THE PORTUGUESE ECONOMY IN THE FIRST HALF OF 1998

1. INTRODUCTION

Economic activity in Portugal grew strongly in the first half of 1998. This dynamism is reflected in the behaviour of economic agents' confidence (chart 1), which exhibited a generalised improvement. Confidence evolved similarly in the European Union (EU) in average terms; together with the most recent activity indicators, this indicator seems to confirm the higher growth perspectives for 1998. Therefore, the Portuguese economy continued to profit from a favourable international macroeconomic background. However, it should be noted that the Asian economic and financial crisis continued to provide a factor of instability, aggravating both the uncertainty regarding the behaviour of the affected economies and the risk of contagion to other economies.

The information available for the Portuguese economy in the first half of 1998 points towards a growth of Gross Domestic Product (GDP) above four per cent. Economic performance is therefore coherent with the appraisal made by the Banco de Portugal in the March *Economic Bulletin*, which indicated a growth rate ranging between 4.0 and 4.5 per cent for 1998 as a whole. The indication of a stronger growth in 1998 than that recorded in 1997 is given by the coincident indicator of the Banco de Portugal. Indeed, in the first quarter of 1998 this indicator accelerated in relation to 1997 as a whole (chart2).

The available data for the first half of the year point towards a high level of activity, with strong growths in the productive sectors of the economy and in most items of demand. The rate of expansion of the economy has since last year exceeded the rate of growth of potential GDP, indicating that the Portuguese economy is in an advanced





stage in the economic cycle. Worth noting, however, that the evolution of potential GDP in forthcoming years is not clear-cut. The strong physical and human capital accumulation in the recent past, alongside the impact of the change in regime linked to the participation in the euro area will trigger a positive effect, though of uncertain size, on the economy's productive potential between 1997 and 2000.

As a result, productive capacity utilisation is already at a quite high level. According to the Employment Survey of the INE, the unemployment rate reached 5.9 per cent in the first quarter of 1998, confirming a further reduction in the unemployment rate. Meanwhile, the rate of productive capacity utilisation in manufacturing industry and in the construction sector continued to increase in the first quarter of the year, reaching high levels. For some production sectors, insufficient equipment and/or difficulty in finding the adequate staff are already seen as limitations to activity.

Economic activity in the first half of 1998 continued to be characterised by a particularly strong growth of domestic demand. The reduction in interest rates continued to be a key factor to explaining the growth differential of Portuguese domestic demand vis-à-vis the average of the eleven countries integrating the euro area on 1 January 1999 (EU-11).

Indicators available point towards a growth of private consumption above that in 1997, compati-

ble with the 3-3.75 per cent forecast interval presented in the March *Economic Bulletin*. This behaviour reflects the acceleration of households' real disposable income, the favourable appraisal of labour market conditions reflected by an increase in households' confidence, and the above referred effects of the fall in interest rates.

Investment grew quite strongly in the first half of the year, which reflects the maintenance of a strong dynamism in investment made by households, companies and the General Government. Nevertheless, this aggregate exhibited a lower growth than in the previous year, due to the slowdown of gross fixed capital formation in construction and transport material - following to extraordinarily high growths in 1997. The effect of the reduction in interest rates on companies and households decisions, the perspectives regarding the behaviour of external and domestic demand, the level of productive capacity utilisation, the favourable behaviour of prices of equipment goods in the international market and the fulfilment of important projects of public infrastructure development continued to sustain the behaviour of investment.

The consolidation of recovery of domestic demand in the European Union, illustrated by the consumers and companies' confidence indicators, contributed to the strong growth of Portuguese exports in the first quarter. Information available from qualitative surveys allow to foresee the continuation of this kind of behaviour in the second quarter of the year. The current dynamism of trade flows of the Portuguese economy, both as regards exports and imports, provides an additional indication that the Portuguese economy is presently in a relatively advanced stage in the economic cycle.

These economic conditions allow for the strengthening of the budgetary consolidation process, as foreseen in the Convergence Programme presented in March 1997.

2. INTERNATIONAL BACKGROUND

The Asian economic and financial crises continued to provide a factor of instability to the international macroeconomic background in the first half of 1998. Recession in Japan and the aggravation of crisis in other economies in the area increased both the uncertainty regarding the perspectives of recovery of the Asian markets and the risk of contagion to other economies.

In the first quarter of 1998, the developments in economic activity in Asia proved worse than expected. Several economies in the region recorded output contractions in the first quarter of the year, and prospects for the following months are not favourable. In Indonesia, political and social instability contributed to the worsening of economic crisis: GDP fell 6.2 per cent in the first quarter of 1998. Economic activity in South Korea fell 3.8 per cent, while GDP in Malaysia fell 1.8 per cent. Activity in Hong Kong decreased 2.0 per cent in the first quarter of 1998. On the contrary, economic activity in other Asian countries continued to exhibit positive growth rates, though lower than in 1997. In China, GDP grew 7.2 per cent in the first three months in this year, while Singapore and Taiwan grew by 5.6 per cent and 5.9 per cent respectively.

The high instability in the financial markets, the harder access to credit and the progressive deterioration of the labour market situation led to a significant reduction in economic agents' confidence, and therefore to a sharp fall in domestic demand in these economies. Imports recorded a significant slowdown, while exports grew less than previously expected. Given the high importance of intra-Asian trade, the reduction of imports in the Asian economies as a whole yielded adverse effects on the behaviour of these countries' exports.

Over the course of the first half of the year, the yen depreciated sharply vis-à-vis the US dollar, in consonance with the increasing divergence between the cyclical positions of these economies. This behaviour of the yen vis-à-vis the US dollar contributed to the deterioration of the competitive positions of the remaining Asian economies. Indeed, concerns on an eventual devaluation of China's currency appeared at this time, which would have led to a new cycle of depreciations in Asia. On 17 June, the FED and the Bank of Japan carried out a joint intervention to invert the yen depreciation vis-à-vis the US dollar, yielding mere temporary effects on the Japanese currency.

The Japanese economy developed quite more unfavourably than previously expected. This economy was technically in recession in the first quarter of 1998. GDP fell 3.7 per cent in this period (-0.4



per cent in the previous quarter), and domestic demand recorded a strong contraction (chart 3). The economic and financial crisis in several Asian countries and the worsening of problems in the Japanese financial sector led to a sharp deterioration of households' and companies' economic confidence, yielding negative consequences in private consumption and investment. The worsening of Japanese financial institutions' problems made companies' access to credit more difficult, and increased the uncertainties about the future developments in the Japanese economy.

Moreover, the most recent data indicate a sharp deterioration of external demand, due to the reduction of imports in the other countries in the area (over 40 per cent of Japanese exports are directed to other Asian countries). In turn, the significant weakening of Japanese domestic demand led to a strong reduction in Japanese imports. As a result, the current account surplus continued to increase in the first half of this year; in this context, worth noting is the trade balance with the United States of America (USA). This current surplus had as a counterpart the sharp increase in Japanese financial investments abroad - specially those denominated in dollars - given the differential between the expected returns of investments in both currencies.

The sharp fall in Japanese production rebounded to the labour market. The unemployment rate rose to 4.1 per cent in May — an extremely high figure for Japanese standards and only slightly below the USA figure this month. The rate of productive capacity utilisation in manufacturing continued to decrease and industrial production fell almost 6 per cent up to May this year. The weakness of the Japanese economy continued to influence price behaviour. In fact, some signs of deflation were recorded. In May, wholesale trade prices fell 1.7 per cent (2.3 per cent decrease if only the domestic market is taken into account), while retail trade prices remained virtually unchanged since April.

Solving the problems of the Japanese banking system is a necessary condition to attain the recovery of the Japanese economy and the strengthening of its domestic demand, which in turn is essential to the improvement of the Asian economic situation. In this context, the Japanese Government announced in April a budgetary package including substantial public expenditure increases and temporary tax reductions, and proposed in early June a set of measures aiming at promoting the amelioration of the Japanese financial sector.

The Asian crisis continued, early in this year, to lead to downward revisions of world growth, but specially of world inflation. Available data for the leading western countries confirm the expected reduction of exports to the Asian economies. The detour of international financial flows to capital markets considered safer and the partial transfer of financial investments from shares to bonds continued to reflect into a greater reduction of long-term interest rates in the USA and Europe. The lower interest rates helped to maintain or increase the dynamism of domestic demand in these areas. Meanwhile, the lower demand for commodities and oil in the Asian countries led to successive price reductions in the international markets of these products, yielding favourable impacts on inflation and on expectations about the future behaviour of prices in the advanced economies.

In the first quarter of this year, economic activity in the USA grew more than expected: GDP grew 3.9 per cent, compared with 3.7 per cent in the last quarter in 1997. The strong dynamism of domestic demand was determinant to this behaviour of economic activity, since the external demand had a more negative contribution to growth (-1.2 percentage points, against -0.8 p.p. in the previous quarter). Private consumption grew 3.7 per cent, in line with the labour market situation and the increase in households' real income. Gross fixed capital formation also grew strongly, due to the long-term interest rate reduction and the increase in companies' profits. Information on the second quarter points towards a slight slowdown of economic activity, due to the reduction of exports to the Asian economies and to some adjustment in the stocks accumulation process.

The high growth in the USA continued to be reflected in the labour market situation. Employment increased again throughout the first half of 1998, while the unemployment rate fell sharply reaching a historic minimum of 4.3 per cent in May. The reduction in unemployment reflected in a stronger growth of wages. However, the inflation rate remained at low levels, partly due to the reduction in commodity and oil prices and to the appreciation of the US dollar. The USA monetary authorities left the official interest rates unchanged in the first half of 1998, but warned banks against some excessive risk exposure in credit granting in the domestic market.

Recent activity indicators and the improvement of the economic agents' confidence levels confirm the expectations of a higher economic growth in the European Union in 1998. In the eleven countries integrating the euro area from 1 January 1999 onwards (EU-11), economic activity grew 3.2 per cent in the first quarter of the year, compared with 3.0 per cent in the previous quarter. The contribution of domestic demand to growth strengthened in most European economies in the first quarter of 1998 (chart 4). Lower interest rate levels and the maintenance of a confidence sentiment in Europe, together with some improvement of the labour market situation in the leading Member States contributed to this acceleration of domestic demand.

Economic activity in Germany grew 3.0 per cent, against 2.3 in the last quarter of 1997. Worth highlighting is the 2.5 percentage points contribution of domestic demand to GDP growth in the first quarter of this year. Private consumption accelerated (1.8 per cent, compared with 0.6 per cent in the previous quarter), reflecting not only an anticipation of expenses due to the increase in indi-



rect taxes in early April, but also some improvement in the labour market situation. Investment in equipment grew steadily (8.4 per cent), reflecting the low level of interest rates and the growth of companies' profits. In France, domestic demand strengthened (as throughout 1997), which was widespread to most of its components. GDP grew 3.5 per cent (3.1 per cent in the previous quarter). The behaviour of gross fixed capital formation and private consumption, in a context of improved expectations about the growth of domestic demand and the strengthening of economic agents' confidence, should be highlighted. Economic activity in Spain continued to exhibit a very high pace of growth in the first months of the year (3.7 per cent), due to the strong dynamism of domestic demand. GDP in Italy recorded a slight slowdown in

relation to the previous quarter (2.5 per cent growth), as a result of the more negative contribution of external demand.

In the first months of 1998, inflation continued to behave favourably in the EU-11 as a whole, though retail prices accelerated slightly in some countries — e.g. in the Netherlands and Ireland. In May, inflation in the EU-11, measured by the harmonised index of consumer prices, was 1.4 per cent, as in the previous month.

3. DEMAND

According to the available information, the Portuguese economy recorded a growth above four per cent in the first half of 1998. Given the data available, economic developments in this period



Source: INE, "Monthly Trade Survey".

DOMESTIC DEMAND DIRECTED TO THE CONSUMER GOODS INDUSTRY



are in general in conformity with the projections disclosed in the March *Economic Bulletin* for the year as a whole. The increase in domestic demand continued to reflect the general optimism sentiment among economic agents and the reduction in interest rates (see box *Interest rates and Inflation*) (chart 1). In turn, foreign trade flows also suggest that the Portuguese economy is in a more advanced stage in the economic cycle than our leading trade partners.

Short-term indicators available suggest that the pace of growth of private consumption in the first half of 1998 stood above that recorded in 1997 as a whole, in line with the March *Economic Bulletin*

forecast (growth between 3.0 and 3.75 per cent). The coincident indicator of private consumption, which synthesises qualitative information on this aggregate, presented in the first quarter of 1998 a rate of growth above that recorded in 1997 as a whole. The Monthly Trade Survey presented, for the January to May period, an increase in the balance of respondents regarding turnover and past activity appraisal in the retail trade segment (chart 5). Also the industrials of consumer goods' appraisal of the level of domestic demand improved again in the period.

Qualitative information points clearly towards a particularly strong growth of durable goods consumption — another distinctive element of the relatively advanced stage in the current economic cycle. This behaviour is explained by the maintenance of a strong growth of household's disposable income and the reduction of interest rates, which contributed to improve the financing conditions of these goods and to a lower incidence of liquidity constrainsts. The acceleration of expenditure in furniture - inferred from the improvement in the respective retailers' opinion — related to the sharp growth of households' investment in housing is worth noting. Purchases of passenger vehicles also grew at a high pace, measuring by the increase in the number of licences issued by the Direcção-Geral de Viação (8.7 per cent in the first half of 1998, against 7.3 per cent in 1997 as a whole). Worth noting that expenditure in new passenger vehicles recovered strongly (13.3 per cent growth up to June 1998, compared with a 2.2 per cent fall in 1997 as a whole).

In the first quarter of the year, industrial production of consumer goods grew 2.0 per cent (0.8 per cent in 1997 as a whole). Meanwhile, imports of consumer goods grew 19.9 per cent in value terms in the same period, which gives an additional indication of the strong growth of that macroeconomic aggregate (table 1).

The growth of private consumption is explained by the behaviour of households' real disposable income, by the reduction in interest rates and by the improvement in confidence. Employment gains — specially as regards wage-earners — and real wage increases supported the growth of households' disposable income. Meanwhile, the trend of reduction in interest rates proceeded, in-

INTEREST RATES AND INFLATION

Since late 1995 onwards credit to non-financial companies and individuals⁽¹⁾ has recorded a particularly strong growth (see table 1). This behaviour of credit granted to individuals and non-financial companies was followed by a lower growth of General Government debt.

Table 1

CREDIT TO NON-FINANCIAL COMPANIES AND INDIVIDUALS Year-on-year rates of change

		Companies	5		Individuals			
	Bank credit	Commercial paper	Total	Credit to housing	Credit to other purposes	Total		
1995								
December	4.0	17.3	4.8	25.8	38.1	28.6		
1996								
March	3.2	10.8	3.6	24.5	32.7	26.4		
June	4.1	19.3	5.0	24.2	27.2	24.9		
September	7.0	21.5	7.9	24.3	24.2	24.3		
December	6.6	17.0	7.3	26.4	22.8	25.5		
1997								
March	12.1	19.2	12.6	26.2	24.8	25.9		
June	15.8	24.3	16.4	26.2	25.6	26.0		
September	19.9	15.3	19.5	26.8	22.4	25.7		
December	21.8	-2.9	20.1	26.3	29.6	27.1		
1998								
March	20.8	5.5	19.8	27.4	24.1	26.6		

The increase in individuals and non-financial companies' indebtedness took place simultaneously to a set of phenomena — for instance, the increase in competitiveness in the banking system, the liberalisation and deregulation of specific kinds of credit, the reduction of taxation on credit to consumption and the reduction in interest rates.

Table 2

INTEREST RATE

	LISBOR interest rate end-of-month values			Rates on 10-year	Loan advances-	Average inflation	
_	O/N	1 month	1 year	 public debt bonds 	2 to 5 years	Over 5 years	rate
December	8.0	8.9	8.9	9.4	16.8	12.1	4.0
996							
March	7.0	7.8	7.8	9.5	16.3	11.8	3.6
June	7.0	7.4	7.3	8.9	15.5	11.4	3.3
September	7.3	7.2	7.0	8.3	15.3	11.1	3.3
December	6.7	6.7	6.0	7.0	14.6	11.0	3.1
997							
March	6.3	6.3	6.2	6.9	14.7	10.4	3.2
June	6.0	6.0	5.5	6.4	11.9	9.7	2.9
September	5.5	5.4	5.0	6.1	13.5	9.2	2.4
December	5.3	5.2	4.8	5.7	13.5	8.0	2.2
998							
March	4.7	4.6	4.1	5.3	11.6	7.4	2.1

(1) Does not include the insurance of bonds.

Throughout the same period, also worth noting that nominal interest rates fell in all maturities (table 2). The 1-month Lisbor rates and the rate of return of public debt bonds decreased 3.7 percentage points between December 1995 and December 1997, while the rate on loans to individuals over 5 years fell 4.1 percentage points. The generalised fall in nominal interest rates is partly explained by the reduction of the inflation rate in the period, but also by the reduction in real interest rates linked to the fall in the risk premium.

The reduction in both nominal and real interest rates affects economic agents' decisions — whether consumers, investors or public authorities.

The recent behaviour of inflation, to the extent that determined the fall in nominal interest rates, yields real effects on consumption, public expenditure and investment. The most important of these effects consists of the attenuation of liquidity constraints.

Take as a first example households' indebtedness. The entity granting credit limits in general debt service to a given share of household's income. Therefore, when the nominal interest rate decreases, their indebtedness capacity increases, inducing to more consumption and housing investment expenses.

Regarding public administrations, the lowering of the inflation rate determines the reduction in interest expenditure, which in turn allows for administrations to accommodate an increase in primary debt — without affecting public deficit.

In what concerns to the behaviour of companies, inflation creates a relative disincentive to long-term investments. Liquidity constraints emerge whenever interest expenditure flows exceed the income of profits raised from investment. This situation is particularly relevant when the life span of investments to be financed is high, since it becomes harder to match the maturity of financing with the maturity of the investment.

In addition to the liquidity effects, the reduction in inflation also may trigger real effects through the interactions with the tax system, and through the reduction of uncertainty regarding information transmitted via the price mechanism.

ducing an expansion of households' consumption and investment decisions (*see box*). Finally, expectations of real wage gains and of easier job creation translated into improvements in consumers' confidence.

Investment recorded also a significant growth in the first half of 1998. Nevertheless, this aggregate exhibited a slower growth than in the previous year. The slowdown of gross fixed capital formation in construction and in transport material was expected already, following particularly high growths recorded in 1997 (see the March 1998 *Economic Bulletin*).

In the first half of 1998, investment in construction recorded a more moderate growth than in the previous year as a whole, according to relatively contemporary demand indicators. Cement sales grew 5.1 per cent in the January to May period (11.9 per cent in 1997 as a whole). The Construction and Public Works Monthly Survey indicates a slight improvement of activity appraisal in the same period, specially in the building sub-sector. In the public works sub-sector, the balance of respondents on activity recorded a less expressive appreciation (chart 6). Note that the order book of the sector as a whole remains at high levels, since the reduction in the public works sub-sector was



Table 1

DEMAND INDICATORS

		1996	1997	1998 ^(a)	Last		1	1997			
	-				month	1 st Q	$2^{nd}Q$	$3^{rd}Q$	$4^{th}Q$	1 st Q	$2^{nd}Q$
Private consumption											
Industrial production index - consumer goods ^(b)	v.r.c.	1.7	0.8	2.0	Mar	1.1	1.8	1.1	-1.0	2.0	
Licenses of light passenger vehicles	y.r.c	17.4	7.3	8.7	Jun	6.4	8.7	7.4	6.4	6.3	11.0
Investment											
Cement sales	y.r.c	6.6	11.9	5.1	May	22.6	16.8	9.4	0.9	10.0	
Constructed works	y.r.c	31.3	26.1	-23.5	May	73.4	61.6	-10.7	1.2	-16.7	
Industrial production index - equipment											
goods excluding transport material $^{(b)}$	y.r.c	7.5	5.0	10.9	Feb	6.9	5.1	6.7	2.0		
Imports of equipment goods exluding											
transport material ^(c)	a.r.c.	12.2	14.5	13.8	Mar						
Exports of equipment goods excluding transport material ^(c)	a.r.c.	2.6	16.1	17.9	Mar						
Sales of light commercial vehicles	y.r.c	27.1	20.9	8.6	Jun	28.3	25.6	19.6	12.8	14.7	2.4
Sales of heavy commercial vehicles	y.r.c	4.4	32.0	18.2	Jun	14.7	41.0	44.5	28.8	26.6	11.8
Foreign Trade ^(c)											
Exports - total	a.r.c.	8.4	10.3	11.9	Mar						
Exports of consumer goods	a.r.c.	6.2	8.9	9.9	Mar						
Exports of equipment goods	a.r.c.	33.7	10.5	16.6	Mar						
Exports of intermediate goods	a.r.c.	-2.1	12.4	15.3	Mar						
Exports of fuel	a.r.c.	-23.5	8.9	-39.7	Mar						
Imports - total	a.r.c.	7.9	11.6	13.3	Mar						
Imports of consumer goods	a.r.c.	8.7	10.8	19.9	Mar						
Imports of equipment goods	a.r.c.	14.9	10.3	13.2	Mar						
Imports of intermediate goods	a.r.c.	3.0	12.7	17.1	Mar						
Imports of fuel	a.r.c.	1.2	15.5	-15.8	Mar						

Source:INE, Direcção-Geral de Viação, ACAP, Cimpor, Secil and ANEOP.

y.r.c. = Year-on-year rate of change.

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

(a) Values accumulated up to the last month available.

(b) The rates of change of the industrial production index are calculated on comparable versions of these indexes.

(c) The rates of change of exports and imports are calculated by comparing preliminary figures of the current year with equally preliminary figures for the same period in the previous year. An exception is made for 1996 — for which definite figures were used.

compensated by an increase in the order book of housing builders.

The interest rate reduction and the households' disposable income real increase continued to be the major factors behind the strength of investment in the housing building segment. On the other hand, the slowdown in the public works sector reflects the fall in the value of contracted works in the second half of 1997 and in the first half of 1998, when compared to the extremely high levels in the same period one year before, which were related to particularly large projects. Nevertheless, it

should be noted that this sub-sector continues to exhibit a quite intense level of activity.

As expected, investment in transport material recorded a slowdown in the first half of 1998, due to high levels recorded in the previous year. This slowdown reflects the behaviour of sales of both light commercial vehicles and heavy commercial vehicles (table 1), which nevertheless grew quite expressively.

Investment in equipment excluding transport material grew strongly in the first half of 1998, as recorded since 1995. According to the Monthly Manu-



Source: INE, "Monthly Manufacturing Industry Survey".

TURNOVER IN WHOLESALE TRADE OF MACHINES AND MATERIAL FOR INDUSTRY, TRADE AND AGRICULTURE



facturing Industry Survey the behaviour of this aggregate continued to be determined by highly positive expectations regarding the behaviour of both domestic and external demand, which resulted in a further increase in the rate of productive capacity utilisation in industry⁽¹⁾. In this context, the improvement of companies' financial situation and the reduction in their liquidity constraints — resulting from the fall in the interest rates which are relevant to their financing — continued to account for a favourable background for companies to carry out new investment projects (*see box*).



Qualitative information available points in this direction as well. According to the entrepreneurs in this sub-sector, domestic demand directed towards the industries producing this category of goods behaved favourably in this period, when compared to 1997 as a whole (chart 7). This appraisal is shared by the entrepreneurs in the industrial goods wholesale trade sector — specially in the machines and material for agriculture, industry and trade sub-sector. Production in the equipment goods industry excluding transport material accelerated in the first two months of 1998, while imports of goods in this economic category continued to grow strongly in nominal terms (table 1).

Merchandise exports exhibited a particularly strong growth in the first quarter of the year (11.9 per cent in nominal terms), above that recorded in the previous year as a whole. This development is consistent with industrials' appraisal of external demand for Portuguese manufactured products, which has tended to improve after receding slightly in the last quarter of 1997 (chart 8). Also worth noting is that demand in Germany, France

⁽¹⁾ Note that the percentage of companies indicating capacity surplus decreased again, from 21 per cent in April 1997 to 14 per cent in April 1998. Meanwhile, the proportion of companies indicating equipment shortage as an important obstacle to production continued to increase.

Table 2

SUPPLY INDICATORS

		1996	1997	1998 ^(a)	Last	1997			1998	
	-				month	$1^{st}Q$	$2^{nd}Q$	$3^{rd}Q$	$4^{th}Q$	1 st Q
Industry										
Industrial production index ^(b)										
Manufacturing industry	y.r.c.	1.6	4.4	5.9	Mar	3.8	5.1	5.2	3.6	5.9
Consumer goods industry	y.r.c.	1.7	0.8	2.0	Mar	1.1	1.8	1.1	-1.0	2.0
Investment goods industry	y.r.c.	10.1	5.1	11.8	Mar	5.9	4.1	3.4	6.6	11.8
Intermediate goods industry	y.r.c.	0.0	6.7	7.3	Mar	5.2	7.4	8.5	6.0	7.3
Turnover index										
Manufacturing industry	y.r.c.	6.1	5.9	12.0	Mar	1.2	6.7	7.2	8.2	12.0
Consumer goods industry	y.r.c.	6.0	2.8	11.7	Mar	-1.5	3.6	3.9	5.2	11.7
Investment goods industry	y.r.c.	27.3	8.1	19.7	Mar	-2.3	4.6	9.1	20.3	19.7
Intermediate goods industry	y.r.c.	1.4	6.6	9.6	Mar	3.2	10.2	6.6	6.5	9.6
Rate of production (capacity utilisation)										
Manufacturing industry	%	79	81	83	$1^{st}Q$	80	80	82	81	83
Consumer goods industry	%	78	79	80	$1^{st}Q$	77	79	81	78	80
Investment goods industry.					· ·					
except transport equipment	%	83	84	85	$1^{st}Q$	84	81	86	85	85
Intermediate goods industry	%	81	81	84	$1^{st}Q$	80	81	83	82	84
Construction										
Rate of productive capacity utilisation ^(c)	%	71	79	82	$1^{st}Q$	77	82	81	77	82

Source: INE.

y.r.c.= Year-on-year rate of change.

(a) Values accumulated up to the last month available.

(b) The rate of change of the industrial production index are calculated on comparable versions of these indices.

(c) New series since 1997.

and Spain accelerated again in the first quarter of 1998, and hence their imports. Recall that these countries as a whole absorb around 50 per cent of total Portuguese exports (chart 4).

The strong dynamism of overall demand led to an extremely intense growth of merchandise imports, reaching 13.3 per cent in the first quarter. As referred above, consumer and equipment good imports grew quite strongly — in consonance with the behaviour of the respective components of demand — as well as intermediate goods — in line with the acceleration of activity in industry.

4. SUPPLY

The available indicators point towards a high level of activity in the industry, construction and service sectors in the first half of 1998. In the first quarter, activity in these sectors as a whole recorded a growth above that exhibited throughout 1997, according to the coincident indicator of the Banco de Portugal (chart 2).

Industrial production grew strongly in the first half of the year; according to the quantitative indicators available up to March and the qualitative indicators for the period up to May, production shall have recorded a stronger growth than in the previous year as a whole. The Industrial Production Index (IPI) in manufacturing industry grew 5.9 per cent in the first quarter of 1998 (4.4 per cent in 1997 as a whole). According to the IPI, production acceleration was widespread to most industries. The increase in the level of activity was particularly strong in the intermediate goods and investment goods industries. Industrial production of consumer goods recorded a less expressive growth, though clearly accelerating in relation to late 1997. Accordingly, the Industrial Turnover Index presents a quite significant increase in the first three months of the year (table 2).

Advanced qualitative information indicates that activity in manufacturing industry remained at high levels in the second quarter of 1998 (chart 9). According to the Monthly Manufacturing In-



dustry Survey, this development results from the behaviour of both domestic and external demand. An illustration of the extremely favourable appraisal industrials make of the sector's situation is provided by the increase in the percentage of companies indicating no limitation to current activity⁽²⁾, as well as the reduction in the proportion of companies indicating insufficient demand as a limiting factor ⁽³⁾.

The high level of activity was reflected in the level of productive factor utilisation. In the first quarter of 1998, the rate of productive capacity utilisation in the manufacturing industry as a whole rose 3 percentage points (p.p.) from the same period in 1997, and 6 p.p. in relation to the first quarter of 1996. The increase in productive capacity utilisation was widespread to most industries (table 2)⁽⁴⁾.

- (3) The percentage of companies considering insufficient demand as an obstacle, among those indicating obstacles to activity, fell from 72 per cent in April 1996 to 50 per cent in April 1998.
- (4) Note that the share of companies having difficulties in hiring skilled staff in those indicating limitations to activity rose from 7 per cent in April 1996 to 16 per cent in April 1998. Regarding equipment shortage, about 25 per cent of companies indicate this as an obstacle to activity in April 1998, compared with 7 per cent in the same period in 1996.



Activity in construction recorded a slowdown in the first half of the year, due to the behaviour of the public works sub-sector, while activity in the building sub-sector continued to grow strongly. Nevertheless, activity in the sector as a whole remained at high levels — as suggests the order book appraisal (chart 10) — which is reflected by a very intense productive capacity utilisation. Productive capacity utilisation reached 82 per cent in the first quarter of 1998 (77 per cent in the same period of 1997). The Construction and Public Works Monthly Survey also indicates that a high share of companies continues to consider the difficulty in hiring skilled staff as a key limitation to activity⁽⁵⁾.

Information concerning to the services sector is scarcer. Activity in the trade sub-sector continued to behave favourably over the course of the first half of 1998, according to the available qualitative data. Entrepreneurs' appraisal of activity in this period stood above the levels recorded in any of the half-years in 1997, both as regards retail and wholesale trade (chart 11). In addition, the behav-

⁽²⁾ This percentage rose to 58 per cent in April 1998, compared with 51 and 47 per cent in the same period in 1997 and 1996, respectively.

⁽⁵⁾ In May 1998, around 68 per cent of construction and public works companies surveyed referred obstacles to activity. Among these, 41 per cent mentioned the difficulty in hiring skilled staff as one of those obstacles.



iour of the balance of respondents on the projection of activity and the order book perspectives allow to foresee the maintenance of a strong growth of activity up to the end of the year.

Analysing the existence of limitations to activity in the trade sector, one can observe not only that the proportion of companies referring the existence of this kind of factors decreased⁽⁶⁾, but also that the percentage of companies considering demand insufficiency as a limiting factor fell sharply ⁽⁷⁾. On the contrary, the share of companies indicating the difficulty in hiring skilled staff as a limiting factor increased, specially in wholesale trade ⁽⁸⁾. These data also suggest that activity in the sector is at a high level.

Alongside the favourable behaviour of activity in trade, other services shall have recorded a significant growth in the first half of 1998. The Lisbon International Exhibition shall have contributed, already in the first half of 1998, to a significant growth of activity in the restaurants and hotels sector and in the transports sector. Likewise, the available indicators point towards the maintenance of a high level of activity in the communications, banking and insurance sub-sectors.

5. LABOUR MARKET

The behaviour of employment, unemployment and of the participation rate in Portugal indicates a strong sensitivity to the cyclical changes in economic activity. Indeed, a wide econometric evidence indicates that the unemployment rate reacts fair predictably and with a lag to changes in output, represented by a considerably stable Okun Relation.

The growth of the Portuguese economy above the potential rate of growth since 1996 was reflected naturally in the behaviour of employment, unemployment and the participation rate. As a result, total employment has recorded successive increases from the first quarter of 1996 onwards, while wage-earners have grown since the first quarter of 1997. The participation rate increased in 1996 and in 1997. The number of unemployed workers has fallen since the fourth quarter of 1996, while the unemployment rate has exhibited a downward trend from the first half of 1996 onwards.

According to the Employment Survey of the Instituto Nacional de Estatística (INE), the unem-

⁽⁶⁾ Between the April 1996 and the April 1998 surveys, the percentage of companies indicating limitations to activity decrease in both wholesale trade (from 42 to 38 per cent) and retail trade (from 56 to 48 per cent).

⁽⁷⁾ Among those companies referring the existence of limiting factors, references to the shortage of demand decreased between April 1996 and April 1998, both in wholesale trade (from 80 to 50 per cent) and retail trade (from 74 to 62 per cent).

⁽⁸⁾ Among the companies in the trade sector referring limitations to activity, the percentage of those indicating difficulties in hiring the adequate staff rose between April 1996 and April 1998, specially in the wholesale trade sub-sector (from 3 to 13 per cent), but also in retail trade (from 7 to 10 per cent).

ployment rate was of 5.9 per cent in the first quarter of 1998^{(9).} This development confirms the trend of reduction of the unemployment rate. Therefore, the behaviour of the Portuguese economy proves compatible with the convergence towards the natural rate of unemployment.

However, the current labour market situation in most sectors is not characterised by a significant difficulty in hiring workers. The construction sector is the leading exception, where the shortage of skilled staff is the major limitation to activity. However, it should be noted again that in line with the gradual process of unemployment rate reduction and the convergence towards its natural rate, the proportion of companies in manufacturing and in wholesale trade, but also retail trade -though to a lesser extent - indicating the difficulty in finding the adequate skilled staff as a limitation to activity has increased. The intensification of this kind of situation may lead to excessive wage pressures, which in turn could jeopardise the sustainability of unemployment reduction.

The wage growth implicit in collective agreements for the private sector was of 3.1 per cent in the January to May period (3.5 per cent in 1997 as a whole). In sectoral terms, services recorded a growth rate above that in industry, by about 0.1-0.2 percentage points.

As in 1996 and 1997, the growth of compensation per employee including social contributions has stood above wage changes implicit in collective agreements (by about 1.1 p.p. in 1997 in the private sector). In fact, in this stage of the economic cycle the variable compensation elements and extra-wage benefits are expected to account for a higher percentage of total earnings, which may lead to a wider differential than in the two previous years.

6. CURRENT ACCOUNT

In the first quarter of 1998, the current account deficit increased PTE 44.9 billion in relation to the same period of the previous year, amounting to PTE 179.2 billion, according to the provisional available information on a transaction basis. This increase is chiefly explained by the worsening of the trade deficit, in line with the cyclical position of the economy (table 3). The services balance posted a deficit — which contrasts with the surplus recorded in the first quarter of the previous year — while the income balance and unrequited transfers contributed to a reduction in the current account deficit in this period.

The trade deficit increased PTE 67 billion in the first three months of the year, due to the strong nominal growth of imports, above that of exports in the period. Regarding services, the travel and tourism surplus decreased, as a result of the strong growth of residents' expenses abroad. Meanwhile, the transports deficit widened, reflecting an increase in settlements linked to the acceleration of merchandise imports.

In the same period, the income account deficit fell from PTE 24.1 billion to PTE 6.3 billion. The capital income account rendered a surplus, which contrasts with the deficit recorded in the same period of 1997. This development was mostly due to the increase in portfolio investment income received. In the first quarter of 1998, unrequited transfers rose PTE 13.1 billion in relation to the same period in the previous year, reaching PTE 281.4 billion due to the growth of both private and public transfers.

7. PUBLIC FINANCE

According to the data available up to the end of the first half-year the General Government (GG) deficit to GDP ratio is expected to continue to decrease in 1998. This projection had already been advanced by the European Commission in its Spring economic forecasts, disclosed in April. The Commission estimates a public deficit in Portugal in 1998 of 2.2 per cent of GDP, 0.3 percentage points below the figure implicit in the 1998 State Budget Law (OE-98).

⁽⁹⁾ In the first quarter of 1998, the INE started to publish a new series for the Employment Survey, comprising some methodological changes to the previous released series. The new series begins in the third quarter of 1997. The overlap period covers the second half of 1997. According to the new methodology, the rate of unemployment stands 0.05 p.p. below that yielded by the previous methodology.

Table 3

CURRENT ACCOUNT

On a transactions basis

		1997			1998			
-		1st quarte	r		1st quarter			
-	Debit	Credit	Balance	Debit	Credit	Balance		
Current account	1935.9	1801.6	-134.3	2181.8	2002.6	-179.2		
Goods and services	1664.5	1286.0	-378.5	1890.4	1436.1	-454.3		
Merchandise f.o.b.	1412.0	1032.1	-379.9	1603	1156.1	-446.9		
Services	252.5	253.9	1.4	287.5	280.0	-7.4		
Transports	68.4	50.6	-17.8	76.5	52.1	-24.4		
Travels and tourism	76.2	135.2	58.9	99.3	147.5	48.2		
Insurance	16.1	4.1	-11.9	17.1	10.2	-6.9		
Other services	80.6	61.2	-19.4	80.3	66.1	-14.2		
Government operations	11.3	2.9	-8.4	14.3	4.1	-10.2		
Income	188.1	164.0	-24.1	185.9	179.6	-6.3		
From labour	3.8	5.9	2.1	5.3	5.2	-0.1		
From capital	170.4	157.2	-13.2	165.9	173.2	7.3		
Other income	13.9	0.9	-13.0	14.7	1.2	-13.5		
Unrequited transfers	83.2	351.6	268.4	105.5	386.9	281.4		
Public	71.7	212.2	140.6	92.8	238.8	146.0		
Private	11.5	139.4	127.8	12.7	148.1	135.4		

The revision of the estimate for the GG deficit in 1998 is basically due to the stronger economic growth than that implicit in the macroeconomic scenery of the OE-98, which affects significantly tax revenue — from both direct and indirect taxation.

Table 4 presents the rates of execution of the State's tax revenue in the January to May period in

	1997				1998			growth
	Jan-May (1)	Exec. (2)	(1)/(2)*100 (3)	Jan-May (4)	OE-98 (5)	(4)/(5)*100 (6)	Jan-May	OE98 Exec.97
Tax revenue	1630.4	4000.3	40.8	1821.4	4269.8	42.7	11.7	6.7
Income taxes	667.5	1683.5	39.6	765.3	1833.7	41.7	14.7	8.9
of which:								
IRS (Personal income tax)	406.4	1048.7	38.8	464.5	1139.9	40.7	14.3	8.7
IRC (Corporate income tax) .	252.5	621.8	40.6	294.8	678.2	43.5	16.8	9.1
Indirect taxes	962.9	2316.8	41.6	1056.1	2436.1	43.4	9.7	5.1
of which:								
IVA (VAT)	541.1	1285.0	42.1	605.5	1353.9	44.7	11.9	5.4
ISP (Tax on oil products)	178.2	446.7	39.9	194.8	459.8	42.4	9.3	2.9
IA (Vehicles tax)	71.0	167.4	42.4	81.3	177.9	45.7	14.5	6.3

Table 4

STATE TAX REVENUE

Note: OE-98 (1998 State Budget Law).

1997 and 1998, and compares the observed rates of growth with those implicit in the OE-98. The rate of growth of the State's tax revenue as a whole in the first five months of the year exceeds that implicit in the budgetary forecasts for the year as a whole by 5 percentage points. Even if adjusted for the effect of changes in the term structure of revenue — specially as regards income taxes — we

may foresee that the State's tax revenue shall surpass the budgeted figures. This situation enables the strengthening of the budgetary consolidation process as foreseen in the Convergence Programme presented in March last year.

Written with the information available up to 6 July 1998.

MONETARY AND EXCHANGE RATE SITUATION IN THE FIRST HALF OF 1998

1. DEVELOPMENTS IN THE MAIN INTERNATIONAL FINANCIAL MARKETS

The behaviour of the main financial markets in the first half of 1998 was conditioned by the uncertainty linked to the Asian economic and financial crisis, and specially to the worsening of the Japanese situation, having the yen recorded a general weakening in the period. International exchange rate and monetary developments were also strongly influenced by the developments in the European monetary unification process, which culminated in the decisions made in early May.

Following the Asian crisis, started in mid-1997, output contracted in the first quarter of 1998, above expectations, in several countries in the area. Signs of recession in Japan accumulated, while GDP recorded a negative growth rate for the second quarter around. The Asian economies continued to exhibit a great weakness in the second quarter of 1998, while the uncertainty about the development of the economic and financial situation persisted. In Indonesia, economic conditions were aggravated by the political and social crisis.

In the first half of 1998, the currencies of several Asian countries remained at levels vis-à-vis the US dollar clearly below those recorded before the crisis (chart 1). Worth noting is the Indonesian rupee, which recorded a further weakening in this period. In late June, stock indices presented in several countries levels below those recorded in late 1997 (chart 2).

In the first half of the year, the contagion effects of the crisis in the Asian countries were felt again in the world economy. In Russia, where the exchange rate regime is based on a peg to the US dollar, these effects worsened the domestic financial situation, deteriorating national and interna-



tional investors' confidence. Between December 1997 and June 1998, the Russian stock exchange index fell by around 50 per cent (chart 3).

As expected, the Asian crisis led to the downward revision of economic growth and inflation



Source: Bloomberg and Datastream.

Chart 3 STOCK INDICES OF RUSSIA, HUNGARY, POLAND, BRAZIL, MEXICO AND ARGENTINA





forecasts for 1998 in the leading advanced countries (chart 4)^{(1).} The downward revision of expected growth was particularly substantial in the Japanese case. However, estimates continue to indicate an acceleration of activity in the European Union (EU) in 1998, but not in the USA — where a slowdown is expected.

In the first half of 1998, international commodity prices — specially oil — fell again, partly reflecting the situation in Asia, contributing to improve expectations about inflation (chart 5).

(1) See "The Portuguese economy – developments in 1997 and prospects for 1998", in the March 1998 *Economic Bulletin*.





From January to May 1998, inflation in the EU, measured by the year-on-year rate of change of the harmonised index of consumer prices (HICP), stayed at low levels in most countries. In May, inflation in the EU stood at 1.6 per cent, the same as in late 1997 (chart 6). In the USA, the year-on-year consumer prices rate of change was 1.7 per cent in May, the same figure as in December 1997.

The main international capital markets exhibited strong increases in their indexes in the first half of 1998, partly reflecting the lower inflationary pressures — which changed the monetary conditions perspectives. Advanced Western countries, which exhibit lower risk premia, also benefited from the capital outflows in the Asian countries, as in the second half of 1997.

In the context of the European monetary unification, progresses achieved in the convergence process (chart 7), consistent with the fulfilment of the necessary conditions to the adoption of the single currency, were reflected in the decisions made in May 1998.

On 2 May, the European Union Council meeting in the composition of the Heads of State or Government decided, on a recommendation from the European Commission, that 11 Member States

Source: Eurostat.



fulfilled the required conditions for the adoption of the single currency on 1 January 1999. The countries participating in the Third Stage of EMU are: Belgium, Germany, Spain, France, Ireland, Italy, Luxembourg, The Netherlands, Austria, Portugal and Finland (EU-11). On the same date, the Council made a recommendation regarding the composition of the Executive Board of the European Central Bank (ECB).

On 3 May, Finance Ministers and Governors of Central Banks of the Member States adopting the euro, together with the European Commission (EC) and the European Monetary Institute (EMI) agreed that the Exchange Rate Mechanism of the European Monetary System (ERM-EMS) current bilateral central rates will be used in calculating the official ECU exchange rate on 31 December 1998. The latter will determine the euro irrevocable conversion rates for the participating countries^{(2).} The bilateral conversion rates announcement aims to stabilise expectations in the foreign exchange markets, and to eliminate uncertainty about the exchange rate levels that national authorities will ensure at the end of 1998.

The European System of Central Banks (ESCB), comprising the ECB and the national central banks of the fifteen EC Member States, was officially es-



tablished on 1 June. The full exercise of its powers is to start on 1 January 1999, date after which monetary policy in the euro area shall be defined by the ECB Council, taking the maintenance of price stability as its main attribution.

1.1 US dollar, Deutsche mark and yen markets

The first half of 1998 was characterised by a sharp weakening of the yen. This currency exhibited a strong volatility vis-à-vis the dollar, depreciating about 8 per cent both in average terms⁽³⁾ and in end-of-period terms⁽⁴⁾ (charts 8 and 9).

However, early in the year, the yen appreciated temporarily vis-à-vis the dollar, influenced by expectations of economic stimulus measures adopted by the Japanese authorities^{(5),} and by the capital

⁽²⁾ See box "Bilateral rates of conversion in the euro area", in Chapter VI of the 1997 *Annual Report*.

⁽³⁾ Average changes use the average values for the second half of 1997 and the first half of 1998, calculated from the indicative official exchange rates of the Banco de Portugal.

⁽⁴⁾ End-of-period changes use the average values for December 1997 and June 1998, calculated from the indicative official rates of the Banco de Portugal.

⁽⁵⁾ In April, the Japanese Government announced a budgetary package comprising massive public expenditure and temporary tax cuts. The Government decided also to postpone for two years (to year 2005/06) the deadline for the reduction of public deficit to three per cent of GDP.

inflows in Japan due to the end of the 1997/98 fiscal year.

Since February, the Japanese currency depreciated substantially vis-à-vis the US dollar, mostly reflecting the increasing economic activity divergence between these countries, alongside the seriousness of the problems affecting the Japanese financial system. While GDP in Japan fell in the last quarter of 1997 and in the first quarter of 1998 (0.4 and 3.7 per cent in year-on-year terms, respectively), the USA continued to grow strongly (3.7 per cent in both quarters). In the second quarter of 1998 the Japanese economy showed new signs of weakness, while the available information for the USA continues to indicate the maintenance of a strong economic activity.

Note that in April the Japanese Central Bank intervened in the foreign exchange market, allowing for a temporary recovery of the yen. On 17 June, the central bank intervened again, this time collectively with the Fed.

The yen weakness was reflected in a 7.1 per cent depreciation of its nominal effective exchange rate in average terms. In end-of-period terms, the yen depreciated 6.9 per cent.

The behaviour of the dollar vis-à-vis the Deutsche mark in the first half of 1998 differed from that vis-à-vis the yen. Between December 1997 and June 1998, the dollar appreciated 0.8 per cent (1.4 per cent in average terms), and its volatility decreased in relation to the previous half-year (charts 8 and 9).

In early 1998, the dollar appreciated slightly vis-à-vis the Deutsche mark, due to the fear that the recovery of German economy was not being as sustainable as previously expected. The strong contribution of external demand to economic growth in Germany rose fears regarding a greater vulnerability of the economy to external shocks, in a context of a weak private consumption.

Up to April, the dollar was traded in a progressively narrow interval. On this date, the dollar started to depreciate vis-à-vis the Deutsche mark. When the trend of recovery of German investment became more evident and the economy started to present signs of improved dynamism, the Deutsche mark appreciated up to late May. European currencies presented a similar pattern.



The strengthening of market expectations about the creation of the euro, following the disclosure of the EC and EMI convergence reports in late March — where 11 countries were considered to fulfil the necessary conditions to the adoption of the single currency — may have contributed to sustain the EU-11 currencies vis-à-vis the dollar. The increasing credibility of the euro should be understood in the context of the high level of convergence of the policies of Member States and of the sustainability of those results.

Late in the first half of 1998, the increasing uncertainty about the financial situation in Russia was negatively reflected in the Deutsche mark exchange rate vis-à-vis the dollar.

In the first six months of 1998, no changes to the official interest rates were made in Japan, the USA, or in Germany (chart 10).

From December 1997 to June 1998, the 3-month interest rate of the yen, the dollar and the Deutsche mark presented a downward trend. The yen interest rate fell 0.4 percentage points, while the dollar and the Deutsche mark interest rate decreased 0.2 percentage points.

In what concerns to the behaviour of capital markets in the USA and Germany, the uncertainty in the Asian countries — which has contributed to moderate the risks of inflationary pressures — and the fact that the dollar and the Deutsche mark are considered safe-haven currencies contributed posi-



tively to the bond markets in these countries (chart 11).

The dollar 10-year bond yields reached particularly low values in early 1998, remaining close to these levels up to June. Between December 1997 and June 1998, these rates fell 0.3 percentage points, to 5.5 per cent.

The Deutsche mark yields reached historic minimum values in this half-year, decreasing 0.5 percentage points in end-of-period terms, to 4.8 per cent in June. As a result, the differential between the USA and the German 10-year yields widened slightly, due to distinct stages in the economic cycle of these countries.

Long-term interest rates in Japan exhibited a higher volatility than the corresponding rates in the USA or in Germany, reflecting some uncertainty regarding the effects of the Japanese authorities' economic policy measures. However, due to the persistent signs of weakness of the economy, these rates followed a clearly downward path, reaching a new historic minimum in June. The 10-year yields fell 0.4 percentage points in end-of-period terms, to 1.5 per cent.

In the stock markets, the weakness of the Japanese economy contributed strongly to the fact that the Nikkei index remained at low levels, after the reduction recorded in the second half of 1997. Over the course of the fiscal year ended 31 March 1998, this index fell 8.2 per cent. From December



1997 up to June 1998, this index fell 4.4 per cent (chart 12).

Meanwhile, the Dow Jones and Dax indices grew 12 and 38.9 per cent respectively, between December 1997 and June 1998.

1.2 European Monetary System

The progresses achieved in the context of the process leading to the Third Stage of EMU determined the behaviour of the foreign exchange and money markets in the first half of 1998.

The announcement of the bilateral conversion rates, following the decisions taken at the informal ECOFIN meeting in September 1997, together with the involvement of authorities in the process of creation of EMU, influenced the spot and forward exchange rate markets of the EU-11 currencies⁽⁶⁾. These currencies concentrated around their bilateral central rates, strengthening the movement recorded in the previous half-year (chart 13). The existence of a credible terminal condition on the behaviour of exchange rates, together with the expected development path for interest rates, confined considerably the exchange rates variation around the announced conversion rates.

The stability of the EU-11 currencies vis-à-vis the Deutsche mark resulted in a reduction in the

⁽⁶⁾ Forward exchange rates refer to 31 December 1998.

Chart 13 **DEVIATION BETWEEN THE SPOT EXCHANGE RATES OF THE EU-11 CURRENCIES AND THE CENTRAL BILATERAL RATES OF THE ERM-EMS VIS-À-VIS THE DEUTSCHE MARK** 14 Daily data 12 10 8 Percentage 6 Δ 2 0 _2 Jan97 Jan98 Jul Ser No Mai May

Note: (+) the spot exchange rate is appreciated in relation to the bilateral central rate vis-à-vis the Deutsche mark.

DEVIATION BETWEEN THE FORWARD EXCHANGE RATES OF THE EU-11 CURRENCIES AND THE CENTRAL BILATERAL RATES OF THE ERM-EMS VIS-À-VIS THE DEUTSCHE MARK



volatility of the spot exchange rates to substantially low levels (chart 14).

In this half-year, the behaviour of the Irish pound was strongly influenced by the decision made in March by the Finance Ministers and Governors of Central Banks of EU Member States to-



wards the 3 per cent revaluation of the bilateral central rates of this currency, which became closer to market rates.

The Irish pound depreciated significantly vis-à-vis the Deutsche mark in the first half of the year. This depreciation reached 4.6 per cent on average and 2.6 per cent in end-of-period terms. Together with the revaluation of the bilateral central rates of the Irish pound, this development led to a sharp reduction in the deviation from the central rate vis-à-vis the Deutsche mark. Recall that late in the previous year this deviation was particularly wide, more than any other currency in the ERM.

In nominal effective terms, the EU-11 currencies weakened slightly in early 1998, hence continuing the movement recorded in the last quarter of 1997 (chart 15). However, in the second quarter these currencies strengthened, partly reflecting the behaviour of the dollar, Sterling and the yen.

Regarding monetary policy decisions made in the first half of 1998, seven of the eleven central banks of the countries adopting the euro carried out no changes to their main money market intervention rates.

In a context of price stability, Portugal, Italy and Spain cut again their official interest rates, narrowing the differential vis-à-vis the EU-11 countries exhibiting the lowest official rates (chart



Source: Bank of England and Banco de Portugal. Note: (+) effective appreciation.





16). The Italian discount rate stood at 5 per cent in late June, while the repo rate in Spain and in Portugal stood at 4.25 per cent and 4.5 per cent, respectively.

In Finland, the central bank increased by 0.15 percentage points its tender rate in mid-March, to 3.4 per cent. In a context of strong growth of economic activity, this measure eliminated the negative differential vis-à-vis the German repo rate, placing the Finnish rate slightly above the German rate.



In the first half of 1998, the 3-month interest rates of the EU-11 countries dropped substantially in Italy (by 1 percentage point, to 5 per cent), in Portugal (0.7 percentage points, to 4.3 per cent) and in Spain (0.5 percentage points, to 4.3 per cent). The differential vis-à-vis equivalent German rates narrowed, since the latter decreased by only 0.2 percentage points, to 3.5 per cent (chart 17).

In the futures markets, differentials between the 3-month interest rates of these countries and those of the Deutsche mark, implicit in contracts for December 1998, recorded a sharp reduction, converging to virtually null values (chart 18).

3-month interest rates in Finland rose 0.1 percentage points, to 3.6 per cent.

In Ireland, where the intervention rates were not altered, 3-month interest rates rose 0.3 percentage points, to 6.2 per cent.

Benefiting from favourable expectations regarding inflation and economic growth, prices of shares and bonds increased in the European capital markets.

Long-term interest rates of the EU-11 currencies reached new historic minimum levels in the first half of 1998. The differential vis-à-vis the German rates did not change significantly in most countries. Between December 1997 and June 1998, the escudo, peseta and lira differentials narrowed again (by about 0.1 percentage points), reaching



between 0.2 and 0.3 percentage points in June. The Finnish markka differential also narrowed, from 0.2 to 0.1 percentage points (chart 19). The perspectives regarding the participation in the single currency and the resulting strengthening of expectations of sustainable price stability in these economies may have contributed to this behaviour.

In the stock markets, indices exhibited a generalised increase in the first half of 1998. In addition to the influence of the behaviour of the USA stock market and in a context of moderate inflationary pressures, the rise in share prices in some countries was also induced by the cuts in the official interest rates (chart 20).

On 16 March, the drachma joined the ERM-EMS with a central rate of 357 drachma per ECU, following a 13.7 per cent devaluation vis-à-vis this basket. The participation of the drachma was accompanied by the announcement of economic policy measures by the Greek authorities, which aim at continuing the nominal convergence process in the country. From this moment up to the end of the first half of 1998, the drachma substituted the Irish pound as the strongest currency in the ERM. The maximum exchange rate fluctuation spread increased thereafter (chart 21).

The Greek central bank, which had risen the Lombard rate by 4 percentage points in January, decided to cut this rate to its previous level (19 per



cent) in late March. After the joining of the drachma to the ERM-EMS, the Greek economy recorded significant capital inflows alongside strong price increases in the bond and stock markets.

The Danish krone remained quite stable vis-à-vis the Deutsche mark and the remaining currencies in the ERM-EMS, in end-of-period terms. However, doubts regarding the result of the referendum on the Amsterdam Treaty (on 28 May) and some uncertainty on the labour market conditions resulted in a temporary rise in the volatility of this currency.



In Denmark, the central bank decision to rise on 5 May its discount and repo rates by 0.5 percentage points, contributed to stabilise the value of the Danish currency. After the referendum and given the normalisation of the Danish krone markets, the central bank changed again the official interest rates. On 29 May, the discount and repo rates were cut 0.25 percentage points, to 3.75 per cent and 4 per cent, respectively (chart 22).

Regarding the Sterling and the Swedish krona — currencies outside the ERM — these recorded again, in the first half of 1998, a greater volatility vis-à-vis the Deutsche mark than most ERM currencies.

In end-of-period terms, the Deutsche mark depreciated 0.3 per cent vis-à-vis the Sterling (1.9 per cent in average terms). After a period of relative stability earlier in the year, the Sterling appreciated vis-à-vis the Deutsche mark. This movement was temporarily inverted in the following months, after which the British currency strengthened again. In nominal effective terms, the behaviour of the Sterling was similar to that vis-à-vis the Deutsche mark (chart 23).

The behaviour of the Sterling over the course of the first half of 1998 was an outcome not only of the behaviour of the dollar, but mainly of the uncertainty regarding future changes in interest rates in the United Kingdom. In a context of high domestic interest rates (when compared with those in Continental Europe), the possible rise in the official rates by the Bank of England — which in-



deed took place in June — was the main factor behind the strengthening of the Sterling. On 4 June, the Bank of England rose its base rate 0.25 percentage points, to 7.5 per cent (chart 22).

From December 1997 to June 1998, the Sterling 3-month interest rates remained stable at 7.6 per cent, while the differential vis-à-vis the Deutsche mark widened 0.2 percentage points, to 4.1 per



cent. Reflecting the level of uncertainty regarding the future behaviour of the Sterling short-term interest rates, the rates implicit in the futures contracts presented a high volatility in this period. After the decision of the Bank of England towards increasing its base rate, the 3-month interest rates recorded an upward movement.

The Sterling long-term interest rates fell 0.6 percentage points in end-of-period terms, to 5.8 per cent. The differential vis-à-vis the German rates remained virtually unchanged, around 1 percentage point (chart 24).

The Deutsche mark appreciated 0.9 per cent vis-à-vis the Swedish krona in average terms (0.7 per cent in end-of-period terms). On 4 June, the Swedish central bank cut its repo rate 0.25 percentage points to 4.1 per cent — the level recorded in early December 1997 (chart 22). The Swedish krona 3-month interest rates were influenced by expectations about the behaviour of the official rates, hence decreasing from 4.7 per cent in December 1997 to 4.2 per cent in June 1998.

Benefiting from the expectations of official interest rates reductions, in a favourable inflationary context, the Swedish krona long-term yields fell by about 1 percentage point, to 5 per cent. The differential vis-à-vis equivalent German rates narrowed 0.5 percentage points, to 0.2 percentage points.

2. MONETARY AND EXCHANGE RATE POLICIES IN PORTUGAL

On 2 May, the European Union Council, meeting in the composition of the Heads of State or Government, confirmed that Portugal will integrate the set of 11 countries joining the euro area on 1 January 1999. The behaviour of the Portuguese economy throughout 1997 and early 1998 was consistent with the fulfilling of the conditions stipulated to the adoption of the single currency, as evidenced in the convergence reports presented by EMI and EC. In addition, the Portuguese authorities carried out the necessary changes to Portuguese legislation — including the central bank statutes — towards guaranteeing its compatibility with the EU Treaty dispositions and the ESCB Statutes. In early 1998, the Organic Law of the Banco de Portugal was revised again⁽⁷⁾. This revision aimed at ensuring, with immediate effects, the total autonomy of the central bank, and its full integration in the ESCB from 1 January 1999 onwards.

The prospects regarding the Portuguese participation in the euro area continued to influence the monetary and exchange rate developments throughout the first half of 1998. The domestic macroeconomic background was marked by a significant growth of economic activity⁽⁸⁾ and by the continuation of the reduction of the budgetary deficit, in a context of price stability.

After a 4.0 per cent real growth in 1997, the Banco de Portugal foresees that GDP growth in 1998 as a whole will range between 4.0 and 4.5 per cent. Therefore, the Portuguese economy is expected to present again a real growth above the average of the countries integrating the euro area. According to the European Commission March 1998 forecasts, GDP in the EU-11 shall grow 3.0 per cent in 1998 (2.5 per cent in 1997). The dynamism of activity provides favourable conditions to

⁽⁷⁾ Law no. 5/98 of 31 January. For a detailed description of the process of adaptation of the Central Bank's Organic Law to the requirements due to the Portuguese participation in EMU see "The adaptation of the Banco de Portugal to the European System of Central Banks", in chapter VI of the 1997 Annual Report.

⁽⁸⁾ See " The Portuguese economy in the first half of 1998" in this bulletin.



the strengthening of the budgetary consolidation process. According to the information available, the General Government deficit for 1998 can be expected to stand below that projected in the 1998 State Budget Law (2.5 per cent of GDP) as in previous years.

In May, inflation measured by the annual average rate of change of CPI, stood at 2.2 per cent, equal to that recorded in 1997 as a whole (chart 25)⁽⁹⁾. In year-on-year terms, the growth of consumer prices decreased from 2.3 per cent in December 1997 to 2.1 per cent in the first quarter of 1998. In April, the year-on-year rate of change was 2.7 per cent, chiefly reflecting the behaviour of prices of foodstuff goods and clothing and footwear — the latter due to the ending of the sales and promotions period. In May, the year-on-year rate of change of CPI decreased to 2.6 per cent — with prices of foodstuff goods exhibiting a lower growth than in the previous month. Trend indicators indicate a more moderate behaviour of prices over the course of the period under review than that described above.

The annual average change of the HICP decreased from 1.9 per cent in December 1997 to 1.7 per cent in May. The year-on-year change fell from 2.1 per cent in December 1997 to 1.4 per cent in the first quarter of 1998, rising afterwards to 2.2 per cent in April and May. However, it should be noted that the reduction in the first months of the year is somewhat overestimated, since it results from comparing the new price index released by the INE for 1998 — which takes sales and promotions into account — and the previous index for the corresponding months of 1997.

The behaviour of the escudo in the first half of 1998 took place in the context of the increasing cohesion between the currencies of countries joining the Monetary Union. In this period, the escudo continued to approach its central rate vis-à-vis the Deutsche mark, depreciating 0.7 per cent in average terms (0.2 per cent in end-of-period terms) (chart 26). The escudo was traded always above its central parity vis-à-vis the Deutsche mark. The spread between the observed exchange rate and the bilateral central rate narrowed from 0.3 per cent in December 1997 to 0.1 per cent in June 1998. As with the remaining currencies of EU-11, the escudo volatility vis-à-vis the Deutsche mark decreased in the first half of 1998, as already recorded in the second half of 1997 (chart 14).

Market expectations regarding the future value of the 3-month forward escudo exchange rate vis-à-vis the Deutsche mark point towards the attribution of an increasing probability to the fixing of the exchange rate in a narrow interval around the central parity vis-à-vis the Deutsche mark (chart 27).

The escudo exchange rate vis-à-vis the set of currencies participating in the Exchange Rate Mechanism of the EMS (EER-ERM) remained virtually unchanged between December 1997 and June 1998 (chart 28). In average terms, the escudo depreciated 0.5 per cent, reflecting the shifting of market rates towards the respective bilateral central rates of the ERM-EMS.

⁽⁹⁾ The data since January 1998 refer to the new CPI, published by the *Instituto Nacional de Estatística*, based on a consumption basket drawn from the 1994/95 Households Budget Survey. Note that the year-on-year rates of change of the CPI for 1998 are calculated from the new index (disclosed retrospectively since January 1997) but the average rates of change are obtained from comparisons with the previous index. For a detailed description of the change of the CPI see box "Change in the consumer price index", in chapter III of the 1997 *Annual Report.*



In the first half of 1998, the escudo effective exchange rate index (EERI) depreciated on average 0.5 per cent in nominal terms, though exhibiting distinct behaviours over the course of the period. Throughout the first three months of the year, the escudo continued to depreciate in effective terms — a trend inverted in the second quarter of 1998. In June, the EERI exhibited a 0.3 per cent appreciation in relation to December 1997. Although the behaviour of the Sterling and the dollar were



again key factors determining the behaviour of the escudo since early 1998, the effective appreciation in the second quarter chiefly reflects the sharp depreciation of the yen (chart 29). The behaviour of the escudo in effective terms over the course of the first six months of 1998 was similar to that of most currencies which shall integrate the euro area, reflecting the increasing similarities in the pattern of behaviour vis-à-vis third currencies (chart 15).

Throughout the first half of 1998, the execution of Portuguese monetary policy consisted again of gradual cuts in the intervention rates of the Banco de Portugal, in a context of continuing exchange rate stability and of the confirmation of expectations regarding the escudo participation in the euro area from 1 January 1999 onwards (table 1 and chart 30). The absorption rate and the emergency lending rate were cut 0.7 percentage points in the first half-year as a whole, respectively to 4.2 and 6.2 per cent since mid-May. The repo rate was cut by 0.8 percentage points, to 4.5 per cent. The differential between the Portuguese and the German repo rates narrowed from 2 percentage points in late 1997 to 1.2 percentage points in June.

The intervention rate cuts were transmitted to the interbank money market (IMM) short-term interest rates, which continued to follow a downward path. In May, this transmission chiefly concentrated in the shorter maturities of the IMM.



The escudo 3-month interest rate decreased 0.7 percentage points between December 1997 and June 1998, to 4.3 per cent. As in 1997, the 3-month interest rate remained in this period below the repo rate of the Banco de Portugal. The differential vis-à-vis the German 3-month interest rate also narrowed throughout the first half of the year, from 1.4 percentage points in December 1997 to 0.8 percentage points in June (chart 31). In this period, the differential between the escudo and the Deutsche mark 3-month interest rates implicit in inter-

Table 1

INTERVENTION RATES OF THE BANCO DE PORTUGAL

Percentage

	Absorption rate	Repo rate ^(a)	Emergency lending rate ^(b)	
19/11/97	4.9	5.3	6.9	
19/01/98	4.8	5.1	6.8	
26/02/98	4.6	4.9	6.6	
19/03/98	4.4	4.7	6.4	
12/05/98	4.2	4.5	6.2	

Notes:

- (a) Operations started on the first working day of the reserve maintenance period and expired on the first working day of the following period.
- (b) Liquidity injection operations, at a pre-announced rate, which expire on the working day immediately following that of the transaction. Use of this facility is automatic, that is to say, it depends solely on a decision by the banks.

est rate futures contracts for December 1998 narrowed, presenting, as recorded by other EU-11 currencies, fluctuations close to zero (chart 18).

In the first six months of 1998, the domestic money market exhibited a liquidity surplus, as in early 1997. Liquidity conditions in this period were influenced by the maturity in late 1997 of the second tranche of Deposit Certificates of the Banco de Portugal — corresponding to liquidity draining operations carried out when the minimum requirement ratio was lowered from 17 to 2 per cent — together with other factors, from which the redemption and payment of interest from Treasury bonds should be singled out.

The intervention of the Banco de Portugal in the first half of the year was characterised by a net draining of funds, namely through the issuing of Títulos de Intervenção Monetária (TIM). These securities were issued at interest rate auctions for maturities of four, nine and thirteen weeks, carried out at the beginning of the periods of cash reserve constitution. The average rates of TIM at four and nine weeks stood always slightly above the absorption rate, although the difference was greater in the four weeks maturity; the average rates for the thirteen weeks maturity stood in general below the absorption rate, suggesting the persistence of expectations regarding further interest rate reductions in this maturity. TIM average rates for all maturities followed the cuts in the intervention



rates of the Banco de Portugal, standing systematically below the LISBOR rates for similar maturities.

From March to mid-June, the regular intervention of the Banco de Portugal shifted to liquidity injection. The last TIM issuing was carried out in mid-April and the live balance of these certificates amounted to PTE 62.5 billion at the end of June.

The escudo 10-year yields decreased again in the first half of 1998, in relation to the end of the previous year. This development took place in the context of the continuation of the convergence process between the countries participating in the euro area. The process of reduction of long-term



interest rates that has been occurring in Portugal reflects the perspectives regarding the participation of Portugal in the euro area, which has been anticipated by financial markets with increasing probability. The 10-year Treasury bond yield decreased from 5.7 per cent in December 1997 to 5.1 per cent in June. The differential vis-à-vis the Deutsche mark long-term yield narrowed again, by about 0.1 percentage points, to 0.3 percentage points in June (chart 32). The narrowing of the long-term differential vis-à-vis the Deutsche mark interest rates confirms the credibility of nominal stability.

The escudo yield curve recorded a further shift downwards in all maturities, between end of 1997 and end March 1998. In the following months, the movement of reduction of interest rates was chiefly concentrated in shorter maturities reflecting the convergence of short-term rates between the EU-11 countries. This development resulted in the convergence between the Portuguese and German yield curves. In late June, the Portuguese yield curve lost its negative slope for maturities up to one and half years, becoming virtually flat. In the remaining maturities, the curve continued to be positively sloped (chart 33).

Written with the information available up to 30 June 1998.

MONETARY AND CREDIT AGGREGATES

1. INTRODUCTION

The behaviour of the monetary and credit aggregates in the first four months of 1998 basically reflects, as in 1997, four key factors: the conclusion of the disinflation process, the continuation of the reduction of interest rates, the acceleration of economic activity and the budgetary consolidation process.

The slowdown of aggregate L⁻ from the second quarter of 1997 onwards (the respective rate of change⁽¹⁾ fell from 9.4 per cent in March 1997 to 6.2 per cent in April 1998) reflects particularly distinct behaviours of its components. As regards aggregate M1⁻ (currency and demand deposits), the reduction of inflation to levels compatible with price stability, as well as the generalised reduction in interest rates associated to the lowering of inflation, resulted in a lower opportunity cost of holding money, and therefore in a fall in money circulation velocity. This development, alongside the dynamic growth of economic activity, induced a significant acceleration of the aggregate. Meanwhile, the reduction in interest rates also reflected in a lower relative return of the income-raising assets included in aggregate L⁻ (mainly time deposits), leading to portfolio adjustments by economic agents. Therefore, quasi-money recorded a sharp slowdown, while alternative investments mainly shares — grew steadily.

As regards credit aggregates, net credit to General Government (GG) has decreased, reflecting the reduction in the public sector's borrowing requirement. This aggregate also recorded a change in its structure. Meanwhile, the high growth rates that have characterised credit to non-financial companies and individuals are consistent with the strong growth of investment (which in 1997 grew above 12 per cent in real terms) and the reduction in liquidity constraints faced both by companies and households. In what concerns to households. the reduction in interest rates induced an increase in their level of indebtedness as a percentage of GDP, from 16.1 per cent early in the decade to 39.5 per cent at the end of 1997, without however resulting in a significant increase in households' effort rate, measured as the interest paid to GDP ratio⁽²⁾. On the contrary, companies cut sharply their financial costs on interest (falling from 14.1 per cent of GDP in 1990 to 6.5 per cent in 1997), while companies' level of indebtedness basically reflected the behaviour of economic activity.

2. MONETARY AGGREGATES

Throughout the first four months in 1998, liquidity aggregate L⁻ (net assets of the non-financial resident sector) recorded growth rates slightly below those recorded in the last quarter of 1997 (chart 1); in April 1998, its growth rate stood at 6.2 per cent (equal to that recorded in December 1997, and comparing with 9.4 per cent in March of the previous year). This behaviour reflects a slightly downward trend in the pace of growth of quasi-money (2.0 per cent growth in April) and further acceleration of aggregate M1⁻ (from 13.3 per cent in January to 16.8 per cent in April).

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

⁽²⁾ On this issue see box "An indicator for households' access to housing credit" in the 1997 *Annual Report.*



An analysis of the quarterly chain rates of change of aggregate L⁻ (chart 2) evidences the influence of privatisation operations on the behaviour of this aggregate: the growth of L⁻ was stronger in months where these operations were carried out, reflecting prior increases in time deposits (for the following settlement of the securities purchased). In April 1998, the annualised chain rate of change of aggregate L⁻ (calculated from seasonally adjusted values) stood at 7.4 per cent, close to the average of the values recorded since January 1996.

The interest rates on time deposits continued to follow a clearly downward path (chart 3), falling by about 0.5 percentage points between January and April 1998. Interest rates for shorter maturities (31 to 90 days) fell to 4.0 per cent, while interest rates on time deposits over 1 year reached 3.2 per cent. Therefore, the yield curve slope became more negative in this market, as recorded in general since August 1997. This situation indicates that expectations about interest rates continue to be revised downwards.

Traditional investments (time deposits and saving certificates) continued to lose attractiveness a development strengthened by the behaviour of the stock market throughout 1997 and over the course of the first four months in 1998. As a result, economic agents shall have continued their portfolio adjustment process, channelling investments to domestic securities — mainly shares — and securities abroad (chart 4). In the context of this portfolio



adjustment, it is worth noting that total investments of Securities Investment Funds grew 43.5 per cent between March 1997 and March 1998. In the same period, investments of equity funds grew about 181.2 per cent, reaching close to PTE 409 billion.

Money creation was exclusively due to the growth of total domestic credit, which rendered a 17.3 percentage points contribution to the growth of aggregate L^- in April 1998 (chart 5). The foreign counterpart continued to contribute negatively to



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.



the growth of domestic liquidity (-5.2 percentage points in April, mostly as a result from the reduction in banks' short-term net foreign assets). This was also the case of the change in other domestic counterparts (-5.8 percentage points contribution). The former was related to the increase in the bank-



ing system's own capital, and to the investments of non-monetary financial institutions in the banking system.

3. CREDIT AGGREGATES

The growth of total domestic bank credit reached 9.1 per cent in February 1998, increasing systematically afterwards — reaching 12.8 per cent in April, the highest level recorded since June 1997. This development reflects two particularly distinct behaviours: while net credit to General Government (GG) has recorded negative rates of change (which reached a minimum value of -33.5 per cent in December 1997, and equalling -20.1 per cent in April 1998), credit to companies and individuals has continued to grow strongly, around 20.0 per cent (chart 6).

3.1 Net credit to General Government

From January to May 1998, total net financing to GG amounted to PTE 277.7 billion, PTE 41.5 billion less than in the same period of 1997 (table 1). After a more negative budgetary execution in the January to May 1998 period than in the previous year (due to a greater concentration of some expenditure in the current year⁽³⁾, and to lower revenue from privatisation operations in this period), the behav-

⁽³⁾ These consist of subsidies, transfers, interest and capital expenditure.

Table 1

GENERAL GOVERNMENT BORROWING

PTE billion

	1996			1997			1998
	Year	1st half	Jan-May	Year	1st half	Jan-May	Jan-May
Net domestic credit	243.4	145.0	327.1	-894.6	-379.8	57.0	185.3
Monetary	-199.8	-91.5	66.9	-1083.2	-488.6	-90.6	180.3
Banking	-189.3	-107.1	38.1	-934.2	-509.6	-168.2	244.8
Banco de Portugal	149.6	374.7	420.8	6.7	-40.7	284.4	166.3
Banks	-338.9	-481.8	-382.6	-940.9	-469.0	-452.6	78.5
of which:							
Treasury bills ^(a)	7.7	-188.9	-152.6	-177.9	-177.9	-30.1	-53.5
Other investments in public securities	-238.2	-36.8	-81.8	-677.9	-677.9	-233.2	268.6
TB held by the public ^(a)	-10.5	15.6	28.7	-149.0	21.0	77.6	-64.6
Non-monetary	443.3	236.5	260.2	188.6	108.8	147.6	5.1
of which:							
Saving certificates (net)	74.3	38.5	39.5	4.9	9.6	16.4	-56.5
Net foreign credit	189.8	212.2	226.4	444.6	219.8	184.0	200.2
Sales/purchases of domestic debt securities to/from							
non-residents (net)	140.2	60.1	73.0	416.3	145.9	91.0	-114.5
Net foreign assets of the Treasury	-16.7	-3.9	-14.5	-9.6	-11.0	-20.6	-4.4
Adjustment Treasury bills	20.6	22.2	20.7	22.4	11.5	7.7	11.1
Total borrowing	577.3	435.5	632.6	-21.0	-13.6	319.2	277.7

Note:

(a) Includes CLIP up to March 1996, the date of redemption of the last tranche.

iour of the overall State deficit was inverted in May; overall State deficit decreased from PTE 407.5 billion in the January to April period, to PTE 167.4 billion from January to May (which compares with PTE 183.6 billion from January to May 1997). This development was due not only to the increase in tax revenue, but also to an expenditure execution closer to the budgeted figures. The behaviour of net credit to GG was also conditioned by the utilisation of revenue from the sale of companies' equity.

As regards the structure of financing to GG, the main development consisted of the inversion in the behaviour of the public debt securities portfolio held by the banking sector. Between January and May 1998, this portfolio rose PTE 215.1 billion, compared with a PTE 263.3 billion reduction in the same period in 1997. The term structure of this portfolio suffered some changes, since its short-term component (Treasury bills) decreased (by PTE 53.5 billion), while investments in other securities increased (by PTE 268.6 billion).

The greater use made of financing through the banking system was also accompanied by a reduction in non-banking residents' position of public debt securities issued in the domestic market (from PTE 147.6 billion from January to May 1997 to PTE 5.1 billion in the same period in 1998) as happened with non-residents (the respective stock of domestic debt securities fell PTE 114.5 billion in net terms between January and May 1998; in the same period in 1997, net position had increased PTE 91 billion).

3.2 Credit to companies and individuals

Bank credit to companies and individuals continued to grow strongly, around 20.0 per cent (chart 7). In the first quarter of 1998, credit to non-banking financial institutions recorded a further slowdown, while the growth of credit to the two remaining borrowers — i.e., individuals and non-financial companies — stabilised at levels close to those reached in late 1997.

Bank credit to non-financial companies continued to grow strongly, reaching 20.7 per cent in March 1998 (chart 8). This behaviour is related to the strong growth of credit for investment purposes, which maintains growth rates above 20 per cent since the first quarter of 1997 (it should be noted that the importance of investment as a pur-



pose of credit has exhibited an upward trend since March 1993, alongside the gradual increase in the



financing maturity). In what concerns to the structure of credit to companies, the bulk is concentrated chiefly (and increasingly) in the Services sector. However, as referred above, this finding may be somewhat artificial due to the close financial linkages between institutions included in the services sector for statistical reasons (namely holding companies) and those included in the remaining sectors. Nonetheless, it is worth stressing that both manufacturing companies and construction and public works companies benefited, at the end of the first quarter of 1998, from an amount of credit clearly above that one year before, with the growth of credit granted to these sectors stabilising at a high level. This development reflects the strong growth of economic activity in the first quarter of the year.

The expansion of credit benefited from the reduction in interest rates (chart 9). Indeed, interest rates on operations with non-financial private companies maintained a downward trend, both in shorter-term operations as in longer-term credits, hence favouring both investment and the treasury management in the shorter run. Companies with a greater financial capacity, eligible to resort to the issuing of Commercial Paper, have been able to fi-



nance themselves through this scheme of credit at interest rates close to those practised in the interbank money market (in April the nominal rate⁽⁴⁾ at Commercial Paper auctions reached 4.5 per cent, which compares with the 4.4 per cent 3-month Lisbor rate). Interest rates practised in the remaining kinds of credit also decreased, though continuing to stand at clearly higher levels: in April, the average interest rate on commercial portfolio stood at 9.8 per cent, while that on Loans and advances stood at 7.4 per cent (falling by 0.9 and 1.0 percentage points respectively, in relation to December 1997).

Domestic bank credit to individuals continued to exhibit an outstanding dynamism, which has been sustained by the growth of credit to housing purchase (27.4 per cent growth rate in March 1998), and to a lesser extent by the behaviour of credit to other purposes (chart 10). This aggregate grew more substantially in the second and fourth quarters of 1997 (25.6 per cent and 29.6 per cent, respectively), possibly linked to the credit lines made available by banks during the above mentioned privatisation operations. In general, credit



for purposes other than housing account for only about 23.7 per cent of total bank credit to individuals^{'(5)} (11.9 per cent of bank credit to non-financial companies and individuals), and comprises mostly credit to consumption — a phenomenon that gained significance in the early 1990's, and is still in expansion in Portugal.

Between January 1997 and April 1998, interest rates on loans for maturities from 91 to 180 days fell 5.6 percentage points (2.1 percentage points since December 1997), reaching 9.3 per cent; meanwhile, in the 181-day to 1-year maturity these rates dropped 3.6 percentage points (0.9 percentage points from January to April 1998), to 9.3 per cent (chart 11). Also expressive was the reduction in interest rates practised for credits for maturities over 5 years, which decreased to around 6.9 per cent. Since January 1997, these rates (strictly related to credit for housing purchase) dropped 3.9 percentage points (1.1 percentage points throughout 1998).

Written with the information available up to 8 July 1998.

⁽⁴⁾ Does not include other costs associated to this financing scheme.

⁽⁵⁾ Regarding the structure of bank credit to individuals, credit for purposes other than housing increased its share from about 10.3 per cent of total credit to individuals in December 1989, to around 24 per cent in September 1993, stabilising around this value thereafter.

FISCAL POLICY AFTER 1999

A.S. Pinto Barbosa**

1. INTRODUCTION

What general guidelines should fiscal policy follow in the new setting where Portugal has joined the group of countries founding the single currency? Should this policy continue to focus on the reference values for the deficit and debt as established in the Treaty, which provided the criterion for accession to that group? Or should other figures be used instead? Other reasons apart, the sole existence of the Stability and Growth Pact for the period post-1999, with the accompanied sanctions for indisciplined public finances, indicates by itself that the interest for fiscal discipline is not confined to the moment countries are selected for integrating the core founding the euro.

In this paper, we shall discuss these questions. Section 2 starts by identifying the main attributes of what might be considered a steady-state of economy, to be attained in the long-run, leaving aside for a while the problem of adjustment or transition to that situation. In this initial section, we stress the required consistency - or mutual compatibility — between the long-run reference values for budget and for public debt. Section 3 tackles the problem of cyclical fluctuations around the steady-state. In this context, we propose a rule for fixing the budget balance, that ensures the stability of the chosen long-run solution in the presence of perturbations affecting the economy. The specific form suggested for the rule solves, in turn, the transition problem since it ensures simultaneously the convergence from the initial situation to the long-run reference values. As a means of illustration, section 4 applies the methodology suggested in the previous section to the Portuguese case, stressing the fiscal effort required in the transition period. Section 5 compares our results with those of alternative specifications. Finally, section 6 concludes.

2. COMPATIBILITY OF OBJECTIVES

How to define a long-run steady-state in the euro regime from the viewpoint of the budget and public debt? The following features should necessarily be among the minimum requirements:

- 1. The public debt to GDP ratio, represented by $\beta = B / Y$, where *B* and *Y* stand respectively for the stock of public debt and GDP, should be stabilized. This is a simple corollary of the concept of steady-state⁽¹⁾, which assumes that the relevant variables are stable at their final equilibrium levels.
- 2. The steady-state value of β at which such stabilization takes place in the long-run should not surpass the 60 per cent threshold. This is the limitation imposed by the Treaty. Since this is an upper bound, the problem of knowing what should be the specific value (inside this limit) that better fits our budgetary policy arises. Therefore, the choice of such reference value to which the public debt ratio must converge in the long-run appears as one of the basic options present in the analysis that follows.

^{*} The opinions of the paper represent the views of the author, and are not necessarily those of the Banco de Portugal.

^{**} Banco de Portugal and Universidade Nova de Lisboa. The author thanks Victor Gaspar and Jorge Correia da Cunha for comments and suggestions.

⁽¹⁾ Note, however, that this is not strictly a necessary condition for dynamic sustainability. Indeed, dynamic sustainability requires only that β grows at a rate smaller than the difference between the interest rate and the growth rate of the economy.

- 3. Medium-run budgetary positions must be close to balance or in surplus. Though not very precise in quantitative terms, this is a constraint imposed by the Pact.
- 4. The overall deficit as a percentage of GDP, hereafter represented by ϕ , should not surpass the 3 per cent threshold at each moment. This, too, is a constraint imposed by the Treaty, and takes the form of an upper limit.

We should start by identifying the options available regarding the long-run reference values for public debt and deficit, within the above constraints.

To what values should the debt ratio β and the overall public deficit ϕ be forced to converge, through the continued implementation of budgetary policy during the transitional stage?

A first key aspect to bear in mind in choosing the long-run reference values for the debt and deficit ratios is that these choices are not independent, but interrelated. Under these circumstances, the mutual compatibility of values chosen is essential, since the fiscal policy designed may prove internally inconsistent otherwise.

It can be shown that the public debt to GDP ratio β evolves approximately according to the following expression⁽²⁾:

$$\Delta\beta = \delta + \beta_{-1}(i - y) + u, \qquad (1)$$

where, for annual data, $\Delta\beta$ indicates the annual change in the ratio β , δ stands for the primary deficit (as a percentage of GDP) in the respective year and term $\beta_{-1}(i - y)$ is the debt ratio at the end of the previous year β_{-1} times the difference between the nominal interest rate *i* (that the State pays in debt) and the nominal GDP growth rate, *y*. the residual term *u* reflects the effect of other non-fiscal impulses on the dynamics of debt — e.g., those resulting from revenue due to privatisation operations, or from public liabilities — whether explicit or implicit — in the Health, Social Security, guaranteed debt, financial system, etc. These impulses were not considered in the simulation, due to the inaccuracy of the available estimates, and also because some of these have opposing algebraic signs, hence partly cancelling out each other.

The stabilization of ratio β in a steady-state means a null change, $\Delta\beta = 0$, thus (1) yields:

$$0 = \overline{\delta} + \overline{\beta}(i - y), \qquad (2)$$

where δ and β stand for the stabilized long-run values for δ and $\beta.$

Considering in turn that this is the steady-state of a small open economy, integrated in a wide European area with a single monetary policy, specification (2) can be further specialised. Indeed, under these circumstances we can admit that some of these parameters will be essentially exogenous. For instance, the growth rate of nominal GDP is basically equal to the sum of European inflation⁽³⁾ p^* to the growth of domestic real potential output, q^* — two variables that for distinct reasons are difficult to be influenced by domestic authorities. Thus, we admit that *y* equals exogenous value y^* , given by:

$$y^* = q^* + p^*.$$
 (3)

Likewise, in such a framework it seems likely that the nominal interest rate should be considered also exogenous:

$$i = i^* \tag{4}$$

Therefore, only two non-exogenous variables remain in our specification, the primary deficit $\overline{\delta}$ and ratio $\overline{\beta}$:

$$0 = \overline{\delta} + \overline{\beta} (i^* - y^*), \qquad (5)$$

In turn, the following definitional relationship between primary deficit and overall deficit should hold in the long-run:

$$\overline{\phi} = \overline{\delta} + \overline{\beta} i^*, \qquad (6)$$

where $\overline{\phi}$ stands for overall deficit in the long-run. From (5) and (6) we obtain:

$$\overline{\beta} = \frac{\overline{\phi}}{y^*}.$$
(7)

⁽²⁾ See Blanchard (1997), p.596. For the exact formula see for example Barbosa (1997), p.131.

⁽³⁾ Samuelson-Balassa-type effects are here being disregarded.

Expressions (6) and (7) reveal the mutual compatibility relationships that must necessarily prevail in the long-run: once known the interest rate *i** and the nominal growth rate of the economy *y**, and once chosen a reference value for any of the three variables $\overline{\beta}$, $\overline{\phi}$ or $\overline{\delta}$, the remaining two variables are residually determined⁽⁴⁾.

Diagram 1 illustrates this independence and the need for a consistent set of long-term targets, assuming a nominal growth rate of the Portuguese economy of 5 per cent and a nominal interest rate of 5.5 per cent⁽⁵⁾.

Suppose that the direct choice made by the fiscal authority regards the public debt to GDP ratio $\bar{\beta}$, measured in the horizontal axis in diagram. The vertical axis indicates the compatible values for the overall and primary deficit. The upward sloping line stands for the overall deficit consistent with the value for β chosen in the horizontal axis, and is given by (7):

$$\overline{\phi} = \overline{\beta} y^* , \qquad (8)$$

while the downward sloping line refers to the corresponding primary deficit, given by (5):

$$\overline{\delta} = \overline{\beta} \left(y^* - i^* \right). \tag{9}$$

Since this line indicates negative values, these represent primary surpluses. Lastly, the horizontal line indicates the 3 per cent of GDP threshold the Treaty and the Stability Pact establishes for the overall deficit.

Choosing for instance a reference value of 60 per cent for the debt ratio, points *a* and *a*' indicate the corresponding long-run values for primary and overall deficit — in this case, -0.3 per cent (a surplus) and 3 per cent, respectively. *b* and *b*' indicate the values for the primary and overall deficit corresponding to a debt ratio of $\bar{\beta} = 40$ per cent, while points *c* and *c*' are associated to a 20 per cent ratio. Note again that primary surpluses are required in the long-run, independently of the



choice of $\overline{\beta}$. Also note that a balanced budget $(\overline{\phi} = 0)$ requires in the long-run that the public debt ratio is null ($\overline{\beta} = 0$), as well as the primary balance ($\overline{\delta} = 0$).

Table 1 exhibits the compatible values for primary deficit $\overline{\delta}$ and overall deficit $\overline{\phi}$ for several alternative choices of $\overline{\beta}$.

Table 1

COMPATIBLE STEADY-STATE VALUES FOR *i* = 5.5% AND *y*=5%

	$\overline{\beta}=60\%$	$\overline{\beta}=40\%$	$\overline{\beta}=30\%$	$\overline{\beta}=20\%$	$\overline{\beta}=0\%$
$\frac{\overline{\delta}}{\varphi}$	-0.3	-0.2	-0.15	-0.1	-0.0
	3.0	2.0	1.5	1.0	0.0

As shown, a primary surplus emerges in all cases, except when the public debt ratio in steady-state is null. In this case, both the overall balance and the primary balance are also null⁽⁶⁾.

Once acknowledged the need for a consistent set of long-run objectives for the three key variables — debt ratio, overall balance and primary balance — another question rises: what additional criteria beyond consistency should guide choice?

⁽⁴⁾ These results illustrate a conclusion previously advanced by other authors (e.g., W. Buiter (1993)): In a steady-state one and only one specific value for the nominal GDP growth rate y^* is bound to ensure the strict compliance to the two Treaty reference values.

⁽⁵⁾ For a 2 per cent inflation rate, these values imply a real growth rate of 3 per cent and a 3.5 per cent real interest rate.

⁽⁶⁾ The low value obtained for the primary balance in the various scenarios is a consequence of having admitted quite similar values for the interest rate *i** and for output growth *y**.

This is a complex issue, due to the manifold implications, some of which not confined to the economic sphere. In what follows, nevertheless, we discuss one of the most relevant aspects to this issue: the implications of this choice in the context of the constraints imposed by the Stability Pact and the Excessive Deficit Procedure on the budgetary variables and debt. This is the objective of the following analysis.

3. CYCLICAL FLUCTUATIONS

Even with a consistent set of objectives for in the long-run, an additional complication must be considered: the effects of the cyclical fluctuations of the economy around that steady-state equilibrium. Indeed, budgets depend on the economic cycle, tending to worsen when production slows down and to improve when production accelerates. It is through this reaction of the budget to the cycle that "automatic stabilizers" operate. These represent a positive feature as it helps to attenuate the cyclical fluctuations in the economy.

Being a positive feature, "automatic stabilization" should at the least be preserved in the future design of fiscal policy. At the least, in the sense that with the loss of the exchange rate and monetary instruments, stabilization of asymmetric shocks will become virtually confined to the fiscal sphere.

In this context, how should the preservation of automatic stabilizers — and the fluctuations in the budget balance they imply — be made compatible with the deficit and debt limits resulting from the Treaty and the Pact? The obvious suggestion is to adjust the reference values to levels sufficiently below those limits, so that these thresholds are not crossed when negative cyclical fluctuations occur. More specifically, in what concerns the budget balance this implies that the overall deficit should be calibrated to a reference value below the 3 per cent threshold, so that when the economy decelerates the deficit is allowed to rise automatically (due to the stabilization mechanism) without triggering sanctions.

What value below 3 per cent should therefore be chosen?

Before answering to this question, a preliminary issue should be mentioned. One may ask whether the suggested reduction on the steadystate deficit to levels below 3 per cent would not bring negative consequences to aggregate demand — more specifically, a sustained reduction in its value, yielding systematic depressing effects on output and employment. It is our belief that a reduction of this kind cannot yield a chronic effect to aggregate demand. In the long-run — that which concerns the present analysis — the assumption of price flexibility must be taken into account, which implies that aggregate demand should equate equilibrium output. The sustained reduction of deficit may result in adjustments in composition of aggregate demand, but not in a reduction in its total value.

Returning to the issue of what should be the specific value for the budget that provides a reference to fiscal policy, let us consider the primary deficit δ broken-down into the following parts:

$$\delta = \overline{\delta} + z \tag{10}$$

where $\overline{\delta}$ is its average steady-state value (as a percentage of GDP) and *z* is the cyclical deviation from $\overline{\delta}$. Component *z* is therefore a stochastic variable, possibly exhibiting serial correlation, which depends on the cyclical position of the economy. So z can be written as follows:

$$z = A(L)cycle, \tag{11}$$

where A(L) is a polynomial in the lag operator L. In turn, *cycle* is a stationary variable following a path described by

$$cycle = B(L)\varepsilon,$$
 (12)

B (*L*) being a polynomial in the lag operator and ε an impulse with $E(\varepsilon) = 0$ and $Var(\varepsilon) = \sigma_{\varepsilon}^{2}$. When output is sustainably at its equilibrium steady-state value *cycle* = 0, *z* will take its zero steady-state value. Thus, *z* is a stochastic variable with zero steady-state mean E(z) = 0, and steady-state variance σ_{z}^{2} . In turn, the overall deficit equals:

$$\phi = \delta + \beta_{-1} i^* = \overline{\delta} + z + \beta_{-1} i^*.$$
 (13)

Assume in this decomposition that the major source of variability in ϕ , in the steady-state, originates in the cyclical component of the economy,

the term *z*. We therefore admit that the variability in the interest expenditure is negligible in the context of our description of steady-state (due to the presumably stable behaviour of β , or the low volatility of *i**), so that βi * basically behaves as a constant.

In this setting, the first question arising when attempting to design an appropriate rule for fixing each period the primary balance in the steadystate is that of the stability of the steady-state solution itself.

Consider the dynamic equation for debt previously indicated in (1), evaluated around the steady-state:

$$\Delta\beta = 0 = \overline{\delta} + z + \overline{\beta}(i^* - y^*).$$

Rearranging slightly, the deviations from the steady-state can be written as follows:

$$\beta = \overline{\delta} + z + \beta_{-1} \Big[1 + (i^* - y^*) \Big]. \tag{14}$$

Note that the dynamics of β around the steadystate will be unstable when the coefficient for β_{-1} is greater than one — i.e., when $i^* > y^*$, which happens under the current numerical assumption i=0.055 and $y^* = 0.05$.⁽⁷⁾. This suggests the need for introducing a corrective term in the rule for fixing the primary balance, which may stabilise the dynamic behaviour of β , without however affecting the stationary expected value $\overline{\delta}$. As we shall see below this corrective term will simultaneously force the convergence of β to its steady-state value. Therefore, we propose that the planned value for δ at each period should be described by the following expression:

$$\delta = \overline{\delta} + E(z|\Omega_{-1}) + \lambda(\overline{\beta} - \beta_{-1}).$$
(15)

In this expression, $E(z|\Omega_{-1})$ stands for the expected value of the cyclical deficit in the period, conditioned on the information available in the previous period, Ω_{-1} . Therefore, this term represents the anticipated dynamics in the primary deficit — i.e., the inertia component of its behaviour. Its inclusion indicates that we want to allow for the automatic stabilizers to operate⁽⁸⁾ — an opera-

tional attribute that, as referred above, is highly desirable. In turn,

$$\theta = \lambda \left(\overline{\beta} - \beta_{-1} \right) 0 < \lambda \le 1 \tag{16}$$

is the correcting term in the dynamic behaviour of β , which will be stabilising if λ is appropriately chosen. Indeed, substituting rule (15) into (14) yields the dynamics around the steady-state described by:

$$\beta = \overline{\delta} + z + \beta_{-1} \Big[1 + (i^* - y^* - \lambda) \Big], \qquad (17)$$

which is stable provided that $\lambda > i^* - y^*$.

However, a higher value for λ may still be preferable. In fact, if $\lambda \ge i^*$, not only stability is achieved but also an additional result is obtained: overall debt does not worsen when β suffers an exogenous shock (increase). Indeed, by including the corrective term (16) in the primary deficit, the overall deficit expressed in (13) can be rewritten as follows:

$$\phi = \overline{\delta} + z + \lambda (\overline{\beta} - \beta_{-1}) + \beta_{-1} i^{*}$$
$$= \overline{\delta} + z + \lambda \overline{\beta} - (\lambda - i^{*}) \beta_{-1}, \qquad (18)$$

which, with $\lambda \ge i^*$ ensures that an unexpected worsening of β_{-1} does not worsen the overall deficit in the following period — a result which may be of interest for fiscal policy design⁽⁹⁾.

4. AN EXAMPLE

We shall refer to the Portuguese historical experience to illustrate a strategy of the type just suggested. Diagram 2 summarizes the basic ingredients of this strategy.

Our first concern refers to the description of the dynamic behaviour of the cyclical component, that is, the estimation of polynomial B (L). Therefore, we started by measuring the cycle applying the

$$\overline{\phi} - \phi = (\lambda - i^{*}) (\beta_{-1} - \overline{\beta})$$
(19)

⁽⁷⁾ This is the only relevant case, since the inverse relation $i^* < y^*$ implies dynamic inefficiency in the economy. See for example Blanchard and Fisher (1989).

⁽⁸⁾ Recall that the unconditional expected value of *z* is zero.

⁽⁹⁾ In turn, comparing the value of overall deficit in (18) with its steady-state level \$\overline{\phi}\$, and ignoring the cycle term yields:

which shows that, with $\lambda \ge i^*$ and $\beta_{-1} > \overline{\beta}$, the overall deficit converges to its long-run level from below.



H-P filter ($\lambda = 100$) to real output in logarithms, obtained from the Historical Series for the Portuguese Economy of the Banco de Portugal⁽¹⁰⁾. We then proceeded to determining the dynamic modelling of the cycle. This stage, represented in Diagram 2 by steps 1 and 2, was used also to estimate the sequence of impulses driving the cycle and the propagation mechanism. The chosen model estimated for the period 1977-1996 has the following specification⁽¹¹⁾:

$$cycle = \alpha_1 cycle_{-1} + \alpha_2 cycle_{-2} + \varepsilon, \qquad (20)$$

yielding the following estimate (*t*-values in brackets):

$$cycle = 1.31 cycle_{-1} - 0.7 cycle_{-2} + \varepsilon$$
(21)
(8.7) (-4.8)
 $\overline{R}^2 = 0.82 \quad s. e. e = 0.014 \quad Q = 6.3(0.61)$

Normality tests were applied to the residuals ε and this hypothesis was not rejected⁽¹²⁾. Next 2000 random numbers were drawn from a normal population, with zero mean and variance equal to that of $\varepsilon^{(13)}$. With these numbers and the propagation mechanism indicated in (21) it was possible to obtain out of sample simulations of the cycle.

In addition, the relationship between the primary balance and the cycle (step 3 in Diagram 2) was taken into account with the following simple specification, which revealed some adherence to the period $1986-1996^{(14)}$:

$$\delta = \alpha + \gamma_1 \, cycle + \gamma_2 \, cycle_{-1} + \eta \tag{22}$$

The left-hand side is the previously used variable δ . The second and third terms in the right-hand side reflect the cyclical influence on the balance, possibly with a lag. Hence, coefficients γ_1 and γ_2 reflect the sensitivity of the primary deficit to the cycle and the estimated values were used in the simulations.

Estimation of (22) gave the following results (*t*-values in brackets)⁽¹⁵⁾:

$$\delta = 0.01 + 0.477 \ cycle - 0.429 \ cycle_{-1} + \eta.$$
(23)
(3.2) (3.2) (-3.1)
$$\overline{R}^2 = 0.47 \quad s.e.e = 0.01 \quad Q = 2.5(0.61)$$

The size and sign of the coefficient γ_2 suggest a partial correction factor, after one year⁽¹⁶⁾. According to (15) and given the estimated coefficients for γ_1 and γ_2 , the control instrument — i.e., the planned primary balance — was defined as:

$$\delta = \overline{\delta} + 0.477 \text{ cycle} - 0.429 \text{ cycle}_{-1} + \lambda (\overline{\beta} - \beta_{-1}). \quad (24)$$

Here, as previously noted, $\overline{\delta}$ and $\overline{\beta}$ should be compatible values. Furthermore, the choice of the coefficient λ requires caution. On the one hand, λ should be great enough, as mentioned, to ensure at the least dynamic stability⁽¹⁷⁾. On the other hand, an excessively high value, given the differ-

⁽¹⁰⁾ The series was stretched to comprise years from 1994 to 2000, using estimates of the Banco de Portugal.

⁽¹¹⁾ This analysis was limited to the period running from 1977 to 1996 due to the conviction (supported by some evidence) that the cycle dynamics in this period was different from that in the previous years.

⁽¹²⁾ Bowman-Shenton test, with result $\chi^2(2) = 0.062[0.97]$.

⁽¹³⁾ A bootstrap analysis was also carried out using historical residuals ϵ . However, given the limited sample, the density function found through this procedure was particularly jagged.

⁽¹⁴⁾ If the primary balance exerts simultaneously a significant contemporary influence on the cycle, the contemporary sensitivity of the balance vis-à-vis the cycle may be overestimated. This being the case, the conclusions below on the risk of violating the 3 per cent threshold for the deficit due to cyclical fluctuations may be overcautious. Nevertheless, alternative specifications are considered below.

⁽¹⁵⁾ See below the discussion of alternative specifications.

⁽¹⁶⁾ A conjecture consistent with this result would be that, after an improvement in the budgetary balance in a given year (for cyclical reasons) fiscal authorities would tend to relax fiscal discipline in the following year. Conversely, a deficit worsening in a given year is followed by a pressure towards greater fiscal control in the next year. Being systematic, this discretionary behaviour of authorities would become an additional component of the automatic stabilising mechanism, hence attenuating the impact of the latter. If this conjecture is valid, then the application of the Stability Pact may lead to the future elimination of this behaviour and the resulting amplification of the impact of conventional automatic stabilisers.

⁽¹⁷⁾ According to (17), stability is attained if $\lambda\!>\!\!i^*-\!y^*\!,$ which in the present case requires $\lambda\!>\!0.005$

ence between the initial value of β and its steady-state value may imply an initial effort of adjustment of such magnitude that its implementation becomes politically infeasible.

In the simulation below, and considering that the initial level of β (its value in 1996) is around 67 per cent⁽¹⁸⁾, four alternative values were considered for λ ⁽¹⁹⁾: 2.5%, 4.0%, 5.5 % and 7%.

In turn, four alternative hypothesis were considered for the steady-state debt ratio: $\overline{\beta} = 40\%$, 30%, 20% and 0%. The corresponding steady-state values for primary and overall deficits which are compatible with those figures were presented in table 1.

Chart 1 depicts historical values up to 1996, together with a simulation of the overall and primary balances up to year 2030, with $\overline{\beta} = 30\%$ chosen for the steady-state value of the debt to GDP ratio. The correcting term parameter λ was fixed at 3.5%.

The behaviour of the cyclically-adjusted overall balance reflects the reduction in interest expenditure. This is due to the sustained reduction of the debt ratio, from its initial value ($\beta_{96} = 67\%$) to the steady-state level $\overline{\beta} = 30\%$. Sometimes the overall balance exceeds the three per cent threshold, although the probability of such event is not constant through time.

It is therefore of great interest to know the probability of violating the threshold, measured as the percentage of time, for a give horizon, for which overall deficit ϕ exceeds the 3 per cent limit. Attempts to calculate this probability were made in the simulations below. Since in all the scenarios analysed the ratio β decreases over time, from its initial value in 1996 to its steady-state level, interest expenditure decrease alongside the former, and the probability of surpassing the limit will thus tend to fall over time, until reaching a final value in the steady-state. On the other hand, however, the influence of the "initial conditions" must be taken into account in what concerns the cycle. Here the influence is contrary to the one of the debt: the initial cyclical position in 1996 is



such that it allows us to foresee a positive contribution to the primary balance in the forthcoming years. This means that the term $E(z|\Omega_{96})$ in (15) is positive in the near future. This point is illustrated in chart 2, which describes the expected value of the cycle in the forthcoming years.

The long-term equilibrium value of zero for this term explains why, on this account, the probability of violating the limit is lower in the near future, tending to increase with time afterwards. Lastly, there is still the possibility that a very strong budgetary effort at the beginning results in such a drastic budget reduction that the deficit is promptly diminished to a level below its long-run equilibrium (see footnote 9), approaching this level from lower values. If this happens, the probability of surpassing the boundary shall tend to increase over time.

In view of this set of possibly contradictory effects, it would be interesting to calculate such probability for four distinct horizons: 2005, 2015, 2025, and only as a reference the stationary probability (infinite horizon)⁽²⁰⁾. 1,000 simulations for the behaviour of overall balance were made for each horizon (and for each value of λ and $\overline{\beta}$). For each simulation the percentage of periods where $\phi > 3\%$ was calculated, and finally the average of those percent-

⁽¹⁸⁾ This was the best available estimate at the time simulations were ran (September 1997). In measuring gross debt, accumulated capitalised interest of saving certificates and CEDEP (sinking fund related to the payment of interest on capitalisation bonds) were excluded.

⁽¹⁹⁾ See previous discussion around expression (18).

⁽²⁰⁾ The limit situation (infinite horizon) corresponding to steady-state probability was calculated by approximation: we considered an hypothetical horizon, sufficient long to eliminate completely any trace of the influence of initial conditions.



ages was computed. Tables 2, 3, 4 and 5 present the results.

The following general conclusions can be drawn from an analysis of the tables:

- a) The probability of violating the 3 per cent threshold (for overall deficit) does not evolve uniformly over time in all scenarios. Indeed, it tends to increase in some scenarios, while decreasing in others. This is basically a consequence of the choice of the intervention coefficient λ : as reported⁽²¹⁾ the overall deficit tends to converge to its longbelow value from when -term $\lambda > i^*$, ($i^* = 0.05$), and from above whenever $\lambda < i^*$. Hence the probability of violating the threshold will tend to rise over time in the first case, decreasing in the second case.
- b) For a given horizon, the greater the correcting budgetary effort — given by the term $\lambda(\overline{\beta} - \beta_{-1})$ in (15) — the lower the probability of violating the threshold. In turn, the greater the value of the intervention coefficient λ and the more ambitious (i.e., the lower) the target for the steady-state debt ratio $\overline{\beta}$, the greater the required effort.

The tables suggest that the probability of violating the 3 per cent ceiling can be substantial in some scenarios. For example, if the objective is to lower the debt to 40 per cent of GDP in the long-run, and if the intervention coefficient equals 2.5 per cent, the overall deficit will, on average, surpass the ceiling in 3 years until year 2005 (38 per cent of the 9 years from 1997 up to 2005). However, this frequency can be lowered to 2 years if the intervention coefficient rises to $\lambda = 4\%$. Therefore, reducing the probability of violating the budgetary ceiling to small values may require a significant value for the intervention coefficient λ .

However, since one would expect that the increase of the corrective budgetary effort — given by term $\lambda(\overline{\beta} - \beta_{-1})$ in (15) — is associated with greater political difficulties in implementation, it is interesting to evaluate what this effort means in quantitative terms. We thus estimated the mean value of the corrective budgetary effort to be carried out in forthcoming years — i.e. up to year 2010 — in 6 distinct scenarios. Coefficient λ takes one of three possible values: 4%, 5.5% and 7%, while the long-run value for debt ratio $\overline{\beta}$ is either 30% or 20%. Table 6 presents the measure of GDP.

The figures in each cell are the mean value of 1,000 simulations of the cycle. The table shows that the required financial effort declines slowly in time, as a result of the progressive reduction in the debt ratio and in its gap vis-à-vis its steady-state level. Note that the budgetary effort here considered represents, according to rule (15), only one out of the three elements necessary for planning the primary balance. The remaining two are the (compatible) steady-state value for primary deficit $\overline{\delta}$ in table 1, and the term representing the anticipated cyclical component of the balance, $E(z|\Omega_{-1})$ which enables the functioning of the automatic stabilizers⁽²²⁾.

The results now obtained are obviously consistent with those presented in the previous tables, and hence they link the budgetary effort to the probability of surpassing the deficit threshold. Thus, for example, for a long-run objective for $\bar{\beta}$ of 30 per cent, and fixing λ at 4 per cent, the budgetary effort for 1997 would be 1.48 per cent of GDP. Moreover, in this case we have $\bar{\delta} = -0.0015$. Given the initial conditions for the cycle,

⁽²¹⁾ See (19) in footnote 9.

⁽²²⁾ Only to some extent, it should be said, since the correction term represented by the fiscal effort — of a contractionary nature — can possibly cancel this effect.

Table 2

PROBABILITY OF OVERALL DEFICIT ABOVE 3% Public debt (steady-state)=40% GDP

_		$\overline{B} = 0.4$		
		p - 0.1		
	2005	2015	2025	~
$\lambda = 0.025$	0.38	0.36	0.34	0.16
$\lambda{=}0.04$	0.22	0.22	0.22	0.16
$\lambda = 0.055$	0.13	0.14	0.15	0.16
$\lambda = 0.07$	0.08	0.10	0.12	0.16

Table 3

PROBABILITY OF OVERALL DEFICIT ABOVE 3%

Public debt (steady-state)=30% PIB

		$\beta = 0.3$		
	2005	2015	2025	~
$\lambda = 0.025$	0.27	0.26	0.24	0.06
$\lambda{=}0.04$	0.12	0.12	0.11	0.06
$\lambda = 0.055$	0.05	0.06	0.06	0.06
$\lambda{=}0.07$	0.02	0.03	0.04	0.06

Table 4

PROBABILITY OF OVERALL DEFICIT ABOVE 3%

Public	debt	(steady-state)=20% PIB
		$\overline{\rho}$ 0.9

p = 0.2							
	2005	2015	2025	~			
$\lambda = 0.025$	0.21	0.18	0.16	0.02			
$\lambda{=}0.04$	0.05	0.06	0.05	0.02			
$\lambda = 0.055$	0.02	0.02	0.02	0.02			
$\lambda = 0.07$	0.0	0.01	0.01	0.02			

Table 5

PROBABILITY OF OVERALL DEFICIT ABOVE 3% Public debt (steady-state)=0% PIB

$\overline{eta}=0$							
	2005	2015	2025	~			
$\lambda = 0.025$	0.09	0.07	0.06	0.0			
$\lambda{=}0.04$	0.01	0.01	0.01	0.0			
$\lambda = 0.055$	0.0	0.0	0.0	0.0			
$\lambda{=}0.07$	0.0	0.0	0.0	0.0			

*cycle*₉₆ = -0.01694 and *cycle*₉₅ = -0.02015 and using (21) the estimate for the cycle position in 1997 is:

$$E\left[\left(cycle_{97}\right) | \Omega_{96}\right] = -0.0081.$$

Table 6

REQUIRED BUDGETARY EFFORT: $\lambda (\overline{\beta} - \beta_{-1})$ As a percentage of GDP

	$\overline{\beta}=30\%$			$\overline{\beta} = 20\%$		
	$\lambda = 4\%$	$\lambda = 5.5\%$	$\lambda = 7\%$	$\lambda = 4\%$	$\lambda = 5.5\%$	$\lambda = 7\%$
1997	1.48	2.03	2.59	1.88	2.58	3.29
1998	1.41	1.91	2.39	1.80	2.43	3.05
1999	1.35	1.79	2.21	1.72	2.29	2.83
2000	1.29	1.69	2.04	1.64	2.15	2.62
2001	1.24	1.60	1.90	1.59	2.04	2.44
2002	1.20	1.52	1.79	1.53	1.94	2.28
2003	1.16	1.45	1.68	1.49	1.86	2.14
2004	1.13	1.39	1.59	1.44	1.78	2.01
2005	1.09	1.32	1.49	1.39	1.69	1.89
2006	1.05	1.26	1.39	1.34	1.61	1.77
2007	1.01	1.19	1.29	1.29	1.52	1.66
2008	0.97	1.13	1.20	1.24	1.44	1.55
2009	0.93	1.078	1.11	1.20	1.36	1.44
2010	0.90	1.01	1.04	1.15	1.29	1.34

With this result and the value of $cycle_{96}$ in (23), we may obtain the anticipated cyclical position of the primary balance:

$$E(z|\Omega_{96}) = 0.477(-0.0081) - 0.429(-0.01694) = 0.0034.$$

The primary deficit planned for 1997 in this intervention scenario thus equals:

$$\delta = \overline{\delta} + E(z|\Omega_{-1}) + \lambda(\overline{\beta} - \beta_{-1}).$$

= -0.0015 + 0.0034 - 0.0148 = -0.0129.

that is, a primary surplus amounting to about 1.3 percentage points of GDP.

5. ALTERNATIVE SPECIFICATIONS

In the previous analysis the possibility of an influence from the budget to the cycle was disregarded. However, this possibility should be examined for two reasons: first, if this causality exists, the estimates for the sensitivity of the balance to the cycle in regression (23) are biased; second, in the simulations with alternative intervention scenarios (e.g., different values for coefficient λ) the impact of these interventions on the cycle itself would have to be included, instead of considering the cycle as an exogenous element. However, an analysis of the possible causality from the budget balance to the cycle does not seem to provide clear-cut evidence that a significant influence exists. The equation that follows, estimated for the period running from 1986 up to 1996, does not reveal such influence:

 $cycle = 0.89 \ cycle_{-1} - 0.26 \ cycle_{-2} + 0.35 \ \delta + 0.42 \ \delta_{-1}, \ (25)$ $(3.1) \qquad (-1.0) \qquad (1.1) \qquad (1.3)$ $\overline{R}^2 = 0.84 \quad s.e.e = 0.014 \quad Q = 1.3 \ (0.53).$

The inability to find this direction of causality can possibly be rationalized in different ways⁽²³⁾. One of these — frequently referred in similar contexts — admits that the budget yields real effects on the cycle only in the presence of nonanticipated budget changes. Therefore, in a context of very predictable budgetary changes, with little innovative content, the balance would render no significant influence on the level of real activity.

Anyway, at least as regards the issue of the budget sensitivity to the cycle and the possible bias of its estimate⁽²⁴⁾, alternative hypothesis to the use of specification (23) should be tested. Therefore, an alternative specification based upon the European Commission Procedure was considered, This procedure uses elasticities to measure the sensitivity of the budget vis-à-vis the cycle. First, elasticities are estimated for the different components of tax revenue and expenditure, which are next integrated in an overall elasticity that weights each of these items⁽²⁵⁾. The application of the Commission methodology to the Portuguese case produced the following specification of the cyclical budget:

$$cyclical budget = 0.44 \ cycle$$
 (27)

where the overall coefficient 0.44 corresponds to the difference between the coefficient of revenue sensitivity to the cycle (0.34) and that of expenditure (-0.1).

```
\begin{aligned} & cycle = 1.38 \ cycle_{-1} - 0.74 \ cycle_{-2} + 0.22 \ \delta + 0.15 \ \delta_{-1}, \\ & (8.2) & (-4.8) & (1.3) & (-0.9) \\ & \overline{R}^2 = 0.82 \quad s.e.e = 0.014 \quad Q = 9.7 \ (0.08). \end{aligned}
```

(24) See footnote 14.

(25) See European Economy no 60 (1995).

It should be noted in the first place that the current methodology does not specify the level of the budget balance, around which cyclical fluctuations occur. Hence it can be calibrated to the following value:

$$\overline{\delta} + \lambda (\overline{\beta} - \beta_{-1}),$$

as done before. Secondly, note that the coefficient 0.44 is quite close to the value which in the previous specification (23) measures the sensitivity of budget to the contemporary value of the cycle, 0.48. However, despite a similar contemporaneous reaction of the balance, the previous specification also comprised a correcting term in the following period. Therefore, the implication of this disparity to the variability of the budget balance should be considered. Does the Community specification (27) imply a greater or smaller budget variability than the previous specification? That is, does it imply a higher or lower probability of surpassing the 3 per cent ceiling?

The variance of the primary balance in the current specification is given by:

$$\operatorname{var}(\delta) = (0.44)^2 \operatorname{var}(cycle).$$
(28)

Using (22) and (20) it can be shown that the variance of the primary balance in the previous specification is given by⁽²⁶⁾:

$$\operatorname{var}(\delta) = \left[\gamma_1^2 + \gamma_2^2 + \frac{2\gamma_1\gamma_2a_1}{1-a_2}\right]\operatorname{var}(cycle). \quad (29)$$

Despite the fact that the 0.44 coefficient is indeed close to coefficient $\gamma = 0.48$, the presence of the correcting term in the previous specification ($\gamma_2 < 0$) helps to lower variance below that yielded by the Community calculation method. Formally we have:

$$(0.44)^{2} / \left[\gamma_{1}^{2} + \gamma_{2}^{2} + \frac{2\gamma_{1}\gamma_{2}a_{1}}{1 - a_{2}}\right] =$$

$$(0.194) / \left[0.23 + 0.18 + \frac{-0.54}{1.7}\right] \approx 2,$$

meaning that the Community method implies a variability about twofold that previously calcu-

⁽²³⁾ The same specification, estimated for the longer period (1977 to 1996) still does not indicate unequivocally this influence:

⁽²⁶⁾ We admit here that the equation (22), as well as (27), are implemented exactly — i.e., with no error term.

Table 7

PROBABILITY OF OVERALL DEFICIT ABOVE 3% Methodology of the Community for calculating cyclical budget Public debt (at steady-state) =20% GDP $\overline{\beta} = 0.2$

	2005	2015	2025
$\lambda = 0.025$	0.26	0.23	0.21
$\lambda = 0.04$	0.09	0.10	0.09
$\lambda{=}0.055$	0.04	0.05	0.05
$\lambda = 0.07$	0.02	0.03	0.03

lated. Therefore, if this method is chosen, the fiscal policy guidelines should be more rigorous than those implicit in tables 2, 3, 4 and 5.

As a means of illustration, table 7 shows the probabilities of exceeding the 3 per cent threshold for $\bar{\beta} = 20\%$ using the Community method of simulation of the budget⁽²⁷⁾. The probabilities calculated according to this methodology are increased between 2 and 5 percentage points.

6. CONCLUSIONS

Returning to the questions raised at the beginning, on the major fiscal policy guidelines to be followed in the context of the monetary union and the Stability Pact, the following general answers can be given based upon the previous analysis:

- 1. The choice of long-run objectives, defined in terms of primary and overall budget balances and public debt, should first of all be mutually consistent.
- 2. With plausible values admitted for the interest rate and the nominal growth of GDP, this compatibility requires a virtually balanced primary account in the long-run.
- 3. However, in the short- and medium-term, an additional budgetary effort is required

for the primary balance, to reduce public debt to significantly lower values. This reduction is essential if a low probability of violating the 3 per cent ceiling for overall deficit, defined by the Stability Pact, is to be attained.

- 4. The budgetary effort ultimately depends on the violation probability one wants to admit. For instance, a violation probability ranging between 6 and 35 per cent up to year 2005 requires in the short run a budgetary effort on the cyclically adjusted primary surplus ranging between 0.8 and 1.8 per cent of GDP, respectively. Obviously, other options are feasible in our framework, including the use of the European Community methodology, which in general points to higher levels of budgetary intervention required.
- 5. The required budgetary effort should concentrate in the near future, since this is the period where the probability of exceeding the threshold is higher, due to the initial magnitude of the debt. It tend to decrease gradually afterwards with the progressive reduction of this magnitude. The need for concentrating the fiscal effort mostly at the beginning, together with the risks of an initial asymmetric recession are reasons that suffice for an increased monitoring of the recent and forthcoming fiscal developments, as well as their articulation with the contribution from privatisation revenues.

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⁽²⁷⁾ By Community methodology we refer to the use of expression (27) instead of (23). Rigorously, the procedure here presented is different from the usual procedure of the European Community, since in the present simulation the autocorrelation in the cycle is taken into account.

SOCIAL SECURITY AND ECONOMIC PERFORMANCE IN PORTUGAL*

Alfredo Marvão Pereira**

1. INTRODUCTION

The reform of the social security system is currently at the center of the policy debate in many countries (see, for example, World Bank (1995)). The need for reform is typically associated with the realization that the social security system is not financially sustainable. We say that the social security system is not sustainable if the current level of social security benefits cannot be financed given the current social security tax base and contribution rates. At the root of these solvency problems is the pay-as-you-go (PAYG) financing mechanism. Under a PAYG mechanism, currently employed workers pay for the benefits of the unemployed, elderly, or disabled. As a result, there is no direct relationship between contributions and benefits for each specific individual and the solvency of the systems may be seriously jeopardized by adverse demographic and economic conditions. Under such adverse conditions, the social security system may be unable to generate enough revenue into the future to finance their current commitments. This is also the situation with the Portuguese social security system⁽¹⁾.

While the lack of sustainability is widely recognized as an inherent problem of a PAYG system, the fact that the same PAYG system may cause considerable economic distortions is less appreciated in the policy debate. In fact, a PAYG social security system is likely to affect the labor and financial markets negatively (see, for example, Feldstein (1996), Gramlich (1996) and Kotlikoff (1997)). Since there is no direct relationship between social security contributions and social security benefits for each specific individual, social security contributions are perceived as taxes on labor income. To the extent that these taxes are borne by producers, they increase real labor costs and affect labor demand negatively. If, however, some of the burden of the labor taxes is borne by workers, then they will reduce disposable income and private savings. By affecting negatively both employment and funding for capital formation, a PAYG social security system is likely to affect output negatively as well.

The empirical evaluation of the magnitude of the negative effects of the social security system on economic performance is critical from a policy perspective. In fact, the presence of sizable negative effects would suggest that the social security system is inefficient even if it were sustainable. Accordingly, the social security would be in need of reform even if were sustainable. Furthermore, if inefficiency is a problem, the conventional recipes to deal with sustainability, increased contributions or decreased benefits, could cure the problem of sustainability but only at the cost of increased economic inefficiencies. As a corollary, in the presence of sizable inefficiencies the debate on social security reform would have to be re-focused from the issue of the sustainability of the system to the issue of its efficiency effects.

The objective of this paper is to provide an empirical evaluation of the size of the distortionary

^{*} The views expressed in this article are of the exclusive responsibility of the author and do not necessarily coincide with the position of the Banco de Portugal. The author would like to thank José Ferreira Machado for very useful comments and suggestions. The usual disclaimers apply.

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⁽¹⁾ See Banco de Portugal (1995), p. 104-106, for a short but comprehensive overview of the social security system in Portugal, Borges e Lucena (1988), Braz (1995), OECD (1996), and Silva (1997), on the issue of sustainability of the Portuguese system, and Gaspar, Lucena, and Pereira (1994), and Gouveia and Pereira (1997) on the issue of social security reform in Portugal.

effects of the social security system in Portugal. The analysis is based on a vector auto-regressive (VAR) approach and the associated impulse-response functions. This approach identifies explicitly the effects of changes in the evolution of social security spending on unit real labor costs, the unemployment rate, the savings rate and output. The dynamic multivariate approach follows from the argument that the analysis of the effects of the social security system requires the consideration of the dynamic feedback effects between changes in social security spending and changes in the remaining variables. Thus, social security spending is allowed to affect economic performance through time and economic performance itself is also allowed to affect the evolution of social security spending. In fact, it can clearly be argued that a country with higher standards of living can also afford a more generous social security system while a country with, for example, higher unemployment necessitates a more generous social security system. Ultimately, the effects of social security on the economic performance have to account for both the initial shocks to social security spending as well as the subsequent dynamic interactions among the different variables.

2. DATA: SOURCES AND DESCRIPTION

This paper considers the following variables: output (GDP), the private savings rate, i.e., private savings as a fraction of GDP (SAV), the unemployment rate, (UNR), the unit real costs of labor (UCL), and social security spending as a fraction of GDP (SSEC). All the variables are used in natural logarithm form, denoted by the letter L before their respective name (LGDP, for example).

For the international cross-section regressions in section 3, the data for all variables is obtained from the Statistical Annex of the European Economy (1995). Each variable is averaged over the period 1981 to 1990 for each of the fifteen European Union countries: Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, the Netherlands, Portugal, Spain, Sweden, and the UK.

The data for the time series regression covers the sample period of 1960 to 1991 and, therefore, contains 32 yearly observations. The data set is obtained from several sources. GDP is obtained as national spending in 1977 prices from the longterm national accounting series published in Cunha, Dias, and Santos (1992). Private saving in current prices is from the same source, as is the GDP price deflator used to convert nominal private savings into real savings in 1977 prices. The unemployment rate and the unit costs of labor are obtained from Statistical Annex to the European Economy (1995). Finally, social security spending in nominal terms was obtained from unpublished sources in the Banco de Portugal and converted into 1977 prices using the GDP price deflator.

The social security variable represents spending rather than revenues. While historically in Portugal the two series have been closely related, in recent years there has been a growing discrepancy between the two. The corresponding deficits have been covered from the general public account budget, i.e., either from general taxation or from public indebtedness, which are claims on future private sector income. Accordingly, social security spending, rather than revenues, best reflects the size of the social security system and more accurately measures the source of the burden induced by the social security system. The social security spending variable includes the general system covering private sector workers and the system for public sector employees. It does not include, however, special regimes that apply, for example, to the banking sector. Finally, the social security spending variable includes pensions for old age, invalidity, and survivors (about 77 per cent of total spending) and compensation for temporary loss of income due to sickness and unemployment as well as other welfare benefits (the remaining 23 per cent) $^{(2)}$.

⁽²⁾ The use of aggregate spending is justified conceptually by the scope of the paper and for practical reasons by the need to keep the VAR estimates at a manageable level. It should be recognized, however, that the focus on aggregate spending obscures the fact that the different components of social security spending affect economic performance through different channels and with different intensities. Accordingly, it is likely that mere changes in the composition of social security spending, without changes in the overall spending, would affect economic performance. This point should in no way affect the answer to the general question in the paper. This is because all major components of social security spending show a positive trend and our prior is that all increases in social security spending are likely to be distortionary. Implicitly, our results presume that at the margin changes in the size of social security spending maintain the average composition of spending observed in the sample period.

Table 1 CROSS-SECTION REGRESSIONS

Dependent variable:	LPIB	LPOUP	LTXDES	LCTUP
Constant	2.503	0.974	0.085	2.589
	(0.324)	(0.194)	(0.259)	(0.180)
LSSEG	0.610	0.827	0.458	0.638
	(0261)	(0.156)	(0.208)	(0.145)
\overline{R}^2	0.22	0.63	0.19	0.53

Note: standard errors in parenthesis.

3. SOME STYLIZED CROSS-SECTIONAL FACTS

The objective of this section is to provide some international stylized facts on the relationship between the size of the social security system and the evolution of the other variables under discussion. The purpose is to establish contemporaneous correlations not to make statements on causality.

Table 1 reports on the cross sectional regressions of LGDP, LSAV, LUNR, and LUCL on LSSEC. As is appropriate with cross-sectional regressions including such disparate countries, all variables are divided by the square root of the population of the respective country. This eliminates problems of heteroskedasticity on the assumption that the variance of the country-specific residual is proportional to the population of the country.

The international cross-section regressions show a strong positive correlation between national output and the savings rate and social security spending. This suggests that social security is a normal good good: richer and thriftier countries tend to have more of it. If one has the prior belief that social security may reduces savings and lowers GDP growth, then this results suggest that these effects are contemporaneously dominated by the "normal good" effect. In addition, both the unit costs of labor and unemployment are also strongly and positively correlated with the level of social security spending. This is consistent with the intuition that countries with higher unemployment may seek greater unemployment protection while at the same time greater unemployment protection may induce higher unemployment.

Table 2
TIME-SERIES REGRESSIONS

Dependent variable:	LGDP	LSAV	LUNR	LUCL
Constant	13.644	-0.146	3.843	6.613
	(0.276)	(0.834)	(0.363)	(0.176)
Trend	0.025	-0.004	-0.003	-0.030
	(0.004)	(0.013)	(0.021)	(0.003)
LSSEG	0.323	0.559	0.884	0.593
	(0.078)	(0.235)	(0.384)	(0.050)
$\overline{R^2}$	0.97	0.58	0.60	0.82

Note: standard errors in parenthesis.

Table 2 reports on the regressions of LGDP, LSAV, LUNR, and LUCL on LSSEC with time series data for Portugal. The pattern of correlations that we have identified in the cross-sectional regressions for the EU is also found when we consider the same regressions with time series data for Portugal. In particular, there is a strong positive correlation between GDP and the unemployment rate and social security spending.

These results have very important policy implications and are very useful in putting the richer VAR results below into perspective. Portugal is currently going through a deliberate process of real convergence to EU standards. This means that GDP in purchasing power parity in Portugal is expected to increase substantially over the next decade or so. The positive correlation between GDP and the size of social security system suggests that there will be great pressures to increase the generosity of the Portuguese social security system. It also worth noticing, however, that in the cross-section regressions the observation for Portugal is below the regression line for both GDP and savings. This suggests that Portugal has a social security system that is more generous than what is implied, by EU standards, by its level of GDP per capita and savings performance. Thus, there may be less pressure to upgrade the social security system than what would be implied by an improvement in the Portuguese standards of living.

At the same time Portugal is currently experiencing levels of unemployment that are relatively

Table 3**TESTING THE NULL HYPOTHESIS OF A UNIT ROOT**

Variable	Deterministic components	Optimal lag	Test Statistic	Value	Critical
		(BIC)		5%	1%
LGDP	Constant	0	-2.7167	-2.93	-3.58
LSAV	None	0	-0.6183	-1.95	-2.62
LUNR	None	0	0.0066	-1.95	-2.62
LUCL	None	2	-0.1598	-1.95	-2.62
LSSEG *	None	0	-2.9388	-1.95	-2.62

Note: * cannot reject the null hypothesis with Phillips-Perron's z-test.

Table 4

TESTING OF COINTEGRATION

Variable	Deterministic components	Optimal lag (BIC)	Test Statistic	Value 5%	Critical 1%
LGDP	Constant & Trend	0	-3.5169	-4.45	-5.07
LSAV	Constant & Trend	0	-3.6065	-4.45	-5.07
LUNR	Constant & Trend	0	-3.6419	-4.45	-5.07
LUCL*	Constant & Trend	1	-7.4658	-4.45	-5.07
LSSEG *	Constant & Trend	1	-5.4574	-4.45	-5.07

Note: * cannot reject the null hypothesis with Phillips-Perron's z-test.

Table 5 SPECIFICATION FOR THE VECTOR AUTOREGRESSIONS

Deterministic components	Lags	AIC	BIC
None	1	-25.051	-23.883
Constant	1	-25.206	-24.205
Constant & Trend	1	-25.433	-24.599
None	2	-26.49	-24.232
Constant	2	-26.684	-24.699
Constant & Trend	2	-26.721	-24.709

low by EU standards. There is a great concern that either institutional or economic changes may increase the unemployment rate. The positive correlation between the unemployment rate and the size of the social security suggests that there will be pressures to increase the generosity of the system, in particular the unemployment benefits. This is particularly important since in this case the observation for Portugal in the cross section unemployment regression is well above the regression line. This suggests that Portugal has currently a social security system that is less generous than what is implied, by EU standards, by its unemployment rate.

4. VAR ESTIMATION AND IMPULSE RESPONSE FUNCTION ANALYSIS

4.1 Preliminary data analysis and VAR estimation

To decide on the order of integration of the variables we test the null hypothesis of a unit root on LGDP, LSAV, LUNR, LUCL and LSSEC. The results of the Augmented Dickey-Fuller (ADF) t-test are reported in Table 3. The optimal lag structure was chosen using the Box Information Criterion (BIC). A deterministic component was considered if statistically significant. In all but one case, the value of the ADF t-test is greater than the 5 per cent critical value. Therefore, the null hypothesis of a unit root cannot be rejected. In the case of LSSEC, further experiments not reported in Table 3, suggest that the null hypothesis of a unit root cannot be rejected using the ADF t-test with any other specification of the deterministic component. Furthermore, the null of a unit root cannot be rejected, even at the 10 per cent level, with the Phillips-Perron's Z-test. We take this as evidence that stationarity in first differences is a good approximation for all the time series under consideration.

In order to investigate the existence of cointegration among the different variables, LGDP, LSAV, LUNR, LUCL, LSSEC, the ADF t-test was applied to the residuals from the regressions of each variable on the remaining variables. The results are shown in Table 4. Again, the optimal lag structure was chosen using the BIC and a deterministic component was considered if statistically significant. Five cases were considered, the

endogenous variable in the regression being the residuals of the variable indicated. In three of the five cases the value of the t-statistic is larger than the 5 per cent critical value. This means that the null hypothesis of a unit root in the residuals cannot be rejected and the evidence is against the existence of co-integration among these variables. In the two cases where the ADF test allows us to reject the null hypothesis, further investigation suggests otherwise. In fact, the ADF Z-test suggests that the null could not be rejected in these cases, even at the 10 per cent level. All together, we conclude that the evidence is overwhelmingly against co-integration.

Following the standard procedure in the literature, and given the non-stationarity of the variables and the absence of co-integration, the VAR estimates are in first differences of log-levels, i.e., in growth rates, denoted by the letter D before their respective name (DLGDP, for example). The general specification of the VAR model is provided in Table 5. A second order specification with both constant and trend is suggested by the BIC. Likelihood ratio tests on both the second-order coefficients and the deterministic components confirm this choice. The VAR estimates are reported in Table 6. In all cases the R-squares as well as the Durbin-Watson statistics are within acceptable bounds. The matrix of contemporaneous correlations among the estimated residuals is given in Table 7. In general, the innovations tend to display relatively low contemporaneous correlations, i.e., under 0.50.

4.2 Impulse response function analysis: orthogonalization strategies

The analysis of the effects of changes in social security spending is based on the impulse response functions associated with the estimated VAR system. These functions are designed to identify the effects of an unanticipated one percentage point temporary increase in the growth in one variable in the system on the growth of the other variables in the system. We expect a temporary shock in the growth rate of one variable to have only a temporary effect on the growth of the other variables. It will have, however, a permanent effect on the levels of the other variables.

Table 6	
ESTIMATES: THE VECTOR AUTO-REGRESSIVE MODEL	

	DLGDP	DLSAV	DLUNR	DLSSEC	DLSSEG
Constant	0.049	-0.090	0.280	-0.052	0.027
	(0.031)	(0.141)	(0.167)	-0.049	(0.080)
Trend	-0.001	0.001	-0.005	0.002	0.000
	(.001)	(0.004)	(0.005)	(0.001)	(0.002)
DGDP-1	0.521	-0.873	-5.597	-0.068	0.106
	(0.240)	(1.089)	(1.289)	(0.377)	(0.615)
DLSAV-1	0.055	0.031	-0.101	-0.092	0.025
	(0.043)	(0.196)	(0.232)	(0.068)	(0.110)
DLUNR-1	0.032	0.202	-0.379	-0.005	-0.128
	(0.038)	(0.172)	(0.204)	(0.059)	(0.097)
DLUCL-1	-0.108	0.165	2.287	0.446	0.828
	(0.131)	(0.593)	(0.702)	(0.206)	(0.335)
DLSSEC-1	0.090	-0.272	-0.210	0.075	-0.013
	(0.076)	(0.346)	(0.409)	-0.119	(-0.195)
DLGDP-2	-0.207	3.216	1.992	0.933	0.645
	(0.268)	-1.214	-1.437	(0.421)	(0.685)
DLSAV-2	-0.084	-0.183	0.289	0.019	0.204
	(0.041)	(0.186)	(0.220)	(0.064)	(0.105)
DLUNR-2	-0.033	0.365	0.477	0.060	-0.075
	(0.033)	(0.151)	(0.179)	(0.052)	(0.085)
DLUCL-2	0.056	0.542	0.815	-0.453	0.646
	(0.142)	(-0.647)	(0.766)	(0.224)	(0.365)
DLSSEC-2	-0.105	-0.416	-0.223	0.104	-0.274
	(0.072)	(0.329	(0.390)	(0.114)	(0.186)
$\overline{R^2}$	29	12	58	42	30
10	.60	.16	.00	.16	.00
D-W	2.00	2.14	2.30	2.40	2.31

It is well known that the results of impulse response analysis depend on the ordering of the variables. Since the matrix of contemporaneous correlations among the estimated residuals is not diagonal, orthogonalization is necessary before we can conduct a meaningful analysis. Orthogonalization, however, is not unique. We confine our discussion of orthogonalization strategies to the use of triangular matrices under the Choleski decomposition method. In our case, there are five scenarios depending on whether social security spending growth is ranked first, second, third, fourth, or fifth. These five scenarios completely determine the range of results in the impulse response analysis.

Of the five possible scenarios, one seems to be the most plausible *a priori*. In this central scenario we focus on the case in which social security spending growth is ranked first. Here shocks to social security spending affect the other variables contemporaneously, but shocks from the other variables have no contemporaneous effect on social security spending growth. The choice of this case is based on the view that within a one-year

Table 7 ESTIMATES: MATRIX OF CONTEMPORANEOUS CORRELATIONS AMONG THE VAR RESIDUAL

	DLGDP	DLSAV	DLUNR	DLUCL	DLSSEC
s-error	0.0205	0.0931	0.1102	0.0323	0.0525
DLGDP	1.0000				
DLSAV	0.3422	1.0000			
DLUNR	-0.3165	-0.4624	1.0000		
DLUCL	-0.2482	-0.2637	0.0743	1.0000	
DLSSEC	-0.3424	-0.5554	0.0857	0.4838	1.0000

period, changes in social security spending can be determined independently by the government. Since our central scenario is based on orthogonalizations when social security spending is ranked first, for each variable there is a single estimated elasticity with respect to social security spending regardless of the order of the remaining variables.

4.3 On the estimated impulse response functions

Figures 1.1-1.5 show the impulse responses in our central scenario to a one-time increase in social security spending growth of one percentage point (1.00). Since our social security variable is social security spending as a fraction of the GDP, this means that at period one social security spending growth is one percentage point above GDP growth. As Figures 1.1-1.5 illustrate, all of the impulse response functions display a very smooth evolution. Though we carry out the simulations for twenty periods, in each case convergence is achieved after a period of five to ten years. In turn, Figure 2 gives the accumulated impulse responses to the shock in social security spending. The accumulated impulse response functions show the effects of the shock to social security spending on the levels of the other variables as opposed to the growth rates which are displayed in Figures 1.1-1.5.

It should be pointed out that, as Figure 2 shows, a one percentage point change in social security spending growth induces a total accumulated change in social security spending growth of just 0.8 percentage points. The fact that the accu-







mulated long-term effect differs from original shock means that social security is not, as often assumed in the literature, an exogenous variable. In fact, while changes in the evolution of social security spending affect the other variables, changes in the other variables also affect over time the evolution of social security spending⁽³⁾.

4.4 Elasticities and marginal products

The results of the impulse response function analysis are summarized using long-term accumulated elasticities and marginal products. We focus on the long-term accumulated elasticities of output, savings rate, unemployment rate, and unit real labor costs, with respect to social security spending. The long term is defined as the time horizon over which the growth effects on the other variables of innovations in the growth rate of social security spending disappear. In our analysis this means a time horizon of ten years. The longterm elasticity is obtained by allowing all variables to respond over time to the initial shock to social security spending growth in the first step. It measures the long-term accumulative effects of so-

⁽³⁾ The idea that the evolution of social security spending depends on the evolution of the remaining variables in previous periods should not be confused with the assumption that contemporaneously, social security spending is not affected by affected the other variables.

cial security spending on the growth of the other variables at the last step. Since social security growth itself changes over time, the elasticity figures are normalized to measure the total accumulated effect on the other variables of an accumulated one percentage point change in the evolution of social security spending.

In turn, the long-term accumulated marginal products are computed by multiplying the elasticity figures by the ratio of the private sector variable under consideration to the social security variable. This ratio is in the original levels of the variables. Since the variables are not co-integrated, there is no stable long-term relationship among them and they should be expected to drift apart over time. This means that the choice of when to measure this ratio is not irrelevant. Given the nature of our discussion we have chosen to consider the average ratio for the last five years of the sample. This allows us to interpret the marginal products as the long-term effects of policies implemented at the end of the sample, measured under the conditions observed by the end of the sample period.

It should be noted that the terms elasticity and marginal product are used in a way that greatly departs from the conventional definitions. Here, the effects on private sector variables resulting from changes in social security spending include all dynamic feedbacks among all the variables. Therefore, the elasticities and the marginal products are total elasticities and marginal products. They measure both the direct effects of changes in social security spending on output and the indirect effects of changes in social security spending on output through changes in the evolution of the other variables. This is the concept that is relevant from a policy standpoint.

5. SOCIAL SECURITY AND ECONOMIC PERFORMANCE

5.1 Economic effects of social security: social security, unemployment and savings

The impulse response function results reported in Table 8 suggest that an increase in social security spending leads to an increase in the unit costs of labor as well as in the unemployment rate. In-

Table 8
LONG-TERM ACCUMULATED EFFECTS OF
CHANGES IN SOCIAL SECURITY SPENDING

Variable	Elasticities	Marginal products	
GDP	-0.298	-\$3.32 per \$1 in social security	
SAV	-0.850	-\$1.40 per \$1 in social security	
UNR	2.463	0.758 percentage points per 1% in SSEC	
UCL	0.528	4.06% per 1% in SSEC	

deed, the long-term accumulated elasticity of the unit labor costs with respect to changes in the evolution of social security spending is 0.582 while the elasticity of the unemployment rate is 2.463. These numbers mean that a one percentage point increase in social security spending, say from 13 per cent of the GDP to 14 per cent using current figures, would lead to an increase of 4.06 per cent in the unit real costs of labor. It would also lead to an increase in the unemployment rate of 0.758 percentage points, say from 7 per cent to 7.758 per cent, using again recent figures.

Also, the long term accumulated elasticity of the savings rate with respect to changes in social security spending is -0.850. This means that a one percentage point increase in social security spending, say from 13 per cent of the GDP to 14 per cent, would reduce the savings rate in the long term by 1.4 percentage points, say from 21.9 per cent of the GDP to 20.5 per cent again using current figures. Since both variables are expressed in percentage of the GDP, this result also suggests that \$1 in social security spending crowds out \$1.40 in savings in the long term. To understand why the result is greater than \$1 it may be noted that there are indirect negative effects on savings in terms of lost wages through increased long-term unemployment induced by increases in social security spending. This is above and beyond any direct crowding out effects among the employed population.

5.2 Economic effects of social security: social security and GDP

The analysis of the effects on output of changes in the evolution of social security spending are to a large extent implied by their effects on savings and unemployment. The crowding out of private savings by social security implies a lower availability of funds for investment purposes while the increase in unemployment reduces the working labor force. Accordingly, one would expect the effects on the GDP to be negative. In fact, as reported in Table 8, the long-term elasticity of GDP with respect to the changes in the evolution of social security spending is -0.298. This means that a \$1 increase in the social security spending from its current level of 13 per cent of the GDP, would decrease GDP in the long term by an accumulated total of \$3.3.

5.3 Variance decomposition: how much does social security explain?

The results of the forecast variance decomposition are reported in Table 9. These figures tell us how much of the variability of each variable is explained by shocks in the social security variable at all horizons. We find that the variability of social security spending is explained mostly by its own shocks. In addition, approximately one-fourth of the variability of both the savings rate and the unit costs of labor are consistently explained by shocks in social security spending. Finally, shocks explain approximately 10 per cent of the variability of output and the unemployment rate. The case of the unemployment rate is particularly interesting since it takes approximately 5 years for the effects of shocks in social security spending to have a noticeable effect on the unemployment rate.

5.4 On the robustness and plausibility of the results

Clearly, the results above are conditional on the assumption that the evolution of social security spending is not affected contemporaneously by the other variables. To establish the robustness of the results from this central case, we computed the

Table 9 VARIANCE DECOMPOSITION: PERCENTAGE OF THE CHANGES IN THE VARIABLES DUE TO CHANGES IN SOCIAL SECURITY

Variable	t=0	t=5	t=10	t=20
DLGDP	11.7	11.6	11.8	11.8
DLSAV	30.8	25.5	25.1	25.1
DLUNR	0.7	10.5	10.5	10.5
DLUCL	23.4	24.2	23.5	23.1
DLSSEC	100.0	50.8	47.1	46.5

values of the impulse response functions under all of the alternative orthogonalization strategies. Specifically, there are a total of five factorial (one hundred and twenty) possible orthogonalizations for our five-variable VAR system. The range of results across all possible orthogonalizations establishes that the qualitative nature of the results above is very robust. Although, the results presented above tend to be close to the upper bounds of the range of variation, in no case is the sign of the long-term effects reversed⁽⁴⁾.

The quantitative results presented above are also very plausible by international standards. Clearly, many other countries have social security systems that are similar to the Portuguese in that they are based on a PAYG financing mechanism. In Pereira (1998) the basic methodology presented in the present paper is applied to European Union countries and to the United States. The results for Portugal are well within the range of variation the for the different countries in this study⁽⁵⁾.

 ⁽⁴⁾ The elasticity of output with respect to changes in the evolution of social security spending, for example, ranges from -0.330 to -0.144.

⁽⁵⁾ The results on the elasticity of output with respect to changes in the evolution of social security spending, for example, range from -0.670 in France to -0.012 in the United Kingdom (Denmark actually displays a positive, albeit small, elasticity).

6. SUMMARY AND CONCLUDING REMARKS

This paper analyzes the effects of the social security spending on the economic performance in Portugal. The empirical results are based on VAR estimates using output, the savings rate, the unemployment rate, the unit real costs of labor, as well as social security spending. This approach follows the conceptual argument that analysis of the effects of the social security system requires the consideration of dynamic feedback effects among the different variables. The main conclusion of this paper is that the social security system in Portugal is, under the current design, highly inefficient. The impulse-response function results indicate that an increase in the size of the social security system adversely affects the performance of the Portuguese economy in the long term: it increases both the unit real costs of labor and the unemployment rate while it decreases the private savings rate. Since it negatively affects both capital accumulation and employment the overall effect on GDP is also negative: a \$1 increase in social security spending decreases GDP by \$3.3.

The negative effects of social security have to be considered in the light of the cross-sectional evidence on the relation between the size of the social security system and GDP per capita and the unemployment rate. It has been shown that countries with higher GDP per capita and with higher unemployment rates tend to have more generous social security systems. The effort to increase GDP per capita in Portugal and the spectrum of increased unemployment in the near future should, by international standards, induce a temptation to increase the size of the social security system. Given the negative effects of social security on economic performance and the sustainability problems of the current system, such temptation should be consistently resisted.

The results in this paper are very important from the standpoint of social security reform. In fact, our results imply that even if the social security system in Portugal were sustainable from a financial perspective, and all the evidence suggests otherwise, it would still be economically inefficient. It would, therefore, be intrinsically undesirable in its current format. This is a far-reaching conclusion. It suggests that the usual prescriptions to deal with the problems of the social security system may eventually alleviate the problem of sustainability. They will not, however, alleviate the central problem of inefficiency and may even make the problem worse. Moreover, it suggests that the policy debate should be re-focused from the issue of sustainability to the issue of efficiency. Changes in the social security system in the direction of a fully funded system have to be the cornerstone of any meaningful social security reform.

Interestingly, if it true that our results relegate the issue of sustainability to a secondary role in terms of social security reform, they also imply that the sustainability problem in Portugal is substantially worse than previously understood. In fact, all the estimates of the implicit social security debt or the equilibrium contribution rates ignore the negative effects of increasing social security contributions on the performance of the economy and therefore its feed back to the sustainability problem. If increasing the size of the system increases unemployment and decreases savings and output, it also reduces the contribution base. Therefore, the increases in the tax burden necessary to generate the stream of additional contributions have been underestimated. As a corollary, the need of trimming down the social security system in Portugal is even greater than previously understood.

Given the sensitive nature of the topic under consideration it is important to conclude with some words of caution. The results in this paper represent, unquestionably, an indictment of the current social security system in Portugal. They make it more acute the need for a reform of the system. They also point the need to re-focus the debate of social security reform from sustainability to efficiency and, in particular, to the need to bring social security contributions and benefits into actuarial balance. In no way can it be inferred that the results in this paper suggest or imply that the social security system should be eliminated or even that it should be privatized. Furthermore, as it is well known, the transition from a PAYG system to a fully-funded system is a rather difficult and lengthy process. As desirable as it may conceptually be, the change from a PAYG to a fully-funded system can only be seriously endorsed after a careful consideration of the costs of transition vis-à-vis the future benefits of having a fully-funded system. This is, clearly, a matter in which the present paper does not have anything to say.

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DETERMINATION OF THE EQUILIBRIUM REAL EXCHANGE RATE FOR THE PORTUGUESE ECONOMY USING THE FEER*

Sónia Costa**

1. INTRODUCTION

The real exchange rate is the relative price of a reference basket of goods between the national economy and abroad, where the basket's prices are compared after converted to a common unit. Its equilibrium path reflects at each moment the value of the real exchange rate which is compatible with full employment of productive factors and with the compliance to the intertemporal budgetary constraint between the domestic economy and abroad. In this context, the identification of persistent misalignments of the real exchange rate vis-à-vis its equilibrium values is a means of detecting imbalances in the economy. Although in a situation where no real perturbations occur the real exchange rate shall not be expected to shift away from its equilibrium, the contrary should happen during a real convergence process as that experienced by the Portuguese economy. Indeed, several researches argue that in the catching-up process resulting from the context of economic and monetary integration, the equilibrium real exchange rate in Portugal has tended to appreciate⁽¹⁾. In this framework the estimation of an equilibrium path for the Portuguese real exchange rate in recent years is particularly relevant. This is the objective of the current research.

The methodology is based upon the concept of Fundamental Equilibrium Exchange Rate (FEER) presented by Williamson (1983). This approach provides an alternative to the determination of the rate of equilibrium in the context of Purchasing Power Parity (PPP), which assumes a constant real exchange rate. Indeed, since real variables exhibit changes in the long-run, these should be expected to be embodied in the equilibrium real exchange rate. This issue has been widely explored in literature, and several empirical applications reveal not only a weak adherence of PPP to the behaviour of the real exchange rate — even in the long-run but also the existence of long-run relationships between the behaviour of the real exchange rate and some real variables⁽²⁾ — e.g., relative productivity between the domestic economy and abroad.

The remainder of this paper is organised as follows: section 2 presents the FEER concept in further detail, highlighting its leading limitations; a simplified application of this methodology to the Portuguese economy in the period 1980-1995 is presented in section 3; the fourth section shows the results for the misalignments of the real exchange rate vis-à-vis its estimated equilibrium path. Section 5 concludes.

2. THE FEER APPROACH

FEER is the real exchange rate that is compatible with the existence of fundamental macroeconomic equilibrium — i.e., that associated to a balanced fundamental account (external equilibrium), in a context where output is at its potential level

^{*} The opinions of the paper represent the views of the author, and are not necessarily those of the Banco de Portugal. The author thanks Vítor Gaspar, Carlos Robalo Marques, Maximiano Pinheiro and Cristina Manteu for comments and suggestions. All remaining errors are the author's responsibility.

^{**} Foreign Department.

See for instance Cunha and Machado (1993), Esteves (1993), Gaspar and Pereira (1995), Gaspar and Pinheiro (1994) and Rebelo (1992).

⁽²⁾ For a revision of the literature see for instance Foot and Rogoff (1995), Rogoff (1996) and MacDonald (1995).

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and no inflationary pressures exist (domestic equilibrium). For fundamental account we take the sum of the primary current account (CA) of the balance of payments to the net value of external flows of structural or fundamental capitals.

This concept of external equilibrium contrasts with the requirement of a permanently balanced CA as often is considered. Indeed, the fundamental account — which joins the flows in the balance of payments of a more permanent nature - is more adequate than the CA in assessing the exchange rate policy medium/long-run sustainability. When domestic saving differs from domestic investment opportunities measured at the world interest rate, countries will experience structural (or non-speculative) capital imports or exports throughout several years, alongside lasting CA imbalances. Therefore, the notion of external balance implicit in the FEER assumes the equality between the CA and the medium-run equilibrium value of net national saving, which may be assessed by the structural capital net flows.

2.1 Application limitations and difficulties

The implementation of the concept of FEER comprises some difficulties related to the concept of fundamental equilibrium. Indeed, the specification of the domestic and external macroeconomic conditions requires that judgements of value are made on what should be the appropriate policies; hence, the FEER is a normative concept⁽³⁾. For instance, the requirement of a permanently balanced fundamental account reflects a strict notion of external equilibrium, which has implicit a policy decision. This decision can be explained by authorities' concern with the behaviour of the fundamental account in the short-run. In fact, in theory the existence of external equilibrium requires only that net external debt is sustainable - for the economy to meet is liabilities without accumulating unemployed cash balances — which is compatible with alternative paths for the fundamental account⁽⁴⁾.

The determination of the fundamental account in practice also does not gather consensus, since the structural capital flows are not easy to identify. The capital items to be included in the fundamental account should be stable and permanent capital flows — i.e., those reacting to differentials between the yields of long-term domestic and external investments, or those reflecting changes in portfolio preferences, possibly lasting for years until the new portfolio equilibrium is met. These characteristics are, however, based on the investor's motives, which in turn are imperfectly correlated with any clear characteristic that can be isolated in the capital account data.

In addition to the application difficulties, the FEER approach encompasses some drawbacks. First, it renders a partial equilibrium analysis, subject to the Lucas' critique. In most empirical applications, as in this paper equilibrium values of domestic and external output are exogenously determined and are substituted in a previously estimated equation for the fundamental account (or for some current account items), which is then

(4) Dolado and Viñals (1991) consider the following equation for the fundamental account (FA):

$$fa_t = ca_t + i_t^* \cdot e_t b_{t-1}^* + sc_t$$

where *ca* stands for the current account balance, *i** is the foreign interest rate, *e* is the nominal exchange rate, *b* the net external debt deducted from the net balance of stable capitals and *sc* the net balance of stable capitals. The intertemporal constraint in an open economy can be derived from this equation. This is the condition required to achieve a stable net external debt to GDP ratio:

$$\begin{cases} by_t^* = \sum_{i=1}^{\infty} (1+\lambda)^{-i} E_t (bfy_{t+i}) \\ Lim_{N \to \infty} (1+\lambda)^N E_t (by_{t+N}^*) = 0 \end{cases}$$

where by^* and bfy stand respectively for the net external debt to GDP ratio and the fundamental account to GDP ratio.

This condition differs from the intertemporal external constraint usually considered in the intertemporal CA equilibrium approaches, which imposes a null discount flow of current account balances. Underlying this divergence is the fact that the exclusion of stable capitals from the definition of debt implies that these flows shall never be reimbursed. Therefore, the FEER approach can be interpreted as implying a medium-term equilibrium notion, and not the Steady State solution where no capital movements take place.

⁽³⁾ This characteristic is evident in Williamson (1991) — which recognises that the FEER should be known as the optimal or adequate real exchange rate instead of the equilibrium rate — and in Bayoumi *et al* (1994) — which uses the designation DEER (Desired Equilibrium Exchange Rate) for indicating the real exchange rate compatible with the desired domestic and external equilibrium positions.

solved in order to the real exchange rate in context of a balanced fundamental account. Second, the FEER methodology only allows to identify with some certainty greater misalignments, since it is highly sensitive to assumptions imposed in an ad-hoc manner (for instance, as regards stable capitals and domestic equilibrium) and to the value of the fundamental balance elasticities⁽⁵⁾. Third, since the FEER does not embody a notion of intertemporal equilibrium, it disregards the existence of an interaction between the deviations of the real exchange rate from equilibrium and the equilibrium path itself. If at a given moment the real exchange rate stands above the FEER, debt accumulation will occur. This being the case, for the intertemporal external constraint to be fulfilled the fundamental balance may have to exhibit surpluses sometime in the future. In this situation, the FEER — i.e., the real exchange rate compatible with a balanced fundamental account - will stand above the true equilibrium rate. Finally, since the FEER approach is not based upon an explicit theory of real exchange rate determination, it cannot identify the fundamental determinants of the equilibrium changes in the exchange rate, nor of the existence of misalignments.

3. EMPIRICAL APPLICATION

In this paper, we estimate one possible path for the equilibrium real effective exchange rate of the escudo between the first quarter of 1980 and the fourth quarter of 1995, taking the FEER as the equilibrium notion. Following the application developed by Dolado and Viñals (1991) we started by estimating a reduced form for the fundamental account, solved afterwards in order to the real exchange rate in a context of domestic equilibrium. An approximation to the domestic equilibrium was obtained through the trend values for the explanatory variables, which assumes that on average (i.e., apart from the effects of the economic cycles) the economy is at equilibrium or tends to equilibrium. As mentioned by Dolado and Viñals (1991), the specification of a reduced form for the

(5) This situation, which is implicitly considered in the 10 per cent intervals suggested by Williamson for the fluctuation of the G-7 currencies, is particularly evident in Bayoumi *et al.* (1994) or in Barrell and Wren-Lewis (1989). fundamental account has the advantage of estimating the structural component of net external capital flows, instead of taking these as given as in the previous application to the Portuguese economy. Indeed, Freitas (1992) only models the goods and services account, while Manteu and Mello (1992) and Luís (1993, 1996) only consider dependence on the exchange rate for the exports of goods and services, the imports of goods and services and emigrants' remittances. In addition to the modelling of the fundamental account, the major differences between this research and the previous ones consist of the update of the data used⁽⁶⁾ and its econometric methodology.

The determination of the fundamental account balance, necessary to the estimation, requires the specification of what are considered to be stable or structural capitals. An analysis of the behaviour of the various items of the long-term autonomous capital account — those most likely to be eligible to our definition — reveals the existence of similar behaviours: a relative stagnation up to 1986, followed by a strong growth ending most cases in 1989, and the maintenance of values clearly above those in the initial period afterwards. This behaviour was, however, determined by the process of liberalisation of foreign capital flows and by the Portuguese accession to the European Community. Therefore, it does not indicate that the motivations behind each type of investment are the same, neither that these are not of a speculative nature. Indeed, being statistically hard to separate structural operations from the speculative ones, as in other studies on Portugal we opted to consider net direct investment (i.e., the difference between foreign direct investment in Portugal and Portuguese direct investment abroad). We also noticed that the inclusion of net real estate investment does not change results in a significant fashion. Therefore, the fundamental account results from summing the primary current account balance to net direct investment.

The following were considered the leading determinants of the fundamental account: domestic

⁽⁶⁾ The path calculated for the FEER comprised the periods 1961-1990 in Freitas (1992), 1980-1992 in Manteu and Mello (1992) and Luís (1993) and 1980-1994 in Luís (1996). The three latter researches used values estimated in 1991 for the elasticities of the main CA items vis-à-vis the exchange rate.

demand in volume, foreign external demand in volume, the degree of openness of the economy, and the real effective exchange rate⁽⁷⁾⁽⁸⁾. Equation (1) is the dynamic regression in Error Correction Mechanism (ECM) estimated through ordinary least squares⁽⁹⁾. Values in brackets are the *t*-ratios, *T* is a linear trend⁽¹⁰⁾, *bfy* stands for the fundamental balance as a percentage of nominal GDP⁽¹¹⁾, *itcer* is the index of real effective exchange rate (defined so that an increase indicates a real appreciation), *lyr* is domestic demand in logarithms, *ldext* the external demand in logarithms and *g* is the degree of openness of the economy.

$$\begin{split} \Delta bfy_t &= 4.27 + 0.40T + 0.20 \Delta bfy_{t-3} - 0.48 \Delta ldext_{t-2} - \\ &(3.22)(3.28) \quad (2.23) \quad (-2.42) \quad (1) \\ &- 0.37 \Delta lyr_{t-4} - 0.57 \Delta g_t - 0.72 bfy_{t-1} - 0.19 itcer_{t-1} - \\ &(-2.21) \quad (-4.57) \quad (-6.12) \quad (-4.28) \\ &- 0.38 lyr_{t-1} + 0.41 ldext_{t-1} - 0.66 g_{t-1} \\ &(-3.27) \quad (3.29) \quad (-4.45) \end{split}$$

Period of estimation: 1981:2 to 1995:4 *WD* = 42.2

DW=1.92; R^2 =0.65; LM~F(4,44)=1.11 (0.37); ARCH~F(3,42=0.31(0.82); N~ χ^2 (2)=7.33 (0.03); H~F(20,27)=0.64 (0.85); RESET~F (1,47=0.56 (0.46) with: DW the Durbin-Watson test for first-order autocorrelation in the residuals; R^2 the coefficient of determination; WD a Wald test for the existence of co-integration in the dynamic equation; LM the 4-lag residuals autocorrelation test, ARCH a LM statistic that tests autocorrelation of order 4 in square residuals, under the null hypothesis of no conditional autoregressive heteroskedasticity; N a normality test on residuals; H a statistic that tests the null hypothesis of non-conditional homoskedasticity against the alternative hypothesis of residuals correlated with the regressors and squared regressors; and RESET is a functional specification test taking the existence of correct specification as its null hypothesis, against the hypothesis of residuals correlated with the squared adjusted value of the endogenous variable. In parenthesis are the p values for each statistic.

The Boswijk test (*WD*) rejects the null hypothesis of no cointegration, even at a 1 per cent level of significance⁽¹²⁾⁽¹³⁾. Although the joint modelling of the fundamental account rises some problems of interpretation of the signs of the estimated coefficients, our results for the long-run coefficients appear to be consistent with the leading effects generally considered. Equation (2) translates the esti-

⁽⁷⁾ The used sources and the method of construction of our variables are described in Appendix. The stationarity of these series was studied previously to the formalisation of the equation to be estimated. All series appeared to be *I*(*1*) — i.e., stationary in the first differences.

⁽⁸⁾ At a first stage the relative price of oil vis-à-vis the price of national goods and the differential of real long-term interest rate between Portugal and the leading countries of origin of direct investment were also used as explanatory variables, the latter to try illustrate the relative return of direct investment, as in Dolado and Viñais (1991). However, results were not satisfactory. Indeed, the first variable seems to be related with real exchange rate. Regarding the second, the quality of the series used was limited by the fact that no representative long-term interest rate for Portugal exists until the early 1990's; furthermore, the fact that direct investment flows were liberalised only between the second half of the 1980's and the early 1990's reduced the relevance of the relationship we wanted to study.

⁽⁹⁾ Since the dynamic equation is considered only for *bfy*, we implicitly assume that regressors are weakly exogenous for the parameter we wish to estimate. If this was not the case, the ordinary least squares method would result in a loss of information.

⁽¹⁰⁾ For some variables *(lyr, dext* and *g)* the hypothesis of these being *I*(*1*) with a drift was not rejected, which explains the inclusion of a linear trend in the estimated equation.

⁽¹¹⁾ Given that the explanatory variables are expressed in real terms, we opted for taking the fundamental account as a percentage of nominal GDP as the dependent variable.

⁽¹²⁾ According to Granger's representation theorem, if a model of variables with the same level of integration admits a ECM representation, then variables are co-integrated. Thus, a way of testing the existence of co-integration using the dynamic model consists of testing the significance of the Error Correction Term (ECT) — i.e., the term translating the long-run relationship. However, this test cannot be carried out with the usual t-ratio since the limit distribution of the estimators is not standard. In this context, Boswijk (1994) suggests that the null hypothesis of a null ECT should be tested using a Wald test (WD). A sufficient hypothesis for performing this test consists in having weakly exogenous explanatory variables for the parameters of the static regression (i.e., inference over the parameters of the static equation, conditional to the regressors, do not involve loss of information). The WD test is calculated as the usual F-test statistic (test statistic for the joint nullity of the ECT parameters), times the number of constraints to general model. In the case of regression (1), the critical value draw from the Boswijk table when the dynamic model encompasses an unrestricted linear trend (i.e., when we do not force the trend to appear only in the ECT) equals 27.52 for a level of significance of 1 per cent.

⁽¹³⁾ We also analysed the existence of co-integration in the static regression using the test of stationarity of residuals. As in the dynamic regression, the hypothesis of no co-integration was rejected at the 1 per cent significance (the ADF test equalled -6.22, and the 1 per cent critical value calculated using the table in Mackinnon (1991) equalled -5.69).

mated long-run relationship — i.e., the static equation implicit in dynamic equation $(1)^{(14)}$.

$$bfy_t = 5.90 + 0.55T - 0.26itcer_t - -0.53lyr_t + 0.57ldext_t - 0.92g_t$$
(2)

The minus sign of the coefficient for domestic demand in volume seems to reflect the dominance of the positive effect of this variable on the demand for imports, over possible positive impacts on the supply of exports or on direct investment⁽¹⁵⁾. The positive coefficient estimated for external demand in volume is consistent with the expected positive effect on the demand for exports, and may also reflect some impact on direct investment⁽¹⁶⁾. The negative sign of the real exchange rate coefficient must be reflecting the effect of changes in the external competitiveness of the Portuguese economy on the goods and services account (assuming that the Marsall-Lerner condition holds), while the possibility of some negative impact on direct investment cannot be disregarded - since lower competitiveness is mirrored in a reduction in investment return⁽¹⁷⁾. Lastly, the degree of openness of the economy tries to reflect the effects of changes in the trade policy, therefore being particularly relevant in the period under scrutiny

due to the accession of Portugal to the European Community. Its coefficient is negative indicating that the increase in the degree of openness shall have contributed to aggravate the trade deficit⁽¹⁸⁾. This situation is in line with the fact that, in the period following to the accession to the EC, the strong growth of domestic demand for manufactured goods, together with a trade pattern in the European economies adequate to this type of products, yielded a sharper growth of imports than that of exports.

Equalling the long-run equation (2) to zero and rearranging in order to *itcer* yields:

$$itcer_t = 22.7 + 2.1T - 2.0lyr_t + 2.2ldext_t - 3.5g_t$$
 (3)

The estimated path for the FEER was obtained by expressing (3) in terms of the trend values for the explanatory variables, calculated through the Hodrick-Prescott filter.

4. DISCUSSION OF RESULTS

According to our results (charts 1 and 2), the equilibrium real exchange rate recorded an appreciation trend over the course of the whole sample period (from the first quarter of 1980 up to the fourth quarter of 1995). Comparing the estimated equilibrium path with the behaviour of the observed real effective exchange rate allows for the identification of three distinct stages in the behaviour of the exchange rate gap, defined as to identify a positive (negative) value with the percentage of FEER that *itcer* has to depreciate (appreciate) so

⁽¹⁴⁾ The long-run value of the first difference of a non-stationary variable with a drift is not null but depends on the value of the drift. Thus, the constant in (2) reflects not only its value in equation (1) but also the product of the values of the drifts for *lyr*, *ldext* and *g* by the sum of the short-run coefficients associated to the respective variables.

⁽¹⁵⁾ If the economy's productive capacity is constrained, domestic demand measured by gross domestic product in volume terms may have a positive effect on the supply of exports, for a given price level. In turn, although domestic product is expected to yield a positive impact on Portuguese direct investment abroad (which would render a minus sign in the fundamental balance), the value of net direct investment is dominated throughout most of the sample period by foreign direct investment in Portugal, for which the growth of the domestic market may provide an incentive.

⁽¹⁶⁾ The growth of the external markets may provide an incentive to Portuguese investment abroad. However, it should be noted that this variable was built on a foreign trade basis — as explained in Appendix — thus representing our leading trade partners' demand for imports, and therefore it may not render the best means of describing the size of the economies competing with Portugal in attracting investment. In fact, it may better reflect the developments in the economic course of the potential investor countries, which would lead us to expect a positive effect instead. Another reason for this variable to represent an incentive to investment in Portugal is the fact that a bulk of direct investment in Portugal aims at producing for the external market.

⁽¹⁷⁾ The real exchange rate is built using consumer price indices, which provide good indicators for the behaviour of labour costs, and these are important factors in determining companies' location.

⁽¹⁸⁾ Krugman (1990) presents arguments indicating that the entry of southern countries in the European Community has a favourable effect on those countries' foreign trade, and arguments otherwise. On the one hand, it is mentioned that a negative effect should be expected, since southern countries present at start a higher level of protectionism than the core countries. On the other hand, the different sizes of the adhering countries and of the countries already belonging to the Community contributes to build a positive effect on trade, since in the case of the smaller country the demand elasticity of exports is higher than that of imports (since it is more likely that the countries in the Community produce close substitute goods).

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that the fundamental account, measured in trend values, yields a null balance.

In the early 1980's the escudo recorded a significant overappreciation in real effective terms, which is coherent with the observed fundamental account deficits (amounting to about 4 per cent of GDP on average, between 1980 and 1983). To this behaviour contributed not only the expansionary macroeconomic policies implemented in a period of weakening world economy — linked to the second oil shock — but also the 6 per cent nominal valuation of the escudo in February 1980, alongside the deterioration in the terms of trade.

A period of intense real underappreciation took place in the second half of the 1980's, reaching its maximum in 1987, when the fundamental account recorded a surplus amounting to about 4 per cent of GDP. Indeed, while the estimated equilibrium rate maintained its appreciation trend throughout this period, the real exchange rate only started to exhibit an appreciation trend from mid-1988 onwards. The behaviour of the real exchange rate in this period was conditioned by a 12 per cent nominal effective devaluation, carried out in the context of the IMF 1983/84 stabilisation agreement, and by the maintenance of a crawling-peg policy up to 1990 (interrupted only in 1986).

Finally, worth noting is the alignment of the real effective exchange rate close to its equilibrium path throughout the first half of the 1990's. According to our estimates, since 1991 the exchange rate gap remained systematically below the 5 per cent threshold in absolute terms, reaching about



0.2 per cent in the last quarter of 1995. Likewise, this period also saw an improved stability in the Portuguese external accounts: from 1991 up to 1995, the fundamental account and the current account recorded on average balances around 0.7 per cent of GDP and -0.5 per cent of GDP, respectively.

Our findings confirm the main conclusions of previous applications of the FEER methodology to the Portuguese case (Freitas (1992), Manteu and Mello (1992) and Luís (1993 and 1996)). This research points, however, to a sharper real appreciation of equilibrium of the escudo throughout the 1980's and the early 1990's, hence strengthening the empirical evidence of an equilibrium real appreciation process in the Portuguese economy.

5. CONCLUSIONS

This research estimated the equilibrium path for the real exchange rate between 1980 and 1995. The methodology was based on the concept of fundamental equilibrium exchange rate. Despite some drawbacks of this approach, the size of the effects detected allows to conclude with some certitude that in the period under scrutiny the escudo recorded an equilibrium real appreciation. However, misalignments from equilibrium were much wider in the 1980's than in the first half of the 1990's — that is to say, the greater misalignments of the real exchange rate seem to have been contemporary to the greater flexibility of the Portuguese exchange rate regime.

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APPENDIX

DESCRIPTION OF THE DATA

The series considered which evidenced seasonal changes were seasonally adjusted using method X11-ARIMA.

Balance of Payments

Sample: 1980:1 up to 1995: 4; Source: Banco de Portugal

To the moment of preparation of this research, no series adjustment had been carried out to solve the series break in 1993 (due to the adoption of the INTRASTAT system and statistical harmonisation at the Community scale). However, since it would make no sense to include data up to 1992 only, we used the published values with no changes.

National Accounts

Sample:1977:1 to 1995:4; Source: INE (Quarterly Accounts)

Since the period comprises a change in the base-year from 1977 to 1986, series were break adjusted — through maintaining the growth rates in volume and value terms implicit in the published series.

Degree of openness of the economy

Sample: 1977:1 to 1995:4

Calculated as the ratio of the sum of imports and exports of goods and services to gross domestic product, in volume terms.

Real effective exchange rate

Sample: 1980: 1 to 1995:4; Source:Banco de Portugal

Nominal effective exchange rate calculated according to the methodology presented in Vidal and Reis (1994), and using consumer price indices for the calculation of the real exchange rate.

External demand in volume

Sample: 1977: 1 to 1996:1

Geometric average of the external demands of the European Union countries (excluding Belgium, Luxembourg, Ireland and Greece), Switzerland, United States of America, Japan and Canada, weighted by the share of these countries in Portuguese exports. The weights were calculated from data on merchandise exports in value, published by the INE. Weights were re-calculated every year. External demand was measured by the volume indices of imports of goods and services, using data released by the OECD for all countries except for Germany, Spain and Denmark — for which indices were calculated from the imports of goods and services in volume, from the respective National Accounts.

Relative oil prices vis-à-vis the price of national goods

Sample: 1980:1 to 1995:4

Ratio of the oil price index in escudos to GDP deflator. Oil prices were measured by the energy imports price index, calculated by the Direcção--Geral das Relações Económicas Internacionais.

Long-term real interest rate differential between Portugal and the exterior

Sample: 1980:1 to 1995:4

For the Portuguese nominal interest rate we used the nominal long-term interest rate series published by the OECD, which necessarily yields a blurred approximation to this variable — since 10-year Treasury bonds only exist since June 1993,

while 2 to 5-year bonds exist since 1991. The nominal long-term external interest rate was calculated as a weighted average of the nominal interest rate series published by the IMF (government bond yields: yields to maturity of government securities or of other securities with longer maturities). "Exterior" in this context consisted of the leading countries of origin of direct investment in Portugal (Germany, Spain, France, United Kingdom, United States, Japan and Switzerland), for which yearly moving weights were calculated using the sum of the absolute values of investment and disinvestment, of the exterior in Portugal and Portugal abroad. Nominal interest rates were deflated with the annual average growth of the retail price index of the period to which correspond the rates.