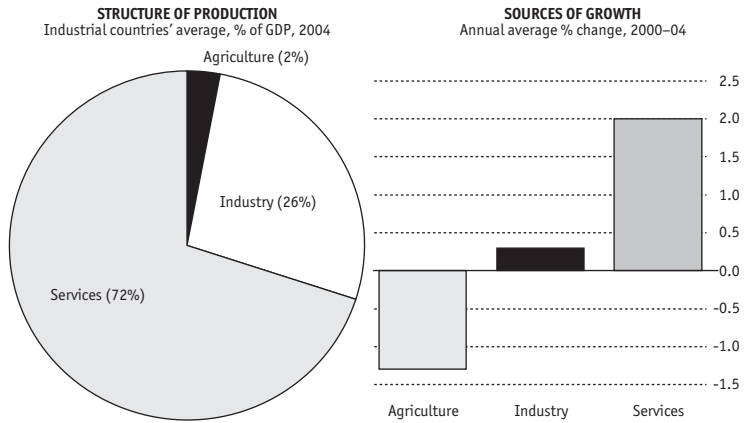
wholesale and retail inventories provide clues to changes in total stocks.

Investment figures should be used with consumer spending, government consumption and exports and imports to assess total GDP on an expenditure basis. This chapter's briefs on retail and vehicle sales provide clues to consumer spending and imports. Manufacturers' orders from abroad are indicative of export demand.

### Coverage

Many figures such as orders and productivity can be related to the whole economy, but for convenience are often produced for manufacturing alone. It is important to be clear about the coverage of any figures you use. Where they relate to manufacturing alone, consider whether other sectors of the economy might be moving differently.

## Structure of production and sources of growth



### Key indicators

The following briefs are arranged broadly from top to bottom: from the whole economy through to individual sectors, and from manufacturing through wholesaling to retailing.

### Business conditions; indices and surveys

- Measures:** Anecdotal evidence of business climate.
- Significance:** Valuable early warning of changes in economic cycle.
- Presented as:** Index number or percentage balance of companies optimistic or pessimistic.
- Focus on:** Trends.
- Yardstick:** Watch for indicators of rising or falling confidence. The US NAPM index has a breakpoint of 50 (see text).
- Released:** Monthly or quarterly, one month in arrears; rarely revised.

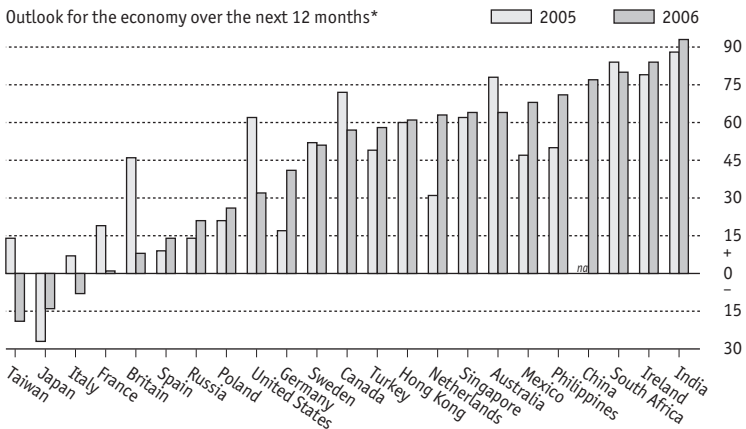
### Overview

Surveys provide valuable evidence of perceptions and expectations relating to business conditions, usually in manufacturing. Responses are subjective but they give early signals of changes in economic trends. (See briefs on Orders, Inventories, Prices, Retail sales, and so on, for comments on individual parts of the surveys.)

Private-sector bodies conduct surveys in some countries (for example, confederations of industry in Australia, Britain, Finland; IFO in

## Business confidence

Most businessmen around the world are confident about their home economies' prospects, according to a new survey by Grant Thornton, an accounting firm. Optimists outnumber pessimists in 26 out of the 30 countries surveyed. Their ranks have soared in Germany, but fallen sharply in America and Britain. In Japan, pessimists are still in the majority, but the gap has narrowed since last year.



\*Difference between % of businesses indicating optimism and pessimism.  
Source: Grant Thornton

The Economist, January 7th 2006

Germany), but some government agencies do the work (for example, Statistics Canada, the Bank of Japan). Many surveys are quarterly, although where they are monthly some questions are asked only 3-4 times a year (for example, capacity use in France and Germany).

## America

The US Institute for Supply Management (previously National Association of Purchasing Managers) publishes monthly indices covering factors such as the state of order books, inventories, production and prices, and a composite index of industrial conditions (the PMI).

A composite index reading above 50 indicates an expanding manufacturing sector, a figure below that indicates a contracting manufacturing sector. A reading below 44 is taken as a sign of a declining economy overall.

Also useful are the US Federal Reserve's report on regional trends (known as the Tan or Beige Book) and the Conference Board's surveys of business conditions.

## The UK

The Confederation of British Industry (CBI) conducts several surveys. Its monthly and quarterly surveys of about 1,250 industrial companies provide guides to manufacturers' expectations, mostly for the four months ahead. Its monthly surveys of 500 distributors, conducted in association with the *Financial Times*, provide information about current and expected conditions in 15,000 retailing and wholesaling outlets.

The CBI surveys are presented in percentage balance of companies reporting orders up less those reporting them down. The OECD uses a similar style. Interpretation is not as clear-cut as with the American surveys, but trends provide a good indication of perceived conditions. The CBI confidence measure is reckoned to provide a guide to corporate earnings nine months in advance.

British economists also watch the monthly indices published by the Chartered Institute of Purchasing and Supply (CIPS). The CIPS produces separate surveys of manufacturing and service companies. As with the PMI in America, a CIPS index above 50 indicates expanding output; below 50 implies contraction.

## Industrial and manufacturing production

<b>Measures:</b>	Value-added output of mines, manufacturing companies, utilities and, in some cases, construction.
<b>Significance:</b>	Indicator of industrial activity.
<b>Presented as:</b>	Index numbers in volume terms.
<b>Focus on:</b>	Trends in volume terms.
<b>Yardstick:</b>	OECD average industrial production grew by 1.1% a year during 2000–05. Manufacturing production in the euro area grew by 0.6% during the same period.
<b>Released:</b>	Monthly, at least one month in arrears; revised.

## Coverage

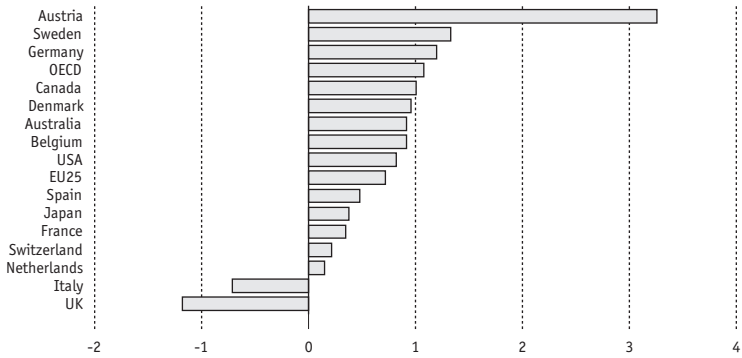
There are two main series, which are usually released together.

- **Manufacturing production.** This is the value-added output of manufacturing companies. Some countries such as Italy and Spain include mining and quarrying.

## Industrial production

9.2

Annual average % change, 2000–05



Source: OECD

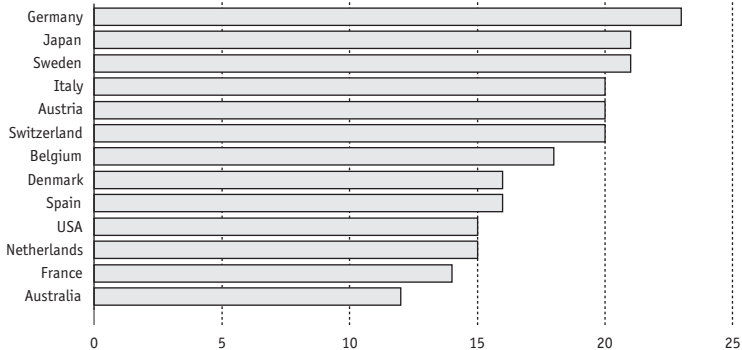
- Industrial production.** This is manufacturing production plus the supply of energy and water, and the output of mines, oil wells and quarries, and, usually, construction. It generally excludes agriculture, trade, transport, finance and all other services.

National coverage varies widely. Canada includes services relating to

## Manufacturing sector

9.3

% of GDP, 2004



Source: World Bank

mineral extraction; Germany covers construction; Portugal leaves out clothing, furniture and printing; Sweden excludes utilities; Switzerland omits mining and quarrying.

In total, for industry the index in Japan covers about 60%, Spain around 70%, Germany and Italy 80%, and the Netherlands, Sweden and Britain up to 100%. France conducts a monthly survey covering 65% and a fuller quarterly survey covering 85% of industry. Australia and Switzerland have quarterly indices only.

### **The importance of manufacturing and industry**

**Manufacturing.** Broadly speaking, in advanced economies, manufacturing ranges from about 12% of GDP in Australia to 23% in Germany (see Table 9.1). Manufacturing is tiny in some African states, but it rises to 30–35% of GDP in developing countries such as Malaysia and Thailand. Chart 9.3 shows the importance of manufacturing across 13 countries.

**Industry.** The difference between manufacturing and industrial production accounts for about 10% of GDP on average. This takes total industrial production to about 22% of American GDP and about 30% of Japan's (see Table 9.1).

The gap is more significant where the energy-producing sector is large, but even OPEC members' industrial production rarely exceeds about half of GDP.

### **Interpretation**

Industrial production as a whole is broadly indicative of the state of the economic cycle. The output of industries producing capital goods and consumer durables tends to be squeezed most during a downturn. Some countries produce separate figures for various sectors (see Motor vehicles, page 119). Steel production is a useful lead indicator since it is an input to many other industries.

## Capacity use and utilisation

<b>Measures:</b>	Extent to which plant and machinery is in use.
<b>Significance:</b>	Indicator of output and inflationary pressures.
<b>Presented as:</b>	Percentage of total capacity.
<b>Focus on:</b>	Absolute level and trends.
<b>Yardstick:</b>	80–90%; more may be inflationary, less indicates room for growth.
<b>Released:</b>	Monthly, 1–3 months in arrears; revised.

### Overview

**Total capacity.** Capacity is a vague, hard-to-measure concept which varies over time and according to economic conditions. The term is generally used to refer to the sustainable maximum output that could be produced by existing (installed) manufacturing plant and machinery, although sometimes other factors such as labour are taken into account. Either way “normal capacity” will vary if working practices are changed, even if only by increasing the working week by one hour. (See Productivity, page 51.)

**Capacity use.** Capacity use is usually defined as output divided by sustainable maximum capacity. Sustainable maximum output is lower than temporarily attainable peak production, so use of (sustainable) capacity can and occasionally does exceed 100% in some industries.

Overall capacity use does not go as high as 100% because different companies reach their peaks at different stages of the economic cycle. Also bottlenecks in one industry restrict supplies and therefore output in another: in major cyclical peaks, a shortage of metals can limit output of consumer durables and business machinery, and restrain capacity utilisation in those industries.

**Capital investment.** Figures for capital investment are sometimes taken as indicators of changes in capacity, but investment is usually measured gross, with no allowance for scrapping. Even where allowance is made, the net capital stock may not be representative of output potential. Moreover, the increase in capacity derived from a unit of new capital is affected by factors such as new technology, an increasingly shorter life for capital equipment, a longer work week for capital, restructuring of industry and the closure of plants.

### Interpretation

Strong economic growth with high capacity use usually suggests



inflationary pressures. However, if demand is expected to remain buoyant and if interest rates are low, producers may invest in new plant and machinery.

If the economy is expanding, but there is low capacity use and no evidence of recent new investment, it may be that the economy is recovering from recession.

### **American capacity utilisation**

The US Federal Reserve is one of the few national official bodies to produce estimates of capacity use and its figures are undoubtedly the most detailed and consistent available, but not even the Fed conducts surveys of capacity or capacity utilisation. Instead it uses data from the Census Bureau and various trade organisations to estimate capacity in various industries. Overall capacity utilisation is industrial production divided by the capacity index.

The Fed defines capacity as the realistically sustainable maximum capacity, rather than unsustainable short-term peak capacity.

American capacity use exceeded 90% during the Korean and Vietnam wars, but it has been below 90% since 1967. A figure of 88% overall would indicate severe strains (but 88% would be normal in certain individual industries which operate a high level of capacity use, such as paper and pulp).

### **Surveys**

In most other countries measures of capacity use are derived from survey evidence (see Business conditions, page 110). For example, the CBI's monthly survey asks British manufacturers if their capacity is satisfactory in relation to orders. Defining "capacity" and "satisfactory" is left to respondents. About half include factors other than physical capacity and the interpretation of satisfactory has changed over time.

Accordingly, survey results are better for examining short-term rather than long-term changes in capacity use.

## Manufacturing orders

- Measures:** New orders received by manufacturing companies.
- Significance:** Indicator of output in the near term.
- Presented as:** Money, index or percentage balance form.
- Focus on:** Trends.
- Yardstick:** Total orders can change by 10–20%. Generally the higher the better, but watch for bottlenecks and inflation.
- Released:** Monthly, 1–2 months in arrears; revised.

### Overview

- **The US Department of Commerce** publishes new orders received by manufacturing companies and their unfilled orders in current dollars, with a breakdown between orders for durable and non-durable goods.
- **The German Federal Statistical Office** publishes volume index numbers for manufacturing orders, distinguishing between domestic and foreign orders.
- **The Confederation of British Industry** publishes survey results indicating the percentage of respondent companies which think that order books are satisfactory less the percentage of companies reporting unsatisfactory order books. This subjective assessment of total and export orders is broken down into value and volume terms.

Manufacturing orders (including machine tool orders) ripple through the economy. An order for a washing machine may prompt an order for a metal pressing which in turn will provoke an order for sheet steel. Each order will reflect the output price, while manufacturing output and GDP will rise by the value-added component only. Orders are therefore much more volatile than manufacturing production.

### Total orders

Buoyant order books indicate upward pressure on employment and output over the next few months. This is basically good, but it may suggest a rise in inflation if unemployment is low; capacity use is high; there is an order backlog (orders are high in relation to shipments or sales); and/or inventories are low. Strong orders will also tend to increase imports of materials and intermediate goods, but this may be offset by exports (see below).

Orders provide an early signal of changes in the economic cycle. A

rise in orders may indicate the end of a recession; a fall may indicate that the cycle is peaking.

Where orders are presented in value terms they should be adjusted for inflation. Producer prices can be used. If orders rise by 6% in value and producer prices increase by 4%, the volume of orders is about 2% higher. It is important to ascertain that this adjustment does not reflect, say, a movement in refined oil prices which are erratic and can falsely suggest changes in the volume of new orders. There may also be other blips. In the American series the transport component jumps by perhaps 40% in a month when new aircraft are ordered. Try to use a series which excludes misleading influences.

### **Domestic orders**

Domestic orders by sector are indicative of the structure of home demand. Bigger orders for capital goods suggest more investment activity and more output in the future. Machine tool orders sometimes receive special attention: an increase is encouraging because they are used to manufacture yet more machines which in turn make more goods.

Defence orders tend to reflect political decision-making. If they are identified separately, as they are in America, subtract them from capital or durable orders to get a better feel for underlying demand.

Orders for durable and capital goods react to changes in the economic cycle ahead of other orders. Orders for consumer goods are obviously indicative of trends in the consumer sector.

### **Export orders**

Orders from overseas reflect export competitiveness (see page 162) and the economic cycle in overseas markets. A rise is good, but see comments above about inflation. If orders are booked despite a stronger currency, profits may be squeezed and repeat business may not be sustained.

## Motor vehicles

<b>Measures:</b>	Activity involving cars and trucks.
<b>Significance:</b>	Indicator of manufacturing production as well as consumer demand.
<b>Presented as:</b>	Number of units.
<b>Focus on:</b>	Trends.
<b>Yardstick:</b>	Volatile, but a 12-month change of more than a few percentage points is worrying.
<b>Released:</b>	Monthly; more frequently in the USA.

### Overview

There are three main series relating to motor vehicles:

- manufacturers' production;
- sales; and
- registrations of new vehicles with national licensing authorities.

Registrations and sales are broadly similar; the difference mainly reflects the method of data collection.

The figures usually relate to the number of units, that is, volume rather than value. They may not reveal very much about the pattern of demand for cheap or expensive vehicles or about changes in quality. However, they are a useful indicator of manufacturing production; demand for a durable good which is vulnerable to the economic cycle; competitive pressures, especially between domestic and overseas producers; and import and export trends.

### Interpretation

Vehicle sales are a reasonable leading indicator of economic activity. A vehicle purchased by an individual is classed as consumption expenditure. The same vehicle purchased by a business is investment spending. Generally, then, figures for cars are suggestive of consumption; light vans and trucks are indicative of investment.

Production and sales may not tally due to changes in stocks (see Wholesale sales and stocks and Retail sales and stocks, pages 124 and 125) and net exports.

**Seasonality.** There is a marked seasonal pattern in car sales, with turnover bunched into January and, if different, the start of a new model year or registration-plate year identifier. Discounting price wars can also shift demand into a different month from normal. Short-term figures

Table 9.2 **Motor vehicle markets, 2004**

	<i>Stock of cars (per '000 persons)</i>	<i>New registrations ('000)</i>	<i>Production ('000)</i>
Australia	520	531	319
Austria	475	247	142
Belgium	465	417	267
Canada	568	1,011	1,278
Denmark	358	104	...
France	506	2,193	3,597
Germany	552	3,128	5,080
Italy	603	2,154	967
Japan	444	4,611	8,750
Netherlands	433	451	182
Spain	489	1,192	2,089
Sweden	457	239	401
Switzerland	527	284	...
UK	519	2,610	1,671
USA	489	7,346	5,359

Source: Euromonitor

should be interpreted with care. Take 2–3 months together and compare with similar periods of earlier years.

## Construction orders and output

**Measures:** Activity in the construction sector.

**Significance:** Indicator of new investment and future output.

**Presented as:** Value of orders, volume of construction.

**Focus on:** Trends in volume terms.

**Yardstick:** In OECD countries, the growth rate of real capital formation in non-residential construction averaged 1.4% a year between 2000 and 2005.

**Released:** Monthly, at least one month in arrears.

## Overview

There are several main series, including the following.

- Orders (volume in Britain; value in Japan and America).

- Permits issued (number in Belgium and France; value in Australia, Canada, Germany, the Netherlands).
- The value of work put in place (Germany, America).
- Value added in money and real terms (with GDP figures for expenditure on investment for many countries).

Construction covers buildings and infrastructure (such as roads and ports). Orders are sometimes based on contracting work. This may include projects such as oil rigs which really belong in manufacturing production under steel fabrication. The figures usually exclude residential dwellings, but this should be checked.

### **Significance**

Construction work is fixed investment. This boosts current-period GDP and lays the basis for future economic growth. Its share of GDP in different countries is shown in Table 8.2.

New factories and offices provide a direct foundation for higher economic output. New infrastructure improves social welfare and generally boosts productivity. The only real exception to the “future output” rule is investment in new dwellings, but this still brings benefits (see Housing, page 122).

### **Interpretation**

**Seasons and cycles.** Construction work is highly seasonal and cyclical. Data are frequently (but not always) seasonally adjusted, but it is wise to take 2–3 months together and compare them with the same periods in earlier years. It is important to look out for the adverse effects of a wet or freezing month.

Construction activity is sensitive to expectations of future demand and to interest rates. Low interest rates increase the return from investment and encourage capital spending, especially when they are coupled with strong demand and high usage of existing capacity. (See also Investment, page 96.)

**Orders.** Construction orders signal demand for building materials and labour over the coming months (and years – depending on the size of the individual projects). Knock-on effects include implications for service industries such as architects and surveyors, manufacturers of industrial plant to go into new factories, and providers of office fittings and furnishings.

Orders are often given on a value basis. These should be adjusted for inflation to arrive at the volume change. For example, if the value of orders rises by 10% and inflation is 8%, real growth is about 2%. Producer prices might be used for deflation if there is no obviously better indicator to hand. Figures sometimes cover construction permits; these provide no guide to the size of the projects, and they might not be translated into construction activity if economic conditions change.

**Output.** Construction output in volume terms helps you to judge the effect on total output. Construction accounts for about 5% of GDP, so a 10% rise in construction value-added contributes around 0.5% to GDP.

A large construction project spread over several months or years adds a little bit to output in each of several periods. (See above for knock-on effects.)

## Housing starts, completions and sales

<b>Measures:</b>	Number of new houses begun and finished; sales of new and existing homes.
<b>Significance:</b>	Indicator of construction activity; industrial and consumer demand.
<b>Presented as:</b>	Number of units per month.
<b>Focus on:</b>	Trends.
<b>Yardstick:</b>	Volatile; number of starts can change by 40% a year. In OECD countries, the growth rate of gross capital formation in residential construction averaged 3.6% a year between 2000 and 2005.
<b>Released:</b>	Monthly, at least one month in arrears.

## Overview

There are three main series indicating:

- the number of residential dwellings started;
- the number of residential dwellings completed; and
- the number of residential dwellings sold.

Each series applies to a given period, usually one month. They are often seasonally adjusted, but it is wise to take 2–3 months together and compare with the same periods in earlier years since house building is highly sensitive to the weather.

Figures usually distinguish between public and private dwellings. Activity in the private sector is a good guide to underlying activity, but there are also knock-on effects from public-sector building.

**Starts**

A housing start is counted on the date that foundations are begun (not when the site is cleared). It implies a given level of demand for construction materials and labour over the next few months and a housing completion at the end of that period.

If the existing housing stock is old, there may be an element of replacement building. Generally, however, housing starts (and completions) are closely linked to population growth rates, earnings and employment, and interest rates.

**Completions**

A housing completion implies a house sale, a new mortgage advance and increased consumer demand for carpets, furnishings and other durables – possibly accompanied by extra consumer credit.

**Sales**

Housing sales are linked to the level of completions, but turnover of existing homes is more important. House prices are highly relevant. People are more inclined to move home and buy rather than rent when house prices are rising and are expected to provide capital gains. Housing turnover is also stimulated by incomes rising relative to house prices and by lower mortgage rates which encourage borrowing.

**Effect on GDP**

The construction of new houses is classed as fixed investment in residential dwellings. This accounts for only a few percentage points of GDP (see Table 8.2), so arithmetically a 10% rise in house building may add less than 0.5% to total output.

The sale of existing houses is a transfer of production scored in earlier periods and does not itself add to output, but real estate, legal and financial fees and commissions do, as does demand for new furnishing and other durables.



## Wholesale sales or turnover, orders and stocks

- Measures:** Most common indicator measures sales by wholesalers.
- Significance:** Indicator of demand.
- Presented as:** Monthly index numbers.
- Focus on:** Rates of change in volume of sales.
- Yardstick:** More volatile than retail sales; look for gains of 3–4% a year.
- Released:** Monthly, 1–2 months in arrears; revised.

### Overview

Wholesale sales (called wholesale turnover in Germany) are an important link in the supply chain. Wholesalers channel imports and domestically produced or processed goods through to final users. Where stocks and orders are available, these provide a useful check on trends. A fall in wholesale sales or a rise in wholesale inventories suggests or confirms slack in business and retail demand.

There are relatively few figures on the services sector, but wholesale sales provide extremely loose indicators of demand from, for example, hotels and catering establishments. They are also indicative of demand for business goods including, in some countries, building materials. Wholesale sales are a reasonable signal of consumer demand (but retail sales are better – see below).

### Value and volume

It is important to watch the volume of sales, particularly for durable goods (an early indicator of demand pressures). Where figures are in value terms they can be converted to volume using wholesale or producer prices. For example, if producer prices increase by 3% and sales value rises by 5%, volume is up by about 2%.

### Effect on GDP

Wholesale sales are included in the distributive trades sector of GDP. Their direct contribution is wholesalers' value added (income from sales less the cost of purchases and other inputs).

## Retail sales or turnover, orders and stocks

<b>Measures:</b>	Most commonly sales by retailers.
<b>Significance:</b>	Indicator of consumer demand.
<b>Presented as:</b>	Monthly index numbers.
<b>Focus on:</b>	Rates of change in volume of sales.
<b>Yardstick:</b>	3% a year is reasonable; any lower and the economy might slow down. More than 4–5% suggests overheating.
<b>Released:</b>	Monthly, at least one month in arrears.

### Coverage

Retail sales figures provide an important and timely indicator of spending at retail outlets. The series is known as retail turnover in Germany; department store sales (with more limited coverage) in Italy and Japan; and hypermarket sales in Spain. French figures cover only department and chain stores, mail order firms and hypermarkets. Sweden's series excludes alcohol, pharmaceuticals, cars and petrol.

Most series include VAT or sales taxes and many are in volume terms (that is, before adjustment for inflation) as well as value terms.

Headline series in North America are also in value terms, but in dollars. Canadian retail sales figures included federal sales tax up to January 1991 but have since excluded the goods and services tax. Australia produces a monthly value and a quarterly volume index; both in dollars.

**Basis.** Information is presented by type of business, rather than by commodity. For example, food sales appear under at least two subheadings: food retailers and mixed businesses. Where an establishment sells items outside its main classification, such as sales of food by a petrol filling station, these are usually excluded from the statistics. Credit sales are treated as a sale, valued at the date of the transaction at the total credit price including charges levied by the retailer.

### Interpretation

Retail sales cover up to half of total consumer spending although there is not a direct correlation between the two since some items sold by retailers are bought by businesses. Nevertheless, retail sales are a key indicator of consumer confidence and demand.

It is important to focus on volume increases. Where figures are in value terms they can be converted to volume using consumer prices. Arithmetically, a 1% rise in retail sales adds roughly 0.3% to GDP, all else being constant.

**Seasonality.** Retail sales data are usually seasonally adjusted, but they should be interpreted with care. Promotional sales price discounting, warm weather or an expectation of increases in sales taxes can encourage consumers to bring forward their spending. An upward blip may not be sustained.

**Cyclical variations.** In times of financial stress consumers cut back on non-essential spending, which results in a decline or less rapid growth in retail sales. Spending on durables (items with a life of over one year, such as washing machines) goes first. For example, in Britain during the 1991–92 recession, the volume of food sales rose by 3% while new car registrations fell by 20%.

Although retail sales are very nearly coincident with GDP, retail sales figures are published with a much shorter lag. They therefore provide an early indication of economic trends.

A downturn in retail sales could lead to lower wholesale sales, slacker factory orders, an accumulation of stocks and, eventually, a cut in production.

**Stocks and orders.** Where figures for retail stocks and orders are also available they provide useful advance warning. For example, excess retail demand might show up first in a fall in the ratio of retailers' inventories to sales. This spells trouble if wholesalers' and manufacturers' stocks are also low and there are constraints on manufacturers' ability to increase output (high capacity use and low unemployment). Look out for price inflation and a surge in imports.

## 10 The balance of payments

No nation was ever ruined by trade.

Benjamin Franklin

**T**he balance of payments is a continual source of misunderstanding and misconception. Yet it is no more than a simple accounting record of international flows. Moreover, trade between two countries is exactly the same as trade between two individuals. Once seen in this light, interpreting external flows is no different from interpreting any other economic transactions.

### Accounting conventions

Balance of payments accounts record financial flows in a specific period such as one year. Financial inflows (such as receipts for exports or when a foreigner invests in the stockmarket) are treated as credits or positive entries. Outflows (such as payments for imports or the purchase of shares on a foreign stockmarket) are debits or negative entries. When a foreigner invests in (acquires a claim on) the country, there is a capital inflow which is a credit entry. Conversely, the acquisition of a claim on another country is a negative or debit entry.

**Debits = credits.** The accounts are double entry, that is, every transaction is entered twice. For example, the export of goods involves the receipt of cash (the credit) which represents a claim on another country (the debit). By definition the balance of payments must balance. Debits must equal credits.

**Current = capital.** One side of each transaction is treated as a current flow (such as a receipt of payment for an export). The other is a capital flow (such as the acquisition of a claim on another country). Arithmetically current flows must exactly equal capital flows.

### Balances

The accounts build up in layers. Balances may be struck at each stage. What follows reflects the IMF's methodology in the fifth edition of the

*Balance of Payments Manual*. By the late 1990s most countries had moved to the new international standards.

Net exports of goods (exports of goods less imports of goods)  
= the visible trade or merchandise trade balance  
+ net exports of services (such as shipping and insurance)  
= the balance of trade in goods and services  
+ net income (compensation of employees and investment income)  
+ net current transfers (such as payments of international aid and workers' remittances)  
= the current-account balance (all the following entries form the capital and financial account)  
+ net direct investment (such as building a factory overseas)  
+ other net investment (such as portfolio investments in foreign equity markets)  
+ net financial derivatives  
+ other investment (including trade credit, loans, currency and deposits)  
+ reserve assets (changes in official reserves), sometimes known as the **bottom line**  
= overall balance  
+ net errors and omissions  
= zero

Thus the current account covers trade in goods and services, income and transfers. Non-merchandise items are known as invisibles. All other flows are recorded in the capital and financial account. The capital part of the account includes capital transfers, such as debt forgiveness, and the acquisition and/or disposal of non-produced, non-financial assets such as patents. The financial part includes direct, portfolio and other investment.

### **Balancing items**

In practice it is impossible to identify all flows: invisibles are hard to track, some speculative flows go unmeasured and some transactions are concealed by tax evasion or organised crime. Even visible trade is sometimes overlooked. In the late 1980s British customs officials stumbled upon £1.5 billion of aircraft imports which had previously gone unnoticed. In addition, the balance of payments accounts relate to specific periods such as calendar years. Lags mean that one-half of a transaction may not be recorded in the same period as the other half.

To cover timing differences and unidentified items, government statisticians are forced to make the accounts balance with a residual or balancing item or statistical discrepancy shown as net errors and omissions.

**Interpretation.** Every country has discrepancies and Britain's have been among the worst. In 2004 the accounts showed a current-account deficit of £19.3 billion with a capital and financial-account surplus of £7.7 billion, leaving an £11.6 billion figure for net errors and omissions.

Aggregating international current-account figures implies that world imports exceed world exports by over \$100 billion a year. Apart from being absurd, this makes it difficult to interpret balance of payments data. What it means is that many countries have smaller current-account deficits or larger surpluses than they think, or even surpluses rather than deficits.

### **Deficits and surpluses**

The balance of payments must balance. When commentators talk about a balance of payments deficit or surplus, they mean a deficit or surplus on one part of the accounts.

Attention is usually focused on the current-account balance, but capital flows have become increasingly important as many industrial countries relaxed exchange controls and other barriers to world capital flows during the 1980s. The stock of foreign direct investment more than tripled between 1990 and 2000.

**The balance to watch.** The bottom line gives an indication of imbalances in the economy. Acute imbalances will trigger changes in the exchange rate. Large negative errors and omissions can be indicative of capital flight or unrecorded outflows to avoid exchange controls. Large positive discrepancies could be proceeds from illegal activities. Adjustments are made to Britain's import figures to allow for VAT Missing Trader Inter-Community fraud. Carousel fraud relates to goods being imported VAT-free from an EU member state, sold through a series of companies and then re-exported to another EU member state.

### **Balance of payments accounting quirks**

Balance of payments figures must be interpreted with care. As a brief illustration, consider a company which borrows \$500 in foreign currency from a domestic bank (which itself borrows the cash from overseas) and invests the money in an overseas operation which earns profits of \$1,750, only \$750 of which are repatriated.

If the balance of payments accounts are drawn up in accordance with IMF recommendations and if all transactions are identified, the entries will be as follows.

	\$
<b>Current account</b>	
Income: profits earned abroad	1,750
<b>Financial account</b>	
Private investment overseas	-1,500
of which:	
Financed by borrowing	-500
Unremitted profits	-1,000
Banks' overseas borrowing	+500
Change in reserves (- = additions)	-750

At first glance the accounts suggest that there was an investment outflow of \$1,500. Yet the net currency movement is the inflow of \$750 profits.

Analysis of balance of payments accounts requires careful review of all entries and a good measure of imagination. Do not be misled by changes in reserves, where negative entries indicate an increase in official holdings of foreign currencies.

### Published figures

National accounting practices vary, but in general governments produce two sets of figures relating to external flows.

- Overseas trade statistics (OTS), which measure imports and exports of goods.
- Balance of payments (BOP) accounts, which record all cross-border currency flows including movements of capital, with emphasis on transactions rather than physical movement.

Apart from the fact that BOP accounts have a wider coverage, the main difference between the two is that BOP accounts exclude goods passing across borders where there is no change of ownership, but include changes of ownership which take place abroad (such as ships built and delivered abroad).

In addition, overseas trade statistics usually record the value of trade at the point of customs clearance, measuring exports FOB (free on board) and imports CIF (including cost, insurance and freight). For BOP purposes

insurance and freight are separated out and imports of goods are shown FOB. Transport and insurance are shown as imports of services if the payments are made to overseas companies; otherwise they are domestic transactions which are excluded from the accounts.

**Using OTS figures.** Figures on an OTS basis are usually the first available and they are preferable for examining the effect of imports on domestic economic activity. They sometimes show imports CIF which is the cost at the point of arrival and is directly comparable with the cost of goods produced at home, but most OTS figures for developed countries are now shown FOB/FOB.

**Using BOP figures.** BOP figures should be used for analysis of external trade in relation to GDP, usually as a percentage. Exports and imports of goods and services on a BOP basis match the figures in GDP. The total income plus net current transfers is shown as “net income from abroad” in national accounts statistics (the difference between GDP and GNP). The BOP position can be vulnerable if the current account is being financed by portfolio investment, financial derivatives and external borrowings rather than by long-term funds for direct investment, as an abrupt withdrawal of funds is easier.

**Other figures.** The briefs in this section should be read in conjunction with the exchange-rate briefs (Chapter 11).

Imports and export unit values (prices) are included with other price indicators in Chapter 13.

## Imports of goods and services

<b>Measures:</b>	Purchases from abroad.
<b>Significance</b>	Imports add to well-being but may displace domestic production and drain financial resources.
<b>Presented as:</b>	Value and volume figures in money and index form.
<b>Focus on:</b>	Growth; total in relation to exports (see trade balance) and as a percentage of GDP.
<b>Yardstick:</b>	OECD average growth in the volume of imports of goods and services was 4.3% a year during the period 2000–05.
<b>Released:</b>	Monthly, at least one month in arrears.

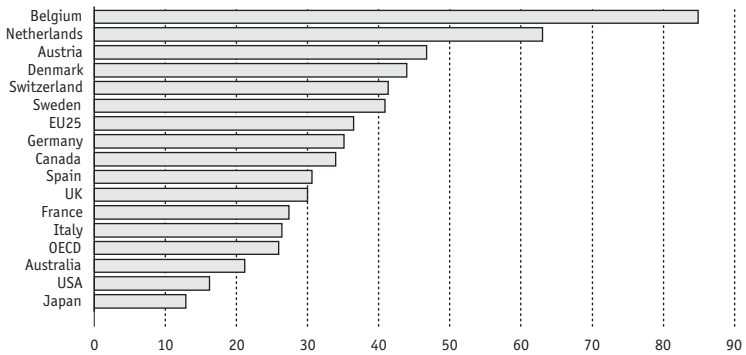
### Overview

A country imports goods and services because it cannot produce



**Imports of goods and services**

% of GDP, 2005



Source: OECD

them itself or because there is some comparative advantage in buying them from abroad. Some commentators worry that all imports are a drain on national resources, which is a bit like saying you should not buy from a domestic neighbour who produces something better or cheaper than you do. Of course, you can only buy to the extent that you can finance the purchase from income, savings or borrowing against future production.

**Goods and services.** Merchandise or visible imports relate to physical goods. Imports of services are payments to foreigners for invisibles such as shipping, travel and tourism; financial services including insurance, banking, commodity trading and brokerage; and other items such as advertising, education, health, commissions and royalties.

In practice, many countries give prominence to visible trade figures because they are among the most reliable and rapidly available figures on external flows. Even so, they are available only after a lag, are frequently revised as more information comes to hand and are subject to various errors and omissions. Figures for invisibles are harder to collect, less reliable and are published only quarterly by some countries.

**Value and volume.** Changes in import values reflect changes in foreign prices, exchange rates and quantity (volume). Real exchange rates (see page 162) are useful for identifying price and currency effects. Import

volume indicates “real changes”, and value gives the overall balance of payments position.

**Cyclical variation.** Import volumes tend to move cyclically. In general they increase when home demand is buoyant. For this reason imports might be seen as a safety valve which offsets the inflationary pressures that arise when domestic firms are operating at close to full capacity.

**Link to exports.** Imports are also linked to exports. An increase in exports boosts GDP because the goods sold overseas are part of domestic production.

When GDP increases, demand for domestic and imported goods rises as well.

**Import penetration.** Imports of goods and services as a percentage of GDP (or of total final demand) indicates the degree of dependence on imports; the higher the figure the more imports displace domestic output and the more vulnerable is the economy to changes in import prices. A sudden rise in import penetration may signal that domestic companies are operating at full capacity and cannot meet increases in demand.

### **Import composition and sources**

**Commodity breakdown.** A high volume of imports of intermediate and capital goods is generally good where these are used to manufacture other items or to generate invisible earnings. This adds value to GDP and perhaps contributes to future export growth. For example, a country buying aircraft from abroad records these as imports. In later years the aircraft will be used to move passengers and generate profits which are invisible export earnings.

Note though that manufacturing output declines in the short term when imports displace locally processed or manufactured items. Developing countries increasingly export semi-manufactures (such as cloth and refined petroleum products) rather than raw materials (such as cotton and crude oil) and the industrial countries import more semi-manufactures and fewer raw materials.

Increases in the volume of imports of consumer goods are a direct signal of consumer demand. They imply that domestic producers cannot meet the required price, quality or quantity.

**Compressibility.** When examining a developing country it is important

Table 10.1 Imports of goods and services

	% of GDP	Annual average % change			
	2005	1990-94	1995-99	2000-04	2005
Australia	21.2	5.8	7.6	4.5	9.1
Austria	46.7	5.0	8.4	4.2	5.7
Belgium	84.9	2.5	6.4	2.8	10.4
Canada	33.9	8.4	8.8	0.6	5.9
Denmark	43.9	2.9	6.7	3.0	15.2
France	27.4	1.3	6.8	1.4	9.8
Germany	35.1	...	7.1	1.7	7.9
Italy	26.4	7.2	8.4	2.3	9.7
Japan	12.9	-0.9	4.7	4.3	14.6
Netherlands	63.0	3.1	8.4	4.0	8.1
Spain	30.6	8.2	13.6	5.2	11.5
Sweden	40.9	...	8.2	2.3	12.4
Switzerland	41.3	0.0	5.3	1.1	9.0
UK	30.0	5.4	6.4	3.8	9.0
USA	16.2	6.6	8.8	5.1	12.8
EU25	36.5	4.2 <sup>a</sup>	8.6 <sup>a</sup>	2.6	9.2
OECD	25.9	...	7.8	4.1	10.2

a EU15

Source: OECD

to check the compressibility of imports, that is, the extent to which there are non-essential goods which need not be imported in times of stress on the balance of payments. If all imports are essentials such as foods and fuels it may not be possible to reduce the import bill.

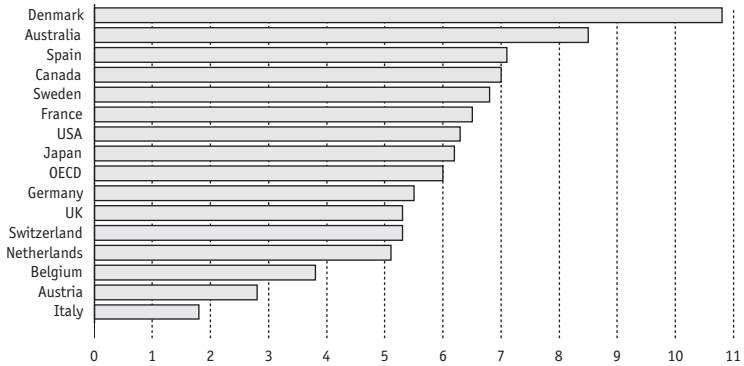
**Sources.** A country which imports from just one or two main trading partners is vulnerable to economic shocks from its suppliers, especially if they cease to export those particular goods, if prices rise sharply or if there is some political disturbance.

### International comparisons

The distinction between OTS and BOP figures is discussed on pages 130-31. For international comparisons, aim for consistency and watch the FOB/CIF basis. As a crude rule of thumb, imports CIF are around 10% greater than imports FOB. The figure varies from 20% for some Latin

**Growth in imports of goods and services****10.2**

% change in volume, 2005



Source: OECD

American countries to under 4% for North America and some European countries where local cross-border trade keeps shipping costs lower than for geographically remote countries.

**Other special factors**

**Smoothing.** Various special factors can cause swings in trade figures even when there is no change in underlying trends. It is always wise to take at least 2–3 months together to smooth out blips.

Many commentators compare the calendar year so far with the same period of the previous year. This has a certain neatness, but economic figures do not respect accounting periods and comparisons of, say, the two months to February are more susceptible to erratic influences than the 11 months to November. Another option is to look at 12-month rolling totals, as can be found in the Indicators pages of *The Economist*.

**Oil and erratics.** The movement of high-value items such as ships, aircraft and precious stones can have a significant effect on trade figures. Oil accounts for a large proportion of imports for many countries (typically up to 20%) and the price can fluctuate widely. For these reasons many countries publish figures for imports and exports excluding oil and erratics, which helps to identify underlying trends.

**Seasonal adjustment.** Most trade figures are adjusted for obvious

seasonal factors such as climatic variation and the effect of holidays on industrial output. However, seasonal adjustment cannot cope with shipping and dock strikes, unusually bad weather or the movement of high-value items. Sensible adjustments should be made for any such factors of which you are aware.

### Exports of goods and services

- Measures:** Sales in other countries.
- Significance:** Exports generate foreign currency and economic growth.
- Presented as:** Value and volume figures in money and index numbers.
- Focus on:** Growth; total in relation to imports (see trade balance) and as a percentage of GDP.
- Yardstick:** OECD average growth in the volume of exports of goods and services was 3.4% during the period 2000–05.
- Released:** Monthly, at least one month in arrears.

### Overview

Exports generate foreign currency earnings. Export growth boosts GDP which in turn implies more imports, so exports should never be considered in isolation.

This brief should be read in conjunction with the previous brief on imports. Note especially the comments on goods and services (page 131–2) and special factors (pages 135–6).

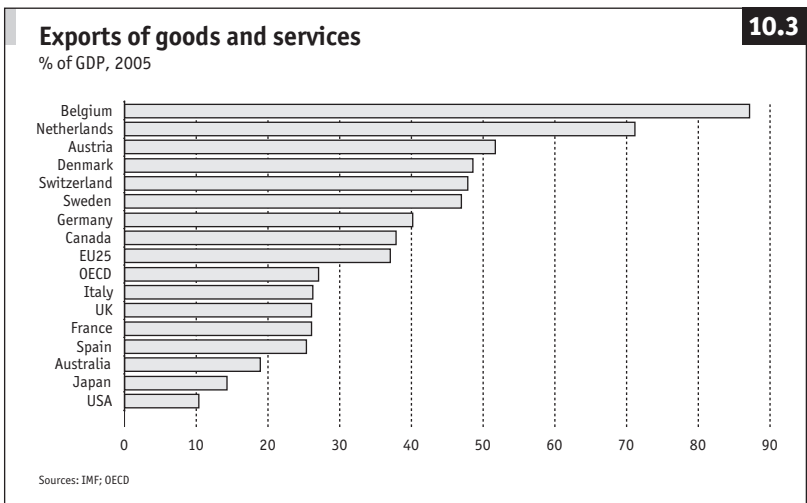


Table 10.2 Exports of goods and services

	% of GDP 2005	Annual average % change			
		1990-94	1995-99	2000-04	2005
Australia	19.0	7.2	5.0	1.8	14.6
Austria	51.7	2.5	8.5	6.0	5.4
Belgium	87.2	3.2	6.2	3.2	7.4
Canada	37.9	11.6	8.5	0.4	5.2
Denmark	48.6	4.2	6.5	2.4	13.7
France	26.1	3.5	7.1	1.0	3.5
Germany	40.2	0.7	7.5	5.2	7.0
Italy	26.3	10.5	3.1	2.2	6.0
Japan	14.3	-0.9	3.1	4.7	8.5
Netherlands	71.2	4.5	6.7	4.9	9.0
Spain	25.4	13.6	11.6	4.4	6.0
Sweden	47.0	8.7	6.2	3.8	9.9
Switzerland	47.9	2.9	5.9	2.1	6.1
UK	26.1	7.8	4.2	2.4	7.5
USA	10.4	6.9	5.1	1.7	10.9
EU25	37.1	...	6.5	3.4	8.0
OECD	27.1	...	6.7	3.9	8.3

Sources: IMF; OECD

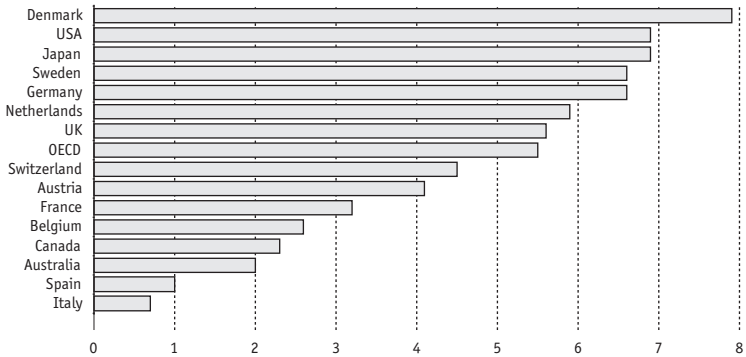
**Value and volume.** Demand for exports depends on economic conditions in foreign countries, prices (relative inflation and the exchange rate) and perceptions of quality, reliability, and so on. Real exchange rates (see page 162) help to identify inflation and currency effects. Export volume indicates “real changes”, and value gives the overall balance of payments position.

**Composition and destinations.** As with imports, dependence on a few commodities increases vulnerability to shifts in demand, while dependence on a few countries increases vulnerability to their economic cycle.

The greater the proportion of exports in relation to GDP, the bigger the boost to domestic output when overseas demand rises. For example, the Netherlands' exports account for over 70% of GDP and it trades heavily with Germany. Consequently, if German imports rise by 10%, Dutch GDP jumps by 1.5%. A high exports:GDP ratio also implies a larger slump when foreign demand falls.

**Growth in exports of goods and services**

% change in volume, 2005



Source: OECD

**Compatibility**

Exports are always measured FOB (free on board) or FAS (free alongside ship) at the point of export, so they present fewer compatibility problems than imports which may be FOB or may include insurance and freight (CIF).

**Trade balance, merchandise trade balance**

**Measures:** The net balance between exports and imports of goods.

**Significance:** Shows a country's fundamental trading position.

**Presented as:** Money values.

**Focus on:** Total balance; balance in relation to the current account.

**Yardstick:** A deficit is potentially more of a problem than a surplus. See Current-account yardstick (page 141).

**Released:** Monthly, at least one month in arrears.

**Overview**

The trade balance is the difference between exports and imports (see above). It may measure visible (merchandise) trade only, or trade in both goods and services.

Invisibles are difficult to measure, so the balance of trade in goods and services is less reliable and more likely to be revised than the visible balance.

This brief should be read in conjunction with the previous briefs on

exports and imports. Note especially the comments on goods and services (pages 131–2) and special factors (pages 135–6).

**Arithmetic.** Small variations in imports or exports can have a significant effect on the trade balance. For example, if exports are \$10 billion and imports are \$11 billion, a 10% rise in imports to \$12 billion will double the trade deficit from \$1 billion to \$2 billion.

**Income elasticity.** The relationship of exports and imports to economic growth (their income elasticity) is important. For example, Japan's imports tend to increase by a relatively small amount when its GDP grows by 1%. At the same time its exports rise rapidly when its trading partners' economies expand. Thus if Japan's economy grows at the same pace as the rest of the world, its trade surplus will tend to widen.

**Supply constraints.** A large trade deficit may signal supply constraints, especially if it is accompanied by high inflation and/or the deficit has emerged recently owing to a rise in imports. This suggests that companies are unable to boost output to match higher domestic demand. The deficit may act as a safety valve and divert potentially inflationary pressures. Alternatively, an increasing trade deficit may signal a loss of competitiveness by domestic companies.

**Net savings and the resource gap.** The balance of trade in goods and services measures the relationship between national savings and investment. A deficit indicates that investment exceeds savings and that absorption of real resources exceeds output.

For developing countries, the difference between exports and imports of goods and services is more usually called the resource gap; that is, the extent to which the country is dependent on the outside world. In the 1980s and 1990s many developing countries had resource gaps equivalent to 20–30% of GDP. In 1982–93 Lesotho's was over 100% of GDP though it was down to below 60% in 2004.

**Current flows.** For the industrial countries a trade imbalance is not necessarily a problem; it reflects choice as much as necessity.

For most of the past 200 years Britain has run a deficit on visible trade which has been more than offset by one of the world's largest surpluses on invisibles. Countries with large manufacturing sectors, such as Japan and Germany, have tended to run visible-trade surpluses and invisibles



Table 10.3 Trade and current-account balances

	<i>Trade balance<sup>a</sup></i>	<i>Current-account balance, % of GDP</i>					<i>\$bn</i>
	<i>2005, \$bn</i>	<i>1985</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>	<i>2005</i>
Australia	-13.7	-4.7	-5.2	-5.4	-4.1	-5.9	-42.1
Austria	3.4	-0.1	0.7	-2.6	-2.5	1.2	3.8
Belgium <sup>b</sup>	2.0	2.0	3.0	5.4	4.0	1.7	6.6
Canada	45.0	-1.6	-3.4	-0.8	2.7	2.2	25.2
Denmark	12.3	-4.6	0.4	0.7	1.4	3.2	8.3
France	-32.3	-0.1	-0.8	0.7	1.3	-1.9	-38.8
Germany	189.2	2.8	2.9	-1.2	-1.6	4.2	115.5
Italy	0.4	-1.0	-1.5	2.3	-0.6	-1.6	-26.8
Japan	0.1	3.7	1.5	2.2	2.5	3.6	0.2
Netherlands	44.3	3.2	2.6	6.0	1.9	6.4	40.2
Spain	-85.6	1.6	-3.5	-0.3	-4.0	-7.4	-83.1
Sweden	27.5	-1.0	-2.0	3.4	4.1	6.1	21.7
Switzerland	23.9	5.2	3.5	6.5	12.3	12.5	46.1
UK	-119.4	0.1	-4.0	-1.3	-2.6	2.6	-57.6
USA	-778.0	-2.8	-1.4	-1.5	-4.2	-6.4	-805.0
EU25	-117.2	0.3	-0.6	0.5	-1.0	-0.4	-54.0
OECD	-485.5	-0.7	-0.6	0.1	-1.3	-1.8	-646.1

a Visible trade only. b Belgium includes Luxembourg in 1985 and 1990.

Sources: IMF; OECD; Eurostat

deficits. The current account is a better indicator of overall current flows (see pages 141–3).

### Eliminating a trade deficit

There are two main ways in which an external trade deficit might move back into balance.

- **A change in the volume of trade.** If demand in the deficit country contracts or grows more slowly than that in the surplus country, the volume of exports will increase relative to the volume of imports.
- **A change in relative prices through a change in the exchange rate or a change in domestic prices.** Imports become dearer and exports cheaper if the deficit country's currency falls in value or if inflation is lower in the deficit country than in the surplus

country. This will tend to depress the demand for imports and boost exports.

Attempts to regain balance through government export subsidies or import barriers such as quotas or tariffs are essentially imposed volume or price changes (which also cause market distortions). For example, a ban on imports will generate extra, possibly inflationary, demand for domestic goods.

Similarly, trade surpluses may be eroded by faster economic growth, a stronger currency or higher inflation in the surplus country.

### **Current-account balance**

- Measures:** Net current payments, the difference between national savings and investment.
- Significance:** Identifies international payments which arithmetically must be matched by capital flows and changes in official reserves.
- Presented as:** Money total.
- Focus on:** Trends; size in relation to GDP.
- Yardstick:** The OECD average current-account balance was -0.4% of GDP during the late 1980s, -0.2% during the 1990s and -1.3% in 2000–05.
- Released:** Usually monthly, quarterly by some countries; at least one month in arrears.

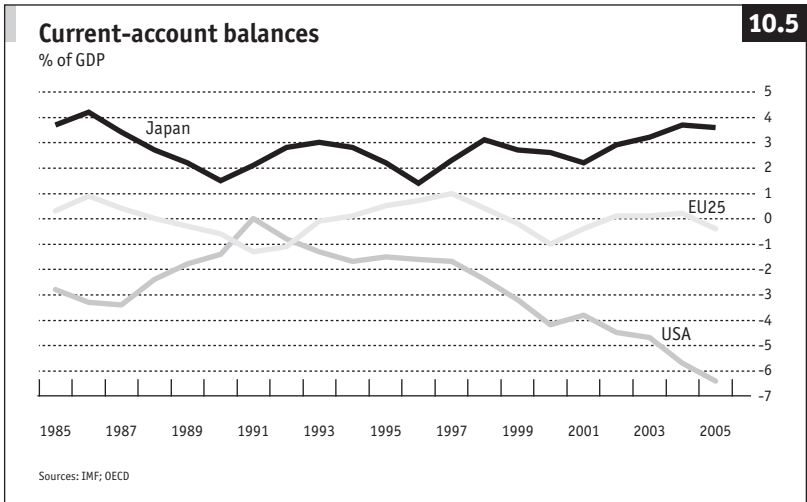
### **Overview**

The current-account balance is the balance of trade in goods and services (see above) plus income and current transfer payments.

Countries which produce monthly current-account figures base their initial estimates on simple projections of previous income and transfers, which themselves may be revised. Consequently this component of the current account is even less reliable than the goods and services balance and is subject to heavy revision.

**Income.** This mainly reflects past capital flows. Countries with current-account surpluses acquire foreign assets which generate further current-account income in future periods. Also referred to as **RIPD** (rents, interest, profits and dividends). Compensation to non-resident employees is also included here.

**Transfer payments.** These include foreign workers' remittances to their home countries, pension payments to retired workers now living abroad, government subscriptions to international organisations and payments of foreign aid.



Host countries with large populations of foreign workers (including Germany) experience transfer outflows. However, for many developing countries workers' inward remittances save the current account from becoming an unmanageable deficit. Remittances were a particularly important source of foreign currency for poor Arab countries with workers in the rich oil exporting Gulf states during the oil boom years of the 1970s.

### Current-account deficits

A visible-trade deficit can be covered by exports of services or net inflows of income and transfers, but the overall current account cannot remain in deficit indefinitely. It has to be financed by any or all of inward investment, loans from overseas, sales of overseas assets and depletion of official currency reserves.

Direct inward investment in businesses may create new employment, output and exports which should help to eliminate future current-account deficits. Nevertheless capital inflows might be withdrawn at inconvenient times, and they create potential RPD current-account outflows.

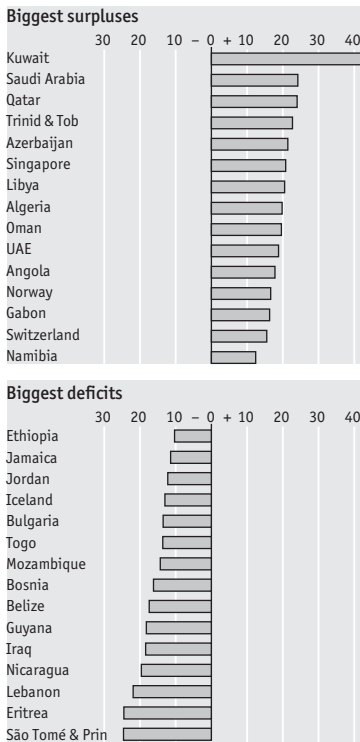
### Savings

The current account is sometimes taken as a measure of the gap between domestic savings and investment, although strictly speaking

### Current-account balances

America's \$805 billion current-account deficit last year was the world's biggest in absolute terms, but as a percentage of GDP it pales in comparison with the 24.5% deficit forecast this year for Eritrea or the 24.6% forecast for São Tomé e Príncipe. The biggest surpluses belong to countries such as Trinidad and Tobago, with large energy exports.

% of GDP, 2006 forecast



Source: EIU

The Economist, March 18th 2006

this is measured by the balance of trade in goods and services (see above).

Since government budget deficits represent government dissaving, some commentators argue that if a budget deficit is cut any current-account deficit will fall automatically. This line of reasoning became popular when America developed large current-account and budget deficits in the mid-1980s. The fallacy of the argument was demonstrated when the American current-account deficit subsequently fell without a corresponding reduction in the budget deficit.

The correlation between the budget deficit and the current-account deficit holds good only if private-sector savings and investments remain unchanged, which they generally do not.

### Acquisition of net foreign assets

Although the current account does not quite measure net savings, it does measure the net acquisition of foreign assets. In other words, external debt grows by the size of a current-account deficit (see page 142).

## Capital- and financial-account flows

- Measures:** International capital flows.
- Significance:** Major contributor to exchange-rate fluctuations. Outflows represent the acquisition of assets overseas.
- Presented as:** Money totals.
- Focus on:** Direct and portfolio investment.
- Yardstick:** Use current-account balance as indicator.
- Released:** Quarterly, at least one month after the quarter end. Revised often.

### Overview

The capital and financial account records international capital and financial flows. These are frequently neglected by commentators but they are important because they are directly related to the current-account balance and to exchange rates. The increase in direct investment flows particularly reflect the increased globalisation of the world economy.

An outflow of capital today implies current-account income in the future. Indeed, with global deregulation, it is easier for companies to raise their market share by setting up production facilities overseas. The initial direct investment shows as a capital-account outflow. Subsequently remitted profits add to current-account inflows and boost GNP relative to GDP. The value of goods sold, however, does not show up in external trade or increase GDP in the way that exports from home would.

## International investment position (IIP)

- Measures:** Balance sheet levels of external assets and liabilities.
- Significance:** Indicates cumulative cross-border activity.
- Presented as:** Value at end-quarter or end-year.
- Focus on:** Changes in totals and main components and holders.
- Yardstick:** US-owned assets abroad were \$9.8 billion at the end of 2004; foreign-owned assets in the United States were \$12.5 billion.
- Released:** Normally annually, about six months after year-end.

### Overview

This is a stock indicator rather than a flow. The IIP measures the level of inward and outward investment with the rest of the world.

## Official reserves

- Measures:** Gold and foreign currencies held by the government.
- Significance:** Indicates a country's ultimate ability to pay for imports; signals pressures on the balance of payments.
- Presented as:** Nominal value at end-month, often in dollars; watch for unrealistic value or revaluation of gold and currencies.
- Focus on:** Totals and changes.
- Yardstick:** A crude rule of thumb is that reserves should be sufficient to cover three months' imports. A sudden large change of tens or hundreds of millions of dollars in one month may indicate exchange-rate pressures.
- Released:** Monthly; in some countries immediately after the month-end.

## Overview

Central banks hold stocks (reserves) of gold and currencies which have widespread acceptability and convertibility, such as the dollar. These reserves are used to settle international obligations and to plug temporary imbalances between supply and demand for currencies.

## Intervention

Central banks frequently intervene in the markets to influence their currency's exchange rate. This affects their reserves.

For example, if the Federal Reserve (the American central bank) decides that the dollar is too strong against the yen it may sell (anonymously) dollars in exchange for yen on the open market. The extra supply of dollars creates new demand for yen and tends to depress the exchange rate of the dollar relative to the yen. The Fed increases its foreign currency reserves by the value of the yen purchased.

Conversely, if the Fed thinks that the dollar is too low, it might use its currency reserves to buy dollars and prop up the dollar exchange rate. Intervention in this direction can continue only so long as the central bank has reserves that it can sell.

Central banks might sensibly intervene to smooth erratic fluctuations in currencies, but it is a fool's game to use intervention alone to try to hold a currency at, or move it to, some previously determined level if that is not the level at which market supply and demand are in equilibrium. Such an exchange-rate objective can only be met in the longer term through domestic economic policies (see Exchange rates, page 148).

**Sterilisation.** When a central bank sells reserves and buys its own currency, the domestic money supply is reduced in size by the amount of

domestic currency swallowed up by the bank. Purchases of foreign currencies boost the money supply. Such intervention is said to be sterilised if the central bank neutralises the effect on the money supply with some other action, such as the purchase or sale of government bonds.

### **Interpretation**

Changes in the level of official reserves suggest foreign-exchange intervention and, therefore, pressures on the currency:

- a fall in the reserves suggests that there was intervention to offset currency weakness;
- a rise suggests intervention to hold the currency down.

However, reserves change for reasons other than intervention, including government borrowing or payments overseas, and fluctuations in the rates used to convert holdings of gold and currencies into a common unit of account. The total value of reserves can also be misleading if gold is valued at some anachronistic rate, as it frequently is.

Strictly speaking, the level of reserves alone is not a guide to a country's ability to pay its way. That is determined in the short term at least by the government's ability to borrow overseas. If the reserves are running low it is a good idea to look at the country's IMF position (see SDR, page 154), its current level of external debt and its ability to borrow overseas.

### **External debt, net foreign assets**

- Measures:** Net borrowing by the public and private sectors.  
**Significance:** Liability which can be repaid only from export earnings.  
**Presented as:** Money totals.  
**Focus on:** Total and debt service in relation to exports.  
**Yardstick:** See Table 10.4.  
**Released:** Annually without fanfare.

### **Overview**

Countries which persistently run current-account deficits accumulate external debt. This can become a major problem since essentially the debt repayments and interest can be financed only from export earnings. Table 10.4 indicates the problems for some of the world's largest debtors.

Table 10.4 External debt, 2004

	<i>Total, \$bn</i>	<i>% of GDP, average 2002-04</i>	<i>Debt service paid, \$bn, 2004</i>	<i>Debt service ratio, average 2002-04</i>
<b>Largest in \$</b>				
China	248.9	15	23.7	5
Brazil	222.0	44	53.7	58
Russia	197.3	45	21.2	13
Argentina	169.2	141	12.4	33
Turkey	161.6	67	33.9	45
South Korea	144.8	21	16.9	6
<b>Largest relative to GDP</b>				
Liberia	2.7	674	0.0	0
Guinea-Bissau	0.8	331	0.0	46

Note: Debt service in interest plus scheduled debt repayments. Debt service ratio is debt service as % of exports of goods and services.

Sources: World Bank; Economist Intelligence Unit; *The Economist Pocket World in Figures 2007* edition

**Net foreign assets.** Rather than being debtors, many countries, including some industrial countries and oil exporters, have accumulated stocks of assets in other countries. The figures tend to understate the true position because of under-declaration and book values that are way out of line with market values.

The stock, however, may not be of any help for offsetting any current-account deficits. Residents may have no wish to repatriate their assets, especially if the current-account deficit is a signal of fundamental economic problems.



## 11 Exchange rates

Devaluation ... would be a lunatic self-destroying operation.

Harold Wilson in 1963; in 1967 he devalued the pound.

**E**xchange rates are nothing more than the price of one currency in terms of another. They are determined mainly by supply and demand, which reflect trade and other international payments, and, much more important, volatile capital flows which are constantly shifting around the world in search of the best expected investment returns.

The prime indicator of market pressures on a currency is the figure for total currency flows in the balance of payments account (see Chapter 10). Other important influences are relative interest rates and yields (Chapter 12) and inflation (Chapter 13).

### A history of exchange rates

The easiest way to understand exchange rates and their influence on the balance of payments is to review previous experiences.

**The gold standard.** Before 1914 exchange rates were fixed in terms of gold, trade was mainly in physical goods and capital flows were limited. A country which developed a deficit on its current account would first consume its reserves of foreign currencies. Then it would have to pay for the imports by shipping gold. The transfer of gold would reduce the money supply in the deficit country and boost it elsewhere, since currencies were then backed by convertibility into gold.

In the deficit country the contracting money supply would tend to depress output and prices. Elsewhere the expanding money supply would boost output and inflation. The deficit country could then only afford to import a lower quantity of dearer foreign goods. The surplus countries could import a higher quantity of the deficit country's cheaper goods. Thus the current account would automatically return to equilibrium.

That was the theory. It seemed to work in practice until the system got out of balance in the 1920s. The gold standard was temporarily suspended during the first world war. Countries experienced rapid and varying rates of inflation and exports were grossly underpriced or overpriced when the gold standard was reintroduced at pre-war rates. Large

current-account surpluses and deficits developed. The gold standard fell from favour and was abandoned almost universally by the early 1930s.

**The 1930s.** There were widespread experiments with fixed and floating exchange rates during the 1930s. Almost every country tried to alleviate the unemployment of the Depression by limiting imports and boosting exports with measures such as import duties, quotas and exchange-rate devaluation or depreciation. It may seem obvious, but world exports cannot rise if world imports fall. The international payments system fell further into disrepute.

**Adjustable pegs.** An international conference was convened in America at Bretton Woods, New Hampshire, in June 1944. Participants agreed to form the IMF and World Bank to promote international monetary cooperation and the major currencies were fixed in relation to the dollar. Fluctuations were limited to 1% in either direction, although larger revaluations and devaluations were allowed with IMF permission. In addition, the American government agreed to buy gold on demand at \$35 an ounce, which left only the dollar on a gold standard.

**Floating rates.** The Bretton Woods system broke down in the 1970s. Persistent American deficits had led to an international excess of dollars and American gold reserves came under pressure. In August 1971 the Americans suspended the convertibility of the dollar, imposed a 10% surcharge on imports and took other measures aimed at eliminating its balance of payments deficit. The major currencies were allowed to float, some within constraints imposed by exchange controls (dirty floats).

Fixed rates with some flexibility were reintroduced in December 1971 following a meeting of the IMF Group of Ten at the Smithsonian Institution in Washington (the “Smithsonian agreement”). However, sterling was floated “temporarily” in June 1972 and by the following year all major currencies were floating or subject to managed floats. Despite bouts of extreme turbulence, most major currencies have remained floating ever since. The exceptions are EU currencies. Several of these spent the 1980s and most of the 1990s linked to one another in the exchange-rate mechanism of the European monetary system. At the start of 1999, 11 countries fixed their exchange rates irrevocably and joined a single European currency, the euro. Greece joined on January 1st 2001. The euro floats freely against other currencies.

## Nominal exchange rates

- Measures:** Price of one currency in terms of another.
- Significance:** Influences external trade, capital flows, and so on.
- Presented as:** Units of one currency for one unit of another.
- Focus on:** Trends.
- Yardstick:** Annual movements of more than a few % in either direction can be destabilising.
- Released:** Minute-by-minute.

### Jargon

An exchange rate indicates how many units of one currency can be purchased with a single unit of another. For example, a rate of ¥100 against the dollar indicates that one dollar buys 100 yen:  $\$1 = ¥100$ .

**Stronger and weaker.** If the rate changes from  $\$1 = ¥100$  to  $\$1 = ¥200$  the dollar has risen or strengthened by 100% against the yen (it will buy 100% more yen). The yen has fallen or weakened against the dollar, but not by 100% or it would be worthless. It has moved from  $¥100 = \$1$  to  $¥100 = \$0.50$ , a fall of 50%.

When currencies get stronger or weaker, they are said to have appreciated or depreciated if they are floating-rate currencies or to have been revalued or devalued if their rates are fixed by the central bank.

**Spot rates.** Rates for immediate settlement are spot rates.

**Forward rates and futures.** Exchange rates fixed today for settlement on a given future date reflect nothing more than spot exchange rates and interest rate differentials.

For example, if a bank agrees to buy dollars in exchange for yen in one month, essentially it borrows the dollars today, converts them into yen, and places the yen in the money markets to earn interest for one month. At the end of the month the bank hands over the yen, takes the dollars and uses them to repay the dollar loan. Nobody takes an exchange-rate risk.

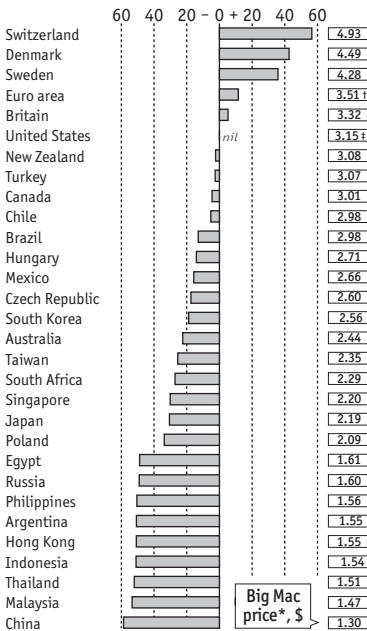
Moreover, arbitrage ensures that forward rates, futures and options move in line.

Forward exchange rates and futures should not therefore be regarded as explicit indicators of expected exchange rates.

## The Big Mac index

The *Economist's* Big Mac index is based on the theory of purchasing-power parity, under which exchange rates should adjust to equalise the cost of a basket of goods and services, wherever it is bought around the world. Our basket is the Big Mac. The cheapest burger in our chart is in China, where it costs \$1.30, compared with an average American price of \$3.15. This implies that the yuan is 59% undervalued.

Local currency under (-)/over (+) valuation against the dollar, %



\* At market exchange rate (January 9th 2006).

† weighted average of member countries. ‡ Average of four cities.

Source: *The Economist* using McDonald's price data

*The Economist*, January 14th 2006

## What determines exchange rates

There is no neat explanation for what determines exchange rates. The two main theories are based on purchasing power and asset markets (investment portfolios).

**Purchasing power parity (PPP).** The traditional approach to exchange rates says that they move to keep international purchasing power in line (parity). If American inflation is 6% and Canadian inflation is 4%, the American dollar will fall by 2% to maintain PPP. With floating exchange rates this would happen automatically. If exchange rates are fixed, demand pressures will instead equalise inflation in the two countries.

Another version of this, favoured by some economists, is to define purchasing power parity as the exchange rate which equates the prices of a basket of goods and services in two countries. In the long term, it is argued, currencies should move towards their PPP. *The Economist* has a simpler approach with its Big Mac index.

**Portfolio balance.** The portfolio approach suggests that exchange rates move to balance total returns (interest plus

expected exchange-rate movements). If yen deposits pay 6% and dollar deposits pay 8%, investors will buy dollars for the higher return until the exchange rate has been pushed up so far that the dollar is expected to depreciate by 2%. The expected return from the dollar will then exactly match the expected return from the yen.

**Overshooting.** The best guess is that exchange rates are determined by PPP in the long run, but that this is overridden in the short term by portfolio pressures. These tend to cause currencies to overshoot PPP equilibrium.

### **Who determines exchange rates**

Clearly there is a complex interaction between exchange rates and various economic and financial variables, many of which are outside domestic control (they are determined exogenously). Central banks can either try to control these variables in order to fix their exchange rate, or leave the exchange rate to the markets.

In fact, of the 150 or so IMF members' currencies in 1990, less than one-sixth were freely floating, including those of Australia, Canada, Japan, New Zealand and America. Of the remaining currencies, 32 had managed floats or limited flexibility, while around 25 were pegged to the dollar, 14 to the French franc, five to other single currencies and 50 to the SDR (see page 154) or other baskets of currencies. By 2005, however, some 30 of the world's 180-odd IMF members had independently floating currencies and a further 80 plus had managed floats.

**Monetary policy.** All economic policies affect exchange rates, although changes in interest rates have probably the most direct and visible influence. The exchange rate is thus the broadest indicator of monetary policy.

**Intervention.** Central banks frequently intervene in the currency markets. They buy or sell their currency in order to alter the balance of supply and demand and move the exchange rate. This is essentially a short-term smoothing activity since they can buy one currency only if they have another to sell. (See Reserves, page 145.)

### **Effects of exchange-rate movements**

The most immediate effect of a weaker currency is higher domestic inflation owing to dearer imports. At the same time, exports priced in foreign currencies and inflows of rents, interest, profits and dividends

generate more income in domestic-currency terms. Thus the trade and current-account balances deteriorate.

Later, after perhaps as much as 12–18 months, relative price movements cause a shift from imports to domestic production and exports. This boosts GDP and the trade and current accounts improve. (Their deterioration followed by improvement is known as the J-curve effect.) However, higher inflation caused by a weaker currency can wipe out any current account improvement within a number of years.

**Capital account.** With regard to the capital account of the balance of payments, a weaker currency makes inward investment look more attractive. In foreign-currency terms outlays are lower and returns are higher, but this may not be enough to attract investors if the currency weakened because of unfavourable domestic economic conditions.

Table 11.1 **Exchange rates**  
Currency units per \$, period average

<i>Country</i>	<i>Currency</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>
Australia	dollar	0.88	1.43	1.28	1.35	1.72	1.31
Austria	schilling/euro	12.94	20.69	11.37	10.08	1.09	0.80
Belgium	franc/euro	29.24	59.38	33.42	29.49	1.09	0.80
Canada	dollar	1.17	1.37	1.17	1.37	1.49	1.21
Denmark	krone	5.64	10.60	6.19	5.60	8.08	6.00
France	franc/euro	4.23	8.99	5.45	4.99	1.09	0.80
Germany	D-mark/euro	1.82	2.94	1.62	1.43	1.09	0.80
Italy	lira/euro	856	1,909	1,198	1,629	1.09	0.80
Japan	yen	226.7	238.5	144.8	94.1	107.8	110.2
Netherlands	guilder/euro	1.99	3.32	1.82	1.61	1.09	0.80
Spain	peseta/euro	71.7	170.0	101.9	124.7	1.09	0.80
Sweden	krona	4.23	8.60	5.92	7.13	9.16	7.47
Switzerland	franc	1.68	2.46	1.39	1.18	1.69	1.25
UK	pound	0.43	0.78	0.56	0.63	0.66	0.55
USA	dollar	1.00	1.00	1.00	1.00	1.00	1.00
SDR		0.77	0.98	0.74	0.66	0.76	0.68
ECU/euro		1.31	1.32	0.79	0.77	1.09	0.80

Source: IMF

## Special drawing rights (SDRs)

<b>Measures:</b>	The value of a basket of four major currencies, see Table 11.2.
<b>Significance:</b>	Stable international currency and reserves asset.
<b>Presented as:</b>	Absolute value per unit of currency.
<b>Focus on:</b>	Market rate against any currency.
<b>Yardstick:</b>	Average: SDR1 = \$1.18 in the 1980s, \$1.40 in the 1990s and \$1.25 in 2000–05.
<b>Released:</b>	Several times daily.

### Overview

The SDR (special drawing right) has some of the characteristics of a world currency. It was introduced by the IMF in 1970 to boost world liquidity after the ratio of world reserves to imports had fallen by half since the 1950s. Through book-keeping entries, the Fund allocated SDRs to member countries in proportion to their quotas (see below). Countries in need of foreign currency may obtain them from other central banks in exchange for SDRs.

**Advantages.** The SDR is stable. It is used for accounting purposes by the IMF and even some multinational corporations. Commercial banks accept deposits and make loans in SDRs, and it is used to price some international transactions.

**Disadvantages.** Since the SDR is an average of four currencies it is less valuable than the strongest and is among the first to go when reserves are sold off. Developing countries argue that it would help their liquidity if they had more SDRs, but the quota system ensures that the rich industrial countries have most of them.

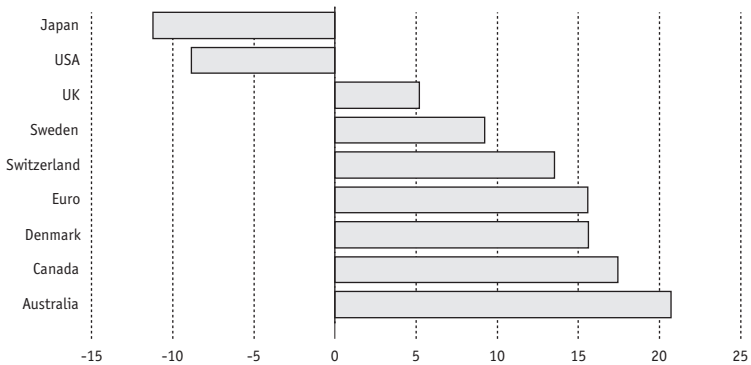
### Value

SDRs were first allocated in 1970 equal to  $\frac{1}{35}$  of an ounce of gold, or exactly \$1 (\$1.0857 after the dollar was devalued in 1971). When the dollar came off the gold standard the SDR was fixed from 1974 in terms of a basket of 16 currencies. This proved too unwieldy and in 1981 the basket was slimmed to five major currencies with weights broadly reflecting their importance in international trade. With the creation of the euro in 1999, the number of currencies was reduced to four (see Table 11.2).

Since 1981 the IMF has paid the full market rate of interest on the SDR, based on a weighted average of rates paid by the individual constituents.

**Changes in exchange rates**

% change against SDRs, 2000–05



Source: IMF

**Quotas**

The IMF allocates to each member country a quota which reflects the country's importance in world trade and payments. The size of the quota determines voting powers, subscriptions in gold and currencies, borrowing powers and SDR allocations.

Any member with balance of payments difficulties may swap its SDRs for reserve currencies at IMF-designated central banks. It can also use its own currency to buy (draw) foreign currency from the Fund's pool. The first chunk of currencies (the reserve tranche), amounting to

Table 11.2 **Currencies in the SDR**

%

Country	Currency	1986–90	1991–95	1996–98	1999–2000	2001–05
USA	dollar	42	40	39	39	42
Germany	D-mark	19	21	21	...	...
Japan	yen	15	17	18	18	13
France	franc	12	11	11	...	...
UK	pound	11	11	11	11	12
Euro area	euro	...	...	...	32	33

Source: IMF



Table 11.3 **SDR exchange rates**  
 Currency units per SDR, end of period

<i>Country</i>	<i>Currency</i>	<i>1985</i>	<i>1990</i>	<i>1995</i>	<i>2000</i>	<i>2005</i>
Australia	dollar	1.61	1.84	2.00	2.35	1.95
Austria	schilling/euro	18.98	15.19	15.00	1.40	1.21
Belgium	franc/euro	55.32	44.08	43.73	1.40	1.21
Canada	dollar	1.54	1.65	2.03	1.95	1.66
Denmark	kroner	9.85	8.22	8.24	10.45	9.04
France	franc/euro	8.31	7.30	7.28	1.40	1.21
Germany	D-mark/euro	2.70	2.13	2.13	1.40	1.21
Italy	lira/euro	1,843.7	1,607.8	2,355.7	1.40	1.21
Japan	yen	220.23	191.21	152.86	149.70	168.61
Netherlands	guilder/euro	3.04	2.40	2.38	1.40	1.21
Spain	peseta/euro	169.32	137.87	180.49	1.40	1.21
Sweden	krona	8.37	8.11	9.90	12.42	11.37
Switzerland	franc	2.28	1.84	1.71	2.13	1.88
UK	pound	0.76	0.74	0.96	0.87	0.83
USA	dollar	1.10	1.42	1.49	1.30	1.43
Euro area	euro	...	...	...	1.40	1.21

Source: IMF

25% of the member's quota, may be taken unconditionally. Four additional credit tranches each worth another 25% of the quota may be taken under progressively tougher terms and conditions. When these options are used up there are other borrowing facilities available. The IMF also arranges standby credits in times of severe strain on a currency.

## EMU, ecu, ERM and euro

- Measures:** The euro became the single currency of 11 EU countries on January 1st 1999. Greece joined on January 1st 2001.
- Significance:** Reserve asset, international currency and basis of the European exchange-rate mechanism. Now in circulation in the form of notes and coins.
- Presented as:** Dollars per euro; yen per euro; (British) pence per euro.
- Focus on:** Rate against other currencies, especially the dollar.
- Yardstick:** The euro began life at around \$1.17 to the euro. By late 2000 it was trading at just over \$0.82 but at the end of 2004 it was \$1.36. In mid-2006 it stood at \$1.25.
- Released:** Continuously.

### Overview

A timetable and criteria for the creation of a single currency as part of economic and monetary union (EMU) was agreed by the EU at Maastricht in 1991. The programme built on the exchange rate mechanism (ERM) and the European currency unit (ecu), which was replaced by the euro.

### The ecu

Introduced on March 13th 1979, the ecu superseded the European unit of account (EUA). While the EUA was no more than a common unit for book-keeping purposes, the ecu was a reserve asset and a currency in its own right used for commercial transactions and bond issues.

The ecu was based on a basket of EC currencies weighted according to the relative size of GDP and trade volume.

### The ERM

Before the creation of the euro, the ERM linked most of the EU's national currencies, including all those who adopted the single currency. Britain and Italy withdrew in September 1992. The Italians later rejoined.

Each ERM currency had a fixed central rate against the ecu. From these rates a "parity grid" of cross-rates between each pair of currencies was calculated. In most countries, central banks were required to keep their own currencies within 2.25% of all other cross-parities. For some countries, however, the limit was 6%, and was raised to 15% after the near-collapse of the ERM in mid-1993.

When the euro was created on January 1st 1999, the ERM was superseded by a new arrangement, ERM2. Countries that wanted to join the

Table 11.4 **Ecu exchange rates**

Currency units per ecu, period average

<i>Country</i>	<i>Currency</i>	<i>1980</i>	<i>1985</i>	<i>1990</i>	<i>1995</i>	<i>1998</i>
Australia	dollar	1.22	1.09	1.63	1.76	1.86
Austria	schilling	21.62	18.02	15.79	13.18	14.44
Belgium	franc	40.60	44.91	42.25	38.56	42.35
Canada	dollar	1.63	1.04	1.49	1.80	1.73
Denmark	kroner	7.83	8.02	7.86	7.32	7.81
France	franc	5.87	6.80	6.91	6.52	6.88
Germany	D-mark	2.52	2.23	2.05	1.87	2.05
Italy	lira	1,189.00	1,448.00	1,522.00	2,129.00	2,025.56
Japan	yen	315.04	180.56	183.66	122.99	152.73
Netherlands	guilder	2.76	2.51	2.31	2.10	2.32
Spain	peseta	99.70	129.10	129.40	162.98	174.32
Sweden	krona	5.89	6.56	7.54	9.32	9.27
Switzerland	franc	2.33	1.88	1.77	1.55	1.69
UK	pound	0.60	0.59	0.71	0.83	0.70
USA	dollar	1.39	0.76	1.27	1.31	1.17

Sources: IMF; European Commission

euro were expected to be members of ERM2 before acceding. Two of the four EU countries that were not members of the euro, Denmark and Greece, were members of ERM2. The British pound and Swedish krona float freely against other currencies.

In ERM2, central rates are defined against the euro, rather than the ecu, and the maximum divergence permitted from the cross-parities is 15%. However, the Danes negotiated a narrower band of 2.25%.

## The euro

The December 1995 EU summit in Madrid confirmed the intention to introduce a single European currency, to be known as the euro, on January 1st 1999.

The summit adopted changeover recommendations presented in a 1995 European Commission Green Paper and a report by the European Monetary Institute (the forerunner of the European Central Bank). On the basis of economic and financial indicators of "convergence" (including budget deficits, ratios of debt to GDP, interest rates and inflation

Table 11.5 **Permanent conversion rates against euro area currencies,  
December 31st 1998**

<i>Country</i>	<i>Currency</i>	<i>1 € =</i>	
Austria	Sch	13.7603	
Belgium/Luxembourg	BFr/LFr	40.3399	
Finland	FM	5.94573	
France	FFr	6.55957	
Germany	DM	1.95583	
Greece (Dec 31st 2000)	Dr	340.750	
Ireland	I£	0.787564	
Italy	L	1936.27	
Netherlands	Fl	2.20371	
Portugal	Es	200.482	
Spain	Pta	166.386	
Slovenia <sup>a</sup>	SIT	239.640	
<i>Euro value against leading currencies</i>		<i>Dec 31st 1998</i>	<i>Dec 30th 2005</i>
US	\$	1.1668	1.1797
Japan	¥	134.88	139.17
UK	£	0.7055	0.6851
Switzerland	SFr	1.6061	1.5505

a Due to become effective on January 1st 2007.

Source: IMF

rates), initial participants were selected in early 1998. Eleven countries that wanted to join were deemed to have qualified. Britain and Denmark decided to opt out. Greece and Sweden were deemed not to have qualified. Greece was admitted from January 1st 2001.

On January 1st 1999 the exchange rates of the 11 countries were irrevocably fixed. The euro replaced the ecu at a rate of one to one. On January 1st 2002 euro notes and coins were introduced. National currency notes and coins were withdrawn from circulation two months later.

Official interest rates in the 12 euro area countries are now set by the European Central Bank. The governors of the national central banks and six others sit on the ECB's rate-setting governing council.

## Effective exchange rates

<b>Measures:</b>	Average exchange rate against a basket of currencies.
<b>Significance:</b>	Shows overall exchange-rate movements.
<b>Presented as:</b>	Index numbers.
<b>Focus on:</b>	Trends.
<b>Yardstick:</b>	An increase indicates a strengthening currency. Movements of more than a few percentage points a year can be destabilising.
<b>Released:</b>	Daily or monthly.

### Overview

An effective exchange rate (EER) measures the overall value of one currency against a basket of other currencies. Changes indicate the average change in one currency relative to all the others.

Effective exchange rates are weighted averages of many currency movements with weights chosen to reflect the relative importance of each currency in the home country's trade. For example, if the dollar appreciates by 10% against the Japanese yen but is unchanged against all other currencies, and if the yen accounts for 25% of American trade, the dollar's effective exchange rate has risen by 2.5%.

For obvious reasons EERS are sometimes known as trade-weighted exchange rates. There are many ways of selecting the weights, based on imports of manufactured goods, total trade, and so on.

**MERMs.** Most indices use weights from the IMF's multilateral exchange-rate model (MERM). This tries to measure the effect of exchange-rate changes on prices of exports and imports, and the response of trade flows to such price changes.

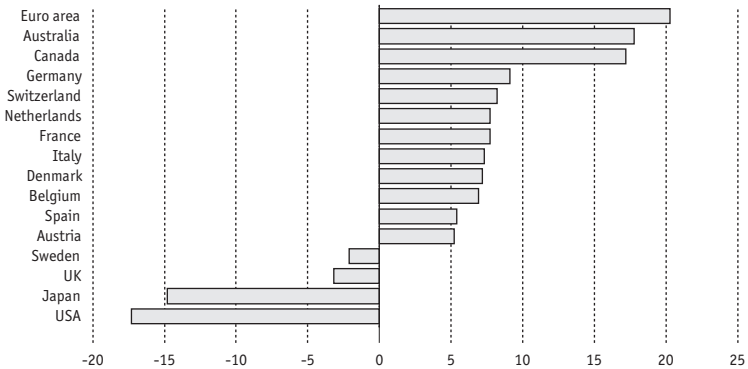
**Main sources.** The IMF, the major central banks and some other organisations calculate effective rates for all the major currencies. The Bank of England indices published in *The Economist* and some daily newspapers for non-euro area countries are based on the IMF's model. The IMF publishes monthly indices for most countries including euro area members. Most EERS are presented in index form, although sometimes they are shown as the percentage change since a chosen base date.

### Interpretation

If, for example, the effective exchange rate for the dollar rises by 1%, this indicates that the various exchange-rate changes that have taken place are the same as a flat 1% rise in the dollar against every individual

**Changes in effective exchange rates**

% change, 2000–05



Source: IMF

**Table 11.6 Effective exchange rates**

Annual averages, 2000 = 100

Country	2000	2001	2002	2003	2004	2005
Australia	100.0	93.6	96.5	106.9	114.9	117.8
Austria	100.0	100.2	101.0	104.1	105.2	105.2
Belgium	100.0	100.5	101.6	105.7	106.8	106.9
Canada	100.0	97.2	95.1	103.6	109.2	117.2
Denmark	100.0	101.3	102.3	106.2	107.4	107.2
France	100.0	100.4	101.7	106.2	107.6	107.7
Germany	100.0	100.5	102.0	107.2	109.0	109.1
Italy	100.0	100.4	101.6	105.8	107.2	107.3
Japan	100.0	90.5	85.7	85.4	87.1	85.3
Netherlands	100.0	100.7	101.9	106.3	107.6	107.7
Spain	100.0	100.5	101.4	104.5	105.3	105.4
Sweden	100.0	91.7	93.4	98.2	99.7	98.0
Switzerland	100.0	103.7	108.2	108.6	108.4	108.2
UK	100.0	98.3	98.7	93.8	97.6	96.8
USA	100.0	105.9	104.3	91.5	84.0	82.7
Euro area	100.0	101.2	104.3	116.1	120.0	120.3

Source: IMF

currency. In other words, the observed movements will have the same effect on the American trade balance as a 1% overall rise in the dollar.

Effective exchange rates do not take account of inflation so they do not reveal anything about changes in a country's competitiveness (see Real exchange rates below).

## **Real exchange rates; competitiveness**

<b>Measures:</b>	International competitiveness.
<b>Significance:</b>	Indicative of a country's ability to sell abroad and of net price (inflation and exchange rate) pressures on the balance of payments.
<b>Presented as:</b>	Index numbers.
<b>Focus on:</b>	Trends.
<b>Yardstick:</b>	The lower the index, the more competitive the country.
<b>Released:</b>	Monthly, one month in arrears.

### **Overview**

The international competitiveness of goods and services produced in a country depends on relative movements in costs or prices after adjusting for exchange-rate movements. For example, if prices increase by 4% in Germany and 6% in America, American competitiveness appears to have fallen by 2%. However, if over the same period the dollar fell by 3%, overall American competitiveness has actually improved by 1%. Such measures of overall competitiveness are known as "relative costs or prices expressed in a common currency" or, more simply, real exchange rates.

### **Indicators of prices and costs**

There is no ideal measure of competitiveness. Those in common use are listed below. They are described in terms of America, but the calculations are the same for any country.

**Relative export prices.** American export prices divided by a weighted average of competitors' export prices, all expressed in a common currency. This might seem to be a logical basis for assessing price competitiveness but there are several drawbacks. Such an exchange rate covers only goods that are traded; it does not take account of competition between imports and domestic production in home or overseas markets; it measures orders but ignores unsuccessful quotations; and it fails to take account of profitability (exporters in general are price-takers; they may be forced to absorb exchange-rate movements in profits).

Table 11.7 **Real effective exchange rates**

Relative normalised unit labour costs, period averages, 2000 = 100

Country	Currency	2001	2002	2003	2004	2005
Austria	schilling/euro	98.7	98.5	99.6	100.4	100.3
Belgium	franc/euro	101.6	104.7	109.0	111.4	112.9
Canada	dollar	98.8	93.8	96.2	99.6	102.9
Denmark	kroner	102.1	104.7	110.6	111.5	111.5
France	franc/euro	97.6	98.8	103.1	105.3	105.1
Germany	D-mark/euro	100.1	99.3	102.1	101.0	98.8
Italy	lira/euro	103.5	106.4	113.4	119.8	122.9
Japan	yen	89.3	79.8	76.6	77.2	73.6
Netherlands	guilder/euro	102.8	105.7	111.0	113.3	112.5
Spain	peseta/euro	102.9	106.9	112.4	115.0	115.5
Sweden	krona	92.0	91.0	93.6	95.9	93.8
Switzerland	franc	105.7	111.4	112.5	114.1	115.2
UK	pound	99.4	99.2	93.6	98.2	97.0
USA	dollar	103.8	105.8	97.3	88.8	90.3

Source: IMF

**Relative export profitability.** American export prices divided by American producer prices. This is not a measure of international competitiveness, but it is a useful supplement to relative export prices. It indicates the extent to which changes in export prices reflect changes in the profit margins on exports against home sales. If export prices rise less rapidly than domestic prices, export profitability has declined.

**Import price competitiveness.** American producer prices divided by American import prices. This provides a guide to import competitiveness, but again it ignores relative profitability.

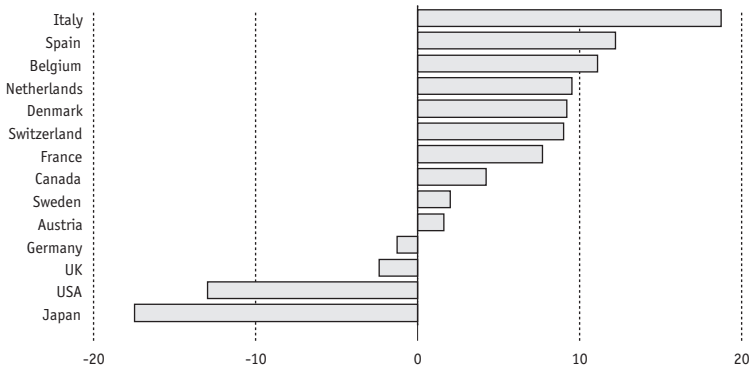
**Relative producer prices.** American producer prices divided by a weighted average of competitors' producer prices. This compares home prices with prices that they will be competing against overseas. It tends to overemphasise domestic markets.

**Relative consumer prices.** American consumer prices divided by a weighted average of competitors' consumer prices. This ignores capital



**Changes in real effective exchange rates**

% change, 2001–05



Source: IMF

and intermediate goods, but it is good for comparing relative consumer purchasing power.

**Relative GDP value-added deflators.** The American GDP deflator divided by a weighted average of competitors' GDP deflators. This is the most comprehensive basis for comparison, covering unit labour costs and profits per unit of output. One drawback is that some of the items in GDP are not traded, although it might be argued that inflation pressures are ultimately transmitted uniformly through all goods and services. Another problem is that the deflators are available only after a sizeable lag.

**Relative unit labour costs.** An alternative to price competitiveness is to look at cost competitiveness. This has the advantage of covering all industries: exporters, potential exporters and those competing with imports. However, because of a lack of data the only sensible indicator is relative unit labour costs (or ULCS – say, American ULCS divided by a weighted average of competitors' ULCS, all in a common currency). This excludes profits and prices of materials.

**Normalised relative unit labour costs.** These are relative unit labour costs adjusted to allow for short-term deviations in productivity from long-term trends. This smooths out differences in the cyclical position of

the countries being compared, but because of the difficulties of adjusting productivity for the cycle it should be treated with care.

### Interpretation

**Common practice.** Relative unit labour costs in manufacturing and relative export prices are the most popular measures, partly because they are available quickly and easily. However, rather than relying on just one indicator it is a good idea to look at several to get a feel for “average” changes.

The indicators are expressed in index form. The index rises if domestic costs or prices increase faster than foreign costs or prices. Thus a larger index number (stronger real exchange rate) indicates that the home country is less competitive. The broad implication is that to restore competitiveness, the currency must weaken or domestic prices/costs will have to increase less than foreign prices/costs.

Current international practice uses 2000 as a base for index numbers.

The indices do not take account of non-price factors (product differentiation) such as quality, reliability and design.

### Terms of trade

<b>Measures:</b>	The ratio of export prices to import prices.
<b>Significance:</b>	Measures the volume of imports that can be bought with one unit of exports.
<b>Presented as:</b>	Index numbers.
<b>Focus on:</b>	Changes in the index.
<b>Yardstick:</b>	An improvement indicates that export earnings will buy more imports – but the trade balance may worsen.
<b>Released:</b>	Monthly.

### Overview

The terms of trade indicate the purchasing power of a country’s exports in terms of the imports that they will buy.

**Favourable or unfavourable.** The terms of trade are said to improve if export prices rise more rapidly or fall more slowly than import prices. For example, if export prices rise by 5% and import prices rise by 2%, a given volume of exports buys roughly 3% more imports; the terms of trade have improved by 3%.

Common terminology suggests that movements in the terms of trade are “favourable” or “unfavourable”. However, after an “unfavourable” movement in the terms of trade, the trade balance will tend to improve

(the smaller rise in export prices than import prices means that exports are more competitive), while a “favourable” movement in the terms of trade may price exporters out of the market and result in a weaker trade balance (see Trade balance and Exchange rates, pages 138 and 148).

**Which way is up?** Governments usually define the terms of trade as export prices divided by import prices expressed in index form. A rise in the index indicates an improvement in the terms of trade: one unit of exports will buy more imports. Academics sometimes do it the other way around, as import prices divided by export prices. The lower the number, the fewer exports needed to obtain one unit of imports. The message is the same in both cases, but you need to check the basis for the calculation before you can interpret the numbers.

**Unit value or average values.** Terms of trade indices constructed using import and export unit value indices (see Export and Import prices, page 205) are not affected by changes in the commodity breakdown of imports or exports. Terms of trade indices based on average value indices reflect changes in composition as well as changes in prices.

In general unit values are most commonly used and are a satisfactory basis for the terms of trade, but where there has been a structural shift in the composition of trade, average value indicators are better. For example, if a country imported a larger proportion of oil in 1990 than in 2000 and if oil prices rise, a unit value terms of trade indicator based on 1990 weights will overstate the deterioration in the terms of trade. An average value indicator will show a smaller, more realistic, deterioration.

**Devaluation or depreciation.** Typically, an exchange-rate devaluation or depreciation increases import prices relative to export prices and causes the terms of trade to deteriorate.

## 12 Money and financial markets

There have been three great inventions since the beginning of time: fire, the wheel and central banking.

Will Rogers

### Money

The cornerstone of the modern economy is money, which is a measure of value, a medium of exchange and a store of wealth. It is also the bridge between real and nominal magnitudes, so understanding it is vital for understanding and controlling inflation.

### Markets

Financial markets bring together the supply of savings and the demand for money to finance businesses and consumer spending. The markets also allow people to complete commercial transactions and spread risks. Note that there are two sides to every transaction: for every lender there is a borrower; for every seller, a buyer.

### Interest rates

Interest rates are the price of money. They link large stocks of physical and financial assets with smaller flows of savings and investment; they connect the present and the future; and they are sensitive to inflation expectations. As a result they are very volatile and hard to predict. With all these factors at work, it is hardly surprising that there is no simple theory which explains why interest rates behave as they do.

### Liberalisation and globalisation

Financial systems changed dramatically in the 1970s, 1980s, 1990s and 2000s. There were three main influences.

- **Liberalisation and deregulation.** Exchange, credit and interest rate controls were abolished or relaxed in the major industrialised countries.
- **Innovation.** Many new financial instruments and derivatives were introduced, including financial futures and options.

- **Technological change.** Computers and modern telecommunications allow transactions to be completed quickly and cheaply.

As a result the world's major financial markets became much more integrated. A change in American, Japanese or euro area interest rates is felt immediately throughout the world, which means that domestic monetary policies are influenced by uncontrollable outside influences. Monetary variables are harder to control and the demand for money is less sensitive to domestic interest rates.

### Key figures

The following briefs examine money and bank lending, interest rates, bond yields and share prices. They are all interlinked. Nevertheless, the exchange rate (see page 148) is also an important indicator of monetary conditions.

### Money supply, money stock, M0 ... M5, liquidity

- Measures:** Notes, coins and various bank deposits.
- Significance:** Indicator of level of transactions and, perhaps, inflation or output.
- Presented as:** Money totals at a point in time, usually end-month; except averages of Wednesdays for Canada and daily averages for Japan and America.
- Focus on:** Changes over time.
- Yardstick:** OECD average narrow money growth was 11.7% a year during the period 2000–05.
- Released:** Monthly; one month in arrears.

### Overview

Money is anything which is accepted as a medium of exchange; essentially currency in circulation plus bank deposits. Notes and coin, issued by the monetary authorities (mainly central banks), account for only a tiny proportion of the money supply. The rest is bank deposits which are initially created within the banking sector.

The total amount of money in circulation, the money stock or money supply depending how you look at it, is often called M. The number of times it changes hands each year is its velocity of circulation, V.

Multiply the two together ( $M \times V$ ) and you have the amount of money that is spent, which by definition must equal real output Y multiplied by the price index P; that is,  $M \times V = Y \times P$ .

This equation is the basis for understanding money. Assume for

the moment that velocity is fixed or predictable (it is not particularly). In this case, argue the monetarists, controlling the money supply controls money GDP (that is,  $Y \times P$ ); and if the trend in real output  $Y$  can be predicted inflation can be controlled. Their opponents argue that cause and effect run in the other direction, that money GDP fixes the demand for money and there is nothing that can be done about it.

Whoever is right, if you are prepared to accept that velocity is fixed in the short term, then as a dangerously crude rule of thumb, subtract the inflation rate from the rate of growth of money to estimate the growth of real output.

### Money defined

**Narrow money, M1.** In most countries the measure of narrow money is called M1. This is fairly uniformly defined as currency in circulation plus sight deposits (accounts where cash is available on demand).

There are some national variations. Britain's narrow money measure is called M0. This consists almost entirely of cash in circulation, but also includes banks' operational deposits at the Bank of England. Britain has no M1 measure. America's M1 measure includes travellers' cheques. Japan's definition includes the government's sight deposits.

The number of national variations was reduced in the run-up to the creation of the euro, with the harmonisation of the definition of monetary aggregates across the euro area. The European Central Bank publishes monetary statistics for the whole euro area from figures compiled by national central banks.

**Broad money, M2.** The main wider definitions of money are called M2 and M3. In essence, M2 consists of M1 plus savings deposits and time deposits (accounts where cash is available after a notice period). The definition of M3 is wider still.

- In America M2 consists of M1 plus savings deposits, time deposits and retail money-market mutual funds.
- In the euro area M2 is defined as M1 plus deposits with agreed maturity of up to two years plus deposits redeemable at up to three months' notice.
- In America M3 consists of M2 plus institutional money funds, large time deposits, repurchase agreements and Eurodollars.
- In the euro area M3 equals M2 plus repurchase agreements,

money-market funds and paper, and debt securities of up to two years' maturity.

- In Japan, the measure of broad money is M2 plus certificates of deposit. M2 consists of currency in circulation plus public- and private-sector deposits.

In Britain, there is no M3. The broad money measure is called M4. It consists of M0 plus sterling deposits held at British banks by the non-bank private sector.

### **Velocity of circulation**

Velocity of circulation, that is, the number of times money changes hands in a year, may be measured by nominal GDP divided by any monetary aggregate such as M2 averaged over the year.

### **Deposit creation and monetary growth**

Commercial banks create money. They can lend out a large proportion of deposits placed with them, since it is unlikely that all customers will ask for their money back at once.

Suppose a bank receives a new \$100 deposit and lends \$80 of it. By the stroke of a pen the bank creates a loan (debit balance \$80) and a new deposit (credit balance \$80). Even if the customer withdraws the entire \$80 to pay for some consumer goods, the retailer is likely to redeposit the \$80, probably in a different bank. The second bank has a new deposit of which it might lend \$60. This credit creation will gradually peter out, but not until one new deposit has created loans (= deposits = money) of several times its own size.

### **Reserve assets**

For prudence and monetary control central banks limit the proportion of new deposits which banks can on-lend by requiring them to hold a fixed proportion of their assets in the following.

- **High-powered reserves.** Cash (till money) and balances at the central banks (operational deposits) which are used to meet day-to-day requirements for customer withdrawals and interbank settlements.
- **Secondary reserves.** "Safe" liquid assets such as Treasury bills which can be used to meet temporary increases in withdrawals.

## Monetary control

Monetary authorities attempt to control the size and growth of money in several ways.

- **Changing reserve-asset ratios.** This affects the multiple which banks can lend and is usually done only once every few years.
- **Open-market operations.** Buying or selling government bonds in the open market, which increases or reduces the amount of money in bank reserves and private deposits.
- **Influencing interest rates.** For example, by means of open-market operations (which affects the supply and demand for money), changing the discount rate (see page 174), or imposing fixed rates for certain deposits or loans.
- **Credit controls.** For example, limits on total bank lending, total personal credit, or the margins that borrowers have to put up for any credit purchase.
- **Moral suasion.** For example, central banks hold heart-to-heart talks with commercial bankers, perhaps to persuade them to restrict lending.

Note that direct control over reserve-asset ratios and the monetary base affects the supply of money while the other measures affect demand for it.

## Alternative indicators of monetary growth

Monetary growth can be tracked by watching the deposits which are included in the various monetary aggregates. Alternative approaches are to track the following.

- **The banking sector's balance sheet.** Movements on the liabilities side (deposits) must be matched by movements in assets (mainly loans) and liabilities not included in monetary aggregates.
- **Sectoral counterparts.** These are measured by money the public sector takes out of circulation (roughly, the budget surplus plus government bond sales to non-banks) plus net additions by the banking sector (mainly bank lending) plus net additions from overseas (net balance of payments inflows to the private sector).



## Monetary targets

Monetary authorities adopt many approaches to monetary control. During the 1980s and for much of the 1990s, many central banks (in Britain, the Treasury) had explicit targets for chosen monetary aggregates.

This has largely fallen out of favour. Several central banks, including the European Central Bank, the Bank of England and the Reserve Bank of New Zealand, now have targets for inflation instead. Monetary growth is one of several indicators of economic activity that central bankers watch.

Although the European Central Bank targets inflation rather than monetary growth, it has a “reference value”, reiterated in December 1999, of 4.5% for the annual rate of growth of M3. It thinks that this is the rate consistent with its inflation target (that consumer prices should rise by less than 2% per year), a trend rate of GDP growth of 2–2.5% and an annual decline of 0.5–1% in the velocity of circulation of M3.

## Interpretation

An important reason for the decline in the importance of monetary targets is Goodhart’s law, named after an economist who sat on the Bank of England’s monetary policy committee, which sets British interest rates. The law says that any monetary variable loses its usefulness within six months of being adopted as a target of monetary policy.

The problem is that if relative interest rates or other influences change, investors quickly move their balances from deposits with one institution (which might be included in a particular definition of money) to another (which might not). This can cause the M3 to jump up and down at different rates and make interpretation tricky. Other complications include international capital flows and changes in the velocity of circulation.

Watch for cash lurking in the sidelines and changes in domestic and international relative interest rates and yields, and for factors which might distort some or all monetary aggregates.

Even though monetary targets no longer enjoy the primacy they once did, central bankers and economists still watch monetary aggregates closely. In interpreting them, the difficulties mentioned in the previous paragraph should be borne in mind. Remember also that although many monetary measures are seasonally adjusted, it is advisable to be on the lookout for erratic influences. It is also wise to take several months together and compare with the same period a year earlier.

Table 12.1 **Money supply**  
End of period, % change

	Narrow money				Broad money			
	2002	2003	2004	2005	2002	2003	2004	2005
Australia	-9.3	8.7	2.7	7.9	7.2	25.9	-3.4	8.2
Canada	5.8	5.8	9.8	6.8	5.6	7.0	10.2	7.9
Denmark	3.8	8.9	14.4	19.9	10.7	12.5	2.7	14.2
Euro area	10.0	9.6	8.6	17.7	6.7	6.5	6.4	8.2
Japan	23.5	4.5	4.0	5.6	3.4	1.8	1.6	2.0
Sweden	4.5	3.1	4.6	9.9	3.7	4.1	2.4	12.2
Switzerland	10.2	24.1	-5.6	6.5	5.7	8.4	2.8	6.8
UK	5.9	7.0	5.1	5.9	7.0	7.2	9.1	12.5
USA	-0.4	5.9	5.6	0.6	4.3	2.5	3.1	5.9

Source: IMF

In general, if a monetary aggregate is growing too rapidly (faster than its target rate, or faster than is consistent with the central bank's inflation target), this may be an argument for the central bank to raise interest rates. Slow monetary growth is a sign of weakening economic activity, and may be an argument for lower rates. However, other signals of inflationary pressures will also be taken into account.

### Bank lending, advances, credit, consumer credit

- Measures:** Loans to persons, companies and the public sector.  
**Significance:** Indicator of monetary conditions.  
**Presented as:** Monthly totals.  
**Focus on:** Trends.  
**Yardstick:** Roughly, growth should equal target for monetary aggregates.  
**Released:** Monthly; one month in arrears.

### Overview

Changes in overall bank lending figures indicate the effectiveness of monetary policy. Changes in lending to various sectors may indicate trends in various parts of the economy.

### Personal and consumer credit

Net new borrowing by households finances the purchase of homes and

consumer goods and services. Such borrowing tends to be sensitive to interest rates and consumer confidence. It is translated directly into higher spending (see also Retail sales, House sales, Motor vehicle sales, Consumer expenditure), output and imports.

Growth in household credit is generally good when demand is slack, but it can be inflationary when demand is already buoyant. Excessive borrowing to finance the acquisition of other financial assets such as shares is also worrying: it may help to drive up their prices, making consumers feel more wealthy and ready for a bout of inflationary spending.

### **Borrowing by companies**

Companies borrow to finance their operations, investment and takeovers. Corporate borrowing generally slackens when the economy is booming and funds are generated by buoyant sales. On the other hand, there will be more investment activity when companies are most optimistic (see Business conditions, page 110).

A breakdown by industry will reveal trends in various industrial sectors. High borrowing may reflect either optimism and investment or recession and debts. Output, orders and capacity utilisation figures will indicate which.

### **Central bank policy rates**

**Measures:** Interest rates at which central banks lend to banking systems.

**Significance:** Indicator of central banks' monetary policy; influences banks reserves, monetary growth and market interest rates.

**Presented as:** Annual percentage rate.

**Focus on:** Rate, trends.

**Yardstick:** See Table 12.2.

**Released:** Changed daily, fixed weekly, or moved only at irregular intervals.

### **Overview**

Within the constraints of market pressures, central banks manage their banking systems to keep liquidity and short-term interest rates at or near to officially desired levels. Central banks:

- intervene in the interbank money market to manage the daily balance of supply and demand;
- often publish formal discount rates at which they provide money to commercial banks to help smooth longer (say, weekly) financing needs; and

- occasionally impose penal rates for emergency lending to banks.

Central banks aim to influence monetary conditions by setting the interest rates on which they are willing to lend money to commercial banks. These rates in turn influence the rates at which banks deal with each other and their customers, and hence affect economic activity as a whole. In America, the Federal Reserve aims to control the Federal funds rate. The Bank of Japan works on the overnight call money rate.

For European central banks, such as the European Central Bank, the Bank of England and the Swedish Riksbank, the principal instrument of monetary policy is called the repo rate (or, at the ECB, the refinancing or “refi” rate). A repo is a sale and repurchase agreement where one financial dealer sells securities to another with an agreement to buy them back at a given price on a certain date. In effect, in setting its repo rate the central bank is announcing the terms on which it will provide a short-term loan (say a week) to banks, in return for which the banks pledge securities as collateral. The repo rate is the interest rate on this loan, expressed in annual terms.

Policy rates are usually set at regular meetings of central banks. America’s Federal Open Market Committee meets eight times a year. The Bank of England’s monetary policy committee and the European Central Bank’s governing council meet monthly. Some central banks, including the Fed, Bank of England and the Riksbank, publish the minutes of their meetings a few weeks after they take place. These are watched keenly by economists, as they contain clues to central bankers’ thinking – such as, for example, the economic indicators they consider most important. In addition, central banks publish regular economic assessments. In Britain, the Bank of England issues an *Inflation Report* in February, May, August and November, which summarises developments over the previous three months and contains projections of inflation and GDP growth for up to two years ahead.

## Interest rates; short-term and money-market rates

<b>Measures:</b>	Interest charged on financial paper with maturity up to 12 months.
<b>Significance:</b>	Indicator of monetary conditions, expectations, creditworthiness.
<b>Presented as:</b>	Annual percentage rates (see also discount rates above).
<b>Focus on:</b>	3-month interbank (or CD/Treasury bill rate if no interbank rate).
<b>Yardstick:</b>	See Tables 12.2 and 12.4.
<b>Released:</b>	Almost continuously round the clock.

### Overview

Money markets are the markets in which banks and other intermediaries trade in short-term financial instruments.

The hub is usually the interbank market (called the Federal funds market in America), which is where banks deal with each other to meet their reserve requirements (see Money supply, page 168) and, longer-term, to finance loans and investments.

Very short-term interbank interest rates are largely determined by central bank intervention (see page 174), although market pressures are also influential. For other maturities and other financial instruments, relative maturities and credit risks are also important.

**Maturity.** Loans in the short-term market range from call (repayable on demand) and overnight to 12-month money. Interest rates on 12-month paper are higher than on shorter maturities if market participants expect interest rates to rise, or lower if rates are expected to fall. Supply and demand imbalances can cause temporary interest rate bulges at various maturities. It is not unknown for overnight money rates to top 100% on rare occasions. Use 3-month rates as the benchmark.

**Credit risk.** Treasury bills (loans to the government) are regarded as completely safe in the major industrial countries and command the finest (lowest) interest rates, usually below interbank rates. Interest rates are higher on certificates of deposit (CDs - bank deposits which can be sold) and, usually, higher still on corporate or commercial paper (loans to companies).

### LIBOR and variants

Interbank rates are quoted bid (to borrow) and offer (to lend). The London interbank offered rate (LIBOR) is a benchmark. The interest rates on many credit agreements worldwide are set in relation to it; for

## Short-term interest rates

12.1

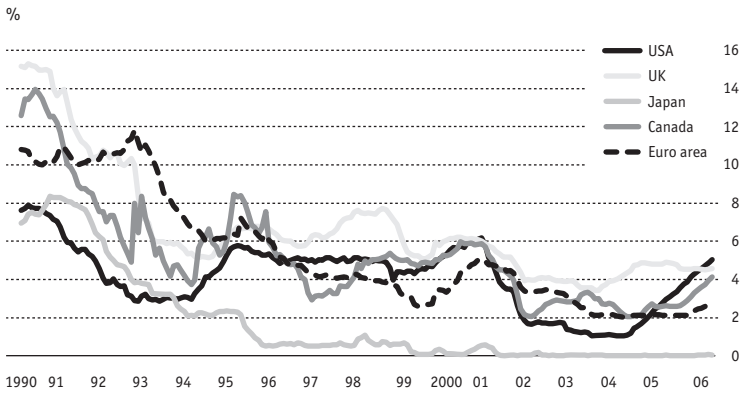


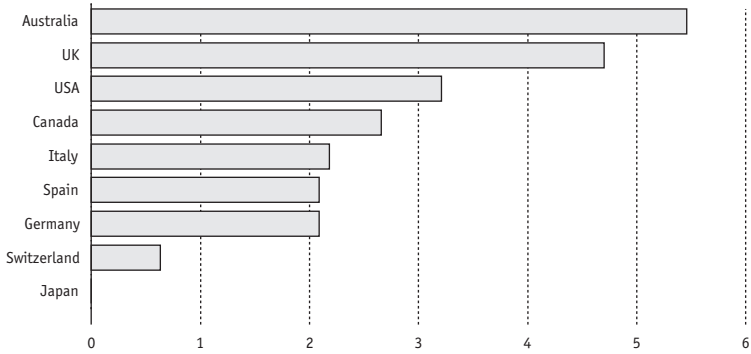
Table 12.2 **Comparative interest rates**  
%, 2005 average

	<i>Money market</i>	<i>Deposit</i>	<i>Prime lending</i>	<i>Treasury bills</i>	<i>Gov't bonds</i>
Australia	5.46	3.70	9.06	...	5.32
Belgium	...	2.03	6.72	2.02	3.41
Canada	2.66	0.79	4.42	2.73	4.39
Denmark	2.20	...	...	...	3.01
France	...	2.15	8.40	...	3.46
Germany	2.09	1.91	8.75	2.03	3.18
Italy	2.18	1.51	5.31	2.17	3.56
Japan	0.001	0.27	1.68	...	1.38
Netherlands	...	2.34	2.77	...	3.37
Spain	2.09	2.07	5.79	2.19	3.05
Sweden	...	0.79	3.31	1.72	3.38
Switzerland	0.63	0.76	3.12	0.71	1.96
UK	4.70	...	4.65	4.55	4.39
USA	3.21	3.51	6.18	3.17	4.29

Source: IMF

**Short-term interest rates**

%, 2005



Source: OECD

example, as LIBOR plus 0.5%. With the creation of the euro, EURIBOR, a euro-equivalent, has come into being.

There is no direct equivalent in America. Its interbank market is the Federal funds market, while the base for loan contracts is the prime rate (the rate charged to borrowers with prime or excellent creditworthiness). However, whereas LIBOR changes constantly under the direct influence of supply and demand, the prime rate is set by the banks (with reference to market rates) and is changed less regularly.

**Two technical points**

**Interest and discount.** Note the difference between interest rates (investment yields) and discount rates. Treasury bills and commercial paper are issued at a discount to their maturity value. A 12-month bill with a face value of \$100 might be sold for \$92.50, when the discount is \$7.50:

- the discount rate is 7.5% (7.50 divided by 100 as a percentage);
- the interest rate is 8.1% (7.50 divided by 92.50 as a percentage).

**Basis points.** Dealers sometimes talk about basis points, where 100 basis points = 1% (percentage point) or 1 basis point = 0.01%.

## Interest rates and the economic cycle

Whether by government action or by constraints of supply and demand, interest rates tend to rise when economic activity is buoyant and fall when it is slack.

Lower interest rates encourage borrowing, which leads to more consumer spending and investment, increased imports, a higher level of economic activity and possibly faster inflation. Higher interest rates do the opposite. The problem for finance ministers and central bankers is getting the timing right. It can take perhaps 12–18 months for the full effect of a change in interest rates to feed through.

## Interest rates and currencies

Changes in interest rates affect the relative attractiveness of holding a currency (see Exchange rates, page 148). For example, an increase in American interest rates will encourage a shift into the dollar, pushing it up and making American imports cheaper and European imports dearer. Other countries which want to maintain exchange-rate relationships or prevent money-market outflows are forced to raise their interest rates as well.

## Bond yields

- Measures:** Interest return on fixed-interest securities.  
**Significance:** Indicator of interest and inflation expectations, creditworthiness.  
**Presented as:** Annual percentage rates.  
**Focus on:** Long-dated government bonds.  
**Yardstick:** See Table 12.3.  
**Released:** Almost continuously round the clock.

## Overview

Bonds are loans with fixed regular coupons (interest payments) and usually a fixed redemption value on a given date. Some bonds are perpetual or undated loans which are never repaid or are repaid only at the borrower's option.

The yield (effective rate of interest) on bonds is determined by market conditions. Investors in bonds want to be compensated for loss of interest on other instruments, the time and credit risk of holding bonds and expected inflation. Risks are minimised with government bonds (loans to the government) and unlike shares the maturity value is fixed, so the yield on long-dated government bonds may be taken as an indicator of expected trends in interest rates and inflation.



Table 12.3 **Benchmark yields**  
June 21st 2006

	<i>Coupon %</i>	<i>Redemption date</i>	<i>Price local currency</i>	<i>Yield %</i>
Australia	6.000	Feb 2017	101.8410	5.77
Austria	4.000	Sep 2016	99.6720	4.04
Belgium	3.250	Sep 2016	93.5700	4.03
Canada	4.500	Jun 2015	100.0460	4.49
Denmark	4.000	Nov 2015	99.7300	4.03
France	3.250	Apr 2016	93.8300	4.02
Germany	4.000	Jul 2016	99.9530	4.00
Italy	3.750	Aug 2016	95.7700	4.32
Japan	1.900	Jun 2016	100.4210	1.85
Netherlands	3.250	Jul 2015	94.4570	3.99
Spain	3.150	Jan 2016	93.2680	4.01
Sweden	3.000	Jul 2016	92.2470	3.95
Switzerland	2.500	Mar 2016	98.2470	2.71
UK	4.000	Sep 2016	94.2800	4.71
USA	5.130	May 2016	99.8281	5.15

Sources: *Financial Times*; Reuters

British government bonds are known as gilts, or gilt-edged securities, after the paper on which they were once printed.

### **Yield calculations**

Bonds are traded in secondary markets at prices which in a mechanical sense reflect their redemption value, coupon, credit rating and other interest rates.

For example, a closely watched American Treasury (government) bond with a 5.13% coupon repayable at \$100 in 2016 was trading at just under \$100 in mid-2006. In return for the \$99.83 outlay, a buyer would receive \$5.13 a year in coupons and \$100 on maturity, making the effective investment yield, or rate of interest, 5.15% a year.

Corporate bonds with the same maturity and redemption details trade at a lower price (higher yield) reflecting the greater risk of default.

Benchmark bonds that professional investors watch are shown in Table 12.3. These change over time as bonds mature and new ones are issued.

**Yields and prices.** Note the negative relationship between bond yields and bond prices. If prices fall, interest yields increase. If prices rise, interest yields decline.

### **Yields and the economic cycle**

Since interest rates tend to rise when economic activity is buoyant and fall when it is slack, bond prices tend to fall on the upward leg of the economic cycle and rise on the downward leg.

### **Index-linked issues**

The British and some other governments have issued index-linked bonds, where the coupons and redemption value are linked to consumer prices. The yield on such bonds is the real interest rate.

For example, in mid-2006 the real yield on index-linked gilts was roughly 1.7% (depending on inflation assumptions) while the yield on long-dated conventional gilts was 4.5%, implying expected inflation of 2.8% a year.

However, such calculations should be regarded with suspicion, because the volume of index-linked bonds is so small that individual trades can move the market.

### **Yield curves, gaps and ratios**

<b>Measures:</b>	Difference between interest yields on different instruments.
<b>Significance:</b>	Indicator of interest and inflation expectations.
<b>Presented as:</b>	Annual percentage rates.
<b>Focus on:</b>	Long-dated government bonds and other interest rates.
<b>Yardstick:</b>	See Table 12.4.
<b>Released:</b>	Almost continuously round the clock.

### **Overview**

Various yield differentials signal market perceptions of risks, interest rates, inflation and perhaps exchange-rate movements. You can focus on the difference between any two yields. Four common measures are described below.

### **Yield curve**

Strictly speaking, the yield curve is a line on a graph linking interest rates for a whole range of maturities. However, it can be represented numerically by the difference between two maturities, such as the yield on long-term government bonds less 3-month Treasury bills (Table 12.4).

Table 12.4 **Yields**  
% per year

	— Treasury bills —		— Gov't bonds —	
	2000	2005	2000	2005
Australia	5.98	...	6.26	5.32
Belgium	4.02	2.02	5.58	3.41
Canada	5.49	2.73	5.89	4.39
Denmark	...	...	5.54	3.01
France	4.23	...	5.45	3.46
Germany	4.32	2.03	5.24	3.18
Italy	4.53	2.17	5.58	3.56
Japan	...	...	1.75	1.36
Netherlands	...	...	5.51	3.37
Spain	4.61	2.19	5.36	3.05
Sweden	3.95	1.72	5.37	3.38
Switzerland	2.93	0.71	3.55	1.96
UK	5.80	4.55	4.68	4.39
USA	5.84	3.17	6.03	4.29

Source: IMF

Long rates are usually higher than short rates to allow for the time and inflation risks of holding bonds. However, the curve flattens or inverts when monetary conditions tighten, mainly because of the increase in short rates. The curve may therefore be used as a signal of monetary conditions and a leading indicator of economic activity.

### Bond spread

The bond spread is the gap between bond yields in two countries. For example, it might be defined as American less British long-term government bond yields, in which case a narrowing of the differential indicates a reduction in the relative attractiveness of the dollar. (See Exchange rates and Interest rates, pages 148 and 176.) Or, more frequently, the premium yield required by those investing in many of the emerging economies over American Treasuries.

### Yield gap or reverse yield gap

The yield gap is the yield on long-term government bonds less the aver-

## Bond spreads

Bonds issued by the governments of emerging economies are riskier than those of their American counterparts. As a result, they must offer a higher yield. In many emerging economies this spread fell to historic lows earlier this year, but it has risen since May. That said, emerging bond markets have fared much better than stockmarkets, which lost a quarter of their value from May 8th to June 13th.

Bond spread over US treasuries, July 25th 2006  
Basis points



Source: Thomson Datastream

The Economist, July 29th 2006

age dividend yield on shares. Decades ago, before the markets were worried about inflation, the yield on shares was higher than that on bonds (that is, the gap was negative), reflecting the greater risk of holding equities. The gap is now generally positive (sometimes called a reverse yield gap) because investors demand a higher return from bonds to compensate for the inflation risk of holding instruments with fixed redemption values. The gap therefore says something about expected inflation.

In the late 1990s and early 2000s, however, worries about inflation were slight in comparison with the early 1990s and the 1980s. Dividend yields in America (and to a lesser extent in other countries, including Britain) were driven lower as the stockmarket boomed. This widened the reverse yield gap. The gap therefore says something about investors' optimism about equities as well as about expected inflation.

## Yield ratio

The yield ratio is the yield on long-term government bonds divided by the average dividend yield on shares. The yield ratio was between 1.5 and 5 in

each of the major markets in 2005. Loosely, a high ratio relative to historical experience in the country in question implies that equities are overvalued relative to bonds.

## Real interest rates and yields

**Measures:** Any interest rate or yield less the rate of inflation.

**Significance:** Determinant of investment behaviour.

**Presented as:** Per cent per year.

**Focus on:** 3-month money, long-dated government bonds.

**Yardstick:** See Table 12.5.

**Released:** Almost continuously round the clock.

### Overview

Real interest rates are nominal interest rates deflated by the rate of inflation. For simplicity, this may be approximated by subtraction. For example, over the period 2000–05 American 3-month interest rates averaged 2.7% and consumer prices rose by 2.5% a year, so the real interest rate was about  $2.7 - 2.5 = 0.2\%$ .

Table 12.5 **Real yields**

% per year; interest rates and yields less consumer price inflation

	— Treasury bills —		— Gov't bonds —	
	2001	2005	2001	2005
Australia	0.42	...	1.25	2.65
Belgium	1.69	-0.76	2.66	0.63
Canada	1.24	0.50	3.25	2.16
Denmark	...	...	...	1.20
France	2.60	...	3.39	1.69
Germany	1.68	0.08	2.72	1.23
Italy	1.26	0.18	2.40	1.57
Japan	...	...	2.06	1.65
Netherlands	...	...	0.97	1.71
Spain	0.33	-1.18	1.28	-0.32
Sweden	1.59	1.27	2.70	2.93
Switzerland	1.69	-0.46	2.57	0.79
UK	2.95	1.72	2.96	1.56
USA	0.62	-0.22	2.19	0.90

Source: IMF

Implicitly at least, investment decisions are based on real interest rates. Since inflation over the period ahead is unknown, it is the expected real interest rate that influences behaviour. This cannot be measured easily, so the latest rate of consumer-price inflation is usually used as a proxy when calculating real interest rates.

Interpretation is tricky. Logic suggests that high real rates will discourage physical investment, but recent studies suggest that cause and effect run in the opposite direction; it is the demand for investment funds that makes real rates high in the first place.

## Share prices and yields

- Measures:** Prices of company share capital.
- Significance:** Reflect economic expectations; useful as a leading indicator.
- Presented as:** Individual prices in money and indices of average prices.
- Focus on:** Broad market indices.
- Yardstick:** See Table 12.6.
- Released:** Almost continuously round the clock.

## Overview

Share prices reflect the discounted value of future dividend payments, with a premium thrown in to reflect the risks. Future dividends depend on company profits, which in turn reflect the quality of management and the state of the economy. For the stockmarket as a whole, variations in management quality average out, leaving perceptions about the state of the economy as a key factor in determining overall share prices.

When investors expect recession, they are less keen to buy equities and their prices fall (a bear market). As soon as there is a glimmer of economic

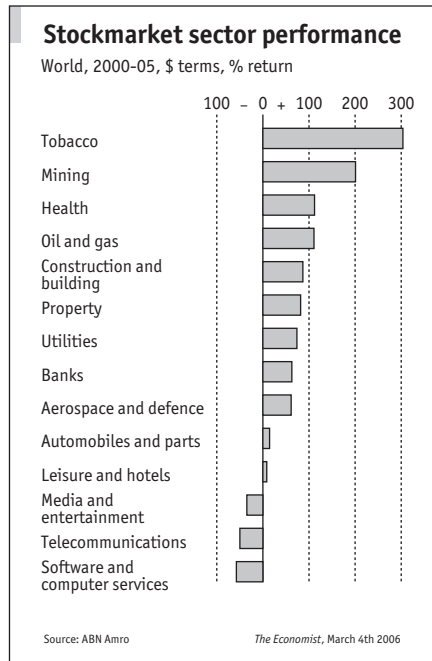


Table 12.6 **Share prices**

End years, average % change

	<i>Nominal</i>				<i>Real</i>			
	1990-94	1995-99	2000-04	2005	1990-94	1995-99	2000-04	2005
Australia	3.0	10.4	5.4	16.2	-0.9	7.9	1.6	13.0
Austria	-1.9	2.6	15.2	50.8	-5.2	1.0	12.8	48.0
Belgium	-1.5	19.2	-2.6	21.0	-4.0	17.4	-4.5	18.6
Canada	1.2	14.8	1.9	21.9	-1.3	13.0	-0.5	19.3
Denmark	3.4	22.4	3.2	42.7	1.5	19.7	1.2	40.0
France	-1.2	25.9	-8.5	23.4	-3.5	24.4	-10.2	21.1
Germany	0.9	27.1	-9.4	27.1	-2.8	25.5	-10.8	25.1
Italy	1.9	24.6	-6.2	15.5	-3.1	21.2	-8.5	12.9
Japan	-12.7	-0.8	-9.5	40.2	-14.3	-1.1	-9.1	40.7
Netherlands	6.6	29.0	-12.3	25.5	3.7	26.4	-14.4	22.6
Spain	-0.8	28.8	-1.0	20.6	-5.8	25.3	-4.2	16.8
Sweden	3.1	30.1	-6.9	32.6	-2.1	29.2	-8.3	30.8
Switzerland	8.1	23.6	-5.5	33.2	4.6	22.4	-6.4	32.1
UK	4.8	17.7	-7.0	16.7	0.4	15.5	-8.2	15.0
USA	6.8	24.6	-1.3	-0.6	3.2	21.7	-3.7	-3.0

Source: Thomson Datastream

recovery, investors switch into equities, pushing up their prices (a bull market). Thus share prices are highly cyclical, and act as valuable leading indicators of expectations.

### Broad indices and sectors

For economic fortune-telling, focus on broad market indices which average out erratic influences. For example, use the American Standard & Poor's 500 stock index rather than the Dow Jones Industrial Average of 30 stocks; and the British FTSE (*Financial Times* Stock Exchange) all-share index of nearly 800 shares rather than the narrower FTSE 100 index.

Sector averages, such as indices for consumer goods or building materials companies, may be used to assess market expectations for various parts of the economy.

## 13 Prices and wages

Inflation means that your money won't buy as much today as it did when you didn't have any.

Anon

### Overview

Price indicators tell you about inflation. An increase in the general level of prices is nothing new: records from the days of the Roman empire show rapid inflation. Since 1946 Britain's consumer prices have risen every year, but in fact inflation – in the sense of continuously rising prices – is historically the exception not the rule. Linking together various price series (of admittedly varying quality) suggests that in 1914, on the eve of the first world war, British consumer prices were no higher than during the 1660s. During those 250 years periods of rising prices were interspersed with periods of falling prices.

Inflation has three main adverse effects. First, it blurs relative price signals; that is, it is hard to distinguish between changes in relative prices and changes in the general price level. This distorts the behaviour of individuals and firms, and so reduces economic efficiency. Second, because inflation is never perfectly predictable, it creates uncertainty, which discourages investment. Third, inflation redistributes income: from creditors to borrowers, and from those on fixed incomes to wage-earners.

It has become economic orthodoxy that price stability should be the goal of central banks. Many central banks now say that this is their aim, and several now have explicit inflation targets as the lodestar of monetary policy. In practice, this does not mean zero inflation, because consumer price indices tend to exaggerate annual inflation rates by 1 or 2 percentage points. So the Bank of England, for example, is expected to achieve an inflation rate of 2.0% (excluding mortgage-interest payments). The European Central Bank's target is a rate of below, but close to, 2%. The Reserve Bank of New Zealand, a pioneer in inflation targeting, is supposed to keep inflation between 1% and 3%.

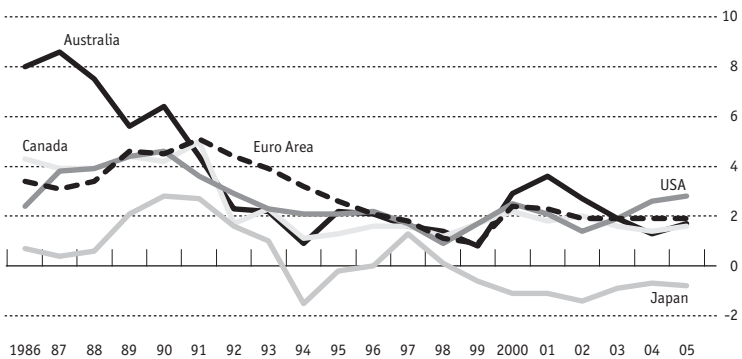
### Causes of inflation

There are two main theories about the causes of inflation: supply shock and demand pull. The reality is probably a complex mixture of the two.



### Inflation in industrial countries

Consumer spending deflator, annual average % change



Source: OECD

**Supply shock (or cost push).** Prices are pushed up by higher wage and raw materials costs; perhaps owing to trade union power, dearer imports as a result of a weak currency, or a jump in commodity prices.

**Demand pull.** Prices are pulled up when spending power (demand) is greater than the availability of goods and services. Factors which can boost aggregate demand include tax cuts, higher government spending, wage rises caused by labour shortages and an increase in consumer borrowing.

#### Recent experiences

Experiences with inflation range from deflation (a fall in prices experienced, for example, during the 1930s depression and by some oil-producing countries in the mid-1980s) to hyperinflation (such as when German wholesale prices rose by about 1.5 trillion % between 1919 and 1923). The most prominent recent example of deflation is Japan, where the consumer price index fell from the late 1990s to 2005. Hyperinflation is frequently associated with rapid increases in the money supply (see Chapter 12).

**Industrial countries.** Inflation was moderate in the industrial world in the 1960s, averaging about 3% a year. It jumped sharply after the two oil price shocks in the 1970s before falling again in the 1980s. In the fight to

Table 13.1 **Comparative inflation rates, 2005**  
 % change on previous year

	<i>Compensation per employee*</i>	<i>Consumer prices</i>	<i>Producer prices</i>	<i>— Implicit price deflators —</i>	
				<i>Private consumption</i>	<i>GDP</i>
Australia	3.9	2.7	5.9	1.7	4.5
Austria	2.3	2.1	2.1	1.9	2.1
Belgium	1.9	2.5	2.6	2.8	2.2
Canada	4.4	2.2	1.5	1.6	3.1
Denmark	2.0	1.8	2.9	2.0	2.6
France	3.0	1.9	1.8	1.2	1.3
Germany	0.2	1.9	2.8	1.3	0.5
Italy	2.8	2.2	4.0	2.3	2.1
Japan	0.8	-0.3	2.0	-0.8	-1.3
Netherlands	2.2	1.5	6.2	1.7	1.6
Spain	2.5	3.4	4.9	3.5	4.4
Sweden	4.2	0.5	3.8	1.0	1.2
Switzerland	2.3	1.2	0.8	1.7	0.6
UK	4.0	2.0	2.8	2.0	2.0
USA	5.2	3.4	5.5	2.8	2.8
Euro area	1.2	2.2	3.2	1.9	1.7
OECD	3.3	2.6	3.9	2.0	2.0

\*In the business sector.  
 Source: OECD

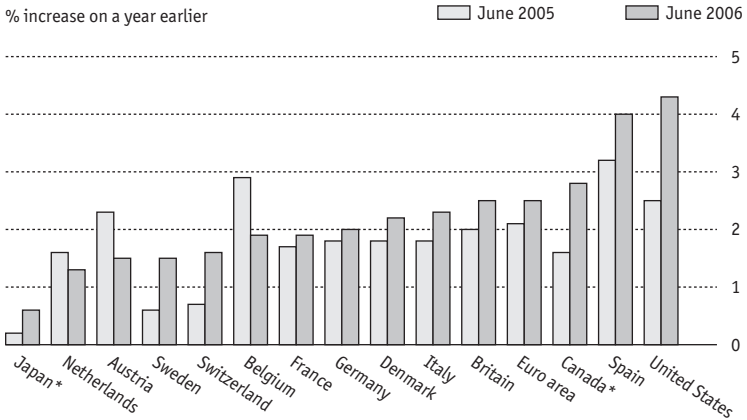
tame inflation, wage and price controls have generally given way to tight monetary and fiscal policies. Inflation generally stayed low in industrial countries during the 1990s and since, thanks to a combination of weak commodity prices and cautious monetary policies.

**Developing countries.** Inflation generally accelerated in the developing countries in the 1980s, and reached over 1,000% in some Latin American countries. The early 1990s saw inflation surge in eastern Europe and the former Soviet Union as ex-communist countries struggled to adjust to a market-based economy. Countries in the former Yugoslavia also experienced high inflation after the break-up of the federation.

Since the mid-1990s inflation has moderated in developing countries, falling from 65.3% in 1994 to 5.1% in 2005. Inflation slowed especially

### Consumer prices

In the 12 months ending in June 2006, American consumer prices rose 1.8 percentage points faster than they had in the preceding 12 months. Inflation has also picked up strongly in Canada. Much of the blame lies with energy prices. But energy was also costly for Austria, the Netherlands and Belgium, three countries that saw their inflation rates fall over this period.



\*May  
Source: National statistics

The Economist, July 22nd 2006

dramatically in Latin America – in Brazil, it dropped from over 2,000% in 1994 to 3.2% in 1998 – and in central and eastern Europe and the former Soviet Union.

### Inflation and the economic cycle

Cycles set in train by supply shocks are evident in Chart 13.1 on page 188. The analysis of inflation is also aided by an understanding of the effects of the economic cycle, where pressures often come through on the demand side. Prices increase less rapidly or even decline during recession when consumer spending is weak. However, at the top of the cycle when personal incomes are buoyant but businesses cannot increase their output, extra demand pulls up prices.

### Price indicators

Price indicators measure levels and changes in particular prices or

groups of prices. For example, an oil price index covers one set of hydrocarbons while a consumer price index relates to a basket of goods and services purchased by households. In turn, these price series act as leading indicators of cost pressures and also signal movements in current demand.

Price indices are sometimes called deflators when they are used to convert (deflate) figures in current prices into constant price terms.

### The composition of price indices

Most price indices are weighted averages of several prices. It is difficult to choose weights for some indicators, such as commodity price indices (see page 197), although often the basis for the weighting is clear. If 20% of an average family's spending goes on food, food has a 20% weight in the index of consumer prices. This can cause problems for interpretation, since there may not be an average family. The average rate of inflation is not experienced by a newly married couple with spending dominated by mortgage payments, nor by a retired person with little expenditure on consumer durables. It also poses problems if spending patterns are changing over time.

- **Base-weighted indices** may be used to measure changes over any period. The weights are the same for each year, so changes in the index reflect changes in prices only. The snag is that the weights may become outdated.
- **Implicit deflators** reflect changes in prices and spending patterns. For example, the American GDP implicit price deflator measures the difference between current and constant price GDP. Since the weights reflect the composition of GDP in each period, changes in the index reflect movements in both prices and the composition of GDP.

### The transmission of inflationary pressures

When looking at price indicators, think about their relationship to final prices.

**Sequence.** The briefs on wages and prices are arranged loosely in the order in which inflationary pressures are transmitted through the economy: from raw materials' prices and wages through producers' selling prices and consumer prices to the GDP deflator. Indicators towards the end of the chapter are also signals of the state of aggregate demand.

Prices in the early stages of production generally fluctuate more than prices at later stages. A 5% change in raw materials prices is generally less worrying than a 5% change in producers' selling prices.

**Relationships.** The sequence of cost pressures is clear. However, it is not so simple to identify a fixed relationship between any pair of price indicators.

- There are leads and lags. In general, changes in raw materials costs take longer to feed through to retail prices than movements in producers' selling prices.
- The ultimate effect depends on the cost mix. For example, if raw materials prices rise by 10% and account for one-tenth of a manufacturer's costs, and if all other costs are held constant, the effect is a 1% increase in list prices.
- Any movement in output prices will reflect the extent to which higher input costs are absorbed in profits or offset by improved efficiency and productivity.

### Indicators to use

Consumer prices are the most rapidly available guides to "national" inflation and they can be used as yardsticks for interpreting other price indicators. For example, wage settlements above the rate of consumer price inflation suggest increasing inflationary pressures (unless they are absorbed by productivity growth – see Unit labour costs, page 213).

Cost pressures are signalled by commodity prices, producer prices and wages and earnings. Surveys of price expectations are valuable leading indicators. The GDP deflator itself may be the best overall guide to inflation and should fluctuate least because it covers so many things, but it is available only after a time lag. Share prices and house prices are useful indicators of asset prices, which influence aggregate demand (see Consumer spending, pages 88–91).

For reviewing particular groups of prices or their effect on certain industries or groups of consumers, select an appropriate indicator. For example, to track the cost of capital equipment purchased by a particular industry, look for a sub-index in the producer prices or the GDP investment deflators.

**Cross-references.** Just about every economic indicator says something about demand pressures. Capacity use and unemployment are particu-

larly useful, as are indicators of the government's monetary and fiscal stance. See also Balance of payments and, particularly, Exchange rates (Chapters 10 and 11).

### Rates of change

Remember to distinguish between a fall in the level of prices and a fall in the rate of increase. If the inflation rate declines but remains positive, prices are still rising.

As a rule of thumb, annual inflation of 0–3% is considered good. Double-digit percentage rises are definitely bad news. Negative inflation, although rarely experienced, is not good either since it signals deflation and – almost certainly – a contracting economy.

### Gold price

**Measures:** Market price of gold.

**Significance:** Raw material and psychologically important store of wealth.

**Presented as:** \$ per oz.

**Focus on:** Trends.

**Yardstick:** Average London spot prices were \$388 in 1996, \$271 in 2001 and \$444 in 2005. In 2006 the price reached \$700.

**Released:** Continuously round the clock.

### Influences on the price of gold

The gold price reflects the interaction of supply and demand in a global market with many buyers and sellers and a free flow of information. Supply depends on production and sales from stocks while demand is influenced by gold's dual function as an industrial raw material and the ultimate store of wealth. It provides a security which cannot always be matched by paper money. Speculative demand is the major short-term determinant of price.

**Supply.** South Africa is by far the largest producer of gold, followed by America, Australia, China, Russia and Peru. In the past Soviet output has not shown any strong relationship to prices. Other countries' production generally edges upwards in the long run in response to higher prices. Sales of gold from stocks are important since stocks are many times greater than annual production. Even though central banks and the IMF sold gold from the 1970s to the 1990s when it fell from favour as a monetary standard, they still hold close to 1 billion oz in their vaults. Uncertainty about what they might do with this may depress prices; and the

gold price fell sharply in 1999 after the British government said it planned to sell some of its gold. However, central bankers in developing countries will dent their gold hoards and egos only as a last resort.

**Demand.** Fabrication demand is mainly for jewellery, electronics and dentistry. Jewellery demand accounts for over three-quarters of industrial and commercial use and is sensitive to price. Electronics demand reflects the fortunes of the industry, decreasing during recession. Use in dentistry is fairly constant, if vulnerable to replacement by man-made materials.

Speculative and investment demand is much harder to predict since flows are large in relation to stocks and output. There tend to be flights into gold which push up its price during rapid inflation, exchange-rate turbulence or political instability worldwide. However, these are less marked now that financial markets offer more sophisticated hedging instruments. Indeed, gold-backed financial instruments, such as gold options, have eroded the lure of holding the metal itself.

**Forward sales.** Financial engineers have also created a wide range of instruments which allow producers to hedge several years' future output. This was probably the most important influence on prices in 1990. Every time prices rose, they were capped as forward sales pushed more metal into the world market. According to market analysts GFMS, forward sales increased through the 1990s, peaking in 1999 at 3,080 tonnes of gold. This had fallen to 1,706 tonnes at the end of 2005.

**Currency.** Since gold is generally priced in dollars it is important to distinguish between exchange-rate effects and underlying price movements. The easiest way to do this is to convert the price into a basket currency such as the SDR. Surprisingly, not many people do this.

### **Gold as an indicator of inflation**

Many economists, especially Americans, argue that gold is a useful indicator of inflationary pressures, but it is difficult to disentangle all the influences on gold prices. Baskets of commodity prices probably make better leading indicators than gold alone. Moreover, it does not make much difference whether gold is included or excluded from such baskets if they are weighted according to world production levels. If gold is given a greater weight to reflect its psychological importance, the pre-

dictive value of such baskets deteriorates. In other words, a commodity price index is preferable as a leading indicator of inflation.

## Oil prices

<b>Measures:</b>	Market price of crude petroleum.
<b>Significance:</b>	Major energy source essential to every economy; also a chemical feedstock.
<b>Presented as:</b>	\$ per barrel.
<b>Focus on:</b>	Traded crude such as North Sea Brent or West Texas Intermediate.
<b>Yardstick:</b>	In 1990 the oil price was around \$20 a barrel. In 1999 it dipped to around \$10 a barrel before recovering to \$25 a barrel before the end of the year. In 2005 it reached \$60 a barrel and topped \$70 a barrel in 2006. Sharp increases in oil prices are potentially worrying for output and inflation in oil-importing countries – but much less so than in the 1970s.
<b>Released:</b>	Continuously round the clock.

## Prices, supply and demand

Oil prices are sensitive to supply and demand, with OPEC exports being the major determinant of short-term price fluctuations.

**Demand.** There are obvious seasonal variations in oil demand; consumption always decreases during the hot summer months. However, in the short term annual demand is fixed in relation to GDP. Consumption fluctuates with the economic cycle in industrialised countries and rises relentlessly in line with economic growth in less developed countries. (Since 1973 oil intensity – oil consumption per unit of GDP – has fallen owing to conservation and the substitution of other fuels.)

**Supply.** Oil producers can be divided into three groups: OPEC, the former communist bloc and what the oil industry has traditionally called the free world. Oil output in the free world is price-responsive; it becomes profitable to extract oil from marginal fields only when prices are high. Within such considerations the free world normally produces oil flat out. The gap between demand and supply is therefore filled by OPEC crude. The organisation's attempts to control the world petroleum markets led to oil price rises in 1973 and 1979 and a sharp slump in 1986. In the past, world market sales from producers in the former Eastern bloc did not fluctuate wildly, but are now rising annually.

In the short term OPEC exports reflect the balance between members' collective willingness to restrict output to try to control the world oil



Table 13.2 **The world oil market**

Barrels per day, m

	1995	2000	2002	2003	2004	2005
<b>Demand</b>						
OECD, of which	44.8	47.9	48.0	48.9	49.5	49.7
North America	21.6	24.1	24.1	24.6	25.3	25.4
Europe	14.6	15.1	15.2	15.5	15.6	15.6
Pacific	8.6	8.7	8.6	8.8	8.5	8.6
Non-OECD	25.2	28.7	29.9	30.9	33.1	34.0
Total	70.0	76.6	77.9	79.7	82.6	83.7
<b>Supply</b>						
OECD	21.1	21.9	21.8	21.6	21.3	20.3
OPEC	27.9	30.9	28.8	30.7	32.8	33.9
Former Soviet Union	7.1	7.9	9.4	10.3	11.2	11.6
Other	14.5	16.2	16.9	17.1	17.6	18.2
Total	70.6	76.9	76.9	79.7	82.9	84.1
<b>Trade</b>						
OECD net imports	23.4	26.2	25.9	27.5	28.4	29.6
Former Soviet Union net exports	2.8	4.3	5.9	6.7	7.5	7.8
Other non-OECD net exports	20.6	21.9	20.0	20.8	21.0	21.7
<b>Prices</b>						
OECD crude oil import price						
\$/barrel, CIF	17.0	28.4	25.0	28.8	38.2	54.4

Source: OECD

market, their individual need for revenue and the general political situation in the oil-producing countries. More ominously for the longer term, OPEC members are sitting on oil reserves which promise to outlast all other supplies.

**Stocks.** Whereas almost all the gold ever produced is still in existence (even if some is in orbit or on the sea bed), oil is rapidly consumed. Oil companies and some governments hold working and strategic stocks which help to prevent prices rocketing in times of temporary crisis, such as during the Iraqi invasion of Kuwait in 1990. Stocks of 100 days' forward consumption are about the highest to expect.

Table 13.3 **Effect of a \$30 oil price increase in selected developing countries**  
% of GDP

	<i>Change in current account</i>	<i>Current account balance, 2005</i>
Guyana	-8.2	-25.1
Mongolia	-6.4	-2.8
Tajikistan	-6.3	-4.2
Lesotho	-5.8	-2.9
Togo	-5.4	-10.3
Kiribati	-5.3	-13.6
Solomon Islands	-5.2	-14.2
Swaziland	-5.1	1.9
Tonga	-4.4	-0.5
Cambodia	-4.4	-5.2

Sources: World Bank; IMF

**Traded crude.** OPEC's slippery grip on oil trade means that its official selling prices (OSPs) are not necessarily representative of market pressures. However, whereas nearly all oil was sold on long-term contracts at fixed prices in the past, most is now traded at market prices. Traded crudes such as North Sea Brent blend or West Texas Intermediate are therefore good indicators of market conditions.

## Commodity price indices

- Measures:** Changes in groups of commodity prices.  
**Significance:** Advance warning of inflationary pressures.  
**Presented as:** Index numbers.  
**Focus on:** Trends.  
**Yardstick:** Prices fluctuate wildly; hope for level trends.  
**Released:** Daily by Reuters; weekly by *The Economist*; others monthly.

## Significance

Commodities are unprocessed or semi-processed raw materials used for food or in the manufacture of other goods. Commodity prices in general are important lead indicators of cost pressures. Prices of metals and, to a lesser extent, non-food agriculturals are also indicative of the level of demand in the industrialised countries.

**Oil that glisters**

How high can they go? Speculators love commodities right now. But what do the fundamentals say?

When commodity prices slipped from their giddy highs in May, many observers hailed the beginning of an inevitable correction after four years of rapid ascent. But the markets, it turns out, were simply pausing for breath. On July 14th the price of a barrel of West Texas Intermediate oil reached a new record in nominal terms of \$78.40, although it has since fallen a little. Nickel followed, topping \$26,000 a tonne for the first time. Even some agricultural commodities are starting to get caught up in the boom. Rapeseed oil, for example, is fetching unprecedented sums. The price of food crops has risen by 40% since the beginning of 2002, although that increase is dwarfed by huge run-ups in the prices of oil and metals, as the top chart on page 201 shows.

Some analysts believe that investors have inflated a speculative bubble in commodities. Hedge funds' investments in energy markets rose from \$3 billion in 2000 to about \$90 billion last year, according to the International Energy Agency, a think-tank. Trading of commodities at exchanges doubled between 2001 and 2005, according to International Financial Services London, an industry group. Over-the-counter trade has risen faster still.

Other pundits think piling into commodities is justified, because the world has embarked on a "super-cycle", in which commodity prices rise far higher and for much longer than is normal in a business blighted by frequent busts. The boom is certainly exceptionally long and lucrative. A recent report by Société Générale, a French bank, analysed five others since 1975. They lasted 28 months, on average, during which prices rose 35%. The present run, by contrast, has lasted 56 months, during which prices have doubled.

The super-cyclists put all this down to a simple mismatch between supply and demand. During the 1980s and 1990s, when commodity prices were low, mining and oil firms invested too little in new mines and wells, leaving them with little or no spare capacity. Although they are now rushing to increase their output, it takes years to find and develop new seams and fields. In fact, it takes longer now than it used to, because environmental regulations have become more onerous and activists more obstreperous around the world. With everyone trying to dig and drill at the same time, costs are rising

and shortages of such things as huge tyres for mining trucks are hampering progress.

Meanwhile, on the demand side, the world as a whole, and China in particular, has been growing much faster than expected and consuming lots of raw materials as it does so. In the past 15 years China's imports of commodities have risen more than tenfold (see bottom chart on page 201). One recent forecast, by Deutsche Bank, says that they will continue to grow by more than 10% a year for the next decade. At any rate, China's economy shows little sign of slowing. GDP grew at an annual rate of 11% in the first half of the year, according to official figures published on July 18th – the fastest pace in over a decade. This combination of feeble production and feverish consumption, the argument runs, means that demand for commodities will outpace supply for years to come.

But it is hard to apply this logic to all commodities. The supply of agricultural ones, for example, increases much more readily when prices rise, because farmers can plant more of them. Take maize (corn, to Americans) which is used both to make ethanol and to feed livestock. China's exports of maize are shrinking, as its herds multiply to cater to its citizens' growing appetite for meat. At the same time, the high price of oil is fuelling demand for ethanol, which is used as both a substitute for and an additive to petrol. Ethanol is expected to consume about a fifth of America's maize harvest next year. Both trends have helped to propel the crop's price to dizzy heights, with the prices of other commodities from which fuel can be made, such as sugar and rapeseed oil. But not for long: American and Chinese farmers are already planting more maize.

Gold is another exception. It is dearer than it has been for decades, yet jewellers and industrialists would need years to use up all the world's stocks. Gold is valued not for its scarcity, but as a hedge against inflation. Its price has duly risen, as worries about inflation have grown (thanks partly to the expense of oil) and central banks have raised interest rates. Higher interest rates, however, should eventually slow global growth, and so crimp demand for other commodities. The prices of gold and more mundane metals may therefore start to move in opposite directions.

Not even oil, the archetypal industrial commodity, quite conforms to the super-cycle theory. Granted, consumption continues to rise, especially in China, where imports have grown by about 10% so far this

year. Furthermore, the industry can muster only about 1.5m barrels a day of spare pumping capacity – a tiny fraction of the 84m-odd barrels the world consumes daily. That makes the price sensitive even to relatively minor interruptions in supply. Iran, which exports 3.4m barrels a day, has threatened to use oil as a weapon in its disputes with America and the European Union. So oil traders twitch every time the two sides exchange barbs.

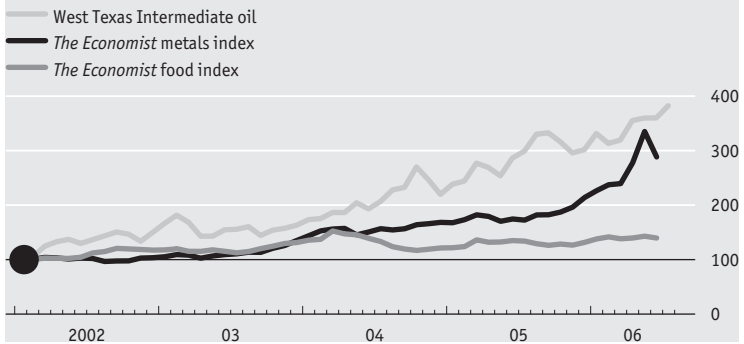
Nonetheless, during the past year spare capacity has actually increased marginally, as have stocks. This cushion should expand further over the next couple of years, as production starts from oilfields now being developed. Meanwhile, there are signs that demand, although not falling, is growing more slowly in the face of high prices. Supply and demand will certainly remain finely balanced for several more years, but the outlook is improving for consumers – even if this is not yet detectable in the price of oil.

It is hard, concedes Frédéric Lasserre, the author of Société Générale's report, to translate nebulous fears about future supply into prices. In the long run, the price of any given commodity should revert to the cost of producing an incremental unit of supply. By that measure, Mr Lasserre calculates, oil is overvalued by 50%, and zinc and copper by almost 40%. In the short term, the level of stocks plays an important part. But again, relative to the historical relationship between stocks and prices, Mr Lasserre reckons copper is 148% too dear; zinc, 122%; nickel, 70%; and oil, 49%.

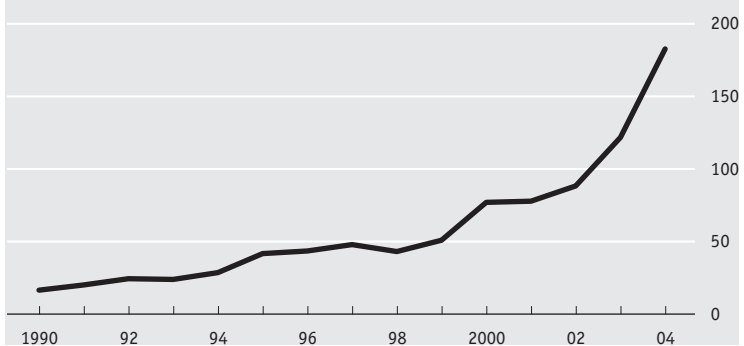
Other analysts see parallels with the dotcom bubble of the late 1990s. After all, plenty of people are opining that “things are different this time”. Pension funds and individual investors are keen to get in on the action. CalPERS, America's biggest pension fund, is due to decide soon whether to put money into commodities. If such a conservative operator is eyeing commodities, cynics say, then a correction must be close at hand.

**All rise**

Commodity prices, \$ terms, Jan 2002 = 100



China's commodity\* imports, \$bn



\*Primary goods and chemicals.

Sources: *The Economist*; Thomson Datastream; China Statistical Yearbook

*The Economist*, July 22nd 2006

Monetarists note with glee the correlation between high commodity prices and liquidity in the late 1980s, and the monetary contraction and commodity price falls of the early 1990s.

**Price instability**

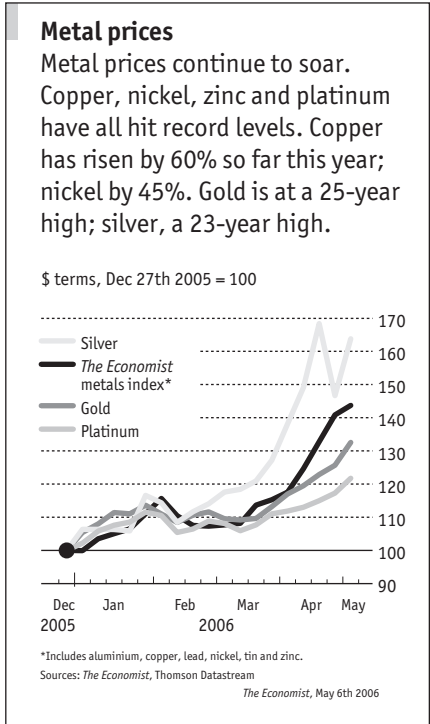
Analysis by the World Bank shows that price instability for sugar, the least stable commodity price, is over 11 times greater than that for oranges, the most stable. Moreover, commodity price fluctuations have increased sharply since the 1960s. Quite apart from the eightfold increase in the real price of oil during the 1970s, the prices of other commodities moved sharply. For example, food prices fell while timber prices rose in the 1980s. Many economic problems can be traced to these shocks and the policy responses to them.

**Influences on prices**

Commodities may be divided into three broad groups depending on whether their prices are influenced mainly by demand, supply, or both.

**Demand.** The prices of industrial raw materials, such as metals and minerals, fluctuate in response to changes in demand, reflecting mainly economic conditions in the industrialised countries. Recession brings lower demand and weaker prices. Supply tends to be more stable and predictable.

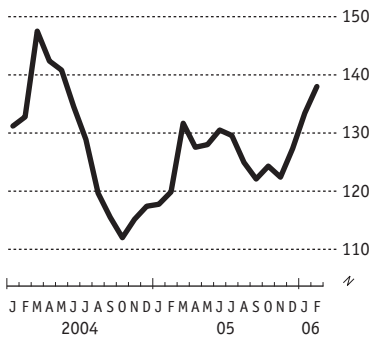
Demand for metals declined as the industrial countries introduced materials-saving technology during the 1970s and 1980s. Between 1990 and 1993, *The Economist* commodities dollar index for metals fell by over 30 percentage points. By around mid-1994 it had recovered all that



### **The Economist food index**

Our food index has risen by 14% since November. Sugar prices have hit 25-year highs as world stocks have fallen and more cane has been diverted into ethanol production. Tea prices rose after a drought in Kenya slashed harvests.

\$ terms, 2000 = 100



Source: *The Economist*

*The Economist*, February 25th 2006

lost ground and more, before it dropped in 1995 to slightly below its 1990 level. By November 2001 it had fallen a further 39%. It then turned up, thanks to Chinese demand, and by May 2006 had soared by 272%.

**Supply.** Food prices are influenced most heavily by unplanned changes in the supply side. For example, world vegetable oil prices depend significantly on the effects of weather on the American soyabean crop and on policies relating to American stockpiles. Food prices fell in the late 1980s and early 1990s as production and stocks recovered from the 1988 drought in America which cut output and pushed up prices.

**Supply and demand.** Non-food agricultural products such as cotton and rubber are vulnerable to changes in both supply and demand.

### **Index composition**

Creating an ideal commodity price index is intellectually testing because:

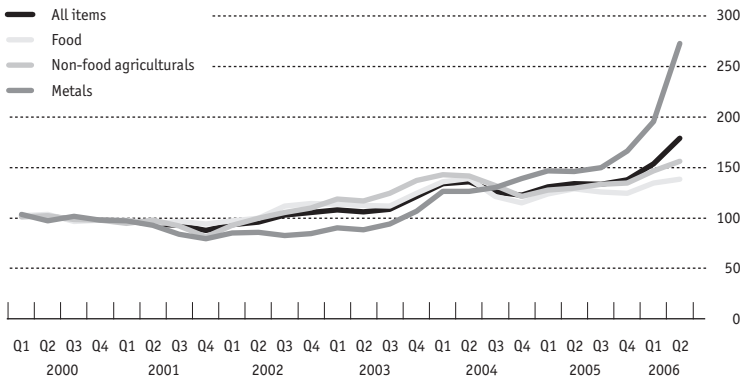
- commodities are not comparable – 1 tonne of coffee is quite different from 1 tonne of copper;
- they are difficult to value – for example, only 6% of rice production is traded on international markets; and
- relative prices are distorted by large fluctuations in individual commodity prices.

Despite these problems there are many indices combining the prices of



**The Economist commodity price indicator**

Dollar terms, 2000 = 100

Source: *The Economist*

several commodities. Apart from *The Economist* commodities price index, the most widely followed indices are prepared by the IMF, the UN, the World Bank and the American Commodity Research Bureau (CRB). They differ in three main ways.

**The basket contents.** *The Economist* index includes only commodities which are freely traded on open markets. This excludes items such as iron ore which has a big weight in the other main indices. *The Economist* also omits oil and precious metals such as gold. The two previous briefs suggest that gold and oil are important commodities but they are subject to special factors which may make them less valuable as simple cost indicators.

**The basket weights.** *The Economist* index is designed to measure cost pressures in industrial countries; its constituents are weighted according to their share in world imports. The UN, IMF and World Bank indicators are intended to monitor the terms of trade in developing countries; the constituents are weighted to reflect shares in developing countries' exports. The CRB index just gives equal weight to all components, which understates the importance of industrial commodities and so makes it less useful as a leading indicator of inflation.

**The currency.** Commodity prices are most often quoted in dollars. As a

result, currency fluctuations will move indices even when there is no underlying change in commodity prices.

### **Bottom line**

*The Economist* index is hard to beat for tracking the interrelation between cost pressures and inflation; see the weekly table in *The Economist*. A rise in the index may signal higher inflation, but the final outcome depends on monetary conditions and supply and demand in other factor markets such as labour.

A UN, IMF or World Bank index should be used if you are interested in the way that changes in commodity prices affect the external balances of developing countries: a fall in commodity prices implies a deterioration in exporters' trade balances.

### **Export and import prices; unit values**

**Measures:** Prices of traded goods.

**Significance:** Helps identify cost pressures, potential exchange-rate problems and changes in competitiveness.

**Presented as:** Index numbers.

**Focus on:** Changes in unit values (see text).

**Yardstick:** A positive rate of increase, as close to zero as possible, is good. Check the ratio between import and export prices (see Terms of trade, page 165).

**Released:** Monthly with trade figures; quarterly with GDP.

**Prices.** Import or export price indices, including the deflators released with GDP data, capture changes in both the prices and the composition of a country's external trade.

**Unit values.** Indices of import or export unit values, which are essentially fixed-weight price indices, highlight changes in prices only. This is useful for reviewing cost and competitive pressures. However, since the weights get out of date when the structure of trade changes – as it inevitably does – unit value indices are best for analysing short-term trends.

**Export prices or values.** Compare export price indices with domestic price indicators, such as the producer price index for home-produced goods, to get a feel for the way that manufacturers are passing on cost pressures to foreign buyers; or perhaps being constrained from doing so by international competitive pressures.

**Import prices or values.** Use import price indices to judge external cost pressures. Import prices that are rising faster than domestic prices are a clear warning of imported inflation.

**Erratic items.** Prices of raw materials can fluctuate widely. It is often sensible to look at price indices which exclude these more erratic items to identify underlying pressures.

**Terms of trade.** One of the most useful ways of looking at import and export prices is by examining the ratio between them, which is known as the terms of trade (see page 165).

### **Producer and wholesale prices**

**Measures:** Prices of goods at the factory gate.

**Significance:** Leading indicator of cost pressures.

**Presented as:** Monthly index numbers.

**Focus on:** Percentage changes.

**Yardstick:** OECD average producer prices rose 2.9% during the period 1990–94 and 2.7% a year during the period 2000–05.

**Released:** Monthly, at least one month in arrears.

**Wholesale price indices (WPIS)** cover prices charged at the first stage of bulk distribution and generally include import prices. WPIS were first introduced to measure prices of raw materials.

**Producer price indices (PPIS)** track prices of home produced goods at the factory gate. Most PPIS cover output prices of goods, although some countries also prepare input price indices for raw materials purchased by industry. In principle, input prices include transport to the factory and output prices are ex-works, although such prices cannot always be identified neatly.

PPIS shed light on cost pressures affecting domestic production and are more useful than WPIS. Most major countries now produce PPIS. The indices cover manufacturing and, sometimes, construction.

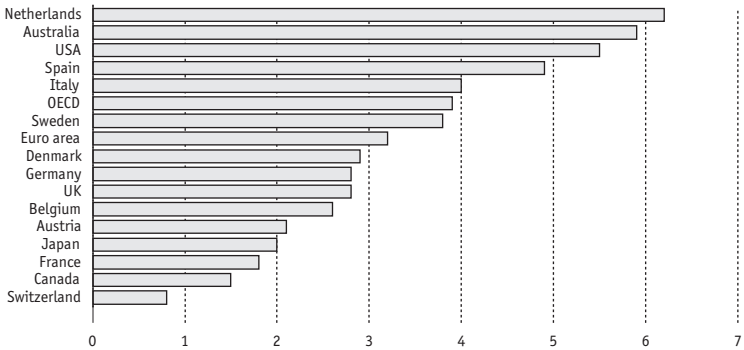
### **Index construction**

The indices are compiled on the basket principle with weights reflecting the output of each contributor relative to the total. For example, if lace-makers account for 1% of total industrial production, lace prices have a 1% weight in the index.

## Changes in producer prices

13.3

% change, 2005



Source: OECD

Weights are generally updated at 5–10 year intervals to take account of the changing structure of industry. Data are acquired by surveys, usually of major companies. The Greek index covers 3,000 price series, the British index over 9,000, and the American index over 100,000.

In many cases returns are collected continuously so that the prices are effectively monthly averages rather than those applying on just one date. Even so, changes one month will not be reflected fully until the following month.

Taxes such as VAT are usually excluded. Excise duties such as on tobacco and alcohol are treated as manufacturers' costs and are included, so the index moves if they are changed.

### The cycle

Prices are generally order prices with list prices adjusted by government statisticians to allow for "normal" discounts in each industry. This is fine when the economy is stable, but the PPI may overstate cost pressures when above-average discounts are offered during a recession. Conversely, the PPI understates cost pressures when inflation is rapid; deliveries may be at prices which were negotiated perhaps several months earlier and which are much below current order prices scored in the index.

Table 13.4 **Producer prices (manufacturing)**

Annual average % change

	1985-89	1990-94	1995-99	2000-04	2005
Australia	6.7	2.3	1.4	3.0	5.9
Austria	-0.7	0.9	-0.1	2.2	2.1
Belgium	-0.4	-0.2	0.7	2.5	2.6
Canada	2.5	1.9	2.1	1.4	1.5
Denmark	2.2	0.6	1.1	1.8	2.9
France	2.6	-0.8	-0.2	0.9	1.8
Germany	0.9	1.2	1.3	1.4	2.8
Italy	4.0	3.4	0.5	2.5	4.0
Japan	-1.4	-0.3	2.1	-0.8	2.0
Netherlands	-1.3	-0.5	-0.9	3.0	6.2
Spain	3.3	2.3	0.9	2.5	4.9
Sweden	5.0	2.9	1.8	1.0	3.8
Switzerland	1.1	0.9	1.4	0.4	0.8
UK	3.9	4.2	-1.0	1.1	2.8
USA	1.9	1.9	1.6	2.2	5.5
Euro area	2.0	1.8	1.2	1.9	3.2
OECD	2.4	2.9	3.2	2.4	3.9

Source: OECD

## Use

Producer output prices and consumer prices tend to follow the same path, with producer prices fluctuating more widely. However, producer prices generally increase less rapidly than consumer prices (compare Tables 13.4 and 13.7).

Producer input price indices vary more widely than output prices in response to movements in both commodity prices and exchange rates and are a useful guide to raw materials cost pressures. See the comments on pages 191-2 about the way that pressures feed through the system.

**Seasonal adjustment.** PPIs are rarely seasonally adjusted. Even if they are, the seasonal adjustment can be suspect, especially on the input side, since, for example, exchange rates do not follow a neat seasonal path. Comparisons over 12 months provide a safer guide to trends, while underlying producer price pressures can often be better identified by

examining PPIS excluding items such as food prices, which tend to bump around erratically.

**Detail.** Producer price numbers are usually available at a high level of detail, covering commodity groups (metals, furniture), stages of processing (crude materials, intermediate goods) and industries (farm machinery, capital goods). Watch especially the prices of finished goods in general and of consumer goods.

**Special applications.** PPIS are frequently used as the basis for price indices for inflation accounting and also for contract price adjustments, often in combination with earnings indices.

### Surveys of price expectations

<b>Measures:</b>	Manufacturers' perceptions of inflationary pressures.
<b>Significance:</b>	Excellent anecdotal warning of potential price changes.
<b>Presented as:</b>	Percentage balances (for example, percentage of those expecting to raise prices).
<b>Focus on:</b>	Trend in expectations.
<b>Yardstick:</b>	An increase of a few points over a few months is a warning of inflationary pressures.
<b>Released:</b>	Monthly; not revised.

### Coverage and interpretation

Surveys of price expectations provide excellent inflation indicators usually straight from the horses' mouths. Various organisations conduct monthly or quarterly surveys (see Business conditions, page 110) in which respondents are asked questions such as: "Do you intend to raise your prices within the next four months?" The balance of those answering yes over those saying no is presented as, say, +20% or  $(50 + 20) = 70$ . If a net 20% of respondents expect to lower prices, the balance would be -20% or  $(50 - 20) = 30$ .

The absolute balance may not be a good guide, since there may always be an excess of companies planning price rises even in times of low and stable inflation. As a quick guide, see if the latest numbers are above or below figures for recent months; a change in the trend may suggest a potential increase or decrease in cost pressures. Better still, examine a long run of data so that you can put the latest figure in the context of the economic cycle.

## Wages, earnings and labour costs

- Measures:** Labour costs and influences on consumers' incomes.
- Significance:** Indicator of both cost and demand pressures.
- Presented as:** Usually index form, some figures in cash terms.
- Focus on:** Percentage change over 12 months.
- Yardstick:** Compare with growth of output and consumer prices. In the OECD, compensation per employee in the business sector rose by 3.8% a year during the period 1990–2005, declining from 5.8% in 1990 to 3.3% in 2005.
- Released:** Mainly monthly, at least one month in arrears; revised.

### Terminology

**Wage rates.** Basic pay per period (hour, week, and so on). Manual workers tend to have wages, white collar workers have salaries (are paid monthly).

**Earnings.** Basic pay plus overtime and bonuses. These may be quoted before or after tax and other deductions. Take-home pay is earnings after deductions.

**Wage drift.** The tendency for earnings to rise faster than wage rates, for example, due to overtime and bonuses.

**Labour costs.** Sometimes called total compensation, these are wages and salaries plus pension contributions, payroll taxes such as social security, free meals and a host of other perks. Non-wage costs are 20–50% of labour costs. (See also page 213.)

**The Phillips curve.** In the 1950s a New Zealand economist, A.W. Phillips, identified an apparent trade-off between unemployment and the rate of increase in wages. His curve suggested that low annual increases in wages are associated with a high unemployment rate; or, conversely, high wage inflation is associated with a low unemployment rate. (See Unemployment, page 66.)

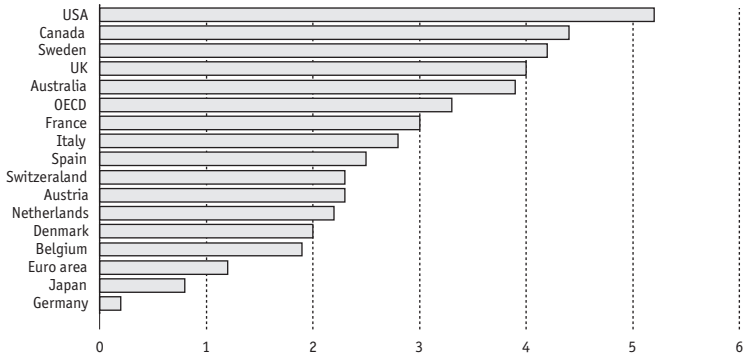
### Key figures

**Cash totals.** Many government and private-sector bodies publish money wage rates and earnings in various industries, sometimes including the cash value of perks such as company cars. The figures are interesting for comparisons between industries, sectors and countries.

## Compensation per employee in the business sector

13.4

% change, 2005



Source: OECD

International comparisons, however, are complicated by differences in coverage, tax regimes and by fluctuations in exchange rates.

**Time series.** Governments also produce indices showing trends in wages and earnings, while various organisations (including those mentioned in Business conditions, page 110) track pay settlements. These are important indicators of both cost pressures and aggregate demand. Personal incomes (see page 86) offer a better guide to potential consumer demand because earnings are usually quoted before tax and other deductions, often cover only part of total employment and may ignore income from self-employment.

At one extreme, American average weekly earnings exclude salary-earners and cover only production and non-supervisory workers. At the other, British average earnings cover both manual and non-manual employees.

### Interpretation

Wages and earnings are closely linked to the economic cycle. When aggregate demand begins to recover after a recession, producers respond first by increasing overtime and earnings rise faster than wage rates. Only when higher demand seems more established do employers take on more workers, which then puts upward pressure on wage rates. When the cycle turns and output begins to decline, overtime is cut first and earnings rise less



Table 13.5 **Hourly earnings in manufacturing**

Annual average % change

	<i>1985-89</i>	<i>1990-94</i>	<i>1995-99</i>	<i>2000-04</i>	<i>2005</i>
Australia	6.1	4.1	4.0	5.0	2.8
Austria	4.4	5.3	3.2	2.5	2.7
Belgium	1.9	3.9	2.3	2.3	2.4
Canada	3.9	4.0	1.7	2.6	1.9
Denmark	6.0	3.6	4.0	3.8	2.7
France	3.8	3.2	2.5	3.6	2.9
Germany	4.0	5.0	2.6	2.1	1.1
Italy	6.9	5.9	3.0	2.4	2.7
Japan	3.3	2.4	1.3	1.0	0.8
Netherlands	1.7	3.2	2.4	3.1	0.9
Spain	8.7	7.6	4.2	4.2	3.5
Sweden	7.9	5.3	4.4	3.1	3.0
UK	8.4	6.7	4.3	3.9	3.6
USA	3.0	3.1	2.9	3.1	2.6
Euro area	4.9	5.0	2.9	2.7	2.1
OECD	na	5.1	4.2	3.5	2.6

Source: OECD

rapidly or fall. Then staff are laid off. The annual increase in wage rates tends to decline as unemployment rises, although usually with a lag.

A change in average earnings can reflect changes in wage rates, total hours, the mix of standard hours and overtime, output (piecework and profit-sharing), and the relative mix of jobs, grades, industry, and so on.

In general, if earnings are rising faster than consumer price inflation, real spending power is growing. It should be noted, however, that earnings data can be distorted by industrial disputes, delays in implementing pay settlements, lump-sum back pay and temporary lay-offs during bad weather.

## Unit labour costs

- Measures:** Labour costs per unit of output.
- Significance:** Indicator of cost pressures and competitiveness.
- Presented as:** Index form.
- Focus on:** Percentage change over 12 months.
- Yardstick:** OECD average unit labour costs in the whole economy rose by 4.5% a year during the period 1990–99 and by 2.2% during the period 2000–05.
- Released:** At least one month after the end of the quarter; frequently revised.

### Significance

Unit labour costs (ULCs) measure the average cost of producing one unit of output; for example, labour costs divided by GDP. This is a key indicator of the cost efficiency of labour. If unit labour costs fall, the same output can be produced for less expenditure on labour.

Unit labour costs reflect two factors, labour costs and productivity.

Table 13.6 **Unit labour costs in the whole economy**

Annual average % change

	1985–89	1990–94	1995–99	2000–04	2005
Australia	5.7	2.1	1.7	2.6	4.9
Austria	2.6	3.5	0.0	0.5	1.2
Belgium	1.4	3.7	1.1	1.9	1.7
Canada	4.1	1.7	0.7	2.0	1.9
Denmark	5.8	0.9	2.2	2.2	0.2
France	2.4	2.4	1.1	1.8	1.6
Germany	1.7	2.8	0.3	0.2	-1.2
Italy	6.2	4.9	1.7	3.1	4.7
Japan	0.3	2.5	-0.5	-1.8	-1.2
Netherlands	0.4	2.3	1.6	3.4	0.5
Spain	7.4	7.0	3.1	3.3	3.1
Sweden	6.8	3.6	1.1	2.6	1.2
Switzerland	3.2	3.6	0.3	1.5	1.0
UK	5.4	3.9	2.9	2.7	3.5
USA	3.1	2.4	2.2	1.9	3.1
Euro area	3.8	4.0	1.2	1.8	1.4
OECD	4.0	5.3	3.8	2.2	2.1

Source: OECD

Britain's rapid increases in unit labour costs in 1989 and 1990 reflected the twin evils of rising wages and falling output, and hence declining productivity.

### **The cycle**

Within the economic cycle, the rate of increase in unit labour costs generally peaks 12–18 months after a peak in activity. When output first begins to fall ULCS rise faster because there is less production for the same spending on labour.

### **Competitiveness**

Relative movements in ULCS are important signals of international competitiveness in traded goods. Businesses in a country where ULCS are rising faster than in other countries might temporarily absorb the pressures by cutting profit margins or improving efficiency.

In the longer term deteriorating competitiveness will reduce exports, output and employment and so eventually tame inflation the hard way. Some economists still advocate devaluation to restore price competitiveness, but experience shows that the initial benefit is quickly eroded by faster inflation.

A fixed exchange rate can impose a useful discipline on pay bargaining.

### **Consumer or retail prices**

- Measures:** Price of a basket of goods and services.
- Significance:** Indicates inflation as experienced by a "typical" household.
- Presented as:** Monthly index numbers.
- Focus on:** Percentage changes.
- Yardstick:** OECD average consumer prices rose by 9.0% a year during the 1980s and by 2.9% during the period 2000–05.
- Released:** Monthly, one month in arrears; quarterly in Australia, New Zealand and Ireland; rarely revised.

### **Composition**

The consumer price index (CPI) is the indicator most people use to track inflation. The index is familiar and readily available, but not necessarily accurate. The European Union's statistical agency, Eurostat, publishes a harmonised index of consumer prices (HICP) for the EU-15, which is equivalent to Britain's CPI. Estimates of HICP for individual member states are also published. The European Central Bank's

inflation target is defined in terms of HICP for the 12 euro area countries.

**Basket contents and weighting.** CPIS measure the cost of a basket of goods and services purchased by the average household each month. The basket's composition and weighting are usually based on surveys of household or family expenditure habits.

Some indices cover "essentials" only. By careful selection a consumer price index can be dominated by subsidised commodities and those subject to official price controls. This is how some developing countries keep down their reported consumer price inflation. Most indices, however, cover a fairly full range of discretionary expenditure. Weights are updated annually in Britain and France, but most countries change their weights only every 5-10 years.

**Price data.** Taxes on expenditure and subsidies are included in CPIS; it would be difficult to exclude them. Other taxes such as those on incomes are excluded, as are savings, life insurance premiums and capital spending.

Prices are usually found by observation, perhaps of over 100,000 items each month. Collection points vary from six state capitals in Australia to over 100 urban centres in France and Germany.

The information is collected by surveys on a particular day so a price change late one month may not be caught in the index until the following month. Indeed, in America, for example, prices of most goods and services other than food and fuel are collected monthly in the five largest geographic areas and every other month in the remaining 80 survey locations. In some other countries major surveys are conducted only every three months.

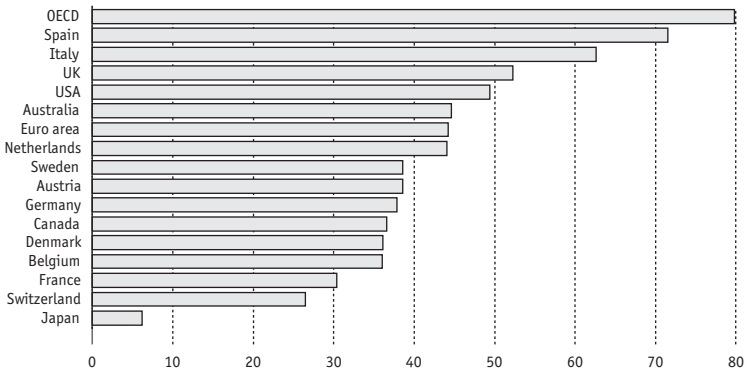
**Housing.** The British Retail Price Index and Canada's index exclude the cost of houses and capital repayments on home loans but include mortgage interest payments. As a result, if interest rates are increased in response to inflationary pressures, the index rises automatically, which is exactly the opposite to the desired and underlying effect. Most other countries use a more satisfactory rental equivalent for measuring housing costs.

### **Variations**

Many countries produce more than one CPI. America has two main

**Changes in consumer prices**

% increase, 1990–2005



Source: OECD

indices: the CPI-U for urban consumers (about 87% of the population) and the CPI-W for wage earners (32% of the population).

As well as the headline index, CPI, which excludes most housing costs, Britain also publishes an index excluding mortgage-interest payments (RPIX) and an index excluding mortgage-interest payments and indirect taxes (RPIY). The Bank of England's inflation target is now defined in terms of the CPI. If mortgage payments were included in the target, then interest rate increases would have the perverse effect of increasing the target measure of inflation.

**Use and abuse**

CPIS are the most timely and best understood inflation indicators. They are often used in setting wage demands and in determining index-linked pay, pension or social welfare payments. They are also used to convert wages and prices of consumer goods (including capital items such as houses) into "real" terms.

Consumer expenditure and GDP deflators are often better guides to inflation, but usually they are not available quickly enough.

**Interpretation**

Getting at the underlying rate of inflation may not be easy. CPIS are generally not seasonally adjusted and the necessary 12-month comparison is slow to highlight changes in trends. Looking at movements over the

**Table 13.7 Consumer prices**  
Annual average % change

	<i>1985–89</i>	<i>1990–94</i>	<i>1995–99</i>	<i>2000–04</i>	<i>2005</i>
Australia	7.8	3.0	2.0	3.4	2.7
Austria	2.2	3.2	1.2	1.8	2.1
Belgium	2.4	2.9	1.3	2.0	2.5
Canada	4.3	2.8	1.6	2.4	2.2
Denmark	4.3	2.1	2.1	2.2	1.8
France	3.6	2.6	1.3	2.0	1.9
Germany	1.2	3.8	1.3	1.5	1.9
Italy	6.2	5.3	3.0	2.5	2.2
Japan	1.1	2.0	0.4	-0.5	-0.3
Netherlands	0.7	2.5	1.7	3.0	1.5
Spain	6.9	5.6	2.8	3.2	3.4
Sweden	5.6	5.8	0.8	1.6	0.5
Switzerland	2.1	3.9	0.8	0.9	1.2
UK	5.3	5.8	2.0	1.2	2.0
USA	3.6	3.6	2.4	2.5	3.4
Euro area	3.3	4.3	1.9	2.2	2.2
OECD	7.3	5.4	4.5	2.9	2.6

Source: OECD

latest few months can be misleading because of erratic and distorting factors such as seasonal variations in food prices, annual price-cutting sales promotions, one-off changes in the rate of sales tax and erratic bumps in oil prices.

It is almost always necessary to make adjustments to highlight the “core” rate of inflation. Many statistical agencies produce helpful sub-indices, usually excluding food and energy prices.

## Consumer or private expenditure deflators

- Measures:** Price changes affecting total consumers' expenditure.
- Significance:** A broad indicator of consumer price inflation which is less susceptible to fiddling than consumer price indices.
- Presented as:** Quarterly and annual index numbers.
- Focus on:** Percentage changes.
- Yardstick:** OECD average consumer expenditure deflators rose by 3.8% a year during the period 1990–2001, declining from 6.5% in 1990 to 2.0% in 2005.
- Released:** Quarterly, at least one month in arrears; frequently revised.

### Advantages

Consumer expenditure or private consumption deflators are derived from current and constant price estimates of total consumer expenditure. This reflects actual spending, which is arguably better than the consumer prices basket approach of outlays by an average family. It also

Table 13.8 **Consumer spending deflators**

Annual average % change

	1985–89	1990–94	1995–99	2000–04	2005
Australia	7.3	3.2	1.6	2.5	1.7
Austria	2.1	3.3	1.3	1.7	1.9
Belgium	2.8	2.8	1.2	2.2	2.8
Canada	4.1	2.8	1.5	1.8	1.6
Denmark	4.1	2.1	1.7	2.1	2.0
France	3.8	2.5	0.8	1.6	1.2
Germany	1.1	3.3	0.9	1.4	1.3
Italy	6.2	5.8	3.2	2.9	2.3
Japan	1.1	1.3	0.1	-1.0	-0.8
Netherlands	0.9	2.7	1.8	2.8	1.7
Spain	6.9	5.9	3.0	3.2	3.5
Sweden	5.7	6.1	1.5	1.6	1.0
Switzerland	1.5	3.7	0.5	0.9	1.7
UK	5.1	5.1	2.7	1.6	2.0
USA	3.6	3.1	1.7	2.1	2.8
Euro area	4.0	4.2	1.7	2.1	1.9
OECD	6.9	5.3	4.0	2.5	2.0

Source: OECD

avoids a selective approach when specifying what goes in the basket.

In addition, consumer prices data are collected at one point each month, while deflators relate to averages over the period, usually three months at a time. The deflators normally include an imputed figure for house rents, which is less distorting than the interest-rate approach used for the British RPI and the Canadian CPI.

### Problems

Deflators are not available as rapidly as consumer price indices and the deflators are revised more often. Movements in implicit price deflators reflect changes in the composition of consumers' expenditure as well as changes in prices (fixed-weight deflators avoid this problem). The personal sector is broader than households; it often also covers unincorporated businesses (such as farms, pension funds and trusts) and private non-profit bodies (such as charities and trade unions).

### Bottom line

Consumer expenditure deflators should be used with care. They usually provide a valuable alternative to consumer price indices. If nothing else, they are a useful check on the signals from other inflation indices.

### GDP deflators

**Measures:** Overall national price changes.

**Significance:** Broadest indicator of inflation.

**Presented as:** Quarterly and annual index numbers.

**Focus on:** Percentage changes.

**Yardstick:** OECD average GDP deflators rose by 8.0% a year during the 1980s and by 2.5% a year during the period 2000–05.

**Released:** Quarterly, at least one month in arrears; frequently revised.

### Definition

Deflators measure the difference between current and constant price GDP and its components. For example, if GDP increases by 2% in real terms and 5% in nominal terms, the implied economy-wide rate of inflation is 3%.

Deflators can be found at any level of detail from one component of consumer spending or business investment right up to total GDP (see Table 13.1). They are not always published, but they can be readily calculated in index form if current and constant price data are available: for each period divide the current by the constant price data and multiply by 100.

Unless otherwise stated, most deflators are implicit price deflators.



Table 13.9 **GDP deflators**

Annual average % change

	<i>1985–89</i>	<i>1990–94</i>	<i>1995–99</i>	<i>2000–04</i>	<i>2005</i>
Australia	7.1	2.1	1.2	3.4	4.5
Austria	2.4	3.2	0.7	1.6	2.1
Belgium	3.2	3.0	1.1	1.9	2.2
Canada	4.0	2.0	1.3	2.5	3.1
Denmark	4.4	2.1	1.6	2.4	2.6
France	4.0	2.2	1.0	1.7	1.3
Germany	2.2	3.6	0.7	0.8	0.5
Italy	7.3	5.5	3.3	2.9	2.1
Japan	1.3	1.4	-0.4	-1.4	-1.3
Netherlands	0.7	2.3	1.7	3.3	1.6
Spain	7.4	5.9	3.2	4.0	4.4
Sweden	6.4	4.8	1.5	1.6	1.2
Switzerland	2.8	3.2	0.2	1.0	0.6
UK	5.6	4.4	2.8	2.3	2.0
USA	3.1	2.8	1.6	2.2	2.8
Euro area	4.7	4.0	1.7	2.0	1.7
OECD	6.9	5.0	3.8	2.6	2.0

Source: OECD

These measure changes in the composition of GDP as well as changes in price. Fixed-weight indicators show changes in price only (see page 190).

## Use

Deflators are valuable for identifying trends and obtaining advance warning of price changes in many areas.

The consumer expenditure deflator is an important alternative to the consumer prices index (see pages 218–19). The overall GDP deflator (also known as the index of total home costs per unit of home output) is the best indicator of overall economy-wide inflation.

Since deflators cover many items and price movements self-cancel to some extent, deflators do not fluctuate as much as narrower indices such as those covering consumer prices or producer prices.

## Appendix Useful websites

Here is a list of some useful websites for official statistics.

### **International organisations**

#### **OECD**

[www.oecd.org](http://www.oecd.org)

#### **IMF**

[www.imf.org](http://www.imf.org)

#### **United Nations**

[www.un.org](http://www.un.org)

United Nations Population Fund

[www.unfpa.org](http://www.unfpa.org)

#### **European Union**

Eurostat

[ec.europa.eu/eurostat](http://ec.europa.eu/eurostat) or [epp.eurostat.ec.europa.eu/pls/portal](http://epp.eurostat.ec.europa.eu/pls/portal)

European Central Bank

[www.ecb.int](http://www.ecb.int)

#### **World Bank**

[www.worldbank.org](http://www.worldbank.org)

### **National statistical offices/central banks**

#### **Australia**

Bureau of Statistics

[www.abs.gov.au](http://www.abs.gov.au)

Reserve Bank

[www.rba.gov.au](http://www.rba.gov.au)

#### **Austria**

Statistik Austria

[www.statistik.at](http://www.statistik.at)

National Bank

[www.oenb.at](http://www.oenb.at)

### **Belgium**

National Institute of Statistics

[www.statbel.fgov.be](http://www.statbel.fgov.be)

National Bank

[www.nbb.be](http://www.nbb.be)

### **Canada**

Statistics Canada

[www.statcan.ca](http://www.statcan.ca)

Bank of Canada

[www.bank-banque-canada.ca](http://www.bank-banque-canada.ca)

### **Denmark**

Statistics Denmark

[www.dst.dk](http://www.dst.dk)

[www.statbank.dk](http://www.statbank.dk)

National Bank of Denmark

[www.nationalbanken.dk](http://www.nationalbanken.dk)

### **France**

INSEE

[www.insee.fr](http://www.insee.fr)

Bank of France

[www.banque-france.fr](http://www.banque-france.fr)

### **Germany**

Federal Statistical Office

[www.destatis.de](http://www.destatis.de)

Bundesbank

[www.bundesbank.de](http://www.bundesbank.de)

### **Italy**

ISTAT

[www.istat.it](http://www.istat.it)

Bank of Italy

[www.bancaditalia.it](http://www.bancaditalia.it)

**Japan**

Bureau of Statistics

[www.stat.go.jp/english/index.htm](http://www.stat.go.jp/english/index.htm)

Bank of Japan

[www.boj.or.jp/en/index.htm](http://www.boj.or.jp/en/index.htm)

**Netherlands**

Statistics Bureau

[www.cbs.nl](http://www.cbs.nl)

Netherlands Bank

[www.dnb.nl](http://www.dnb.nl)

**Spain**

National Statistics Institute

[www.ine.es](http://www.ine.es)

Bank of Spain

[www.bde.es](http://www.bde.es)

**Sweden**

Statistics Sweden

[www.scb.se](http://www.scb.se)

Bank of Sweden

[www.riksbank.se](http://www.riksbank.se)

**Switzerland**

Federal Statistical Office

[www.bfs.admin.ch](http://www.bfs.admin.ch)

Swiss National Bank

[www.snb.ch](http://www.snb.ch)

**UK**

National Statistics

[www.statistics.gov.uk](http://www.statistics.gov.uk)

Bank of England

[www.bankofengland.co.uk](http://www.bankofengland.co.uk)

## **USA**

FedStats (links to other federal government statistics in the USA)

[www.fedstats.gov](http://www.fedstats.gov)

Commerce Department, Bureau of Economic Analysis, US Census  
Bureau

[www.economicindicators.gov](http://www.economicindicators.gov)

[www.bea.gov](http://www.bea.gov)

Treasury

[www.ustreas.gov](http://www.ustreas.gov)

Federal Reserve

[www.federalreserve.gov](http://www.federalreserve.gov)

## **Links to statistical offices**

United Nations

[unstats.un.org/unsd/methods/inter-natlinks/sd\\_natstat.htm](http://unstats.un.org/unsd/methods/inter-natlinks/sd_natstat.htm)

Harvard University, Center for International Development

[www.cid.harvard.edu/ciddata/offices.html](http://www.cid.harvard.edu/ciddata/offices.html)

## **Links to central banks**

Bank for International Settlements

[www.bis.org/chanks.htm](http://www.bis.org/chanks.htm)

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