THE PORTUGUESE ECONOMY IN 1998

1. INTRODUCTION

In 1998, the Portuguese economy recorded again a strong growth. According to the estimates of the Banco de Portugal, included this *Economic Bulletin* (EB), Gross Domestic Product (GDP) shall have grown 4.0 per cent in real terms. The current stage of the economic cycle is characterised by a very strong growth of domestic demand, and by a negative contribution of net external demand to GDP growth.

The appraisal made by the Banco de Portugal on the current economic situation in Portugal is basically identical to that presented in the September EB. However, the current estimate of output growth in 1998 corresponds to the lower limit of the forecast interval of 4.0-4.25 per cent presented in September. This change resulted to a great extent from the downward revision of merchandise exports growth. Indeed, the slowdown of demand for Portuguese exports was sharper than expected in September, giving rise to a more negative contribution of net external demand. The growth of domestic demand matches the September forecast, although a slight change in its composition has been recorded. Private consumption is now estimated to grow more than expected, while Gross Fixed Capital Formation (GFCF) is now estimated to have grown less than formerly expected.

In 1998, domestic demand is estimated to have grown 5.5 per cent in real terms, reflecting a very significant growth of all its components. The sharp fall in interest rates due to the participation of Portugal in the Economic and Monetary Union, provided the key element dynamising domestic demand[(1)]. Indeed, the reduction in liquidity constraints resulted in a particularly strong growth of consumption and housing expenditure in the case of households, and a strong growth of investment — in parallel with relatively high confidence levels — as regards companies.

The current situation of the Portuguese economy is characterised by a strong growth of private consumption. In 1998, private consumption grew above GDP, which happened for the first time since 1993. Private consumption accounted for 75 per cent of output growth, replacing GFCF as the leading engine of growth; nevertheless, GFCF also grew strongly.

Alongside the greater contribution of domestic demand to GDP growth, the negative contribution of net external demand increased in 1998. Merchandise exports recorded a slowdown, namely from the second half of 1998 onwards. The slowdown of external demand directed towards Portuguese exports reflected the slowdown of imports of the European Union economies, as well as the lower economic growth in the extra-EU area. The slowdown of external demand influenced the behaviour of the Portuguese industry, the most exposed sector to international developments. In the second half of 1998, the external order book decreased, while production and turnover in manufacturing industry recorded a strong slowdown. Consequently, industrials' confidence fell. In addition to the behaviour of exports, the reduction of the contribution of net external demand to GDP growth resulted also from the strong growth of imports, due to the above referred dynamism of domestic demand.

(1) For a discussion of the effects of the reduction of interest rates see box "Interest rates and inflation" in the June 1998 EB.

2. INTERNATIONAL BACKGROUND

In late 1998, after the turbulence triggered by the worsening of the Russian economic and financial crisis in mid-August, international financial markets stabilised. The risk of a sharp slowdown of growth in most industrialised countries, in a context where inflation perspectives remained favourable, led several central banks to cut their reference rates. This change in monetary policies, together with other favourable developments (namely in Brazil, one of the emerging economies most affected by the crisis, where authorities presented a programme aiming at correcting economic imbalances and dealt a package of international financial aid) helped to restore some tranquillity to the financial markets from October. Regarding activity, the leading economies were less dynamic in late 1998, according to the available indicators. The International Monetary Fund (IMF) forecasts, released in December, reflect these developments. The world growth forecast for 1999 was slightly revised downwards from the October forecast, from 2.5 to 2.2 per cent. This figure stands below its 4 per cent historical average. The downward revision was basically widespread, but particularly sharp for Japan, Brazil and Russia. Although the world economic situation was not sharply revised — which indicates more stable short-term perspectives — risks are mostly downwards.

The risks of a sharp slowdown of activity in the USA, following to the financial turbulence between August and October, became more evident. This is due to the strong dynamism of private consumption, the low private saving rate and the significant weight of stock market investments in households' wealth. Nevertheless, activity continued to grow strongly in the third quarter of 1998 (3.5 per cent in year-on-year terms, against 3.6 per cent in the previous quarter). Domestic demand continued to grow strongly, though less than in the previous quarter. In the year as a whole, growth is estimated to have reached 3.6 per cent, according to the IMF (3.9 per cent in 1997) (table 1). In an attempt to sustain growth perspectives for the USA — threatened by the weakening of the international economic situation and the more restrictive domestic financial conditions — the Federal Reserve carried out three cuts of the Fed funds rate between late September and mid-November, amounting to 0.75 p.p. as a whole (from 5.5 to 4.75 per cent).

Recession in Japan continued in late 1998. In the third quarter of the year, real GDP fell for the fourth consecutive quarter (-3.5 per cent in year-on-year terms). The positive contribution of net external demand to growth (due to a stronger reduction of imports) was totally offset by the strong falls in private investment and consumption. The accomplishment of some public expenditure, foreseen in the budgetary package of stimulation to the economy presented in April 1998, were not enough to compensate for the behaviour of the private sector. In mid-November, the government presented a new set of budgetary measures aiming at domestic demand stimulation — the third supplementary budget since the end of the current fiscal year. For 1998 as a whole, the IMF estimates a 2.8 per cent fall in Japanese real output (table 1).

In the euro area (EU-11), GDP increased 2.4 per cent in the third quarter in year-on-year terms, compared with 2.4 and 3.8 per cent in the second and first quarters, respectively. This growth reflects the favourable behaviour of private consumption and investment, since net external demand continued to yield a negative contribution to growth in the leading economies in the area (chart 1). The lower dynamism of the area's export markets in 1998, resulted in a further slowdown of exports in the leading economies in the third quarter. There was also a sharp slowdown of imports. The indicators available for the last months of 1998 point towards a weakening of activity. Inflation in the EU-11 continued to exhibit a moderate pace of growth up to late 1998. In November, the average change of the harmonised consumer price index reached 1.2 per cent, compared with 1.6 per cent in late 1997. The reduction in international prices of commodities — specially oil — contributed partly to this result, leading to sharp falls in producer and import prices in these countries. The appraisal of the economic and financial situation in the euro area as a whole shared by the monetary authorities in the participating countries led to a combined cut in intervention rates — to 3 per cent — in early December (the Italian reference rate was cut to 3.5 per cent on this date, and to 3 per cent at the end of December). This was the level of the official interest rate with which the Third Stage of the Monetary Union began, on 1 January 1999.

Table 1

IMF - ESTIMATES FOR GDP AND INFLATION GROWTH

	Rates of growth (percentage)					
	Real GDP growth			Inflation		
	1997	1998 E		1997	1998 E	
		Dec 98	Revision vis-à-vis Oct98 (p.p.)		Dec 98	Revision vis-à-vis Oct98 (p.p.)
World economy	4.2	2.2	0.2			
Transition economies	1.9	-0.8	-0.6	28.0	21.0	-8.5
Russia	0.7	-5.7	0.3	15.0	26.0	-22.0
Development economies	5.7	2.8	0.5	9.2	10.2	-0.1
Brazil	3.2	0.5	-1.0	7.9	3.9	-1.1
ASEAN - 4	3.7	-10.6	-0.2			
Developed economies	3.2	2.0	0.0	2.1	1.6	-0.1
EU-15	2.7	2.8	-0.1	1.9	1.5	-0.2
United Kingdom	3.5	2.6	0.3	2.8	2.6	-0.2
EU - 11	2.5	2.8	-0.2	1.7	1.3	-0.1
Germany	2.2	2.7	0.1	1.8	1.0	0.0
France	2.3	3.0	-0.1	1.2	0.7	-0.4
Italy	1.5	1.3	-0.8	1.7	1.7	-0.1
Spain	3.5	3.8	0.0	2.0	1.9	-0.2
Portugal	4.0	4.2	0.0	2.2	2.7	0.0
Netherlands	3.6	3.8	0.0	2.2	1.8	-0.2
Belgium	3.0	2.9	0.2	1.6	1.0	-0.4
Austria	2.5	2.9	0.1	1.3	1.1	0.0
Finland	6.0	4.9	-0.2	1.2	1.5	-0.1
Ireland	9.8	9.1	0.5	1.5	2.8	0.0
Luxembourg	4.8	4.1	0.0	1.4	1.6	0.4
USA	3.9	3.6	0.1	2.3	1.6	0.0
Japan	1.4	-2.8	-0.3	1.7	0.4	0.0

Note: ASEAN-4 includes Indonesia, Thailand, Philippines and Malaysia.

3. DEMAND

According to the current estimate of the Banco de Portugal, the Portuguese economy grew 4.0 per cent in 1998 (table 2)[(2)]. Output growth resulted from the very dynamic behaviour of domestic demand — in acceleration since 1994 — and from the negative contribution of net external demand.

The current estimate for economic growth in 1998 equals the lower limit of the forecast interval disclosed in the September *Economic Bulletin* (table 2). The revision of the 1998 growth estimate reflects a more negative contribution of net external demand, due to a sharper slowdown of merchandise exports than expected. The growth of domestic demand equals that foreseen in September. However, its composition has been revised. Private consumption is now estimated to grow more, while GFCF is expected to record a lower growth.

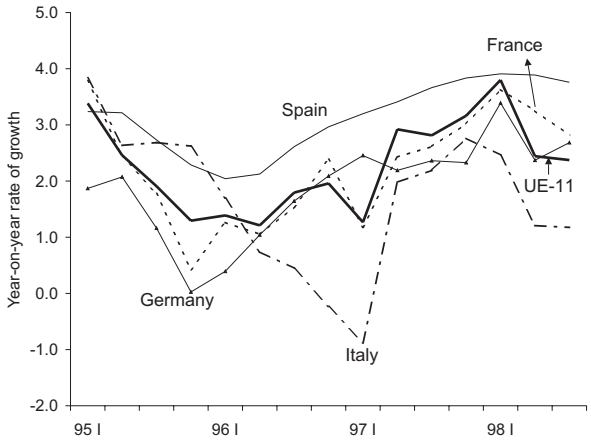
Residents' **private consumption** is estimated to have grown 4.5 per cent in real terms in 1998. Several factors account for this significant growth — above real output growth for the first time since the 1993 recession. The reduction of interest rates, the growth of disposable income and the high confidence levels are worth being highlighted. The reduction of interest rates — particularly sharp in 1998 — yielded an expressive impact on households' consumption and investment expenditure.

(2) This forecast reflects the information available up to 18 January 1999, and is therefore subject to revision in the March 1999 EB.

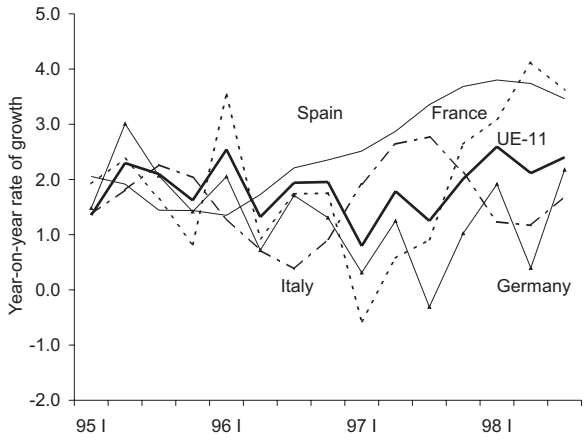
Chart1

COMPOSITION OF GROWTH IN THE EURO AREA LEADING ECONOMIES

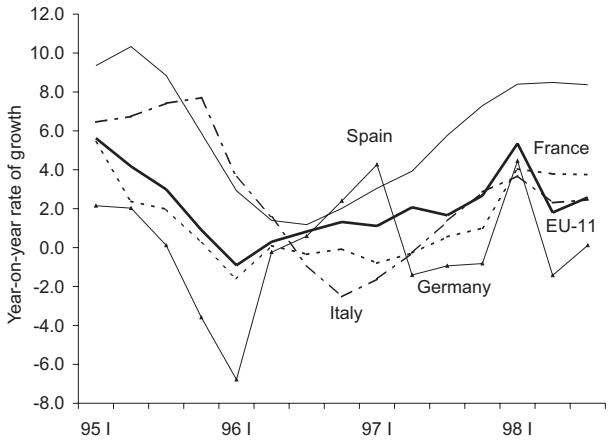
Gross Domestic Product



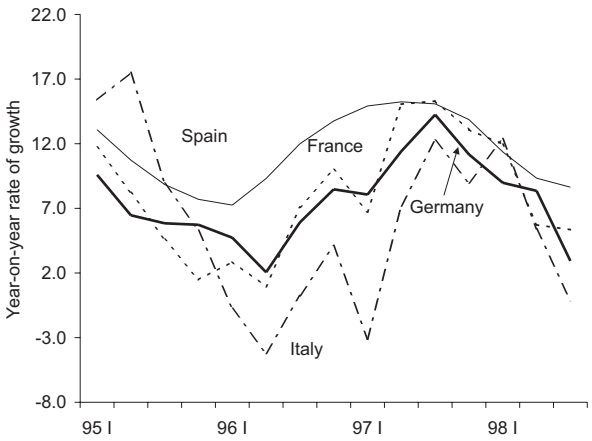
Private consumption



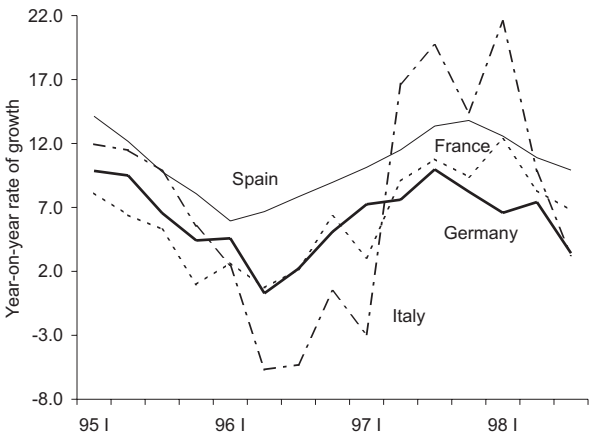
Gross fixed capital formation



Exports of goods and services



Imports of goods and services



Source: Datastream.

Table 2

GROWTH ESTIMATES FOR 1998

Real rates of growth (percentage)

	EB September	EB December
Private consumption ..	4.0-4.5	4.5
Public consumption ...	3.25-3.5	3.5
GFCF.....	9.5-10.5	9.4
Domestic demand.....	5.25-5.75	5.5
Exports	10.25-11.25	9.9
Imports	13.0-14.0	12.9
GDP.....	4.0-4.25	4.0

Bank lending to individuals recorded an outstanding growth, both for housing and other purposes (table 3). The growth of disposable income was supported by the increase of employment — specially of wage-earners — and by the further growth of real wages. Finally, the recent developments in the labour market — translated into expectations of real wage gains and favourable perspectives of finding a job — together with historically low nominal interest rate levels, contributed to consumers' high confidence levels in 1998.

The current estimate for private consumption growth corresponds to the upper level of the 4.0-4.5 per cent forecast interval disclosed in the September EB (table 2). This revision was determined by the stronger growth of this aggregate recorded in the second half-year than previously expected. As mentioned in the November Monthly Indicators, several indicators suggest that private consumption accelerated from the first to the second half of 1998. The private consumption coincident indicator (chart 2), which synthesises qualitative information on this component of demand, exhibited a strong acceleration from the second to the third quarter(3). According to the Trade Monthly Survey, the average level of the balance of respondents regarding turnover and current activity in the second half of 1998 stood above the levels recorded in the first half-year (chart 3). This development was common to retail trade of both durable and non-durable goods. Consumer goods industrials' appraisal of domestic demand for these goods also improved from the same period in the previous year, though to a lesser extent (chart 3).

The increase of private consumption was greatly supported by consumer good imports. Up to September, nominal imports of foodstuff consumer goods grew 20.7 and 18.0 per cent in year-on-year terms, respectively (table 3). This growth of nominal foodstuff consumer good imports indicates not only the strong growth of private consumption, but also the bad harvest year and the behaviour of import prices of these goods(4).

Households' expenditure on durable goods grew strongly in 1998. Sales of light passenger vehicles (including 4x4) grew 18.1 per cent, exhibiting a very marked intra-annual pattern (table 3). Several indicators also illustrate a very dynamic behaviour of households' expenditure on furniture and housing equipment.

According to the Banco de Portugal, **Gross Fixed Capital Formation** is estimated to have grown 9.4 per cent in 1998. The strong pace of growth of GFCF is due to the dynamic behaviour of all categories (machines, transport material and construction) and institutional sectors (households, corporate sector and General Government).

Investment in machinery continued to exhibit a strong dynamism in 1998 as a whole. Many factors contributed to this behaviour. The fall in interest rates, in a context of competition and innovation in the financial sector, provided a key factor through the reduction of liquidity constraints. In 1998, the rate of productive capacity utilisation reached on average the highest levels since the 1993 recession(5). Industrials' confidence continued to increase up to mid-1998, while expectations re-

(3) The calculation of the change in this indicator in the fourth quarter requires series still to be disclosed by the *Instituto Nacional de Estatística* in the January 1999 "Monthly Trade Survey".

(4) According to estimates of the *Direcção-Geral das Relações Económicas Internacionais*, import prices of foodstuff consumer goods grew 7.7 per cent in the first half of 1998.

(5) At the time this article was written, the *Instituto Nacional de Estatística* had yet not disclosed the rate of productive capacity utilisation for the last quarter of 1998.

Table 3

DEMAND INDICATORS

		1996	1997	1998[a]	Last month available	1997 1st	1997 2nd	1998 1st	1998 2nd	1997 1st Q	1997 2nd Q	1997 3rd Q	1997 4th Q	1998 1st Q	1998 2nd Q	1998 3rd Q	1998 4th Q
Private consumption																	
Retail trade turnover index		6.3	5.1	11.1	Sep	4.5	5.6	12.0		4.5	4.5	4.9	6.3	11.1	12.8	9.6	
Sales of new light passenger vehicles and 4x4	tvh	9.1	-0.8	18.1	Dec	-2.7	1.5	13.6	23.0	-3.3	-2.1	-1.3	4.0	5.4	21.7	23.6	22.5
Licenses of light passenger vehicles	y.n.y	17.4	7.3	13.2	Dec	7.6	6.9	8.7	18.1	6.4	8.7	7.4	6.4	6.3	11.0	11.7	24.5
Bank credit to individuals for purposes other than housing	y.n.y	24.6	27.0	29.0	Sep					24.4	24.0	20.5	27.0	29.0	26.9	29.0	
Investment																	
Cement sales	y.n.y	6.6	11.9	4.4	Nov	19.5	5.3	4.6		22.6	16.8	9.4	0.9	10.0	-0.2	0.2	
Contracted public works	y.n.y	31.3	26.1	-22.2	Aug	67.1	-4.9	-26.4		73.4	61.6	-10.7	1.1	-15.7	-36.4		
Mortgage lending to individuals	y.n.y	26.4	26.6	32.9	Sep					26.2	26.2	27.3	26.6	28.2	30.7	32.9	
Bank credit to companies for investment	y.n.y	14.8	23.1	11.1	Sep					22.3	23.7	32.3	23.1	23.3	25.3	11.1	
IPI of equipment goods excluding transport material[b]	y.n.y	7.5	5.0	7.6	Sep	6.0	4.0	8.6		6.9	5.1	6.7	2.0	10.1	7.3	5.0	
Imports of equipment goods excluding transport material[c]	a.r.c.	12.2	14.5	16.4	Sep												
Exports of equipment goods excluding transport material[c]	a.r.c.	2.6	16.1	18.3	Sep												
Sales of light commercial vehicles	a.r.c.	27.1	20.9	12.3	Dec	27.0	15.6	8.8	15.7	28.3	25.6	19.6	12.8	14.6	2.8	6.8	22.6
Sales of heavy commercial vehicles	a.r.c.	4.4	32.0	10.6	Dec	28.3	35.4	18.2	4.1	14.7	41.0	44.5	28.8	26.6	11.8	7.1	1.6
Foreign trade[c]																	
Total exports	a.r.c.	8.4	10.3	10.5	Sep												
Exports of consumer goods	a.r.c.	6.2	8.9	7.4	Sep												
Exports of equipment goods	a.r.c.	33.7	10.5	18.4	Sep												
Exports of intermediate goods	a.r.c.	-2.1	12.4	10.7	Sep												
Exports of energy	a.r.c.	-23.5	8.9	-25.6	Sep												
Total imports	a.r.c.	7.9	11.6	14.0	Sep												
Imports of consumer goods	a.r.c.	8.7	10.8	18.9	Sep												
Imports of equipment goods	a.r.c.	14.9	10.3	18.8	Sep												
Imports of intermediate goods	a.r.c.	3.0	12.7	13.4	Sep												
Imports of energy	a.r.c.	1.2	15.5	-18.0	Sep												

Source: INE, *Direcção-Geral de Viação*, ACAP, Cimpor, Secil and ANEOP.
y.n.y = year-on-year rate of change.

a.r.c. = accumulated rate of change.

Notes:

(a) Accumulated values up to the last month available.

(b) The rates of change of the industrial production index are calculated upon comparable versions of the indices.

(c) The rates of change of exports and imports result from comparing preliminary values of the current year with equally preliminary figures for the same period in the previous year. 1996 is the exception, for which definitive versions were used.

Chart 2
COINCIDENT INDICATOR OF PRIVATE CONSUMPTION

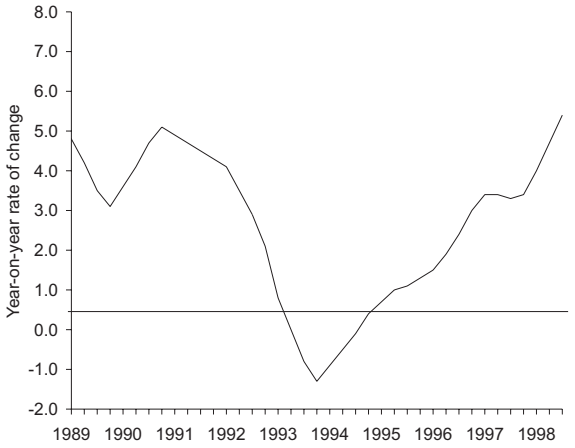
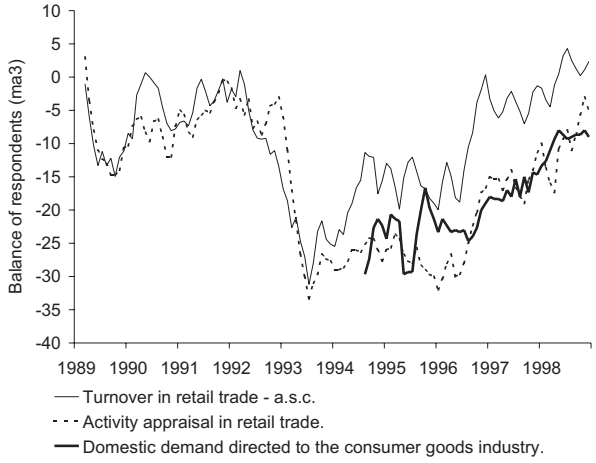
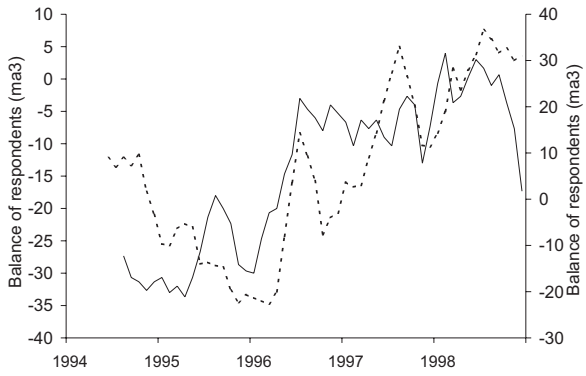


Chart 3
QUALITATIVE INDICATORS OF PRIVATE CONSUMPTION



Source: INE, "Monthly Trade Survey" and "Monthly Manufacturing Industry Survey".

Chart 4
INVESTMENT IN MACHINERY: QUALITATIVE INDICATORES



Source: INE, "Monthly Manufacturing Industry Survey" and "Monthly Trde Survey".

garding the behaviour of overall demand improved up to the second quarter of 1998. Finally, as in previous years, equipment good prices in escudos decreased(6).

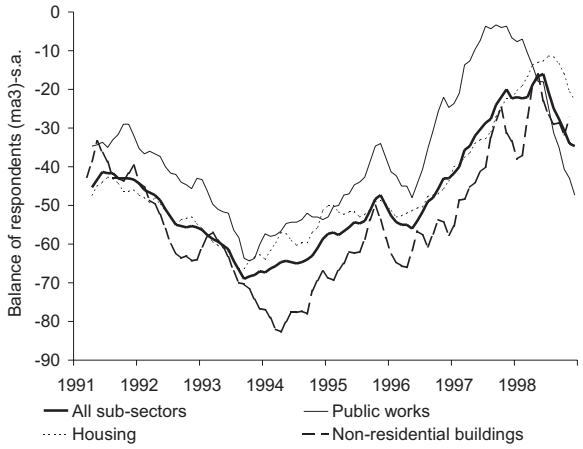
The current estimate for GFCF growth stands about half percentage point below the centre of the forecast interval disclosed September (table 2). The growth of investment in machinery in the second half-year, which was lower than expected in September, greatly explains this revision. Some indicators available for the second half-year illustrate this slowdown. The balance of respondents regarding equipment good industrials' appraisal of domestic demand (excluding transport material) stood in this period below the levels recorded in the previous half-year and in the same period of 1997 (chart 4). Also the balance of respondents regarding the order book and future activity appraisal made by wholesalers of machines and material to agriculture, industry and trade recorded on average lower levels in the second half of 1998. The slowdown of investment in machinery is linked to the worsening of perspectives regarding the behaviour of external demand, and lower confidence levels of industrials in manufacturing.

Investment in transport material continued to grow strongly in 1998. Sales of light commercial vehicles grew 12.3 per cent, while heavy commercial vehicles grew 10.6 per cent (table 3).

Investment in construction recorded a slowdown in 1998, as expected. In the second half-year, cement sales grew 4.7 per cent in year-on-year terms (4.6 per cent in the first half-year). The slowdown from 1997 was greatly determined by the public works sub-sector, where the order book dropped sharply — due to the fall in the value of contracted public works from the extremely high levels recorded in the previous year (chart 5 and

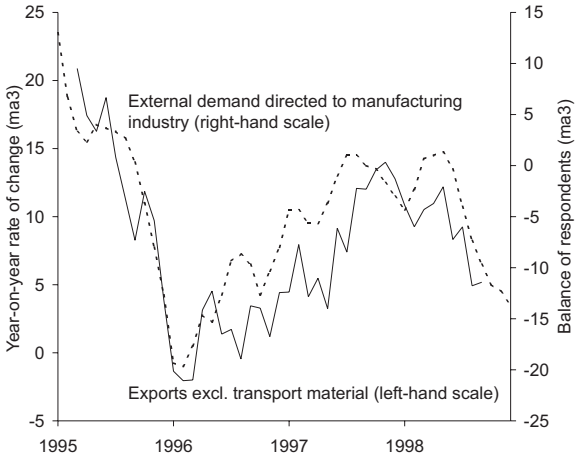
(6) According to estimates of the *Direcção-Geral das Relações Económicas Internacionais*, import prices of equipment goods (excluding transport material) dropped 2.0 per cent in the first half of the year.

Chart 5
INVESTMENT IN CONSTRUCTION QUALITATIVE INDICATORS
Activity appraisal in the construction and public works sector



Source: INE, "Construction and Public Works Monthly Survey".

Chart 6
MERCHANDISE EXPORTS AND EXTERNAL DEMAND



Source: INE, "Foreign Trade Statistics" and "Monthly Manufacturing Industry Survey".

table 3). On the other hand, the order book in residential building continued to record on average higher levels than in 1997. This sub-sector continued to profit from the reduction of interest rates, in a context of competition in banking, and by the improvement of households' economic situation. Mortgage lending to individuals, already at very high levels in the first half of 1998, increased further in the third quarter (table 3).

According to the estimates of the Banco de Portugal, real **exports of goods and services** grew 9.9 per cent in 1998 (table 2). Exports of services grew more than merchandise exports, partly due to the increase in tourism activity — linked to the EXPO-98.

The Portuguese economy was marked by a slowdown of merchandise exports in the second half of 1998 (chart 6). As mentioned in the September EB, manufacturing industrials' appraisal of external demand — a qualitative indicator leading on average 3 months the quantitative data of the *Instituto Nacional de Estatística* — already indicated clearly the slowdown in the third quarter. However, the results disclosed afterwards for the July to September period presented a sharper slowdown than that previously foreseen by the Banco de Portugal. These results reflected the behaviour of both intra-EU and extra-EU exports. The release of these data led to a downward revision of real exports growth, to around 1 p.p. below the lower limit of the September EB forecast interval.

The slowdown of merchandise exports in the second half of 1998 was greatly determined by the behaviour of the Euro area economies. Indeed, imports of the leading economies in the EU-11 recorded a sharp slowdown in the third quarter of the year(7). Industrials' qualitative appraisal of the external order book decreased up to December, pointing towards the continuation of the slowdown of real exports. The reduction in the balance of respondents was due, to a great extent, to the worse perspectives regarding intermediate good exports, which reflects the behaviour of industrial production in our leading trading partners.

Imports of goods and services recorded a 12.9 per cent real growth in 1998. This estimate stands about 0.5 p.p. below the September EB forecast, which reflects the lower growth of overall demand (table 2). Nevertheless, the nominal growth of merchandise imports remained high (13.9 per cent in the first nine months of the year). Imports of most economic categories grew strongly in this pe-

(7) In the third quarter of 1998, real imports of goods and services grew 3.4 per cent in Germany (7.5 per cent in the second quarter), 6.6 per cent in France (8.4 per cent in the second quarter), 9.9 per cent in Spain (10.9 per cent in the second quarter) and 3.3 per cent in Italy (9.8 per cent in the second quarter).

riod. As mentioned above, the growth of consumer good imports resulted from the acceleration of the private consumption of goods, the bad harvest year and the behaviour of the prices in escudos of foodstuff goods imports. The increase in households and companies' expenditure on transport material reflected into greater imports of these goods. The dynamism of companies' investment in other equipment goods determined also the strong growth of imports in this economic category (table 3).

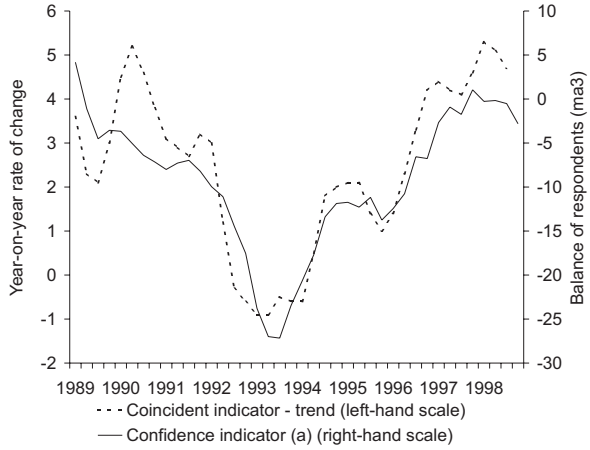
According to the estimates of the Banco de Portugal, Portugal recorded a gain in **terms of trade** in 1998. In the first half-year, according to data disclosed by the *Direcção-Geral das Relações Económicas Internacionais*, merchandise import prices in escudos fell 0.3 per cent in year-on-year terms, while export prices grew 2.0 per cent. The gain in terms of trade resulted to a great extent from the reduction in energy prices. Indeed, the change in the deflator of imports excluding energy was of 1.5 per cent in the first half of 1998. For the second half, export prices are expected to remain stable, while import prices are expected to record a sharper fall than in the previous half-year.

4. SUPPLY

The coincident indicator of the Banco de Portugal, which synthesises the behaviour of activity in industry, construction and trade, continued to grow strongly in the third quarter of 1998. This growth stood slightly below that of the first half of the year. This is also reflected in the confidence indicator of these sectors as a whole (chart 7). However, it should be noted that the positive impact of the EXPO-98 on economic activity — namely on activity in other services sectors — may not be fully reflected in the behaviour of the coincident indicator.

The available indicators suggest that services continued to be the most dynamic sector in the second half of 1998; indeed, activity in this sector accelerated from the first half. Meanwhile, Gross Value Added (GVA) in industry recorded a sharp slowdown in relation to the previous half-year. Over the course of 1998, activity in construction recorded a pace of growth identical to that of the second half of 1997.

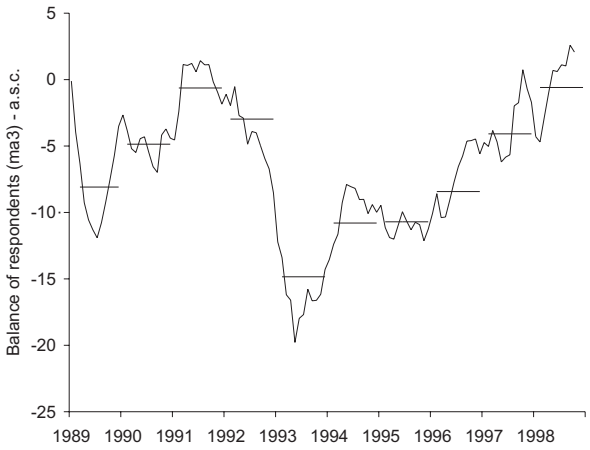
Chart 7
COINCIDENT INDICATOR OF ACTIVITY AND CONFIDENCE INDICATOR
Industry, construction and trade



The **services** sector continued to grow strongly in the second half of 1998, more than in the previous half. Trade — the greatest services sub-sector — recorded a further acceleration in this period. This is illustrated by the increase in the average confidence levels in both wholesale and retail trade (charts 8 and 9). Retailers, in particular, proved quite optimistic regarding present and future activity (chart 8), providing an indication of the strong growth of private consumption. The EXPO-98 contributed also to an acceleration of activity in both the restaurants and hotels sector and in the transports sector in 1998 — specially in the second half-year. Bednights spent in hotels rose 7.6 per cent up to August, compared with an average growth of 4.6 per cent in 1997. GVA of communications services also accelerated from the first to the second half of 1998, due to a greater demand — triggered by lower prices in some telecommunication services.

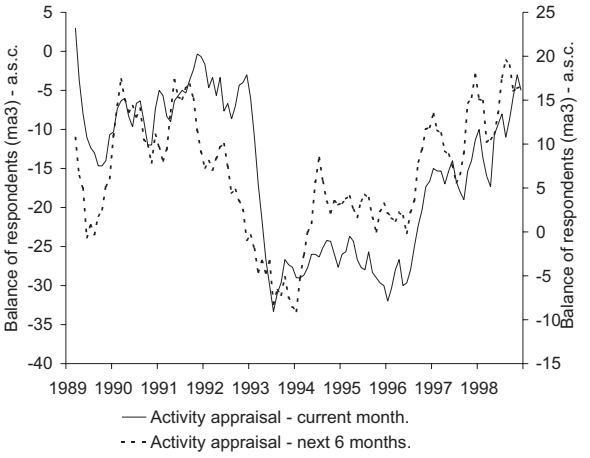
The available information points towards a lower dynamism of **industrial production** in the second half of 1998. Industrials' confidence decreased in this period. The appraisal of current activity and future production perspectives worsened in this period (chart 10). Industrials indicate a reduction in the external order book, reflecting the slowdown in the industrial sector abroad — specially in Europe, which concentrates the bulk of our leading trade partners. However, it should be

Chart 8
CONFIDENCE INDICATOR IN RETAIL TRADE[(a)]



Note:
(a) The European Commission methodology was used over seasonally-adjusted series (Tramo-Seats).
Source: Banco de Portugal and INE, "Monthly Trade Survey".

CURRENT AND FUTURE ACTIVITY APPRAISAL RETAIL TRADE

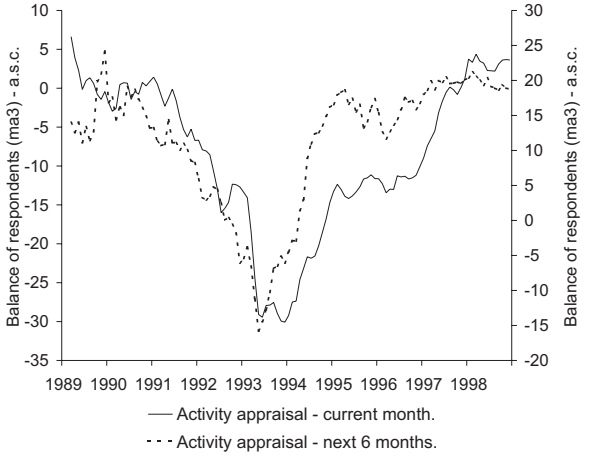


Source: INE, "Monthly Trade Survey".

Chart 9
CONFIDENCE INDICATOR IN WHOLESALE TRADE[(a)]

Note:
(a) The European Commission methodology was used over seasonally-adjusted series (Tramo-Seats).
Source: Banco de Portugal

CURRENT AND FUTURE ACTIVITY APPRAISAL RETAIL TRADE



Source: INE, "Monthly Trade Survey".

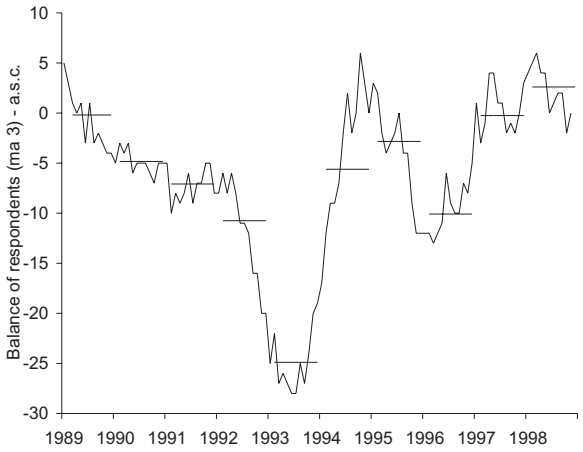
noted that industrials' appraisal of domestic demand was also less favourable in late 1998, specially in the intermediate goods and investment goods industries.

According to the Industrial Production Index, production in manufacturing industry grew 0.1 per cent in year-on-year terms from July to October 1998 (4.3 per cent in the first half-year). The Manufacturing Industry Turnover Index also decelerated in this period (3.2 per cent growth, compared with 9.3 per cent up to June) (table 4). The rate of productive capacity utilisation in manufacturing industry also provides some indication of a slowdown of activity in the sector. Indeed, in the third quarter of 1998 this indicator stood below that recorded one year before (table 4).

As referred above, GVA in the **construction** sector recorded a slowdown from 1997. Confidence levels in the sector decreased throughout 1997 (chart 11), greatly due to the public works

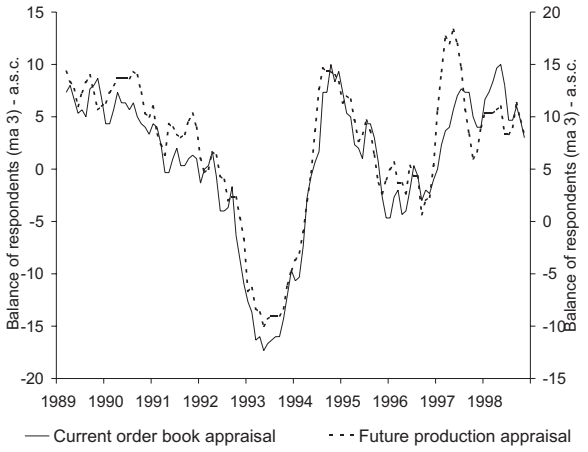
Chart 10

CONFIDENCE INDICATOR IN INDUSTRY



Source: European Commission.

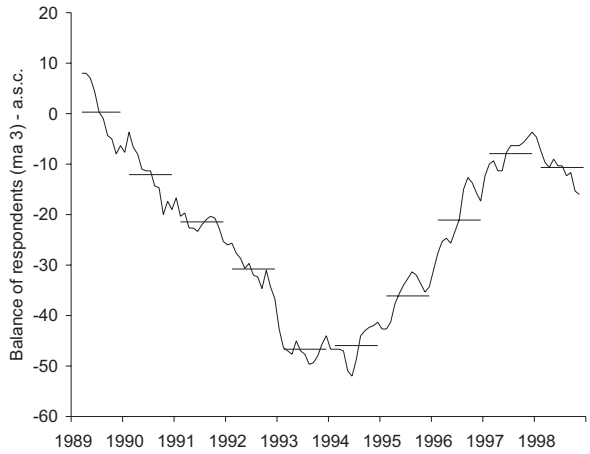
CURRENT AND FUTURE ACTIVITY APPRAISAL INDUSTRY



Source: European Commission.

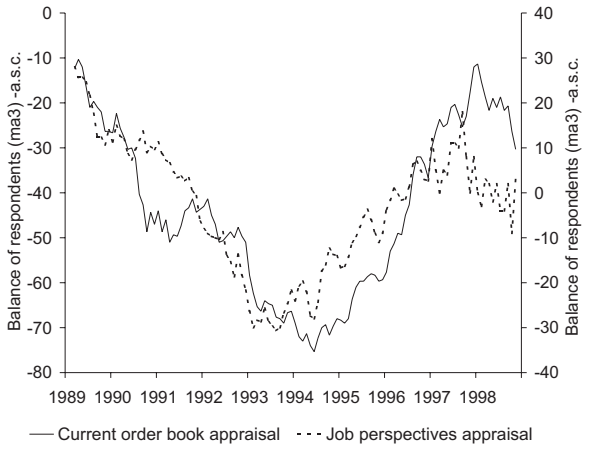
Chart 11

CONFIDENCE INDICATOR IN CONSTRUCTION



Source: European Commission.

CURRENT AND FUTURE ACTIVITY APPRAISAL CONSTRUCTION



Source: European Commission.

sub-sector. The rate of productive capacity utilisation decreased again in the third quarter of 1998 (table 4).

5. LABOUR MARKET

According to the new Employment Survey of the *Instituto Nacional de Estatística*, the unemployment rate in mainland Portugal was of 4.7 per cent in the third quarter of 1998, compared with 5.9 and 4.6 per cent in the first and second quarters, respectively. If adjusted with the seasonal adjustment factors derived from the previous Survey, these rates would be of 5.7, 4.7 and 4.9 per cent for the first, second and third quarters of 1998, respectively[8]. These figures are not comparable with those previous to 1998, given the methodological changes of the new survey[9]. Nevertheless, these figures point towards the continuation of the reduction of the unemployment rate in 1998.

The results of the new survey also confirm that gains of employment were recorded again in 1998. According to data in the survey regarding individ-

(8) Given the short coverage period of the new survey, it is still not possible to detect if significant changes have occurred in the pattern of seasonality from the previous series.

(9) See the September 1998 *Economic Bulletin*.

Table 4

SUPPLY INDICATORS

		1996	1997	1998[a]	Last month available	1997		1998	1997				1998		
						1st	2nd	1st	1st Q	2nd Q	3rd Q	4th Q	1st Q	2nd Q	3rd Q
Industry															
Industrial Production Indices [b]															
Manufacturing industry	y.n.y	1.6	4.4	2.6	Oct	4.4	4.4	4.3	3.8	5.1	5.2	3.6	6.2	2.4	-0.1
Consumer goods industry	y.n.y	1.7	0.8	-0.3	Oct	1.5	0.0	0.7	1.1	1.8	1.1	-1.0	2.5	-1.2	-1.9
Investment goods industry	y.n.y	10.1	5.1	9.9	Oct	5.0	5.2	10.8	5.9	4.1	3.4	6.6	11.6	10.0	8.8
Intermediate goods industry	y.n.y	0.0	6.7	3.2	Oct	6.3	7.2	5.3	5.2	7.4	8.5	6.0	7.5	3.2	-0.5
Turnover indices															
Manufacturing industry	y.n.y	6.1	5.9	6.8	Oct	4.0	7.7	9.3	1.2	6.7	7.2	8.2	12.0	6.9	5.2
Consumer goods industry	y.n.y	6.0	2.8	7.4	Oct	1.0	4.5	9.3	-1.5	3.6	3.9	5.2	11.5	7.3	6.6
Investment goods industry	y.n.y	27.3	8.1	14.8	Oct	1.3	15.1	17.2	-2.3	4.6	9.1	20.3	19.4	15.3	15.8
Intermediate goods industry	y.n.y	1.4	6.6	4.4	Oct	6.7	6.5	6.8	3.2	10.2	6.6	6.5	9.7	4.1	2.3
Rate of productive capacity utilisation															
Manufacturing industry	%	79	81	82	3rd Q	80	81	82	80	80	82	81	83	81	81
Consumer goods industry	%	78	79	79	3rd Q	78	79	79	77	79	81	78	80	78	80
Investment goods industry, excluding vehicle manufacturing	%	83	84	88	3rd Q	83	86	87	84	82	86	85	85	90	89
Intermediate goods industrys	%	81	81	83	3rd Q	80	82	83	80	81	83	82	84	83	82
Construction															
Rate of productive capacity utilisation [c]	%	71	79	79	3rd Q	80	79	81	77	82	81	77	82	79	77

Source: INE.

y.n.y. = year-on-year rate of change

a.r.c. = accumulated rate of change.

Notes:

(a) Accumulated values up to the last month available.

(b) The rates of change of the industrial production index are calculated upon comparable versions of the indices.

(c) New series from 1997.

uals' situation one year before, total employment is estimated to have grown 2.3 per cent in the third quarter of 1998 (2.5 per cent in the first half of 1998). The services sector shall have rendered the greatest contribution to total employment growth in 1998. Employment growth is estimated to have been particularly strong in the trade sector, the hotels and restaurants sector and in the transports and communications sectors. This development reflects the acceleration of activity in these sub-sectors, partly due to the EXPO-98. Job creation took place in the General Government as well. Employment in construction increased also in 1998, while employment in industry is estimated to have fallen again.

The data from the Employment Centres confirm the reduction in the number of unemployed workers, and indicate an increase in the number of job vacancies and placements in 1998. In late November, the number of employed workers registered in the Employment Centres stood 8.1 per cent below that recorded one year before. Meanwhile, between January and November, job vacancies and placements stood on average 13.2 and 8.5 per cent above those recorded one year before, respectively.

Wages implicit in contractual agreements for the private sector grew 3.1 per cent in 1998 (3.5 per cent in 1997). These contracts covered 1,348.7 thousand workers, more than at the end of 1997 (1,225.8 thousand). Analysing by sectors, the wage change implicit in contracted agreements was on average identical in industry, services and construction.

6. INFLATION

The behaviour of prices in Portugal in 1998 was characterised by an increase in inflation. Meanwhile, the inflation differential vis-à-vis the eleven countries integrating the euro area since 1 January 1999 widened.

Inflation measured by the annual average change of the HICP reached 2.2 per cent in December, 0.3 p.p. more than in 1997[10]. In year-on-year terms, prices grew 2.8 per cent in December[11], compared with 2.1 per cent in December 1997.

The rise in inflation in Portugal took place in a context of disinflation in the euro area[12]. Consequently, the differential between inflation in Portugal and average inflation in the euro area, measured by the average annual change in the HICP, widened from 0.3 p.p. in December 1997 to 0.9 p.p. in November 1998. The widening of the differential was even greater in year-on-year terms — from 0.6 p.p. at the end of 1997 to 1.7 p.p. in November 1998.

The rise in inflation in Portugal is illustrated by other inflation measures. The year-on-year rate of change of the CPI was of 3.2 per cent in December 1998, 0.9 p.p. more than in late 1997 (chart 12). A broken-down analysis reveals that tradables' prices grew 1.5 p.p. in year-on-year terms in the same period (from 1.1 to 2.6 per cent), while non-tradables' prices grew 0.3 p.p. (from 3.6 to 3.9 per cent) (chart 13).

The behaviour of prices in Portugal is chiefly explained by two factors: the anomalous behaviour of some prices and the behaviour of the escudo exchange rate in 1997 and in early 1998.

A wide set of goods and services in the CPI recorded abnormally high changes in 1998. The rise in schooling fees in early 1998, the significant growth of prices of some foodstuff goods[13] and price accelerations in accommodation services — due to temporary pressures on demand — should be highlighted. Chart 14 illustrates the volatile behaviour of traded foodstuff prices, both in 1997 and in 1998. An additional way of illustrating the impact of these anomalous price behaviours on the CPI consists of analysing the **trend inflation** mea-

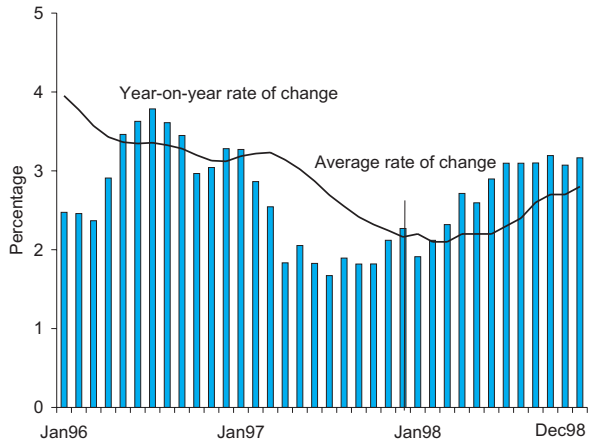
(10) As referred in previous publications of the Banco de Portugal (see for instance "Change in the Consumer Price Index" in the 1997 *Annual Report* (Banco de Portugal, 1998) and "Inflation — Recent developments and perspectives in the *Economic Bulletin* vol.4, Nº3 (Banco de Portugal, September 1998), the method of break adjusting the new HICP series (from January 1998) and the previous series underestimates inflation measured by the year-on-year rate of change of the HICP in months of greater incidence of sales and promotions. Likewise, the annual average rate of change of HICP in December also underestimates the annual price change.

(11) Since December is not a month of great incidence of sales and promotions, the year-on-year change of the HICP is not bound to underestimate inflation due to the effect referred in the previous footnote.

(12) Between December 1997 and November 1998, the annual average rate of change of the HICP increased only in Finland (from 1.2 to 1.4 per cent), Ireland (from 1.2 to 2.1 per cent), Italy (from 1.9 to 2.0 per cent) and Portugal.

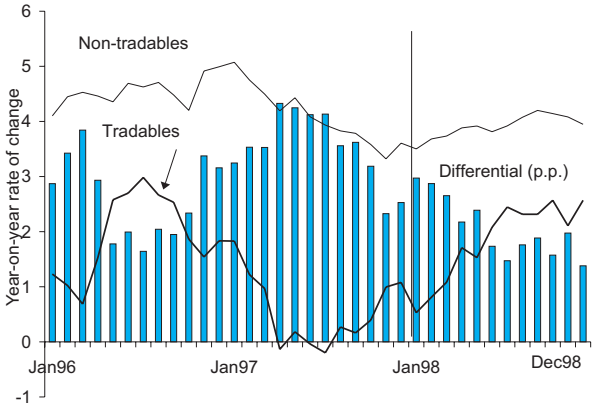
(13) This is the case of the following items of the CPI: dried fish, fresh and refrigerated vegetables, wine and fresh and refrigerated fruit.

Chart 12
INFLATION
CONSUMER PRICE INDEX



Source: INE and Banco de Portugal.

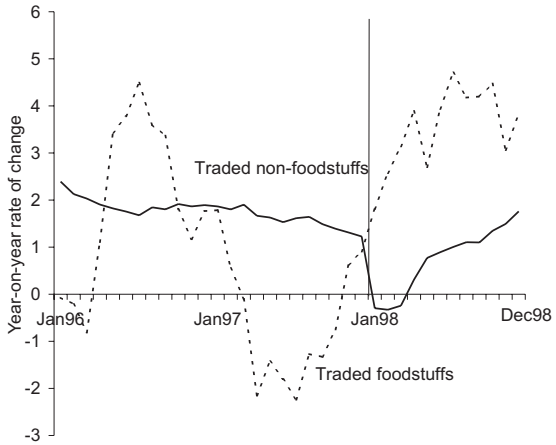
Chart 13
INFLATION INDICATORS



Source: INE and Banco de Portugal.

sures most used by the Banco de Portugal[14]. In 1998, these indicators grew less than the CPI[15] (chart 15). In December, the "trimmed mean at 10 per cent" grew 2.5 per cent in year-on-year terms,

Chart 14
PRICES OF TRADED GOODS



Source: INE and Banco de Portugal.

compared with 2.3 per cent in December 1997[16]. The year-on-year change of the "principal component" was 2.7 per cent in December 1998 — as in December 1997.

The sharp rise the prices of some foodstuff goods recorded in Portugal did not take place in the other EU-11 economies[17]. As a result, this factor contributed to widen the **inflation differential** between Portugal and the euro area.

The depreciation of the escudo throughout 1997 and in early 1998 also contributed to the increase of inflation. In annual average terms, the escudo effective exchange rate depreciated 1.2 per cent in 1998. In 1997, the escudo had already depreciated 1.9 per cent in effective terms. The behaviour of the escudo was linked not only to the appreciation the US dollar and the Sterling recorded in the international financial markets, but also to the convergence of the escudo towards the central parities vis-à-vis the remaining currencies in the exchange rate mechanism of the European Monetary System. Indeed, the escudo effective exchange rate vis-à-vis the remaining currencies participating in the ERM-EMS depreciated 1.2 per cent (following to a 0.6 per cent appreciation in 1997). This devel-

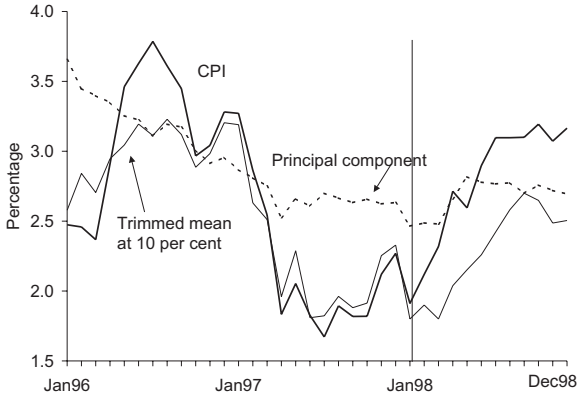
(14) On the methodology of calculation of the inflation trend indicators usually calculated by the Banco de Portugal see Coimbra, C. and Neves, P.D., (1997), "Inflation Trend Indicators", *Economic Bulletin* of the Banco de Portugal, Volume 3, no.1, March 1997.

(15) The reverse situation took place in 1997, with most trend inflation indicators recording higher year-on-year changes than those of the CPI. As mentioned in previous publications of the Banco de Portugal (e. g., "Inflation — Recent developments and perspectives", *Economic Bulletin* of the Banco de Portugal, Vol. 4, no. 1, March 1998), the prices of foodstuff goods exhibited a particularly favourable behaviour throughout 1997.

(16) The "trimmed mean at 10 per cent" eliminates each month the 10 per cent highest year-on-year price changes and the 10 per cent lowest year-on-year price changes. One way of illustrating the greater incidence of anomalous price changes above the mean consists in the fact that, throughout 1998, the sectional distribution of the year-on-year changes of the CPI recorded systematically a positive skewness coefficient.

(17) Except Ireland.

Chart 15
TREND INDICATORS
Year-on-year rates of change



INE and Banco de Portugal.

opment partly explains the widening inflation differential vis-à-vis the euro area (1.1 p.p. between December 1997 and November 1998, in year-on-year changes of the HICP), specially due to the faster transmission of that development to domestic prices — in a context of accelerating domestic demand. These developments took place in a context where the effectiveness of the monetary and exchange rate policy in dealing with the specific conditions of the Portuguese economy — namely as regards the behaviour of prices — decreased quite significantly.

The contribution of the two factors mentioned above — the anomalous behaviour of some prices, and the effective depreciation of the escudo — to the rise in inflation over compensated the international conditions which were favourable to disinflation. The fall in the prices of most international prices (oil, industrial commodities and foodstuff commodities) usually denominated in US dollars, and the absence of inflationary pressures in the euro area — responsible for a very significant share of Portuguese merchandise imports — provided fairly favourable conditions to price developments in Portugal in 1998.

As mentioned above, the inflation differential vis-à-vis the remaining euro area rose. In addition to the factors that determined the rise in Portuguese inflation, an additional factor accounts for the widening of this differential. Indeed, most EU-11 economies recorded a significant reduction in energy prices — following the behaviour of oil prices in the international markets — which did not take place in Portugal.

The rise in inflation in 1998 chiefly resulted from the behaviour of tradables' prices. However, unlike in previous years, the prices of non-tradables did not contributed to the reduction of inflation in 1998. It also should be noted that, although the growth of the prices of services was similar to that recorded, for instance, in Spain and in Ireland, this growth stands clearly above that recorded in most EU-11 economies.

Monetary policy in the Economic and Monetary Union is guided towards the maintenance of price stability in the euro area — and therefore cannot respond to country-specific economic conditions. In this context, the behaviour of wages and the conduction of budgetary policy (see box "The Stability and Growth Programme 1999-2002", at the end of this article) are increasingly important in determining the economic conditions in each country in the EU-11. The beginning of the Economic and Monetary Union created the adequate conditions to an increase in competition, both in the domestic and the external markets. The maintenance of Portuguese companies' competitiveness requires moderate wage growths, so that the change in unit labour costs is close to that recorded in the remaining euro area countries.

Written with the information available as on 18 January 1999.

THE STABILITY AND GROWTH PROGRAMME – 1999-2002

In agreement with Council Regulation (CE) no. 1466/97, the Portuguese Government submitted recently to the EU Council and the European Commission the Stability and Growth Programme for the period 1999-2002, for appreciation by the Economic and Financial Committee and by the Ecofin Council.

Table 1 synthesises the main budgetary objectives of the Stability Programme. The crucial aspect of the Programme is the continuation of the budgetary consolidation process. The General Government overall deficit is estimated to decrease as a percentage of GDP, from 2.3 per cent in 1998 to 0.8 per cent in 2002. Meanwhile, the public debt ratio shall decrease continuously throughout the period covered by the Stability Programme, to 53.2 per cent of GDP in 2002.

The primary balance is expected to grow 0.8 percentage points (p.p.) of GDP between 1999 and 2002, due to the growth of current revenue and the reduction of the capital deficit as a percentage of GDP. Primary current expenditure as a percentage of GDP shall rise 0.5 p.p. from 1999 to 2001, decreasing 0.1 p.p. in 2002. Interest expenditure as a percentage of GDP shall decrease 0.4 p.p. in the period as a whole.

The Stability Programme builds upon a macro-economic scenario that admits a 3.3 per cent average growth for real GDP in the period 1999-2002. The estimates of the Banco de Portugal for the growth rate of potential output are similar to those of the central scenario of the Stability Programme. Therefore, a 3.3 per cent real growth of GDP is estimated to lead to a virtually null output gap in 2002.

According to the analysis of the deficit sensitivity to GDP, presented in the Programme, a real growth rate of GDP exceeding that of the reference scenario on average by 0.5 p.p. (2.1 p.p. in 2002, in accumulated terms) would imply a deficit to GDP ratio reduction amounting to 0.5 p.p. in 2002. The effect of a real growth rate below that of the reference scenario is symmetrical. "Ceteris paribus", the application of a deficit elasticity vis-à-vis GDP of 0.5 (the figure the European Commission currently admits for Portugal) in the same macro-economic scenario would yield a deficit reduction/increase of 1 p.p. of GDP at the end of the period. Therefore, the Stability Programme seems to imply that the behaviour of budgetary policy is not totally neutral. Therefore, admitting the 0.5 elasticity referred above, and considering the output gap estimates of the Banco de Portugal, neutral budgetary policies in the most pessimistic scenario would yield a deficit around 1.8 per cent of GDP. In the presence of a severe recession — i.e. a -4.0 per cent output gap — in 2002, under the same assumptions, the budgetary deficit would reach 2.8 per cent of GDP.

From the notification of late February 2000 onwards, the Excessive Deficits Procedure shall be based upon data gathered according to the ESA-95. The Stability Programme was based upon data estimated according to ESA-79. Since transiting from the ESA-79 to ESA-95 comprises several effects, both on the deficit and on GDP, the objectives of the recently presented Programme must be re-evaluated in the light of ESA-95 as soon as possible.

Table 1

STABILITY AND CONVERGENCE PROGRAMME

Main Budgetary Objectives

	1999		2000		2001		2002	
	Value	As a % of GDP	Value	As a % of GDP	Value	As a % of GDP	Value	As a % of GDP
Current revenue	8 456.6	41.7	8 981.0	41.9	9 523.9	42.1	10 097.9	42.2
Current expenditure ..	8 075.3	39.8	8 547.6	39.9	9 041.1	40.0	9,517.5	39.8
Current balance	381.3	1.9	433.4	2.0	482.8	2.1	580.4	2.4
Capital revenue	584.4	2.9	581.1	2.7	627.2	2.8	701.0	2.9
Capital expenditure ..	1 372.3	6.8	1 337.6	6.2	1 373.3	6.1	1 472.6	6.2
Capital balance	-787.9	-3.9	-756.4	-3.5	-746.1	-3.3	-771.6	-3.2
Overall balance	-406.6	-2.0	-323.0	-1.5	-263.3	-1.2	-191.2	-0.8
Debt interest.....	687.4	3.4	708.1	3.3	704.0	3.1	717.7	3.0
Primary balance.....	280.7	1.4	385.0	1.8	440.7	1.9	526.5	2.2
Public debt	11 527.9	56.8	11 956.5	55.8	12 363.7	54.7	12 709.7	53.2

MONETARY AND CREDIT AGGREGATES

1. INTRODUCTION

The behaviour of monetary and credit aggregates over the course of 1998 was influenced by the continued and significant reduction of interest rates, the dynamism of economic activity and the continuation of the sharp reduction in net credit to General Government. The turbulence in the international financial markets in the second half of the year shall have induced to some adjustment in non-banking residents' securities portfolio towards lower investments in foreign securities.

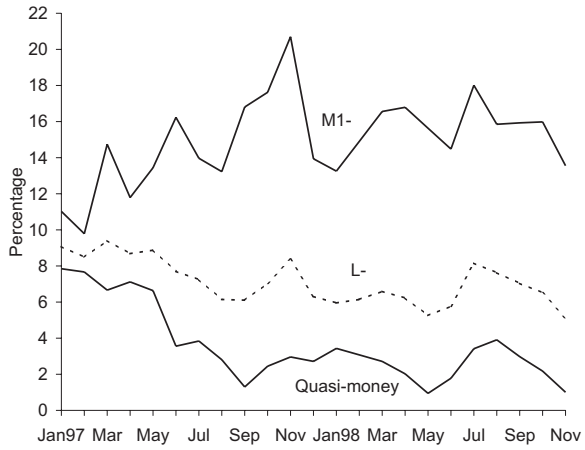
In the context of the convergence process of Portuguese interest rates towards the levels expected for the beginning of the Monetary Union (MU), the Banco de Portugal carried out successive cuts in its intervention rates. These transmitted to lending and borrowing rates, influencing the cost of credit and the opportunity cost of holding money — which in turn influenced the behaviour of monetary and credit aggregates.

Money circulation velocity (in a strict sense) continued to decrease. Credit to companies and individuals was the main counterpart of liquidity growth in the economy.

2. MONETARY AGGREGATES

Between June and November 1998, liquidity aggregate L^- (net assets held by the non-financial resident sector) grew between 5.1 and 8.2 per cent[(1)] (chart 1); the lowest growth rate was recorded in November. The strongest growth was recorded in July, which was contemporary to the strongest growth of aggregate M_1^- — when the privatisation

Chart 1
MONETARY AND LIQUIDITY AGGREGATES
Year-on-year rate of change



of EDP took place. This development is highlighted by the annualised quarterly chain rates of aggregate L^- (chart 2), which recorded a much stronger growth in July (13.5 per cent). The change in L^- was only 5.4 per cent in November.

Aggregate M_1^- (currency and demand deposits) continued to record strong growth rates, reaching 13.6 per cent in November (14.5 per cent in June). The income velocity circulation of this aggregate continued to decrease (chart 3). In turn, the growth of quasi-money remained low (1.0 per cent in November). This was due to the lower return than alternative investments in the stock market (specially shares). As shown in chart 4, non-banking residents' investments in "other domestic securities" grew strongly, while investments in foreign securities decreased — reflecting the instability in the international financial markets — as well as domestic public debt securities.

The progressive reduction of the official interest rates of the Banco de Portugal transmitted to

(1) Except where otherwise mentioned, the referred growth rates correspond to year-on-year percentage change.

Chart 2
L⁻ LIQUIDITY AGGREGATE
Annualised quarterly rate of change calculated over seasonally adjusted values

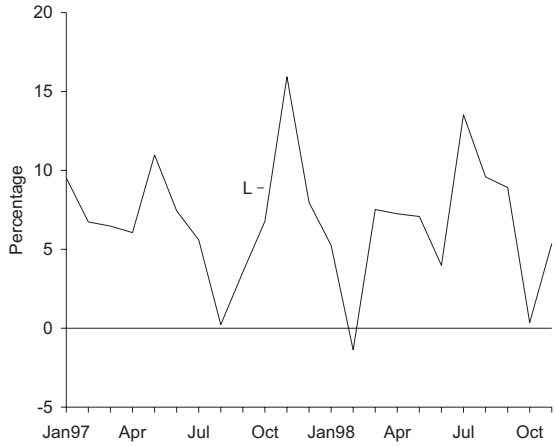


Chart 3
MONEY INCOME VELOCITY
Ratio between nominal GDP and the monetary aggregate

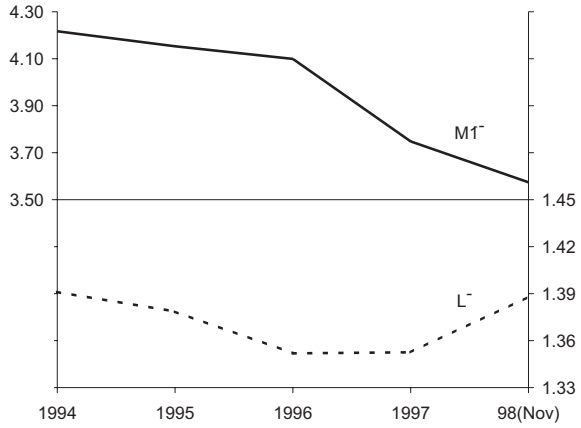
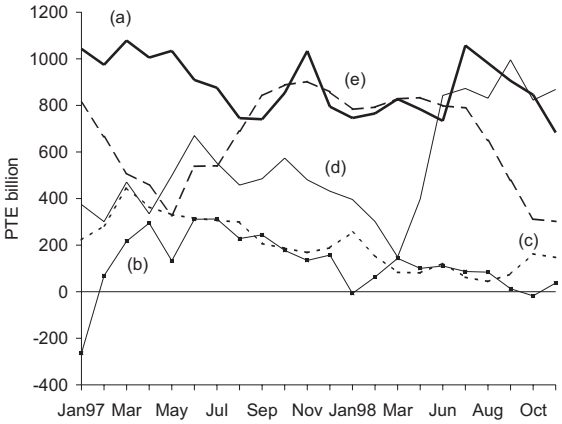
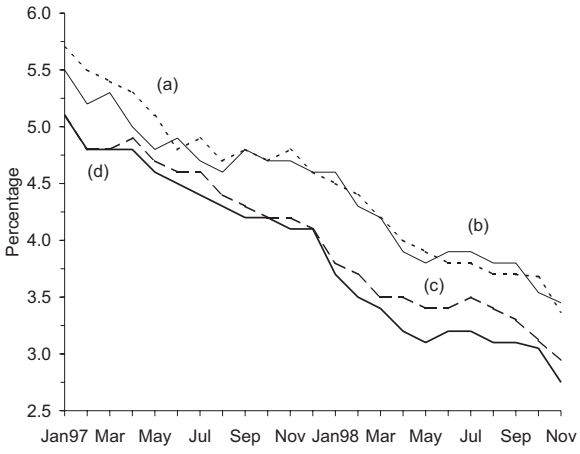


Chart 4
FINANCIAL AGGREGATES
Annual flow*



Notes:
(a) L⁻.
(b) Investment of other financial intermediaries, financial auxiliary institutions, insurance companies and pension funds in banks, Treasury bills and CLIP.
(c) Investment of the non-banking sector in public debt securities.
(d) Investment of the non-banking sector in other domestic securities.
(e) Investment of the non-banking sector abroad.
* Calculated on end-of-month balances.

Chart 5
INTEREST RATES ON TIME DEPOSITS



Notes:
(a) 31 to 90 days.
(b) 91 to 180 days.
(c) 181 days to 1 year.
(d) Over 1 year.

the borrowing rates of commercial banks (chart 5). The interest rates on time deposits for shorter maturities (31 to 90 days) fell from 4.6 per cent in December 1997 to 3.8 per cent in June and 3.4 per cent in November. This rate is close to credit institutions' return from *Títulos de Regularização Monetária* (TRM) — securities used by the Banco de Portugal in its shorter term liquidity draining operations — at the end of the same month. From January to November, the interest rate for maturities over one year dropped 1.4 percentage points, to 2.8 per cent. At the end of November, the time deposits rate yield curve remained negatively

Chart 6
COUNTERPARTS OF CHANGE IN L⁻
Year-on-year rates of change

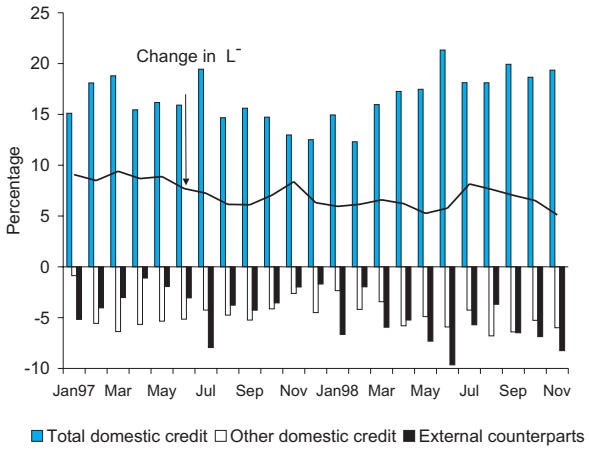
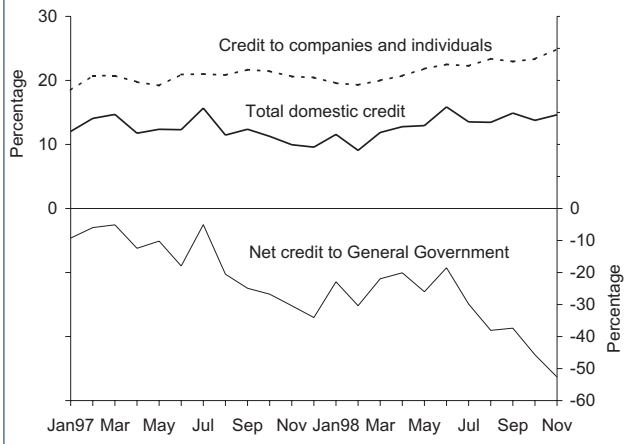


Chart 7
DOMESTIC BANK CREDIT AGGREGATES
Year-on-year rates of change



sloped. Alongside the reduction of deposits interest rates, the yields of public debt securities also decreased. The average yield of 10-year Treasury Bonds fell 1.2 percentage points between the end of 1997 and November 1998, to 4.4 per cent.

Money creation resulted exclusively from the strong growth of total domestic credit (chart 6), which contributed 19.4 percentage points to the growth of L⁻ in November. The foreign counterpart contributed negatively to the growth of domestic liquidity (-8.3 percentage points in November), as was the case of the change in other domestic counterparts (-6.0 percentage points contribution). The latter was related to the increase in the banking system's own capital.

3. CREDIT AGGREGATES

In November 1998, total domestic bank credit grew 14.6 per cent, compared with 15.9 per cent at the end of the first half of 1998 and 9.6 per cent at the end of 1997. This aggregate tended to accelerate over the course of 1998 (chart 7).

Net credit to General Government (GG) continued to record negative rates of change. This trend was strengthened early in the second half of 1998, reaching a minimum value of -52.6 per cent in November. This development continued to be basically conditioned by the use made of alternative financing sources.

Meanwhile, bank credit to companies and individuals continued to grow strongly. This rate grew 24.9 per cent in November — the maximum growth reached in recent years.

3.1 Net credit to General Government

From January to November 1998, total net financing to General Government fell PTE 110.9 billion. This aggregate had dropped PTE 9.1 billion in the same period of 1997 (table 1). The distinct development partly reflects the lower revenue from privatisation operations in the first eleven months of 1998 (around PTE 371.6 billion) when compared with the previous year (around PTE 728 billion).

Up to November 1998, net domestic credit to GG fell PTE 1,032.1 billion (PTE 841.2 billion in the same period of 1997), basically due to the behaviour of bank credit (PTE 914.9 billion reduction). The public debt stock held by the public dropped PTE 117.2 billion, due to a PTE 166.5 billion reduction in the Treasury bill component and a PTE 49.3 billion increase in other securities.

From May 1998 onwards, the *Instituto de Gestão de Crédito Público* (IGCP) issued fixed-rate debt securities at longer maturities — 15-year bonds, both in domestic currency and in currencies of the euro area countries (namely Deutsche marks). From June onwards, issues were carried out only for five

Table 1

GENERAL GOVERNMENT BORROWING

PTE billion

	1997			1998	
	Year	1st half	Jan-Nov	1st half	Jan-Nov
Net domestic credit	-894.6	-379.8	-841.2	108.5	-1032.1
Banking	-934.2	-509.6	-793.7	154.8	-914.9
Banco de Portugal	6.7	-40.7	31.9	188.8	-215.8
Banks	-940.9	-469.0	-825.6	-34.0	-699.1
of which:					
Treasury bills portfolio	-177.9	-88.7	-202.0	-0.2	-501.7
Other investment in public debt securities	-684.7	-225.0	-565.5	-115.7	-12.2
Treasury bills held by the public	-149.0	21.0	-138.6	-88.6	-166.5
Other securities held by the public	188.6	108.8	91.1	42.3	49.3
of which:					
Saving certificates (net)	4.9	9.6	7.8	-69.2	-80.2
Net foreign credit	444.6	219.8	438.3	219.7	362.5
Sales / purchases of domestic debt securities to / from non-residents(net)	416.3	145.9	360.5	-35.8	517.0
Net foreign assets of the Treasury	-9.6	-11.0	11.4	1.0	12.3
Adjustment-Treasury bills	22.4	11.5	22.1	14.0	29.4
Total borrowing	-21.0	-13.6	-9.1	307.3	-110.9

and fifteen-year maturities. Issues for the remaining maturities were interrupted in March (3-year maturity securities) and June 1998 (10-year maturity). Recall that, since September 1997, no issue was made of indexed-rate Treasury bonds (OTRV) in the 7-year maturity.

The change in the GG financing policy also took place in the short-term public debt segment. Indeed, the IGCP resorted less to this segment (as regards financing amounts). In May, the IGCP suspended the auctions of these securities for the 91-day maturity. Therefore, alongside the reduction in the stock of Treasury bills held by the public, the banking system's investments in these securities also decreased (by PTE 501.7 billion between December 1997 and November 1998).

Foreign credit (net of redemptions) rose PTE 362.5 billion (PTE 438.3 billion increase between January and November 1997). The position of public debt securities issued in the domestic market by non-residents also increased. This aggregate reached PTE 517.0 billion in the first eleven months of 1998, which compares with PTE 360.5 billion in the same period of 1997.

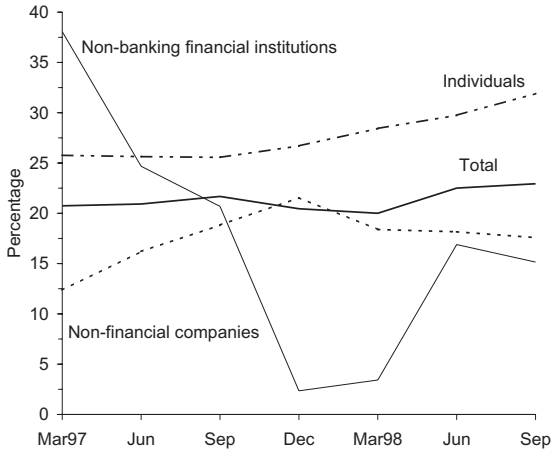
3.2 Credit to companies and individuals

As referred, domestic credit to companies and individuals continued to grow strongly (chart 8). Credit to individuals stood as the most dynamic component (31.9 per cent growth in September). This development reflects the sharp fall in the lending interest rates, as well as households' favourable permanent income perspectives.

Interest rates of bank credit to individuals fell sharply in the first eleven months of 1998 (chart 9). Interest rates on loans for maturities from 91 to 180 days fell 3.0 percentage points from end 1997, to 8.4 per cent. Interest rates for longer maturities stood at lower levels: 8.3 per cent on loans for 6-month up to 1-year maturities, and 5.9 per cent on loans for maturities over five years; the latter — the most related with mortgage lending — fell about 2.2 percentage points in 1998.

Mortgage lending constitutes the bulk of credit to individuals, accounting for about 75 per cent of total credit to individuals in recent years. Total credit to housing grew 32.9 per cent in September 1998 (chart 10), compared with 26.6 per cent in December 1997. Credit to other purposes also grew

Chart 8
DOMESTIC BANK CREDIT TO COMPANIES AND INDIVIDUALS
Year-on-year rates of change[a]



(a) Calculated on end-of-quarter balances.

Chart 9
INTEREST RATES ON BANK CREDIT TO INDIVIDUALS
Loans and advances

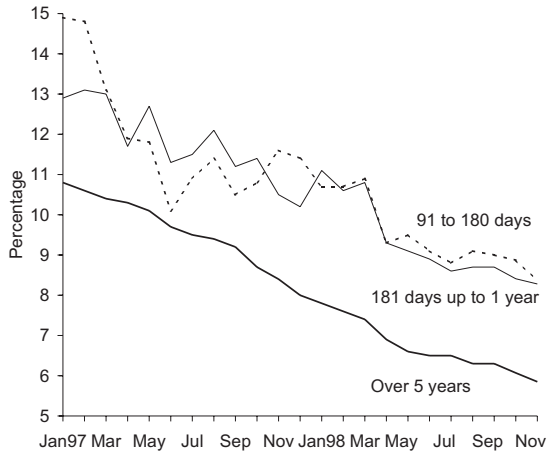


Chart 10
DOMESTIC BANK CREDIT TO INDIVIDUALS BY PURPOSE
Year-on-year rate of change

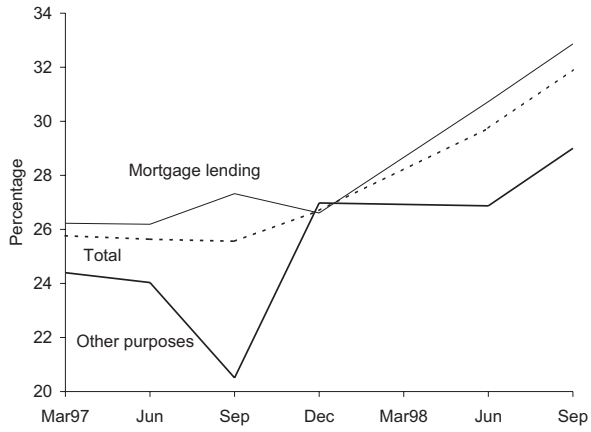
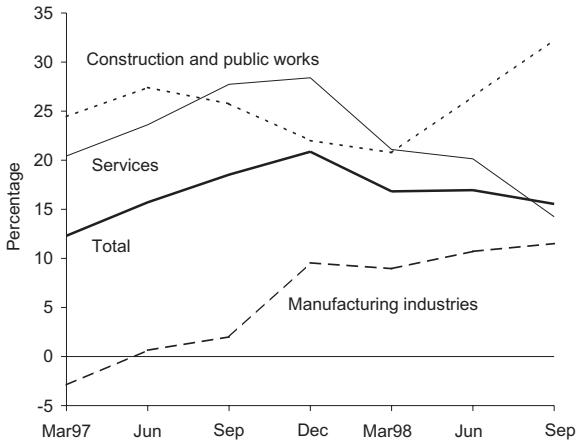


Chart 11
DOMESTIC BANK CREDIT TO NON-FINANCIAL COMPANIES BY SECTOR OF ACTIVITY [a]
Year-on-year rates of change [b]



Notes:
(a) Unsecuritised credit and commercial paper.
(b) Calculated on end-of-quarter balances.

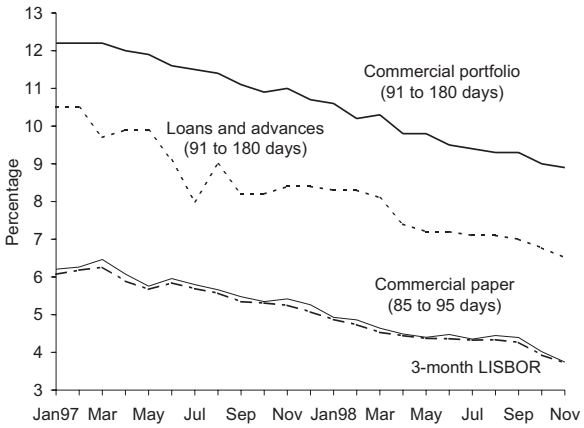
strongly throughout 1998 (29 per cent in September 1998, compared with 27 per cent in December 1997).

As in previous years, households' indebtedness increased over the course of 1998, both as a percentage of GDP (to an estimated 45.6 per cent in September, compared with 39.5 per cent in late 1997) and as a share of disposable income (from 55.7 per cent in December 1997 to an estimated 65.2 per cent in September 1998).

Credit to non-financial companies also continued to grow strongly (17.6 per cent in September), although recording a slowdown since end 1997 (from 21.6 per cent). The rate of change of credit to investment purposes decreased from 23.1 per cent in December 1997 to 11.1 per cent in the third

Chart 12

INTEREST RATES ON BANK CREDIT TO PRIVATE NON-FINANCIAL COMPANIES AND ON COMMERCIAL PAPER



quarter of 1998. However, it should be noted that this slowdown mainly reflects the arithmetic effect of the exceptionally high growth recorded in the same period of the previous year on the September growth rate.

In what concerns to the structure of credit by branch of activity (chart 11), the progressive acceleration of credit to manufacturing throughout 1998 (to 11.5 per cent in September) and the slowdown of credit to services sector (from 28.4 per cent in December 1997 to 14.2 per cent in September 1998) should be highlighted. Credit to the construction and public works sector accelerated strongly in the second half of 1998, reaching a 32.3 per cent growth in September (26.5 per cent in June).

Interest rates on credit to non-financial companies also fell over the course of 1998 (chart 12). From December 1997 to November 1998, the commercial portfolio interest rate fell 1.8 percentage points, to 8.9 per cent. Meanwhile, the interest rate on loans and advances fell from 8.4 to 6.5 per cent in the same period. The interest rates on the issuing of commercial paper followed more closely the behaviour of the 3-month Lisbor rate. In November, these rates stood at 3.7 per cent.

Written with the information available up to 11 January 1999.

MONETARY AND EXCHANGE RATE SITUATION IN THE SECOND HALF OF 1998

1. DEVELOPMENTS IN THE MAIN INTERNATIONAL FINANCIAL MARKETS

1.1 Macroeconomic background

The developments in the world economy in the second half of 1998 were influenced by the instability of international financial markets. This instability was due to the economic and financial crisis in Russia, giving rise both to a sharp fall in capital flows to emerging markets, and to an increase in international investors' risk perception — reflected in higher risk premia — triggering concerns regarding the contraction of world credit (see box 1).

As a result of financial instability, the main international organisations revised downwards substantially their forecasts for the world economic growth. According to the December interim report of the International Monetary Fund (IMF), the world economy grew 2.2 per cent in 1998, 0.9 percentage points less than the May projection.

The Latin American economies were particularly affected by the international financial turbulence. Private capital inflows fell while interest rates rose sharply. The contagion effects were exacerbated by the fall in the commodity prices, which gave rise to a severe deterioration of terms of trade and hence to reductions in the ratings of some of them. Among these countries, Brazil should be highlighted. The Brazilian currency was under strong pressure up to October, due to the loss of external competitiveness and to concerns regarding the sustainability of public finances. In the last two months of 1998, the Brazilian real market remained temporarily calm, benefitting from the announcement, by the Brazilian government, of a budgetary stability package that was supported by the financial agreement with the IMF and the international community[1]. According to the IMF, the Brazilian economy is estimated to have grown 0.5 per cent in 1998, 1 percentage point less than in its May 1997 forecast exercise, and 2.7 percentage points less than the 1997 growth estimate.

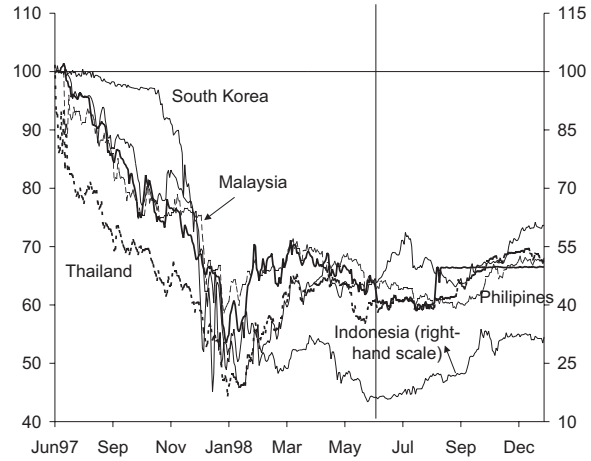
In the Asian economies more directly involved in the 1997 crisis, the contraction of domestic demand proved stronger than expected. This contraction was conditioned by the problems affecting the banking sector, which resulted in a strong reduction of credit granted. Since these economies exhibit a high level of openness and are strongly dependent of Japanese demand, these economies were also affected by the worsening of the domestic conditions of the Japanese economy. Despite the financial and foreign exchange progresses recorded in late 1998 (see chart 1 and 2), the IMF estimates a -10.6 per cent output growth for the ASEAN-4[2] (3.7 per cent in 1997). As regards South Korea the IMF estimates a 7.0 per cent fall in output in 1998 (5.5 per cent growth in 1997).

Most commodity prices fell in 1998. In end-of-period terms and in monthly average terms, the price in US dollars of industrial commodities fell 14.4 per cent, while foodstuff commodities dropped 19.4 per cent and oil fell 42.2 per cent (chart 3). The reduction in commodity prices con-

(1) However, on 13 January 1999, in the context of massive capital outflows, the Brazilian authorities altered the operational framework of the exchange rate policy, widening the wide band of fluctuation of the Brazilian real against the dollar, and suppressing the former narrow band. On 15 January, the authorities changed the exchange rate regime, the real floating freely onwards. Up to 21 January 1999, the real depreciated around 30 per cent against the dollar.

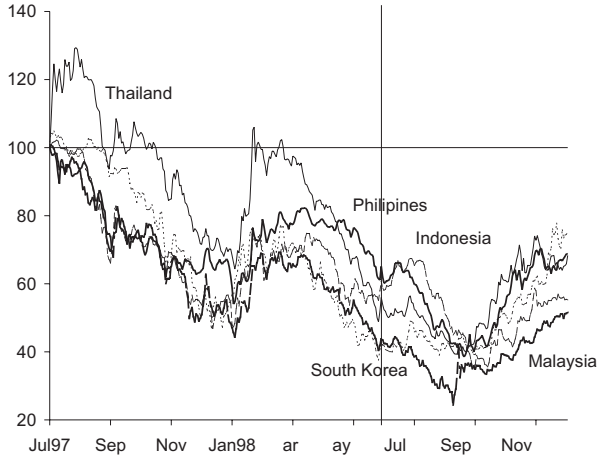
(2) ASEAN-4 includes Thailand, Philippines, Indonesia and Malaysia.

Chart 1
EXCHANGE RATE INDICES OF ASEAN-4 AND SOUTH KOREAN CURRENCIES VIS-À-VIS THE DOLLAR
30 June 1997=100



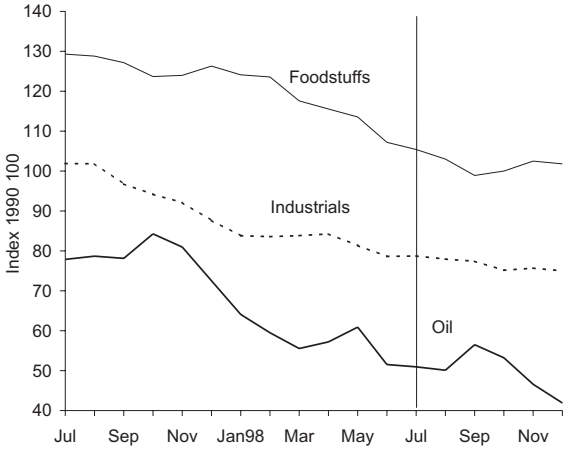
Source: Bloomberg.

Chart 2
STOCK INDICES OF ASEAN-4 AND SOUTH KOREA
30 June 1997=100



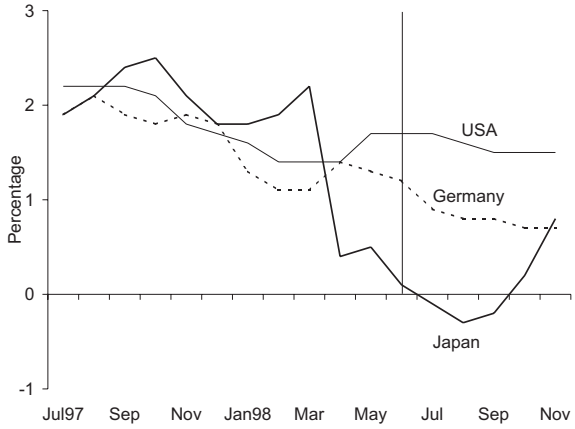
Source: Bloomberg.

Chart 3
INTERNATIONAL COMMODITY PRICES
In USD



Source: The Economist and Financial Times.

Chart 4
CONSUMER PRICE INDEX
Year-on year rate of change



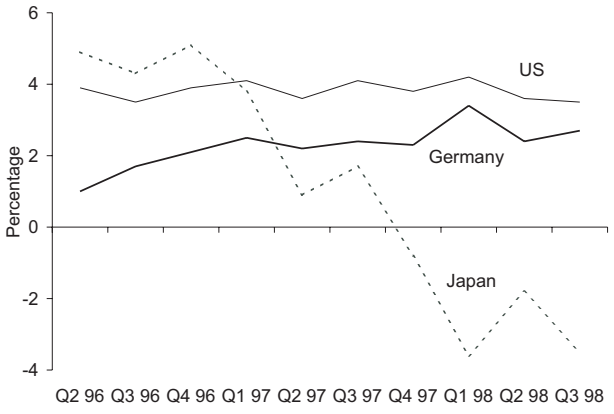
Source: Datastream International Limited.

tributed significantly towards the consumer price stability panorama in the developed economies (chart 4). However, this development worsened the economic situation of countries exporting these products.

In a context characterised by less favourable growth perspectives and no inflationary pressures, monetary policies in industrial countries — including the US, the United Kingdom and the Euro area countries (EU11) — became less restrictive. This was as an important factor in reducing the instability in the financial markets from October onwards.

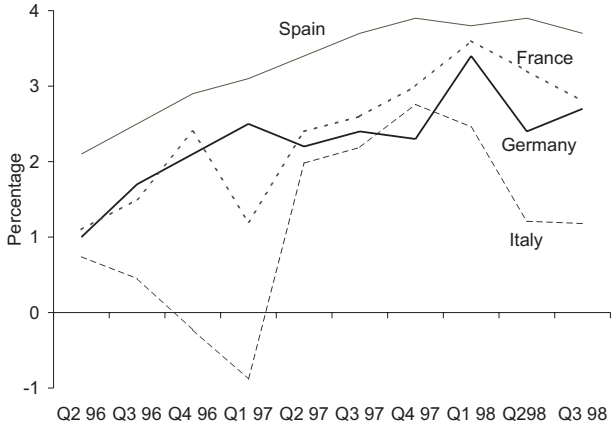
In the US, GDP continued to grow strongly in the second half of 1998 (chart 5), with no signs of inflationary pressures. Growth was due to the strong dynamism of domestic demand components, which outweigh the increasing negative contribution of net external demand — which reflected a widening of the current account deficit. The IMF December estimates pointed towards a

Chart 5
GROSS DOMESTIC PRODUCT
Year-on year rates of change



Source: Datastream International Limited.

Chart 6
GROSS DOMESTIC PRODUCT
Year-on year rates of change



Source: Datastream International Limited.

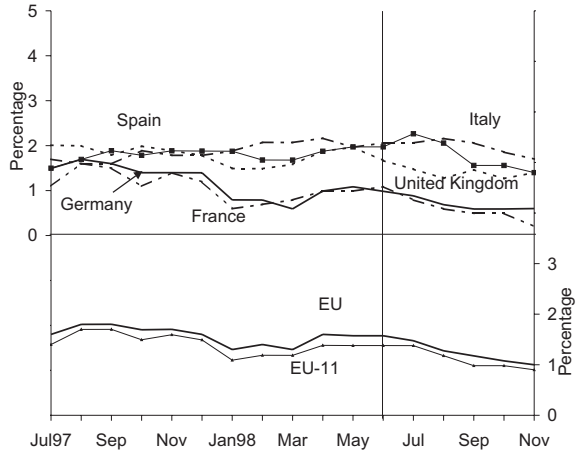
3.6 per cent output growth in 1998 (3.9 per cent in 1997). According to the disclosed data, inflation in 1998 decreased 0.7 percentage points, to 1.6 per cent — the lowest value since 1965.

The buoyancy of private consumption — which has grown above output — is a result from consumers' high confidence levels — in recovery from the sharp fall recorded in October — and from the reduction in the savings rate — which recorded negative levels in the last months of the year. The increase in credit to consumption — favoured by the fall in interest rates — together with the maintenance of strong wage growth, has supported the continuation of the current expansionary period. The labour market continued to post low unemployment rates. In 1998, the unemployment rate fell 0.4 percentage points, to 4.5 per cent — the lowest value since 1969. Significant improvements were also recorded at the fiscal level. In the fiscal year of 1997-98, the budget surplus reached 0.8 per cent of GDP — its highest level since 1956.

In Japan, economic recession worsened in the second half of the year. In the third quarter of 1998, GDP recorded a negative year-on-year growth rate for the fourth consecutive quarter. The IMF forecasts a -2.8 per cent growth of Japanese GDP in 1998. This figure compares with 1.4 per cent growth in 1997. Japanese GDP hadn't recorded such a severe fall since the post-war. In this context, the unemployment rate rose 0.7 percentage points, to 4.1 per cent (the highest level since the post-war), while the inflation rate — measured by the consumer price index — recorded a slowdown, to 0.6 per cent (1.7 per cent in 1997). In November, with the objective of stimulating the economy, the Japanese Government announced a set of measures amounting to an estimated JPY 24 trillion. This was the greatest budgetary effort ever carried out in this country. Meanwhile, aiming at solving the serious problems affecting the Japanese financial system, the Law of Recapitalisation of the Banking System was approved in October. This Law involved JPY 60 trillion.

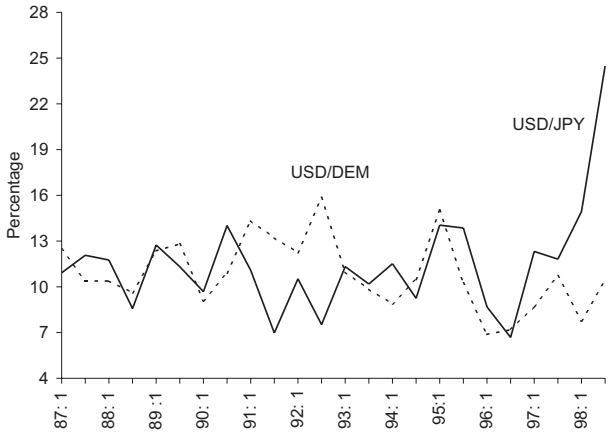
The continuation of the pace of growth of output in the EU11 (chart 6) reflected the favourable behaviour of domestic demand, which more than offset the reduction of external demand — partly due to the negative impact of the slowdown of world economic growth. According to the IMF, GDP growth in the EU11 reached 2.8 per cent in 1998, 0.3 percentage points more than in 1997. GDP is estimated to have grown 2.7 per cent in Germany and 3.0 per cent in France — 0.5 and 0.7 percentage points more than in 1997, respectively. In Italy, GDP continued to show smaller growth rates, reflecting the lower dynamism of domestic demand.

Chart 7
HARMONISED INDEX OF CONSUMER PRICES
Year-on-year rates of change



Source: Eurostat.

Chart 8
VOLATILITY OF THE DOLLAR VIS-À-VIS THE DEUTSCHE MARK AND THE JAPANESE YEN



Note: Annualised standard deviation of the daily changes in the exchange rate for the last six months.

The unemployment rate in the EU 11 decreased over the course of the second half of 1998, reaching 10.8 per cent in November (11.5 per cent in late 1997).

The inflation rates in the EU11 remained at historically low levels. The inflation rate, measured by the year-on-year change in the Harmonised Index of Consumer Prices (HICP), continued to decrease in the second half of 1998. In November, HICP grew less than 1.0 per cent for the first time (chart 7). Excluding energy products, the behaviour of inflation was more stable. Indeed, the year-on-year change of HICP excluding energy in the EU11 reached 1.4 per cent in November.

According to the European Commission (EC) estimates, budget balances improved in all EU11 countries in 1998 — except for Luxembourg and the Netherlands. Overall public deficit reached 2.3 per cent of GDP (2.5 per cent in 1997). In December, in agreement with the Stability and Growth Pact, some EU11 countries presented their stability programmes.

1.2 US dollar, Deutsche mark and Japanese yen markets

The higher risk aversion of investors — following to the economic and financial crisis in Russia — gave rise to wide movements in the financial markets (see box 1). Indeed, in the second half of 1998, the dollar exchange rates exhibited higher volatility levels than those recorded in the previous half-year. Meanwhile, the volatility of the Deutsche mark remained at levels close to those recorded in the previous 10 years. On the contrary, the volatility of the yen reached the highest half-year average levels of the last decade (chart 8).

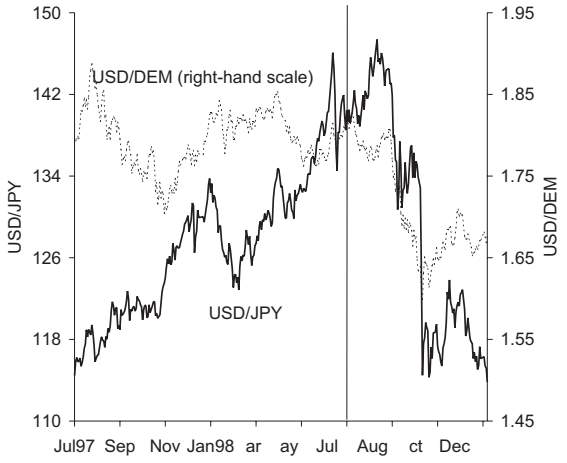
In 1998 as a whole, the dollar appreciated on average 1.5 per cent vis-à-vis the Deutsche mark, and 8.3 per cent vis-à-vis the Japanese yen.

In the second half of 1998, the US dollar depreciated on average[3] 5.1 per cent vis-à-vis the Deutsche mark and 1.4 per cent vis-à-vis the Japanese yen. In end-of-period terms[4], the depreciation of the US dollar was even stronger (6.9 per cent vis-à-vis the Deutsche mark and 16.6 per cent vis-à-vis the Japanese yen) (chart 9).

(3) Hereafter in the text, average changes in 1998 and in the second half of 1998 are respectively the change between the average of daily values in 1997 and in 1998, and the change between the average of daily values in the first and the second half of 1998.

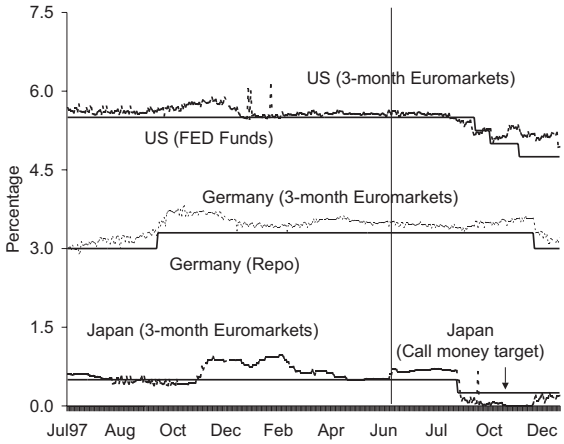
(4) Hereafter in this article, end-of-period changes in 1998 as a whole and in the second half of 1998 correspond respectively to the change of the average of the daily values between December 1997 and December 1998, and the change of the average of the daily values between June and December 1998.

Chart 9
DOLLAR EXCHANGE RATES VIS-À-VIS THE DEUTSCHE MARK AND THE JAPANESE YEN



Note: (+) dollar appreciation.

Chart 10
INTERVENTION RATES AND 3-MONTH INTEREST RATES
USA, Germany and Japan



Early in the second half-year, the dollar appreciated against the yen, basically reflecting the worsening of the Japanese economic conditions — in a context where the US economy continued to grow strongly. The US dollar maintained high levels vis-à-vis the Deutsche mark — supported by the instability in Russia, given investors' perception that the German financial system was more exposed to this economy. Between late August and early October, the US dollar depreciated strongly vis-à-vis the Japanese yen. This development was due to the worsening of investors' confidence sentiment regarding the Latin American markets — given markets' appraisal that the US economy could be particularly affected by the developments in the area. The rise in the level of investors' risk aversion resulted in the settlement of higher-risk assets formerly financed in the yen market. This fact gave rise to massive buy orders of Japanese yen. The stronger demand for lower-risk assets, alongside with the successive downward revisions of world economic growth and the reduction of inflation perspectives, translated into lower US Treasury bond yields, and into a sharp fall of the Dow Jones stock index.

In this context, from 29 September to 17 November the US monetary authorities cut the Fed Funds reference rate to 4.75 per cent by a total of 0.75 percentage points in three step of 0.25 percentage points); the discount rate was also cut by 0.5 p.p. (in two step of 0.25 percentage points), to 4.50 per cent (chart 10). As a result, the level of the dollar 3-month interest rates adjusted downwards. In the second half of 1998, this rate fell 0.5 percentage points in end-of-period terms.

In the period running from late August up to early October, the yen appreciated strongly, reflecting the above referred external factors. The latter outweigh the effect of the deterioration of domestic economic conditions in Japan and the decision of the Japanese authorities towards the implementation of a more expansionary monetary policy. On 9 September, the Japanese authorities cut the reference rate of the call money, and injected the necessary liquidity to maintain interest rates at low levels. As a result, the yen 3-month interest rates fell from 0.5 per cent in June to an average of 0.1 per cent in the last quarter of the year — a historically low level.

In the last two months of the year, the US dollar continued to exhibit a high volatility vis-à-vis the Japanese yen, without presenting however a clear trend against this currency. Meanwhile, the dollar appreciated slightly vis-à-vis the Deutsche mark. The contention of the level of financial instability in the dollar market and the reduction of interest rates in Europe (see section 1.3) conditioned favourably the behaviour of the US dollar. These effects were somewhat diluted vis-à-vis the Japanese yen, and were offset by less pessimistic perspec-

Chart 11
10-YEAR BOND YIELDS
Dollar, Deutsche mark and Japanese yen
Monthly averages

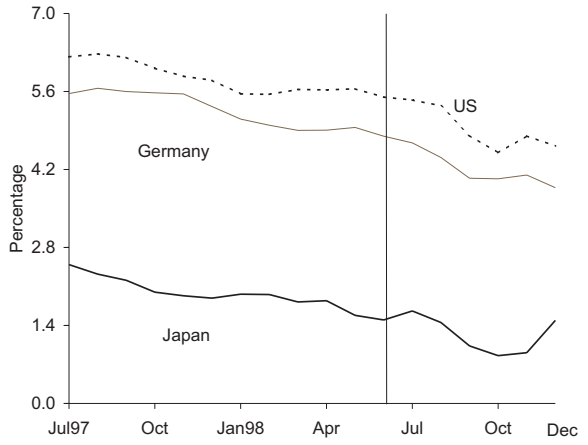
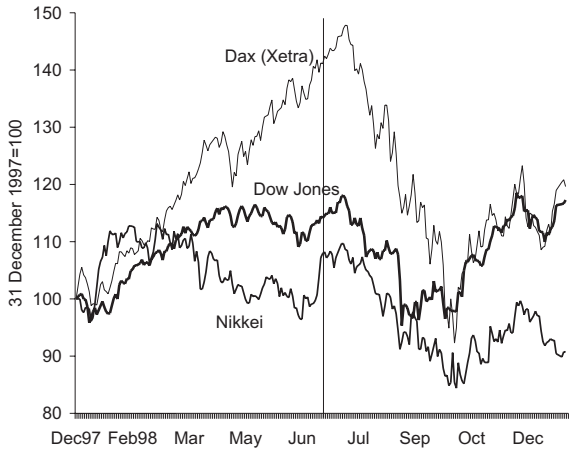


Chart 12
STOCK INDICES
US, Japan and Germany



tives regarding the future behaviour of the Japanese economy, after the Government announced the Banking System Recapitalisation Law and the set of measures to stimulate the economic activity.

Long-term yields in the US and in Germany maintained the downward trend over the course of the second half of 1998. In Japan, long-term yields decreased up to mid-November, increasing afterwards up to end 1998 (chart 11). In end-of-period terms, the dollar 10-year yields decreased 0.9 percentage points in the second halfyear (1.2 percentage points in 1998 as a whole), to 4.6 per cent in December. In Germany, long-term yields fell 0.9 percentage points in the second half, and 1.5 percentage points in 1998 as a whole, to 3.9 per cent at the end of the year. In Japan, 10-year yields remained stable throughout the second half of 1998 in end-of-period terms. As a result, these yields fell 0.4 percentage points in the year as a whole — the same fall recorded in the first half-year. Early in the second half-year Japanese long-term yields reached successive historical minima. However, in the last month and a half of 1998, these yields grew strongly. The perspectives of higher General Government borrowing requirements — due to the announced budgetary measures(5) and the reduction of the rating attributed to Japanese public foreign currency debt by the Moody's and IBCA rating agencies — shall have contributed to this development.

In the second half of 1998, the long-run upward trend of stock indices in the US and in Germany was interrupted. In late 1998, Dow Jones recovered from its previous losses. In end-of-period terms, this index rose 1.4 per cent in the second half-year and 13.6 per cent in the year as a whole. In Germany, the DAX stock index fell 16.7 per cent in the second half of 1998, hence reducing the gains of the first half-year; in the year as a whole, the DAX index rose 15.4 per cent. In Japan, the fall of the Nikkei index in the second half-year reached 5.9 per cent, raising the accumulated loss in the year to 10 per cent (chart 12).

(5) It should be noted that the Budgetary Consolidation Law had been revised in April 1998, postponing to year 2005/06 the deadline for the reduction of public deficit to 3 per cent of GDP, and including conditions bound to result in the suspension of the objectives of reduction of deficit-financing bonds. Among the conditions introduced, the following should be highlighted: the occurrence, in the last two quarters of annualised chain growth rates below 1 per cent and the disclosure of strongly negative economic indicators.

Box 1: INSTABILITY IN THE INTERNATIONAL FINANCIAL MARKETS IN THE SECOND HALF OF 1998

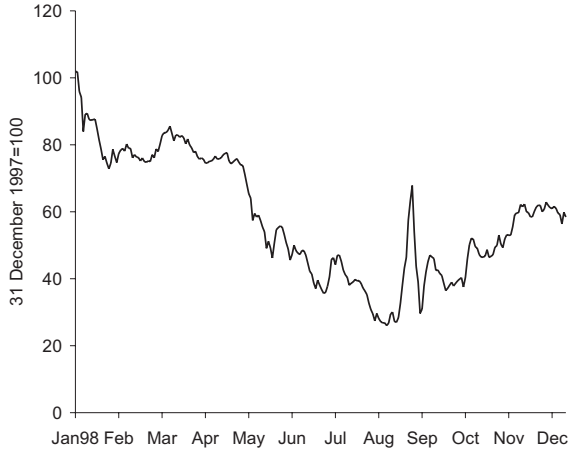
The second half of 1998 was marked by the effects of new developments in the emerging markets — namely the economic and financial crisis in Russia and the tensions felt afterwards in the financial markets of Latin America.

Some periods of financial instability had already taken place in Russia in the first half of the year. Those developments occurred in a context of: dependence on external portfolio investments to finance the balance of payments and the budget deficit; concentration of domestic debt in shorter maturities; and the strong fall in the price of energy products — one of the major sources of exports revenue. This situation led to a progressive worsening of both national and international investors' confidence levels. Later, important aspects of the structural reforms agreed with the IMF[(1)] were not approved in the Parliament, which raised doubts about the continuation of international financial aid. Both stock index losses (chart 1) and capital outflows increased.

In the presence of a weakened domestic banking and financial system, investors attributed an increasing likelihood to a shift in the exchange rate policy objective — which was based upon the maintenance of a strong linking of the rouble to the US dollar.

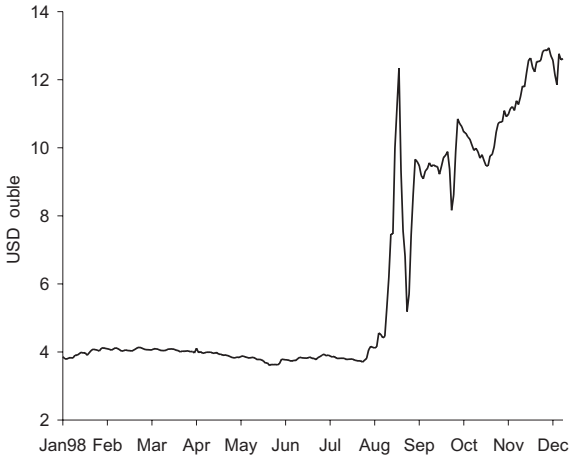
On 17 August, the Russian authorities announced a set of measures, from which we should note the devaluation of the rouble (chart II), the announcement of a 90-day moratoria in the payment of private external debt service and the restructuring of short-term public debt, under particularly unfavourable conditions as regards investors (technically considered as an effective "default" of short-term debt). As a consequence, the Russian yields on foreign currency debt issues reached extremely high differentials vis-à-vis their US equivalents (chart III).

Chart I
RUSSIAN STOCK INDEX



Source: Bloomberg

Chart II
DOLLAR EXCHANGE RATE VIS-À-VIS THE RUSSIAN ROUBLE



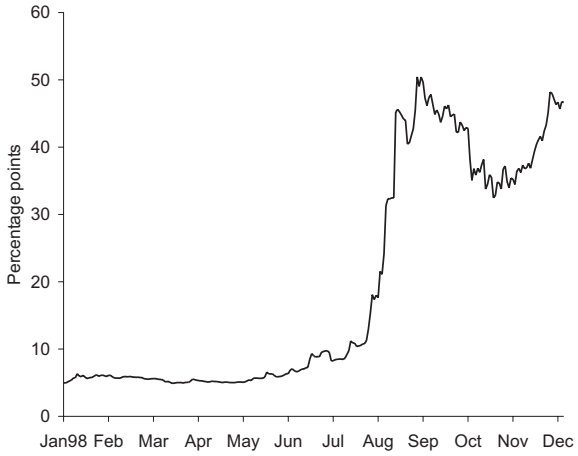
Source: Bank of Russia - Bloomberg.

The decisions taken by the Russian authorities inverted sentiments in the financial markets, since these feared the same kind of measures were followed by other emerging market economies. The significant increase in the level of risk aversion and the repercussions to the financial conditions of developed countries in the second half-year are two aspects that distinguish this period of instability from the one of higher tension following the Asian financial

(1) On 20 July 1998, Russian authorities and the IMF concluded the Agreement on the Russian stabilisation programme; the counterpart of this programme consists of a two-year international financial aid package amounting to USD22.6 billion.

Chart III

SPREAD BETWEEN 10-YEAR YIELDS OF A RUSSIAN USD ISSUE AND US TREASURY BOND YIELDS



Source: Bloomberg.

Table I

STOCK MARKETS IN DEVELOPED COUNTRIES

From late July to the minimum levels reached in early October

	Stock indices (% change)	10-year interest rates (in percentage points)
USA	-14	-1.29
Japan	-21	-0.80
United Kingdom	-17	-1.19
Germany	-34	-0.86
France	-29	-0.81
Italy	-32	-0.64
Spain	-30	-0.71
Portugal	-33	-0.75

and economic crisis, in the second half of 1997. The destabilisation of financial conditions in the dollar market was one of the major factors leading the Federal Open Market Committee (FOMC) to cut the US official interest rates in this half-year. The monetary policy easing in the US and the multilateral financial package of support to Brazil — co-ordinated by the IMF — contributed to attenuate the effects in the dollar market.

Between late July and early October, the "flight to quality" movement that characterised capital flows in this period benefited the bond segment of developed markets, in disadvantage of financial investments in the stock and emerging markets.

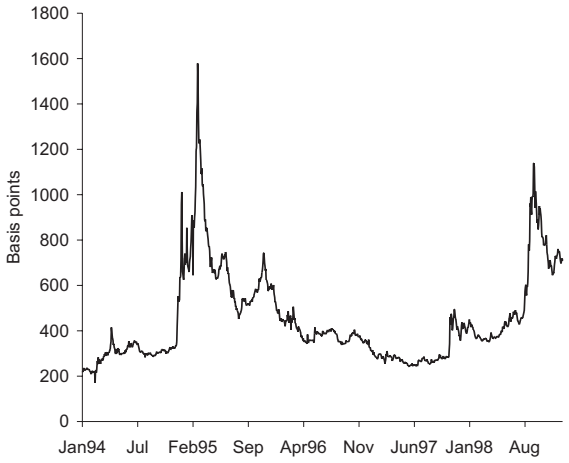
The leading stock indices fell between 14 per cent in the US and 34 per cent in Germany, while the 10-year Government bond yields fell between 0.64 percentage points in Italy and 1.29 percentage points in the US (table I). This portfolio readjustment across market segments also resulted from the successive downward revisions of economic growth forecasts for most countries, and perspectives of lower inflation levels in the industrial economies. In addition, spill-over effects were felt in the Latin American markets — a region until then relatively immune to the effects of the economic and financial crisis in the emerging Asian countries. The financial and exchange rate conditions of the Latin America emerging economies worsened significantly. Most countries tightened their monetary policies and in some cases widened the fluctuation bands of their national currencies. The differential between Latin America bond yields issued in dollars and the equivalent US Treasury bond yields reached levels comparable only with those recorded during the 1994/95 Mexican crisis (chart IV).

The destabilisation of financial conditions in developed markets was reflected in some credit and liquidity risk indicators. The massive losses financial institutions had to bear in result of investments in emerging markets and their exposure to "hedge funds"— institutions with investment strategies presenting high leveraging — raised concerns that the financial systems of developed countries were being affected by the crisis in the emerging countries. Instability worsened with the announcement of problems with the Long Term Capital Management (LTCM) — an American top "hedge fund". Against this background, the Federal Reserve made the decision in late September to facilitate a private rescue of the LTCM.

The spread between 10-year swap rates and the US dollar, Pound sterling, Deutsche mark and French franc public debt yields widened sharply in August. Up to October, the demand for public debt securities in these countries increased, resulting in a reduction of the yields by about 1 percentage point in the US and in Germany. Mean-

Chart IV

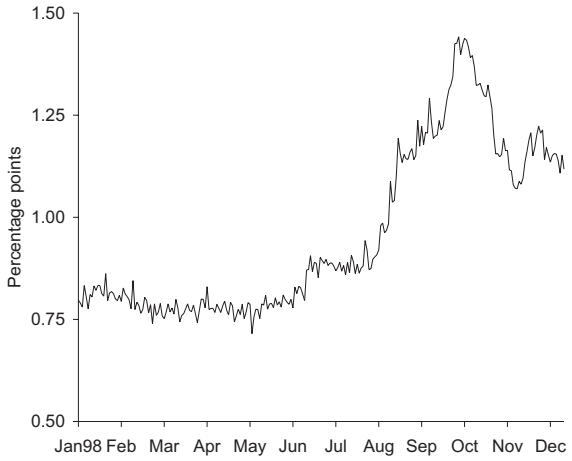
SPREAD BETWEEN LATIN AMERICAN BOND YIELDS AND US TREASURY BOND YIELDS



Source: JP Morgan, Bloomberg

Chart VI

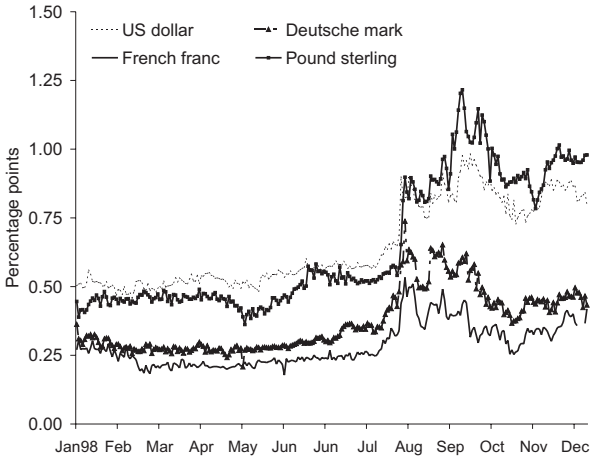
SPREAD BETWEEN 30-YEAR BONDS ISSUED BY COMPANIES RATED AAA BY MOODY'S AND US TREASURY BOND YIELDS



Source: Bloomberg.

Chart V

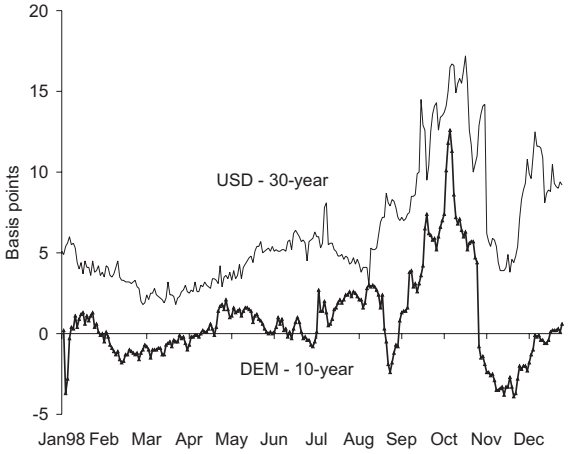
SPREAD BETWEEN SWAP RATES AND PUBLIC DEBT BOND YIELDS



Source: Bloomberg.

Chart VII

SPREAD BETWEEN ON AND OFF-THE-RUN BOND YIELDS



Source: Bloomberg.

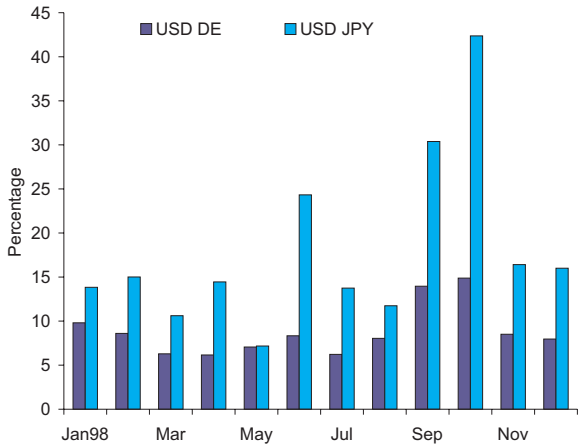
while, swap rates also decreased, though less than the former. Afterwards, the widening of the spreads between the 10-year swap rates and the public debt bond yields was reversed — almost fully as regards the EU-11 currencies (chart V).

The spread between the yield of bonds issued by companies and those issued by the Government also increased in this period. Indeed, the differential between the 30-year yields of bonds issued by US companies' rated AAA by Moody's, and those of the US Treasury bonds started to widen in August. At the end of the year, this differential was wider than at the end of the first half of 1998 (chart VI).

The higher level of risk aversion of economic agents also resulted in a higher liquidity risk premium. In the public debt bond market, the spread between the yields of benchmark (on-the-run) issues and those with closer maturity

Chart VIII

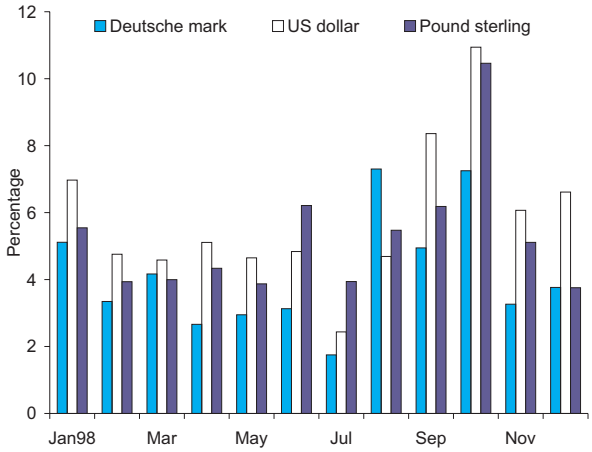
MONTHLY VOLATILITY OF THE US DOLLAR VIS-À-VIS THE DEUTSCHE MARK AND THE JAPANESE YEN



Note: Annualised standard deviation of the daily change in the exchange rate.

Chart IX

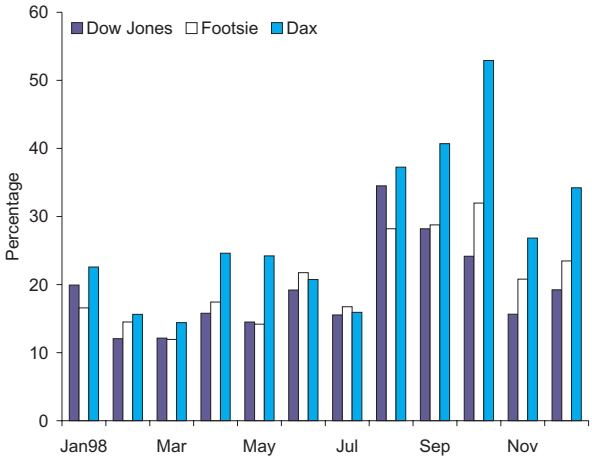
MONTHLY VOLATILITY OF THE 10-YEAR YIELDS OF THE US DOLLAR, POUND STERLING AND THE DEUTSCHE MARK



Note: Annualised standard deviation of the daily change of the 10-year yields.

Chart X

MONTHLY VOLATILITY OF STOCK INDICES US, UNITED KINGDOM AND GERMANY



Note: Annualised standard deviation of the daily change in the stock indices.

no longer considered benchmark (off-the-run) widened (chart VII). At the end of the year, this differential was even wider in the USA Treasury bond market, being virtually null in the German bonds.

The instability in the financial markets, specially between August and October, also resulted in an increased volatility in the exchange rate, bond and stock market segments (see respectively chart VIII, IX and X).

1.3 Monetary and exchange rate developments in the European Union countries

1.3.1 Countries of the future euro area

The announcement in May 1998 of the eleven countries integrating the euro area from 1 January 1999, together with the announcement that the ERM bilateral central parities would determine the conversion rates vis-à-vis the euro on 31 December 1998 (see box 2) created conditions for a high internal cohesion of the financial and foreign exchange markets across the EU11 countries in the second half of 1998 — which in the international context functioned as if these markets were already a single block. The credibility of the transition to the

Third Stage of the EMU at the beginning of 1999 allowed a smooth completion of the convergence processes of short-term interest rates and of exchange rates towards their central parities, despite the context of strong instability in the international markets.

In the second half of 1998, the EU11 currencies continued to converge towards their bilateral central rates (chart 13). In end-of-period terms, this movement translated into a depreciation vis-à-vis the Deutsche mark, of 1.4, 0.5, 0.2 and 0.1 per cent, respectively for the Irish pound, Italian lira, Spanish peseta and the Portuguese escudo. The remaining EU11 currencies recorded virtually null changes. The convergence towards the bilateral central rates was characterised by a reduction of the exchange rate volatility among the EU11 currencies, to virtually null levels (chart 14).

The major guidelines of the European System of Central Banks monetary policy strategy were defined in the second half of 1998 (see box 3). As regards monetary policy, decisions made by the national central banks of the EU11 countries exhibited a high level of co-ordination. At a first stage, this feature translated into the acceleration of the convergence of the leading intervention rates — specially in Ireland, Portugal, Spain and Italy (chart 15). On 3 December, in a co-ordinated decision and in a context of price stability, of moderate growth of monetary aggregates and of less optimistic perspectives regarding growth in the euro area, all national central banks of the EU11 cut their official interest rates by different amounts, setting the rates of liquidity injection at 3.0 per cent. Italy was the only exception cutting the discount rate to 3.5 per cent but on 23 December this rate was cut to 3.0 per cent.

Reflecting the monetary policy decisions, 3-month interest rates in the EU11 decreased over the course of the half year by different amounts — to close to 3.25 per cent in December, presenting virtually null differentials vis-à-vis the German rates (chart 16). In end-of-period terms, the stronger interest rate reductions in the second half of 1998 took place in Ireland (2.9 percentage points), Italy (1.7 percentage points), Spain (1.0 percentage points) and in Portugal (0.9 percentage points).

In the second half of 1998, the EU-11 capital markets were conditioned by international instability, namely by the "flight to quality" movement. The 10-year yields fell sharply — specially between July and September. In end-of-period terms, these yields fell between 0.82 percentage points in Finland and 1.04 percentage points in Italy, to levels close to 4 per cent. It should be noted that the differentials vis-à-vis the Deutsche mark widened in the first four months of the half-year, due to greater relative attractiveness of German bond

Chart 13
EUROPEAN MONETARY SYSTEM
Position in the ERM band excluding the Greek drachma

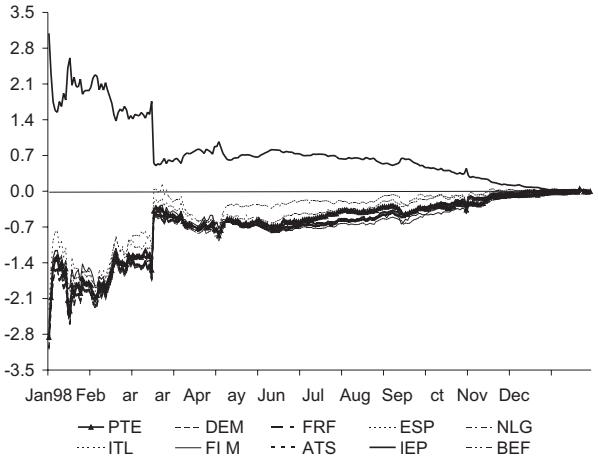
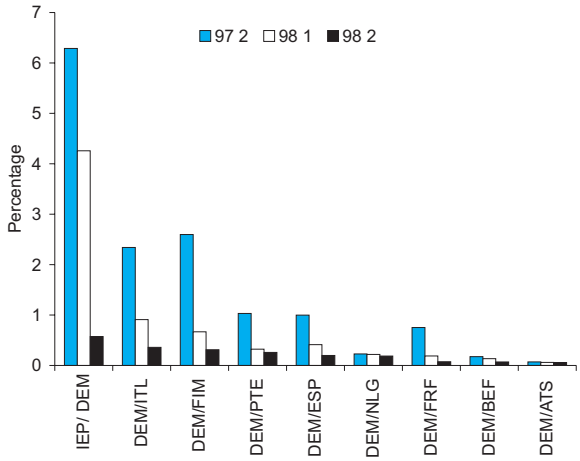


Chart 14
VOLATILITY OF THE EU-11 CURRENCIES VIS-À-VIS THE DEUTSCHE MARK



Note: Annualised standard deviation of the daily change in the exchange rate for the respective half-year.

Chart 15
INTERVENTION RATES
EU11 countries

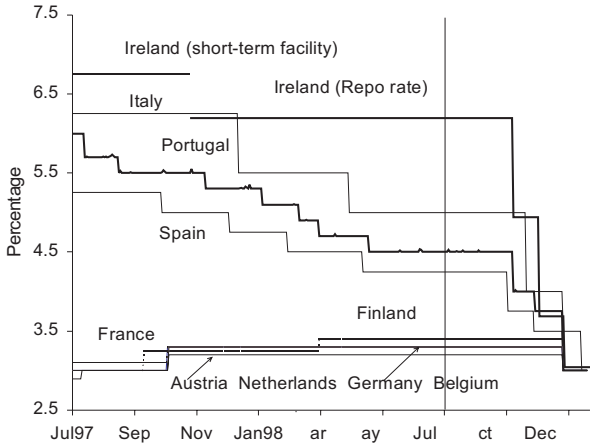
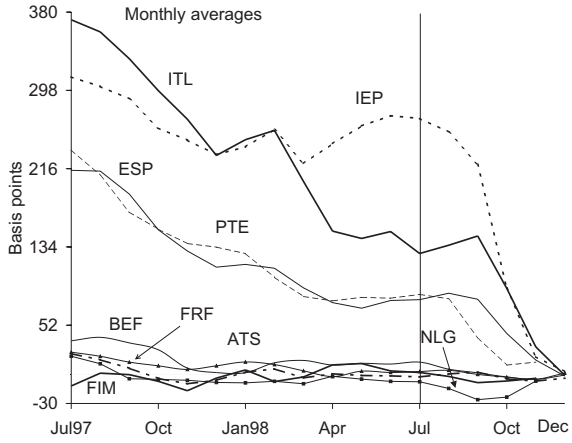


Chart 16
SHORT-TERM INTEREST RATE DIFFERENTIALS VIS-À-VIS THE DEUTSCHE MARK
EU 11 countries



Note: Euromarket 3-month interest rates.

Chart 17
10-YEAR BOND YIELDS IN THE EU11 COUNTRIES
Differentials vis-à-vis the Deutsche mark

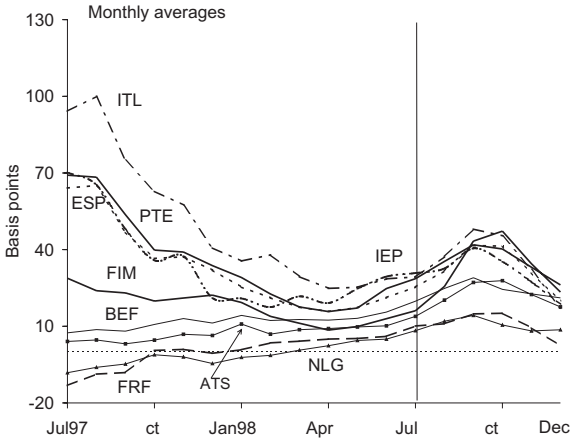
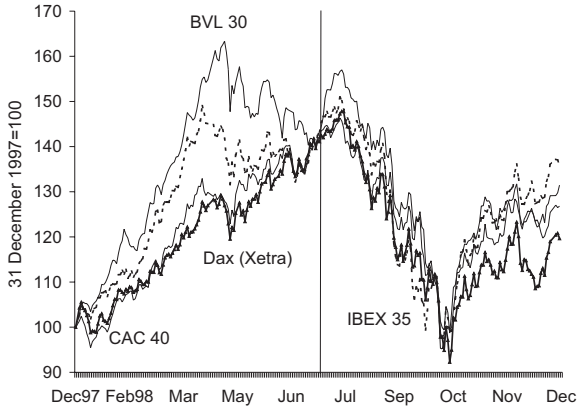


Chart 18
STOCK INDICES
EU11 countries



market, which benefited from its greater liquidity (chart 17). This movement was reversed in the last two months of 1998. In December, the differentials against the Deutsche mark did not surpass 0.3 percentage points.

EU-11 stock indices fell sharply between August and October, cancelling out the gains raised in the first seven months of 1998 (chart 18). Afterwards, the contention of financial instability and the adjustment of monetary policies in industrial countries contributed to improve the optimism about the future behaviour of the world economy, resulting in gains in the European stock indices.

1.3.2. EU countries outside the future euro area

Concerning the remaining currencies in the European Monetary System, the second half of 1998 was characterised by an increased exchange rate volatility in relation to the previous half-year. Throughout the second half of 1998, the Greek drachma was the strongest currency in the ERM of

Box 2: IRREVOCABLE CONVERSION RATES TO THE EURO AND ERM 2

On 31 December 1998, the ECOFIN Council adopted the irrevocable conversion rates to the euro (table I). In addition, the central exchange rates of the Danish krone and the Greek drachma vis-à-vis the euro in the context of the ERM 2 were approved (table II).

Table I

IRREVOCABLE CONVERSION RATES TO THE EURO

Portuguese escudo	200.482
Spanhish peseta	166.386
Italian lira	1936.27
French franc	6.55957
Belgium franc	40.3399
Luxembourg franc	40.3399
Deutsche mark	1.95583
Austrian schilling	13.7603
Dutch guilder	2.20371
Finnish markka	5.94573
Irish pound	0.787564

Table II

ERM2

	Lower limit	Central rate	Upper limit
Danish krone	7.29252	7.46038	7.62824
Greek drachma	300.143	353.109	406.075

The irrevocable conversion rates to the euro determined on 31 December 1998 cannot be rounded and inverse conversion rates must not be used.

In converting values between national currency units of the euro the following conventions should be regarded (EC Regulation no. 1103/97, of 17 June; art.4, no. 4 and art. 5):

1) *The amounts to be converted to another national currency unit should first be converted to a pecuniary amount in euros;*
2) *The amount in euros can be rounded up to a least of 3 decimal places;*
3) *Afterwards, that amount is converted to the other national currency unit, rounded to the closest sub-unit or, in its absence, to the closest unit, or to a multiple or fraction of the national currency sub-unit or unit.*

Example:

The conversion of 5 million Irish pounds to escudos is made in two steps:

1- conversion of the value to the euro, using the irrevocable exchange rate: EUR/ IEP= 0.787564.

The value in euro is 6 348 690.39214591, rounding to the least decimal places allowed yields 6 348 690.392 euro.

2- Conversion of the value in euro to escudos, using the irrevocable exchange rate: EUR/PTE= 200.482.

The value is 1 272 798 147.1982 escudos.

In the case of the Portuguese currency, "values expressed in cents are rounded to the closest unit of the escudo" (Decree-law no. 138/98 of 16 May); thus the final result is 1 272 798 147 escudos.

It should be noted that, according to the defined rules, the correct value of the 5 million Irish pounds expressed in escudos is 1 272 798 147. This value differs from the wrong value we would get if using directly the bilateral central parity between the Irish pound and the escudo (IEP/PTE=254.56) of 1 272 800 000 escudos - i.e., a difference of 1 853 escudos.

Box 3: MONETARY POLICY STRATEGY OF THE ESCB

Over the course of the second half of 1998, the European Central Bank (ECB) Council made public a relevant set of decisions related to the definition of the monetary policy of the European System of Central Banks (ESCB).

In this context, the main elements of the monetary policy strategy of the ESCB are worth being stressed. These lie upon: first, a quantitative definition of the monetary policy primary objective (i.e., price stability), corresponding to an annual increase of the HICP for the euro area below 2 per cent; second, the establishment of a reference value for the rate of growth of monetary aggregate M3, illustrating the key role money plays in the strategy agreed; finally, an overall appraisal of the future behaviour of prices, using a wide set of indicators. The reference value for monetary growth shall be calculated consistently with the quantitative definition of price stability, taking into consideration real output growth and changes in money circulation velocity.

In its meeting on 1 December 1998, the ECB council decided to fix the first reference value for the growth of monetary aggregate M3 at 4.5 per cent. This reference value was calculated upon the contributions to money creation resulting from the proposals for prices (annual growths below 2 per cent), real growth (trend annual growth between 2 and 2.5 per cent) and money circulation velocity (trend annual reduction between 0.5 and 1 per cent).

In November, the 3-month moving average of the annual growth rates of M3 was 4.7 per cent particularly close to the reference value fixed by the Council.

At the level of monetary policy implementation, the ECB Council took a decision on the interest rates to be applied as from the start of Stage Three. The repo rate was therefore set at 3.0 per cent, while the interest rates for the marginal lending facility and for the deposit facility would be set at 4.5 and 2.0 per cent, respectively (temporarily, and up to 21 January, these rates stood at 3.25 and 2.75 per cent, respectively).

Chart 19
WIDTH OF THE ERM-EMS BAND
Monthly averages

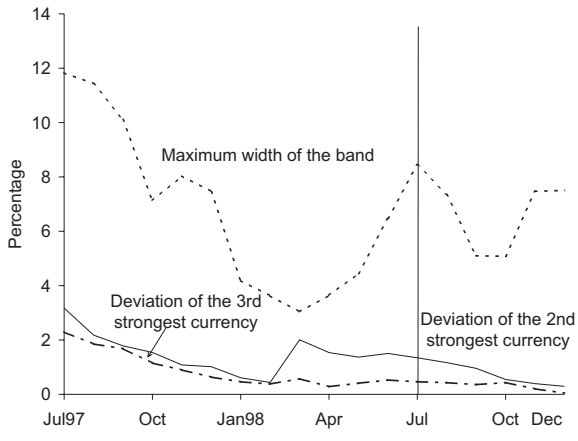
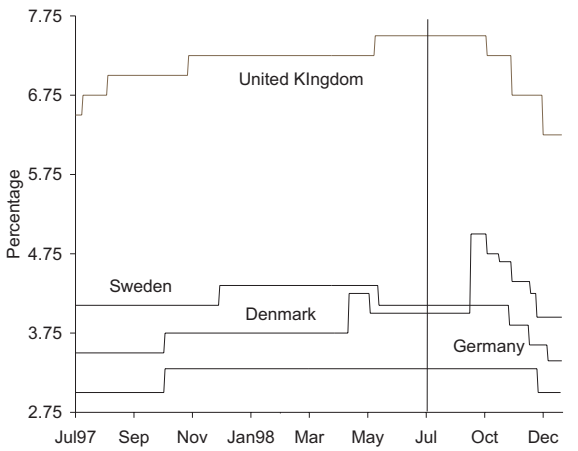


Chart 20
INTERVENTION RATES
United Kingdom, Sweden, Denmark and Germany



the EMS. Therefore, its fluctuation implied some volatility in the ERM band width (chart 19).

The Danish krone, Swedish krona and Greek drachma markets were particularly vulnerable to the instability of the international financial markets. The Danish authorities rose the intervention interest rates by 1 percentage point, to 5 per cent, to ensure exchange rate stability of the Danish currency vis-à-vis the Deutsche mark (chart 20). This movement was gradually inverted from October

Chart 21
SHORT-TERM INTEREST RATES IN THE UNITED KINGDOM, DENMARK AND SWEDEN
Differentials vis-à-vis the Deutsche Mark

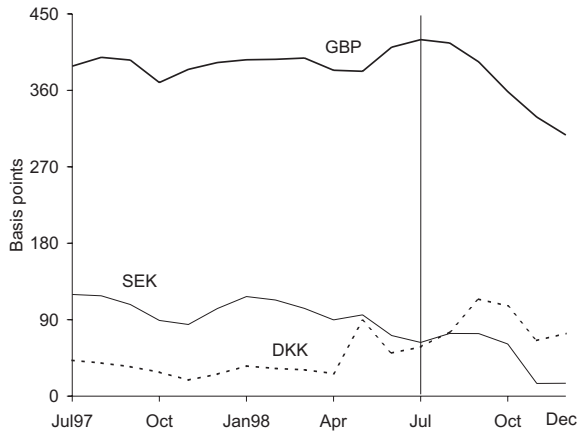
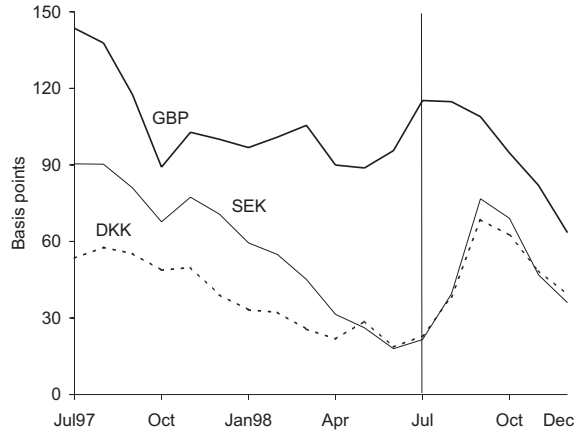


Chart 22
10-YEAR BOND YIELDS IN THE UNITED KINGDOM, DENMARK AND SWEDEN
Differentials vis-à-vis the Deutsche mark



onwards. In December, the intervention rate stood at 3.95 per cent. However, the differential vis-à-vis the German repo rate widened 0.25 percentage points in the half-year, to 0.95 percentage points. The Danish 3-month interest rates exhibited a similar behaviour. Indeed, the differential against the equivalent German rates widened 0.2 percentage points in the half-year, to 0.7 percentage points. (chart 21).

At first, the Swedish authorities maintained unchanged their official interest rates — allowing the adjustment to take place at the exchange rate level. In end-of-period terms, the Swedish krona depreciated 9.5 per cent vis-à-vis the Deutsche mark in the half-year, and 10.2 per cent in the year as a whole. In November, in a context of greater exchange rate stability and of negative year-on-year changes of the CPI, the Swedish central bank carried out successive cuts in its repo rate, totalling 0.70 percentage points. The 3-month interest rate differential vis-à-vis the German rates narrowed 0.6 percentage points in the second half of 1998, to 0.2 percentage points.

In end-of-period terms, the Pound sterling depreciated 5.8 per cent vis-à-vis the Deutsche mark in the half-year, and 5.5 per cent in 1998 as a whole. From October onwards, in a context of improved perspectives regarding the behaviour of prices in the United Kingdom, the Monetary Policy Committee of the Bank of England drew three cuts on the official interest rate amounting to 1.25 percentage points, to 6.25 per cent. As a result, the differential between the Sterling 3-month interest rates and the corresponding German rates narrowed 1 percentage points, to 3.1 percentage points.

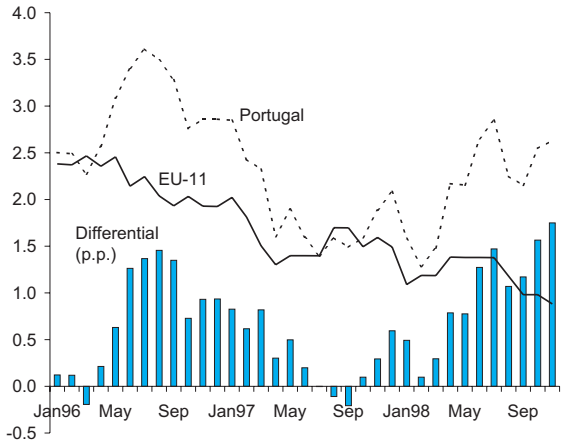
In the bond market, the British, on the one hand, and the Danish and Swedish public debt securities, on the other, exhibited distinct behaviours vis-à-vis the German bonds, reflecting the different impacts of the international financial instability (chart 22). In end-of-period terms, the differential between the 10-year United Kingdom yields and the German ones narrowed 0.3 percentage points, to 0.6 percentage points. Conversely, in end-of-period terms, the 10-year yields differential vis-à-vis Germany widened about 0.2 percentage points (in the half-year) both in Denmark and in Sweden.

2. MONETARY AND EXCHANGE RATE POLICY IN PORTUGAL

2.1 Macroeconomic background

In 1998, the Portuguese economy was characterised by the continuation of a high pace of economic growth. For the third consecutive year, Portuguese GDP grew at a rate above that of the EU.

Chart 23
HARMONISED INDEX OF CONSUMER PRICES IN PORTUGAL AND IN THE EU11
Year-on-year rates of change



Source: Eurostat

Economic growth in Portugal has benefitted from the dynamism of domestic demand, stimulated by the reduction of interest rates — in a context of the Portuguese participation in the euro area from 1 January 1999 onwards. The Banco de Portugal estimates a 4.0 per cent real GDP growth for 1998 in this *Economic Bulletin*; this estimate corresponds to the lower limit of the 4.0-4.25 forecast interval disclosed in the September *Economic Bulletin*. This change was partly due to the downward revision of merchandise exports growth.

According to the new Employment Survey of the *Instituto Nacional de Estatística*, the unemployment rate in Mainland Portugal was of 4.7 per cent in the third quarter of 1998, compared with 5.9 and 4.6 per cent in the first and second quarters, respectively.

Inflation in Portugal increased in 1998. In December, the rate of inflation, measured by the annual average rate of change of the HICP, reached 2.2 per cent, 0.3 percentage points more than in December 1997. The year-on-year change in the HICP was of 2.8 per cent in December. The rate of inflation in Portugal chiefly results from two factors: temporary effects linked to the behaviour of some prices — specially influencing the prices of traded foodstuff goods — and the behaviour of the escudo effective exchange rate in 1997 and early 1998 — mostly as a result from the appreciation of the US dollar and the Pound sterling.

Reflecting the recent behaviour of prices in Portugal, the inflation differential vis-à-vis the EU-11 average widened in the second half of 1998, both in average terms and in year-on-year terms. The differential of the year-on-year rate of change of the HICP vis-à-vis the EU11 average widened from 1.3 percentage points in June to 1.7 percentage points in November (chart 23). In annual average change terms, the inflation differential vis-à-vis the euro area rose 0.4 percentage points in June, to 0.9 percentage points in November.

In 1998, according to the 1999 State budget law, the General Government budget deficit in Portugal is estimated to have reached 2.3 per cent of GDP in 1998 (2.5 per cent in 1997).

2.2 Monetary and exchange rate policy execution

In the second half of 1998, the escudo exchange rate was conditioned by the need to converge towards the bilateral central parities of the ERM, in line with the commitment made on 1 May by the countries of the future euro area. In end-of-period terms, the escudo depreciated 0.1 per cent vis-à-vis the Deutsche mark in the second half of 1998, and 0.3 per cent[6] in 1998 as a whole (chart 24). However, the escudo depreciated vis-à-vis the German currency up to October, appreciating afterwards. As a result, the escudo exchange rate on 31 December equalled the central parity of the ERM: PTE 102.505 per Deutsche mark.

On 31 December, the conversion rates to the euro — which replaced the ECU from 1 January 1999 onwards at a 1:1 rate — were fixed. The conversion rate of the euro vis-à-vis the escudo was fixed at 200.482 (see box 2).

As with the other EU-11 currencies, the volatility of the escudo vis-à-vis the Deutsche mark continued to decrease, becoming virtually null in the last months of 1998.

(6) On average, the escudo depreciated 0.1 per cent in the half-year and 1.3 per cent in the year as a whole.

(7) In 1998, the EERI of the escudo depreciated on average 1.2 per cent.

Chart 24

ESCUDO EXCHANGE RATE VIS-À-VIS THE DEUTSCHE MARK

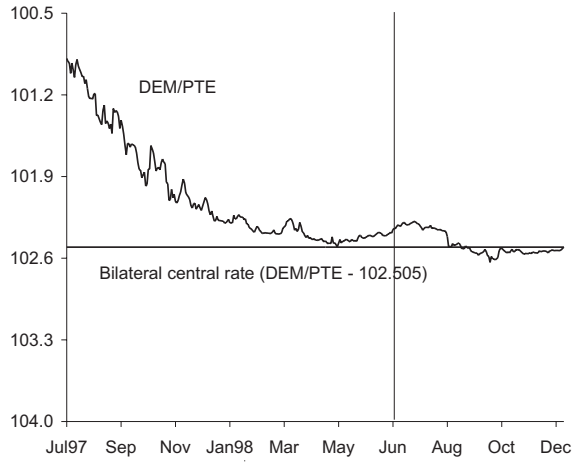


Chart 25

ESCUDO EXCHANGE RATES EERI AND ERI-ERM

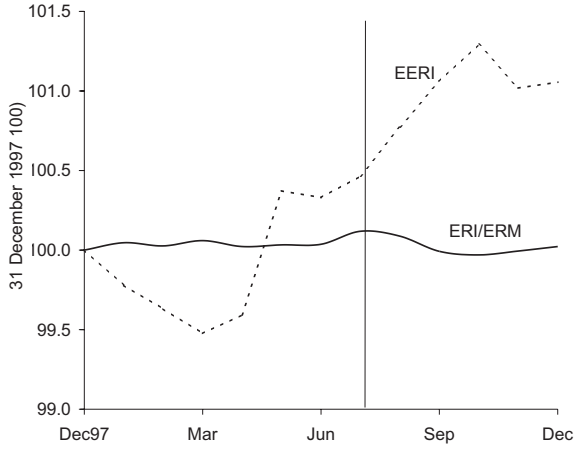


Table 1

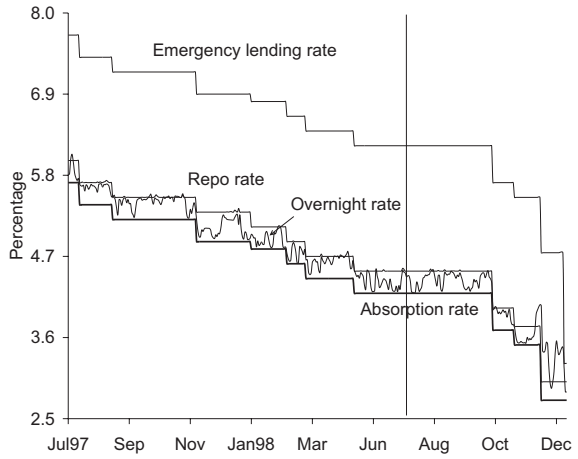
INTERVENTION RATES OF THE BANCO DE PORTUGAL

Percentage

	Absorption rate	Repo rate	Emergency lending rate
12-05-1998	4.20	4.50	6.20
12-10-1998	3.70	4.00	5.70
04-11-1998	3.50	3.75	5.50
03-12-1998	2.75	3.00	4.75
29-12-1998			3.25

Chart 26

INTERVENTION RATES OF THE BANCO DE PORTUGAL AND OVERNIGHT INTEREST RATE IN THE INTERBANK MONEY MARKET



In effective terms and in end-of-period values, the escudo appreciated 0.7 per cent in the half-year, appreciating 1.1 per cent in the year[7] (chart 25). However, the escudo recorded no change, in the half-year and in the year as a whole, against the currencies in the ERM of the EMS.

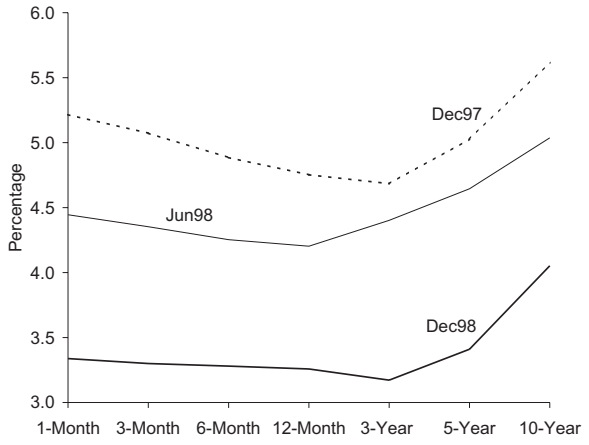
Over the course of the second half of 1998, the monetary policy of the escudo was increasingly conditioned by the convergence objectives. Full convergence of the repo rate was accomplished on 3 December, in the context of a combined reduction of the intervention rates of the future euro area national central banks, to 3.0 per cent (table 1). On this date, the absorption rate and the emergency lending rate were cut to 2.75 and 4.75 per cent, respectively.

These intervention rate cuts were passed through to the interbank money market short-term interest rates, which maintained their downward path.

As in the first half of 1998, the interbank money market presented in general a situation of excess liquidity. On 4 November, the first tranche of Deposit Certificates of the Banco de Portugal (series B remunerated) amounting to PTE 136.8 billion, came into maturity.

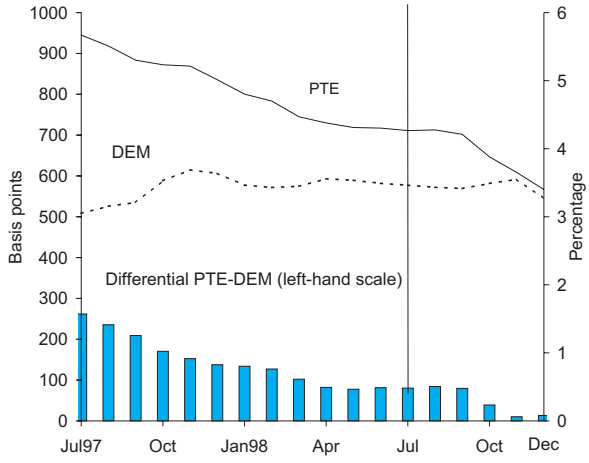
The adaptation of institutions to the new conditions of intervention in the escudo money market

Chart 27
ESCUDO YIELD CURVES
End-of-period figures



Note: Interest rates for maturities up to one year are Lisbor rates; interest rates for maturities between 3 and 10 years are Treasury bond yields.

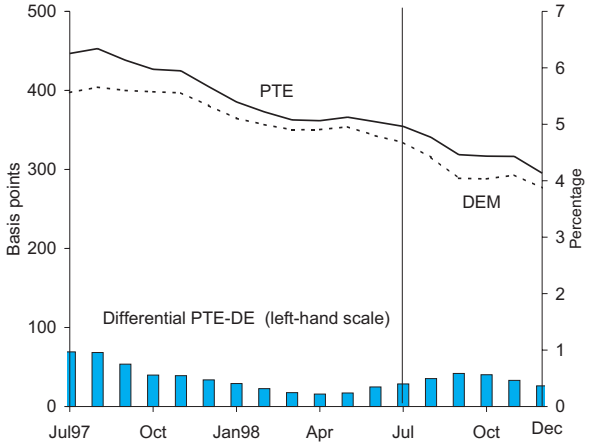
Chart 28
SHORT-TERM INTEREST RATES
Monthly averages



is bound to have somewhat conditioned the interbank systems liquidity. The volatility of the overnight interest rate increased; indeed, this rate stood many times above the repo rate (chart 26).

Over the course of the half-year, the escudo yield curve recorded a parallel downward shift. Interest rate levels decreased around 1 percentage point (chart 27). In late 1998, the slope of the yield

Chart 29
10-YEAR BOND YIELDS
Monthly averages



curve increased slightly when compared with late 1997, due to the sharper reduction of short-term interest rates (-1.9 percentage points in the 1-month maturity) than in longer-term maturities (-1.6 percentage points for 10-year yields). This development reflected the completion of the convergence process of short-term interest rates.

The escudo 3-month interest rates continued to decrease, falling 0.9 percentage points in the second half of the year (1.6 percentage points in 1998 as a whole). The differential between the escudo 3-month interest rates and the corresponding German rates narrowed 0.7 percentage points in the second half of 1998 (1.2 p.p. in the year as a whole); this convergence process was concentrated specially in October and November (chart 28).

In end-of-period terms, the 10-year yields fell 0.9 percentage points in the half-year and 1.5 percentage points in the year. The differential vis-à-vis the Deutsche mark long-term yield continued to widen slightly early in the half-year, reaching 0.3 percentage points in December (chart 29). In 1998 as a whole, this differential narrowed 0.1 percentage points.

Written with the information available up to 21 January 1999.

ESTIMATION OF POTENTIAL OUTPUT FOR THE PORTUGUESE ECONOMY

Susana Botas * *
Carlos Robalo Marques *
Pedro Duarte Neves **

1. INTRODUCTION

The growth rate of an economy is unquestionably one of the most relevant pieces of information for the economic authorities in each country. A slow growth may indicate persistently high unemployment levels, while extremely high rates of growth may generate unsustainable pressures on the wage formation process.

In this context, the concept of potential output can play a key role as an indicator of the aggregate supply situation. However, although widely used in economic analysis, the concept of output gap is not unique. In fact, several definitions and estimation methods exist.

Many fairly standard time series techniques identify potential output with the trend component of the time series, hence eliminating the seasonal, cyclical and irregular components. These are statistical methods and thus do not allow the interpretation of the economic factors leading to an observed output level above or below potential output.

The estimation of a production function allows establishing a relationship between the degree of utilisation of inputs and potential output. According to this interpretation, potential output growth reflects a growth of trend productivity and a level of capital utilisation compatible with those observed in the past, as well as a labour utilisation compatible with the non-existence of inflationary pressures, usually associated to the concept of the natural unemployment rate.

As it shall become clear throughout this paper, alternative methods can render quantitatively distinct estimates for potential output. Therefore, considerable uncertainty surrounds the measurement of the so-called output gap — the difference between observed and potential output levels — which requires special caution in interpreting the results. This fact suggests that the estimates obtained through different methods should be compared with other quantitative indicators of the rate of productive factor utilisation — as the unemployment rate or the rate of productive capacity utilisation.

According to the production function approach, potential output can be interpreted as an indicator of inflationary pressures in the economy. Indeed, pressure on prices tends to appear when the rate of productive capacity utilisation is high and when unemployment rate is below its natural rate(1).

The concept of potential output is also employed in the adjustment of cyclical behaviour of some variables. In particular we may calculate changes of the General Government overall and primary balances adjusted for effects of the cyclical position of the economy, useful as guidelines to budgetary policy(2).

The first conclusion of the study is that in the Portuguese case, alternative output gap estimation procedures lead to similar results, specially in the

* The opinions of this paper represent the views of the authors, and are not necessarily those of the Banco de Portugal.

** Economic Research Department.

(1) A vast set of researches published in Central Banks discuss the use of the output gap to explain inflation behaviour. See for instance Cassola and Sousa (1996), Marques (1990), Fisher, Mahadeva and Whitley (1997) and Gartner (1995).

(2) See Centeno (1994).

recent past. We also find that in the last three years the economy has grown above potential output, and output is currently probably close to its potential level.

This article contains three additional sections. Section 2 briefly presents some methods to obtain estimates for potential output. Results for Portugal are described in section 3. Section 4 concludes.

2. ALTERNATIVE METHODS OF ESTIMATION OF THE OUTPUT GAP

As mentioned above, potential output is a non-observable variable, hence requiring estimation. Given the relevance of this concept, it is advisable to compare estimates obtained from the application of alternative quantitative techniques. Three different procedures are used in this study: (i) linear trend; (ii) the Hodrick- Prescott filter and (iii) the production function.

We now follow to outline each of these procedures, as well as their potentialities and drawbacks.

i) Linear trend

The simplest way to obtain an estimate for potential output consists in estimating a linear trend of log GDP at constant prices — which basically corresponds to using the average growth rate observed in the period under scrutiny[3].

For longer periods, however, the constant average growth rate assumption is not reasonable. In most western economies, for example, economic growth was stronger in the post-world war period than in the 1970's or the 1980's. Alternatively, the linear trend of GDP can be estimated accounting for the existence of structural breaks. This corresponds to assuming different growth rates for potential output in different time periods[4]. This procedure can ultimately lead to different potential growth estimates for each economic cycle [5].

The estimation of potential growth rates that correspond to the average growth rate recorded in each economic cycle ensures the symmetry of economic cycle gaps, which is an advantage. On the other hand, the fact that the estimation results are not invariant to the definition of economic cycles constitutes a drawback of the method.

A second disadvantage is the difficulty in using this method in potential output forecasting, since structural breaks are only known *a posteriori*. It is also known that if GDP is integrated of order one, instead of a trend stationary series, then the adjustment of a linear trend gives rise to the so-called "spurious de-trending" phenomenon since the regression residuals (the cyclical component of output) are non-stationary. In this case, the cyclical component is of difficult interpretation, as it reflects a series that does not present mean reversion.

ii) Hodrick-Prescott filter

An alternative to the estimation of a linear trend consists in assuming that the potential growth rate is not constant in time. This can be obtained by using some statistical filters mainly aimed at identifying the trend component of a time series. Unlike the linear regression — which attributes equal weights to all observations — these filters give different weights to different observations, according to their closeness to the period under scrutiny. The Hodrick-Prescott method is the most commonly used statistical filter in estimating potential output[6]. The Hodrick-Prescott[7] (HP) filter delivers estimates for potential output from the calculation of weighted moving averages

(3) This procedure requires the utilisation of complete economic cycles.

(4) The identification of a constant output growth rate corresponds to the estimation of the log-linear relationship $\ln PIB_t = \alpha + \beta t$, where β is the estimated potential output growth rate; in the presence of structural breaks, the above relationship takes the form $\ln PIB_t = \alpha + \sum_i \beta_i t_i$.

(5) The OECD uses this procedure — among others — and defines an economic cycle as the period between two consecutive economic growth maxima. See Giorno, Richardson, Roseveare and Van den Noord (1995).

(6) Two alternatives are the Holt-Winters method and the non-observed components method (Watson, 1986).

(7) The Hodrick-Prescott filter is obtained from the following minimisation problem:

$$\underset{y_t^*}{Min} \sum_{t=1}^{T} \left(\ln y_t - \ln y_t^*\right)^2 + \lambda \sum_{t=1}^{T} \left[\left(\ln y_{t+1}^* - \ln y_t^*\right) - \left(\ln y_t^* - \ln y_{t-1}^*\right)\right]^2.$$

Where y is output at constant prices and y^* is the value of potential output.

using past and future values of observed output. Weights are greater for years closer to that for which potential output is being calculated. The Hodrick-Prescott filter requires the choice of the value of smoothing parameter λ of the minimisation problem[8]. This reflects the choice between a smooth potential output series and one closer to observed output (as extreme cases, we could have a linear trend or the observed output series itself). A lower value for λ corresponds to an output path close to that observed — thus to a more volatile series. A higher value for λ yields a smoother output path, thus closer to a linear trend. These results are explained by the fact that a lower value for λ corresponds to using a smaller number of years in calculating moving averages. In literature the assumption of $\lambda = 100$ is fairly standard for annual data and $\lambda = 1600$ for quarterly data[9].

The weighting of past and future observations brings problems to the utilisation of the Hodrick-Prescott filter at the ends of the sample, where the estimated trend follows closely the observed value of output. This issue is important, since in most cases our interest consists precisely in measuring potential output in recent years. To overcome this drawback, it is convenient to extend the sample period to include forecasts of future values for output.

Another limitation of the HP filter deals with the treatment of structural breaks which tend to be smoothed by the filter. As a result, the effect of a structural break tends to be distributed over several periods, instead of being felt in one period alone — as happens with the linear trend for instance, once the break period is identified. Furthermore, the HP filter tends to create spurious cycles i.e., it generates cycles even when these are not present in the original data[10].

Nevertheless, this method has the advantage of ensuring that the estimated output gap (cyclical component) is stationary. As mentioned above, this was not the case of the linear trend.

iii) Production function

The previously presented methods are statistical procedures aimed at identifying the trend of a time series. The major drawback of these methods is unequivocally the fact that they are simply statistical procedures, that fully disregard any information on eventual structural constraints binding the economy — namely the greater or smaller availability of production factors. Therefore, the potential output extrapolated by any of the above described approaches may be inconsistent with the behaviour of the capital stock, employment and productivity. The so-called production function approach intends to overcome these drawbacks by taking into account the greater or lower availability of productive factors.

According to this approach, potential output is the maximum output level consistent with stable inflation. Consequently, this concept should not be identified with maximum output level — in the technical sense — which corresponds to the full utilisation of productive factors.

For simplicity we assume that output is fairly explained by a Cobb-Douglas production function with constant returns to scale and technical progress[11]. Since technical progress can be non-stationary and not bound to be represented by a simple linear trend (which would complicate the estimation of the production function parameters), the production function parameter corresponding to the share of labour income in total national income is set equal to the sample mean by calibration. The residuals of the production function (technical progress) are then smoothed (using for instance the HP filter or a linear trend) to obtain a trend measure of total factor productivity. Potential output is found by substituting trend productivity, the capital stock and potential employment in the production function. In turn, potential employment can be given by an estimate for the NAIRU[12].

Consider the following Cobb-Douglas production function with constant returns to scale and technical progress:

(8) See footnote 7.

(9) See for instance Kydland and Prescott (1990).

(10) See Cogley and Nason (1995).

(11) For an approach based on the C.E.S. production function see for instance Marques (1990).

(12) Non Accelerating Inflation Rate of Unemployment.

$$Y_t = L_t^{\alpha} K_t^{1-\alpha} N_t$$

where Y_t stands for output, L_t is labour, K_t is the capital stock effectively used and N_t the technical progress.

Using lower case to represent the corresponding logarithms, the previous function can be written as follows:

$$y_t = \alpha l_t + (1-\alpha) k_t + n_t$$

For a given value of α we can calculate the technical progress n_t corresponding to the residuals of the production function. Smoothing n using a HP filter or a linear trend provides a measure of trend factor productivity, here noted by n^*.

Potential employment is given by the expression $L^* = LF(1\text{-}NAIRU)$ where LF stands for the labour force. The logarithm of potential output can be calculated from the following expression

$$y_t^* = \alpha l_t^* + (1-\alpha) k_t^* + n_t^*$$

where k^* stands for the potential capital stock, which in practice corresponds to the observed capital stock.

The expression above evidences the role that different production factors play in determining potential output. First, the greater the capital stock, the highest is potential output. This means that high investment rates — specially if investment is channelled to expanding productive capacity — yield higher growth rates of potential output. Second, the higher potential employment — i.e., the lower the NAIRU — the higher is potential output. Finally, potential output is also higher the greater is trend technical progress.

Naturally, the production function approach is not free of limitations. As discussed above, potential output is dependent on the type of production function assumed, on the method of calculation of NAIRU and on the method of calculation of trend productivity. The choice of a point estimate for the NAIRU — which encompasses a certain level of uncertainty — and the utilisation of the HP filter or a linear trend in calculating n^* bring to this approach all kinds of limitations associated to these methods.

3. RESULTS FOR PORTUGAL

This section presents the results of the application of the methods described above. Two alternative series were used for output. First we used a series resulting from patching three distinct series: that covering the period 1958-1987 was drawn from Santos, Dias and Cunha (1992); the series for the period 1988-1994 corresponds to the National Accounts of the *Instituto Nacional de Estatística*; finally, for the period 1995-1998 we used the most recent estimates and forecasts of the Banco de Portugal (see the 1997 *Annual Report* of the Banco de Portugal, as well as the article "The Portuguese economy in 1998" in this bulletin). The second alternative consisted of using the "Historical Series for the Portuguese Economy" in Pinheiro *et al.* (1997) for the period 1958-1995[13], and the most recent estimates of the Banco de Portugal for the period 1996-1998. Hereafter these series shall be denoted National Accounts (NA) and Historical Series (HS), respectively. We use two distinct series because their real growth rates exhibit a non-negligible difference. Indeed, the Historical Series reveal a stronger growth in the period after 1974.

The application of the above described techniques of estimation of the output gap was applied to these annual series, but also to quarterly ones. We follow to present the main findings.

i) Annual data

The Portuguese economy grew substantially more in the period 1958-1973 than in the period 1974-1998. The estimation of a log-linear trend for the period as a whole would lead to the estimation of a relatively high potential growth rate when compared to the growth observed in the last 20 years. To overcome this situation, we considered a log-linear model with a structural brake in 1974.

Chart 1 presents the estimates for potential output growth obtained for the Historical Series, as well as the observed growth rates. The estimation of a log-linear regression leads to an average growth of 6.0 per cent up to 1973 and 3.5 per cent

(13) The series used in this research encompass some revisions meanwhile made to the series of Pinheiro *et al.* (1997) up to 1993, and an extension to cover 1994 and 1995.

thereafter. The potential growth rate obtained from the Hodrick-Prescott filter is also depicted in the chart. At the end of the sample period, this estimate is slightly lower than that yielded by the log-linear regression.

Chart 2 exhibits the corresponding estimates based on the National Accounts. The estimation of a log-linear regression leads to an average growth of 6.6 per cent up to 1973, and 2.9 per cent afterwards. The potential output growth rate delivered by the Hodrick-Prescott filter is virtually identical to that yielded by the log-linear regression in the last 20 years. At the end of the period under scrutiny the Hodrick-Prescott series stands slightly above the log-linear regression with a growth rate of 3.1 per cent.

Note that we get the same potential output growth for both series at the end of the sample period if the Hodrick-Prescott method is used.

The output gap estimates for each one of these series and for each method are plotted in charts 3 and 4. These charts present quite similar behaviours. In general, and regarding the most recent period, we may conclude that the 1993 recession led observed output to a level below potential output. From 1996 onwards, however, the growth of the Portuguese economy has made the output gap less negative. In 1998, the estimated level for output stands very close to its potential value. According to the National Accounts, the output gap switched from negative in 1997 (-0.6 per cent) to positive in 1998 (about +0.4 per cent). For the Historical Series the output gap became null in 1998 according to the HP filter (-0.9 per cent in 1997); however, according to the linear trend the output gap still remains marginally negative in 1998 and 1999. In any of these cases, the conclusion is that in 1998 output is very close to its potential value – i.e., the output gap is virtually null.

Charts 3 and 4 provide us with two additional remarks. The first is that in the 1960s (the first 10 years of the sample) there are no visible cycles – or, if existing, they were clearly inexpressive and short. On the contrary, from the early 1970s onwards, cycles are clearly defined and are more or less lengthy – the last of which is estimated to have lasted about 10 years. The second remark is that the 1993 recession was less sharp and shorter than those recorded in 1975 and in 1983-84. The

Chart 1
HISTORICAL SERIES – POTENTIAL OUTPUT
Growth rate

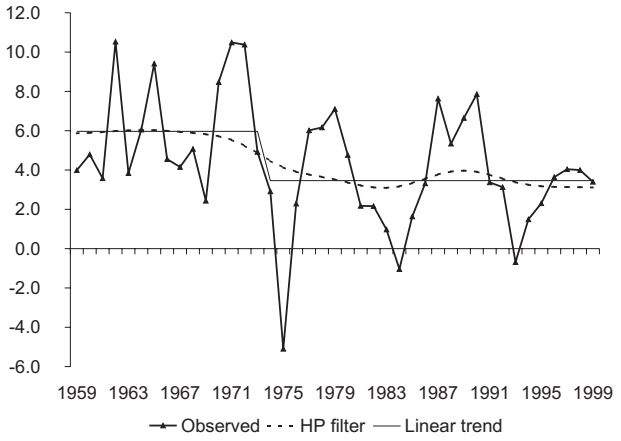


Chart 2
NATIONAL ACCOUNTS – POTENTIAL OUTPUT
Growth rate

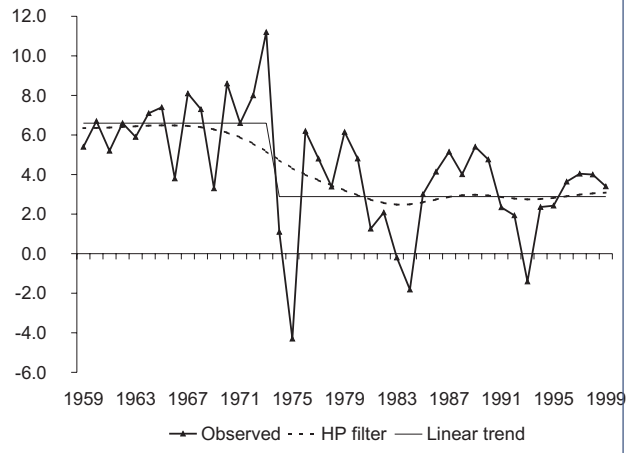


Chart 3
HISTORICAL SERIES – OUTPUT GAP

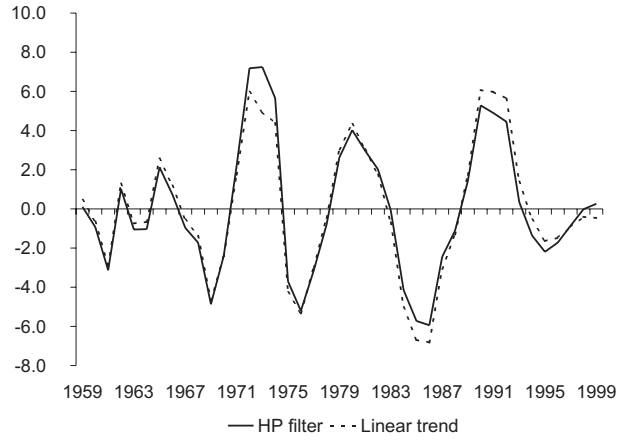
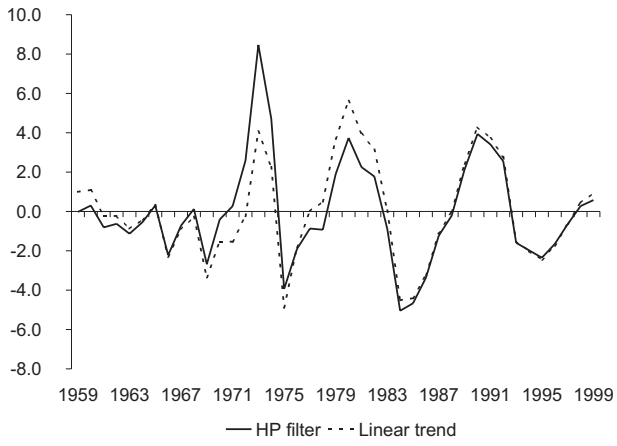


Chart 4

NATIONAL ACCOUNTS – OUTPUT GAP



output gap estimated for the period following to the last recession is clearly less negative than that obtained in previous recession periods.

Table 1

NAIRU ESTIMATES FOR PORTUGAL

	Methodology	NAIRU
Luz and Pinheiro (1993)	Okun's law Wage equation	5.5 6.0
Marques and Botas (1997)	Wage equation	5.4
Modesto (1997)	Beverage curve	6.0-6.5
Gaspar and Luz (1997)	Okun's law Wage equation	6.0 5.75
Barbosa et al (1998)	Okun's law Wage equation	5.8 5.6

ii) Quarterly data

We now analyse the results obtained from using quarterly data. Since these series have the same implicit growth rates of the corresponding annual series, qualitative changes from the above presented conclusions should not be expected — except for those eventually resulting from the different sample period considered[14] or the utilisation of the production function method in calculating potential output.

To calculate potential output according to the production function method we assumed α=0.535, which corresponds to the average share of wage income in national income in the period 1980-1996. In general, the greater difficulty deals with the estimation of potential employment L^*, given the usual uncertainty regarding the true value of NAIRU. However, in the Portuguese case, there is not only a large consensus among researchers that the NAIRU has remained virtually stable over the last 15 years, but also estimates themselves are quite close to each other. Indeed, most estimates stand between 5.5 and 6 per cent, as table 1 shows.

We chose to use 5.75 per cent as the value for NAIRU in estimating potential output. Total labour force was assumed to grow 1 per cent in 1998 and 1999, which compares with 0.7 per cent in 1996 and 1.3 per cent in 1997. As regards trend technical progress n^*, we admitted for 1998 and 1999 a quarterly growth rate equal to the trend rate recorded at the end of the sample period (the last quarter of 1997). The capital stock effectively in use was calculated multiplying the observed capital stock by the rate of productive capacity utilisation (previously divided by its mean value), according to the values disclosed in the Monthly Manufacturing Industry Survey of the I*nstituto Nacional de Estatística.* To reduce slightly the noise present in the potential output measures, GDP and labour force series were adjusted from their irregular component.

Charts 5 and 6 exhibit the results for the output gap calculated according to the three methods,

(14) An additional limitation of the linear trend and HP filter approaches deals with the fact that results may be sensitive to the size of the sample period. Recall that in both cases residuals (i.e., the cyclical component) have zero mean independently of the length of the sample period, and regardless of the economy being or not at the same stage of the cycle at the beginning and the end of the period. This property alone may generate spurious cycles — since in any sample period (the smallest it can be) there is always at least one positive gap period and one negative gap period that compensate each other.

Chart 5
OUTPUT GAP
QUARTERLY SERIES – HS

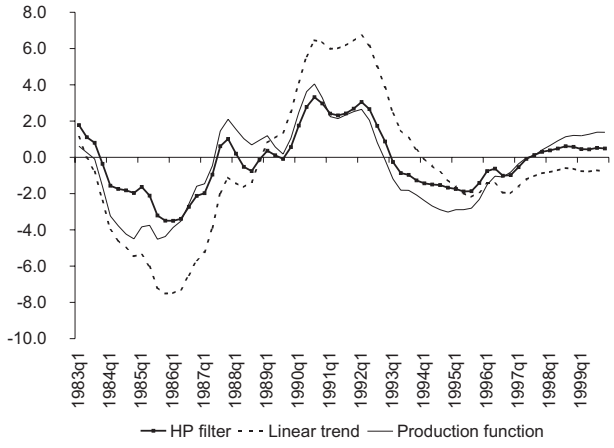


Chart 6
OUTPUT GAP
QUARTERLY SERIES – NA

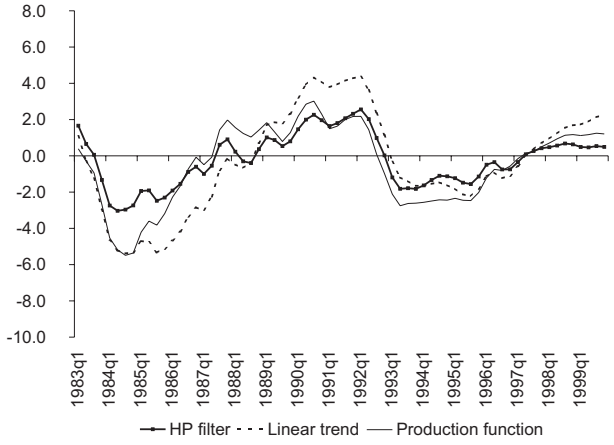


Chart 7
POTENTIAL OUTPUT
QUARTERLY SERIES – HS
Annual average growth rate

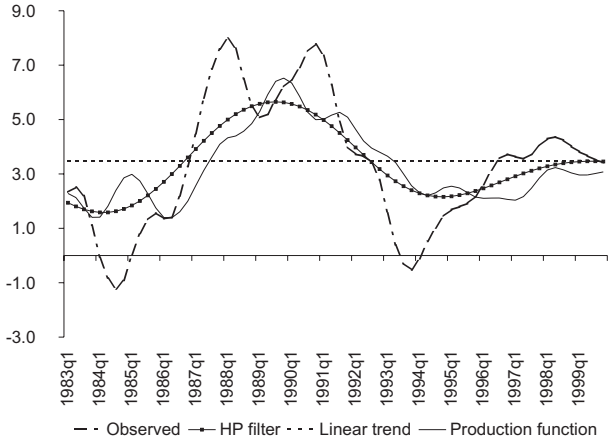
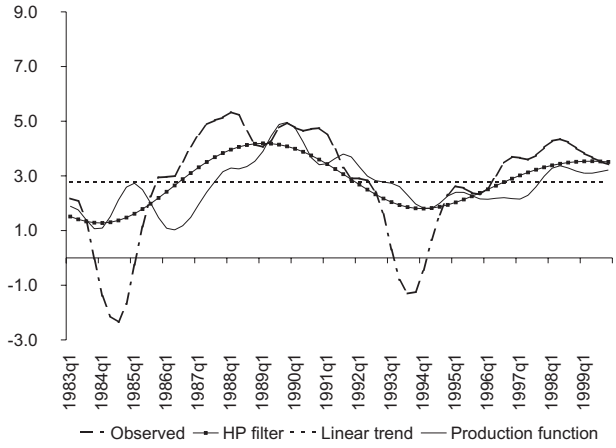


Chart 8
POTENTIAL OUTPUT
QUARTERLY SERIES – NA
Annual average growth rate



based respectively on the Historical Series and on the National Accounts. In general, the output gap given by the production function[15] follows closely the output gap yielded by the HP filter.

The application of the three methodologies points towards a change in the sign of the output gap over the course of 1997, when using the National Accounts series. The same happens when applying the HP filter and the production function to the Historical Series. However, the adjustment of a linear trend of the Historical Series leads to a negative output gap at the end of the sample.

The idea presented above for the annual data, according to which the 1993 recession was less sharp and shorter than that recorded in 1983-1984 is confirmed by the quarterly data.

Charts 7 (Historical Series) and 8 (National Accounts) show the annual average growth rates of potential output calculated according to the three

(15) Charts 5, 6, 7 and 8 present the result of the production function approach where potential technical progress is measured by the application of the HP filter to the series of observed technical progress. However, the results found when trend technical progress is measured through a linear trend are not qualitatively distinct from those presented.

methods, as well as the observed / estimated GDP growth rate. Analysing in detail the end of the sample period we see that GDP has grown above potential output since 1996, regardless of the method of calculation — exception made for the last year under scrutiny (1999). Indeed, in 1999, due to the slowdown assumed for GDP, its growth rate becomes closer to that of potential output — specially when measured by the HP filter or by the production function.

4. CONCLUSIONS

This article presents estimates for potential output for the Portuguese economy, calculated according to the most commonly used methods: the log-linear trend method, the Hodrick-Prescott filter and the production function approach. Estimates were obtained for annual data (period 1958-1999) and for quarterly data (period 1983:1 — 1999:4). The main conclusion is that results for potential output — and consequently for the output gap — do not differ substantially, independently of the series and the calculation methods used. One can also conclude that output has grown above potential output in the last three years; moreover, regardless of the calculation method and the sample period considered, the value of observed output in 1998 is estimated to be very close to potential output.

Naturally these conclusions should be interpreted with caution. The limitations of all methods — specially the uncertainty regarding the true value of NAIRU — suggest that the kind of analysis carried out in this research should be completed with the observation of variables bound to provide some indications on the level of productive factor utilisation. An analysis of the labour market situation — comprising the analysis of the unemployment rate and wage behaviour — and the scrutiny of the level of productive capacity utilisation in manufacturing industry, at each moment, should be carried out regardless of the greater or lower credibility the present potential output estimates might gather.

Furthermore, the Portuguese economy, as in the case of the remaining countries in the euro area, is possibly undergoing a change of regime due to the introduction of the single currency. It may be the case that the positive effects resulting from the suppression of exchange rate risks and conversion costs between the participating currencies, from the clear objective of promotion of price stability in the euro area, and from the reduction of public deficits in the context of the Stability and Growth Pact, lead to the creation of a favourable environment for a progressive rise in potential output, greatly as a result of stronger investment growth — induced by lower interest rates and lower uncertainty[16]. If this suspicion is confirmed, this change of regime shall allow for a stronger growth of the Portuguese economy exempt of the risks of significant pressures on prices.

REFERENCES

Barbosa *et al.*, 1998, *O impacto do euro na economia portuguesa*, Ministério das Finanças.

Cassola, N., Sousa, J., 1996, "The P-STAR Model: an Application to Portugal", Banco de Portugal, *Economic bulletin*, September.

Centeno, M., 1994, "Política orçamental: indicadores e análise", Banco de Portugal, *Quarterly bulletin*, March 1994.

Cogley, T., Nason, J.M., 1995, "Effects of the Hodrick-Prescott filter on trend and difference stationary time series: implications for business cycle research", *Journal of Economic Dynamics and Control*, 19, 253-278.

Fisher, P., Mahadeva L., Whitley J.D., 1997, "Utiliser l'écart de production pour prévoir l'inflation: l'expérience de la Banque d'Angleterre", *Économie Internationale*, no. 69, first quarter.

Gartner, C. , 1995, "Potential output and output gap. Indicators for monetary policy analysis", *Reports and Summaries* of the Oesterreichische Nationalbank, 3 / 1995.

Gaspar V., Luz S., 1997, "Unemployment and wages in Portugal", Banco de Portugal, *Economic bulletin*, December 1997.

Giorno, C., Richardson, P., Roseveare, D. , van den Noord, P., 1995, "Estimating potential output, output gaps and structural budget balances", *WP* no. 152, OECD, Economics Department.

(16) Barbosa *et al* (1998) presents estimates for the impact of some of the mentioned effects on output growth.

Kydland, F., Prescott, C. 1990, "Business cycles: real facts and a monetary myth", Federal Reserve Bank of Minneapolis, *Quarterly Review* (Spring), pp 3-18, 1990.

Luz S., Pinheiro M., 1993, "Desemprego, vagas e crescimento salarial", Banco de Portugal, *Quarterly bulletin* , Vol. 15, no 2.

Marques, C. R., 1990, "Produto potencial, desemprego e inflação em Portugal", Banco de Portugal, *Working Paper* no. 1 (new series).

Marques C.R., Botas S., 1997, "Estimation of the NAIRU for the Portuguese economy", Banco de Portugal, *Working Paper* no. 6/97.

Modesto, L., 1997, "Measuring job mismatch and structural unemployment in Portugal: an empirical study using panel data", *Working Paper* no. 1, *DGEP, Ministério das Finanças.*

Pinheiro *et al.*, 1997, *Historical Series for the Portuguese Economy*, Vol. 1, Banco de Portugal.

Santos E., Dias F. C., Cunha, J. C.,1992, "Séries longas das contas nacionais portuguesas: aspectos metodológicos e actualização, 1958-1991", Banco de Portugal, *Quarterly bulletin* , Vol.14, no. 4, December.

Watson M.W., 1986, "Univarate detrending methods with stochastic trends", *Journal of Monetary Economics*, 18,49-76.

ESTIMATION OF THE OUTPUT GAP: A BIVARIATE APPROACH*

*Maximiano Pinheiro***

1. INTRODUCTION

The output gap of a given economy is defined as the difference between the observed output of the economy and its potential output. Although it may have diverse meanings, the term "potential" usually conveys the output level corresponding to the "natural", normal or average utilisation of primary production factors available in the economy.

Whenever the economy is operating above (below) its potential output level — that is, when the output gap is positive (negative) — budgetary automatic stabilisers will improve (deteriorate) the general government balance compared to the balance one would get in a neutral cyclical situation — where observed output matches potential output. This is why general government balances adjusted for cyclical changes are calculated upon output gap estimates — to abstract from the effects of the automatic stabilisers and to better evaluate the restrictive or expansionary stance of fiscal policy.

In turn, a positive output gap situation will be characterised by inflationary pressures (both in the goods and services markets, but also in the markets for primary factors — specially in the labour market). However, in a very open small economy — as in the case of the Portuguese economy — inflationary pressures in the traded goods markets (i.e., the markets where domestic output is more exposed to international competition) are moderated.

For the reasons presented above, the output gap is a thoroughly used concept in short-term analyses and in justifying economic policy decision making. However, the output gap is not a directly observed variable, and conventional estimation methods bear weaknesses that fragilise conclusions.

This article alerts for the limitations of conventional output gap estimation procedures. We propose an alternative approach to the estimation of the output gap — a bivariate approach —, which tries to solve some of the most important limitations of conventional methods. Obviously, this new methodology also presents drawbacks and is quite discretionary. Nevertheless, we argue that these drawbacks and limitations may prove less serious than those affecting conventional methods.

This article concludes that the Portuguese economy is presently at a fairly neutral cyclical position. We also conclude that no risks of overheating exist in the near future, unless real output grows at more than an annual 4% alongside a slowdown of investment. The current international background of the Portuguese economy — presenting signs of activity slowdown in our leading trade partners — minimises the risk of a positive and significant output gap in the near future.

The remaining of this article is structured as follows: Section 2 discusses the major drawbacks of conventional methodologies of estimation of output gap; the necessary assumptions in building the proposed alternative methodology are presented in Section 3; the fourth Section describes the data and the considered estimation technique; the last sections discuss the findings and evaluate the robustness of conclusions.

* The opinions of this paper represent the views of the author, they are not necessarily those of the Banco de Portugal.

** Economic Research Department. This article was written last Summer, while the author was in the Credit and Market Operations Department. It was revised in January 1999 to incorporate revised data meanwhile released.

2. METHODOLOGICAL CONSIDERATIONS

A simplified typology of conventional methodologies used in estimating the output gap distinguishes two main groups:

— univariate approaches applied to a sample of output observations (using techniques of analysis of time series);
— approaches based on the estimation of an aggregate output function relating output with the primary production factors.

The first class of methodologies encompasses the adjustment of a linear trend to the logarithm of the time series for (real) output — the gap resulting as the residual of the regression — but also algebraically more sophisticated procedures, like trend estimation through the Hodrick-Prescott (HP) filter[1].

The HP filter became very popular through its extensive application in the context of tests of real business cycles models[2]. This ended up determining its widespread utilisation as a method of estimation of the output gap. The HP filter currently enjoys an "official method" status. It is adopted by most national and international economic institutions whenever the output gap is to be measured. The widespread utilisation of the HP filter — often a-critically — tends to disregard the serious drawbacks of the method. These cover both essential statistical and economic problems.

Among the former, the choice of the "smoothing parameter" (λ, as frequently noted) should be highlighted. A consensus existing among users of the HP filter dictates that this parameter should equal 100 for annual data, and 1600 for quarterly data, although justifications behind these values are weak and usually absent. Furthermore, output gap estimates for the last observations of the sample seem to be particularly sensitive to the choice of the parameter[3]. A third criticism of the first nature is that the HP filter, when applied to series generated by integrated processes (which is probably the case of the series of real output, in logarithms), may produce serious cyclical fluctuations (i.e., that do not appear in the original data)[4].

The major criticism made to the application of the HP filter to the output gap estimation — shared by all univariate methods — is that it is poor from an economic point of view. All methods resorting exclusively to the time series of output for the estimation of the output gap do not take into account that potential output is determined by the productive capacity of the economy. This implies a multivariate approach that relates the economy's output with the available primary factors, namely the capital stock, through a production function — the second class of approaches referred above. However, the estimation of a macroeconomic production function is far from being free of difficulties. First, there are all the difficulties related with measuring the capital stock — usually measured indirectly through the accumulation of investment flows. But above all, the estimation of potential output through the estimation of a production function requires the previous calculation of the "natural" level of employment. The estimation of natural employment from observed employment using statistical smoothing techniques only transforms the original problem (i.e., the estimation of potential output) into another one, similar to the first (the estimation of the natural amount of employment). The same difficulties are met if the labour force series is used instead of employment, since the former also presents cyclical fluctuations.

(1) Hodrick and Prescott (1980) (original reference). See also King and Rebelo (1993). Given a value to smoothing parameter λ, the estimated trend (y_t^*) of series y_t (in logarithms) obtained through the HP filter corresponds to the solution of the following minimisation problem:

$$\underset{\{y_t^*\}}{Min}\left\{\sum_{t=1}^{T}(y_t - y_t^*)^2 + \lambda\sum_{t=1}^{T}\left[(y_t^* - y_{t-1}^*) - (y_{t-1}^* - y_{t-2}^*)\right]^2\right\}$$

(2) See for instance Stadler (1994) for an overview.

(3) Hodrick and Prescott (1980) suggest that the smoothing parameter should be chosen as to translate approximately the ratio between the variance of the cyclical component and the variance of the growth rate of trend GDP. The sensitivity analysis they promote intends to quiet users of the filter, since the main descriptive statistics (the standard deviation and autocorrelation coefficients) and the impulse response function of the cyclical component remain virtually unchanged in the presence of different smoothing parameters. However, this does not mean that individual estimates for each period in the sample — specially those at its end — do not suffer some changes with changes in parameter λ.

(4) This is the so-called Nelson-Kang critique (on this issue, see for instance Cogley and Nason (1995)).

In the next Section, a mixed methodology for calculating the output gap is presented, as an alternative to the two pure approaches. This alternative builds upon the specification of a Cobb-Douglas production function, but substitutes the prior estimation of natural employment by an assumption about the behaviour of the capital-labour ratio. The proposed formulation leads to output gap estimates that do not differ widely from those obtained through the HP filter, but reveal some interesting particularities.

3. ASSUMPTIONS OF THE PROPOSED APPROACH

"Potential" or "natural" output is defined as the output level, which in a given period, corresponds to a normal intensity of utilisation of the primary production factors available in the economy. Assume that potential output is generated according to a Cobb-Douglas production function of two primary production factors, capital and labour, with constant returns to scale:

$$\frac{Y_t^*}{L_t^*} = \pi \left(\frac{K_t^*}{L_t^*} \right)^{\alpha} \qquad (1)$$

where π and α are unknown constants, Y_t^* stands for the (real) potential output in period t, K_t^* is the (real) fixed capital stock at the beginning of period t and L_t^* is the "natural" employment level in period t, with K_t^* and L_t^* measured in efficiency units. None of these variables is directly observed.

At each moment, the comparison between the observed output level and potential output determines the so-called "output-gap":

$$Y_t = Y_t^* \, e^{g_t} \qquad (2)$$

where Y_t is the observed level of output in period t and g_t is the output gap in logarithms (to neutralise scale effects and to facilitate algebraic rearranging). For instance, positive values for g_t indicate that the economy is "overheating", i.e. functioning above the natural output level. The values of the output gap $g_t (t = 1, \ldots, T)$ are assumed to be generated according to a zero-mean stationary stochastic process of type *ARMA*(*p*, *q*) with gaussian innovations, p and q being determined as to maximise the empirical fitness of the model. Usually g_t would be expected to be strongly auto-correlated, to generate the typical cyclical fluctuations associated to the output gap estimates.

To overcome the non-direct observation of the fixed capital stock measured in units of efficiency, we assume the following accumulation equation:

$$K_t^* - K_{t-1}^* = I_{t-1}^* - \delta K_{t-1}^* \qquad (3)$$

with

$$I_t^* = I_t \, e^{\lambda t} \qquad (4)$$

where δ stands for the rate of depreciation of capital and I_t is the (real) flow of Gross Fixed Capital Formation (GFCF) observed during period t. The productive efficiency of investment is assumed to rise in time at a constant rate λ; thus the productive capacity does not depend exclusively on the amount of fixed capital available, but depends also on the average age of capital.

In addition, we admit that the capital-labour ratio follows equation (5), (with $\mu_1 > 0$)

$$\frac{K_t^*}{L_t^*} = \frac{K_{t-1}^*}{L_{t-1}^*} e^{\mu_0 + \mu_1 g_{t-1}} \qquad (5)$$

Bearing in mind that L_t^* is the natural employment level measured in terms of efficiency, and that the capital stock is referred to the beginning of period t, the expression above assumes a pro-cyclical behaviour of the capital-labour ratio in addition to an eventual "stochastic trend". Note that if g_t were white noise (which it is not, since it is auto-correlated), equation (5) would imply that the logarithm of the capital-labour ratio would follow a random walk with drift μ_0, since :

$$\ln\left(\frac{K_t^*}{L_t^*} \right) - \ln\left(\frac{K_{t-1}^*}{L_{t-1}^*} \right) = \mu_0 + \mu_1 g_{t-1} \qquad (5')$$

where "ln" denotes natural logarithm.

Equation (5) completes the model and functions as an equation of definition of L_t^*, and is necessary to the model since no reasonable proxy exists for this variable. As stressed in Section 2, the definition of L_t^* from the directly observed employment level (for instance, making $L_t^* = L_t \, e^{\gamma t}$ with L_t being the observed employment) is not a coherent alternative, since observed employment does not reflect the natural employment level in the economy. Moreover, the assumption — made by most

traditional approaches based on the estimation of a production function — that labour efficiency exhibits a deterministic exponential growth in time, independently of the investment effort in the economy (and specially the changes in time of that effort) is too strong.

Despite the improved flexibility when compared with the conventional formulation based on the production function, assumption (5) is clearly the less orthodox of all assumptions made. In fact, it implies a conceptual rupture with the utilisation of information from the labour market. In the Portuguese case this represents an advantage of the proposed approach, from the point of view of labour market data availability and quality, since employment and unemployment time series prior to 1974 are not reliable. Even in the period following to 1974, intertemporal consistency problems would still be present, due to several series breaks existing in 1983, 1992 and 1998.

One could reason that model (1) to (5) is bound to deliver output gap estimates inconsistent with the observed behaviour of labour market indicators, since it does not incorporate directly employment or unemployment statistical data. However, if this were the case, within reasonable limits, results could possibly simply indicate a change in the natural unemployment rate, instead of suggesting the weakness of the model or of the series used. Compared with some traditional approaches through the estimation of a production function, that use previously smoothed employment series assuming a constant NAIRU, the flexibility implicit in assumption (5) seems to be preferable.

4. ESTIMATION

The assumptions described above yield the following reduced form:

$$\Delta y_t + \theta_0 + \theta_1 g_{t-1} - \qquad (6A)$$

$$-\ln\left[e^{-\theta_2} + e^{\Delta i_{t-1}}\left(e^{\theta_3} - e^{g_{t-1}-\Delta y_{t-1}+(\theta_3-\theta_0-\theta_2)-\theta_1 g_{t-2}}\right)\right] = g,$$

$$A(L)g, = B(L)u, \text{ with } u_t \cap n.i.d.)0,\sigma^2 \qquad (6B)$$

where *A(L)* and *B(L)* are polinomials on the lag operator *L* (of order *p* and *q*, respectively), $n.i.d.(0,\sigma^2)$ means "independent and identically distributed following a normal law (and with zero mean and variance σ^2)",

$\Delta y_t = \ln(Y_t) - \ln(Y_{t-1}) = (1-L)\ln(Y_t)$,

$\Delta i_t = \ln(I_t) - \ln(I_{t-1}) = (1-L)\ln(I_t), \theta_0 = (1-\alpha)\mu_0$,

$\theta_1 = 1 + (1-\alpha)\mu_1, \theta_2 = -\ln(1-\delta)$ and $\theta_3 = \lambda$[5].

Having a sample of observations for Gross Domestic Product (GDP) and GFCF (both in real terms), fixing the values of *p* and *q* and assuming values of g_t for the beginning of the sample period, the parameters of reduced form (6A) - (6B) can be estimated through the maximum likelihood method[6]. This procedure also gives us the estimated series for the output gap.

Our sample encompasses annual data covering the period 1953-1998, drawn from the *Historical Series for the Portuguese Economy* (1997, Banco de Portugal), in its revised version, extended to the period 1953-1995[7]. These series were then extended to 1998 using estimates released by the Banco de Portugal in its 1997 *Annual Report* and in this December 1998 *Economic Bulletin*[8].

The choice of the Historical Series for this exercise is explained by the fact that these series better ensure intertemporal consistency in measuring output and investment. The alternative, based upon the construction of series by "linking" (with change rates) the several segments available for the official national accounts since 1977 in different bases, is not sustainable. Any analysis, regardless of how superficial it may be, concludes that such segments are incompatible — e.g., just by comparing overlaps. Furthermore, there is strong evidence that the official accounts from 1977 up to the early 1990's underestimate the output growth rates, which affects the estimates for potential output, implying the overestimation of the output gap in recent years.

(5) Note that not all parameters in the structural form are specified (α, π, μ_0 e μ_1 remain unidentified); thus the set of assumptions in Section 2 is not the only set compatible with the reduced form presented.

(6) Other methods applicable in this context are the non-linear least squares method or the generalised method of moments.

(7) The original historical series disclosed in 1997 ran up to 1993. The Banco de Portugal shall release shortly a reviewed and extended version of these. Meanwhile, the new version is currently available by request to the Statistics Department or the Economic Research Department.

(8) See "The Portuguese Economy in 1998" in this issue.

Likelihood was maximised using the algorithm proposed by Berndt, Hall, Hall and Hausman, as available in econometric package *RATS*. Several values for p and q were tested. We concluded that the most parsimonious model that fits well the data is that with p=2 and q=0 i.e., with g_t generated according to a second order autoregressive process (AR(2)).

As referred above, the dynamic character of the model and the fact that the output gap is not observed directly imply that the values for g_t in the first years of the sample must be previously provided to the application of the maximum likelihood algorithm. For p = 2 and q = 0, the algorithm was given the first two years of the output gap (1953 and 1954). Estimates proved sensitive to distinct initial values for the output gap. In this context, a careful research must be carried out to ensure the quality of results. The natural criterion of choice of the initial levels for the output gap corresponded to the maximisation of the likelihood function, searching in an array of admissible values. Maximum likelihood is reached when 0.005 and 0.015 are used in 1953 and 1954, respectively.

Table 1

THE MODEL

$$\Delta y_t + \theta_0 + \theta_1 g_{t-1} - \ln\left[e^{-\theta_2} + e^{\Delta i_{t-1}}\left(e^{-\theta_3} + e^{g_{t-1}-\Delta y_{t-1}+(\theta_3-\theta_0-\theta_2)-\theta_1 g_{t-2}}\right)\right] = g_t$$

$$g_t = \beta_1 g_{t-1} + \beta_2 g_{t-2} + u_t \text{ with } u_t \cap n.i.d.(0,\sigma^2)$$

	Estimate	Standard deviation
θ_0	0.049294389	0.00133
θ_1	1.415479418	0.16476
θ_2	0	-
θ_3	0.039156934	0.00051
β_1	1.141854298	0.1097
β_2	-0.534299733	0.10615
σ^2	0.000362119	0.00012

Sample: 1955-1998

Descriptive statistics of the estimated innovations $\hat{u}_t$[9]

- average[10]: 0.00192 (*p-value* of the hypothesis mean = 0: 0.51)
- assymmetry[11]: -0.41854 (*p-value* of the hypothesis assym.= 0: 0.27)
- "Kurtosis"[12] -0.62894 (*p-value* of the hyphotesis Kurtosis= 0: 0.43)

- 1sr order autocorr.: -0.10626 (standard deviation = 0.14586)
- 2nd order autocorr.: 0.12852 (standard deviation = 0.14750)

5. RESULTS FOR THE SAMPLE 1953-1998

Table 1 exhibits the estimated parameters of the reduced form and some statistics associated to these for the estimation period 1955-1998. Parameter $\theta_2 (= -\ln(1-\delta))$ was clearly non-significant in the model estimation. Therefore, equation (3), which represents the dynamics of the stock capital in units of efficiency resumes to:

$$K_t^* - K_{t-1}^* = I_{t-1}^* \qquad (3').$$

Note that equation (4) implicitly introduces in equation (3') a depreciation mechanism, by making productive efficiency of capital dependent on the average age of the capital stock.

Chart 1 compares the output gap estimates obtained from applying the HP filter to the 1953-1998 sample (with smoothing parameter 100) with the estimates yielded by the proposed method. Globally, both sets of estimates do not differ substantially from each other, despite some local differences. In the last six years of the sample, for instance, the output gap estimated through the HP filter is more negative than that estimated through the proposed method, which takes into account the limitating effect of the increase in productive capacity resulting from the fall in GFCF in 1993, followed by a stagnation of this variable in 1994. In addition, the HP estimates for output gap in 1997 and 1998 evidence the quick "closing" (of a minimum of -2.1% in 1995 to -0.8 and + 0.1%, re-

(9) $m_{(1)} = N^{-1}\sum_{t-1}^{N} \hat{u}_t$, $m_{(k)} = N^{-1}\sum_{t-1}^{N} (\hat{u}_t - m_{(1)})^k$ for k>1 and $s = \sqrt{\frac{N}{N-1} m_2}$, where

N=44 is the number of observations in the sample. The following P - values correspond to asymptotically valid tests if the series were directly observed, so these are taken as a proxy (see for example Kendall and Stuart (1961)).

(10) m_1

(11) $\frac{N^2}{(N-1)(N-2)} \frac{m_3}{s^3}$

(12) $\frac{N^2}{(N-1)(N-2)(N-3)} \frac{(N+1)m_4 - 3(N-1)m_2^2}{S^4}$

Chart 1
OUTPUT GAP : 1953-1998

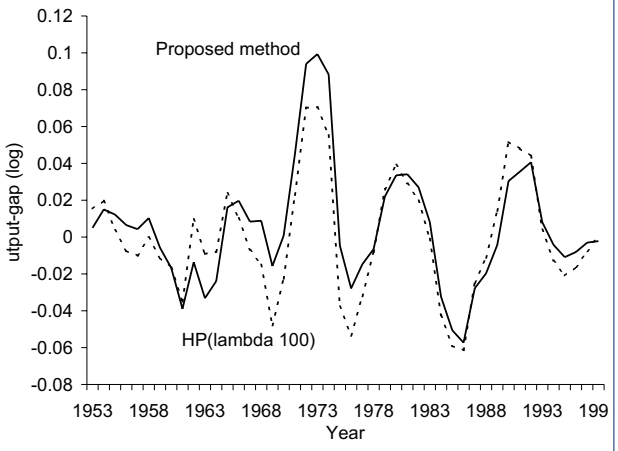


Chart 2
OUTPUT GAP:
CENTRAL SCENARIO

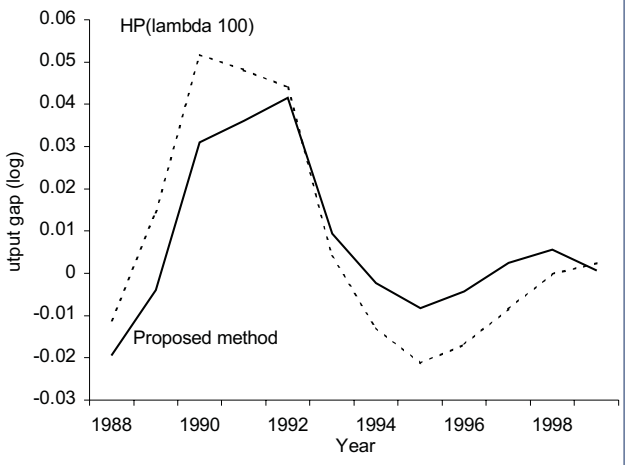
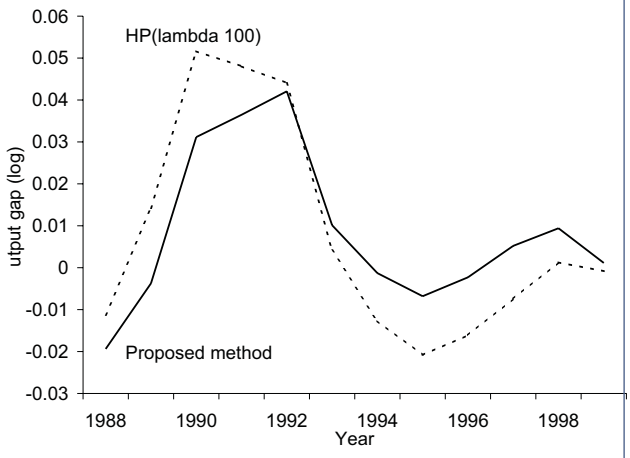


Chart 3
OUTPUT GAP:
PESSIMISTIC SCENARIO



spectively in 1997 and 1998), while the proposed method suggests the output gap rose from a minimum of -1.1% in 1995 to -0.3% and -0.2% in 1997 and 1998. The recent high growth rates of investment and their expansionary effect on productive capacity — taken into account by the proposed method and ignored by the HP filter — explain this difference between estimates.

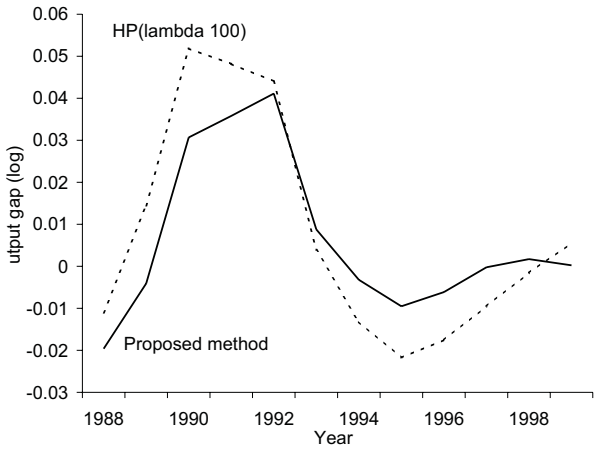
6. EXTENSION OF THE SAMPLE TO 1999

Since estimates differ for the end of the sample period, one may question what would be the behaviour of the output gap if the sample were extended to include 1999. This was carried out using the European Commission Autumn 1998 forecasts, which indicate a real output growth for Portugal of 3.4% in 1999. Two alternative scenarios are considered to assess the sensitivity of results to different output growth hypothesis: a less favourable scenery, where output grows 2.9% in 1999, and a more optimistic one, where output grows 3.9% in 1999 (virtually the same as that estimated for 1998, 4%).

Extended the three samples, the output gap estimates given by the proposed bivariate method and by the HP filter with a smoothing parameter of 100 were re-calculated. Estimates are shown in charts 2, 3 and 4. The first conclusion to be drawn, which is specific of output gap estimation methods, is that the addition of a new observation to the sample (1999 in this case) may change significantly estimates for the closest years in the sample.

In the more optimistic scenario, according to the proposed method, the strong dynamism of GFCF since 1996, with growth rates more than twice (or thrice, in 1997) of output, renders a neutral position of the economy from 1997 to 1999, with output gaps of 0.0% + 0.2% and 0.0% in 1997, 1998 and 1999, respectively (chart 4). This happens despite real output growing about 4% in these three years, according to this scenario. Note that the HP filter estimates give a quick “closing” of the output gap in 1997 and 1998, followed by a

Chart 4
OUTPUT GAP: 1953 - 1999
OPTIMISTIC SCENARIO



positive value in 1999 (-1.0%, -0.2% and +0.6% respectively). Since the HP filter results do not take into account the investment effort of the economy, they indicate a potential output annual growth around only 3.2% per cent in these years, compared with almost 4.0% per cent in the proposed method.

In the central and pessimistic scenarios for 1999, output gap estimates for 1997 and 1998 are substantially revised when the proposed bivariate method is extended to include 1999. Before this extension, as referred in the previous Section, estimates were -0.3% for 1997 and -0.2% for 1998. With 1999 in the sample, the central scenario gives +0.2% and +0.6% and +0.1% respectively for 1997, 1998 and 1999, compared with +0.5%, +0.9% and +0.1 in the pessimistic scenario (charts 2 and 3). These revisions take place because activity slowdown in 1999, implicit in both scenarios, constitutes a "surprise" to the AR (2) process generating the output gap values, implying slight adjustments to the parameters estimated with the sample up to 1998.

Curiously, the 1997 and 1998 estimates of the output gap rendered by the HP filter according to the central and pessimistic scenarios for 1999 remained virtually unchanged from those reported in the previous Section: with the central scenario we obtained -0.8%, 0.0% and +0.2% for 1997, 1998 and 1999 respectively, while the corresponding figures are -0.7%, +0.1% and -0.1% according to the pessimistic one.

Therefore, independently of the calculation method, if the slowdown expected in the central and unfavourable scenarios takes place, no overheating can be expected for the Portuguese economy in 1999.

7. CONCLUSION

This article presents a mixed methodology for the calculation of the output gap, based on the specification of a Cobb-Douglas production function, in alternative to the HP filter or to the conventional estimation of a production function. It substitutes the prior estimation of natural employment by an assumption about the behaviour of the capital-labour ratio. Taking into account the behaviour of both output and GFCF, the proposed formulation presents an important conceptual advantage in relation to the HP filter. The latter does not take into account that potential output is determined by the productive capacity installed in the economy, which basically depends on the past investment effort of the economy.

Despite the conceptual advantages over the HP filter, the proposed method is not exempt of drawbacks — namely some sensitivity of estimates to the output gap values assumed for the first years in the sample. Moreover, it is also somewhat sensitive to changes in data at the end of the sample. Therefore, the available results do not allow for a precise conclusion on the current level and sign of the output gap in the Portuguese economy. Nevertheless, it seems fairly safe to conclude that the output gap was virtually null in 1997 and 1998, to which corresponds a neutral cyclical position of the Portuguese economy. Furthermore, given the deceleration of external demand and the available forecasts pointing to some slowdown of the Portuguese GDP in 1999, the risks of a significantly positive output gap in a near future are much unlikely.

REFERENCES

Banco de Portugal (1998) 1997 *Annual Report*.

Cogley, T. and J. M. Nason (1995) "Effects of the Hodrick-Prescott Filter on Trend and Difference Stationary Time Series: Implications for Business Cycle Research", *Journal of Economic Dynamics and Control*, 19, pp. 253-278.

Hodrick, R. J. and E. C. Prescott (1980) "Post-War U. S. Business Cycles: An Empirical Investigation", Discussion Paper No. 451, Carnegie-Mellon University.

Kendall, M. e A. Stuart (1961) The Advanced Theory of Statistics, Vol. 2, Charles Griffin.

King, R. G. and S. Rebelo (1993) "Low Frequency Filtering and Real Business Cycles", *Journal of Economic Dynamics and Control*, 17, pp. 207-232.

Pinheiro, M., T. Crespo, M. Nascimento, A. Faro, H. Marrocos, J. Correia da Cunha, M. A. Sousa, M. Pereira, M. J. Valério, F. Silva, N. Alves e P. Variz (1997) *Historical Series For The Portuguese Economy — Post World War* II, Vol I and II Banco de Portugal.

Stadler, G. W. (1994) "Real Business Cycles", *Journal of Economic Literature*, XXXII, No. 4, pp. 1750-1783.

ELEVENTH GENERAL REVIEW OF IMF QUOTAS *

Background and implications

Fernando Martins **

1. BACKGROUND

On 22 January 1999, the Eleventh General Review of the International Monetary Fund (IMF) quotas came into force, after a number of members holding a majority of not less than 85 per cent of votes expressed their consent to the proposed capital increase — hence fulfilling the participation requirement. The Eleventh General Review of Quotas had been concluded on 30 January 1998, when the IMF Board of Governors adopted the resolution submitted by the Executive Board proposing a 45 per cent increase to the overall amount of quotas in the institution — which rose to around SDR 212 billion (USD 299 billion(1)). As regards Portugal, its quota is now SDR 867.4 million (USD 1,223 million), reflecting a SDR 309.8 million (USD 436.8 million) increase.

In what concerns to the distribution of the overall increase in the quota, and reflecting the views expressed by the Interim Committee(2) in April and September 1997, it was agreed that:

i) 75 per cent of the overall increase would be equiproportionally distributed (i. e., as a proportion of each member's previous quota); ii) 15 per cent would be distributed in proportion to members' shares in calculated quotas (based on 1994 data), so as to better reflect their relative economic positions; and iii) the remaining 10 per cent would be allocated to the correction of the main anomalies affecting the quota structure. Regarding the latter amount, 90 per cent would be distributed by the countries holding a share in calculated quotas greater than their share in actual quotas, while the other 10 per cent would be distributed among five members whose current quotas are far out of line with their relative economic positions.

The conclusion of the Eleventh General Review of Quotas is particularly important given the turbulence affecting the international monetary system over the last years. The massive financial packages approved recently, following the difficulties experienced by the emerging markets of Southeast Asia and Latin America furnished the IMF with improved international visibility. However, the strong utilisation of financial resources resulted in a significant weakening of the institution's liquidity. With the approval of the quota increase — its major source of funds — the IMF sees its liquidity position strengthened, at a time when the institution's role in the face of challenges of a new international financial framework is under intense discussion.

This article starts by presenting the main functions played by the IMF quotas, as well as the several general reviews, to the present time (section 2). I then follow to analyse the procedures of de-

---

* The opinions of this paper represent the views of the author, they are not necessarily those of the Banco de Portugal.

** Economic Research Department.
A significant part of the research conducting to this article was carried out while the author was at the International Relations Department.

This article benefited from comments by João Nunes dos Santos, José de Matos and José Ferreira Machado. Any remaining errors and omissions are the responsibility of the author.

(1) The values presented in US dollars assume a 1 SDR= 1.41 USD exchange rate (31 December 1998).

(2) I. e., the forum where IMF members meet (usually twice a year, in Spring — in Washington — and in Autumn — in the town receiving the Annual Assembly) to discuss issues of a monetary-exchange rate nature. This body —created in 1974— is composed by 24 central bank Governors or Ministers, and has mere advisory functions.

termination of individual quotas and the key role played in this process by the so-called calculated quotas (section 3). Finally, section 4 discusses the essential issues around the Eleventh General Review of Quotas: size and distribution of the overall increase; subscription and major implications over the structure of quotas.

2. QUOTAS: FUNCTIONS AND REVIEWS

A member's quota is the most fundamental element in its financial and organizational relations with the IMF; in parallel, the quotas also represent the IMF's financial base. Each member is assigned a quota, expressed in Special Drawing Rights (SDR)[3], equivalent to the amount of the institution's capital subscribed by each member. Before the approval of the Eleventh General Review of Quotas, the IMF capital amounted to SDR 146 billion (USD 205.9 billion)[4]; the quota of Portugal was of SDR 557.6 million (USD 786.2 million).

In addition to the determination of **each member's contribution to the IMF's capital**, quotas perform three other major roles:

1) The **maximum of access to the IMF financial resources** is expressed in terms of quotas. In the context of regular facilities, each member can currently use resources of the IMF up to the maximum limit of 300 per cent of its quota. This limit does not apply to special facilities. This is the case of the Supplemental Reserve Facility, approved in December 1997 in the context of the agreement with Korea, where the limit of access is a function of each member's individual needs.
2) In accordance with the Articles of Agreement, the rates at which **SDR allocations** are made are expressed as percentages of quotas established on the date of each decision to allocate. Decisions regarding SDR attributions are taken in successive basic periods, with a maximum duration of five years. Over the course of the first basic period (1970-72) SDR 9.3 billion were allocated. A new SDR allocation (of 12.1 billion) was carried out only in the third basic period, which took place between 1978 and 1981. Portugal became member of the SDR Department in July 1975, receiving SDR 53.32 million (20.7 per cent of its quota at the time) under the allocation carried out in the third basic period[5].
3) Finally, the amount of the quota determines a **member´s voting power** in the IMF. Each member holds 250 basic votes, to which one vote for each SDR 100,000 quota is added. The number of votes of each member determines, for instance, its representation in the IMF Executive Board — the permanent decision making accountable for the management of general operations of the IMF, and for the exercise of powers delegated to it by the Board of Governors. In fact, five out of a total of 24 Executive Directors are appointed by the five members holding the largest number of votes — the United States, Japan, Germany, France and the United Kingdom.

(3) Special Drawing Rights are international reserve assets created by the IMF in the sequence of the First Amendment to Articles in 1969, and are attributed by the IMF to the members participating in the SDR Department. Since 1981 the value of the SDR is calculated on a daily basis, based on a basket comprising the five leading international currencies: the US dollar, the yen, the Deutsche mark, the French franc and the Pound sterling. On 1 January 1999, the amounts in Deutsche marks and in francs included in the SDR basket were substituted by an equivalent amount in euro, using the fixed conversion rates.

(4) In practice, the capacity of IMF to financially assist its members is lower than the institution's total capital. This is also because members pay 75 per cent of their quota in the corresponding national currency — which seldom is demanded outside the issuing territory. The stock of resources available to the IMF — normally reaching less than half its capital — encompasses the SDR assets of the institution, national currencies of members considered by the Executive Board to have a sound balance of payments positions (i.e., bound to be included in the quarterly Operational Budget), as well as the amounts not employed in the credit facilities activated in the context of the GAB/NAB (see section 4.1 for a more detailed explanation). Note that assets in gold are written-off from the stock of usable resources, as their inclusion in the financial operations of the IMF requires the prior approval by a majority of 85 per cent of total votes.

(5) In September 1997, the Board of Governors of the IMF approved a proposal of the Executive Board for amending the IMF's Articles of Agreement to allow for a special one-time allocation of SDRs so as to equalize members' ratios of cumulative allocations to their Ninth Review quotas at approximately 29.32 per cent This decision shall imply the doubling of the total amount of SDR attributed (to SDR 42.87 billion) and the fixing of the ratios between the attributed SDR and the individual quotas at a value equal for all members (about 29.3 per cent). For Portugal, the SDR cummulative allocation shall increase about SDR 110 million, to SDR 163.46 million.

The other 19 are elected by the remaining countries. The constituency to which Portugal currently belongs includes also Italy — which indicated the Executive Director — Greece, Malta, Albania and San Marino.

It should be noted that the importance attributed by each member to the functions performed by quotas closely depends on its level of economic development. Although the increase in voting power is important for all members, developing countries tend to consider the amount of their quota specially as the basis over which the limits of their access to IMF resources and SDR allocations are determined. In turn, for developed countries more emphasis is given to quotas as providing a basis for determining contributions to IMF resources. A balanced and equitable quota system should meet the different perceptions of members as regards the various functions quotas perform.

Under the Articles of Agreement the Board of Governors is required to conduct a **general review of quotas** at intervals no longer than five years. If appropriate, it shall also propose its adjustment to adequate the institution's capital to the financial needs resulting from changes undergone by the world economy[6]. A general review of quotas also enables re-adjustments to individual quotas, so that these may better reflect member's relative economic positions. The First General Review of Quotas was concluded in 1951 (table 1).

3. THE KEY ROLE OF CALCULATED QUOTAS

As mentioned above, the Articles of Agreement provide for a general review and possible adjustment of quotas every five years. However, they do not indicate how IMF quotas should be determined and the Executive Board has neither formally adopted nor endorsed any particular

(6) It should be noted that an 85 per cent majority of votes is required if the IMF's overall quota amount is to be subject to any change. In addition, a members quota shall not be changed without its expressed consent, and without the corresponding settlement.

Table 1

GENERAL REVIEWS OF QUOTAS

	Date of conclusion	Overall quota increase (%)	Quota of Portugal after each General Revision	
			In SDR million	(%)
First General Revision	1951			
Second General Revision	1956			
Extraordinary	1959	60.7		
Third General Revision	1960		60.0[a]	
Fourth General Revision	1965	30.7	75.0	25.0
Fifth General Revision	1970	35.4	117.0	56.0
Sixth General Revision	1975/76	33.6	172.0	47.0
Seventh General Revision	1978	50.9	258.0	50.0
Eighth General Revision	1983	47.5	376.6	46.0
Ninth General Revision	1990	50.0	557.6	48.1
Tenth General Revision	1994		557.6	
Eleventh General Revision	1998	45.0	867.4	55.6

Note:The values up to the Fourth General Revision are expressed in million US dollars.

(a) Quota of Portugal at the date of its adhesion to the IMF (29 March 1961). The subscribed quota — accounting for 0.4 per cent of total capital — granted Portugal with 850 votes — 0.49 per cent of voting power. As regards representation in the Executive Board, Portugal was integrated in the same constituency of Italy (2,950 votes) — who indicated the Executive Director — Spain (1,750 votes) and Greece (850 votes). Finally, it was agreed that the initial parity of the escudo vis-à-vis the US dollar and gold would be 28.75 per USD and 1,006.25 per troy ounce, respectively.

FORMULAS OF CALCULATION OF QUOTAS USED IN THE ELEVENTH GENERAL REVIEW

Reduced Bretton-Woods: (0.01Y+0.025R+0.05P+0.2276VC)(1+C/Y
Scheme III: (0.0065Y+0.0205125R+0.078P+0.4052VC)(1+C/Y)
Coefficient of adjustment: 0.850369
Scheme IV: (0.0045Y+0.03896768R+0.07P+0.76976VC)(1+C/Y)
Coefficient of adjustment: 0.827708
Scheme M4: : 0.005Y+0.042280464R+0.044(P+C)+0.8352VC
Coefficient of adjustment: 0.904555
Scheme M7: 0.0045Y+0.05281008R+0.039(P+C)+1.0432VC
Coefficient of adjustment: 0.908865

Variables used have the following meaning:

Y - GDP at constant prices of 1994.

R - Annual average of reserves in gold and foreign currency, including assets in SDR and ECU, and reserve positions in the IMF.

P - Annual average of current payments (goods, services, income and unrequited transfers) in the period 1990-1994.

C - Annual average of current revenue (goods, services, income and unrequited transfers) in the period 1990-1994.

VC - Variability of current revenue, defined as the standard deviation of the 5-year moving average, centred on the third year, for the period 1982-1994.

The calculated quota is the highest value among the result reached through the Bretton-Woods formula and the average of the two lowest values yielded by the remaining four formulae. The latter are previously adjusted or "normalised" so that the sum of the calculated quotas for all members equals that derived from the Bretton-Woods formula.

method for determining quotas. To overcome this situation, the IMF has developed and put into force a set of formulae to obtain a synthetic indicator aiming to reflect the relative economic size of each member — the so-called **calculated quotas**.

Since 1963 — when the Bretton Woods original formula was first revised and several alternative formulae were developed — calculated quotas have played a central role in the distribution of the selective component of overall quota increases (i.e., the component that envisages to adjust the size of each member's quota to its relative economic position[7]). The current formulae employed in the determination of calculated quotas have been into force since the Eighth General Review (see Box 1).

From the Fifth to the Seventh General Reviews, the distribution of the selective component was made proportionaly to the (positive) difference between calculated and actual quotas. This technique — named **Method B** since the Ninth General Review — distributed the selective component by a limited number of members only. Over the course of the Eighth and Ninth General Reviews, the distribution of the selective component was propor-

(7) The way the quota increase is distributed depends on a set of factors, which includes the size of the overall increase to be distributed; the existing quota structure and the relative disparities in quotas among members; and the need to provide sufficient liquidity for the IMF to maintain its operations without undue reliance on borrowing. Up to the Eighth General Review of Quotas, the equiproportional component of the distribution was predominant, chiefly due to the non-existence of strong disparities between actual and calculated quotas, and the need to avoid severe perturbations to the voting structure. During the Eighth and Ninth General Reviews, the share of the selective component was respectively of 60 and 40 per cent, leading to a substantial change in the IMF quotas structure. Some Executive Directors support that a quota structure that better reflects the relative economic position of members tends to strengthen liquidity of the IMF, since members exhibiting wider discrepancies between the calculated and actual quota shares are those which have presented relatively fast growth and solid external positions.

tional to the share of each member's quota — the so-called **Method A**. This method has the advantage of being simpler and more transparent, and is applicable to all members. Appendix 1 describes methods A and B in further detail.

4. THE ELEVENTH GENERAL REVIEW OF QUOTAS

4.1 Size of the overall quota increase

The proposal adopted by the Board of Governors implied a 45 per cent increase in the overall amount of quotas, which rises from SDR 146.2 billion to SDR 212.0 billion.

The determination of the overall quota increase takes several factors into account. Some of these are: the growth of trade and international payments since the previous review; the size of the world economy; the scale of potential payments imbalances — including those due to sudden inversions in capital flows — and the role of private markets in financing those imbalances.

In this context, the assessment of **IMF's liquidity position** stands as a fundamental issue. As referred above, the IMF capacity to financially assist its members is lower than the total capital of the institution, and depends on the stock of usable assets (SDR assets, national currencies of the members with solid external positions and contracted loans)[8]. The stock of assets should be confronted with the expected demand for IMF resources in a defined time span. This demand results from the need IMF has to (i) meet commitments ensured in the context of the existing facilities; (ii) meet the debt service contracted by the institution itself; (iii) attend to some members' will to draw their reserve positions fully or in part; (iv) and finally, to establish new financing agreements.

The **liquidity ratio** is a measure of the IMF's liquidity position, represented by the ratio of its uncommited usable resources to its net liabilities. Table 2 describes the process of calculation of the liquidity ratio.

The unprecedent size of commitments under arragements in response to the Asian financial crisis led to a pronounced weakening in the IMF liquidity position since the last review. Between

(8) About 67 per cent of the overall quota increase approved in the Eleventh General Review of Quotas (SDR 44 billion) consists of usable resources.

Table 2

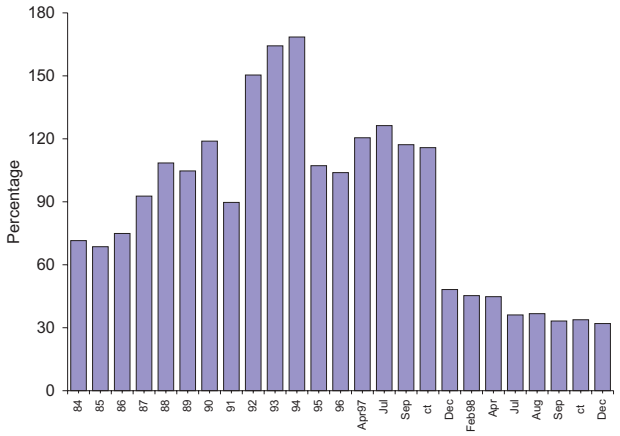
CALCULATION OF THE LIQUIDITY RATIO

In SDR 10^9, excepting mentions otherwise; end-of-period

	1996	1997	1998
1. Total resources	149.0	149.2	165.1
Members' currencies	143.4	144.7	149.4
Gold holding	3.6	3.6	3.6
SDR holdings	1.7	0.6	0.7
Other assets	0.3	0.3	0.3
Available under GAB activation	-	-	11.1
2. Non-usable resources	87.9	98.5	111.6
3. Usable resources (1-2)	61.1	50.7	53.5
4. Amount committed under arrangements	9.7	18.0	24.5
5. Working balances	11.9	10.0	9.6
6. Net uncommited usable resources (3-4-5)	39.5	22.7	19.4
7. Reserve tranche positions	38.0	47.1	56.4
8. Outstanding borrowing under GAB	-	-	4.3
9. Net liabilities (7+8)	38.0	47.1	60.7
10. Liquidity ratio (6/9x100)	103.9	48.2	32.0

Source: International Monetary Fund.

Chart 1
IMF LIQUIDITY RATIO
End-of-period



Source: International Monetary Fund.

July 1997 and the end of 1998, the amount of commitments exceeded SDR 43 billion. In this context, the agreements celebrated with Thailand (on 20 August 1997), Indonesia (5 November 1997), Korea (4 December 1997) and Brazil (2 December 1998) should be highlighted. These four agreements amounted to SDR 36 billion. In the same period, the value of resources decreased from SDR 58 billion to SDR 53.5 billion. These events resulted in a sharp decline of the liquidity ratio, from 126.3 to 32.0 per cent in the same period — a historically low level (chart 1) — reducing substantially IMF's ability to meet further commitments.

In this context, the **New Arrangements to Borrow** (NAB) — which came into force on 17 November 1998 — played a central role. The NAB, adopted by the Board of Governors on 27 January 1997, consist of credit facilities agreed between the IMF and 25 members (or the respective central banks), with the purpose of strengthening the resources of the institution in exceptional situations of shortage of funds(9). The NAB were first activated on 2 December 1998, following to the agreement celebrated between the IMF and Brazil.

(9) The NAB do not replace the former General Arrangements to Borrow (GAB), which are still in force. However, the NAB shall be the main and first mechanism to which countries will resort if needed. The combined amount of resources available in the context of NAB and GAB amounts to SDR 34 billion (USD 47.6 billion).

4.2 Distribution of the overall increase

Following to the Executive Borad decision, 75 per cent of the total increase was distributed equiproportionally — i.e., taking into account the share of each member's actual quotas. For Portugal, the equiproportional quota increase amounted to SDR 188.2 million:

Rate of growth of the overall quota = 45%.
Share of the equiproportional component
= 75% of the overall increase.
Quota = SDR 557.6 million.
Equiproportional increase = 0.45 X 0.75 X 557.6=
=188.2

To adjust the quota structure to the relative economic position of members, 15 per cent of the overall increase were distributed in proportion to members' shares in calculated quotas (based on 1994 data), using Method A. This method requires the prior determination of the amount and the share of each member's calculated quota. In the Portuguese case, according to data available up to 1994, the calculated quota amounts to SDR 3,049.0 million (0.56 per cent of total quota). Thus, the selective quota increase for Portugal was of SDR 55.2 million:

Overall increase = SDR 65,800 million.
Share of the selective quota = 15% of the
overall increase.
Share of the calculated quota = 0.56%.
Selective increase = 65,800x 0.15 x 0.0056 = 55.2.

Finally, the remaining 10 per cent of the overall increase (about SDR 6,500 million) was distributed as to correct the major anomalies in the current quota structure (*ad hoc* increase). 90 per cent of this increase was distributed by members (37) for which the share of the respective calculated quota was not smaller than the share of its actual quota; the remaining 10 per cent were distributed by the five members whose quotas were far out of line with their relative economic positions and that were simultaneously participants in the NAB — Singapore, Luxembourg, Korea, Thailand and Malaysia. The *ad hoc* quota increase for Portugal equalled SDR 66.4 million. Appendix 2 presents the respective calculations.

Table 3

CALCULATION OF THE NORM AND THE REMUNERATED RESERVE TRANCHE FOR PORTUGAL

Position on 31 December 1998

	SDR106	% of quota
1. Quota on 1/4/1978	117.00	20.98
2. Quota on 31/12/1998	557.60	100.00
3. 75 per cent of quota on 1/4/1978	87.75	15.74
4. Change in quota since 1/4/1978	440.60	79.02
5. Norm (3+4)	528.35	94.75
6. Holding of escudos (31/12/1998)	115.50	20.71
7. Reserve tranche position (31/12/1998)	442.10	79.29
8. Remunerated reserve tranche position (5-6)	412.85	74.04

Source: International Monetary Fund.

The new quota for Portugal is thus SDR 867.4 million, resulting from a SDR 309.8 million increase. It should be noted that, since the previous quota structure underestimated the relative economic size of Portugal, the individual quota increase amounted to about 56 per cent, i.e. above the overall increase (45 per cent).

4.3 Subscription and reserve tranche position

The IMF agreement provides that, after the quota increase comes into force, members shall pay the IMF, within an agreed period, 25 per cent of their increase in SDR or in any other currency to be defined by the institution — this is the so-called **reserve asset payment**. The balance of the increase shall be paid in national currency, usually through the issuing of non-negotiable non-interest bearing notes in favour of the IMF[10]. The reserve asset payment does not affect each member's overall amount of external reserves, as the reduction of assets in foreign currency is compensated by an increase, of equal value, in its reserve position in the IMF. In accordance with the 30-working day period agreed in the context of the Eleventh General Review of Quotas, Portugal proceeded to the payment of its quota increase in early February 1999.

Each member's **reserve tranche position** (previously known as the "gold tranche") consists of the difference between its quota and the IMF's holdings in its respective national currency, excluding the amount resulting from loans granted by the IMF to that member. Drawings made under the reserve tranche are not considered an use of IMF credit as each member's reserve positions are a part of their foreign reserves. Request for reserve tranche purchases shall not be subject to challange (Article V, section 3(c)).

Every quarter, the IMF pays a return to those members holding a **remunerated reserve tranche position**. A reserve tranche position is remunerated when a member's amount of national currency held by the IMF is lower than a pre-determined "norm" (excluding currency held by the country due to credits granted by the IMF to the member). For each member, the norm equals 75 per cent of the quota existing prior to the Second Amendment to the Articles of the Agreement (1 April 1978) plus all following quota increases. Therefore, as the quota increases, the norm converges to 100 per cent of the effective quota — progressively reducing the share of the non-remunerated component.

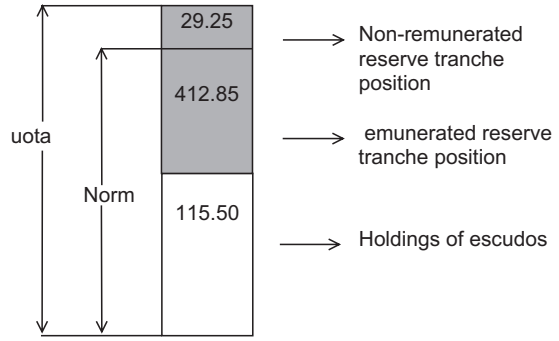
According to the data available in late 1998, only a small part of the reserve position of Portugal (about 6.6 per cent) is non-remunerated (table 3, diagram 1).

(10) In the terms of Decree-Law no. 245/89, which regulates the relationship between Portugal and the IMF, "the Banco de Portugal is enforced to carry out increases to the Portuguese quota in the International Monetary Fund; for this purpose it shall make on its own account the deliveries of special drawing rights, of currencies of other members or of escudos".

Diagram 1

REMUNERATED RESERVE TRANCHE POSITION

On 31 December 1998



4.4 Major changes to the quota structure

The Eleventh General Review of Quotas yielded some important changes to the structure of quotas and voting power in the IMF. Firstly, worth noting are the significant increases in the quotas of Japan and Germany (62 and 58 per cent, respectively), which resulted in substantial rises in these countries' voting powers. Indeed, Japan became the IMF member with the second largest quota. The United States recorded a percentage change below the overall increase (40 per cent, compared with 45 per cent), recording a slight fall in its share in total voting power. The Eleventh General Review of Quotas also enabled some members holding large quotas but that did not reflect their respective relative economic size, to benefit from significant quota increases. This was the case of Korea (104 per cent increase), Ireland (60 per cent), Spain (58 per cent) Austria (58 per cent) and Italy (54 per cent), among others.

As regards the constituency where Portugal is included, the overall quota increase amounted to SDR 3,065 million (52.4 per cent), resulting in a 0.2 percentage points rise in the voting power share of this group, to 4.2 per cent (table 4). Reflecting these changes, Portugal became the country holding the second largest quota in the constituency.

Table 4

CHANGES TO THE RELATIVE POSITIONS OF SOME MEMBERS

Amount of quota expressed in SDR 10^6

	Ninth General Review of Quotas				Eleventh General Review of Quotas			
	Quota	Share (%)	Votes	Share (%)	Quota	Share (%)	Votes	Share (%)
1. United States	26526.8	18.21	265 518	17.61	37149.3	17.52	371 743	17.16
2. Japan	8241.5	5.66	82 665	5.48	13312.8	6.28	133 378	6.16
3. Germany	8241.5	5.66	82 665	5.48	13008.2	6.14	130 332	6.02
4. France	7414.6	5.09	74 396	4.93	10738.5	5.07	107 635	4.97
5. United Kingdom	7414.6	5.09	74 396	4.93	10378.5	5.07	107 635	4.97
6. Italy	4590.7	3.15	46 157	3.06	7055.5	3.33	70 805	3.27
7. Greece	587.6	0.40	6 126	0.41	823.0	0.39	8 480	0.39
8. Portugal	557.6	0.38	5 826	0.39	867.4	0.41	8 924	0.41
9. Malta	67.5	0.05	925	0.06	102.0	0.05	1 270	0.06
10. Albania	35.3	0.02	603	0.04	48.7	0.02	737	0.03
11. San Marino	10.0	0.01	350	0.02	17.0	0.01	420	0.02
12. Total (6 to 11)	5848.7	4.00	59 987	3.98	8913.6	4.20	90 636	4.18

5. CONCLUDING REMARKS

The conclusion of the Eleventh General Review of Quotas takes place in a context where the establishment of a new architecture for the international monetary system became one of the most widely discussed issues. The IMF's capacity for assisting financially its members with imbalances in their balance of payments was substantially increased with the endorsement of the Eleventh General Review of Quotas and the NAB, strengthening the central position of the IMF in the international monetary system.

The world economy financial background is today unquestionably different from that in 1945, when the IMF Agreement was signed(11). The monetary system based upon fixed parities against gold and infrequent adjustments was replaced by a greater exchange rate flexibility between the major economic areas; the size of private capital flows rose substantially; integration among countries increased, through their greater openness — both to trade and capital flows; finally, the IMF membership expanded enourmously, granting the institution with an universal status — and simultaneously rising the potential demand for its resources.

The financial instability affecting the international markets in the 1990s offers the IMF possibly its greatest challenge since the end of the Bretton-Woods regime, in the early 1970s. The size of repercussions of the recent turbulence in financial markets over the world economy makes urgent the re-adaptation of the institution's surveillance practices, granting them with new dimensions. For instance, the usual analysis of members' economic policies should be supplemented with a systematic and rigorous assessment of the soundness of the financial sector. It is also important that the recent trend towards greater information transparency and availability is strengthened. This comprises, for instance, indicators on the level of short-term private external debt.

An effective surveillance by the IMF, which allows for an early diagnosis of problems and their advanced correction, should help to avoid or diminish the severity of both general disturbances to the world economy and specific problems in individual members that contribute to balance of payments difficulties, the likelihood of sudden and massive adjustments in balances of payments, and the potential demand for its financial resources.

(11) The IMF was formerly founded in 1945, reflecting the consensus reached one year before — during the Monetary and Financial Conference held in Bretton Woods. The cornerstone idea supporting the creation of the IMF was that the promotion of international monetary co-operation would be the best way to reach other objectives considered essential to the welfare of the respective members. These objectives are listed in Article I of the IMF Agreement.

REFERENCES

Driscoll, D. (1998). "What is the International Monetary Fund", IMF.

Feldstein, Martin (1998). "Refocusing the IMF", *Foreign Affairs*, March / April, volume 77, no.2.

Fischer, S. (1998). "Lessons from a crisis", *The Economist*, October.

International Monetary Fund (1995). "Financial Organization and Operations of the IMF", *Pamphlet Series*, no.45.

International Monetary Fund (several editions). "*Annual Report*".

International Monetary Fund (several editions). "*International Financial Statistics*".

Goldstein, M., P. Isard and M. Taylor (1992). "Policy Issues in the Evolving International Monetary System", IMF, *Occasional Paper*, 96.

Labisa, A.S. (1994). "Organismos Internacionais", Banco de Portugal.

Masson, P. and M. Mussa (1995). "The Role of the IMF: Financing and Its Interactions with Adjustment and Surveillance", IMF, *Pamphlet Series*, no.50.

Rapaz, V. (1984). "8ª Revisão Geral de Quotas do FMI: Enquadramento, Solução e Significado", Banco de Portugal, *Quarterly Bulletin*, *December*.

Fischer, S. (1999). "On the Need for an International Lender of Last Resort", IMF.

Appendix 1

METHODS OF DISTRIBUTION OF THE SELECTIVE QUOTA INCREASE

This Appendix describes the mathematical properties of the alternative techniques for allocating quota increases presented in the main text and introduces the concept of "adjustment coefficient".

1. The adjustment coefficient

To ease the comparison between the alternative distribution methods, it seemed useful to calculate a measure of its effectiveness in reducing the divergence between the shares in calculated quotas and those in actual quotas. The adjustment coefficient, developed during the Eight General Review, indicates precisely the amount of reduction in the difference between the share in the calculated quota and the share in the actual quota, as a percentage of the original difference. For each member *i*, the coefficient of adjustment is calculated as follows:

$$\alpha^i = \frac{S_n^i - S_p^i}{S_c^i - S_p^i} \times 100 \qquad (1)$$

where S_p^i, S_c^i and S_n^i stand respectively for the share in the actual quota, the calculated quota and the new quota. For the *m* IMF members as a whole, the adjustment coefficient is determined through the following formula:

$$\alpha = \frac{\left[\sum_{i=1}^{m}\left(S_c^i - S_p^i\right)^2\right]^{1/2} - \left[\sum_{i=1}^{m}\left(S_c^i - S_n^i\right)^2\right]^{1/2}}{\left[\sum_{i=1}^{m}\left(S_c^i - S_p^i\right)^2\right]^{1/2}} \times 100 \qquad (2)$$

2. Method A

This method allocates the selective component of the quota increase to all members, as a proportion of their shares in calculated quotas. The new quota of member *i*, excluding the *ad hoc* component of the increase, can be expressed as a function of its effective and calculated quotas, as follows:

$$Q_n^i = (1+a)Q_p^i + \sigma Q_c^i$$

where Q_p^i, Q_c^i and Q_n^i are respectively the actual quota, calculated quota and the new quota. Parameter $a \geq 0$ stands for the equiproportional quota increase as a percentage of the actual quota, and σ defines the aggregate amount of the selective increases ($\sum \Delta Q_s^i$) as a proportion of total calculated quotas. By definition we have:

$$\sigma = \frac{\sum_{i=1}^{m} Q_n^i - (1+a)\sum_{i=1}^{m} Q_p^i}{\sum_{i=1}^{m} Q_c^i} = \frac{\sum_{i=1}^{m} \Delta Q_s^i}{\sum_{i=1}^{m} Q_c^i} \qquad (4)$$

$$\Delta Q_s^i = S_c^i \sum_{i=1}^{m} \Delta Q_s^i \qquad (5)$$

It can be demonstrated that the coefficient of adjustment is constant in this case, and equal to:

$$\alpha^i = 1 - (1+a)\sum_{i=1}^{m} Q_p^i / \sum_{i=1}^{m} Q_n^i \qquad (6)$$

Equation (6) shows that the coefficient of adjustment varies inversely to the size of the equiproportional component, and that its value is limited by the overall quota increase. For example, if the capital of IMF doubles, and the equiproportional component is null, the coefficient of adjustment equals 50 per cent.

3. Method B

This method distributes the selective component of the quota increase among a restricted number of previously elected members. The selective increase for elected member *i* is distributed as a proportion of its share in the total excess of calculated quotas over actual quotas of all the eligible members:

$$Q_n^i = (1+a)Q_p^i + d(Q_c^i - Q_p^i) \qquad (7)$$

where *d* is the aggregate size of selective increases in relation to the difference between the sum of calculated quotas and the sum of effective quotas. So,

$$d = \frac{\sum_{i=1}^{m} Q_n^i - (1+a)\sum_{i=1}^{m} Q_p^i}{\sum_{i=1}^{k}\left(Q_c^j - Q_p^i\right)} \quad (8)$$

with $k<m$. For the $m–k$ non-elegible members, $d = 0$, and

$$Q_n^i = (1+a)Q_p^i \quad (9)$$

Three other techniques were analysed during the Eleventh General Review alternatively to methods A and B.

Appendix 2

AD HOC QUOTA INCREASES

Ad hoc quota increases are determined so that the initial discrepancy between the ratio of the calculated quota share to the effective quota share, and a given pre-fixed value (F) is uniformly reduced for all selected countries. Algebraically, for an eligible member *i* we have:

$$\frac{S_c^i}{S_n^i} = \frac{S_c^i}{S_p^i} - b\left[\frac{S_c^i}{S_p^i} - F\right] \quad (1)$$

Where S_c^i, S_n^i and S_p^i stand respectively for the shares in the calculated quota, the new quota and the effective quota of member *i*. S_n^i is, in this case, defined as the quota share of country *i*, considering only the *ad hoc* increase. Therefore, for a selected country the sum of its actual quota with the *ad hoc* increase (Q_n^i) is:

$$Q_n^i = S_n^i\left[\sum_{all} Q_p^i + A\right] \quad (2)$$

where A indicates the total value of the *ad hoc* increase.

Coefficient *b* in equation (1) is identical for all selected countries, and is calculated iteratively to ensure that the sum of individual increases match a pre-determined amount. A further restriction imposed on *b* is that it must not be greater than 1.

In the case of the current review, the *ad hoc* increase is divided into two parts: 9 per cent of the overall increase is distributed by the 37 members with a calculated quota share not lower than the respective actual quota share (*F=1*), and 1 per cent by the five members with the highest ratios of the calculated quota share to the effective quota share and that simultaneously participate in the NAB — Singapore, Luxemburg, Korea Thailand and Malaysia.

For an *ad hoc* quota increase of SDR 6.5 billion, calculated coefficient *b* is 0.226. Portugal, which has a calculated quota share to the effective quota share of 1.47, benefits from the first part of the increase.

For Portugal, the variables in equations (1) and (2) take the following values:

$$S_n^P = \frac{S_c^P}{\frac{S_c^P}{S_p^P} - b\left[\frac{S_c^P}{S_p^P} - F\right]} = \frac{0.00560}{\frac{0.00560}{0.00381} - 0.226\left[\frac{0.00560}{0.00381} - 1\right]} = 0.004107$$

$$Q_n^p = S_n^p\left[\sum_{all} Q_p^i + A\right] = 0.004107 \times \left(146226.1 + 5922.16\right) = 624.8$$

with A= 146,226.1x0.45x0.09= 5,922.16. Since the actual quota of Portugal is SDR 557.6 million, the corresponding *ad hoc* increase amounts to SDR 67.2 million (SDR 624.8 million — SDR 557.6 million).

The values reached for the *ad hoc* increase were adjusted so that these would not imply excessive changes in the shares of new quotas. For Portugal, full adjustment resulted in a SDR 0.8 million downward review of its *ad hoc* increase, which thus amounted to SDR 66.4 million.

January

- ***9 January*** — The liquidity draining rate and the daily facility rate remained unchanged at 4.9 and 6.9 per cent, respectively.
  The repo rate of Banco de Portugal remained at 5.3 per cent.

- ***9 January*** — The liquidity draining rate and the daily facility rate of the Banco de Portugal remained unchanged at 4.9 and 6.9 per cent, respectively.
  The repo rate remained at 5.3 per cent.

- ***19 January*** — The liquidity draining rate and the daily facility rate of the Banco de Portugal were cut by 0.1 percentage point, to 4.8 and 6.8 per cent, respectively.
  The repo rate was lowered by 0.1 percentage point to 5.1 per cent.

- ***31 January (Law no. 5/98, Official Gazette no. 26/98, Series I, A)*** — Introduces changes in the Organic Law of Banco de Portugal with a view to its integration in the European System of Central Banks.

- ***2 February (Circular Letter of the Banco de Portugal no. 3/DOC)*** — Announces that the rate of return on the certificates of deposit, Series B, is fixed at 4.3 per cent, effective from the quarter started on 4 February.

- ***3 February (Law no. 7/98, Official Gazette no. 28/98, Series I, A)*** — Regulates the general framework governing the issue and management of the public debt.

- ***4 February (Notice no. 1741-C/98, Official Gazette no. 29/98, Series II, 2nd Supplement*** — Regulates the legal framework governing uncovered cheques, approved by Decree-Law no. 454/91 of 28 December, following the changes introduced in this decree by Decree-Law no. 316/97 of 19 November.

- ***11 February (Rule no. 17/97-R, Official Gazette no. 35/98, Series III*** — Discloses the figures on the 1997 fiscal year, to be reported to *Instituto de Seguros de Portugal* (Portuguese Insurance Institute) by insurance companies having their head office in Portugal (joint-stock companies and insurance mutual companies), branches of insurance companies having their head office outside the territory of the European Union, complementary groupings of undertakings and pension fund managing companies. Revokes Rule no. 22/96-R of 19 December.

February

- ***13 February (Regulation no. 1/98 of the Stock Market Commission, Official Gazette no. 37/98, Series II)*** — Sets forth the conditions regarding the registration of financial intermediaries for the carrying out of intermediation activities in transferable securities.

- ***20 February (Circular Letter of the Banco de Portugal no. 5/98/DSBRE)*** — Informs credit institutions and financial companies that the accounting and prudential data to be reported to the Banking Supervision Department of the Banco de Portugal, from 1 January 1999 onwards, shall be denominated in euro, by means of the conversion of original data.

- ***25 February (Notice no. 1/98, Official Gazette no. 47/98, Series I, B)*** — Sets at 5 per cent the discount rate of the Banco de Portugal.

- ***25 February (Circular Letter of the Banco de Portugal no. 8/98/DSBRE)*** — Fixes the intangible assets and the costs that credit institutions and financial companies (where applicable) shall take into account in the calculation of own funds, both on a consolidated and a non-consolidated basis. Revokes Circular Letter no. 77/M/DSB of 14 December 1994.

- ***25 February (Circular Letter of the Banco de Portugal no. 6/DCP*** — Following the decisions taken at Community level on the programme for the changeover to the euro, discloses the decisions adopted by the Board of Directors of the Banco de Portugal regarding the accounting procedures related to the introduction of the euro in the information systems of the Portuguese Banking System.

- ***26 February*** — The liquidity draining rate and the daily facility rate of the Banco de Portugal were cut by 0.2 percentage point to 4.6 and 6.6 per cent, respectively. The repo rate was lowered by 0.2 percentage point to 4.9 per cent.

March

- ***18 March*** — The liquidity draining rate and the daily facility rate of the Banco de Portugal were cut by 0.2 percentage point to 4.4 and 6.4 per cent, respectively. The repo rate was lowered by 0.2 percentage point to 4.7 per cent.
- ***27 March (Rule no. 2/98-R, Official Gazette no. 73/98, Series III)*** — Sets forth a set of rules on the calculation and constitution of the solvency margin and the guarantee fund of firms and insurance companies. Revokes rules no. 27/95-R of 14 December and no. 4/98-R of 20 February.
- ***27 March (Rule no. 3/98-R, Official Gazette no. 73/98, Series III)*** — Sets forth a set of rules on the calculation and constitution of the solvency margin and the guarantee fund of the pension fund managing companies. Revokes rules no. 28/95-R of 14 December and no. 5/97 of 20 February, without retaining no. 61 of Rule no. 298/91 of 13 November, previously revoked.

April

- ***3 April (Decree-Law no. 85/98, Official Gazette no. 79/98, Series I, A)*** — Approves the designs of the national face of the 1 and 2 euro coins and of the 50, 20, 10, 5, 2 and 1 cent coins.
- ***11 April (Notice no. 2/98, Official Gazette no. 85/98, Series I, B)*** — Revokes Notice no. 11/90, published in the Official Gazette no. 207, Series I, of 7 September 1990, which established that institutions subject to the supervision of the Banco de Portugal should observe the ceilings set on the underwriting of securities and on the indirect subscription of shares.
- ***17 April (Decree-Law no. 94-B/98, 2nd Supplement to Official Gazette no. 90/98, Series I, A)*** — Regulates the conditions of access to and carrying out of insurance and reinsurance activities in the European Community territory, including those carried out within the international scope of off-shore centres. Revokes Decree-Laws nos. 91/82, of 22 March, 133/86, of 12 June, 107/88, of 31 March and 102/94, of 20 April.
- ***27 April (Circular Letter of the Banco de Portugal no. 14/DOC)*** — Fixes at 4 per cent the rate of remuneration of Certificates of Deposit, Series B, applicable in the quarter started on 4 May.

May

- ***5 May*** — The liquidity draining rate and the daily facility rate remain unchanged at 4.4 and 6.4 per cent, respectively. The weighted average repo rate of the Banco de Portugal remains unchanged at 4.7 per cent.
- ***12 May*** — The Banco de Portugal cut the liquidity draining rate and the daily facility rate by 0.2 p.p. to 4.2 and 6.2 per cent, respectively. The weighted average repo rate of the Banco de Portugal was also cut by 0.2 p.p. to 4.5 per cent.
- ***15 May (Executive Order no. 476/98, Official Gazette no. 112/98, Series II)*** — Under no. 8 of article 411 of the Stock Market Code, as amended by Decree-Law no. 196/95 of 29 July and Decree-Law no. 232/96 of 5 December, authorises the Association of the Oporto Derivatives Stock Exchange to provide integrated registration, clearing and settlement services of loan operations on domestic or foreign transferable securities and money-market instruments, and to play the role of counterpart in the said operations.

- ***16 May (Decree-Law no. 138/98, Official Gazette no. 113/98, Series I, A)*** — Lays down fundamental rules to be complied with in the process of transition to the euro, supplementing the relevant provisions of the Community law.

- ***20 May (Executive Order no. 487/98, Official Gazette no. 116/98, Series II)*** — Amends the wording of no. 3 of Executive Order no. 291/96 of 23 December with the purpose of promoting the widening of the scope of the authorisation granted to the registration services of repurchase agreements concluded with natural persons.

- ***21 May (Decree-Law no. 117/98, Part A, Series III, Third Supplement)*** — Publishes the Annual Report and Accounts of the Banco de Portugal, E.P. for the year 1997.

- ***21 May (Circular Letter of Banco de Portugal no. 19/98/DSBDR)*** — Clarifies the way of calculating and gives information on the disclosure of the "annual effective rate" (Portuguese acronym: TAE), referred to in Decree-Law no. 220/94 of 23 August.

- ***27 May (Regulation no. 5/98 of the Stock Market Commission, Official Gazette no. 122/98, Series II)*** — Pursuant to the provisions of article 14, no. 1, a) of the Stock Market Code and for the purposes laid down in article 5, no. 6 of Decree-Law no. 294/95 of 17 November, fixes the quantitative limits on risk concentration of real estate investment trusts inherent in the signing of lease contracts, whose counterpart is the same entity or associated entities.

June

- ***9 June*** — The liquidity draining rate and the daily facility rate of the Banco de Portugal remain unchanged at 4.2 and 6.2 per cent, respectively.
  The repo rate remains unchanged at 4.5 per cent.

- ***24 June Regulation no. 7/98 of the Stock Market Commission, Official Gazette no. 143/98, Series II*** — Pursuant to the provisions of article 14, no. 1, a) and b) of the Stock Market Code and for the purposes set forth in article 35, no. 2 of Decree-Law no. 276/94 of 2 November, lays down the rules governing the publication of information by transferable securities investment trusts. Revokes Regulation no. 95/2 of 8 May 1995 of the Stock Market Commission.

- ***25 June Decree-Law no. 166/98, Official Gazette no. 144/98, Series I, A*** — Creates the internal control system of the State financial administration (Portuguese acronym: *SCI*).

July

- ***7 July Resolution of the Council of Ministers no. 81/98, Official Gazette no. 154/98, Series I, B*** — Authorises the Public Credit Management Institute to issue, on behalf and as representative of the Republic, short-term domestic loans, denominated in escudos and represented by special short-term debt certificates (Portuguese acronym: *CEDIC*), for the purpose of enabling the financing of the State borrowing requirements through the placement of the cash surpluses held by General Government bodies. Sets at 500 billion escudos the maximum amount of outstanding *CEDIC*.

- ***8 July Decree-Law no. 187/98, Official Gazette no. 155/98, Series I, A*** — Provides for the concerted action between the means of payment of the Treasury and the new interbank clearing system (Portuguese acronym: *SICOI*), taking into consideration the introduction of the euro. Rewords articles nos. 3 and 4 of Decree-Law no. 371/91 of 8 October. This decree-law takes effect from 1 May 1998 onwards.

- ***13 July*** — The liquidity draining rate and the daily facility rate of the Banco de Portugal remain unchanged at 4.2 and 6.2 per cent, respectively.
  The repo rate remains unchanged at 4.5 per cent.

- ***16 July (Decree-Law no. 211/98, Official Gazette no. 162/98, Series I, A)*** — Regulates the activity of Mutual Guarantee Schemes (Portuguese acronym: SGM). This Decree-Law shall take effect on 1 August 1998.

- ***17 July (Regulation no. 8/98 of the Stock Market Commission, Official Gazette no. 163/98, Series II)*** — Introduces changes in the wording of article 14 of Regulation no. 97/04 of 20 March, relative to the services of repo operations (repurchase agreements) carried out by the Oporto Derivatives Exchange.

- ***17 July (Regulation no. 9/98 of the Stock Market Commission, Official Gazette no. 163/98, Series II)*** — Lays down the rules governing the integrated registration, clearing and settlement services of credit operations in transferable securities and money market instruments carried out by the Oporto Derivatives Exchange, whether or not the latter is a counterparty in the said operations.

- ***22 July (Decree-Law no. 229/98, Official Gazette no. 167/98, Series I, A)*** — Creates the Mutual Counter-guarantee Fund, whose purpose is to guarantee the observance of obligations by Mutual Guarantee Schemes the activity of which is regulated by Decree-Law no. 211/98, of 16 July. The entity managing this Fund is the *SPGM - Sociedade de Investmento, SA*.

- ***22 July (Decree-Law no. 230/98, Official Gazette no. 167/98, Series I, A)*** — Redefines the activity framework of risk capital and entrepreneurial development companies. Rewords articles nos. 6 to 8, 12 and 13 of Decree-Law no. 433/91, of 7 November.

- ***24 July Decision no. 12765/98, Official Gazette no. 169/98, Series II*** — Stipulates a set of guidelines applicable to the actual utilisation of the euro by the public sector during the transitional period.

- ***29 July (Circular Letter of the Banco de Portugal no. 22/DOC)*** — Informs that the revisions of the Credit Facilities Manual are suspended and that this Manual shall be discontinued by the end of the present year. As regards credit operations to agriculture, livestock and fishing, the IFADAP shall continue to issue and codify the respective credit lines.

August

- ***3 August (Circular Letter of the Banco de Portugal no. 24/DOC)*** — Fixes at 3.8 per cent the rate of remuneration of Certificates of Deposit, Series B, applicable in the quarter started on 4 August 1998.

- ***6 August (Law no. 42/98, Official Gazette no. 180/98, Series I, A)*** — Approves the new Local Finance Law (financial system governing municipalities and civil parishes). Revokes Law no. 1/87 of 6 January and article no. 10 of Law no. 23/97, of 2 July. The present law becomes effective on 1 January 1999.

- ***19 August*** — The liquidity draining rate and the daily facility rate of the Banco de Portugal remain unchanged at 4.2 and 6.2 per cent, respectively.
The repo rate remains unchanged at 4.5 per cent.

- ***20 August (Regulation no. 10/98 of the Stock Market Commission, Official Gazette no. 191/98, Series II)*** — Lays down the rules governing repo operations and security lending, carried out on behalf of transferable securities investment trusts by their managing bodies. Revokes Regulation no. 14/97 of 8 October.

- ***20 August (Regulation no. 11/98 of the Stock Market Commission, Official Gazette no. 191/98, Series II)*** — Lays down a set of rules governing the quarterly reporting of data on the activity, results and economic and financial situation of all companies with shares listed on the official stock exchange market. This Regulation takes effect on 1 October 1998.

- ***25 August (Regulation no. 12/98 of the Stock Market Commission, Official Gazette no. 195/98, Series II)*** — Lays down rules governing the training and empowerment of the agents intervening in spot stock exchange operations.

- ***25 August (Regulation no. 13/98 of the Stock Market Commission, Official Gazette no. 195/98, Series II)*** — Introduces changes in the procedures relating to the negotiation of bonds and participating bonds. Amends the wording of articles 6, 11, 18 and 32 as well as of the annexes I to X of Regulation no. 91/10 of 5 September. This Regulation takes effect on 2 November 1998, except for the amendments introduced in article 18 and in annex I, which take effect on 14 September 1998.

September

- ***3 September (Regulation no. 14/98 of the Stock Market Commission, Official Gazette no. 203/98, Series II)***

  Lays down the rules governing the carrying out of OT-10 futures stock exchange operations and three-month futures (Lisbor rate). Rewords no. 1 of Regulation no. 96/5 and no. 1 of Regulation no. 96/11.

- ***17 September (Decree-Law no. 279/98, Official Gazette no. 215/98, Series I, A)***

  Lays down the legal system governing Treasury bills. Revokes Law no. 20/85 of 26 July, except for the provisions relating to the exemption from the gift and inheritance tax set forth in article 6, as well as Decree-Law no. 321-A/85 of 5 August. Until the entry into force of the Instructions of the Public Credit Management Institute, which will define the system governing the registration, settlement and transmission of Treasury bills, the Instructions approved by the Banco de Portugal on the operation of the Treasury bill market remain in force.

- ***17 September (Decree-Law no. 280/98, Official Gazette no. 215/98, Series I, A)***

  Lays down the legal system governing Treasury bonds. Revokes Decree-Law no. 367/87 of 27 November, as worded by Decree-Law no. 11/92 of 4 February and Decree-Law no. 5-A/94 of 11 January, as well as Decree-Law no. 163/90 of 23 May and Executive Order no. 32-A/94 of 11 January. This Decree-Law shall not be applicable to the Resolutions of the Council of Ministers that approve the contracting of loans during the current fiscal year nor shall it affect the conditions of the loans already raised or to be raised during the same period.

- ***18 September***

  The liquidity draining rate and the daily facility rate of the Banco de Portugal remain unchanged at 4.2 and 6.2 per cent, respectively.
  The repo rate remains unchanged at 4.5 per cent.

October

- ***1 October (Executive Order no. 1010/98, Official Gazette no. 227/98, Series II)***

  Under the provisions laid down in paragraph 1 of article 96 of the Legal System of Credit Institutions and Financial Companies, approved by Decree-Law no. 298/92 of 31 December, rewords no. 1 of Executive Order no. 95/94 of 9 February, which fixed the minimum capital stock of credit institutions and financial companies. It also fixes the minimum capital stock of mutual guarantee companies.

- ***12 October***

  The liquidity draining rate and the daily facility rate of the Banco de Portugal were cut by 0.5 percentage points, to 3.7 and 5.7 per cent, respectively.
  The repo rate was also cut by 0.5 percentage points, to 4 per cent.

- ***8 October (Regulation no. 17/98 of the Stock Market Commission, Official Gazette no. 242/98, Series II)***

  Regulates the listing process on the official stock exchange of shares issued by entities which have their registered office outside the national territory, as well the reporting requirements and the control system to which the said shares are subject.

- ***12 October (Circular Letter of the Banco de Portugal no. 29/98/DSBGA)***

  Stipulates that the lender in securities lending operations, for the purposes of the calculation of the own funds for the coverage of credit risks, must weigh the amount of the transferable securities sold by the risk coefficient of the respective issuer; it further stipulates that, for the same purpose, the borrower must weigh the value of the securities pledged as collateral by the risk coefficient of the respective issuer; this Circular Letter also stipulates that the risk coefficient assigned to the Oporto derivatives stock exchange will be 20 per cent.

November

- ***2 November (Circular Letter of the Banco de Portugal no. 327/DOC)***

  Fixes at 3.4 per cent the rate of remuneration of Certificates of Deposit, Series B, applicable in the quarter started on 4 November 1998.

• ***3 November (Resolution of the Council of Ministers no. 128/98; Official Gazette no. 254/98, Series I)***	Approves the co-operation integrated budget for 1999.
• ***4 November***	The Banco de Portugal cut the liquidity draining rate and the daily facility rate by 0.2 percentage point to 3.5 and 5.5 per cent, respectively. The repo rate was cut by 0.25 percentage point to 3.75 per cent.
• ***6 November (Notice of the Banco de Portugal no. 3/98, Official Gazette no. 257/98, Series I, B)***	Fixes at 4.25 per cent the discount rate of the Banco de Portugal, amending accordingly no. 1 of Notice no. 3/93 of 20 May.
• ***6 November (Decree-Law no. 343/98, Official Gazette no. 257/98, Series I, A)***	Adapts several regulations of the national law to the replacement of the escudo with the euro.
• ***9 November (Decree-Law no. 345/98, Official Gazette no. 259/98, Series I, A)***	Regulates the operation of the Agricultural Credit Guarantee Fund, a public-law juridical person, with administrative and financial autonomy, operating at the premises of the Banco de Portugal. Revokes Decree-Law no. 182/87 of 2 April and Decree-Law no. 322/97 of 26 November.
• ***17 November (Regulation no. 18/98 of the Stock Market Commission, Official Gazette no. 287/98, Series II)***	Regulation concerning the changeover weekend. Lays down a set of procedures regarding the preparations for the entry into force of the euro in the Stock Markets, namely the closing of the Stock Markets and of the Special Market for Wholesale Transactions on 31 December 1998.
• ***23 November (Circular Letter of the Banco de Portugal no. 32/98 DSBRE)***	Clarifies some accounting issues regarding the introduction of the euro from 1 January 1999 onwards, for the purpose of implementing the Chart of Accounts of the Banking System.
• ***26 November (Regulation no. 19/98 of the Stock Market Commission, Official Gazette no. 287/98, Series II)***	Fixes the transaction fees of stock exchange futures contracts. Revokes Regulations nos. 96/05, 96/11, 97/08, 97/12 and 4/98.
• ***27 November (Circular Letter of the Banco de Portugal no. 36/DOC)***	Discloses the list of the institutions which will be subject, in Portugal, to the minimum reserve system of the European System of Central Banks, from 1 January onwards.
• ***27 November (Executive Order no. 1004-A/98, Official Gazette no. 275/98, Series I B, Supplement)***	Provides for the redenomination, which takes effect on 1 January 1999, of fixed-rate and variable-rate Treasury bonds, as well as of euro-bonds denominated in Deutsche Marks and French francs. It also provides for the non-redenomination of Treasury bills maturing in 1999.

December

• ***3 December***	The Banco de Portugal cut the liquidity draining rate and the daily facility rate by 0.75 percentage point to 2.75 and 4.75 per cent, respectively. The repo rate was also cut by 0.75 percentage point to 3 per cent.
• ***16 December***	The liquidity draining rate and the daily facility rate of the Banco de Portugal remain unchanged at 2.75 and 4.75 per cent, respectively. The repo rate also remains unchanged at 3 per cent.
• ***19 December (Notice of the Banco de Portugal no. 4/98, Official Gazette no. 292/98, Series II, B)***	Sets at 3.25 per cent the discount rate of the Banco de Portugal, which shall prevail until 31 December 1998.
• ***22 December (Instruction no. 2-A/98, Official Gazette no. 294/98, Series II, Supplement)***	Lays down the rules governing the issue of Treasury bonds, namely, the access to and the operation of the respective primary market.

- ***23 December (Regulation no. 23/98 of the Stock Market Commission, Official Gazette no. 295/98, Series II, Supplement)*** — Introduces changes in article 11 (recent quotation, maximum and minimum changes in quotations) and article 29 (bid prices range) of Regulation no. 91/10 of 5 September, so as to adapt it to the entry into force of the euro. This Regulation shall enter into force on 1 January 1999.

- ***23 December (Circular Letter of the Banco de Portugal no. 48/DOC)*** — Discloses a set of procedures regarding the transition to the new minimum reserve system of the European System of Central Banks (ESCB).

- ***23 December (Circular Letter of the Banco de Portugal no. 49/DOC)*** — Supplies information on the end of reserve requirements as of 1 January 1999, and, therefore, waives the presentation of table D1B.

- ***23 December (Circular Letter of the Banco de Portugal no. 50/DOC)*** — Supplies information on the end of reserve requirements as of 1 January 1999, and, therefore, waives the presentation of table D1C.

- ***24 December (Regulation no. 21/98 of the Stock Market Commission, Official Gazette no. 296/98, Series II)*** — Introduces changes in articles 2 and 3 (governing commissions or other fees charged by financial intermediaries) of Regulation no. 96/7 of 24 April, so as to adapt it to the entry into force of the euro. This Regulation shall enter into force on 4 January 1999.

- ***28 December (Regulation no. 24/98 of the Stock Market Commission, Official Gazette no. 298/98, Series II, Supplement)*** — Pursuant to Decree-Law no. 343/98, of 6 November, article no. 21, and according to the provisions set forth in the Stock Market Code, article 14, no. 1 a) and b), article 76, no.3, article 96, article 407, no. 1, article 437, no.4 and article 461, no. 1, this Regulation lays down a set of rules regarding the redenomination of transferable securities integrated in a central securities depository. This Regulation shall enter into force on 1 January 1999.

- ***29 December (Circular Letter of the Banco de Portugal no. 64/98/DCP)*** — Explains the procedures to be followed by credit institutions as regards cheques in escudos with date of issue after 31 December 2001, pursuant to the provisions laid down in Council Regulation (EC) no. 974/98, of 3 May.

January*

- ***7 January (Regulation no. 25/98 of the Stock Market Commission, Official Gazette no. 5/99, Series II)*** — Lays down a set of rules regarding the compulsory reporting and advertising of transferable securities transactions by the issuing companies to the managing companies of the respective market. Revokes Regulation no. 92/6 of 7 January 1993.

- ***7 January (Executive Order no. 8/99, Official Gazette no. 5/99, Series I, B)*** — According to the provisions laid down in Decree-Law no. 138/98 of 16 May, on the rules to be complied with in the process of transition to the euro, fixes at 3.25 per cent the benchmark rate to which the aforementioned Decree-Law, article 10, no. 2 refers. This is an equivalent rate, which will replace the discount rate of the Banco de Portugal as of 1 January 1999.

- ***11 January (Decree-Law no. 11/99, Official Gazette no. 8/99, Series I, A)*** — Introduces changes in the calculation basis of the annual base rate. This Decree-Law takes effect on the first day of the month following its entry into force.

- ***15 January (Notice of the Banco de Portugal no. 1/99, Official Gazette no.12/99, Series I, B)*** — Determines the operations included in no. 1 of Article 5 of Decree-Law no. 13/90 of 8 January, which defines the scope of foreign exchange operations, introducing the changes arising from the entry into force of the euro. Revokes Notice no. 6/93 of 15 October.

- ***15 January (Executive Order no. 28/99, Official Gazette no. 12/99, Series II)*** — Under the terms laid down in no. 4 of Article 8 of Decree-Law no. 138/98 of 16 May, entrusts the Directorate-General of the Treasury with the powers to guarantee the exact correspondence between the daily cash flows arising from the global settlement of means of payment denominated in euro and the respective accounting records, on an item-by-item basis, both at the fiscal level and at the level of the Treasury accounts.

* The chronology for monetary measures of the Eurosystem can be found in the Monthly Bulletin of the European Central Bank.

- ***19 January (Regulation no. 3/99, Official Gazette no. 15/99, Series II)*** — Lays down the rules governing the use of derivative products by insurance companies operating in Portugal or abroad, which are subject to the supervision of the Portuguese Insurance Institute.

- ***19 January (Regulation no. 4/99, Official Gazette no. 15/99, Series II)*** — Lays down the rules governing the use of derivative products in pension funds by the respective managing companies operating in Portugal.

- ***26 January (Notice of the Banco de Portugal no. 2/99, Official Gazette no. 21/99, Series I, B)*** — In use of the powers conferred to it by Article 99 (e) of the Legal Framework of Credit Institutions and Financial Companies, approved by Decree-Law no. 298/92 of 31 December, introduces changes in the setting up of provisions for general credit risks by credit institutions and financial companies, taking into account the growth level of credit granted to individuals for consumption purposes, namely the ratio risk/profitability associated with it. Rewords nos. 3 and 7 and revokes nos. 20 and 21 of Notice no. 3/95 of 30 June.

- ***28 January (Instruction no. 1, Official Gazette no. 23/99, Series II)*** — Lays down the general rules governing the operation of the primary and secondary markets of Treasury bills.

- ***28 January (Decree-Law no. 22/99, Official Gazette no. 23/99, Series I, A)*** — Lays down several rules governing the registration and settlement of transferable securities of a monetary nature by the Banco de Portugal.

February

- ***10 February (Executive Order no. 118/99, Official Gazette no. 34/99, Series II)*** — Under the terms laid down in no. 4 of Article 295 of the Companies Act (*Código das Sociedades Comerciais*) (legal reserve), stipulates that the provisions set forth in no. 2 of the aforementioned Act shall not be applicable to the companies subject to the supervision of the Banco de Portugal and the Portuguese Insurance Institute, as regards the reserves set up for the amounts referred to in paragraph a) of this Act. It further stipulates that reserves cannot be utilised for the payment of dividends or the acquisition of own shares.

- ***11 February (Decision no. 2481/99, Official Gazette no. 35/99, Series II)*** — Stipulates the new amounts in euro for the issue of fixed rate and variable rate Treasury Bonds, following the process of redenomination to which Decree-Laws no. 138/98 of 16 May and no. 343/98 of 6 November refer, to take effect on 1 January 1999.

WORKING PAPERS

1/90 PRODUTO POTENCIAL, DESEMPREGO E INFLAÇÃO EM PORTUGAL
Um estudo para o período 1974-1989
— Carlos Robalo Marques

2/90 INFLAÇÃO EM PORTUGAL
Um estudo econométrico para o período 1965-1989, com projecções para 1990 e 1991
— Carlos Robalo Marques

3/92 THE EFFECTS OF LIQUIDITY CONSTRAINTS ON CONSUMPTION BEHAVIOUR
The Portuguese Experience
— Sílvia Luz

4/92 LOW FREQUENCY FILTERING AND REAL BUSINESS CYCLES
— Robert G. King, Sérgio T. Rebelo

5/92 GROWTH IN OPEN ECONOMIES
— Sérgio Rebelo

6/92 DYNAMIC OPTIMAL TAXATION IN SMALL OPEN ECONOMIES
— Isabel H. Correia

7/92 EXTERNAL DEBT AND ECONOMIC GROWTH
— Isabel H. Correia

8/92 BUSINESS CYCLES FROM 1850 TO 1950: NEW FACTS ABOUT OLD DATA
— Isabel H. Correia, João L. Neves, Sérgio Rebelo

9/92 LABOUR HOARDING AND THE BUSINESS CYCLE
— Craig Burnside, Martin Eichenbaum, Sérgio Rebelo

10/92 ANALYSIS OF FOREIGN DIRECT INVESTMENT FLOWS IN PORTUGAL USING PANEL DATA
— Luísa Farinha

11/92 INFLATION IN FIXED EXCHANGE RATE REGIMES:
THE RECENT PORTUGUESE EXPERIENCE
— Sérgio Rebelo

12/92 TERM STRUCTURE OF INTEREST RATES IN PORTUGAL
— Armindo Escalda

13/92 AUCTIONING INCENTIVE CONTRACTS: THE COMMON COST CASE
— Fernando Branco

14/92 INDEXED DEBT AND PRODUCTION EFFICIENCY
— António S. Mello, John Parsons

15/92 "TESTING " FOR MEAN AND VARIANCE BREAKS WITH DEPENDENT DATA
— José A. F. Machado

16/92 COINTEGRATION AND DYNAMIC SPECIFICATION
— Carlos Robalo Marques

17/92 FIRM GROWTH DURING INFANCY
— José Mata

18/92 THE DISTRIBUTION OF HOUSEHOLD INCOME AND EXPENDITURE IN PORTUGAL: 1980 and 1990
— Miguel Gouveia, José Tavares

19/92 THE DESIGN OF MULTIDIMENSIONAL AUCTIONS
— Fernando Branco

20/92 MARGINAL INCOME TAX RATES AND ECONOMIC GROWTH IN DEVELOPING COUNTRIES
— Sérgio Rebelo, William Easterly

21/92 THE EFFECT OF DEMAND AND TECHNOLOGICAL CONDITIONS ON THE LIFE EXPECTANCY OF NEW FIRMS
— José Mata, Pedro Portugal

22/92 TRANSITIONAL DYNAMICS AND ECONOMIC GROWTH IN THE NEOCLASSICAL MODEL
— Robert G. King, Sérgio Rebelo

23/92 AN INTEGRATED MODEL OF MULTINATIONAL FLEXIBILITY AND FINANCIAL HEDGING
— António S. Mello, Alexander J. Triantis

24/92 CHOOSING AN AGGREGATE FOR MONETARY POLICY: A COINTEGRATION APPROACH
— Carlos Robalo Marques, Margarida Catalão Lopes

25/92 INVESTMENT: CREDIT CONSTRAINTS, REGULATED INTEREST RATES AND EXPECTATIONS OF FINANCIAL LIBERALIZATION – THE PORTUGUESE EXPERIENCE
— Koleman Strumpf

1/93 SUNK COSTS AND THE DYNAMICS OF ENTRY
— José Mata

2/93 POLICY, TECHNOLOGY ADOPTION AND GROWTH
— William Easterly, Robert King, Ross Levine, Sérgio Rebelo

3/93 OPTIMAL AUCTIONS OF A DIVISIBLE GOOD
— Fernando Branco

4/93 EXCHANGE RATE EXPECTATIONS IN INTERNATIONAL OLIGOLOPY
— Luís Cabral, António S. Mello

5/93 A MODEL OF BRANCHING WITH AN APPLICATION TO PORTUGUESE BANKING
— Luís Cabral, W. Robert Majure

6/93 HOW DOES NEW FIRM SURVIVAL VARY ACROSS INDUSTRIES AND TIME?
— José Mata, Pedro Portugal

7/93 DO NOISE TRADERS “CREATE THEIR OWN SPACE”?
— Ravi Bhushan, David P. Brown, António S. Mello

8/93 MARKET POWER MEASUREMENT – AN APPLICATION TO THE PORTUGUESE CREDIT MARKET
— Margarida Catalão Lopes

9/93 CURRENCY SUBSTITUTABILITY AS A SOURCE OF INFLATION DISCIPLINE
— Pedro Teles

10/93 BUDGET IMPLICATIONS OF MONETARY COORDINATION IN THE EUROPEAN COMMUNITY
— Pedro Teles

11/93 THE DETERMINANTS OF FIRM START-UP SIZE
— José Mata

12/93 FIRM START-UP SIZE: A CONDITIONAL QUANTILE APPROACH
— José Mata, José A. F. Machado

13/93 FISCAL POLICY AND ECONOMIC GROWTH: AN EMPIRICAL INVESTIGATION
— William Easterly, Sérgio Rebelo

14/93 BETA ESTIMATION IN THE PORTUGUESE THIN STOCK MARKET
— Armindo Escalda

15/93 SHOULD CAPITAL INCOME BE TAXED IN THE STEADY STATE?
— Isabel H. Correia

16/93 BUSINESS CYCLES IN A SMALL OPEN ECONOMY
— Isabel H. Correia, João C. Neves, Sérgio Rebelo

17/93 OPTIMAL TAXATION AND CAPITAL MOBILITY
— Isabel H. Correia

18/93 A COMPOSITE COINCIDENT INDICATOR FOR THE PORTUGUESE ECONOMY
— Francisco Craveiro Dias

19/93 PORTUGUESE PRICES BEFORE 1947: INCONSISTENCY BETWEEN THE OBSERVED COST OF LIVING INDEX AND THE GDP PRICE ESTIMATION OF NUNES, MATA AND VALÉRIO (1989)
— Paulo Soares Esteves

20/93 EVOLUTION OF PORTUGUESE EXPORT MARKET SHARES (1981-91)
— Cristina Manteu, Ildeberta Abreu

1/94 PROCUREMENT FAVORITISM AND TECHNOLOGY ADOPTION
— Fernando Branco

2/94 WAGE RIGIDITY AND JOB MISMATCH IN EUROPE: SOME EVIDENCE
— Sílvia Luz, Maximiano Pinheiro

3/94 A CORRECTION OF THE CURRENT CONSUMPTION INDICATOR – AN APPLICATION OF THE INTERVENTION ANALYSIS APPROACH
— Renata Mesquita

4/94 PORTUGUESE GDP AND ITS DEFLATOR BEFORE 1947: A REVISION OF THE DATA PRODUCED BY NUNES, MATA AND VALÉRIO (1989)
— Carlos Robalo Marques, Paulo Soares Esteves

5/94 ECCHANGE RATE RISK IN THE EMS AFTER THE WIDENING OF THE BANDS IN AUGUST 1993
— Joaquim Pires Pina

6/94 FINANCIAL CONSTRAINTS AND FIRM POST-ENTRY PERFORMANCE
— Paulo Brito, António S. Mello

7/94 STRUCTURAL VAR ESTIMATION WITH EXOGENEITY RESTRICTIONS
— Francisco C. Dias, José A. F. Machado, Maximiano R. Pinheiro

8/94 TREASURY BILL AUCTIONS WITH UNINFORMED BIDDERS
— Fernando Branco

9/94 AUCTIONS OF SHARES WITH A SECONDARY MARKET AND TENDER OFFERS
— António S. Mello, John E. Parsons

10/94 MONEY AS AN INTERMEDIATE GOOD AND THE WELFARE COST OF THE INFLATION TAX
— Isabel Correia, Pedro Teles

11/94 THE STABILITY OF PORTUGUESE RISK MEASURES
— Armindo Escalda

1/95 THE SURVIVAL OF NEW PLANTS: START-UP CONDITIONS AND POST-ENTRY EVOLUTION
— José Mata, Pedro Portugal, Paulo Guimarães

2/95 MULTI-OBJECT AUCTIONS: ON THE USE OF COMBINATIONAL BIDS
— Fernando Branco

3/95 AN INDEX OF LEADING INDICATORS FOR THE PORTUGUESE ECONOMY
— Francisco Ferreira Gomes

4/95 IS THE FRIEDMAN RULE OPTIMAL WHEN MONEY IS AN INTERMEDIATE GOOD?
— Isabel Correia, Pedro Teles

5/95 HOW DO NEW FIRM STARTS VARY ACROSS INDUSTRIES AND OVER TIME?
— José Mata

6/95 PROCUREMENT FAVORITISM IN HIGH TECHNOLOGY
— Fernando Branco

7/95 MARKETS, ENTREPRENEURS AND THE SIZE OF NEW FIRMS
— José Mata

1/96 CONVERGENCE ACROSS EU COUNTRIES: INFLATION AND SAVINGS RATES ON PHYSICAL AND HUMAN CAPITAL
— Paulo Soares Esteves

2/96 THE OPTIMAL INFLATION TAX
— Isabel Correia, Pedro Teles

3/96 FISCAL RULES OF INCOME TRANSFORMATION
— Isabel H. Correia

4/96 ON THE EFFICIENCY AND EQUITY TRADE-OFF
— Isabel H. Correia

5/96 DISTRIBUTIONAL EFFECTS OF THE ELIMINATION OF CAPITAL TAXATION
— Isabel H. Correia

6/96 LOCAL DYNAMICS FOR SPHERICAL OPTIMAL CONTROL PROBLEMS
— Paulo Brito

7/96 A MONEY DEMAND FUNCTION FOR PORTUGAL
— João Sousa

8/96 COMPARATIVE EXPORT BEHAVIOUR OF FOREIGN AND DOMESTIC FIRMS IN PORTUGAL
— Sonia Cabral

9/96 PUBLIC CAPITAL ACCUMULATION AND PRIVATE SECTOR PERFORMANCE IN THE U.S.
— Alfredo Marvão Pereira, Rafael Flores de Frutos

10/96 IMPORTED CAPITAL AND DOMESTIC GROWTH: A COMPARISON BETWEEN EAST ASIA AND LATIN AMERICA
— Ling-ling Huang, Alfredo Marvão Pereira

11/96 ON THE EFFECTS OF PUBLIC AND PRIVATE R&D
— Robert B. Archibald, Alfredo Marvão Pereira

12/96 EXPORT GROWTH AND DOMESTIC PERFORMANCE
— Alfredo Marvão Pereira, Zhenhui Xu

13/96 INFRASTRUCTURES AND PRIVATE SECTOR PERFORMANCE IN SPAIN
— Alfredo Marvão Pereira, Oriol Roca Sagales

14/96 PUBLIC INVESTMENT AND PRIVATE SECTOR PERFORMANCE: INTERNATIONAL EVIDENCE
— Alfredo Marvão Pereira, Norman Morin

15/96 COMPETITION POLICY IN PORTUGAL
— Pedro P. Barros, José Mata

16/96 THE IMPACT OF FOREIGN DIRECT INVESTMENT IN THE PORTUGUESE ECONOMY
— Luísa Farinha, José Mata

17/96 THE TERM STRUCTURE OF INTEREST RATES: A COMPARISON OF ALTERNATIVE ESTIMATION METHODS WITH AN APPLICATION TO PORTUGAL
— Nuno Cassola, Jorge Barros Luís

18/96 SHORT-AND LONG-TERM JOBLESSNESS: A SEMI-PARAMETRIC MODEL WITH TIME -VARYING EFFECTS
— Pedro Portugal, John T. Addison

19/96 SOME SPECIFICATION ISSUES IN UNEMPLOYMENT DURATION ANALYSIS
— Pedro Portugal, John T. Addison

20/96 SEQUENTIAL AUCTIONS WITH SYNERGIES: AN EXAMPLE
— Fernando Branco

21/96 HEDGING WINNER'S CURSE WITH MULTIPLE BIDS: EVIDENCE FROM THE PORTUGUESE TREASURY BILL AUCTION
— Michael B. Gordy

22/96 THE BRICKS OF AN EMPIRE 1415-1999: 585 YEARS OF PORTUGUESE EMIGRATION
— Stanley L. Engerman, João César das Neves

1/97 LOCAL DYNAMICS FOR PLANAR OPTIMAL CONTROL PROBLEMS: A COMPLETE CHARACTERIZATION
— Paulo Brito

2/97 INTERNATIONAL PORTFOLIO CHOICE
— Bernardino Adão, Nuno Ribeiro

3/97 UNEMPLOYMENT INSURANCE AND JOBLESSNESS: A DISCRETE DURATION MODEL WITH MULTIPLE DESTINATIONS
— Pedro Portugal, John T. Addison

4/97 THE TREASURY BILL MARKET IN PORTUGAL: INSTITUTIONAL ISSUES AND PROFIT MARGINS OF FINANCIAL INSTITUTIONS
— Bernardino Adão, Jorge Barros Luís

5/97 ECONOMETRIC MODELLING OF THE SHORT-TERM INTEREST RATE: AN APPLICATION TO PORTUGAL
— Nuno Cassola, João Nicolau, João Sousa

6/97 ESTIMATION OF THE NAIRU FOR THE PORTUGUESE ECONOMY
— Carlos Robalo Marques, Susana Botas

7/97 EXTRACTION OF INTEREST RATE DIFFERENTIALS IMPLICIT IN OPTIONS: THE CASE OF SPAIN AND ITALY IN THE EUROPEAN MONETARY UNION
— Bernardino Adão, Jorge Barros Luís

1/98 A COMPARATIVE STUDY OF THE PORTUGUESE AND SPANISH LABOUR MARKETS
— Olympia Bover, Pilar Garcia-Perea, Pedro Portugal

2/98 EARNING FUNCTIONS IN PORTUGAL 1982-1994: EVIDENCE FROM QUANTILE REGRESSIONS
— José A. F. Machado, José Mata

3/98 WHAT HIDES BEHIND AN UNEMPLOYMENT RATE: COMPARING PORTUGUESE AND US UNEMPLOYMENT
— Olivier Blanchard, Pedro Portugal

4/98 UNEMPLOYMENT INSURANCE AND JOBLESSNESS IN PORTUGAL
— Pedro Portugal, John T. Addison

5/98 EMU, EXCHANGE RATE VOLATILITY AND BID-ASK SPREADS
— Nuno Cassola, Carlos Santos

6/98 CONSUMER EXPENDITURE AND COINTEGRATION
— Carlos Robalo Marques, Pedro Duarte Neves

7/98 ON THE TIME-VARYING EFFECTS OF UNEMPLOYMENT INSURANCE ON JOBLESSNESS
— John T. Addison, Pedro Portugal

8/98 JOB SEARCH METHODS AND OUTCOMES
— John T. Addison, Pedro Portugal