

1988/1989

# OECD ECONOMIC SURVEYS

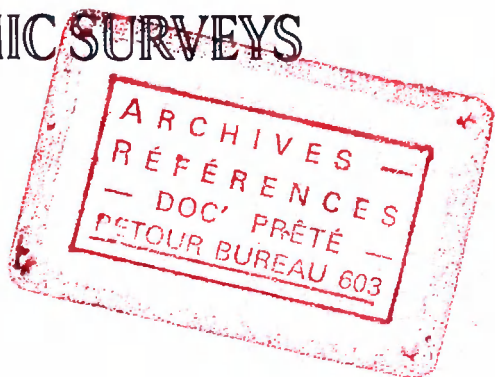
**BELGIUM  
LUXEMBOURG**

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ECONOMIC SURVEYS



**BELGIUM**  
**LUXEMBOURG**

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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### **LUXEMBOURG**

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## BASIC STATISTICS BELGIUM

### THE LAND

Area (1 000 sq. km)	30.5	Main urban areas (1-1-1987) inhabitants:	
Agricultural area (1 000 sq. km) 1986	13.8	Brussels	973 499
Tillage (1 000 sq. km) 1986	7.2	Antwerp	919 453
		Liège	591 467
		Ghent	484 857

### THE PEOPLE

Population (1-1-1987), thousands	9 865	Total labour force (1986, thousands)	4 212
Number of inhabitants per sq. km	323.2	Total dependant employment	3 043
Population, net natural increase in 1986	5 600	Agriculture	13
Net migration (1986)	256	Manufacturing and construction	952
		Other	2 079

### PRODUCTION

Gross national product (1987), billions of Belgian francs	5 323.0	Gross national product by origin, at market prices (1986)	%
Gross national product per head (1987) US \$	14 449	Agriculture	2.2
Gross fixed investment:		Industry	26.8
Per cent of GNP (1987)	15.9	Construction	5.1
Per head (1987) US \$	2 301	Other	65.9

### THE GOVERNMENT

Current government expenditure on goods and services (1987), percentage of GNP	50.6	Composition of the House of Representatives:	%
Current government revenue (1987) per cent of GNP	45.4	Socialists	34
Government debt, 31-12-1988, billions of Belgian francs	6 990	Christian-Socials	29
		Liberals	23
		Volkunie	7
		Others	7
		Last elections : 13.12.1987	

### FOREIGN TRADE

Exports:		Imports:	
Main exports in 1987 per cent of total exports, SITC (BLEU):		Main imports in 1987, per cent of total imports, SITC (BLEU):	
Iron and steel products (67 + 68)	12.6	Iron and steel products (67 + 68)	6.2
Chemical products (5)	15.5	Chemical products (5)	12.0
Machinery and apparatus (71 to 77)	14.2	Machinery and apparatus (71 to 77)	17.1
Textile products (65)	7.0	Textile products (65)	3.7
Transport equipment (78 + 79)	19.1	Transport equipment (78 + 79)	16.6
		Energy (3)	10.7

### THE CURRENCY

Monetary unit: Belgian franc	Currency units per US \$, average of daily figures:	
	Year 1988	36.7718
	June 1989	41.4738

*Note:* An international comparison of certain basic statistics is given in an annex table.

## BASIC STATISTICS LUXEMBOURG

### THE LAND

Area (sq. km)	2 586	Major city, inhabitants:	
Agriculture area, 1987 (sq. km)	1 266	Luxembourg (April 1986)	86 200
Woodland, 1987 (sq. km)	886		

### THE PEOPLE

Population (1-1-1988)	372 100	Total employment (1987, thousands)	169.6
Number of inhabitants per sq. km	144	Agriculture	6.1
Population, net natural increase in 1987	226	Industry	55.0
Net migration 1987	2 374	Services	108.6
		Dependent employees	151.4
		Employers, self-employed persons and domestic help	18.2

### PRODUCTION

Gross domestic product (1987), billions of francs	223.5	Gross domestic product by origin, at	
Gross domestic product per head, US \$ (1987)	16 084	market prices (1986):	%
Gross fixed investment:		Agriculture	2.6
Per cent of GDP (1987)	22.6	Industry, energy	29.6
Per head, US \$ (1987)	3 631	Construction	5.6
		Other	62.2

### THE GOVERNMENT

Public consumption (1987), per cent of GDP	16.7	Composition of the Chamber:	
Current government revenue (general government) (1987), per cent of GDP	38.6	Christian Social Party	36.7
Central government debt, per cent of GDP (December 31st, 1987)	8.6	Workers Socialist Party	30.0
		Democratic Party	18.3
		Cinq-sixième Party	6.7
		GLEI (Greens)	3.3
		GAT (Greens)	3.3
		Communist Party	1.7
		Last election: 18-6-1989	

### THE CURRENCY

Monetary unit: Luxembourg franc	Currency units per US \$, average of daily figures:
	Year 1988
	June 1989
	36.7718
	41.4738

*Note:* An international comparison of certain basic statistics is given in an annex table.

*This Survey is based on the Secretariat's study prepared for the annual review of Belgium and Luxembourg by the Economic and Development Review Committee on 3rd July 1989.*

*After revisions in the light of discussions during the review, final approval of the Survey for publication was given by the Committee on 21st July 1989.*

*The previous survey of Belgium and Luxembourg was issued in February 1988.*

## LUXEMBOURG

### **Introduction**

After the restructuring and diversification policy pursued by the authorities since the early 1970s succeeded in offsetting the effects of the steel and oil crises between 1973 and 1984, thereafter the Luxembourg economy began to recover the vitality it had previously lost. In contrast to the trend observed over the period 1974-1983, the past few years have seen faster GDP growth on average than in the other EC countries. Robust employment growth has helped to maintain the unemployment rate at a low level. Inflation outcomes have been among the best in the OECD. The current account has continued to show a substantial surplus. Despite significant tax reductions, a budget surplus has persisted. The first part of the Survey briefly retraces the progress achieved in the past few years. The second describes the main features of budgetary policy, analyses recent trends and outlines short-term prospects. The expanded role of Luxembourg's financial sector and the outlook for its development are examined in the third section.

# I. Improved economic performance

## The steel situation

The iron and steel industry still accounts for almost 7 per cent of total employment in the Luxembourg economy and over 8 per cent of total value added. While 1987 was a difficult year, with crude steel production down by nearly 11 per cent, the situation improved in 1988. In response to a brisk recovery in world steel

Table 1. Trend and structure of value added<sup>1</sup>

	Sectoral structure of value added as a percentage of total				Sectoral trend of value added Average annual growth rate		
	1970	1974	1983	1987	1970-1974	1974-1983	1983-1987
Agriculture	3.9	2.7	2.6	2.3	-2.9	1.3	1.3
Industry	37.9	36.8	29.0	29.4	5.5	-1.0	4.7
<i>of which:</i>							
Steel	19.1	17.5	9.0	8.4	3.9	-5.5	2.6
Other	18.8	19.3	20.0	21.0	7.1	2.1	5.7
Construction	7.9	8.8	6.6	6.2	9.3	-1.5	2.8
Market services	36.1	39.5	49.3	49.7	8.8	4.2	4.6
<i>of which:</i>							
Financial institutions	3.4	6.7	12.7	14.3	25.7	9.1	7.6
Other	32.6	32.7	36.6	35.4	6.5	2.9	3.6
Non-market services	14.6	12.7	13.0	12.3	2.7	2.4	3.0
Total	100	100	100	100	6.3	1.7	4.4
GDP (national definition)					6.3	1.8	4.4
GDP (SEC)					5.5	1.1	4.2
<i>Memorandum item:</i>							
Average GDP of EEC countries					3.9	1.8	2.6

1. At 1980 prices.

Source: STATEC.

demand<sup>1</sup>, output in Luxembourg increased by 11 per cent, bringing it back to its 1986 level. This performance was reflected in the excellent financial results of ARBED, the country's leading steel group, whose cash flow rose from LF 2.4 billion in 1987 to LF 6 billion in 1988. It was able to improve its financial position by reducing its level of indebtedness such that its debt/equity ratio is now below unity. All in all, after a loss of LF 2.2 billion in 1987, group profits registered LF 2.3 billion in 1988. The business climate has continued to be favourable in the first half of 1989, and the recent trend in new orders suggests that demand will remain firm in the short term. In the longer run, however, the growth prospects of the international steel market, and particularly the European market, are tinged with uncertainty, owing to excess capacity and stiffer competition from the newly industrialising economies. The decision to embark on a modernisation programme involving proposed investment of LF 13 billion in this sector, starting in 1989, would thus seem a wise strategy. By diversifying into new activities<sup>2</sup>, the ARBED group ought to be less sensitive to the cyclical vagaries of the steel sector.

## **Macroeconomic developments**

Growth of total domestic employment has gained considerable momentum, rising from an average of 0.5 per cent a year between 1980 and 1984 to 2.5 per cent between 1984 and 1988. Almost 16 000 jobs, for the most part in dependent employment, were created in the last four years, equivalent to almost 10 per cent of the resident labour force (Table 2). The expansion in numbers employed was particularly marked in the "credit and insurance" sector (averaging nearly 8.5 per cent a year). The financial sector alone accounted for around 25 per cent of jobs created over the period, not including those indirectly induced by its growth. Despite strong labour-force growth (1.1 per cent per year or around 7 000 persons in the four years), the Luxembourg business sector had to call increasingly on cross-border workers, whose numbers rose by 9 000 in the space of four years (an annual average of 12.5 per cent). In 1988 they accounted for close to 14 per cent of total domestic employment. Because of the steep rise in job creation, the unemployment rate, already low compared with the average for the other European countries, declined slightly, from 1.8 per cent in 1984 to 1.6 per cent in 1988.

After declines between 1982 and 1985, overall real wages per employee have rebounded again since 1986. This has been due to a number of factors. Because of the improvement in the business climate, substantial real wage increases were awarded under collective agreements in such sectors as banking and insurance; payment of an

Table 2. Labour market

Thousands

	1970	1975	1980	1981	1982	1983	1984	1985	1986	1987	1988
	Yearly average										
1. Domestic employment	140.2	157.5	158.2	158.7	158.3	157.8	158.7	160.9	165.1	169.6	174.9
Dependent workers	112.6	132.8	137.0	138.7	138.7	138.4	139.5	142.1	146.6	151.4	156.8
Self-employed and family workers	27.6	24.7	21.2	20.0	19.6	19.4	19.2	18.8	18.5	18.2	18.1
2. Net border workers	4.4	7.5	6.8	6.7	6.7	7.0	7.2	8.2	10.3	13.0	16.2
Foreign border workers working in Luxembourg	7.7	12.5	13.4	13.8	14.1	14.5	14.9	16.1	18.2	20.9	24.3
Luxembourg border workers working abroad	(- )0.5	(- )0.5	(- )0.5	(- )0.5	(- )0.5	(- )0.5	(- )0.5	(- )0.5	(- )0.5	(- )0.5	(- )0.5
Luxembourg international civil servants and other international organisations staff	(- )2.8	(- )4.5	(- )6.1	(- )6.6	(- )6.9	(- )7.0	(- )7.2	(- )7.4	(- )7.4	(- )7.4	(- )7.6
3. National employment (1) - (2)	135.8	150.0	151.4	152.0	151.6	150.8	151.5	152.7	154.8	156.6	158.7
4. Unemployed	—	0.1	1.1	1.6	2.0	2.5	2.7	2.6	2.3	2.7	2.5
5. Labour force (3) + (4)	135.8	150.1	152.5	153.6	153.6	153.3	154.2	155.3	157.1	159.3	161.2
6. Unemployment rate (4/5)	0.0	0.0	1.0	1.3	1.6	1.8	1.8	1.7	1.5	1.7	1.6

Source: STATEC, *Quarterly Bulletin*.

advance instalment was also reintroduced into the indexation system that year<sup>3</sup>; civil service pay was uprated and the minimum social wage increased. But the sectoral data available suggest that wage growth was uneven, particularly within industry. Nominal compensation per employee in the iron and steel industry does not appear to have increased between October 1985 and April 1987, although in the other industrial sectors it rose by 7 per cent. After the excellent performance of the iron and steel industry in 1988, however, some catch-up did occur. The inflation deceleration observed since 1982 was helped along from 1986 on by import-price movements, in particular the decline in energy prices. The price index for domestically-produced goods, which broadly reflects that for services, experienced faster growth than the overall index. All told, the Grand Duchy's inflation performance was among the best in the OECD area.

Table 3. Wage and price developments

	Percentage change						
	1982	1983	1984	1985	1986	1987 <sup>2</sup>	1988 <sup>2</sup>
Compensation paid by resident employers <sup>1</sup>	6.9	6.6	8.0	5.4	8.5	7.3	7.9
Domestic dependent employment	0	-0.2	1.0	1.9	3.2	3.3	2.5
Per capita compensation	6.9	6.8	7.0	3.5	5.2	3.9	5.4
Consumer price index	9.4	8.7	5.6	4.1	0.3	-0.1	1.4
Real per capita compensation	-2.3	-1.7	1.4	-0.6	4.9	4.0	4.0

1. Compensation of resident and non-resident employees paid by resident employers, including pensions paid to civil servants, excluding international civil servants.  
2. Estimates.  
Source: STATEC.

In the early 1970s steel products accounted for the largest share in exports of goods and services (with almost 50 per cent of the total), and the trade balance showed a sizeable surplus. But in 1975 it began to move into deficit, as oil prices rose and the prices of steel products plummeted. However, despite this, the Grand Duchy's growing popularity as an international financial centre kept the current account in surplus. In 1987 investment income accounted for around 70 per cent of goods and services exports, producing a surplus on that account of LF 40 billion, or over 15 per cent of GDP (Table 4). The steep growth of receipts from banking services as a result of the expansion in the private banking business also boosted the surplus on services



**Table 4. Luxembourg's current payments balance**

LF billion

	1970	1975	1980	1985	1986	1987	1988 <sup>1</sup>
Exports of goods	42.5	65.3	87.9	168.1	166.2	163.3	186.4
Imports of goods	38.2	69.2	105.6	186.7	188.1	195.6	214.7
Trade balance	4.3	-3.9	-17.7	-18.6	-21.9	-32.3	-28.3
Exports of services	18.7	95.3	376.8	622.4	574.7	584.9	615.0
<i>of which:</i>							
Factor income	12.8	81.0	348.1	568.7	516.0	523.4	550.0
Services excluding factor income	5.9	14.3	28.7	53.3	58.7	61.5	65.0
Imports of services	15.2	81.0	339.8	554.8	506.0	513.8	543.0
<i>of which:</i>							
Factor income	11.5	73.4	326.3	529.6	478.2	483.6	510.0
Services excluding factor income	3.7	7.6	13.5	25.2	27.8	30.2	33.0
Balance on services	3.5	14.3	37.0	67.2	68.7	71.1	72.0
<i>of which:</i>							
Factor income	1.3	7.6	21.8	30.1	37.8	39.8	40.0
Services excluding factor income	2.2	6.7	15.2	28.1	30.9	31.3	32.0
Private and public transfers, net	-0.5	-0.7	-1.8	-3.8	-3.5	-4.5	-5.0
Current balance	7.3	9.7	17.5	44.8	43.3	34.3	38.7

1. Estimates.

Source: STATEC.

excluding factor incomes. In all, the balance on services account amounted to LF 71 billion in 1987, approximately double the current payments surplus, estimated at 15 per cent of GDP.

## II. Economic policy, recent trends and short term prospects

### Fiscal policy

With the improvement in the business climate that began in 1984 and lower exceptional spending on restructuring and modernising the iron and steel sector, the government was freer to act on the fiscal-policy front. After beginning by replenishing its reserves<sup>4</sup>, from 1986 onwards the government pursued a more expansionary policy, while taking care not to compromise budgetary equilibrium. It introduced substantial tax relief<sup>5</sup>, totalling LF 9.9 billion over the period 1985-1988 or around 4.2 per cent of GDP (European System of Integrated Economic Accounts), with two-thirds going to households and one-third to the corporate sector. These measures altered the composition of tax revenues by increasing the share of indirect taxes. Over the period 1980-1987, the share of indirect taxes in total government tax receipts rose from 32 to 36 per cent. Despite the rise in transfer payments (as a result, *inter alia*, of the introduction of a minimum guaranteed income in 1986), higher public investment and higher civil service pay, the share of government expenditure in GDP remained more or less unchanged at around 38 per cent. Altogether, the budget has continued to show a surplus. Although the budgets adopted in 1987 and 1988 foresaw slight deficits, the additional non-budgeted tax revenues resulting from the improvement in the business climate enabled the authorities to pursue a policy of reducing government debt, while still achieving a surplus<sup>6</sup>. Under the effect of curbs on new loan issues and the accelerated amortisation of past loans, the State's gross debt, which was 9.5 per cent of GDP in 1984, was probably down to under 7 per cent in 1988.

The broad fiscal-policy thrust of recent years has been maintained for 1989. The budget again included a substantial tax-relief package, including increases in personal income tax brackets and a further reduction in corporation tax. The latter has been brought down in stages from 40 per cent in 1986 to 34 per cent in 1989.

**Table 5. Central government budget**

LF billion

	1987 Outturn	1988 Budget voted	1988 Provisional outturn <sup>1</sup>	1989 Budget voted
<b>Ordinary budget</b>				
Receipts	85.9	84.4	92.5	89.4
Expenditure	74.7	77.3	81.9	80.7
Balance	11.2	7.1	10.6	8.7
<b>Extraordinary budget</b>				
Receipts	0.4	0.6	0.1	0.1
Expenditure	11.5	8.2	10.6	8.2
Balance	-11.1	-7.5	-10.5	-8.0
<b>Total budget</b>	<b>0.1</b>	<b>-0.4</b>	<b>0.1</b>	<b>0.7</b>

1. After appropriations resulting from unexpected gains in receipts.

Source: Ministry of Finance.

Taken together, these measures are expected to reduce taxes by some LF 1.7 billion, or 0.5 per cent of GDP. Expenditure, on the other hand, should overshoot the budget target by LF 1.5 billion. This is due to the trend in ordinary expenditure which has been pushed up by the rise in civil service pay and pensions as well as in social-assistance transfers. Extraordinary expenditure, i.e. expenditure to finance public infrastructure investment, has been maintained in the 1989 budget at its level voted in the 1988 budget (Table 5). Despite the new tax-relief measures and expenditure increases, the budget balance is expected to remain positive, because of the buoyancy of economic growth. So the process of public debt reduction ought to continue.

### Recent trends and short-term prospects

The Luxembourg economy displayed great vigour in 1988, with GDP growth exceeding 5 per cent<sup>7</sup>, mainly under the impetus of foreign demand. The rise in orders for Luxembourg steel products led to a surge in exports. This favourable trend would seem to have carried through to the early months of 1989. Private consumption growth remained brisk, boosted by the tax-relief measures and higher real wages. Despite a decline in gross fixed capital formation in industry due to the completion of certain projects, particularly in the chemical sector, total investment continued to

rise, owing to higher capital expenditure in the services and construction sectors. As in 1987, inventory building also helped to stimulate activity. The first few months of 1989 suggest that, along with its main neighbours, Luxembourg has been experiencing a slight resurgence of inflationary pressures, mainly as a result of the rise in the prices of oil products, some food items and services such as medical care and medicines. Thanks to the pick-up in the iron and steel industry, the trade deficit, which had widened quite substantially in 1987, narrowed by LF 4 billion in 1988 according to first estimates (Table 4). The services surplus was helped by a continuing expansion of activity in this sector. All told, the current payments surplus, slightly down between 1986 and 1987, probably widened in 1988.

In the wake of outstanding performance in 1988, the outlook for the Luxembourg economy remains good, although less brilliant, reflecting some slowdown in manufacturing activity due to a progressive deceleration in export growth in the wake of a slightly less buoyant international climate. Growth of the financial sector should however continue to prove robust. Private consumption should grow at a fast pace, thanks not only to the cuts in personal income tax, but also to the wage increases awarded in 1988 and at the beginning of 1989. Investment growth, especially in industry, could accelerate slightly in 1989. Stockbuilding is not expected to contribute positively to real growth, and the external contribution ought to decline. All in all, GDP growth could be maintained at around 3½ per cent in 1989,

Table 6. Short-term prospects<sup>1</sup>

	1987 current prices		Annual change (volume)			
	LF billion	As % of GDP	1987	1988	1989	1990
Private consumption	132.2	59.1	3.1	3.2	3.4	3.1
Public consumption	37.3	16.7	3.6	2.5	1.5	1.5
Gross fixed capital formation	50.5	22.6	5.2	3.0	4.0	3.2
Final domestic demand	219.9	98.4	3.7	3.1	3.2	2.9
Change in stockbuilding <sup>2</sup>	2.2 <sup>3</sup>	1.0	3.6	1.1	0.0	0.0
Total domestic demand	222.1	99.3	7.5	4.0	3.0	2.7
Change in foreign balance <sup>2</sup>	1.5 <sup>3</sup>	0.7	-4.2	1.3	0.5	0.2
Exports of goods and services	225.2	100.7	4.6	7.9	5.5	4.4
Imports of goods and services	223.7	100.0	9.5	6.9	5.3	4.5
GDP	223.6	100.0	2.7	5.2	3.4	2.7
Unemployment rate			1.6	1.4	1.4	1.4
Private consumption deflator			2.9	1.4	2.8	2.4
GDP deflator			-1.1	1.8	2.5	2.4

1. SNA definitions.

2. As a percentage of GDP in previous period.

3. Actual amount of stockbuilding and foreign balance.

Source: OECD, *Economic Outlook*, No. 45, 1989.

decelerating slightly to  $2\frac{3}{4}$  per cent in 1990. Despite a certain slackening in line with activity, employment growth could still be relatively brisk, and the unemployment rate could stay at its low level of 1988. While inflation will clearly accelerate in 1989, the increase would appear unlikely to exceed that experienced by Luxembourg's main trading partners.

### **III. Luxembourg's financial markets: developments and outlook**

#### **Organisation of Luxembourg's financial markets**

##### *Institutional features*

A number of factors have played a part in shaping the organisation and structure of Luxembourg's financial markets. The more important of these are the small size of the domestic market, the oft-repeated determination of the authorities to open up the economy; the Grand Duchy's social and political stability; its central geographical position within the European Community; the presence of several EEC institutions; and, finally, such special features as a multilingual population. Luxembourg is indeed highly exposed to the outside world. In the field of finance, one of the most noteworthy aspects of this openness is its monetary association with Belgium in the framework of the Belgian-Luxembourg Economic Union (BLEU). The protocol between the two states makes Belgian banknotes legal tender and redeemable in the Grand Duchy (though not the reverse). It also provides for monitoring of the issue of notes and coinage by Luxembourg<sup>8</sup>. The protocol stipulates that exchange rates *vis-à-vis* third countries are to be set by mutual agreement, but does not formally establish any equivalence between the two currencies. While, in theory, Belgian and Luxembourg francs may differ in value, this has in fact only happened during the crisis of the 1930s. Responsibility for implementing the exchange-rate policy adopted in the framework of the Belgian-Luxembourg monetary association lies with the Institut belgo-luxembourgeois de change (IBLC) which supervises the application of the foreign-exchange regulations. Responsibility for intervention on the foreign-exchange market in line with EMS mechanisms lies with the Banque Nationale de Belgique. The existence of a two-tier foreign-exchange market since 1955, a regulated market for commercial transactions and services and a free market for all other capital transactions, serves to avoid, at times of exchange rate pressure,

recourse to stringent controls on capital flows; such restrictions would be contrary to Luxembourg's traditionally very liberal policy with respect to capital movements. However, in agreement with the Belgian authorities, the Grand Duchy has undertaken, in the context of the effective implementation of the European Directive on the liberalisation of capital movements and in the framework of the strengthening of the European Monetary System, to phase out the two-tier foreign exchange market by 31st December 1992. Maintenance of a strong-currency policy within the EMS since the 1982 devaluation has subsequently prevented the emergence of large differentials between the two rates<sup>9</sup>.

Another feature of Luxembourg's financial market is that the country does not have a central bank as such or an independent monetary policy that constrains the banking system. The Institut Monétaire Luxembourgeois (IML), created in 1983, nonetheless has some of the attributes of a bank of banks. Its task is to put out monetary signals, to see to the smooth working of the financial market, to help keep the value of the currency stable and to fulfil commitments and exercise rights resulting from existing international agreements (within the IMF, for instance) or any future agreements (particularly should European monetary integration become a reality). The IML is not, however, a central bank in the true sense of the term, since it does not, in practice, control the growth of credit by way of an organised money market or by tightly regulating money supply (through credit controls or compulsory reserve requirements). While not putting into question the agreements resulting from the BLEU, Luxembourg has nonetheless created an institution and regulatory framework that would allow it to pursue, if need be, an independent monetary policy<sup>10</sup> with a view to ensuring economic and monetary stability.

### *The dominance of the international financial market over the domestic market*

The small size of the domestic financial market is due not only to the small size of the country, but also to the very low level of gross public debt as a result of rigorous management of the public finances. An examination of the structure of the Luxembourg financial market reveals the preponderance of international activity over domestic market activity. In 1987, for instance, foreign currencies accounted for nearly 90 per cent of lending institutions' balance sheets (Table 7, bottom line). Furthermore, the high proportion of European currencies (the Deutschmark, Swiss franc and ECU) in the total, as well as the heavy concentration of Euro-liabilities and Euro-assets on Western European lenders are evidence of the marked specialisation of the Luxembourg market. The geographic origins of lending institutions established

**Table 7. The position of Luxembourg banks on Euromarkets compared with that of banks in a 15-country area monitored by the BIS**

	Percentage of total							
	Assets				Liabilities			
	End of period							
	1978 Q4	1980 Q4	1985 Q4	1988 Q3	1978 Q4	1980 Q4	1985 Q4	1988 Q3
<b>Banks in monitored area<sup>1</sup></b>								
Eurocurrencies in US\$ billion of banks in monitored area	502.5	751.2	1 119.5	1 718.9	510.8	801.4	1 196.0	1 862.5
1. Geographical breakdown (%)								
Western Europe	57.4	55.4	48.3	44.6	58.8	55.3	51.3	51.6
Eastern Europe	6.3	5.2	3.4	3.0	3.1	1.7	1.6	1.3
Latin America	5.9	7.5	6.5	3.7	3.5	2.9	1.3	0.8
United States and Canada	6.2	6.9	14.2	13.8	8.9	8.9	17.0	14.0
Other	24.2	25.0	27.6	34.6	27.1	31.3	28.5	32.3
2. Foreign currency breakdown (%)								
US\$	67.6	69.0	63.9	54.6	68.2	68.4	66.1	54.9
DM	19.4	16.3	14.0	14.7	18.2	15.6	12.9	15.9
SF	5.6	6.6	6.8	6.0	5.5	6.4	6.2	5.7
ECU	—	—	3.4	5.0	—	—	2.9	4.1
Other	7.4	8.1	11.9	19.7	8.1	9.6	11.9	19.4
3. Sector breakdown (%)								
Banks	74.7	74.2	73.2	78.0	88.1	86.1	81.2	82.0
Non-banks	25.3	25.8	26.8	22.0	11.9	13.9	18.8	18.0
<b>Banks in Luxembourg</b>								
Eurocurrencies in US\$ billion of Luxembourg banks	58.3	87.3	106.5	172.7	54.5	83.5	98.2	160.0
1. Geographical breakdown (%)								
Western Europe	70.5	70.6	69.4	69.2	82.0	80.7	77.4	76.0
Eastern Europe	6.9	6.6	5.7	5.1	1.1	1.2	3.1	2.2
Latin America	7.4	8.5	7.0	4.3	2.6	1.3	0.7	0.6
United States and Canada	3.1	2.7	6.0	6.3	2.7	2.9	3.6	3.4
Other	12.1	11.6	11.9	15.1	11.6	13.9	15.2	17.8
2. Foreign currencies breakdown (%)								
US\$	37.7	38.5	37.9	35.1	44.8	45.5	45.1	33.4
DM	50.6	45.1	40.4	37.8	45.3	38.2	32.5	38.1
SF	5.7	9.2	8.5	8.7	5.0	8.6	9.2	8.8
ECU	—	—	4.1	4.2	—	—	3.4	3.4
Other	6.0	7.2	9.1	14.2	4.9	7.7	9.8	16.3
3. Sector breakdown (%)								
Banks	44.1	48.5	50.8	60.7	86.4	87.2	81.8	73.6
Non-banks	55.9	51.5	49.2	39.3	13.6	12.8	18.2	26.4
4. Share of Luxembourg in Eurocurrencies of monitored area (%)	11.6	11.6	9.5	10.0	10.7	10.4	8.2	8.6
<b>Memorandum item:</b>								
Share of foreign currency transactions in balance-sheet total	86.5	86.0	88.5	86.7	84.4	84.8	87.1	86.1

1. The monitored area comprises the following countries: Belgium, France, Germany, Italy, Luxembourg, Netherlands, Sweden, Switzerland, United Kingdom, Austria, Denmark, Ireland and, since end-1983, Finland, Norway and Spain.

Source: Institut Monétaire Luxembourgeois.



**Table 8. Geographical origin of banks and savings institutions established in Luxembourg**

	At end of period				
	1970	1975	1980	1985	1988
Number of establishments	37	76	111	118	143
<i>of which:</i>					
Luxembourg/Belgium	14	12	12	12	16
Germany	3	16	29	29	36
Scandinavia	—	3	14	16	17
Switzerland	4	5	7	7	12
France	4	5	6	7	9
Italy	—	1	5	8	9
United States	7	15	11	11	9
Japan	—	2	4	6	8
Other	5	17	23	22	27

*Source:* Institut Monétaire Luxembourgeois.

in Luxembourg testify to this international, and more particularly European, focus (Table 8). Of the 143 establishments located in Luxembourg at end-1988, only 16 were of Belgian or Luxembourg origin, and over 70 per cent of the others were European. The Luxembourg stock exchange too is strongly internationally oriented. Over three-quarters of listed quotations are for Eurobonds, while close to 60 per cent of all public Eurobond issues are quoted on the Luxembourg exchange. This specialisation is even greater in the case of ECU-denominated bonds, with quotation of almost 90 per cent of all flotations. Last, the international thrust of the Luxembourg financial market is also reflected in the location of such institutions as CEDEL, which acts as an international clearing house for securities transactions, and such European financial institutions as the European Investment Bank, the Court of Auditors of the European Communities and the legal headquarters of the European Monetary Co-operation Fund.

## Structural change

### *Far-reaching change*

The current structure of Luxembourg's financial markets reflects their high degree of adaptability to changes in the international environment. The growing importance of the financial sector in Luxembourg reflects the far-reaching changes

that are taking place in the economy, with the financial sector replacing the declining iron and steel industry as the main focus of activity. This structural adjustment, which was reviewed in an earlier survey<sup>11</sup>, is evidenced by the evolution of the structure of production, as well as by the trend of employment and the external accounts. From 3.4 per cent in 1970, the share of financial institutions in total value added rose to 14.3 per cent in 1987. Its share in total employment, 3.1 per cent in 1970, stood at 7.7 per cent in 1987. The international activity of Luxembourg's banking sector has also boosted the current payments position. The surplus on services widened substantially between 1970 and 1986, as a result of net investment income and the rapid growth of banking services, mainly commission-earning activities. The surplus on net investment income was thus up to 14.6 per cent of GDP in 1986, compared to 2.3 per cent in 1970. Over the same period, the services balance excluding factor incomes (which includes commissions) moved up from 3.9 per cent to 12.5 per cent of GDP. Last, it should be said that the financial sector is one of the prime sources of tax revenue (providing around 20 per cent of the total).

### *Active government support*

The growth of the Luxembourg financial sector owes much to the active support provided by the authorities, concerned to offset the relative decline of the iron and steel industry. While there has been no "big bang" as such, they adapted the liberal legislative and regulatory system with a view to enhancing the Grand Duchy's appeal to banks and their private customers. The absence of restrictions on capital movements and of entry barriers for foreign institutions, the system of universal banks and equality of treatment of domestic and foreign establishments by virtue of the "national treatment" principle are all indicative of the resolutely international stance of Luxembourg's financial legislation. The legislative framework has been modified to meet the changing requirements of the financial market, while taking due account of EC regulatory directives. The 1983 and 1988 Acts, setting out the legal and tax rules for mutual funds, gave statutory recognition to open-end investment companies as well as umbrella funds in Luxembourg. These Acts also ensured that the funds were in compliance with the relevant EC directive. In this way, with the European seal of approval, authorised Luxembourg mutual funds will be able, as of 1st October 1989, to market their services throughout the European Community without having to seek additional approval.

One of the special attractions of the Luxembourg financial market from a tax standpoint is that there is no withholding tax on dividend or interest payments for non-residents and that stockmarket transactions are not taxed. Here too, changes in

the taxation system – corporation tax reduced from 40 to 34 per cent between 1987 and 1989, the abolition of stamp duty on securities issues – mean that the Grand Duchy now ranks as one of the world's most attractive financial markets<sup>12</sup>. The Commission pour l'Amélioration de l'Infrastructure de la place du Luxembourg (CAIL) also investigates ways and means of improving the financial market, such as the adoption, in 1987, of the post mortem power of signature principle<sup>13</sup> (“mandat post mortem”), thereby eliminating a serious obstacle to competitiveness in the field of estate management. Legislation adopted in 1989 confirming the right to bank secrecy *vis-à-vis* the tax authorities, except in the event of criminal activity, is a further advantage for the Grand Duchy. The creation, in 1983, of the IML, the tighter controls on mutual funds introduced with the Act of 30th March 1988, along with a package of strict prudential rules, have also enhanced the stability and soundness of the Luxembourg financial market. These rules include minimum net capital requirements for financial establishments setting up in the Grand Duchy; Luxembourg standards are considerably more stringent than those laid down in EC directives<sup>14</sup>. This determination to tighten surveillance of the Luxembourg financial market has also been reflected over the recent past in the finalisation of draft legislation to invest the government's stock-market watchdog body with greater powers.

### *Rapid adjustment to changes in the international financial market*

Luxembourg's importance as a financial market may be traced back to the strong growth of Euromarkets in the 1970s. Their spectacular development was connected with the emergence of serious financial disequilibria on the international front and the measures taken to tackle them. Between 1973 and 1980 average annual growth of Euro-assets of the banks in the fifteen European countries for which statistics are compiled by the Bank for International Settlements was over 20 per cent. The growth of this market may be ascribed to a surge in short-term capital flows generated by oil-producer trade surpluses looking for a home and a steep increase in the medium- and long-term demand for financing by some governments and a large number of major firms. Finally, the issue of variable rate loans (Libor + spread) by international banking syndicates has been particularly buoyant, since these are not bound by domestic market constraints, and earnings on the foreign-currency deposits financing them are not taxable. Banks, particularly those established in Luxembourg, bridged the gap between supply and demand by “converting” these short-term resources into medium- and long-term funds. The strong expansion in the number of foreign banks established in the Grand Duchy, from 23 in 1970 to 99 in 1980, reflects

in part the way in which Luxembourg managed to turn this development to its advantage. In terms of Euro-assets, Luxembourg's banks experienced considerably higher growth than banks monitored by the BIS taken together – over 30 per cent between 1973 and 1980, with the market share of banks established in the Grand Duchy rising from 7 per cent to almost 12 per cent over the period.

A salient feature of the Luxembourg financial market (Table 7) is the concentration of its operations on Western Europe. The heavy presence of German and Swiss banks (Table 8) and the importance of these two countries' currencies serve to explain the preponderant role of these two Euro-currencies in Luxembourg banking transactions. This geographical concentration derives too from the close links of foreign banks operating in Luxembourg with their commercial and industrial customers back home, which is why the share of non-banks in total bank assets is greater in Luxembourg than in the total assets of banks monitored by the BIS. That share went up from 16 per cent in 1973 to over 23 per cent in 1980. Four-fifths of these credits were refinanced by way of interbank borrowing. The traditional European financial centres, such as Switzerland, the United Kingdom and Germany, play a special role here. Part of the funds deposited with Swiss banks, for instance, is invested on the Euromarket with Luxembourg banks and accounts for a substantial proportion of the latter's total interbank liabilities (Diagram 1).

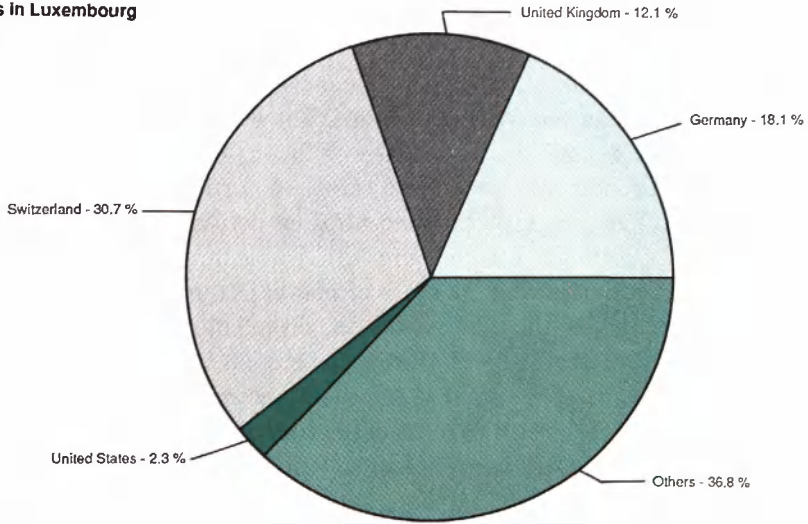
The international debt crisis that began in the early 1980s altered the whole face of international banking and financial activity. By bringing to light the liquidity risk that "converting" short-term borrowing into long-term lending could pose for banks, as well as the solvency problems of borrowing countries, the crisis prompted the international banks and, more particularly, Luxembourg banks to adjust to the new market conditions. Because the Luxembourg capital market is so geared to Europe, the appreciation of the dollar, against both the Deutschemark and other currencies, was a factor in narrowing the Euromarket share of Luxembourg banks between 1980 and 1985. Its subsequent depreciation probably had the opposite effect between 1985 and 1987. Annual average growth of Luxembourg banks' Euro-assets (in dollar terms) was indeed only one-third as rapid between 1980 and 1987 as between 1973 and 1980.

Responding to the banks' liquidity problems caused by the crisis of the early 1980s, the process of disintermediation observed on domestic financial markets spread to Euromarkets. As a result, there was a relative reduction in bank financing and a corresponding expansion in the international bond market. Total public Eurobond issues surged from \$18 billion in 1980 to \$143 billion in 1987, boosting the development of the Luxembourg Stock Exchange which specialises in securities of

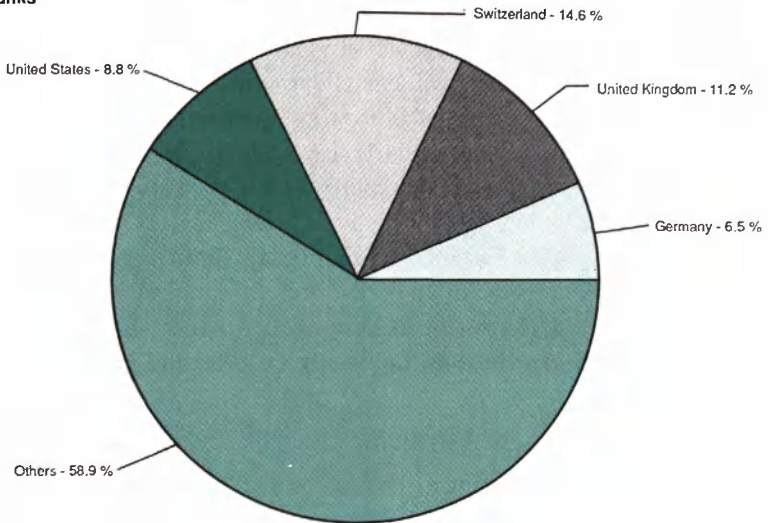
## Luxembourg

Diagram 1. **BREAKDOWN OF INTERBANK REFINANCING ON THE EUROMARKET**  
1987

### Banks in Luxembourg



### All European banks<sup>1</sup>



1. Coverage : Germany, Belgium, France, Italy, Luxembourg, Netherlands, United Kingdom, Sweden, Austria, Denmark and Ireland and, since end-1983, Spain, Finland and Norway.  
Source: = Institut Monétaire Luxembourgeois.

**Table 9. Trend in the contingency reserves of Luxembourg's banks**

	LF billion							
	1980	1981	1982	1983	1984	1985	1986	1987
Capital	65	77	84	96	107	115	118	125
Reserves	40	45	53	62	66	75	85	93
Provision against geographic risks	n.a.	n.a.	36	60	107	140	172	176
Other <sup>1</sup>	49	80	105	128	134	165	167	180
Total	154	202	278	346	414	495	542	574
As percentage of total liabilities and shareholders' equity	3.9	4.0	4.6	5.2	5.7	6.5	6.8	6.6

1. Including, in particular, subordinated debt similar to net capital and provision against specific non-geographic risks.

Source: Institut Monétaire Luxembourgeois.

this type. Faced with the possibility that some debtors could default because of the international debt problem, the initial response of Luxembourg's banks was to increase their equity capital. From 1980 to 1987, the Grand Duchy's banks and savings institutions increased their contingency reserve ratio from 3.9 per cent to 6.6 per cent of total liabilities (Table 9). Geographical contingency reserves were increased fivefold between 1982 and 1987, accounting in the latter year for over 30 per cent of total contingency reserves. A second consequence of the international debt crisis was that Luxembourg acquired a firmer place in the financial markets of the industrialised countries. Since 1984, Luxembourg banks, along with those from elsewhere in Europe, have moved steadily to disengage from Latin America. With the strengthening of its net capital and its relatively small exposure to high-risk countries, based on IML figures the Grand Duchy's banking system already satisfies the international standards proposed by the BIS Committee on Banking Regulations and Supervisory Practices (the Cooke ratio).

Because of the slowdown of banking activity by institutions operating on the Luxembourg financial market due to Euromarket developments, the Grand Duchy has sought to diversify the activities of its financial institutions. Banks are making efforts to step up their private banking business, i.e. the range of their private customer services and especially commission-earning off-balance-sheet transactions. Several indicators testify to the scale of this development. Examination of the sectoral breakdown of Luxembourg banks' Euromarket liabilities reveals that the share of business with non-banks rose from 15 per cent in 1983 to almost 27 per cent by the end of the second quarter of 1988, enabling them to fund their activities. For the

Table 10. **Gross income of Luxembourg banks**

	Percentage						
	1981	1982	1983	1984	1985	1986	1987
Margin on interest	76.3	81.6	82.5	86.8	80.3	78.6	79.9
Income from foreign exchange transactions	15.5	8.5	6.8	1.8	5.5	2.5	3.3
Other income							
<i>of which:</i>							
Commission	4.7	3.9	5.1	6.3	7.2	9.3	9.9
Capital gains	1.4	4.1	3.6	3.1	5.6	8.4	4.3
Miscellaneous	2.1	1.9	2.0	2.0	1.4	1.2	2.6
<b>Total</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>	<b>100</b>

*Source:* Institut Monétaire Luxembourgeois.

aggregate sample of banks for which statistics are kept by the BIS, this share contracted from 20 to 19 per cent over the same period. Furthermore, net commission earnings of Luxembourg's banks and savings institutions rose from 5 per cent of gross income in 1983 to 10 per cent in 1987 (Table 10). Unlike interest margins, which still account for the bulk of income of Luxembourg's banks, these earnings are not in direct relationship with balance-sheet items and thus do not entail any costs in terms of equity capital, since they are payments for financial services. Last, there has been a rapid expansion in the number of Luxembourg mutual funds, from 76 in 1980 to 525 by end-1988; over the same period their total net assets increased from LF 118 billion to over LF 2 000 billion, or one-fifth of the Luxembourg banks' balance-sheet total. An important development in this sector has been the substantial expansion in open-end investment funds (SICAVs) since 1983, when the statutory measures enabling them to operate in Luxembourg were introduced. By end-1988 they accounted for over 40 per cent of mutual funds' total net assets and for over 55 per cent of their number.

### **The future of the Luxembourg financial market**

After the successful adjustment and diversification phase of the past five years, Luxembourg has become a major, efficient and sound financial market and one which is set to play an important role, as evidenced by the ever-growing number of

foreign banks setting up in the country. However, progress towards a single European market, and, in particular, the liberalisation of capital movements that is due to take place in the Community as from 1st July 1990, means that Luxembourg will almost certainly have to adjust again to changes in the international financial environment. Some harmonisation of taxes on savings within the European Community seems ultimately inevitable, if the Community's proclaimed goal of freeing capital movements is upheld. The German experience of levying a withholding tax on income from securities seems to suggest that, in the absence of controls, differences in tax treatment across countries lead to substantial capital flight in search of higher-yielding investments. Thus, whether as a result of market pressure or Community-wide negotiations, some harmonisation of the tax treatment of savings among EC countries appears likely.

In this connection, the choice of the optimal rate of tax on investment income depends on a number of constraints and objectives common to all EC countries, as well as on the need to reconcile the sometimes conflicting objectives of individual Member states. These constraints include the existence of financial markets outside the European Community which might provide a haven for savings, should taxation of investment income become the norm. In view of the major risk of capital flight such a measure implies – which would almost certainly have greater ramifications in Luxembourg than elsewhere – an extreme alternative might be to take savings completely out of the tax net. However, such a measure would not be without drawbacks, inasmuch as it would reduce the tax revenues of EC Member states and run counter to the principle of equal tax treatment of earned and unearned income, which could ultimately lead to less than optimal allocation of labour and capital. Moreover, zero-rate EC tax harmonisation would mean, in the specific case of Luxembourg, that its financial market would no longer benefit from the comparative advantage it enjoys by virtue of its specialisation in tax-free Euromarkets. While it is no doubt difficult to determine what the optimal tax rate on investment income should be, it is fair to say that were a non-zero tax rate on income from financial investments to be adopted and income from funds placed on Eurobond markets to be untaxed, one of the consequences of the liberalisation of capital markets could well be stronger growth in the demand for financial products of this kind, because of the greater number of agents with potential access to such attractive investment opportunities. Should things indeed develop along these lines, the Grand Duchy would be able to expand and enhance its financial role as a Euromarket specialist.

The Luxembourg financial market was one of the first to foresee the trend in banking towards advisory and financial services which allow better account to be



taken of individual customer needs. Here, Luxembourg's strategy could be to adapt to the development of the financial system, so as to reinforce its position on profitable markets, while maintaining a policy of diversification, so as to become less reliant on the international conjuncture. Thus, despite the boom in securitisation since the stock-market crisis of October 1987, the new financial instruments (such as futures and options) have been slow to catch on in Luxembourg. The growing interest evinced in these products may be ascribed to efforts to hedge against interest- and exchange-rate risks. Keener demand is thus likely to be seen for them in the future from the traditional customer base of Luxembourg's banks, as well as from the new customers whom the liberalisation of capital markets may be expected to generate. To respond to this potential demand calls for advance planning, since the sophisticated nature of these instruments demands manpower with the expertise to handle a variety of requests.

More broadly, the need for Luxembourg to acquire the services of skilled staff, able to adapt to the development of new products, is a direct consequence of its financial market strategy of stepping up its private banking activities. In addition to adjustment in terms of product diversification and manpower training, competitiveness among the world's different financial markets may also be measured in terms of the cost of the services provided. One effective way of improving Luxembourg's competitive position would be to introduce investment programmes to enhance productivity and rationalise management. Charging lower brokerage fees for small operators than other rival markets would, for instance, help to boost the growth of the Luxembourg market relative to the other European financial centres which tend to specialise in larger-scale transactions.

## Notes and references

1. Growth of world crude steel output increased to 6 per cent in 1988 from 2.7 per cent in 1987.
2. This redeployment was effected with assistance from the Société Nationale de Crédit et d'Investissement.
3. The advance instalment system was a one-time real wage increase of 1.5 per cent awarded in 1986 so as to offset losses due to the lagged adjustment of wages to prices under the wage escalator mechanism. This increase, which was first introduced in 1972, had been discontinued in 1981.
4. Depleted in 1983, reserves were up to LF 5.6 billion by 1987, or 2.5 per cent of GDP (European System of Integrated Economic Accounts).
5. The reduction in taxation was achieved by cuts in personal income tax, in the solidarity tax levied on households and businesses (used to finance unemployment benefits) and in tax rates on company profits. Last, the subscription tax and stamp duty on bond issues were abolished.
6. Preliminary results for 1988 show a surplus of around LF 2.1 billion (before appropriations resulting from unexpected gains in receipts).
7. Given the importance of banking in Luxembourg, its national-accounts treatment raises problems. On standardised accounting definitions, imputed banking-sector output is treated as intermediate consumption by the other sectors and hence as not contributing to GDP. On the other hand, the balance on interest paid and received from abroad is deemed to be a component of GNP. Thus the difference in Luxembourg between GNP and GDP is considerable. To resolve this problem, in calculating GDP, the Luxembourg National Statistics Institute decided to separate out from total banking services those that are provided to residents (treated as an intermediate consumption) and those provided to non-residents (treated as final consumption and hence included in GDP). For further discussion see G. Als, "The nightmare of economic accounts in a small country with a large international banking sector", *Review of Income and Wealth*, 34, 1, March 1988, pp. 101-110.
8. The issue ceiling is set with reference to two variables: the ratio of the population of Belgium to that of Luxembourg and the amount of notes and coinage issued by Belgium.
9. After peaking at an annual average of over 7 per cent in 1982, the differential between the two markets has since remained at under 2 per cent. See Diagram 10 in the accompanying *Survey of Belgium*.

10. Articles 22, 28 and 29 of the Act of 20th May 1983 establishing the IML constitute Luxembourg's statutory framework for an independent monetary policy.
11. *OECD Economic Surveys, Belgium-Luxembourg*, Paris, 1986.
12. The lowering of corporation tax in the United Kingdom in 1984 was one of the factors that impelled Luxembourg to introduce a similar measure so as to enhance the appeal of its financial market.
13. The post mortem power of signature for heirs does away with some of the capital transfer problems associated with inheritance.
14. The Luxembourg standard is a minimum capital of LF 350 million, whereas the Directive stipulates only 5 million ECUs or just over LF 200 million.

## Annex I

### A macroeconomic wage equation for Belgium

#### Specification

In line with the other wage equations estimated for individual countries in the OECD INTERLINK model, a modified Phillips-curve equation has been estimated for Belgium. It should be noted that the basic hypothesis underlying the Phillips curve is that (real) wage growth is a function of the unemployment rate. Accordingly, the starting point for the specification of the equation is:

$$\dot{WR} = f\left(\sum_i a_i \dot{P}_{-i}, g(\text{UNR})\right) \quad (1)$$

where  $WR$  is wages and salaries per employee in the business sector<sup>1</sup>,  
 $P$  is the price level,  
 $UNR$  is the unemployment rate (based on OECD, *Labour Force Statistics*),  
 $f$  and  $g$  are functions and a dot indicates a logarithmic difference.

Three modifications to the basic specification have been undertaken. First, it is hypothesised that wages vary in line with realised cyclical labour productivity growth, independent of its trend value which should be manifest in the equation's constant. Second, since the wage equation is a reduced-form equation deriving from structural labour-demand and labour-supply relationships, it is necessary to specify the price-inflation term quite carefully. Employees will view the wage offered in consumer-price terms, while employers will reckon in producer-price terms. Therefore,

$$\dot{P} = \emptyset \dot{PCP} + (1-\emptyset) \dot{PGDPB} \quad (2)$$

where  $PCP$  is the private consumption deflator, adjusted for "index skips"<sup>2</sup>,  
 $PGDPB$  is the business-sector value-added deflator and  
 $\emptyset$  is a constant strictly between zero and unity.

Finally, allowance has been made for the possibility that employers' social-security contributions may not be borne entirely by employers: increases in rates may reduce net-of-contribution wages and vice-versa.

Incorporating these changes in (1) yields the following:

$$\dot{WR} = b + \emptyset \sum_{i=0}^m d_i \dot{PCP}_{-i} + (1-\emptyset) \sum_{j=0}^n h_j PG\dot{DPB}_{-j} + \sum_{k=0}^p c_k (GDPBV/\dot{ETB})_{-k} + m(WSSSE_{-1}/\dot{WR}_{-1}) + g(UNR) \quad (3)$$

where GDPBV is constant-price value added of the business sector at factor cost, ETB is total business-sector employment and WSSE is total compensation per business-sector employee (including employers' social-security contributions).

It is expected that  $b$ ,  $d_i$ ,  $h_j$ ,  $c_k$  will be positive and  $m$  negative and that  $\delta WR/\delta UNR < 0$ .

### Estimation results

Because the equation was estimated in part for insertion in INTERLINK, which is a semi-annual model, the data were semestrialised prior to estimation<sup>3</sup>. Preliminary estimation of (3) was undertaken in order to fix the values of  $m$ ,  $n$  and  $p$ . The results easily confirmed that the optimal choice is  $m=0$ ,  $n=1$  and  $p=0$ . The estimated value of  $h_0$  was also not significantly different from zero. The next step was to test whether the Phillips curve is vertical, that is whether  $\sum d_i + \sum h_j = 1$ . This constraint was easily accepted by the data. The final step was to decide on the functional form in which the unemployment rate should enter the equation: the choice revolves around a linear versus a logarithmic specification; in addition, various lags and moving averages were tested. The linear specification clearly dominated its logarithmic counterpart, but there was little to choose from amongst the unlagged, once-lagged or moving-average versions. For simplicity as well as parallelism with other country models, the unlagged specification was retained. Thus,  $g(UNR) = g \cdot UNR$ .

The estimation results were as follows:

$$\begin{aligned} \dot{WR} = & 0.0198 + 1.0000 \dot{PCP} + 0.6660 (PG\dot{DPB}_{-1} - \dot{PCP}) + 0.7830 (GDPBV/\dot{ETB}) \\ & (3.43) \quad (\text{imposed}) \quad (4.59) \quad (5.73) \\ & - 0.6249 (WSSE_{-1}/\dot{WR}_{-1}) - 0.0020 UNR \\ & (1.81) \quad (3.66) \\ \bar{R}^2 = & 0.7304 \quad SEE = 0.0105 \quad DW = 1.88 \quad SMPL 1971S2-1987S2 \end{aligned}$$

The results show that, except in the very short run, output prices in fact dominate consumer prices, as one might expect for a small, open economy. This is an element of flexibility: in the event of an unfavourable external supply shock, labour will share the burden with capital. It can also be seen that increases in employers' social-security contributions do indeed cause

net-of-contribution wages to decline, another element of labour-market flexibility. The implied “non-accelerating-rate-of-wage-inflation rate of unemployment” is<sup>4</sup>

$$-(b+(c-1) \cdot \text{mean}(\dot{\text{GDPBV}}/\text{ETB}))/g$$

which, using the estimated coefficient values, is equal to 8.4 per cent.

### Notes

1. Including the statistical adjustment in the national accounts.
2. Account has been taken of the three “index skips” of 2, 2 and, implicitly, 1.85 per cent of 1984, 1985 and 1987 in the estimation.
3. See OECD, *Analytical Data Base Reference Manual*, Economics and Statistics Department, 1988.
4. The so-called “NAWRU” ( $U^*$ ) can be calculated by setting wage growth equal to inflation, subtracting average productivity growth from the constant and assuming that in equilibrium there are no changes in the “terms of trade” nor in employer social-security contributions. Thus,  $0 = b + (c-1) \cdot \text{mean}(\dot{\text{GDPBV}}/\text{ETB}) + gU^*$  which reduces to  $U^* = -(b+(c-1) \cdot \text{mean}(\dot{\text{GDPBV}}/\text{ETB}))/g$ .

## *Annex II*

### **Measuring the differentials between unit labour cost levels in manufacturing<sup>1</sup>**

The traditional method of analysing competitiveness, using indexes of relative unit labour costs in manufacturing in a common currency, does not provide information on absolute cross-country differentials between levels of labour costs. These indicators only measure movements in relative competitiveness by reference to a specific period. One of the main problems in calculating the level of individual countries' unit labour costs is estimating output levels in common-currency terms. Though not an ideal solution, the use of purchasing-power-parity (PPP) exchange rates does provide an answer to the problem for a base year<sup>2</sup>. Thus the indicator of the level of individual countries' labour costs is defined as the ratio of total nominal labour compensation in manufacturing<sup>3</sup>, expressed in dollars, to real value added in that sector translated into common currency by means of the PPP exchange rate.

$$ULCD_i = (ERA_i * C_i) / (PPP_i^{85} * Q_i)$$

where  $ULCD_i$  is the level in dollars of each country  $i$ 's common-currency unit labour costs,  
 $ERA_i$  the dollar exchange rate of country  $i$ 's currency,  
 $C_i$  total nominal compensation in manufacturing,  
 $PPP_i^{85}$  country  $i$ 's 1985 purchasing-power-parity exchange rate, and  
 $Q_i$  real value added in manufacturing in local-currency terms.

Constructed in this way, the series can be used to calculate, by means of a weighting system<sup>4</sup>, the average costs of competitors for each country. The results provide the basis for the comparisons set out in Table 10.

While this approach gives some idea of relative cost levels across countries, great care is needed in analysing the results, since the information supplied depends very much on the PPP exchange rates used. The difficulties involved in calculating these variables are considerable and the resulting differences between estimates made for various reference years substantial. Moreover, these PPP exchange rates do not relate only to internationally-traded goods. What is more, the data, which in principle should be used for cross-country comparisons between the

various GDP components, include indirect tax differentials between countries. In view of this distortion, which does not affect foreign trade, the solution adopted for purposes of international comparisons of cost levels poses problems. The results in Table 10 are thus no more than indicative and should be seen as very approximate.

### Notes

1. The approach described here is based on an article by P. Hooper and K.A. Larin, "International comparisons of labour costs in manufacturing", Board of Governors of the Federal Reserve System, International Finance Discussion Paper No. 330, August 1988.
2. Purchasing-power-parity exchange rates are currency translation rates used to equate the purchasing powers of different currencies. In other words, a given sum of money translated into local currencies by means of the PPP exchange rate will buy the same basket of goods and services in all the countries. The PPP exchange rates used here are those calculated for 1985 by the OECD and Eurostat for a set of representative manufactures.
3. The figures used are those compiled by the Bureau of Labor Statistics, US Department of Labor.
4. The weightings are those used to calculate the OECD competitiveness indicators published in the *OECD Economic Outlook*, redefined for 15 OECD countries and two South-East Asian economies.



### *Annex III*

## **A simple model of Belgian interest-rate determination**

### **Specification**

A simple model has been chosen to describe Belgian interest-rate determination. It is based on the following:

$$I = I^* + ID \quad (1)$$

$$ID = f(\underline{X}) \quad (2)$$

where  $I$  is the interest rate,  
 $ID$  is the interest rate differential,  
 $\underline{X}$  is a vector of its determinants and  
an asterisk indicates an exogenous foreign variable.

Thus, after substitution of (2) into (1) we have:

$$I = I^* + f(\underline{X}) \quad (3)$$

In a small open economy, foreign interest rates should go a long way in the determination of domestic rates, especially in light of the EMS exchange-rate mechanism. The interest differential is assumed to be a function of three factors. The first is the inflation differential: differential rates of inflation should presumably influence nominal interest rates relative to those elsewhere. A second consideration is the condition of the current account: the greater the need for the nation to resort to foreign sources of savings, the greater should be the price demanded by the market for such borrowing. The final determinant of the interest differential considered here, of particular relevance in the Belgian case, is the state of the public finances, specifically the level of net borrowing by the general government<sup>1</sup>: the greater are the financing needs of the exchequer, the greater is likely to be the margin required.

Therefore, (3) can be elaborated as follows:

$$I = k + I^* + a(P-P^*) + b(CB/GDP) + c(D/GDP) \quad (4)$$

where CB is the current balance,  
D is the general-government deficit,  
GDP is gross domestic product and  
k, a, b, c are parameters such that  $a, c \geq 0$ ;  $b < 0$ .

In fact, for estimation purposes several of the constraints implicit in (4) were relaxed, viz. the unit constraint on  $I^*$ , as well as the constraint that the two inflation rates enter in differential form. In addition, lagged values were inserted to proxy expectations and adjustment lags. Three interest rates were considered, covering much of the range of Belgium's financial markets: the rates on day-to-day loans (IRSP), on three-month Treasury certificates (IRSG) and on central-government bonds (IRLG). The corresponding foreign rates chosen were German: the rates on day-to-day loans (IRSP\*), on two-to-three-month Treasury bills (IRSG\*) and on public-sector bonds (IRLG\*). Inflation was measured by the respective consumer-price indices.

### Estimation results

The national accounts data for GDP and D were interpolated in order to generate quarterly time series prior to estimation. Preliminary results showed that the unit constraint on  $I^*$  could be rejected, but that the inflation-differential specification could only be rejected in the IRLG equation, where the German inflation rate did not seem to play a role. The results are given in Table A1, while a summary of short- and long-run multipliers is given in Table A2.

The hypotheses advanced receive strong support from the data: each of foreign interest rates, the inflation differential (or at least domestic inflation) and both the budget deficit and the current balance in relation to GDP influence the level of Belgian rates in a significant way. The adjustment mechanisms are, not surprisingly, much more rapid in each of the short-term-rate equations than in the bond-rate equation. Foreign rates are especially influential for the short-term instruments. As one would expect, public-sector borrowing rates are more sensitive to the government deficit in the long run than is the private-sector rate. However, the latter is the most affected by variations in the size of the current balance in relation to GDP.

These equations have been used to determine the contribution of each factor to the evolution of interest rates over the period (Table A3). However, the dynamics have been largely ignored: the effects of lagged dependent variables have been labelled "inertia". It can be seen that: *i*) the exogenous decline in foreign rates over the years 1981 to 1987 explains between a quarter and a third of the reduction in Belgian short-term rates; *ii*) the improvement in the state of the public finances explains a further one-third of the decline in the three-month Treasury certificate rate; *iii*) and the improvement in the current balance explains between one-quarter and one-third of the fall in short-term rates.

Finally, in order to eliminate the recently-observed interest-rate differential with Germany, the government deficit would have to be cut by approximately  $7\frac{1}{2}$ ,  $3\frac{3}{4}$  and 3 percentage points of GDP for the public short-term rate, the public long-term rate and the private short-term rate, respectively.

**Table A1. Estimation results**

	Public short-term rate	Public long-term rate	Private short-term rate
Constant	1.6963 (2.79)	0.6557 (4.46)	1.5744 (2.75)
Corresponding foreign rate	0.4703 (4.35)	0.2729 (5.43)	0.2678 (4.10)
First lag		-0.2491 (4.57)	
Inflation differential <sup>1</sup>	0.1926 (3.58)		0.1396 (2.60)
Belgian inflation		0.0175 (1.96)	
General-government deficit/GDP <sup>2</sup>	0.4527 (4.73)	0.0538 (3.17)	0.2501 (3.91)
Current balance/GDP <sup>3</sup>	-1.2911 (4.68)	-0.1792 (3.98)	-1.3365 (4.79)
Lagged dependent variables:			
First	0.6220 (7.74)	1.4800 (19.82)	0.5413 (5.90)
Second		-0.6075 (8.86)	
Third	-0.4397 (5.66)		-0.2644 (3.43)
RHO		-0.4755 (4.42)	
$\bar{R}^2$	0.9178	0.9952	0.8613
SEE	0.9753	0.2222	1.0835
DW/h	1.85/0.74	1.96/0.20	2.01/-0.07
SMPL	1971Q2-1987Q4	1971Q2-1987Q4	1971Q2-1987Q4

1. A two-quarter moving average.

2. Lagged two quarters in the equation for the public long-term rate and five quarters in that for the private short-term rate.

3. A two-quarter moving average in the equations for the public and private short-term rates.

**Table A2. Calculated multipliers**

	Public short-term rate		Public long-term rate		Private short-term rate	
	Short-run multiplier	Long-run multiplier	Short-run multiplier	Long-run multiplier	Short-run multiplier	Long-run multiplier
Corresponding foreign rate	0.47	0.58	0.27	0.19	0.27	0.37
Belgian inflation	0.19	0.24	0.02	0.14	0.14	0.19
Foreign inflation	-0.19	-0.24	..	..	-0.14	-0.19
General-government deficit/GDP	0.45	0.55	0.05	0.42	0.25	0.35
Current balance/GDP	-1.29	-1.58	-0.18	-1.41	-1.33	-1.85

Source: Calculated from the equations presented in Table A1.

Table A3. Factors determining Belgian interest rates

Public short-term rate	Public long-term rate	Private short-term rate	Contribution of explanatory variables <sup>1</sup>																					
			Constant			Corresponding foreign interest rate			Belgian inflation			Foreign inflation			General-Government deficit			Current balance			"Inertia" <sup>2</sup>			
			(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)	(1)	(2)	(3)				
1972-1976	7.4	8.1	5.9	1.7	0.2	1.6	2.1	0.2	1.7	1.8	0.1	1.3	-1.2		-0.8	2.0	0.2	0.9	-0.6	-0.1	-0.6	1.5	7.1	1.7
1977-1982	11.4	11.1	8.8	1.7	0.2	1.6	2.4	0.2	1.9	1.4	0.2	1.0	-1.0		-0.7	4.1	0.5	2.0	0.8	0.1	0.8	2.2	9.6	2.5
1983-1987	9.4	10.0	7.6	1.7	0.2	1.6	1.7	0.1	1.3	0.8	0.1	0.6	-0.3		-0.2	4.2	0.5	2.6	-0.3	-0.0	-0.3	1.4	8.8	2.0
1981	15.2	13.8	11.5	1.7	0.2	1.6	3.4	0.3	3.0	1.5	0.1	1.1	-1.4		-1.0	6.0	0.6	2.1	1.4	0.2	1.4	3.0	12.1	3.0
1982	14.1	13.4	11.4	1.7	0.2	1.6	3.1	0.1	2.3	1.7	0.1	1.2	-0.8		-0.6	5.1	0.7	3.1	1.0	0.1	1.1	2.4	11.8	3.3
1983	10.6	11.8	8.3	1.7	0.2	1.6	1.8	0.2	1.4	1.3	0.1	0.9	-0.6		-0.5	5.3	0.6	2.9	0.2	0.0	0.2	1.0	10.3	1.9
1984	11.4	12.0	9.5	1.7	0.2	1.6	1.8	0.1	1.5	1.0	0.1	0.8	-0.4		-0.3	4.3	0.6	2.9	0.1	0.0	0.0	2.4	10.5	2.8
1985	9.6	10.6	8.3	1.7	0.2	1.6	1.9	0.1	1.4	1.0	0.1	0.7	-0.5		-0.3	4.0	0.5	2.5	-0.3	-0.0	-0.3	1.3	9.5	2.2
1986	8.1	7.9	6.6	1.7	0.2	1.6	1.5	0.1	1.2	0.1	0.0	0.0	0.2		0.2	4.1	0.5	2.2	-0.8	-0.1	-0.8	1.2	6.9	1.7
1987	7.1	7.9	5.6	1.7	0.2	1.6	1.2	0.1	1.0	0.5	0.0	0.3	-0.2		-0.2	3.3	0.4	2.3	-0.6	-0.1	-0.7	1.1	6.8	1.4

1. Based on the equations in Table A1.
2. Effect of lagged dependent variables.

## Notes

1. An alternative hypothesis, not tested here, it is that is the *stock* of public debt rather than its *flow* which influences investors' willingness to lend: the portfolio allocation decision may generate either stock or flow equilibrium (or both).

*Annex IV*

**Chronology of main economic policy measures**

**BELGIUM**

**MONETARY POLICY**

(Note: Only important interest-rate changes are enumerated)

**1988**

**January**

Key interest rates reduced in stages: Treasury certificate rates by 0.3 percentage points and discount rate and rate for advances by 0.25 points.

**February**

Further 0.25 percentage-point reduction in Treasury certificate rates.

**April**

Reduction from BF 180 billion to BF 160 billion in indirect advances Central bank can grant the Treasury through the Fonds des Rentes. Given BF 37 billion in direct advances maximum total central-bank advances reach BF 197 billion.

**July**

Discount rate and rate for advances raised by 0.25 percentage points each. Three-month Treasury certificate rates increased in stages by 0.50 percentage points.

**August**

Discount rate and rate for advances raised in stages by 0.75 percentage points each. Three-month Treasury certificate rates increased in stages by 1.00 percentage point.

**September**

Three-month Treasury certificate rates cut by 0.15 of a percentage point in two stages.

## **November**

Discount rate and rate for advances lowered by 0.25 percentage points each.

## **December**

Staged increase in the discount rate, the rate on advances and the various Treasury certificate rates, each by 0.50 of a percentage point. Later, three-month Treasury certificate rates cut by 0.15 of a percentage point. Law of 23rd December: *i)* Central bank existence rendered permanent; *ii)* franc no longer legally backed by gold; *iii)* Central bank given power to institute compulsory reserves.

# **1989**

## **January**

Discount rate and rate on advances raised by 0.50 of a percentage point. Three-month Treasury certificate rates increased by 0.10 of a percentage point.

## **February**

Three-month Treasury certificate rates raised in small steps by 0.40 of a percentage point.

## **March**

Three-month Treasury certificate rates cut by 0.20 of a percentage point. Central bank implements new system of credits to financial institutions. Central bank sells about 10 percent of its stock of gold, some 127 tonnes for about BF 63 billion.

## **April**

Discount rate and rate for advances increased by 0.50 of a percentage point each. Three-month Treasury certificate raised by 0.10 of a percentage point.

## **May**

Three-month Treasury certificate rates raised in steps by 0.35 of a percentage point. First issue of "linear bonds".

## **June**

Discount rate and rate for advances increased by 0.50 of a percentage point each.

## FISCAL POLICY

### 1988

#### September

Adoption of the draft budget for 1989, Government net borrowing requirement reduced from BF 460.8 billion (8.3 per cent of GNP) in 1988 to BF 403.2 billion (7 per cent of GNP) in 1989.

### 1989

#### March

Revisions made to the 1989 budget. Net borrowing requirement revised to BF 405.4 billion (6.9 per cent of GNP).

## STRUCTURAL POLICIES

### 1988

#### June

System of price controls replaced by one of prior notification.

#### August

Constitutional reform enacted transferring substantially greater spending powers to the three Communities and the three Regions (Flanders, Wallonia, Brussels).

#### December

Passage of tax reform legislation allowing BF 91 billion in personal tax reductions, financed by increases in indirect taxes and broadening of the personal and corporate tax bases.

### 1989

#### January

Legislation adopted to safeguard competitiveness. Semi-annual reports to be published by the Conseil Central de l'Economie and specific steps outlined which must be taken if competitiveness is endangered.



## **LUXEMBOURG**

### **1988**

#### **March**

Legislation passed enacting "post mortem power of signature" in order to make management of financial wealth more flexible with respect to inheritance. Also legislation adopted setting regulations for sale and management of mutual funds in line with 1985 EC directive.

#### **August**

Presentation of draft budget for 1989. As adopted, corporate tax rate reduced to 34 per cent and increases in personal tax brackets. Budgetary surplus set at LF 0.7 billion.

### **1989**

#### **January**

Minimum wages as well as private-sector pensions increased by 3.5 per cent. Increase in family allowances.

#### **March**

Legislation adopted formalising bank secrecy.

*STATISTICAL ANNEX*

Belgium – Selected background statistics

	Average 1979-87	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>A. Per cent changes from previous year</b>										
Private consumption <sup>1</sup>	1.7	4.8	1.9	-0.6	1.6	-1.3	1.2	2.1	3.6	1.7
Gross fixed capital formation <sup>1</sup>	-0.6	-2.6	4.6	-16.2	-1.9	-4.3	2.2	1.1	3.8	7.6
Public investment <sup>1</sup>	-5.3	4.3	3.0	-8.4	-8.8	-3.2	-11.3	-11.2	-7.7	-3.9
Residential <sup>1</sup>	-5.5	-13.1	-1.2	-40.9	-6.5	-2.8	-0.5	4.5	3.8	7.1
Non-residential <sup>1</sup>	3.4	3.3	8.9	-4.1	1.9	-5.1	7.0	2.9	6.1	9.9
GDP <sup>1</sup>	1.5	2.2	4.1	-1.4	1.5	0.2	2.2	0.9	2.1	2.1
GDP price deflator	4.8	4.5	3.7	5.2	7.2	5.8	5.1	5.9	3.5	1.9
Industrial production	1.1	4.5	-1.4	-2.7	-0.0	2.0	2.4	2.4	1.0	2.1
Employment	-0.1	1.2	-0.1	-2.0	-1.3	-1.1	0.0	0.8	1.0	0.5
Compensation of employees (current prices)	5.4	6.8	9.5	3.7	6.0	4.9	6.4	5.0	5.1	1.1
Productivity (GDP <sup>1</sup> /employment)	1.7	1.0	4.2	0.6	2.8	1.3	2.2	0.1	1.0	1.7
Unit labour costs (compensation/GDP <sup>1</sup> )	3.8	4.6	5.1	5.2	4.5	4.7	4.1	4.1	3.0	-1.0
<b>B. Percentage ratios</b>										
Gross fixed capital formation as % of GDP at constant prices	17.6	20.6	20.7	17.6	17.0	16.2	16.2	16.2	16.5	17.4
Stockbuilding as % of GDP at constant prices	0.0	0.8	0.8	-0.3	0.1	-0.5	0.6	-0.7	-0.7	0.2
Foreign balance as % of GDP at constant prices	0.9	-4.6	-2.8	0.4	1.0	3.4	3.4	3.6	2.6	1.3
Compensation of employees as % of GDP at current prices	56.7	58.2	59.0	58.9	57.4	56.8	56.3	55.3	55.0	53.5
Direct taxes as percent of household income	15.0	15.5	14.9	14.6	15.6	14.9	15.3	15.2	14.8	14.7
Household saving as percent of disposable income	14.1	14.9	16.2	16.3	13.9	15.2	13.8	11.6	12.8	11.8
Unemployment as percent of civilian labour force	10.8	7.3	7.7	10.0	11.7	12.9	13.0	12.0	11.3	11.1
<b>C. Other indicator</b>										
Current balance (BLEU) (billion dollars)	-0.9	-3.1	-4.9	-4.2	-2.4	-0.4	-0.0	0.7	3.1	2.9

1. At constant 1980 prices.

Source: OECD Secretariat estimates.

Table A. Belgium – Gross domestic product<sup>1</sup>

Frs. billion

	1980	1981	1982	1983	1984	1985	1986	1987	1988 <sup>3</sup>
	Current prices								
Private consumption	2 224.9	2 392.0	2 617.8	2 752.9	2 950.9	3 189.1	3 320.6	3 445.9	3 574.6
Public consumption	643.6	699.9	740.3	765.3	799.6	854.0	883.5	890.8	901.5
Gross fixed capital formation	728.4	644.1	671.3	670.0	709.6	743.2	781.8	847.5	996.2
Change in stocks <sup>2</sup>	27.3	-4.9	7.2	-27.4	17.5	-34.5	-47.7	4.6	6.1
<b>Total domestic demand</b>	<b>3 624.2</b>	<b>3 731.2</b>	<b>4 036.5</b>	<b>4 160.9</b>	<b>4 477.7</b>	<b>4 751.8</b>	<b>4 938.3</b>	<b>5 188.8</b>	<b>5 478.4</b>
Exports of goods and services	2 026.4	2 282.1	2 636.2	2 919.7	3 332.3	3 466.7	3 366.4	3 443.9	3 807.8
less: Imports of goods and services	2 124.7	2 355.9	2 695.7	2 862.1	3 275.4	3 375.1	3 187.5	3 309.7	3 675.8
<b>Gross domestic product at market prices</b>	<b>3 525.9</b>	<b>3 657.9</b>	<b>3 980.1</b>	<b>4 218.6</b>	<b>4 534.3</b>	<b>4 843.4</b>	<b>5 115.2</b>	<b>5 323.0</b>	<b>5 610.4</b>
	1980 prices								
Private consumption	2 224.9	2 212.3	2 247.0	2 217.4	2 243.5	2 291.5	2 373.7	2 414.4	2 474.7
Public consumption	643.6	648.7	640.9	642.6	641.3	655.7	665.3	667.5	669.5
Gross fixed capital formation	728.4	610.7	598.8	573.0	585.5	591.7	614.0	660.7	751.2
Change in stocks <sup>2</sup>	27.3	-8.9	4.2	-18.3	21.4	-23.8	-27.0	7.3	7.3
<b>Total domestic demand</b>	<b>3 624.2</b>	<b>3 462.8</b>	<b>3 490.9</b>	<b>3 414.8</b>	<b>3 491.7</b>	<b>3 515.1</b>	<b>3 626.0</b>	<b>3 749.9</b>	<b>3 902.7</b>
Exports of goods and services	2 026.4	2 088.6	2 134.0	2 201.6	2 327.6	2 355.1	2 490.1	2 647.4	2 882.0
less: Imports of goods and services	2 124.7	2 075.2	2 098.2	2 082.1	2 206.4	2 224.8	2 394.6	2 596.6	2 823.5
<b>Gross domestic product at market prices</b>	<b>3 525.9</b>	<b>3 476.2</b>	<b>3 526.7</b>	<b>3 534.3</b>	<b>3 612.9</b>	<b>3 645.4</b>	<b>3 721.5</b>	<b>3 800.7</b>	<b>3 961.1</b>

1. Includes a statistical discrepancy.

2. Includes adjustment in connection with gross fixed capital formation.

3. Estimates.

Sources: *Note de conjoncture*, Research and Documentary Service of the Ministry of Finance and OECD Secretariat estimates.

**Table B. Belgium – Income and expenditure of households and private non-profit institutions**

Frs. billion, current prices

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988 <sup>1</sup>
Compensation of employees	1 899.4	2 079.0	2 155.3	2 285.6	2 397.7	2 550.9	2 679.0	2 815.8	2 846.2	2 937.2
Income from firms received by individuals	390.2	397.1	408.3	432.6	463.7	496.7	523.6	566.5	592.4	633.7
Household property income	377.7	434.6	518.8	603.7	660.8	743.4	830.6	883.4	930.3	976.2
Current transfers from government	680.5	734.6	823.6	888.7	959.1	1 010.3	1 054.2	1 086.4	1 137.1	1 178.7
Current transfers from the rest of the world	18.2	20.9	24.0	27.0	29.3	31.4	36.5	33.2	39.3	38.3
<b>Household income</b>	<b>3 365.9</b>	<b>3 666.2</b>	<b>3 930.0</b>	<b>4 237.6</b>	<b>4 510.6</b>	<b>4 832.7</b>	<b>5 123.9</b>	<b>5 385.3</b>	<b>5 545.3</b>	<b>5 764.1</b>
<i>less:</i> Direct taxes	516.3	541.8	566.8	654.3	666.6	731.6	773.9	790.4	807.9	821.4
Social security contributions by wage-earners and self-employed	405.2	437.7	464.7	505.2	557.5	634.9	698.7	744.4	786.6	814.3
Current transfers to the rest of the world	28.0	31.8	39.3	38.1	38.5	41.4	43.9	42.8	43.7	43.1
<b>Disposable income</b>	<b>2 416.4</b>	<b>2 654.9</b>	<b>2 859.2</b>	<b>3 040.0</b>	<b>3 248.0</b>	<b>3 424.8</b>	<b>3 607.4</b>	<b>3 807.7</b>	<b>3 907.1</b>	<b>4 085.3</b>
Household savings	359.1	430.0	467.1	422.3	495.0	473.8	418.3	487.0	461.0	509.4

1. Estimates.

Source: *Note de conjoncture*, Research and Documentary Service of the Ministry of Finance.

Table C. Belgium – Income and expenditure of enterprises

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988 <sup>1</sup>
	Billion francs									
1. Gross operating surplus before subsidies	342	358	331	406	545	647	755	821	910	997
2. Subsidies	56	50	55	53	59	67	71	75	56	70
3. Gross operating surplus (1 + 2)	398	408	386	459	604	714	826	896	966	1 067
4. Net property income payable	65	79	60	57	155	193	211	191	215	241
5. Gross primary income (3 – 4)	333	329	326	402	449	521	615	706	751	826
6. Current transfers paid to government	92	89	87	113	114	133	148	157	160	166
7. Disposable income: (5 – 6)	241	240	239	289	335	390	466	548	591	660
8. Capital transfers received	59	99	131	128	144	115	144	116	119	91
9. Capital resources (7 + 8)	300	339	370	417	479	505	608	696	710	751
10. Gross capital formation	298	335	304	348	313	399	377	390	489	564
11. Net lending (9 – 10)	+ 2	+ 4	+ 66	+ 69	+ 166	+ 106	+ 233	+ 275	+ 220	+ 187
	Percentage of GNP									
Gross operating surplus	12.2	11.6	10.6	11.6	14.5	15.9	17.2	17.7	18.3	19.2
Disposable income	7.4	6.8	6.6	7.3	8.0	8.7	9.7	10.8	11.2	11.8
Capital resources	9.2	9.7	10.2	10.6	11.5	11.2	12.7	13.7	13.4	13.5
Gross capital formation	9.1	9.6	8.4	8.8	7.5	8.9	7.9	7.7	9.2	10.1
Net lending	+ 0.1	+ 0.1	+ 1.8	+ 1.8	+ 4.0	+ 2.4	+ 4.9	+ 5.4	+ 4.2	+ 3.4

1. Estimates.

Source: National Bank of Belgium, 1988 Report.

Table D. Belgium – Government revenue and expenditure

Fr. billion

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988 <sup>1</sup>
<b>General Government</b>										
Current revenue	1 242.2	1 293.6	1 301.9	1 434.3	1 487.3	1 629.8	1 715.4	1 737.2	1 855.4	1 925.8
Income from property and firms	3.4	20.4	28.3	43.6	23.5	32.0	39.2	32.0	34.2	22.5
less: Interest on the public debt	-164.6	-211.5	-285.2	-363.3	-392.3	-443.0	-511.3	-567.4	-561.3	-573.9
Indirect taxes	387.7	412.1	436.4	477.1	511.5	533.4	558.7	575.6	616.6	658.9
Direct taxes on households	516.3	541.8	566.8	654.3	666.6	731.6	773.9	790.4	807.9	821.4
Social security contributions by wage-earners and self-employed	405.2	437.7	464.7	505.2	557.5	634.9	698.7	744.4	786.6	814.3
Direct taxes on companies	91.9	89.7	87.5	112.9	115.0	133.1	148.4	157.1	164.4	174.9
Current transfers from the rest of the world	2.3	3.4	3.4	4.5	5.5	7.8	7.8	5.1	7.0	7.7
Current expenditure	1 339.4	1 454.5	1 610.8	1 720.9	1 823.8	1 912.9	2 006.6	2 074.4	2 130.2	2 196.7
Public consumption	588.1	643.6	699.9	740.3	765.3	799.6	854.0	883.5	890.8	901.8
Subsidies	55.8	50.3	55.3	53.4	59.3	68.0	71.1	75.0	55.7	63.3
Social security transfers to wage-earners and self-employed	604.1	655.7	734.8	797.7	866.6	907.4	943.2	976.8	1 020.8	1 058.5
Other current transfers (net) to households	76.4	78.9	88.8	91.0	92.5	102.9	111.0	109.6	116.3	120.2
Current transfers to the rest of the world	15.0	26.0	32.0	38.5	40.1	35.0	27.3	29.5	46.6	52.6
Savings of general government	-97.2	-160.9	-308.9	-286.6	-336.5	-283.1	-291.2	-337.2	-274.8	-270.9
<b>Central Government</b>										
Current revenue	774.4	800.1	775.9	856.5	859.5	902.6	915.6	882.3	950.1	..
Income from property and firms	-30.0	-17.0	-12.5	2.6	-18.8	-13.8	-12.2	-24.7	-24.0	..
less: Interest on the public debt	-131.3	-171.6	-241.3	-312.8	-334.7	-385.4	-452.8	-509.2	-507.3	..
Indirect taxes	377.5	401.1	424.2	463.3	495.4	515.1	540.7	556.5	597.1	..
Direct taxes on households	472.6	501.4	523.7	595.5	607.9	659.0	698.0	711.4	727.1	..
Direct taxes on companies	83.3	82.8	78.4	103.4	104.2	119.9	134.1	143.2	150.2	..
Current transfers from the rest of the world	2.3	3.4	3.4	4.5	5.5	7.8	7.8	5.1	7.0	..
Current expenditure	863.9	926.4	1 065.7	1 145.1	1 190.2	1 232.3	1 242.5	1 274.2	1 235.0	..
Public consumption	440.5	476.7	519.0	545.9	560.7	582.6	625.4	641.1	650.0	..
Subsidies	54.7	49.0	54.0	52.2	57.9	66.4	69.2	73.0	53.7	..
Current transfers (net) to households	64.1	65.8	75.0	75.9	76.7	86.3	92.9	90.4	96.0	..
Transfers (net) to the rest of the world	15.0	26.0	32.0	38.5	40.1	35.0	27.3	29.5	46.6	..
Transfers (net) to local authorities	79.5	83.2	94.2	97.9	103.8	119.6	123.9	134.8	125.5	..
Transfers (net) to social security	210.1	225.7	291.5	334.7	351.0	342.4	303.8	305.4	263.2	..
Savings of central government	-89.5	-126.3	-289.8	-288.6	-330.7	-329.7	-326.9	-391.9	-284.9	..

1. Estimates.

Source: Note de conjoncture, Research and Documentary Service of the Ministry of Finance.

Table E. Belgium – Labour market

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
<b>Labour market</b>	In thousands <sup>2</sup>										
Labour force <sup>1</sup>	4 081	4 140	4 156	4 173	4 197	4 213	4 214	4 202	4 212	4 217	4 222
Domestic employment	3 753	3 798	3 797	3 722	3 672	3 634	3 635	3 662	3 698	3 712	3 759
of which: Employees	3 132	3 172	3 174	3 099	3 051	3 007	2 998	3 018	3 043	3 047	3 085
Wholly unemployed	290	304	322	416	490	545	546	506	478	466	424
of which: Completely insured	265	276	295	379	443	491	494	456	431	424	386
Partially unemployed, daily average	78.0	80.5	80.4	93.3	82.2	81.2	71.3	67.3	62.4	63.5	49.6
Vacancies, annual average	5.1	5.5	4.3	4.4	4.4	6.2	8.0	18.4	17.7	14.7	21.5
<b>Employment by activity</b>	In per cent										
Civilian employment	100	100	100	100	100	100	100	100	100	100	..
Farm	3.2	3.1	3.0	3.0	2.9	2.9	2.9	2.9	2.8	2.7	..
Non-farm	96.8	96.9	97.0	97.0	97.1	97.1	97.1	97.1	97.2	97.3	..
Wage and salary earners	82.9	83.0	83.0	82.7	82.5	82.2	81.9	81.8	81.9	81.7	..
Other	13.9	13.9	14.0	14.3	14.6	14.9	15.2	15.3	15.3	15.6	..
Secondary sector	35.7	34.6	33.9	32.5	31.4	30.7	30.0	29.4	28.8	28.2	..
of which: Manufacturing industry	26.0	25.0	24.5	23.7	23.2	22.9	22.7	22.2	21.7	21.2	..
Construction	7.9	7.9	7.6	7.0	6.5	6.0	5.6	5.6	5.6	5.6	..
Tertiary sector	61.1	62.2	63.1	64.5	65.6	66.6	67.0	67.7	68.3	69.0	..
of which: Trade	18.7	18.6	18.6	18.8	19.0	19.1	19.3	19.3	19.4	19.8	..
Transport and communication	7.2	7.2	7.4	7.5	7.5	7.4	7.3	7.2	7.1	7.0	..
Government	17.8	18.5	19.0	19.5	20.1	20.2	20.4	20.6	21.0	20.6	..

1. Including border workers (net) and armed forces.

2. Data at the 30th June, except for the partially unemployed and vacancies.

Source: *Note de conjoncture*, Research and Documentary Service of the Ministry of Finance.



Table F. Belgium – Area breakdown of foreign trade

Millions US \$

	1979	1980	1981	1982	1983	1984	1985	1986	1987	1988
<b>Exports, fob</b>										
World	56 214	64 498	55 475	52 405	51 841	51 704	53 667	68 730	83 038	91 956
OECD	48 397	54 969	46 481	44 296	43 783	43 636	45 612	59 803	73 069	80 731
EEC	41 176	46 313	38 808	36 978	36 278	35 627	37 061	49 037	59 739	65 721
Germany	12 661	13 717	11 148	10 719	10 964	10 194	9 971	13 560	16 462	17 886
France	10 782	12 522	10 650	10 161	9 444	9 524	10 179	13 763	16 978	18 369
Netherlands	9 079	9 801	8 202	7 432	7 380	7 202	7 644	10 322	12 480	13 506
United Kingdom	4 535	5 470	4 777	5 061	5 106	5 125	5 251	5 980	6 991	8 580
Italy	2 985	3 562	2 819	2 642	2 420	2 656	2 921	4 009	5 290	5 723
USA	2 102	2 160	2 344	2 306	2 667	3 136	3 401	3 640	4 319	4 578
Other	5 117	6 495	5 327	5 011	4 837	4 872	5 149	7 125	9 010	10 431
Non-OECD	7 470	9 043	8 413	7 572	7 541	7 631	7 605	8 371	9 345	10 616
COMECON	1 114	1 347	1 141	926	1 103	963	1 085	1 049	1 076	1 166
OPEC	2 292	2 986	2 928	2 322	2 074	1 912	1 714	1 599	1 482	1 512
Other	4 064	4 710	4 343	4 324	4 362	4 755	4 805	5 722	6 786	7 937
Unspecified	346	486	580	536	516	436	449	555	623	608
<b>Imports, cif</b>										
World	60 353	71 679	61 852	57 829	54 096	55 252	56 048	68 616	83 304	92 103
OECD	50 186	58 003	49 455	46 381	45 975	45 936	47 584	59 899	72 587	80 105
EEC	40 691	45 255	37 887	36 526	36 457	36 917	38 176	48 569	58 949	65 602
Germany	13 273	14 093	11 701	11 568	11 383	11 012	11 789	15 876	20 241	22 548
France	9 494	10 355	8 488	8 039	7 744	8 081	8 456	10 871	13 065	14 197
Netherlands	10 015	11 736	10 447	10 178	9 977	10 377	10 229	12 257	14 287	16 374
United Kingdom	4 807	5 787	4 607	4 069	4 696	4 842	5 013	5 727	6 542	7 043
Italy	2 451	2 571	2 085	2 079	2 023	1 978	2 001	2 909	3 547	3 929
USA	3 985	5 493	4 439	4 066	3 530	3 326	3 184	3 463	3 954	3 924
Other	5 509	7 254	7 128	5 787	5 988	5 692	6 223	7 866	9 683	10 578
Non-OECD	10 126	13 626	12 367	11 407	8 082	9 031	8 236	8 566	10 381	11 939
COMECON	1 075	1 656	1 460	1 860	1 545	2 252	1 688	1 552	1 865	1 873
OPEC	4 474	6 587	6 177	4 880	2 362	2 312	1 840	1 837	2 150	2 328
Other	4 576	5 382	4 729	4 666	4 174	4 466	4 707	5 176	6 366	7 737
Unspecified	40	50	29	40	39	284	227	150	335	58

Source: OECD, Foreign Trade Statistics, Series A.

Table G. **Belgium – Commodity breakdown of foreign trade**  
Millions US \$

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>Exports, fob</b>	44 793	56 083	63 960	55 238	51 747	51 676	50 968	53 316	68 649	82 951
<b>SITC sections</b>										
0 Food and live animals	3 777	4 593	5 347	5 274	5 025	4 576	4 757	4 624	6 116	7 460
1 Beverages and tobacco	292	356	404	388	408	402	375	415	544	686
2 Crude materials, inedible, except fuels	1 325	1 586	1 669	1 506	1 352	1 339	1 497	1 490	1 716	2 077
3 Mineral fuels, lubricants and related materials	1 952	3 580	5 369	5 021	4 507	4 370	4 068	3 535	3 388	3 148
4 Animal and vegetable oils and fats	196	231	233	254	254	264	387	423	343	337
5 Chemicals	5 701	6 644	7 422	6 477	6 173	6 216	6 449	6 882	8 597	10 444
6 Manufactured goods classified chiefly by material	15 824	19 246	22 054	17 603	15 746	15 950	15 972	16 560	20 533	24 444
7 Machinery and transport equipment	10 899	12 930	13 919	12 093	11 866	11 668	10 757	12 429	17 784	22 447
8 Miscellaneous manufactured articles	3 224	3 754	4 465	3 887	3 661	3 756	3 709	3 883	5 377	6 753
9 Others	1 602	3 162	3 077	2 733	2 756	3 134	2 997	3 075	4 250	5 154
<b>Imports, cif</b>	48 268	60 186	71 186	61 448	57 367	53 654	54 386	55 561	68 025	82 598
<b>SITC sections</b>										
0 Food and live animals	5 015	5 919	6 434	5 851	5 736	5 094	5 184	4 973	6 272	7 335
1 Beverages and tobacco	624	768	837	678	655	648	621	641	840	1 027
2 Crude materials, inedible, except fuels	3 212	4 296	5 172	4 476	3 864	4 010	4 056	4 169	4 282	5 221
3 Mineral fuels, lubricants and related materials	6 007	8 580	12 393	12 560	11 956	9 501	10 232	9 323	7 284	7 739
4 Animal and vegetable oils and fats	256	351	323	293	283	272	365	353	290	273
5 Chemicals	4 267	5 376	5 972	5 235	5 144	5 184	5 437	5 735	7 119	8 698
6 Manufactured goods classified chiefly by material	11 172	13 585	15 786	12 145	11 326	11 115	11 386	11 442	14 876	17 976
7 Machinery and transport equipment	12 570	14 740	16 044	13 245	12 501	12 150	11 773	12 976	19 129	24 431
8 Miscellaneous manufactured articles	4 518	5 423	6 136	5 066	4 723	4 390	4 229	4 515	6 481	8 469
9 Others	628	1 148	2 088	1 898	1 179	1 289	1 102	1 434	1 452	1 429

Source: OECD, *Foreign Trade Statistics, Series C*.

Table H. Belgium – BLEU Balance of payments

US dollars millions<sup>1</sup>

	1979	1980	1981	1982	1983	1984	1985	1986 <sup>3</sup>	1987
Exports, fob <sup>2</sup>	51 291	57 137	50 585	48 013	47 612	48 006	48 719	62 168	79 598
Imports, fob <sup>2</sup>	55 419	62 138	54 646	50 904	48 836	48 843	48 910	61 022	78 639
Trade balance	-4 128	-5 001	-4 061	-2 891	-1 224	-837	-191	1 146	959
Services, net	2 047	1 378	1 174	1 711	1 954	1 674	1 588	2 932	3 483
Balance on goods and services	-2 081	-3 623	-2 887	-1 180	730	837	1 397	4 078	4 442
Private transfers, net	-345	-376	-412	-241	-180	-173	-125	-215	-115
Official transfers, net	-624	-937	-889	-991	-982	-708	-579	-759	-1 384
Current balance	-3 050	-4 936	-4 188	-2 412	-432	-44	693	3 104	2 943
Long-term capital (excluding special transactions)	-150	3 394	3 880	2 455	-262	-50	-54	-3 762	-1 347
a) private	-1 081	919	1 365	322	-624	-1 390	-735	-3 480	-600
b) official	931	2 475	2 515	2 133	362	1 340	681	-282	-747
Basic balance	-3 200	-1 542	-308	43	-694	-94	639	-658	1 596
Non-monetary short-term private capital	-1 283	-1 976	-2 956	-810	-252	-237	-520	-770	246
Non-monetary short-term official capital	307	571	1 220	1 037	68	253	-747	1 222	977
Errors and omissions	-379	352	-746	-260	-409	-165	-125	206	327
Balance on non-monetary transactions	-4 555	-2 595	-2 790	10	-1 287	-243	-753	0	3 146

1. Exchange rates: 1979: 1\$ = 29.31BF; 1980: 1\$ = 29.25BF; 1981: 1\$ = 37.14BF; 1982: 1\$ = 45.70BF; 1983: 1\$ = 51.13BF; 1984: 1\$ = 57.76BF; 1985: 1\$ = 59.43BF; 1986: 1\$ = 44.69BF; 1987: 1\$ = 37.34BF.

2. Including commission processing and non-monetary gold.

3. Figures have been revised from 1986 on.

Source: OECD Secretariat estimates.

Luxembourg – Selected background statistics

	Average 1978-87	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>A. Per cent changes from previous year</b>											
Private consumption <sup>1</sup>	2.2	2.9	3.3	2.8	1.6	0.2	-0.1	2.4	1.7	4.2	3.1
Gross fixed capital formation <sup>1</sup>	1.6	1.3	4.1	11.8	-6.7	-0.4	-11.6	-0.4	-3.3	15.8	5.2
GDP <sup>1</sup>	2.9	3.9	2.7	1.2	-0.2	1.5	2.9	6.2	3.7	4.7	2.7
GDP price deflator	5.1	5.3	6.0	7.6	6.8	10.4	6.9	4.4	3.3	1.5	-1.1
Industrial production	2.7	3.4	3.2	-3.5	-5.5	2.3	5.5	11.8	6.8	2.8	0.3
Employment	0.7	-0.6	0.5	0.7	0.3	-0.3	-0.3	0.6	1.5	2.6	2.5
Compensation of employees (current prices)	7.7	5.6	8.1	10.5	9.8	6.9	6.7	8.0	5.4	8.5	7.3
Productivity (GDP <sup>1</sup> /employment)	2.2	4.5	2.1	0.5	-0.5	1.8	3.2	5.6	2.2	2.1	0.2
Unit labour costs (compensation/GDP <sup>1</sup> )	-0.4	-3.5	-0.7	1.6	3.0	-4.6	-3.0	-2.6	-1.6	2.1	5.6
<b>B. Percentage ratios</b>											
Gross fixed capital formation as % of GDP at constant prices	22.8	24.2	24.5	27.1	25.3	24.9	21.4	20.1	18.7	20.7	21.2
Stockbuilding as % of GDP at constant prices	2.2	1.3	-1.3	-1.4	-0.3	0.4	3.4	5.7	6.0	2.2	5.6
Foreign balance as % of GDP at constant prices	2.0	0.6	2.6	-1.2	-1.8	-1.2	1.6	3.3	5.4	7.6	3.3
Compensation of employees as % of GDP at current prices	62.2	63.5	63.1	64.1	66.0	63.0	61.1	59.5	58.6	59.8	63.1
Number of unemployed	1 976	1 200	1 100	1 100	1 600	2 000	2 500	2 700	2 600	2 300	2 660
Unemployment as percent of civilian labour force	1.2	0.8	0.7	0.7	1.0	1.3	1.6	1.7	1.6	1.4	1.6
<b>C. Other indicator</b>											
Current balance (million dollars)	..	..	..	555.2	..	..	..	601.0	883.6	1 051.7	1 137.3

1. At constant 1980 prices.

Source: OECD Secretariat estimates.

Table I. Luxembourg – Gross national product

Frs. billion

	1977	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
	Current prices										
Private consumption	61.1	65.0	70.6	78.1	86.3	95.8	104.2	112.6	120.5	126.6	132.1
Public consumption	16.3	17.6	19.5	22.2	24.7	26.1	27.6	29.8	32.3	35.5	37.3
Gross fixed capital formation	25.7	27.0	29.8	36.0	36.0	39.6	37.1	38.6	38.2	46.1	50.5
Change in stocks	-4.2	1.4	-2.5	-1.8	-0.8	0.3	5.8	9.6	6.2	2.3	2.2
<b>Total domestic demand</b>	<b>98.9</b>	<b>111.0</b>	<b>117.4</b>	<b>134.5</b>	<b>146.1</b>	<b>161.8</b>	<b>174.7</b>	<b>190.6</b>	<b>197.2</b>	<b>210.6</b>	<b>222.1</b>
Exports of goods and services	88.5	94.0	111.1	117.3	122.5	141.1	157.4	195.7	222.3	224.3	225.2
Imports of goods and services	85.2	92.7	106.3	118.9	127.0	144.1	157.4	192.6	212.0	214.3	223.7
<b>Gross domestic product at market prices (SNA)</b>	<b>102.3</b>	<b>112.2</b>	<b>122.1</b>	<b>132.9</b>	<b>141.7</b>	<b>158.8</b>	<b>174.7</b>	<b>193.7</b>	<b>207.5</b>	<b>220.5</b>	<b>223.5</b>
Net factor income from abroad	19.6	20.4	21.5	26.6	34.8	58.0	69.2	72.9	80.6	76.9	72.3
<b>Gross domestic product at factor costs</b>	<b>121.9</b>	<b>132.6</b>	<b>143.6</b>	<b>159.5</b>	<b>176.5</b>	<b>216.8</b>	<b>243.9</b>	<b>266.6</b>	<b>288.1</b>	<b>297.4</b>	<b>295.8</b>
	1980 prices										
Private consumption	71.5	73.5	76.0	78.1	79.4	79.5	79.4	81.3	82.7	86.2	87.4
Public consumption	20.5	21.0	21.5	22.2	22.5	22.8	22.7	23.1	23.9	24.8	25.7
Gross fixed capital formation	30.6	31.0	32.2	36.0	33.6	33.5	29.6	29.5	28.5	33.1	34.8
Change in stocks	-2.5	1.7	-1.8	-1.8	-0.4	0.5	4.8	8.4	9.2	3.5	3.3
<b>Total domestic demand</b>	<b>120.0</b>	<b>127.2</b>	<b>128.0</b>	<b>134.5</b>	<b>135.1</b>	<b>136.3</b>	<b>136.5</b>	<b>142.3</b>	<b>144.3</b>	<b>147.6</b>	<b>151.2</b>
Exports of goods and services	104.0	108.4	118.7	117.3	113.1	114.0	119.9	140.7	153.3	162.7	173.2
Imports of goods and services	101.6	107.6	115.2	118.9	115.6	115.6	117.7	135.8	145.1	150.5	160.8
<b>Gross domestic product at market prices (SNA)</b>	<b>122.5</b>	<b>128.0</b>	<b>131.4</b>	<b>132.9</b>	<b>132.7</b>	<b>134.7</b>	<b>138.6</b>	<b>147.1</b>	<b>152.5</b>	<b>159.7</b>	<b>163.6</b>

Note: Data may not add because of rounding.

Source: STATEC.

**Table J. Luxembourg – Labour force, employment and unemployment**  
Thousands

	1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
<b>Labour force (A + B)<sup>1</sup></b>	157.5	158.2	159.3	160.3	160.3	160.3	161.4	163.5	167.4	172.3
<b>A. Unemployed</b>	1.2	1.1	1.1	1.6	2.0	2.5	2.7	2.6	2.3	2.7
<b>B. Total employed</b>	156.3	157.1	158.2	158.7	158.3	157.8	158.7	160.9	165.1	169.6
Agriculture	9.7	9.1	8.5	7.9	7.6	7.2	6.9	6.7	6.5	6.1
Industry	46.0	44.6	43.6	42.9	42.0	40.5	40.1	39.8	40.3	39.7
Iron and Steel	19.7	18.7	17.7	17.2	16.7	15.0	13.8	13.1	13.0	12.1
Construction	15.0	15.6	16.4	15.9	15.3	15.1	14.4	13.9	14.2	15.3
Services	66.9	68.6	70.0	72.0	73.1	72.9	74.7	77.4	80.4	84.2
General Government	18.7	19.2	19.7	20.0	20.3	22.1	22.6	23.1	23.7	24.4
Employees	133.3	134.9	137.0	138.7	138.7	138.4	139.5	142.1	146.6	151.4
Self employed and family helpers	23.0	22.0	21.2	20.0	19.6	19.4	19.2	18.8	18.5	18.2
<b>Unemployment rate</b>	0.8	0.7	0.7	1.0	1.2	1.6	1.7	1.6	1.4	1.6

1. Domestic definition (including border workers, net).  
Source: STATEC.

*BASIC STATISTICS :*  
*INTERNATIONAL COMPARISONS*

**BASIC STATISTICS: INTERNATIONAL COMPARISONS**

	Units	Reference period <sup>1</sup>	Australia	Austria	Belgium	Canada	Denmark	Finland	France	Germany	Greece	Iceland	Ireland	Italy	Japan	Luxembourg	Netherlands	New Zealand	Norway	Portugal	Spain	Sweden	Switzerland	Turkey	United Kingdom	United States	Yugoslavia
<b>Population</b>																											
Total	Thousands	1987	16 249	7 575	9 868	25 803	5 130	4 932	55 627	61 149	9 998	245	3 542	57 331	122 091	372	14 671	3 284	4 184	10 280	38 830	8 399	6 610	52 010	56 890	243 915	23 410
Inhabitants per sq.km	Number		2	90	324	3	119	15	102	246	76	2	50	190	328	143	432	12	13	112	77	19	160	67	232	26	90
Net average annual increase over previous 10 years	%		1.4	0.0	0.0	1.0	0.1	0.4	0.4	0.0	0.7	1.0	0.8	0.3	0.7	0.3	0.6	0.5	0.3	0.5	0.7	0.2	0.5	2.2	0.1	1.0	0.8
<b>Employment</b>																											
Total civilian employment (TCE) <sup>2</sup>	Thousands	1987	7 079	32 997	3 645 (86)	11 954	2 630 (86)	2 414	20 988	25 456	3 601 (86)	117 (86)	1 068 (86)	20 584	59 110	164 (86)	5 135 (86)	1 517 (86)	2 090	4 156	11 370	4 337	3 219 (86)	15 632 (86)	24 987	112 440	..
of which: Agriculture	% of TCE		5.8	8.6	2.9	4.9	5.9	10.4	7.1	5.2	28.5	10.3	15.7	10.5	8.3	3.7	4.9	10.5	6.7	21.9	16.1	4.2	6.5	55.7	2.4	3.0	..
Industry	% of TCE		26.6	37.7	29.7	25.3	28.2	31.2	30.8	40.5	28.1	36.8	28.7	32.6	33.8	32.9	25.5	28.9	27.0	35.8	32.0	30.2	37.7	18.1	29.8	27.1	..
Services	% of TCE		67.6	53.7	67.4	69.8	65.9	58.4	62.1	54.3	43.4	53.0	55.5	56.8	57.9	63.4	69.6	60.6	66.3	42.3	51.8	65.6	55.8	26.2	67.8	69.9	..
<b>Gross domestic product (GDP)</b>																											
At current prices and current exchange rates	Billion US\$	1987	193.7	117.2	138.9	410.9	101.3	89.5	879.9	1 117.8	47.2	5.3	29.4	758.1	2 376.5	6.0	213.2	35.1	82.7	36.7	289.2	158.5	171.1	67.4	669.8	4 472.9	61.7 (86)
Per capita	US\$		11 919	15 470	14 071	16 019	19 750	18 151	15 818	18 280	4 719	21 813	8 297	13 224	19 465	16 138	14 530	10 620	19 756	3 761	7 449	18 876	25 848	1 296	11 765	18 338	2 652 (86)
At current prices using current PPP's <sup>3</sup>	Billion US\$	1987	204.9	88.4	116.5	444.5	68.4	63.3	712.2	814.7	63.6	3.8	26.7	702.5	1 609.4	5.5	179.7	35.3	64.5	61.4	337.1	115.7	104.9	220.9	702.5	4 472.9	..
Per capita	US\$		12 612	11 664	11 802	17 211	13 329	12 838	12 803	13 323	6 363	15 508	7 541	12 254	13 182	14 705	12 252	10 680	15 405	6 297	8 681	13 771	15 842	4 247	12 340	18 338	..
Average annual volume growth over previous 5 years	%	1987	3.7	1.8	1.5	4.2	2.7	3.2	1.6	2.1	1.4	3.1	1.8	2.6	3.9	4.0	2.1	2.1	4.1	2.1	2.9	2.4	2.3	6.0	3.2	4.3	..
<b>Gross fixed capital formation (GFCF)</b>																											
of which: Machinery and equipment	% of GDP	1987	23.8	22.6	16.3	21.0	18.8	23.5	19.4	19.4	17.4	18.8	17.4	19.9	28.9	22.6	20.3	21.2	28.0	25.3	20.7	19.0	25.2	24.5	17.3	17.3	21.6 (86)
Residential construction	% of GDP		11.5 (86)	9.7	7.0 (86)	6.9 (86)	7.8	9.7	8.3	8.4	7.1	6.5	9.4 (86)	10.0	10.5 (86)	9.0 (82)	10.0	13.1 (85)	7.9 (86)	14.7 (81)	6.4 (86)	8.5 (86)	8.8	8.6 (84)	8.1 (86)	7.6	..
Average annual volume growth over previous 5 years	%	1987	4.7 (86)	4.6 (86)	3.4	6.4 (86)	4.4	5.5	5.2	5.2	4.6	3.5	4.6 (86)	5.2	5.0 (86)	4.7 (82)	5.2	4.6 (85)	5.0 (86)	6.4 (81)	4.0 (86)	3.8 (86)	6.0	7.3	4.7	7.0	..
<b>Gross saving ratio<sup>4</sup></b>																											
	% of GDP	1987	20.3	24.1	17.6	18.8	15.5	22.5	19.6	23.9	14.7	15.2	18.6	20.9	32.3	56.5	21.8	20.3	23.4	27.5	21.9	18.0	31.7	24.1	17.2	14.7	..
<b>General government</b>																											
Current expenditure on goods and services	% of GDP	1987	18.2	19.0	16.3	19.5	25.4	20.7	19.1	19.8	19.5	17.7	18.0	16.7	9.6	16.7	16.1	17.6	20.9	14.4	14.4	26.7	12.8	9.1	20.9	18.6	14.3 (86)
Current disbursements <sup>5</sup>	% of GDP	1987	35.0 (86)	46.6 (86)	51.6 (86)	43.3 (86)	53.4 (86)	38.2	48.4	43.0 (86)	42.9 (86)	27.3 (86)	49.2 (84)	45.2	27.4 (86)	45.3 (84)	54.0 (86)	..	47.8 (86)	37.6 (81)	36.1 (86)	60.0 (86)	30.1	..	42.9 (86)	35.5 (86)	..
Current receipts	% of GDP	1987	34.7 (86)	47.9 (86)	45.0 (86)	39.4 (86)	58.0 (86)	39.6	49.4	44.9 (86)	36.6 (86)	32.1 (86)	43.3 (84)	39.3 (86)	31.3 (86)	54.1 (84)	52.8 (86)	..	56.5 (86)	33.3 (81)	35.0 (86)	61.6 (86)	34.5	..	41.6 (86)	31.2 (86)	..
<b>Net official development assistance</b>																											
	% of GNP	1987	0.33	0.17	0.49	0.47	0.88	0.50	0.74	0.39	..	0.05	0.20	0.35	0.31	0.10	0.98	0.26	1.09	0.08	0.06	0.88	0.31	..	0.28	0.20	..
<b>Indicators of living standards</b>																											
Private consumption per capita using current PPP's <sup>3</sup>	US\$	1987	7 389	6 535	7 593	10 059	7 236	6 966	7 796	7 374	4 273	9 930*	4 378	7 543	7 623	8 694	7 461	6 236	8 155	4 167	5 521	7 273	9 349*	2 844	7 731	12 232	1 335 (86)*
Passenger cars, per 1 000 inhabitants	Number	1985	..	306 (81)	335 (84)	421 (82)	293	329 (86)	369 (86)	441 (86)	127	431	206 (83)	355 (84)	221 (83)	439 (87)	341	455	382 (86)	135 (82)	252	377	402	18 (82)	312 (83)	473 (84)	121 (83)
Telephones, per 1 000 inhabitants	Number	1985	540 (83)	460 (83)	414 (83)	664 (83)	783	615	614 (86)	641 (86)	373	525 (83)	235 (83)	448 (84)	535 (83)	425 (86)	410 (86)	646	622 (84)	166 (83)	381 (86)	890 (83)	1 334	55 (83)	521 (84)	650 (84)	122 (83)
Television sets, per 1 000 inhabitants	Number	1985	..	300 (81)	303 (84)	471 (80)	392	370 (86)	394 (86)	377 (86)	158 (80)	303	181 (80)	244 (84)	250 (80)	336 (83)	317 (86)	291	346 (86)	140 (80)	256 (82)	390	337	76 (79)	336 (84)	621 (80)	175 (83)
Doctors, per 1 000 inhabitants	Number	1985	..	1.7 (82)	2.8 (84)	1.8 (82)	2.5 (84)	2.3 (86)	2.3 (86)	2.5 (84)	2.8 (83)	2.4 (84)	1.3 (82)	3.6 (82)	1.3 (82)	1.9 (86)	2.2 (84)	2.4	2.2	1.8 (82)	3.4 (86)	2.5	1.4 (84)	1.5 (83)	0.5 (83)	2.0 (85)	1.6 (82)
Infant mortality per 1 000 live births	Number	1985	9.2 (84)	11.0	9.4	9.1 (83)	7.9	5.8 (86)	7.0 (86)	9.1	14.1	5.7	8.9	10.9	5.9 (84)	9.0	9.6 (86)	10.8	8.5 (86)	17.8	7.0 (84)	6.8	6.9	..	9.4	10.4 (86)	31.7 (83)
<b>Wages and prices (average annual increase over previous 5 years)</b>																											
Wages (earnings or rates according to availability)	%	1987	5.7	4.9	3.4	3.6	6.1	8.5	6.4	3.6	17.4	..	8.8	10.5	2.6	..	2.3	7.4	10.2	17.9	10.3	7.6	..	..	8.5	3.1	..
Consumer prices	%	1987	7.0	3.0	3.5	4.2	4.7	5.0	4.7	1.1	19.3	25.7	5.2	7.6	1.1	2.2	1.3	12.6	7.0	17.2	8.5	5.9	2.1	41.6	4.7	3.3	56.3
<b>Foreign trade</b>																											
Exports of goods, fob*	Million US\$	1987	26 484	27 084	82 824 <sup>7</sup>	94 320	25 632	19 404	147 936	293 424	6 516	1 368	15 948	116 004	230 220	.. <sup>8</sup>	92 592	7 164	21 804	9 144	33 972	44 388	45 312	10 344	130 632	254 124	11 425
as % of GDP	%		13.6	23.0	59.8	22.8	25.3	22.1	16.8	26.2	13.9	25.8	54.8	15.4	9.7	..	43.1	20.1	26.2	25.3	11.8	27.9	26.6	15.7	19.7	5.7	16.3
average annual increase over previous 5 years	%		4.4	11.6	9.6	6.5	11.1	8.2	9.0	10.7	8.7	13.7	14.6	9.6	12.1	..	6.9	3.4	4.4	17.0	10.4	10.6	11.8	12.1	7.7	3.7	2.2
Imports of goods, cif*	Million US\$	1987	26 964	32 580	82 992 <sup>7</sup>	87 528	25 452	18 828	153 204	227 916	13 116	1 584	13 620	124 596	150 300	..	91 068	7 224	22 428	13 248	48 816	40 596	50 424	14 460	153 768	424 440	12 603
as % of GDP	%		13.9	27.7	59.9	21.1	25.1	21.4	17.4	20.4	27.9	29.9	46.8	16.6	6.3	..	42.4	20.2	27.0	36.7	17.0	25.5	29.6	21.9	23.2	9.6	18.5
average annual increase over previous 5 years	%		2.8	10.8	7.4	9.7	8.8	7.0	6.7	6.5	5.6	10.8	5.9	7.7	2.8	..	7.2	4.6	7.8	6.9	9.1	8.0	12.0	9.7	9.1	11.7	-3.1
<b>Total official reserves<sup>6</sup></b>																											
As ratio of average monthly imports of goods	Ratio	1987	6 441	6 049	7 958 <sup>7</sup>	5 778	7 153	4 592	26 161	58 846	2 007	221	3 393	23 631	57 925	..	12 818	2 298	10 105	3 047	22 035	5 974	22 283	1 254	30 070	33 657	557
			3.4	2.6	1.4	0.9	4.0	3.5	2.4	3.7	2.2	2.0	3.5	2.7	5.5	..	2.0	4.5	6.4	3.3	6.4	2.1	6.3	1.2	2.8	1.1	0.6

\* At current prices and exchange rates.  
1. Unless otherwise stated.  
2. According to the definitions used in OECD *Labour Force Statistics*.  
3. PPP's = Purchasing Power Parities.  
4. Gross saving = Gross national disposable income minus Private and Government consumption.  
5. Current disbursements = Current expenditure on goods and services plus current transfers and payments of property income.  
6. Gold included in reserves is valued at 35 SDR's per ounce. End of year.  
7. Including Luxembourg.  
8. Included in Belgium.  
9. Including non-residential construction.

Sources:  
Population and Employment: OECD *Labour Force Statistics*.  
GDP, GFCF, and General Government: OECD *National Accounts*, Vol. I and OECD *Economic Outlook*,  
*Historical Statistics*.  
Indicators of living standards: Miscellaneous national publications.  
Wages and Prices: OECD *Main Economic Indicators*.  
Foreign trade: OECD *Monthly Foreign Trade Statistics, series A*.  
Total official reserves: IMF *International Financial Statistics*.



## **EMPLOYMENT OPPORTUNITIES**

### *Economics and Statistics Department, OECD*

The Economics and Statistics Department of the OECD offers challenging and rewarding opportunities to economists interested in applied policy analysis in an international environment. The Department's concerns extend across the entire field of economic policy analysis, both macroeconomic and microeconomic, and it is also responsible for the collection, processing and dissemination of a wide range of internationally consistent statistics. On the economic side, its main task is to provide, for discussion by committees of senior officials from Member countries, documents and papers dealing with current policy concerns. Within this programme of work, three major responsibilities are :

- To prepare regular surveys of the economies of individual Member countries;
- To issue full twice-yearly reviews of the economic situation and prospects of the OECD countries in the context of world economic trends;
- To analyse specific policy issues in a medium-term context for the OECD as a whole, and to a lesser extent for the non-OECD countries.

The documents prepared for these purposes, together with much of the Department's other economic work and its statistical output, appear in published form in *OECD Economic Outlook*, *OECD Economic Surveys*, *OECD Economic Studies*, the Department's Working Paper series, and an extensive list of statistical publications.

The Department maintains a world econometric model, INTERLINK, which plays an important role in the preparation of the policy analyses and twice-yearly projections. The availability of extensive cross-country databases and good computer resources facilitates comparative empirical analysis, much of which is incorporated into the model.

The Department is made up of about 90 professional economists and statisticians from a variety of backgrounds from all Member countries. Most projects are done by small teams and last from four to eighteen months. Within the Department, ideas and points of view are widely discussed; there is a lively professional interchange; and all professional staff have the opportunity to contribute actively to the programme of work.

### **Skills ESD is looking for**

- a) Solid competence in using the tools of both microeconomic and macroeconomic theory to answer policy questions. In our experience, this requires the equivalent of a PhD in economics or substantial relevant professional experience to compensate for a lower degree.
- b) Solid knowledge of economic statistics and quantitative methods; this includes how to identify data, estimate structural relationships, apply and interpret basic techniques of time series analysis, and test hypotheses. It is essential to be able to interpret results sensibly in an economic policy context.
- c) A keen interest in and knowledge of policy issues, economic developments and their political/social contexts.

- d) Interest and experience in analysing questions posed by policy-makers and presenting the results to them effectively and judiciously. Thus work experience in government agencies or policy research institutions is an advantage.
- e) The ability to write clearly, effectively and to the point. The OECD is a bilingual organisation with French and English as the official languages. Candidates must have excellent knowledge of one of these languages and some knowledge of the other. Knowledge of other languages might also be an advantage for certain posts.
- f) For some posts, expertise in a particular area may be important, but a successful candidate can expect to be asked to contribute in a broader range of topics relevant to the work of the Department. Thus, except in rare cases, the Department does not recruit narrow specialists.
- g) The Department works on a tight time schedule and strict deadlines. Moreover, much of the work in the Department is carried out in small groups of economists. Thus, the ability to work with other economists, from a variety of professional backgrounds, and to produce work on time is important.

## **General Information**

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