ECONOMIC ADJUSTMENT AND BUDGET CONSOLIDATION

The publication of this *Economic Bulletin* is an opportunity to do a first assessment of the behaviour of Portuguese economy over the past year. The recent evolution of the economy indicates the existence of three groups of problems:

1) a deceleration of economic activity, that we share with the rest of Europe, but which has its own endogenous factors;
2) a difficult budgetary position that requires a significant reduction of the deficit at a very short notice;
3) a structural deficit of competitiveness, that we must face with new solutions intended to change the supply side of the economy, in order to meet the challenges posed by European Union enlargement.

2001 was marked by a significant decrease in the growth rate of output from 3.6% in 2000 to 1.8%, a value nonetheless still higher than the European average. This behaviour evolved in line with the world economy, that also characterised by a strong reduction in growth and by a deterioration of international trade that implied, in our case, a deceleration of demand in our external markets from 11.8 % in 2000 to only 1.2% in 2001. In addition to this, however, the slowdown of growth in Portugal was also due to the behaviour of domestic demand that went up by only 0.9%, after an increase of 3.0% in 2000. This deceleration of both consumption and investment, already initiated in 2000, reflects the adjustment of the economy, following a period of strong growth that implied a higher indebtedness of the economic agents. Therefore, since the second half of 2000, households have increased their savings rate and contained consumption, that grew by only 0.8% in 2001 compared with 2.8% in 2000. This behaviour, despite the continued increase in Disposable Income (1.9%) and the maintenance of the full employment situation, is a normal reaction to the indebtedness level attained and to the negative expectations generated in the meantime regarding the future of the economy. Likewise, firms also reduced investment that registered a global negative rate of 0.8%, in spite of the increase in public investment.

The deceleration of domestic demand, in turn, was offset by an increase in the contribution of exports net of imports to the growth of the economy. Indeed, exports grew more than international demand, meaning that our exports had a gain in market share. As a result, the deficit of the balance of goods and services declined significantly by 2 percentage points. In turn, the combined balance of the current and capital accounts (equivalent to the former balance of current transactions) declined to 8.1%. The deceleration in domestic demand was behind this improvement of the external balance and is expected to continue this year. In effect, the factors behind the recent trend of domestic demand continue to be present, and are possibly more pronounced due to the inevitable budget consolidation measures. Therefore, it is only natural that this year the Portuguese economy will grow below the European average.

Over the coming years, the deficit of the balance of goods and services will have to decrease further. The limits on the deficit and on indebtedness are introduced by the private agents themselves or by the markets, thereby ensuring the operation of deficit autocorrection mechanisms, which are naturally of a restrictive nature. The later this deceleration process is started, the more abrupt could be the slowdown and the higher would be the recessive risks. For this reason, the deceleration in domestic demand may be consid-

ered positive, since that corresponds to a path towards a smooth adjustment of the Portuguese economy. Since the second half of 2000, domestic expenditure decelerated in spite of a full employment situation, an improvement in real wages and an increase in the disposable income of households. This income increased more than the growth in consumption, which means that there was an increase in the household savings rate, which indicates that households have started on their own initiative to correct excessive expenditure growth.

This has therefore implied a fall in economic growth. However, the deceleration of domestic expenditure does not linearly translate into a reduction in output growth, since firms may always channel more production to exports. This seems to have happened last year, since, as I mentioned above, there was a gain in market share, including in traditional exports. It is necessary to maintain this development over the coming years. This should be taken into account in managing the expectations of economic agents, in order to avoid an excessive and unjustified pessimism about the future of the economy.

On balance, this means that we need a different growth pattern, less centred on domestic demand and more based on productivity increases, that improve our external competitiveness.

This leads me to address the third problem mentioned at the beginning. A profound structural shock is necessary on the supply side, dependent on some public policies, but which will chiefly be the result of more business initiative. Unfortunately, neither most private agents nor the State seem to have adequately realised the new operating rules of the economy for a country that is member of a monetary union. These rules require a change in behaviour, some structural reforms and a new macroeconomic regulatory system.

The most serious and immediate issue is the situation of public finance. Last year, I recalled the need to comply with the Stability Pact and I said then: "This requirement means that the country faces a budget crisis, rather than an economic crisis ". The issues at stake are the commitments assumed on the medium-term development of the budget deficit. As it is known, there is no technical problem of sustainability of Portuguese public finances. Our debt to GDP ratio is 55%, below the European average and the deficit-related regulations laid down in the Stability Pact ensure that it will have to decrease further. Compliance with the major guidelines contained in the Stability Programme is essential for the international credibility of our economic policy. The deterioration of the budget deficit in 2001 makes the task more difficult. A high level of national consensus is required as regards the objectives to be attained, without any drama, but in line with a sense of responsibility usually shared by everyone regarding the interests of the country. In particular, this external credibility requires the maintenance of the objective of a budgetary position close to balance by 2004, given the need to show serious efforts of budget consolidation. In order to reduce the deficit, some tough decisions will have to be taken, including containing expenditure and avoiding any measures that may reduce tax receipts. The situation may even justify an increase in some indirect taxes with more immediate effects on the recovery of current revenues.

In the short run, all these measures have restrictive consequences that must be offset by a higher buoyancy of exports, boosted by an international economic recovery and by a re-channelling of production to external markets. In order to make this development possible, it is necessary to reverse the trend observed in recent years of wage increases above output growth. This would not necessarily correspond to a freezing of wages, but to more moderation in wage increases. We must all realise that, under the present situation, this is an essential condition to maintain high employment levels and thus avoid the deterioration of exclusion factors and more inequalities in Portuguese society.

A last word to the recent creation of the Commission led by the Banco de Portugal, with the participation of the Ministry of Finance and the *Instituto Nacional de Estatística*, with a view to analysing and updating the accounts utilised in the notification of the Excessive Deficit Procedure reported in late February. It should be stressed that part of the problems related to the assessment of the final value of the deficit are associated with issues known for quite a long time, but that require final clarification with the Eurostat. These issues are related, firstly, to the treatment of equity increases in some public companies. This is particularly controversial, since they can be considered as

financial asset operations or as capital transfers with an influence on the deficit. Secondly, they are related to the problem of the values of taxes and social contributions considered in National Accounts when compared with those registered in Public Accounts. On the other hand, there are still some issues related to the application of the specialisation principle of the fiscal year in the translation from Public Accounts concepts, which are mainly on a cash basis, to National Accounts standards. In addition, many Autonomous Funds and Services only have to present their final accounts by 15 May. It should be stressed, however, that the work of the Commission do not cover an audit to public accounts, in the technical sense of the term, since there are neither the time nor the means required to carry out such audit, nor should we interfere with the competences of the Court of Auditors. The Commission will present its conclusions up to August, in time for the preparation by the *Instituto Nacional de Estatística* of the forthcoming notification of the Excessive Deficits Procedure, to be reported in early September.

The Governor
Vítor Constâncio

THE PORTUGUESE ECONOMY IN 2001

1. INTRODUCTION

In 2001 economic activity in Portugal slowed markedly. According to Banco de Portugal estimates, published in this issue of the *Economic Bulletin*, Gross Domestic Product (GDP) increased by 1.8 per cent in 2001, against 3.6 per cent in 2000 (Table 1.1). The deceleration in economic activity reflected the weakening of the external demand relevant to the Portuguese economy and mainly a marked slowdown in the private components of domestic expenditure.

The components of domestic expenditure which are more sensitive to the stage of the economic cycle – such as Gross Fixed Capital Formation (GFCF) of both corporations and households, and household expenditure on durable consumer goods – declined sharply, thus ensuring the pursuance of the adjustment process of private expenditure started in 2000. Given the high import content of these expenditure components, the marked deceleration in imports – which recorded a virtually nil real growth – enabled a significant rise in the contribution of net exports to output growth, even against a background of a marked weakening of the external demand relevant to the Portuguese economy. Note also that, conversely to the previous years, exports registered a gain in market shares.

In line with the trend already seen in 2000, the household savings rate increased further in 2001. According to estimates of Banco de Portugal, the ratio of the household savings rate to disposable income rose by 2.2 percentage points (p.p.) in the past two years as a whole. There was thus a recovery in the savings rate, which stood at historically low levels at the end of the 90's. This recovery is partly associated with the adjustment process of the financial situation of households, which have to repay the debts contracted in the past years. In addition, the rise in the household savings rate may also be related to increased uncertainty about future developments in the Portuguese economy, reflected in the reduction of the consumer confidence indicator in the course of 2001.

Table 1.1

MAIN ECONOMIC INDICATORS

Percentage rates of change

	1999	2000	2001
Private consumption	5.3	2.8	0.8
Public consumption	5.7	3.8	2.9
GFCF	4.6	4.8	-0.8
Changes in inventories[(a)]	0.1	-0.4	0.1
Domestic demand	5.2	3.0	0.9
Exports	3.4	8.5	3.3
Overall demand	4.8	4.2	1.4
Imports	7.5	5.7	0.5
GDP	3.8	3.6	1.8
Current account + capital account (% of GDP)	-6.3	-8.8	-8.1

Note:
(a) Contribution to GDP growth in percentage points.

Table 1.1

MAIN ECONOMIC INDICATORS

Percentage rates of change

	2001	2001
	EB September 2001	EB March 2002
Private consumption	¾ ; 1¼	0.8
Public consumption	1.9	2.9
GFCF	-1 ; 1	-0.8
Domestic demand	¾ ; 1¼	0.9
Exports	4¼ ; 5¼	3.3
Overall demand	1½ ; 2	1.4
Imports	1¼ ; 3¼	0.5
GDP	1½ ; 2	1.8
Current account + capital account (% of GDP	-8¾ ; -7¾	-8.1
HICP	4.2 ; 4.4	4.4

The strong deceleration of private domestic demand was accompanied by a slowdown in credit to the non-financial private sector, despite the existence of monetary conditions characterized by relatively low interest rates, both in nominal and real terms. As a result, the pace of growth of the indebtedness of both households and non-financial corporations declined, reaching 95 per cent of household disposable income and 88 per cent of GDP respectively at the end of 2001.

Conversely to private expenditure, the pattern of general government expenditure did not signal a correction. Primary current expenditure continued to show a very high growth pace both in real and nominal terms. The public sector continued to contribute to labour market tensions, through the creation of employment and very high wage increases. Thus, in a context of deceleration of tax revenue, the overall deficit of the general government deteriorated beyond the performance of automatic stabilisers, indicating a deviation from the required fiscal consolidation.

In 2001, external financing needs of the Portuguese economy declined slightly, which translated into a decrease in the combined deficit of the current and capital account by 0.7 p.p. of GDP, albeit to a still very high level (8.1 per cent of GDP). This reduction resulted from a decline in the goods and services deficit – to which contributed the gain in terms of trade and the favourable volume effect referred to above – which more than offset the widening of the income deficit and lower net public transfers inflows. The behaviour of the combined current and capital account reflected essentially the reduction in the financing needs of the private sector of the economy (households and corporations), since the general government financing needs increased sizeably. A significant share of the financing of the combined deficit of the current and capital account was accounted for by resident monetary financial institutions through their branches abroad, by means of the issue of medium and long-term securities in international financial markets, improving the maturity structure of the liabilities of those institutions.

In 2001 the labour market was characterised by the maintenance of strong employment growth (1.6 per cent against 1.7 per cent in 2000) and a reduced level of the unemployment rate (4.1 per cent, i.e. 0.1 p.p. higher than in 2000), clearly below the natural unemployment rate (estimated by Banco de Portugal at around 5 per cent).[1] The slowdown in economic activity, together with the increase in employment, translated into a marked deceleration of apparent productivity per employee (virtually nil growth in 2001 against approximately 1.8 per cent in 2000), which is likely to reflect the lag between output and employment cycles. It should be noted that most euro area countries recorded a similar pattern of strong slowdown in productivity in 2001.

The annual average change in the Consumer Price Index (CPI) reached 4.4 per cent in 2001, i.e. 1.5 p.p. higher than in 2000. However, the year-on-year rate of change in the CPI has recorded a downward trend since the second quarter of 2001, standing at 3.7 per cent in December. This reduction was confirmed in the first quarter of 2002, as there was a further reduction to 3.2 per cent in February and March. The rise in Portuguese inflation, in addition to reflecting the impact of anomalous price changes in some food products, also reflected the rise in external inflation, which gave rise to an acceleration in consumer good import prices in Portugal. In addition, it should be mentioned that compensation per employee continued to rise strongly in 2001, remaining in real terms above the rise in productivity for the fifth consecutive year (see Box 1– *Factors behind inflation in Portugal*).

Turning to the forecasts presented in the September 2001 issue of the *Economic Bulletin*, it should be noted that current estimates of output growth stand in the middle of the projection range presented in the September 2001 issue. This result reflects however deviations from the forecasts of output components: lower growth of exports, as a result of a deterioration in the external environment of the Portuguese economy, which was more significant than forecast in the technical assumptions adopted then; there was a higher adjustment of private expenditure, probably reflecting the relatively unfavourable trend of economic agents' confidence; and, finally, a higher rise in public expenditure, in both real and nominal terms, than the one assumed in the September issue. Finally, it

(1) The natural rate is an estimate, obtained with a high degree of uncertainty, of the commonly known non-accelerating inflation rate of unemployment (NAIRU).

Table 2.1

INTEREST RATES OF THE EUROPEAN CENTRAL BANK

Percentage

Decision date	Deposit facility	Main refinancing operations	Marginal lending facility
1998			
5 Dec.	2.00 (a)	3.00	4.50 (a)
1999			
8 Apr.	1.50	2.50	3.50
4 Nov.	2.00	3.00	4.00
2000			
3 Feb.	2.25	3.25	4.25
16 Mar.	2.50	3.50	4.50
27 Apr.	2.75	3.75	4.75
8 Jun. (b)	3.25	4.25	5.25
31 Aug.(b) . . .	3.50	4.50	5.50
5 Oct. (b)	3.75	4.75	5.75
2001			
10 May.(b) . . .	3.50	4.50	5.50
30 Aug.(b) . . .	3.25	4.25	5.25
17 Sep.(b) . . .	2.75	3.75	4.75
8 Nov.(b)	2.25	3.25	4.25

Source: ECB.

Notes:

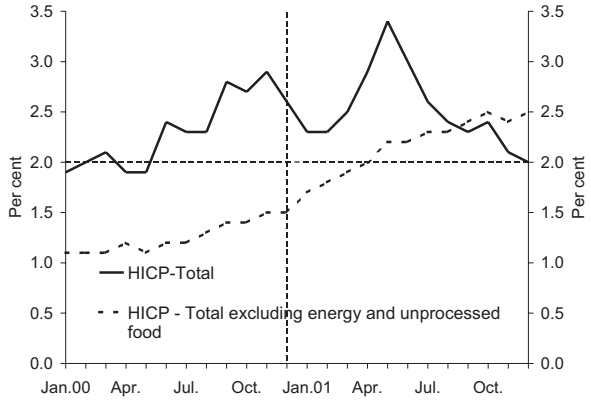
(a) In the period between 4 and 21 January 1999 the interest rates on the marginal lending facility and the deposit facility stood respectively at 3.25 and 2.75 per cent.

(b) Minimum bid rate on variable rate tenders.

Chart 2.1

HICP IN THE EURO AREA

Year-on-year rate of change



Source: Eurostat.

should be noted that the annual average change in the Harmonised Index of Consumer Prices (HICP) stood at the upper limit of the projection range.

2. THE MONETARY POLICY OF THE EUROSYSTEM AND MONETARY CONDITIONS OF THE PORTUGUESE ECONOMY

2.1. The monetary policy of the Eurosystem

2001 was marked by a reversal in May of the upward cycle of the key ECB interest rates, which had started in November 1999. In the course of 2001, the key ECB interest rates were lowered four times, by a total of 1.5 p.p. Thus, the minimum bid rate on the main refinancing operations was cut from 4.75 per cent to 3.25 per cent at the end of the year (Table 2.1). The monetary policy decisions of the Governing Council of the ECB in 2001 were made in a context of gradual reduction in risks to price stability in the medium term, associated with a gradual deterioration of euro area growth prospects. In the year as a whole, euro area GDP went up by 1.5 per cent – i.e. one of the weakest growths of the past years and far lower than in the previous year (3.4 per cent).

In the early months of 2001 and following unexpected price rises in unprocessed food as well as lagged effects of the rise in oil prices and of the euro depreciation in 2000, HICP inflation increased significantly reaching a peak of 3.4 per cent in May(2) (Chart 2.1). This price acceleration might imply inflationary pressures in the medium term, namely due to potential second round effects on wage increases. In this context, official interest rates were kept unchanged in the first four months of the year.

However, as the signs of a deceleration in the world economy and of weakening domestic demand became more marked, the risks to price sta-

(2) This trend was subsequently reversed, whereby in December the year-on-year change in HICP stood at 2.0 per cent compared with 2.6 per cent in the same month a year earlier (compared with 2000, the average change in euro area HICP increased from 2.3 to 2.5 per cent in 2001). However, in January 2002 the year-on-year change in HICP rose again (2.7 per cent), declining to 2.4 per cent in February. It should be noted that when the HICP for January 2002 was published, Eurostat revised the series of the price indices of Italy and Spain, to include sales and promotions. Considering that this change was made from January 2001 onwards, the year-on-year rates of change in 2001 have been adjusted (the annual average change in euro area HICP was revised by -0.1 p.p. to 2.5 per cent).

Table 2.2

DEVELOPMENTS IN GDP GROWTH AND INFLATION FORECASTS FOR THE EURO AREA

	Growth				Inflation [a]			
	2000	2001	2002	2003	2000	2001	2002	2003
IMF								
2001								
May	3.4	2.4	2.8	-	2.4	2.3	1.7	-
Oct.	3.5	1.8	2.2	-	2.4	2.7	1.7	-
Dec.	3.4	1.5	1.2	-	2.4	2.7	1.4	-
OECD								
2000								
Dec.	3.5	3.1	2.8	-	2.2	2.3	2.0	-
June	3.4	2.6	2.7	-	2.2	2.2	1.9	-
Nov	3.5	1.6	1.4	3.0	2.1	2.5	1.6	1.7
European Commission								
2000								
Oct.	3.5	3.2	3.0	-	2.3	2.2	1.9	-
Apr.	3.4	2.8	2.9	-	2.3	2.2	1.8	-
Oct.	3.4	1.6	1.3	2.9	2.4	2.8	1.8	1.8
Consensus Forecasts								
2000								
Dec. [b]	3.3	3.0	-	-	2.2	2.0	-	-
2000								
Mar.	3.3	2.7	2.9	-	2.2	2.1	1.8	-
June	3.4	2.3	2.7	-	2.2	2.5	1.9	-
Sep.	3.4	1.9	2.4	-	2.2	2.7	1.9	-
Dec.	3.4	1.5	1.2	-	2.2	2.6	1.6	-
Eurosystem								
2000								
Dec.	3.2-3.6	2.6-3.6	2.5-3.5	-	2.3-2.5	1.8-2.8	1.3-2.5	-
June	3.4	2.2-2.8	2.1-3.1	-	2.4	2.3-2.7	1.2-2.4	-
Dec.	3.4	1.3-1.7	0.7-1.7	2.0-3.0	2.4	2.6-2.8	1.1-2.1	0.9-2.1

Sources: IMF World Economic Outlook, OECD Economic Outlook, European Commission Economic Forecasts, Consensus Economic Forecasts and ECB.

Notes:

(a) IMF and Consensus Economics Forecasts: consumer prices; OECD: private consumption deflator; European Commission and Eurosystem: HICP.

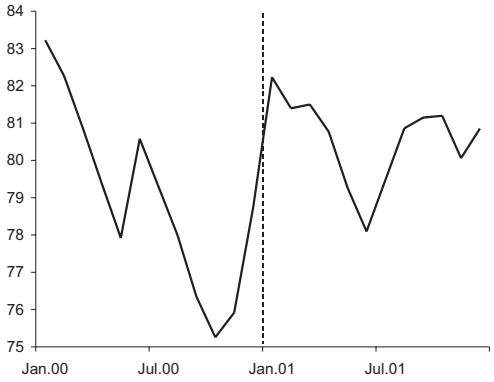
(b) Does not include Greece.

bility declined. The growth forecasts of official and private international organisations for the economy of the euro area in 2001 and 2002 were successively revised downwards in the course of the year (Table 2.2). Reflecting the deterioration of growth prospects, inflation forecasts showed a slightly downward trend. In this context, the ECB cut by 0.25 p.p. its key interest rates in May and in August. The unfavourable scenario for the development of the economic activity was aggravated by the international shock related to the terrorist attacks in the United States on 11 September, adding to the deterioration of prospects for world economic growth and to the rise in uncertainty, further reducing the risks of medium-term inflationary pressures. Against this background, the ECB made two additional cuts in its official interest rates each by 0.50 p.p., one on 17 September, soon after the terrorist attacks, and the other on 8 November.[3]

The reduction in the key ECB interest rates throughout the year was passed on to money market interest rates, which fell significantly in 2001, thus maintaining the downward trend started at the end of 2000. In turn, euro area ten-year government debt bond yields remained relatively stable in the course of 2001, standing in December 2001 approximately 0.1 p.p. below their December 2000 level. Thus, euro area monetary conditions remained relatively accommodating in 2001, reflecting a relative stability of long-term interest rates,

(3) At its meeting on 8 November, the Governing Council of the ECB also decided that it would thenceforth as a rule assess the stance of the ECB's monetary policy and take interest rate decisions in the first meeting of each month.

Chart 2.2
MONETARY CONDITIONS IN THE EURO AREA
Nominal effective exchange rate index
January 1999=100

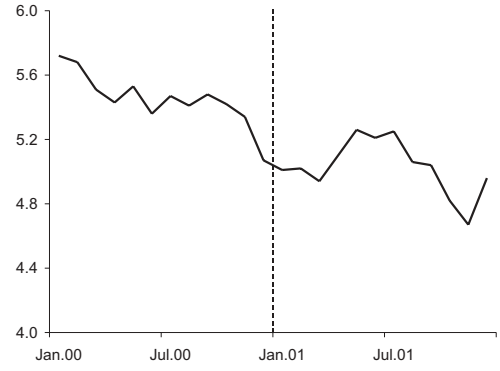


Source: ECB.

Short-term interest rate
3-month Euribor

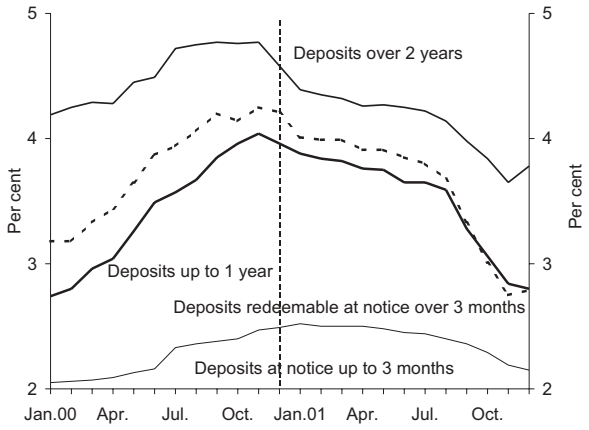
Source: Reuters.

10-year yield

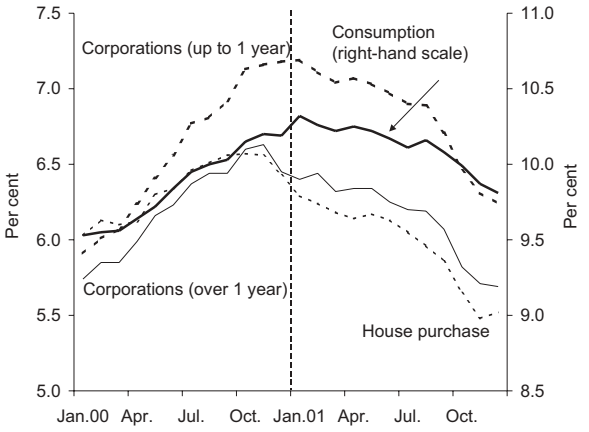


Source: Bloomberg.

Chart 2.3
BANK INTEREST RATES IN THE EURO AREA
Deposit rates



Lending rates



as well as reverse sign effects of the appreciation of the euro and the fall in short-term interest rates (Chart 2.2). In early 2002, there was a widespread rise in both short and long-term interest rates. Thus and compared with the figures for the end of 2001, the three-month Euribor rose by approximately 0.2 p.p. to 3.4 per cent at the end of March, while one-month Euribor rose from 0.6 pp. to 4.0 per cent. Over the same period, euro area ten-year government debt bond yields rose by 0.2 p.p. to 5.4 per cent.

Following the trend set by money market interest rates, bank interest rates also declined, in particular from August onwards (Chart 2.3). The fall in deposit rates was particularly marked at the three months and one year maturity.[4] With respect to loans, mention should be made on the

Table 2.3

M3 AND CREDIT OF COMPONENTS

Year-on-year rate of change, unless stated otherwise (per cent)

	2000	2001	2000				2001			
			I	II	III	IV	I	II	III	IV
M1	8.0	3.6	10.3	9.3	6.9	5.7	2.5	2.5	3.8	5.4
Currency in circulation	4.2	-7.7	6.2	5.2	3.7	1.8	-1.3	-3.3	-7.4	-18.4
Overnight deposits	8.8	5.9	10.8	10.4	7.6	6.4	3.3	3.9	6.2	10.1
M2	4.5	4.1	5.1	4.8	4.1	3.8	3.0	3.5	4.4	5.7
Other short-term deposits (M2-M1)[a]	1.4	4.7	0.6	1.1	1.6	2.2	3.4	4.3	5.0	5.9
M3	4.9	5.5	5.6	5.5	4.5	4.2	3.8	4.4	5.9	7.6
Marketable instruments (M3-M2)[a][b]	8.4	14.3	9.4	10.4	7.6	6.3	9.6	10.3	16.2	20.9
Total credit	7.0	5.4	7.8	7.7	6.7	6.0	5.6	5.4	5.6	5.2
Credit to general government	-2.7	-3.8	1.2	-1.6	-3.4	-7.0	-7.4	-5.3	-1.9	-0.5
Credit to other residents in the euro area	10.4	8.3	10.1	11.0	10.1	10.4	9.8	8.8	7.8	6.9
Loans to other residents in the euro area	9.6	7.8	9.3	10.1	9.4	9.6	9.1	8.2	7.4	6.5
Longer-term financial liabilities	6.6	3.5	6.8	6.5	7.0	6.0	4.5	3.8	2.6	3.2
Memo: sectoral breakdown of loans [c]										
Non-financial corporations	-	-	9.4	9.3	11.1	10.9	10.0	9.0	7.4	6.3
Households	-	-	9.7	8.7	8.0	7.4	6.6	6.3	6.0	5.3
Consumer credit	-	-	7.9	7.1	8.0	7.8	4.5	5.2	3.6	3.7
Credit for housing purposes	-	-	11.4	10.2	9.0	8.6	8.3	7.7	7.8	6.6
Other loans	-	-	6.2	5.7	4.9	3.5	3.1	2.7	2.1	2.5

Source: ECB.

Notes:

(a) Non-adjusted for seasonal and calendar effects.

(b) Adjusted for non-resident holdings.

(c) Excluding general government (annualised rate of change, end of period). The definitions of consumer credit and credit for housing purposes may not be fully consistent for the euro area as a whole .

maintenance of the downward trend of interest rates on housing credit (which declined by 0.9 p.p.) and on loans to corporations (which fell by 0.9 and 0.8 p.p. respectively at the one year and over one year maturity).

In early 2001 the growth rate of the euro area monetary aggregate M3 kept the downward trend started at the end of 2000 (Table 2.3). The three-month moving average of the annual growth rates of this aggregate remained below the reference value of 4.5 per cent since mid-2000, taking into account figures adjusted for holdings by non-euro area residents of marketable instruments included in M3.[5] This deceleration was mainly due to the behaviour of the most liquid components of this aggregate, probably reflecting the rise in the key ECB interest rates between November 1999 and October 2000. In parallel, the growth of loans to the private sector became also more moderate from the beginning of 2001 onwards. However, the deceleration in M3 was interrupted from the second quarter of 2001 onwards, while there was a progressive rise in the growth rates of this aggregate. The year-on-year rate of change in M3, which

(4) In 2001, interest rates on deposits redeemable at a period of notice of up to three months fell by approximately 0.3 p.p. (three-month Euribor fell by 1.6 p.p. in the same period), while interest rates on deposits up to one year declined by approximately 1.2 p.p.

(5) It should be noted that the fully adjusted series were only published in November 2001. In May, on the basis of preliminary data, the ECB estimated that the distortion associated with holdings by non-euro area residents of money market securities and government securities issued with an initial maturity of up to two years would be around ½ p.p. of the growth rate of M3 in April. It should further be noted that the performance pattern of fully adjusted year-on-year growth rates of M3 is close to that of non-adjusted rates, reflecting however more moderate growth paces of M3, in particular between the first quarter of 2000 and the first quarter of 2001.

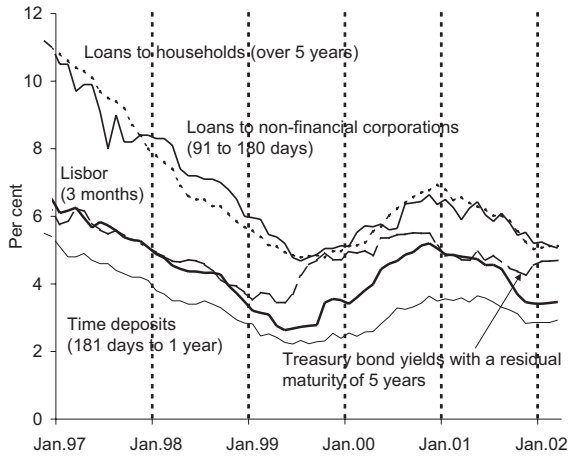
(6) The strong rise in the growth rate of M3 implied that the respective three-month moving average of the year-on-year rates stood above the reference value of 4.5 per cent during the second half of 2001.

stood at 3.8 per cent in March 2001, rose gradually to a peak of 8.1 per cent in December 2001.(6) The behaviour of M3 seems to be associated with investors' increased preference for liquid and less risky assets (to the detriment for instance of shares), in a context of high uncertainty as the one seen in 2001, in particular after the terrorists attacks of 11 September.(7) It should also be noted that in the first months of 2002, the annual growth rate of M3 declined to 7.9 per cent in January and to 7.4 per cent in February (the three-month average of the annual growth rates declined to 7.8 per cent in February).

Contrasting with the situation recorded in 1999 and early 2000, the rise in the growth rate of M3 in 2001 was followed by a continued deceleration of loans to the private sector. In fact, and in contrast to the trend of credit to the general government – which recovered strongly in line with the rise in overall financing needs of the general government of the euro area as a whole –, credit to other euro area residents decelerated markedly in 2001 from 10.5 per cent in the last quarter of 2000, to 6.9 per cent in the fourth quarter of 2001 (Table 2.3). This deceleration reflects developments in both loans to non-financial corporations and loans to households, whose year-on-year rates of change recorded a downward trend throughout the year. The smaller growth of loans to the private sector, despite the fall in lending rates, may be associated with the deterioration in business and consumer confidence in the euro area, as well as with the slowdown in economic activity during 2001. It should also be noted that the deceleration in loans to non-financial corporations throughout the year can be partly explained by the unwinding of some special factors – such as the strong merger and acquisition activity in the euro area – that in 2000 had pushed up the growth rate of this credit component.

At its meeting on 6 December 2001, the Governing Council of the ECB conducted its regular review of the reference value for M3 growth, keeping it unchanged at 4.5 per cent. This decision was based on the ECB's definition of price stability and on unchanged assumptions for trend potential output growth in the euro area (2-2½ per cent per annum) and for trend decline in M3 income velocity (½-1 per cent per annum).

Chart 2.4
BANK INTEREST RATES AND MONEY MARKET INTEREST RATES



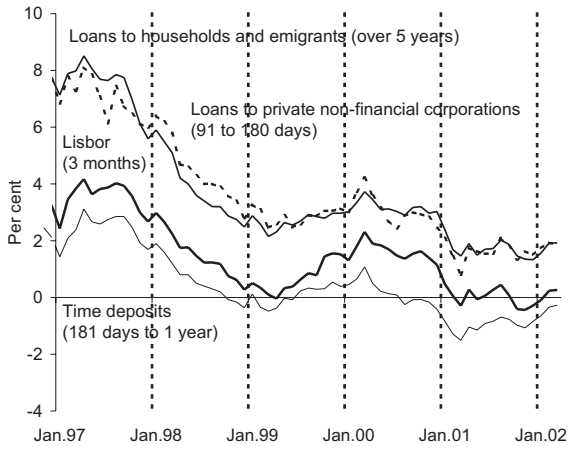
Note: Last observation March 2002.

2.2. Monetary conditions of the Portuguese economy

Similarly to the euro area, in the course of 2001, bank interest rates in Portugal moved in line with the fall in money market interest rates, although with some lag, reversing the upward trend observed in 2000 (Chart 2.4). In annual average terms, interest rates stood, in general, at levels similar to those recorded in the previous year. The fall in nominal bank interest rates throughout the year was particularly pronounced in the last quarter of 2001, reflecting a strong fall in money market interest rates between September and November 2001. From December onwards, interbank interest rates at the shortest maturities stabilised somewhat. In the early months of 2002, bank's interest rates also exhibited some stabilisation. Following a reduction throughout the year, at the end of 2001 and in early 2002, bank lending interest rates stood close to the levels observed in mid-1999. The fall in interest rates in the course of the year, more pronounced when assessed in real terms, may have implied an easing of monetary conditions in the Portuguese economy, despite the slight appreciation recorded by the effective exchange rate index for Portugal.(8)

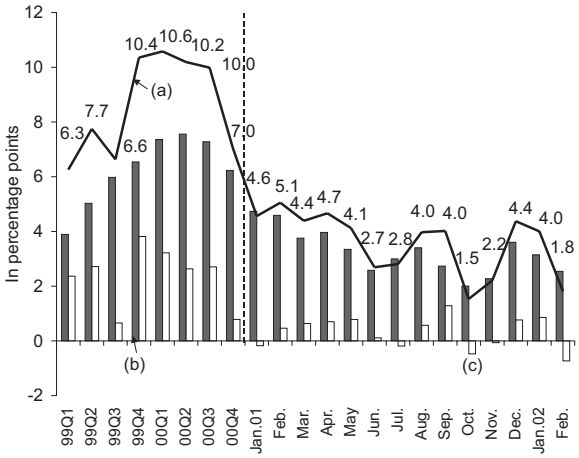
(7) In the first half of the year, the relative flatness of the yield curve may also have increased the attractiveness of holding financial assets with a higher degree of liquidity.

Chart 2.5
REAL BANK INTEREST RATES



Nota: Last observation March 2002.

Chart 2.6
CONTRIBUTIONS TO THE YEAR-ON-YEAR RATE OF CHANGE OF DEPOSITS AND DEPOSIT-LIKE INSTRUMENTS OF THE NON-FINANCIAL PRIVATE SECTOR



Notes:
(a) Year-on-year rate of change of deposits of the non-financial private sector (per cent).
(b) Households.
(c) Non-financial corporations.

In December 2001, interest rates on loans to non-financial corporations (with a maturity from 91 up to 180 days) stood at 5.2 per cent (1.2 p.p. less than in December 2000), while the interest rate on loans to households (over 5 years) stood at 5.0 per cent (1.9 p.p. less than at the end of 2000). In early 2002, these interest rates remained virtually unchanged, standing both at 5.1 per cent in March of 2002. The fall in the interest rate on time deposits (with a maturity from 181 days up to 1 year) was not as marked as that in interest rates on lending operations. In December 2001, this rate stood at 2.9 per cent, posting a reduction of 0.6 p.p. from December 2000, having remained unchanged in the first months of 2002. The relative rigidity of deposit rates was reflected in the narrowing of the differential between money market interest rates with comparable maturities and these rates. In fact, in the course of 2001, this differential narrowed by 1.1 p.p., to 0.5 p.p. at the end of the year, before recovering slightly in the early months of 2002 (reaching 0.6 p.p. in March 2002).

In 2001, real lending rates[9] remained relatively stable, at historically low levels, following a strong fall in the last few months of 2000 and in the first quarter of 2001 (Chart 2.5). From the end of 2001 onwards, real interest rates associated with lending operations increased very slightly, in line with the stabilisation of nominal interest rates and the gradual decline in inflation. This upward trend in real interest rates was seen in deposit rates already in the second quarter of 2001, becoming more marked from November onwards. However, this slight rise was not sufficient to offset the strong fall recorded in 2000 and therefore real deposit rates continued to be negative. This may have contributed to the moderate growth of time deposits observed in 2001. Indeed, deposits of the non-financial private sector, in annual average terms, have grown at a significantly lower pace than the

(8) In annual average terms, the effective exchange rate index for Portugal appreciated by 0.6 per cent vis-à-vis 2000, in nominal terms, and by 3.5 per cent, in real terms. It should be noted that although the appreciation of the real effective exchange rate index (calculated on the basis of whole-economy unit labour costs, excluding the government transfers to *Caixa Geral de Aposentações*, i.e. the civil servants pension system) suggests a deterioration in the competitiveness of Portuguese exports, in 2001 there was a rise in the export market share of Portuguese goods. This evidence suggests that the performance of Portuguese exports may have been driven by factors other than the developments in price determinants.

(9) Despite the recognised limitations of the procedure, real interest rates are calculated as the contemporaneous difference between nominal interest rates and the year-on-year rate of change in the CPI, since it is difficult to accurately compute inflation expectations of economic agents in the relevant period.

one recorded in 2000 (Chart 2.6). This evolution resulted chiefly from the marked deceleration in deposits in the last quarter of 2000 and in early 2001. In December 2001, the year-on-year rate of change in deposits stood at 4.4 per cent, as against 6.4 per cent in the corresponding month of 2000 and 10.0 per cent at the end of 1999. In the beginning of 2002, deposits of the non-financial private sector recorded a further significant deceleration, growing at a year-on-year rate of change of 1.8 per cent in February 2002.

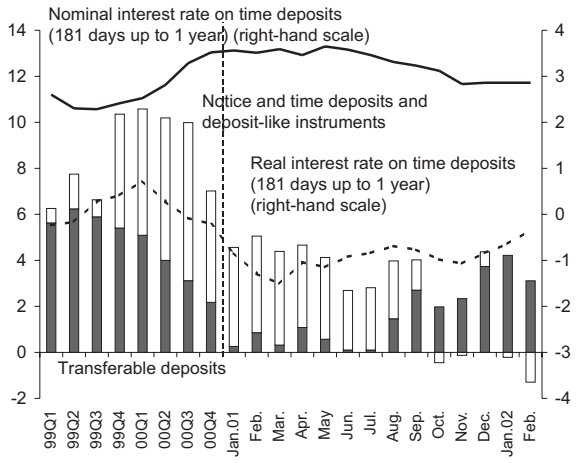
The very moderate growth of deposits is in line with the slowdown in economic activity and with historically low nominal and real interest rates. As a result of the rise in households' saving rate in 2001, the slowdown of deposits may have been offset by a more pronounced increase in other financial investments of this sector, namely equities and investment fund units. Furthermore, the recovery in the savings rate (which at the end of the 90s stood at historically low levels) seems to be associated, in part, with an adjustment process of the household financial position, in view of the increased burden stemming from the debt accumulated over the last few years.

The deceleration in deposits in 2001 resulted chiefly from the reduction in the growth of deposits of households and emigrants, whose contribution to the year-on-year rate of change in deposits of the non-financial private sector declined by 1.9 p.p. between December 2000 and December 2001. In turn, the contribution of deposits of non-financial corporations decreased only slightly (0.1 p.p.). The deceleration in deposits in the course of 2001 was accompanied with some substitution of time deposits with demand deposits, in line with the low opportunity costs of holding highly liquid financial investments, in a context of historically low interest rates (Chart 2.7). Between December 2000 and December 2001, the contribution of transferable deposits[10] increased by 1.0 p.p., while the contribution of time deposits declined by 3.0 p.p. over the same period (between December 2001 and February 2002, these contributions fell by 0.6 and 1.9 p.p. respectively).

The deceleration trend in credit to the non-financial private sector observed since mid-1999, persisted in the course of 2001, despite the wide-

Chart 2.7

CONTRIBUTIONS TO THE GROWTH RATE OF DEPOSITS AND DEPOSIT-LIKE INSTRUMENTS OF THE NON-FINANCIAL PRIVATE SECTOR AND INTEREST RATE ON DEPOSITS

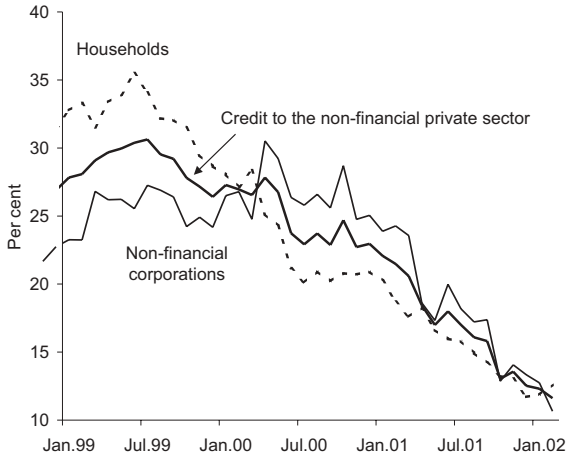


spread reduction of bank interest rates throughout the year. As such, the evolution of credit to the non-financial private sector, which was accompanied by a slowdown in private consumption (especially of durable goods) and private investment, should be associated with the high indebtedness levels already reached, as well as with the uncertainty underlying economic agents' expectations concerning future income. Thus, in December 2001, credit to the non-financial private sector, adjusted for securitisation operations,[11] recorded a year-on-year rate of change of 12.5 per cent, which represented a 10.4 p.p. decline from December 2000 (Chart 2.8). In February 2002, the year-on-year rate of change in this aggregate stood at 11.6 per cent, falling by 0.9 p.p. from December 2001.

(10) This aggregate comprises mainly demand deposits.

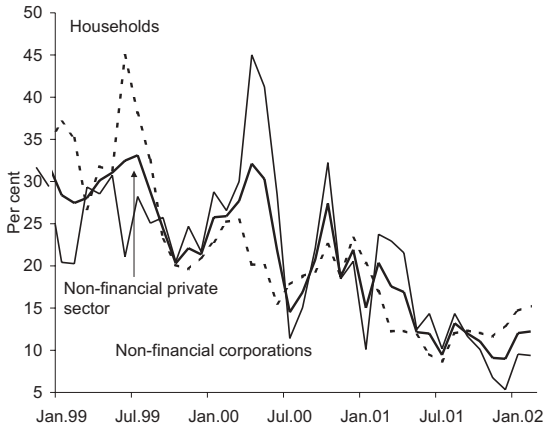
(11) In the past few years, some credit securitisation programmes have been carried out, implying significant reductions in the stock of credit in banks' portfolios. In 2001, these have contributed to the slowdown in bank credit, in particular at the end of year. Note that these reductions in bank's credit portfolio do not represent lower overall indebtedness of the non-financial private sector, being rather a transfer of liabilities of this sector to the portfolio of non-bank institutions. Therefore, unless otherwise indicated, all credit aggregates analysed in this section have been adjusted, so that the amounts associated with these operations (as well as the respective redemptions) continue to be considered in the credit granted to the non-financial private sector.

Chart 2.8
YEAR-ON-YEAR RATES OF CHANGE OF CREDIT TO THE NON-FINANCIAL PRIVATE SECTOR
Adjusted for securitisation operations



Note: Last observation February 2002.

Chart 2.9
BANK CREDIT GRANTED TO THE RESIDENT NON-FINANCIAL PRIVATE SECTOR
Annualised quarterly rates of change adjusted for seasonal effects and credit securitisation operations



Note: Last observation February 2002.

Credit to non-financial corporations decelerated sharply in the course of 2001 (the year-on-year rate of change was 13.3 per cent in December 2001, which compares with 25.0 at the end of 2000) and in the early months of 2002 (year-on-year rate of change of 10.7 per cent in February of 2002). Thus, some of the special factors that in 2000 had contributed to the persistently high growth rates of credit to non-financial corporations, seem to have lost relevance in the course of 2001. Among the aforementioned special factors, which are not directly related to the economic juncture, it should be highlighted the direct investment operations abroad by Portuguese companies, as well as the debt built up in order to finance merger and acquisition operations of domestic non-financial economic groups. The financing needs of public works carried out by entities classified as non-financial corporations (as, for instance, road infrastructures with "shadow toll concessions") seem to have also contributed over the past years to the sustained high growth rates of loans to non-financial corporations. However, and in contrast to the two other factors abovementioned, available evidence suggests that, in 2001, the financing needs of private entities operating in the construction and management of road infrastructures seem to have continued to significantly contribute to the growth of credit.

Credit to households continued to decelerate in the course of 2001, persisting in the declining trend started in mid-1999. In December 2001, the year-on-year rate of change in credit to households stood at 11.7 per cent, which compares with 20.9 per cent at the end of 2000. The evolution of this aggregate seems to be related to the gradual adjustment process of households' behaviour resulting from the indebtedness levels already reached. However, taking into consideration seasonally adjusted annualised quarterly growth rates, it can be seen that the pace of growth of loans to households has been increasing slightly since mid-2001 (Chart 2.9). This was reflected, in the early months of 2002, in a slight recovery of the year-on-year rate of change in credit to households, which stood at 12.6 per cent in February, accounting for a 0.9 p.p. increase from December 2001. This recent recovery in credit to households may be related to the very low levels of lending interest rates during this period.

Despite the deceleration of credit aggregates in 2001, their growth rates continued to be higher than those of disposable income and nominal GDP. Thus, in 2001, the indebtedness of households and non-financial corporations measured, respectively, as a percentage of disposable income and nominal GDP, recorded a significant increase from the previous year. According to estimates, in

Chart 2.10
HOUSEHOLDS INDEBTEDNESS AND INTEREST PAYMENTS

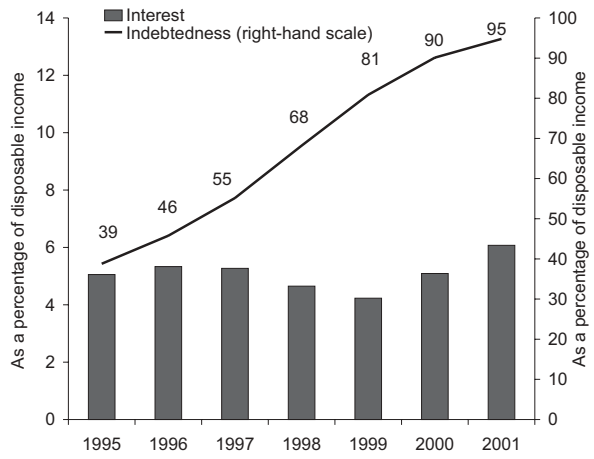
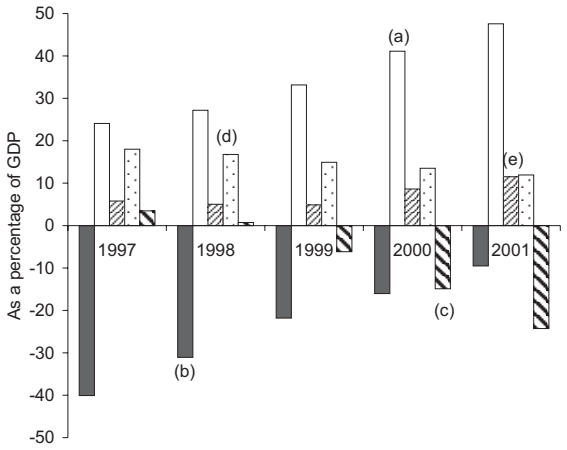


Chart 2.11
NET POSITION OF THE MONETARY SECTOR* INSTITUTIONAL BREAKDOWN



Notes:
(a) Non-financial corporations.
(b) Households.
(c) Net external assets – Other monetary institutions.
(d) Net external assets – Banco de Portugal.
(e) Non-monetary financial institutions.
* Net claims of the monetary sector on each sector defined as the difference between the monetary sector's assets and liabilities via-à-vis that sector.

2001 the indebtedness of households' stood at around 95 per cent of disposable income, as against 90 per cent in 2000 (Chart 2.10). At the same time, the households' debt burden increased,[12] chiefly as a result of the high indebtedness level built up in the past years and, to some extent, of the lagged effect of the rise in interest rates in 2000. The indebtedness of non-financial corporations, as a percentage of GDP, increased by approximately 6 p.p. from 2000, standing at 86 per cent at the end of 2001. It should be noted that although there was a rise in the indebtedness level of both institutional sectors, the magnitude of the change is considerably lower than in previous years.

2.3. Developments in the Monetary Survey[13]

Developments in credit and deposits over the past few years have been reflected in significant changes in the Monetary Survey. In fact, since the beginning of 1993, credit to the non-financial private sector has recorded considerably higher rates of change than deposit growth rates of this institutional sector. In 2001, despite the strong deceleration of bank credit, net claims of other monetary financial institutions (MFI) on the non-financial private sector[14] rose sharply again, accounting for 38.1 per cent of GDP, increasing 13.0 p.p. from the previous year (Chart 2.11 and Table 2.4).

The increase in net claims of MFI on the non-financial private sector has been mirrored in a deterioration in external liabilities of Portuguese MFI. It should be borne in mind that these liabilities are mostly denominated in euro and that an increasingly significant share of external financing reflects the international issue of bonds by subsidiaries of Portuguese banks which have their head office abroad, outpacing the recourse to short-term financing in international money markets (see note in table 2.4).

(12) The debt burden is defined as the overall debt service, including interest and redemptions, measured as a percentage of household disposable income.
(13) Credit items considered in this section have not been adjusted for securitisation operations.
(14) The net position of the monetary sector vis-à-vis each sector is defined as the difference between assets and liabilities of the monetary sector vis-à-vis that sector.

Table 2.4

MONETARY SURVEY

EUR million

	1998	1999	2000	2001	2002	Absolute changes Dec. 1998	Dec. 1999	Dec. 2000	Dec. 2001
	Dec.	Dec.	Dec.	Dec.	Feb.	Dec. 1999	Dec. 2000	Dec 2001	Feb. 2002
Net foreign assets	14 960	8 985	-6 788	-19 368	-20 275	-5 974	-15 773	-12 580	-907
Banco de Portugal	16 770	18 623	14 985	16 050	15 367	1 852	-3 638	1 065	-684
Other monetary financial institutions [a]	-1 810	-9 637	-21 773	-35 418	-35 642	-7 827	-12 136	-13 645	-224
of which:									
Denominated in euro	-2 364	-10 741	-19 559	-34 412	-33 488	-8 377	-8 818	-14 853	924
Credit to general government	12 522	8 764	8 496	9 082	8 622	-3 758	-268	585	-460
Domestic credit (except credit to general government)	102 736	129 577	160 783	179 373	180 399	26 840	31 206	18 590	1 026
Households	44 591	56 859	68 921	76 022	76 904	12 268	12 062	7 101	881
Non-financial corporations	45 539	56 500	70 667	80 098	80 683	10 962	14 167	9 431	586
Non-monetary financial institutions	12 606	16 217	21 194	23 253	22 812	3 611	4 977	2 059	-441
Currency in circulation	4 562	5 620	5 392	4 450	4 700	1 059	-228	-942	250
Deposits and deposit-like instruments - Total	103 027	114 507	120 125	123 254	119 878	11 480	5 618	3 129	-3 377
Non-monetary financial institutions	7 623	9 661	9 843	10 360	10 117	2 038	182	517	-243
General government	8 177	8 872	8 181	6 329	6 744	695	-690	-1 852	415
Non-financial corporations and households	87 227	95 974	102 100	106 565	103 016	8 747	6 126	4 465	-3 549
Securities other than capital	10 769	13 319	17 476	22 491	23 217	2 550	4 157	5 015	726
Money market fund units	0	0	115	166	187	0	115	51	21
Capital reserves	15 905	20 827	25 920	28 392	30 250	4 921	5 093	2 472	1 858
Sundry items (net)	-4 045	-6 947	-6 537	-9 666	-9 486	-2 903	410	-3 128	179
						Year-on-year rates of change			
Memo item:									
Contribution to the euro area M1 aggregate	38 164	45 537	47 723	51194	50 264	19.3	4.8	7.3	13.2
Contribution to the euro area M3 aggregate	103 578	113 135	119 794	126 702	126 938	9.2	5.9	5.8	4.3

Note:

(a) These figures refer to net claims on non-resident other monetary financial institutions, accordingly with the criteria considered in the Monetary Statistics. Thus, the figures partly reflect operations with non-resident institutions which belong to financial groups under supervision (in consolidated terms) of the Banco de Portugal. The corresponding item in the consolidated balance sheet, which is considered the most adequate measure for the indebtedness of credit institutions, represented -15185 EUR million, in December 2001 (see table A.3.15 of the *Statistic Bulletin* of April 2002).

3. FISCAL POLICY

The assessment of the general government accounts in 2001 is influenced by the fact that the estimates of the fiscal outturn on a National Accounts basis are still very preliminary. In fact, following the doubts raised publicly on the Portuguese general government deficit, particularly in 2001, a Commission headed by the Banco de Portugal was set up, in which the Ministry of Finance and the National Statistical Institute also take part, with the purpose of assessing and updating the accounts used in the excessive deficit procedure notification of last February. This Commission shall present its conclusions until next August, at the latest. The main problems concern the implementation of the accrual principle in National Accounting (ESA-95) and the clarification of the points that the Eurostat has been analysing for some time. These ones are related to the treatment of capital injections in public enterprises and to the amounts of taxes and social contributions recorded in National Accounts in opposition to the amounts recorded in Public Accounts.[15]

In the recent Spring Economic Forecasts, the European Commission, using exclusively the information available until now, presents an estimate of 2.7 per cent of GDP for the general government deficit in Portugal in 2001, stating that this figure adds to the 2¼ per cent from the excessive deficit procedure notification of February, more ¼ p.p. from the upward revision of the local government deficit reported afterwards by the Portuguese Government and around ¼ p.p. due to the reclassification as capital transfers of part of the capital injections in public enterprises.

As already mentioned, these and other questions have been under examination by the Eurostat and will only be definitely clarified in the next September excessive deficit procedure notification. For this reason, the figures on the last year general government accounts used by the Banco de Portugal in this *Bulletin* must be considered as preliminary and show a deficit similar to the one published by the European Commission.

Therefore, according to preliminary estimates of the Banco de Portugal, the Portuguese general government deficit, on a National Accounts basis (ESA-95), would have amounted to more 0.8 p.p. than in 2000 (excluding the receipts from the sale of UMTS licences). Considering that interest payments remained unchanged as a percentage of GDP, the primary surplus declined by 0.8 p.p., to 0.4 per cent of GDP.

Thus, the general government deficit in 2001 largely exceeded the targets assumed in the Stability and Growth Programme update of January 2001 (1.1 per cent of GDP). This cannot be attributed exclusively to a less favourable macroeconomic evolution than the one forecasted by the Government, given that the primary cyclically adjusted balance declined instead of having increased significantly as projected.

As in previous years, primary current expenditure recorded a strong rise, above that of nominal GDP (0.5 p.p. higher as a percentage of GDP), accelerating relative to 2000. This evolution stemmed largely from the performance of the compensation of employees, transfers to households and subsidies (which went up by 0.2, 0.4 and 0.1 p.p. as a percentage of GDP, respectively).

Current revenue fell by 0.4 p.p. of GDP. In 2001, tax revenue (including social security contributions) increased less than in the previous year: 6.5 per cent, which compares to 8.1 per cent in 2000. Receipts from taxes on income and wealth increased by 2.5 per cent, with the personal income tax (IRS) still showing a strong growth (9.0 per cent, on a National Accounts perspective, according to the Ministry of Finance), despite the tax cut measures included in the 2001 State Budget, and the corporate income tax (IRC) declining sharply (-6.4 per cent), due *inter alia* to the reduction of the tax rate from 34 to 32 per cent included in the 2000 State Budget. In turn, social contributions continued to show the strong growth observed in the previous years (9.6 per cent). Concerning taxes on production and imports, mention should be made to the strong rise in the receipts from taxes on oil products (21.7 per cent),[16] due to the fall in the oil prices that was not passed to the consumer price and to the deceleration of the VAT revenue, in line with the evolution of the economic activity.

The general government debt ratio increased from 53.4 to 55.2 per cent of GDP in 2001. This rise was mainly driven by deficit-debt adjustments, in particular, debt settlements by the Treasury (€ 1837.9 millions) and a huge amount of expenditure paid in January 2001, but still related to the budget outturn of 2000 (€ 1311.3 millions).

4. OUTPUT TREND IN 2000: EXPENDITURE AND OUTPUT

In 2001 GDP increased by approximately 1.8 per cent, according to the estimates of Banco de Portugal (3.6 per cent in 2000[17]) (Table 1.1). The slowdown in economic activity in 2001 resulted from the weakening of the external demand rele-

(15) On a National Accounting basis taxes are recorded according to the amount assessed in the years when they are due and on a Public Accounting perspective it is recorded the amount of taxes actually paid in each year, on a cash basis.

(16) On a National Accounts basis. The amount recorded in Public Accounting is smaller as it is affected by the settlement of debts to the oil companies generated in 1999 and 2000.

(17) The estimates of Banco de Portugal for economic growth in 1999 and 2000 were revised upwards (from 3.4 to 3.8 per cent in 1999 and from 3.2 to 3.6 per cent in 2000). These revisions reflect the adoption of the new annual national accounts basis supplied in April 2002 by National Statistical Institute (*INE*) for the period 1995-98 and the incorporation of new data on public finances and external trade deflators, as well as improvements in some estimation procedures.

Table 4.1

EXPORTS BY TYPE PRODUCTS

C.E.A. – Classification of Economic Activities		Weight	1999			2000			2001		
	CEA	2000	Rate of change			Rate of change			Rate of change		
Exports			Price	Volume	Value	Price	Volume	Value	Price	Volume	Value
Total		100.0	-0.2	3.6	3.5	5.8	8.3	14.6	1.2	4.5	5.8
Agriculture, hunting, forestry, fishing, food, beverage and tobacco	A+B+DA	7.3	-0.4	2.3	1.8	1.8	11.9	13.9	1.8	4.5	6.4
Mining and quarrying	C	0.7	4.9	-9.1	-4.6	30.0	-15.7	9.6	-6.4	9.8	2.8
Textiles and manufacture of leather and leather products	DB+DC	24.8	-0.2	-0.4	-0.7	2.3	0.5	2.9	2.8	4.5	7.4
of which:											
Manufacture of textiles	17	9.3	0.2	0.2	0.4	1.5	3.9	5.5	-0.5	12.8	12.2
Clothing, articles of apparel and preparation of hides with fur	18	9.2	0.4	-3.5	-3.0	1.3	-0.1	1.2	2.4	-2.5	-0.1
Manufacture of leather and leather products	DC	6.3	-1.8	3.3	1.5	5.0	-3.3	1.5	8.6	2.9	11.7
Wood and cork, pulp paper and paper-board and articles thereof; publishing and printing	DD+DE	10.1	3.5	-0.5	2.9	22.2	2.3	25.1	-6.5	3.6	-3.1
Coke, refined oil products and nuclear fuel	DF	2.2	13.9	-2.6	10.9	58.7	2.2	62.2	-4.2	-19.7	-23.0
Chemical and man-made fibres and rubber and plastic materials articles	DG+DH	8.4	-1.2	10.7	9.3	12.7	17.5	32.5	-1.1	-2.1	-3.2
Other non-metallic mineral products and base metal industries and manufacture of metal products	DI+DJ	8.9	-2.3	7.4	4.9	3.2	14.7	18.3	0.7	2.2	3.0
Machinery and equipment, not elsewhere classified and electrical and optical equipment	DK+DL	19.9	-1.4	11.3	9.8	1.1	16.9	18.2	0.4	3.3	3.6
Transport material	DM	15.4	-0.9	1.3	0.4	2.7	7.7	10.6	7.1	11.8	19.8
of which:											
Motor vehicles, trailers and semitrailers	34	13.8	-0.9	3.0	2.0	2.4	3.5	6.0	7.6	13.4	22.0
Other manufacturing industries, not elsewhere classified	DN	2.2	4.6	-1.6	2.9	4.5	9.4	14.3	0.1	29.0	29.2

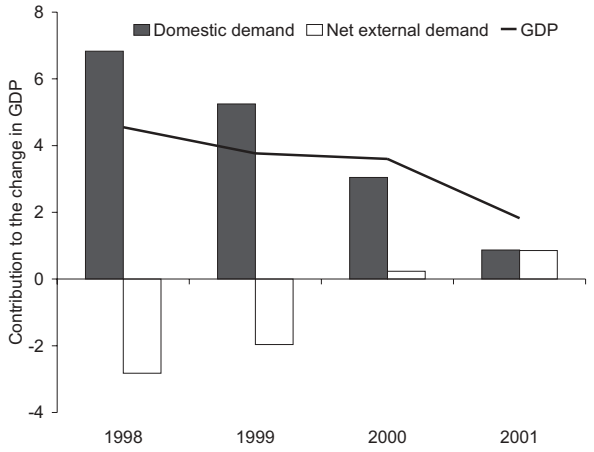
Source: *INE*.

vant to the Portuguese economy and, chiefly from the continuation of the adjustment process of domestic demand, started in 2000, in particular of its consumption and private investment components. Mention should be made of the negative changes in some domestic demand components with higher import content, such as the consumption of durable goods and investment in equipment. As a result, in 2001 the contribution of domestic demand to output growth declined to 1.0 p.p. (3.4 p.p. in 2000). The trend of overall demand led to a deceleration in imports, which more than offset the slowdown in exports, and thereby the positive contribution of net external demand to GDP growth increased to 0.9 p.p. in 2001 (0.2 p.p. in 2000) (Chart 4.1).

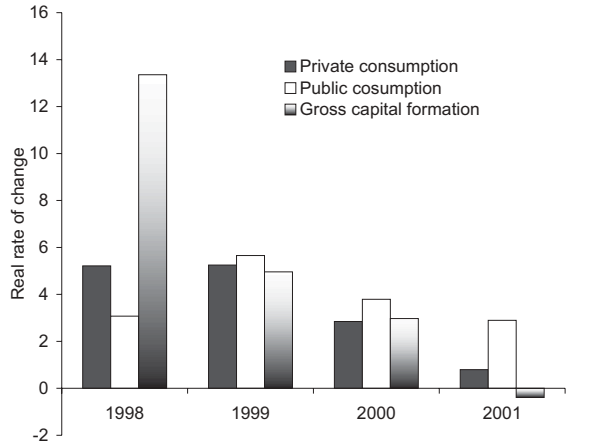
With respect to the forecasts presented in the September 2001 issue of the *Economic Bulletin*, although the rate estimated for the real growth of output remained within the projection range disclosed then, there are some important differences in terms of composition. The revisions reflect a more moderate trend of overall demand in the second half of the year than that projected in September, accompanied by a more marked deceleration in imports than expected (Table 1.2). It should be noted that the growth of domestic demand stood close to the middle of the projection range. How-

Chart 4.1
GDP

Domestic demand and net external demand



Domestic demand – Components



ever, the real changes in both private consumption and GFCF stood closer to the lower limit of the projection range. By contrast, the real growth of public consumption was significantly higher than forecast. Goods and services exports were far less buoyant than forecast in the September 2001 issue of the *Economic Bulletin*, reflecting a deterioration of the external environment of the Portuguese economy which was more marked in the second half of the year than implied then in projections of international institutions.

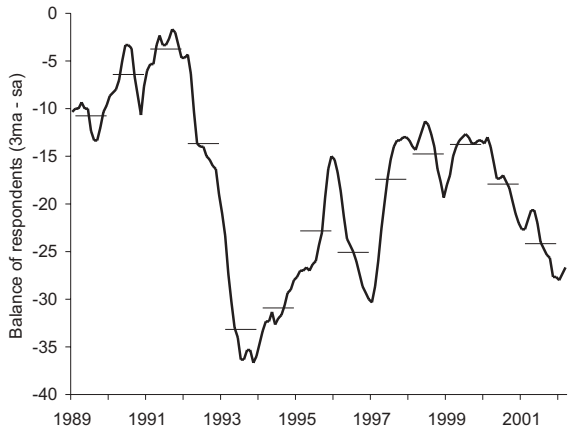
Economic growth in Portugal was negatively affected by the pronounced slowdown in world activity in 2001, which happened synchronically. In particular, euro area GDP growth – which concentrates a very significant share of Portugal's trading partners – declined from 3.4 to 1.5 per cent, one of the weakest growths of the past years. The growth of domestic demand in the euro area stood at 0.9 per cent, compared with 2.8 per cent in 2000 and with growths above 3 per cent in the past two years. The smaller contribution of domestic demand to GDP growth reflected chiefly a marked deceleration in GFCF – in a context of deterioration of (both external and internal) demand and of more uncertain prospects for the future trend of activity – and a reduction in the contribution of the change in inventories, which reduced by 0.5 p.p. the change in GDP, after a nil contribution in 2000. Private consumption was also less buoyant in the year under review. The world economic slowdown was reflected in a marked deceleration of euro area exports in the course of 2001, which in parallel with a marked loss of buoyancy of domestic demand, translated into a far smaller growth in imports. The contribution of net exports to euro area GDP growth remained unchanged in 2001.

Private consumption in Portugal slowed significantly in 2001, with a real growth of 0.8 per cent (2.8 per cent in 2000). Thus, and in line with what had already been observed in 2000, this expenditure component recorded again a smaller growth than GDP. A deceleration of private consumption was also recorded in the euro area (a 1.8 per cent growth compared with 2.5 and 3.2 per cent, respectively in 2000 and 1999). In Portugal, however, the deceleration was more pronounced and started earlier, as illustrated by the European Commission confidence indicator (Chart 4.2).

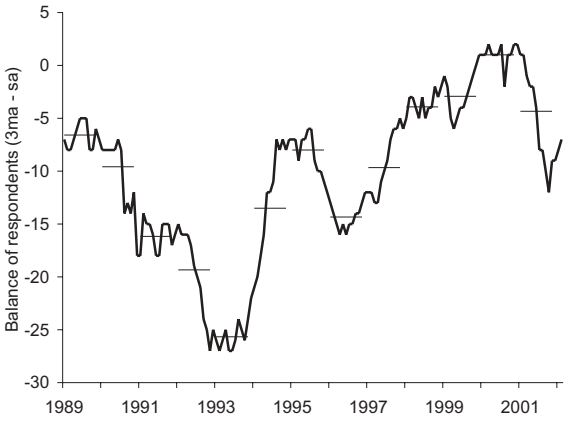
There are several factors behind the trend of consumer expenditure in Portugal in 2001. On the one hand, this trend was conditioned by a lower growth of real disposable income in 2001 (1.9 per cent compared with 4.3 per cent in 2000), largely associated with a rise in inflation. It should be noted that the cut in the households income tax in 2001 does not seem to have had a significant impact on consumption expenditure.[18] On the other hand, uncertainty about future economic developments increased, leading to a reduction in con-

(18) Part of this tax cut will only become apparent in 2002, with the computation of the final settlement of the personal income tax (IRS) for the year 2001. In accordance with the excessive deficit procedure notification of February 2002, IRS revenue is likely to have increased by 9 per cent in 2001, i.e. a figure similar to that recorded in 2000.

Chart 4.2
PORTUGAL – CONSUMER CONFIDENCE INDICATOR



EURO AREA – CONSUMER CONFIDENCE INDICATOR



Source: European Commission.

sumer confidence. Finally, the slowdown in consumer expenditure continued to largely reflect the need to stabilise consumers' indebtedness at a sustainable level, consistent with expectations for future earnings growth. Thus, the household savings rate increased for the second consecutive year, despite the deceleration in disposable income.

In addition, it should be noted that the slowdown in private consumption in 2001 and the rise in the savings rate were amplified by the effect of the change in the automobile tax. This change brought about a rise in the automobile tax on off-the-road vehicles, which are currently subject to the same tax as that applicable on the other light passenger cars. Sales of this type of vehicle thus increased by approximately 30 per cent in 2000 – partly due to an effect of anticipation of purchases – having fallen by nearly 80 per cent in 2001. Sales of light passenger cars, excluding off-the-road vehicles, went down by 3.6 per cent in 2001 (-5.5 per cent in 2000). The private consumption aggregate excluding expenditure on the purchase of cars is due to have decelerated by around one percentage point in real terms in 2001, accounting for half of the estimated slowdown in total private consumption.

A wide range of indicators, both quantitative and qualitative, illustrate the slowdown in private consumption in 2001. The coincident indicator of private consumption, calculated by Banco de Portugal on the basis of qualitative data compiled from the *INE* surveys, continued to show a trend decline in 2001, recording an average growth approximately 2 p.p. lower than in 2000. The retail sales volume index,[19] published by *INE*, recorded a lower nominal growth than inflation. In fact, using the relevant CPI categories, it is estimated that the real change in this index was -0.4 per cent (3.6 per cent rise in 2000). It should be noted that this negative trend was more marked in the sub-indices referring to durable consumer goods. With respect to the consumption of services, data available point to a higher growth than that of consumption of goods, albeit also slowing from the previous year. The consumption of telecommunications and repair services continued to be considerably buoyant. By contrast, the consumption of tourism services turned out to be less buoyant, with a reduction in residents expenditure on tourism services in the country and abroad. The number of nights spent by residents in hotels in Portugal increased only by 0.3 per cent (2.6 per cent in 2000).

According to quite preliminary estimates of Banco de Portugal, public consumption increased by 2.9 per cent in volume in 2001 – 1 p.p. higher than the figure assumed in the September 2001 issue of the *Economic Bulletin* – being the component of domestic demand with a higher growth (Chart 4.1). Even though, its growth was smaller than in 2000, both in real and nominal terms. In 2001 public consumption increased by 8.6 per cent, in nominal terms, after a 10.3 per cent rise in 2000. General

(19) This indicator does not cover sales of vehicles and fuel.

government staff costs continued to record a very high growth (8.9 per cent compared with 10.2 per cent in 2000). These high paces of growth resulted in part from the increase in employment in general government, in particular in local and regional government and in autonomous funds and services. The trend of this type of expenditure in 2001 reflects also, in addition to the change in the wage scale (3.71 per cent rise against 2.5 per cent in 2000), the effect of promotions and changes in professional careers, albeit to a lesser extent than in 2000. With respect to the other components of public consumption, the slowdown in 2001 may have been slightly higher, maintaining however, very high nominal growths (7.9 and 10.7 per cent respectively in 2001 and 2000).

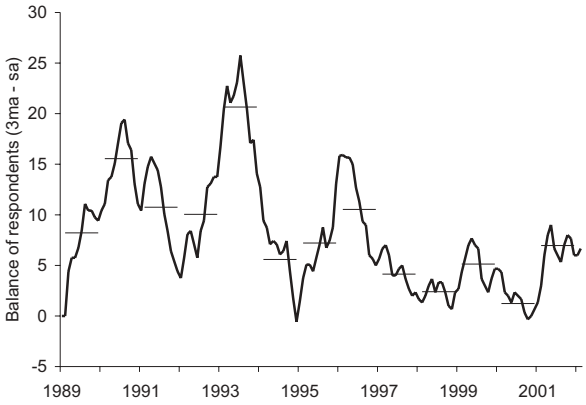
The change in inventories contributed positively to output growth in 2001, contrary to the previous year. In fact, the results of the *INE* surveys suggest a rise in inventory levels towards the end of the year, in particular in manufacturing industry (Chart 4.3).

GFCF had a negative change in 2001 (-0.8 per cent compared with a 4.8 per cent rise in 2000). This trend reflected a strong reduction in investment in transport material (by approximately -15 per cent) and, to a lesser extent, in investment in machinery and metal products (-2.8 per cent). It should be noted that GFCF in transport material was affected in 2001 – like expenditure on the purchase of off-the-road vehicles – by the rise in the automobile tax on light commercial vehicles. GFCF in construction continued to record a positive change, albeit smaller than in 2000 (2.5 and 5.0 per cent respectively). Turning to an analysis by institutional sector, it can be seen that corporate investment shrank in 2001, similarly to investment by households in housing. By contrast, general government GFCF must have recorded a strong growth, concentrated on construction of public works.

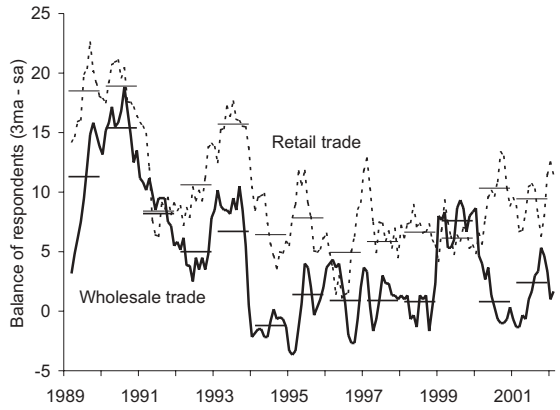
The reduction in GFCF in equipment reflected, on the one hand, the deterioration of external and internal demand – implying a slowdown in production and lower capacity utilisation – allied to a more uncertain outlook for the future trend of economic activity. In particular, uncertainty about prospects for the major economies may have negatively affected prospects of the business sector and, consequently their investment plans. In fact,

Chart 4.3

ASSESSMENT OF STOCKS IN INDUSTRY



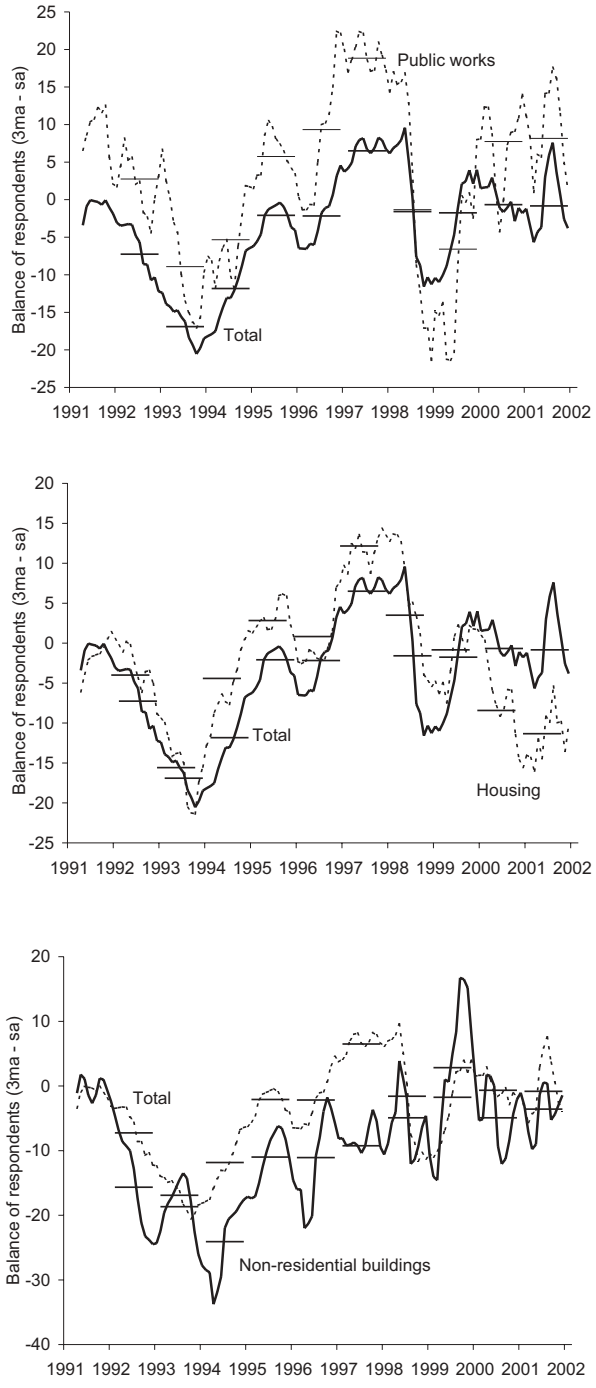
ASSESSMENT OF STOCKS IN RETAIL AND WHOLESALE TRADE



in addition to the direct influence channels on the Portuguese economy – which translate into a change in demand for Portuguese exports – developments in the external environment affect economic agent' expectations and, hence their consumption and investment decisions. On the other hand, the performance of this type of investment may have been conditioned by the high corporate indebtedness level, derived from the borrowing requirements associated with the strong growth of investment in the recent past.

The slowdown in GFCF in construction in 2001 reflects on the one hand, the reduction of investment in housing and on the other, a slight acceleration of investment in public works and non-residential buildings. This different buoyancy is illustrated by the different pattern of the balance of

Chart 4.4
ACTIVITY APPRAISAL IN THE CONSTRUCTION AND PUBLIC WORKS SECTOR



respondents on activity in the construction subsectors compiled from the *INE* business survey (Chart 4.4).

The negative pattern of GFCF in housing is suggested by several indicators. New residential house building permits decreased by 4 per cent in 2000 and by 10 per cent in 2001. Net flows of housing credit showed a further negative change at the end of 2001 (-10 per cent compared with -12.1 per cent at the end of 2000). The negative pattern of GFCF in housing represents a correction of the strong paces of growth in recent years, caused by a number of reasons. First, the maintenance of the past level of households' indebtedness would be unsustainable, having resulted from the reduction, largely considered irreversible, of the interest rate levels. Second, the trend of the economic conjuncture, adversely conditioned by the external environment and by unfavourable fiscal developments, seems to have led to a more cautious attitude in households' investment decisions. Finally, with the strong investment rates of recent years, the stock of available houses has already reached sufficiently high levels that, at least temporarily, restrict the growth margin of investment.

Exports of goods and services slowed in 2001, with a real growth of 3.3 per cent (8.5 per cent in 2000). The deceleration in services exports was particularly marked and it should be noted that tourism services increased, in real terms, by approximately 3 per cent in 2001 (12 per cent in 2000).

Merchandise exports also decelerated in 2001, both in nominal and real terms. In nominal terms, this performance resulted in part from the deceleration in external selling prices. There was a loss of buoyancy in merchandise exports both to extra-Community markets and to European Union (EU) countries, being more marked in the case of the former.[20] In real terms, growth went down by approximately 4 p.p. (from 7.9 per cent in 2000 to 4.0 per cent in 2001), basically as a result of the decline in growth of the external demand relevant to the Portuguese economy[21] (from 11.8 per cent in 2000 to 1.2 per cent in 2001). The gain in export market shares implied in these figures (2.7 per cent) interrupted the trend decline in market shares observed over the past few years (cumulative loss of

(20) Nominal exports to extra-Community countries decelerated from 34.7 per cent in 2000 to 4.4 per cent in 2001, while the rise in nominal exports to EU countries declined from 10.5 to 6.2 per cent over the same period.

(21) This indicator is derived from imports of manufactured goods of a significant set of economies, compiled by OECD, taking into account the relative breakdown of Portuguese exports by countries of destination.

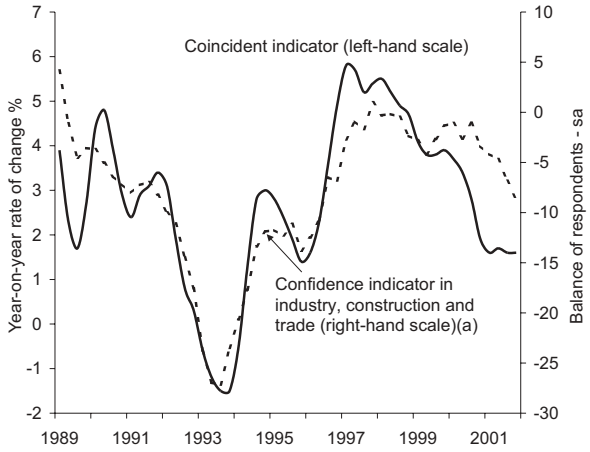
around 13 p.p. from 1997 to 2000), helping to minimize the negative impact of the deterioration in the external environment of the Portuguese economy in 2001. This gain resulted in part from the strong acceleration in car exports in 2001, following the closing down of a large production plant in the automobile sector for a few months in 2000 (Table 4.1). However, even excluding this effect, there is a positive differential between the rise in merchandise exports and the growth in the relevant external market. This pattern may be partly related to a more positive behaviour, than in the recent past, of sales abroad of the more traditional export industries – "textiles, clothing and footwear" – which increased in volume at a rate close to that of total exports. It should be borne in mind that exports of these industries had recorded falls or negligible rises in the previous years, adding thus to the loss in market share in these years. The gain in market share in 2001 can be explained for instance either by the interruption of the delocalisation process of export companies from traditional sectors to other countries with cheaper labour costs, or the redirection of sales to the external market against a background of weakening domestic demand.

In 2001, imports of goods and services may have increased by only 0.5 per cent in volume (5.7 per cent in 2000). This slowdown became more marked by a rather negative change in services imports (-8.3 per cent, following a 7.6 per cent rise in 2000). Merchandise imports also decelerated strongly from the previous year (from 5.5 to 1.6 per cent, in real terms), since the reduction in consumption spending on durable goods and in investment in transport material and other equipment – domestic demand components with high import content – and the deceleration of exports translated into a smaller recourse to external supply.

It should be noted that import and export prices recorded a sharp slowdown in 2001, in particular in the case of imports, which was partly associated with developments in the oil price in international markets. The estimates of Banco de Portugal point to a 2.2 per cent rise in export prices, i.e. higher than the estimated growth of 0.8 per cent for import prices. Thus, developments in terms of trade in goods and services were favourable to the Portuguese economy in 2001, conversely to the previous year (changes of 1.4 and -3.1 per cent, respectively). The gain resulting from this positive change in terms of trade is, in real terms, equal to 0.5 per cent of GDP (-1.1 per cent in 2000).

Chart 4.5

COINCIDENT INDICATOR OF ACTIVITY AND CONFIDENCE IN INDUSTRY, CONSTRUCTION AND TRADE



Sources: European Commission, *INE* "Monthly Trade Survey"and Banco de Portugal.

Note:

(a) Simple arithmetic mean of the industry, construction, retail trade and wholesale trade indicators.

By sectors of activity, developments in 2001 were featured by a deceleration in construction and services – in particular, in trade – and by the maintenance of the growth pace in industry. Reflecting the combined performance in these sectors, the coincident indicator of activity calculated by Banco de Portugal recorded an annual average change in 2001 clearly below that observed in 2000 (Chart 4.5). In services, the deceleration resulted largely from the activity pattern in the trade, restaurants and hotels sub-sectors. The deceleration in domestic demand – in particular, in private consumption of goods and GFCF in equipment – translated into a slowdown in activity in retail and wholesale trade. In the restaurants and hotels sector, there was also a strong deceleration in activity, in real terms, associated with the expenditure pattern of residents and non-residents in the national territory. Preliminary data on the total number of

(22) This behaviour results from the base effect, associated with the discontinuance of production in a large plant of this sector during some months in 2000.

Table 5.1

SUMMARY OF LABOUR MARKET INDICATORS

	Compensation per employee [a]				Total employment	Employees	Unemployment rate	Participation rate
	Whole economy[b]		Private sector[c]					
	Nominal	Real [d]	Nominal	Real [d]				15-64 ears
	(r.c.)	(r.c)	(r.c)	(r.c)	(r.c)	(r.c)	(%)	(%)
1998	6.4	3.6	6.4	3.6	2.3	2.1	5.0	70.1
1999	5.3	2.9	4.8	2.4	1.8	3.3	4.4	70.6
2000	5.7	2.6	5.3	2.2	1.7	2.5	4.0	71.1
2001	5.7	1.1	5.4	0.8	1.6	1.7	4.1	71.8

Source:s:*INE*, "National Accounts" and "Employment Survey" and Banco de Portugal.

Notes:

(a) Compensation per employee; includes wage scales, additional benefits and Social Security contributions from employers.

(b) Excluding the general government transfer to *Caixa Geral de Aposentações*.

(c) Excluding compensations earned by civil servants.

(d) Deflated using the private consumption deflator.

r.c.: Rates of change, percentage.

nights spent in hotels point to a decrease of 1.7 per cent in 2001 (a 3.3 per cent rise in 2000). The growth in industry seems to have been in line with that recorded in 2000, accounted for by the trend in the automobile industry (strong growth after a fall in 2000).[22] Output of the remaining industries decelerated, in line with the trend of domestic and external demand. As referred to above, the slowdown in construction is explained by developments in the residential construction segment. Finally, it should be noted that activity in the agriculture, forestry and fishing sector recovered slightly, after a steep fall in 2000.

5. EMPLOYMENT AND WAGES

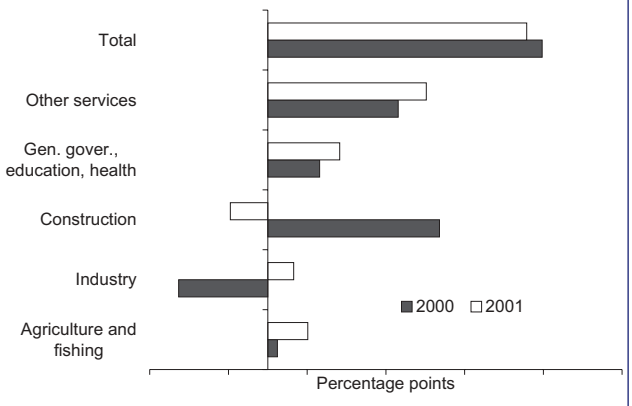
In 2001, according to the Employment Survey of the *INE*, developments in the Portuguese labour market were characterised by a continuing strong growth in total employment (1.6 per cent, compared with 1.7 per cent in 2000) (Table 5.1). Dependent employment decelerated rather sharply, from 2.5 per cent in 2000 to 1.7 per cent in 2001. In contrast to previous years, other types of employment – self-employment, unpaid family workers and other – also rose in 2001 (1.6 per cent).

The highest positive contribution to employment growth in 2001 continued to stem from services (1.5 p.p.) (Chart 5.1). In particular, and according to the Employment Survey, stress should be laid on the further significant rise in employment at the level of general government, education and health in 2001 (2.7 per cent, compared with 2.0 per cent in 2000). Employment in the trade sector also continued to grow at a strong pace (4 per cent). There was also an increase in employment in agriculture and fishing, contributing 0.3 p.p. to the change in total employment (0.1 p.p. in 2000). The construction sector, which had made a significant contribution to total employment growth in the previous years, made a negative contribution to the net change in employment in 2001 (around -0.2 p.p.).

The slowdown in economic activity, in parallel with the actual employment growth, translated

Chart 5.1

SECTORAL CONTRIBUTIONS TO THE CHANGE IN TOTAL EMPLOYMENT



Sources: *INE*, "Employment Survey".

into a sharp deceleration in apparent productivity per employee (virtually nil growth in 2001 compared with 1.8 per cent in 2000). These developments in productivity reflect the lag between output and employment cycles, and were also recorded across the euro area.

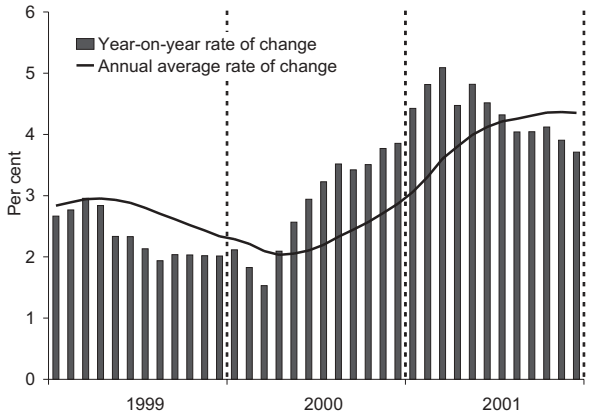
The unemployment rate, discontinuing the trend decline observed in recent years, rose by 0.1 p.p. in 2001, to stand at 4.1 per cent of the labour force, i.e. at a level still far below that estimated for the natural unemployment rate (around 5 per cent). The number of unemployed rose by 3.3 per cent, after having declined in the previous years. This change was due to a significant increase in the number of first-job seekers (23.5 per cent). The number of unemployed workers seeking a new job – more than 85 per cent of the total – saw a very slight increase (0.1 per cent).

The participation rate recorded a further sharp rise in 2001. For those aged 15-64, the rise was 0.7 p.p. in 2001, standing at 71.8 per cent. This change is largely explained by a reduction in the share of young people aged 15-24 in the population(23) and by the trend rise in the female participation rate. In 2000 and 2001 the immigration phenomenon is likely to have also contributed to the rise in the participation rate calculated by the *INE*'s Employment Survey.

Nominal wages continued to grow at the pace seen in the previous year, thus continuing to exceed largely the increase seen in the euro area (i.e. around 2.5 per cent). According to the estimates of the Banco de Portugal, the rate of change in nominal compensation per employee in the private sector stood at 5.4 per cent in 2001 (5.3 per cent in 2000) (Table 5.1). This figure sets the estimated deviation from wage settlements in centrally negotiated agreements at around 1.5 p.p., i.e. 0.3 p.p. less than in 2000. It should be noted that the growth of compensation per employee for the public sector remained above that estimated for the private sector.

(23) If the participation rate for each age group in 2000 were to remain unchanged, developments in the age structure of this population in 2001 by themselves would imply an increase of around 0.3 p.p. in the participation rate.

Chart 6.1
CONSUMER PRICE INDEX
Year-on-year and average rates of change



Source: *INE*.

6. INFLATION

In 2001 the inflation rate in Portugal, as measured by the annual average change in the Consumer Price Index (CPI), rose to 4.4 per cent (2.9 per cent in 2000). However, the year-on-year rate of change in the CPI shifted downwards from the second quarter of 2001 onwards, and as from August it stood below the average rate of change for the first time since March 2000 (see Chart 6.1 and Table 6.1). In December 2001 the year-on-year rate of change in the CPI stood at 3.7 per cent, i.e. 0.2 p.p. less than in December 2000 and 1.4 p.p. less than in March 2001, when it reached its peak. This downward trend was confirmed in the first quarter of 2002, by a decline in the year-on-year rate of change in the CPI in February and March to 3.2 per cent.

In 2001 inflation developments in Portugal essentially reflected three main factors (see Box 1 – *Factors behind inflation in Portugal)*. On the one hand, the prices of some foodstuffs recorded anomalous changes, which had an impact on the change in the CPI. On the other hand, there was an increase in external inflation, which translated into an acceleration in import prices of consumer goods in Portugal. Moreover, and as stressed in the previous section, both nominal and real compensation per employee continued to grow strongly, the latter increasing far above productivity for the fifth consecutive year.

Table 6.1

CPI – MAIN CLASSES AND AGGREGATES

Average and year-on-year rates of change, per cent

	Weights in total	Average rates of change			
		1998	1999	2000	2001
Total	100	2.8	2.3	2.9	4.4
Total excluding unprocessed food and energy	78.1	2.5	2.7	2.5	3.6
Aggregates					
Goods	68.9	1.9	1.7	2.2	4.2
Food	25.8	3.8	2.7	1.9	6.1
Unprocessed food	13.0	6.0	2.7	2.5	8.8
Processed food	12.8	1.5	2.8	1.4	3.1
Industrial goods	43.1	0.8	1.1	2.4	3.1
Non-energy industrial goods	34.3	0.8	1.8	1.4	2.5
Energy	8.8	0.6	-1.9	6.1	5.2
Services	31.1	4.9	3.7	4.2	4.8
Classes					
Food and non-alcoholic beverages	22.7	3.5	2.2	2.1	6.5
Alcoholic beverages and tobacco	3.2	4.9	7.2	0.8	3.2
Clothing and footwear	7.2	-1.0	0.4	0.8	1.5
Housing, water, electricity, gas and other fuels	10.1	2.7	0.8	3.7	3.9
Furnishings, household equipment and routine household maintenance	8.1	2.1	2.2	2.0	3.2
Health	6.0	4.6	4.2	3.1	3.6
Transports	21.2	2.4	2.9	4.8	4.8
Communication	2.5	-3.9	-3.7	-4.8	-2.2
Recreation and culture	4.2	-0.3	0.7	0.8	2.2
Education	1.6	18.7	4.8	5.0	5.2
Restaurants and hotels	9.2	3.3	2.9	3.6	4.2
Miscellaneous goods and services	4.0	3.5	3.8	4.3	5.5
Memo item:					
Trend measures					
Trimmed mean at 10 per cent		2.3	2.1	2.8	3.9
Main component		3.0	2.6	2.7	3.4

Sources: *INE* and Banco de Portugal.

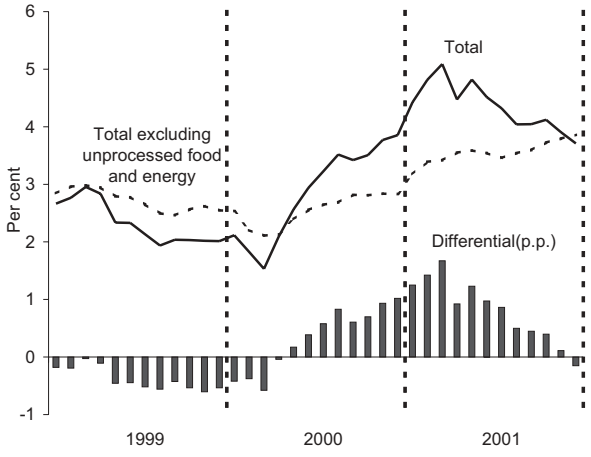
The year-on-year rate of change in unprocessed food prices rose strongly from mid-2000 onwards, to stand at above 10 per cent up to the end of the first half of 2001. Subsequently, it declined gradually over the second half-year to 4.6 per cent in December. Price developments in this component were driven by the re-emergence of news regarding outbreaks of BSE and foot-and-mouth disease and also by particularly adverse weather conditions during the winter 2000 / 2001.

Energy consumer prices decelerated in annual average terms – from 6.1 per cent in 2000 to 5.2 per cent in 2001 – but also made a significant contribution to the intra-annual erratic behaviour of the year-on-year rate of change in the CPI. The prices of these products grew more than 10 per cent in the first quarter of 2001, as a reflection of the effects of increases in fuel prices at end-March 2000 (around 11 per cent) and in January 2001 (around 3

Chart 6.2

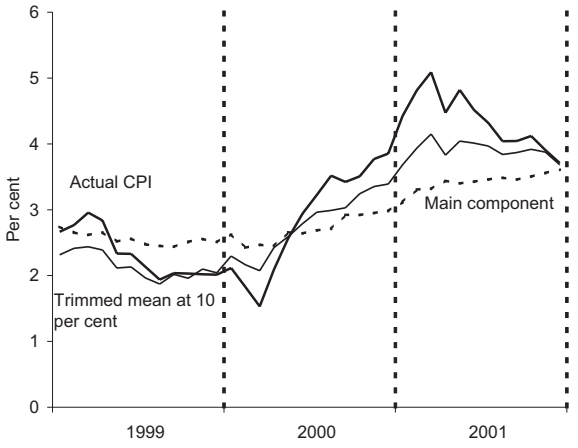
TOTAL EXCLUDING UNPROCESSED FOOD AND ENERGY

Year-on-year rates of change



Sources: *INE* and Banco de Portugal.

Chart 6.3
CPI – TREND MEASURES
Year-on-year rates of change



Sources: *INE* and Banco de Portugal.

per cent). There was a progressive deceleration in the prices of these products from April onwards.

Excluding unprocessed food and energy, the annual average change in the CPI increased from 2.5 per cent in 2000 to 3.6 per cent in 2001 (Chart 6.2), suggesting that the rise in the Portuguese inflation rate in 2001 did not result only from one-off factors. The year-on-year inflation trend indicators normally used by the Banco de Portugal, i.e. trimmed mean at 10 per cent and main component, confirm this assessment, since they showed a clear rise in annual average terms, although below that in the CPI (Chart 6.3). Developments in trend indicators essentially reflect the unfavourable performance of the main factors behind inflation: the acceleration of import prices and the maintenance of a very strong growth in wage costs.

The rise in inflation in Portugal in 2001, as in the euro area as a whole, largely reflected the gradual pass-through to consumer prices of the significant increases in international commodity prices recorded in 2000, heightened by the depreciation of the euro. In fact, import prices of goods, in particular intermediate goods, saw a high increase in 2000, with lagged effects on developments in the Portuguese inflation in 2001. In addition, as a reflection of the rise in inflation in Portugal's main trading partners, import prices of consumer goods accelerated in 2001. According to the estimates of Banco de Portugal on the basis of data made available by *INE*, import deflators of consumer goods increased by 4.0 per cent in 2001, compared with a 2.6 per cent growth in 2000 as a whole.

Finally, as referred to in the previous section, wage pressures on price developments remained high in 2001. The continuing labour market tension and the intensification of inflationary pressures in 2001 are particularly noticeable in developments in the prices of some services (e.g. restaurants and cafés, medical and dental services, domestic services). The prices of the services component of the CPI rose by 4.8 per cent in 2001, in annual average terms, representing an acceleration of 0.6 p.p. from the previous year.

According to the Harmonised Index of Consumer Prices (HICP),[24] the annual average inflation rate rose from 2.8 per cent to 4.4 per cent in 2001, which translated an acceleration in prices above that seen in most euro area countries. In terms of HICP annual average, the inflation differential between Portugal and the euro area widened from 0.4 p.p. in 2000 to 1.7 p.p. in 2001 (Chart 6.4). The widening of the inflation differential was largely influenced by the different behaviour of unprocessed food and energy prices between Portugal and the remaining euro area countries. In fact, the differential between the HICP growth rates excluding the prices of these two aggregates remained relatively stable in the course of 2001, at around 1.5 p.p., which means that, excluding developments in the prices of these two types of products, the acceleration in consumer prices in Portugal is likely to have been similar to that seen

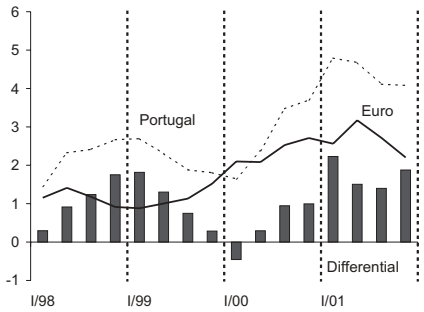
(24) In order to improve the coverage and harmonisation of the measurement of consumer prices in the euro area, some methodological changes were introduced in the HICP. From among these changes, the overall inflation rate for the euro area and, in particular, the non-energy industrial goods aggregate, are especially affected by the inclusion of sales and promotions in Italy and Spain from January 2001 onwards. The series used in the following analysis does not include prices regarding sales and promotions in these two countries, so as to avoid the distortion of the year-on-year rates of change in the HICP for the euro area in 2001. In addition, with the adoption of the single currency by Greece on 1 January 2001, from that month onwards this country started to be included in the HICP published for the euro area. For analytical reasons, the Eurostat started also to disclose a series which includes Greece since 1995. Thus, the analysis of developments in the inflation differential in this text uses an HICP series for the euro area which includes Greece since 1995, but excludes prices regarding sales and promotions in Spain and Italy in 2001.

Chart 6.3

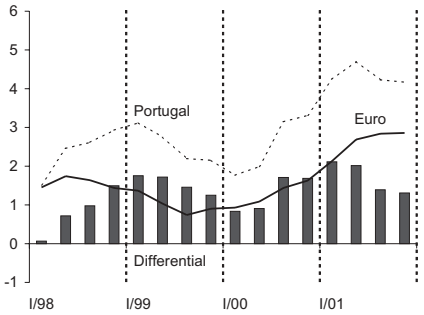
HARMONISED INDEX OF CONSUMER PRICES – TOTAL AND AGGREGATES

Year-on-year rates of change and differentials

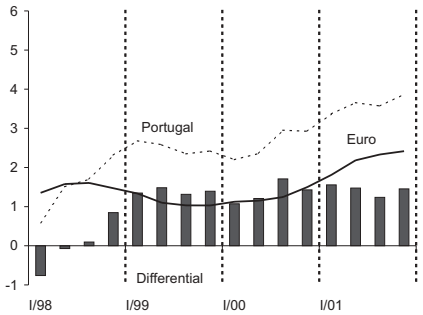
Total



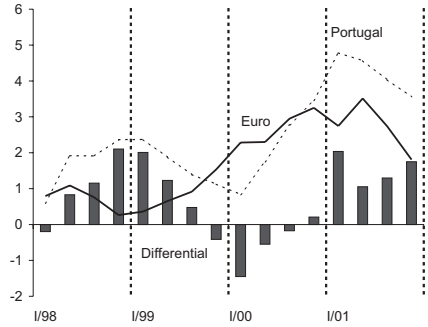
Total, excluding energy



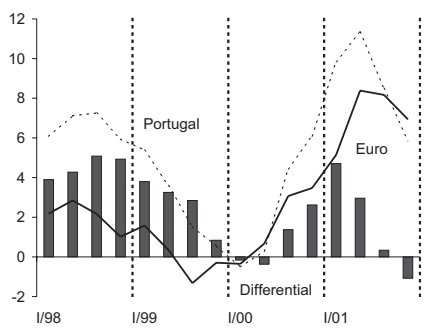
Total, excluding energy and unprocessed food



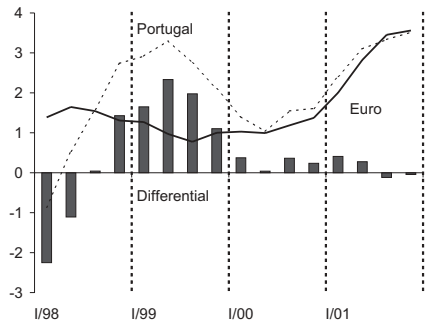
Goods



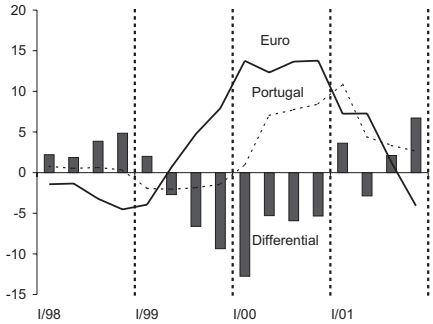
Unprocessed food



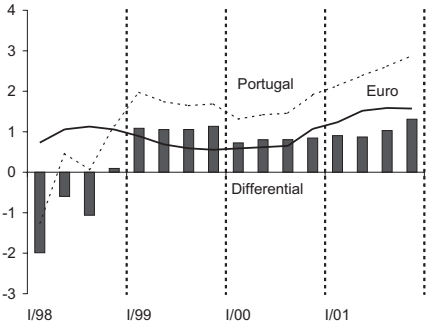
Processed food



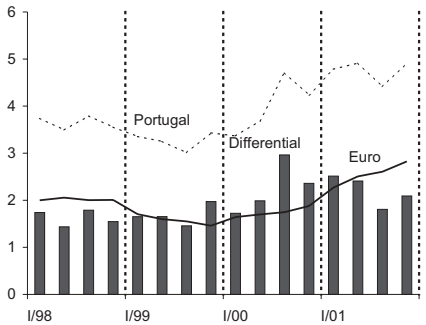
Energy



Non-energy industrial goods

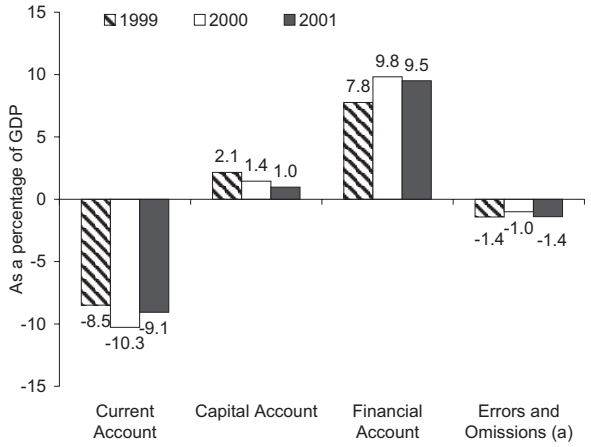


Services



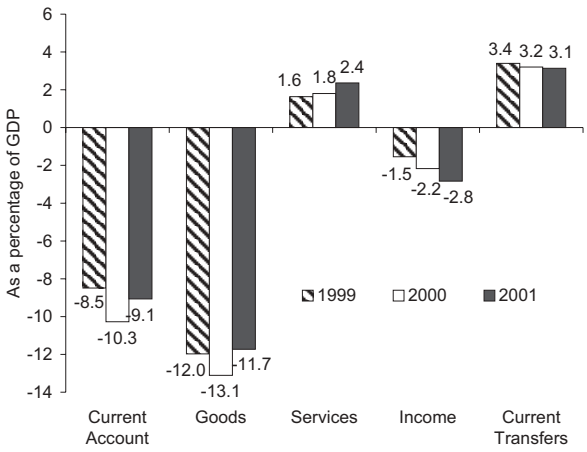
Source: Eurostat.

Chart 7.1
BALANCE OF PAYMENTS – BREAKDOWN



Note:
(a) A positive (negative) sign indicates a credit (debit) not elsewhere recorded in the balance of payments.

Chart 7.2
CURRENT ACCOUNT – BREAKDOWN
Balances



in the euro area as a whole, albeit at a higher inflation level. The existence of a higher inflation level in Portugal than in the euro area as a whole is likely to be closely related to the fact that labour costs in Portugal continue to show a higher growth than that seen in the euro area as a whole. With regard to services prices, which are particularly sensitive to wage developments, the differential in terms of the annual average change in the HICP, continued to record rather high values, albeit reasonably stable (2.2 p.p. in 2001, compared with 2.3 p.p. in the previous year, in annual average terms).

7. BALANCE OF PAYMENTS

In 2001 there was a slight reduction in the Portuguese economy's external borrowing requirements, which translated into a narrowing of the combined deficit of the current and capital accounts by 0.7 p.p. of GDP. The moderation of private consumption – which was reflected in the increase in household savings – and the reduction in private investment allowed the reversal of the upward trend of the borrowing requirements of the economy's private sector (households and corporations) in 2001. However, this improvement was partially offset by the increase in general government borrowing requirements in 2001. The financial account recorded a net inflow equivalent to 9.5 per cent of GDP in 2001 (9.8 per cent of GDP in 2000)[25] (see Chart 7.1 and Table 7.1). The financing of the combined deficit of the current and capital accounts continued to be mostly ensured by resident monetary financial institutions through lending and deposit operations with non-resident banks. A significant share of this external financing of monetary financial institutions corresponded to the transfer of funds obtained through the issue of medium and long-term securities in international markets by branches abroad of Portuguese banks.

The reduction in the combined deficit of the current and capital accounts, from 8.8 to 8.1 per cent of GDP in 2001, resulted from a narrowing of the goods and services deficit, only partially offset by the behaviour of the remaining items. There was a relatively marked widening of the income deficit, lower net inflows of current transfers and a lower capital account surplus (Chart 7.2).

In 2001 the goods and services account recorded a deficit equivalent to 9.4 per cent of GDP, compared with 11.3 per cent in 2000. On the one hand, the goods deficit narrowed by 1.4 p.p., as a result of the contribution from the volume effect and the terms of trade effect (Chart 7.3). The volume effect was positive this year, as the impact of

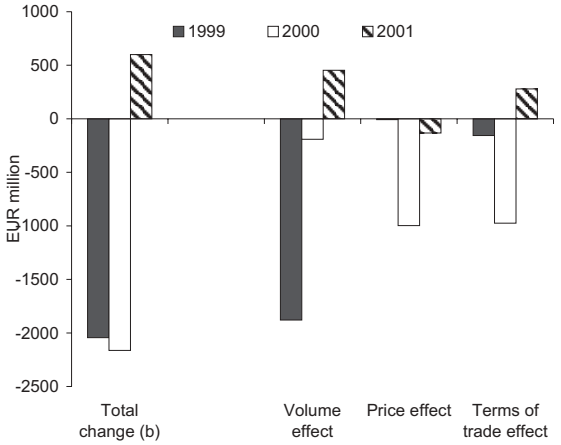
(25) The difference between the balance on the financial account and the symmetric surplus balance on the current and capital accounts corresponds to statistical discrepancies included in "Errors and Omissions".

Table 7.1

BALANCE OF PAYMENTS

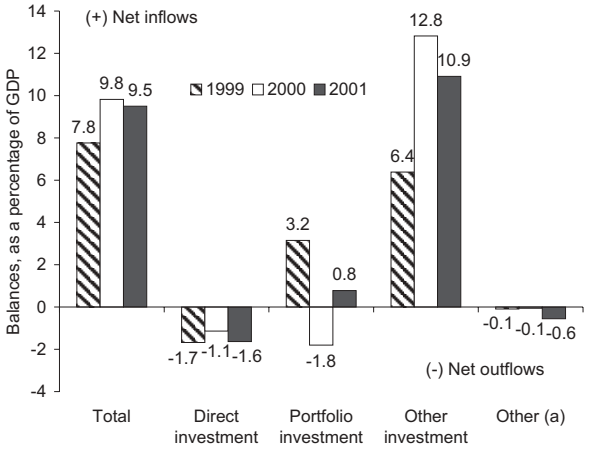
	1999	2000			2001			Balance as a % of GDP		
	Balance	Debit	Credit	Balance	Debit	Credit	Balance	1999	2000	2001
Current account	**-9 177.3**	**59 474.7**	**47 637.2**	**-11 837.6**	**61 785.7**	**50 575.3**	**-11 210.4**	**-8.5**	**-10.3**	**-9.1**
Goods	-12 943.5	42 456.5	27 349.5	-15 107.0	43 320.8	28 813.7	-14 507.1	-12.0	-13.1	-11.7
Services	1 765.0	7 151.7	9 230.8	2 079.1	6 917.2	9 835.4	2 918.2	1.6	1.8	2.4
Transport	-409.1	2 103.1	1 584.7	-518.5	2 216.7	1 764.9	-451.8	-0.4	-0.4	-0.4
Travel and tourism	2 833.8	2 422.4	5 720.3	3 297.9	2 350.2	6 118.8	3 768.6	2.6	2.9	3.0
Insurance	-30.8	108.3	64.0	-44.2	103.2	63.4	-39.8	0.0	0.0	0.0
Royalties and license fees	-260.1	298.1	31.5	-266.7	261.0	28.3	-232.6	-0.2	-0.2	-0.2
Other services	-213.4	1 955.7	1 718.3	-237.3	1 782.9	1 734.4	-48.5	-0.2	-0.2	0.0
Government services	-155.2	264.2	112.0	-152.2	203.2	125.6	-77.6	-0.1	-0.1	-0.1
Income	-1 668.4	7 718.2	5 215.5	-2 502.7	9 149.5	5 645.6	-3 503.9	-1.5	-2.2	-2.8
Compensation of employees	27.9	138.5	165.7	27.2	162.6	167.3	4.7	0.0	0.0	0.0
Investment income	-1 696.3	7 579.6	5 049.8	-2 529.9	8 986.9	5 478.3	-3 508.6	-1.6	-2.2	-2.8
Current transfers	3 669.5	2 148.3	5 841.3	3 693.0	2 398.2	6 280.7	3 882.5	3.4	3.2	3.1
Official transfers	531.0	1 459.8	1 632.4	172.5	1 420.2	1 608.5	188.3	0.5	0.1	0.2
Private transfers	3 138.5	688.5	4 208.9	3 520.5	978.0	4 672.2	3 694.2	2.9	3.1	3.0
Capital account	**2 323.8**	**184.4**	**1 854.2**	**1 669.8**	**234.8**	**1 430.3**	**1 195.6**	**2.1**	**1.4**	**1.0**
Capital transfers	2 332.5	142.0	1 794.1	1 652.1	184.4	1 398.9	1 214.5	2.2	1.4	1.0
Official transfers	2 317.2	24.0	1 673.2	1 649.2	53.3	1 260.2	1 206.9	2.1	1.4	1.0
Private transfers	15.2	118.0	120.9	2.9	131.1	138.7	7.7	0.0	0.0	0.0
Acquisition / disposal of non-produced, non-financial assets	-8.7	42.4	60.0	17.6	50.4	31.4	-19.0	0.0	0.0	0.0
Financial account	**8 389.2**	**832 148.9**	**843 472.3**	**11 323.3**	**609 450.3**	**621 192.6**	**11 742.2**	**7.8**	**9.8**	**9.5**
Direct investment	-1 816.1	33 291.8	31 981.0	-1 310.9	26 400.6	24 380.5	-2 020.2	-1.7	-1.1	-1.6
Portuguese investment abroad	-2 973.9	14 000.3	5 691.1	-8 309.2	9 471.6	3 811.7	-5 659.9	-2.8	-7.2	-4.6
Foreign investment in Portugal	1 157.8	19 291.6	26 289.9	6 998.3	16 929.0	20 568.8	3 639.8	1.1	6.1	2.9
Portfolio investment	3 408.2	133 859.9	131 781.8	-2 078.0	123 814.9	124 775.1	960.3	3.2	-1.8	0.8
Assets	-6 081.7	54 927.0	49 886.7	-5 040.3	60 064.9	52 890.3	-7 174.6	-5.6	-4.4	-5.8
Liabilities	9 489.9	78 932.9	81 895.2	2 962.3	63 749.9	71 884.8	8 134.9	8.8	2.6	6.6
Financial derivatives	189.1	3 613.1	3 951.5	338.4	3 161.7	3 446.0	284.3	0.2	0.3	0.2
Other investment	6 899.9	604 941.4	619 720.4	14 779.0	409 836.2	423 323.8	13 487.6	6.4	12.8	10.9
Assets	361.8	199 470.8	188 357.5	-11 113.3	210 830.2	207 800.4	-3 029.9	0.3	-9.6	-2.5
Liabilities	6 538.1	405 470.6	431 362.9	25 892.3	199 006.0	215 523.5	16 517.5	6.0	22.5	13.4
Reserve assets	-291.9	56 442.7	56 037.6	-405.1	46 236.9	45 267.1	-969.8	-0.3	-0.4	-0.8
Errors and omissions	**-1 535.7**			-1 155.5			**-1 727.4**	**-1.4**	**-1.0**	**-1.4**
Memo:										
Current Account + Capital Account	**-6 853.5**	**59 659.1**	**49 491.3**	**-10 167.8**	**62 020.5**	**52 005.7**	**-10 014.8**	**-6.3**	**-8.8**	**-8.1**

Chart 7.3
CHANGE IN THE TRADE BALANCE BREAKDOWN



Notes:
(a) The change in the trade balance can be broken down into:
- volume effect - effect of the change of exported and imported volumes
$\left[X_{t-1}.V\mathrm{x}_t.(1+P\mathrm{x}_t)\right]-\left[M_{t-1}.V\mathrm{m}_t.(1+P\mathrm{m}_t)\right]$
- price effect - effect of the average growth of external trade prices
$(X_{t-1}.P_t)-(M_{t-1}.P_t)$
- Terms of trade effect - effect of the relative change in export and import prices
$\left[X_{t-1}.(P\mathrm{x}_t-P_t)\right]-\left[M_{t-1}.(P\mathrm{m}_t-P_t)\right]$
Where:
X_{t-1} and M_{t-1} – exports and imports in year *t-1*, at current prices
$V\mathrm{x}_t$ and $V\mathrm{m}_t$ – growth of exports and imports, in volume terms, in year *t*
$P\mathrm{x}_t$ and $P\mathrm{m}_t$ – growth of export and import prices, in year *t*
P_t – average growth of external trade prices, in year *t* $\left[(P\mathrm{x}_t+P\mathrm{m}_t)/2\right]$
Note that the volume effect includes the price-volume cross effect, so that the sum of the three effects adds up to the total change. This cross-effect, however, is not significant.
(b) A positive change means a reduction in the trade deficit.

Chart 7.4
FINANCIAL ACCOUNT
Balance



Note:
(a) Includes reserve assets and financial derivatives.

the lower real import growth was higher than that of the deceleration in exports. The positive change in the terms of trade of goods in 2001 – conversely to the previous year – accounts for around 50 per cent of the improvement in the trade balance. On the other hand, the services surplus widened by around 0.6 p.p. of GDP. Stress should be laid on the improvement in Travel and Tourism: nominal tourism revenue grew by 7.0 per cent (around 15 per cent in 2000), while expenditure on travel and tourism abroad by residents fell. This fall is likely to be associated with the deterioration in household confidence and the general trend of private consumption, considering that tourism expenditure abroad is surely one of its components with the greatest income elasticity.

The income account deficit widened further – from 2.2 per cent of GDP in 2000 to 2.8 per cent of GDP in 2001 – as a counterpart to the growth of external liabilities of the Portuguese economy in recent years, as a result of the build-up of deficits in the combined current and capital accounts. This deficit continued to reflect the behaviour of the income deficit of other investment, in line with developments in the type of financing – loans and deposits – from abroad in recent years.

The current transfers surplus declined slightly from 3.2 to 3.1 per cent of GDP. The current public transfers surplus stabilised at around 0.2 per cent of GDP, while private transfers, essentially comprised of emigrants'/immigrants' remittances, declined somewhat. Emigrants' remittances remained quite buoyant, growing by around 8.0 per cent in 2001. However, immigrants' remittances – whose amount is still negligible compared with those of emigrants (around 0.3 and 3.0 per cent of GDP respectively in 2001) – more than doubled this year, associated with the recent immigration flows. With regard to the capital account – which is essentially comprised of EU transfers – its sur-

plus declined further, from 1.4 to 1.0 per cent of GDP, as a reflection of a reduction in public transfers received by Portugal.

The financial account recorded an inflow equivalent to 9.5 per cent of GDP in 2001 (9.8 per cent of GDP in 2000) (see Chart 7.4 and Table 7.1). Operations included in the Other Investment item continued to represent the majority of inflows, reaching 10.9 per cent of GDP (12.8 per cent of GDP in 2000). Most borrowing and lending operations, given their nature, continued to be carried out by resident banks (12.0 per cent of GDP, vis-à-vis 10.3 per cent of GDP in 2000). As referred to above, most of these net inflows corresponded to the transfer of funds stemming from the issue of medium and long-term debt securities in international markets, by branches abroad of those banks.

Portfolio investment operations also resulted in a net inflow (0.8 per cent of GDP), in contrast to a net outflow in the previous year (-1.8 per cent of GDP). There was, on the one hand, a significant increase in net investments by non-residents (from 2.6 to 6.6 per cent of GDP), in particular in long-term debt securities issued by monetary financial institutions and money market instruments issued by the general government. On the other hand, net investments by residents in foreign securities also increased, from 4.4 to 5.8 per cent of GDP. These investments continued to be mainly channelled to long-term debt securities and to be carried out mostly by insurance corporations, pension funds and investment funds, which seems to be related to portfolio diversification strategies of these institutions.

Finally, direct investment operations showed a higher deficit than that recorded in the previous year (-1.6 and -1.1 per cent of GDP respectively), sharpening the trend of net direct investment outflows seen in recent years. In net terms, flows of foreign direct investment (IDE) in Portugal were lower than in the previous year (6.1 against 2.9 per cent of GDP) as well as flows of direct investment of Portugal abroad (IPE) (7.2 against 4.6 per cent of GDP). A significant share of total IDE continued to be channelled to holding companies of national economic groups. Stress should be laid on the rise in IDE in manufacturing in 2001, particularly in the car sector. With regard to IPE, over 40 per cent of the total net investment was made by financial sector corporations, in contrast to previous years. However, holding companies continued to be the main responsible for these flows, accounting for 45 per cent of total investment.

8. CONCLUDING REMARKS

The adjustment process of private domestic demand, which had started in 2000, was pursued in 2001. This adjustment translated namely into a rise in the household savings rate, which is probably reflecting both higher savings for precautionary reasons, in a context of unfavourable expectations of future economic developments, and the need to cope with the increase in the level of debt servicing. Thus, in 2001, private consumption decelerated sharply, growing clearly below output, whereas investment in housing fell. Reference should be made to the fact that the adjustment of household behaviour occurred against a background in which bank interest rates fell to historically low levels during the year and the unemployment rate stood below what is considered to be the natural unemployment rate for the Portuguese economy. Corporations, in parallel with households, and notwithstanding the fact that they tend to face fewer liquidity constraints than households, also made a downward revision to their investment expenditure as a result of negative prospects for developments in both domestic and external demand, and of the need to stabilise their indebtedness level.

This adjustment of the private components of domestic demand, which translated into a reduction of the private sector's borrowing requirements and a deceleration in the credit granted to it, took place in parallel with a strong growth of public expenditure, and there was a marked upward revision of public consumption growth in comparison with the figures available at the time of preparation of the September 2001 issue of the *Economic Bulletin*. The continuing very strong growth in public expenditure, combined with an increase in revenue below expectations, translated into a general government deficit quite above the target set for 2001 in the updated Stability Programme submitted by the Portuguese government at end-2000. Only part of this deviation can be attributed to a more unfavourable macroeconomic scenario than the one assumed in the programme.

The situation of Portuguese public finances is far from complying with the requirements of the Stability and Growth Pact. Thus, in the near future and conversely to the desirable situation, fiscal policy cannot act as a stabilisation factor for the Portuguese economy (see Box 2 – *The Portuguese economy in the euro area: Implications for adjustment mechanisms and for the conduct of economic policy*). In fact, after having being erroneously pro-cyclical, fiscal policy will have to remain pro-cyclical, although this time due to the urgent need to correct the imbalance in public accounts. Within this framework, the effects on the economy stemming from the endogenous adjustment of the private components of demand will be amplified by the fiscal correction. Greater buoyancy of exports supported by the international economic recovery and by the re-direction of domestic production to external markets, as well as the eventual realisation of favourable supply-side shocks, may offset those less positive effects on growth in the short-term. For that to be possible, it is necessary to ensure a greater wage moderation, after five years in which wage growth exceeded productivity rises. Only in this way it will be possible to minimize the costs of the fiscal consolidation in terms of product and employment.

Completed with information available as at 18 April 2002.

Box 1 – FACTORS BEHIND INFLATION IN PORTUGAL

This box shows the results of an exercise which consisted in decomposing the inflation rate into the various factors underlying it, according to the model normally used by the Banco de Portugal to forecast Portuguese inflation. In this model, developments in administrative prices – which include consumer fuel prices – are considered to be exogenous, while developments in the remaining consumer prices can be basically expressed as a function (i) of wage costs[(1)] and (ii) of import prices of consumer goods and intermediate goods (excluding oil). Given that this is a dynamic model, there are lagged effects; hence the estimated impact of each of these two explanatory factors (wage costs and import prices) results from the comparison between the inflation rate forecast by the model and that which would be obtained in case this variable recorded nil growth, not only in the same year, but also in the two previous years.

The model includes two other factors underlying inflation, in addition to wage costs and import prices, as for instance the output gap. However, these other factors combined are less relevant in the decomposition of changes in the inflation rate, thus being shown on aggregate. It should also be noted that the decomposition of the inflation rate takes into account a residual component, which covers all erratic effects not included in the model (e.g. anomalous changes in the prices of some unprocessed food).

The results obtained allow for a better understanding of recent price developments in Portugal (see Charts 1 and 2). The following conclusions can be drawn:

Chart 1
WAGES AND IMPORT PRICES

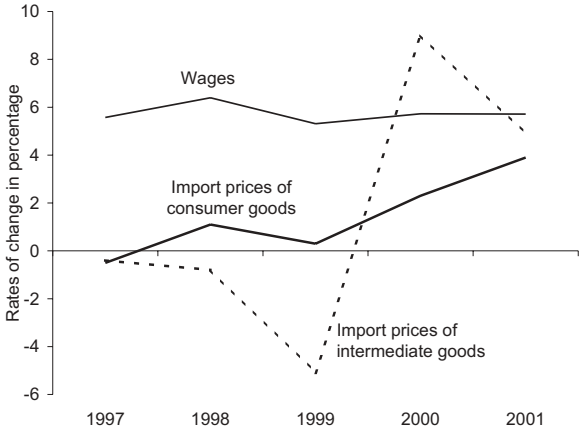
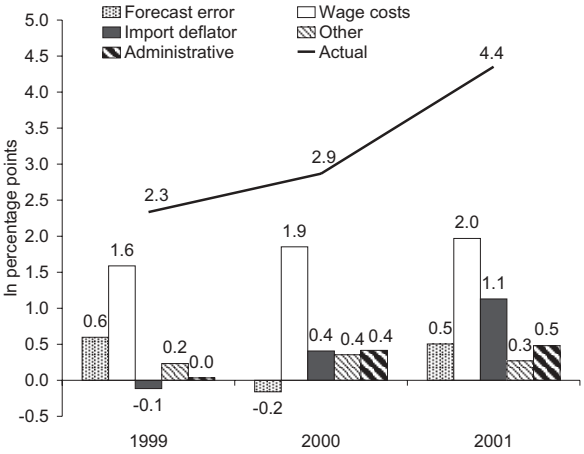


Chart 2
BREAKDOWN OF CONTRIBUTIONS TO ANNUAL AVERAGE INFLATION
1999-2001



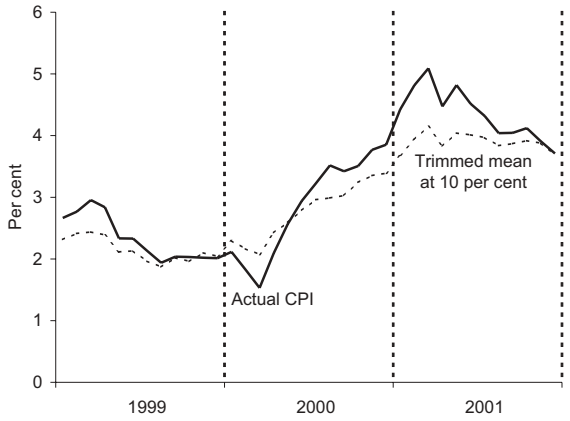
(i) In recent years wage costs have made the most important contribution to the growth of consumer prices, although their trend has not played a key role in the rise in the inflation rate in 2001. In fact, in 2001 the contribution from the growth of wage costs was similar to that of the previous year, i.e. around 2.0 percentage points (p.p.).

(1) This model calculates unit labour costs by taking into account a trend measure for productivity. This procedure allows the model's econometric adjustment to be enhanced, as opposed to the use of productivity developments estimated at each period (defined as the ratio of GDP to the number of actual employees), which are highly erratic. In fact, at the statistical level there is a low correlation between changes in the productivity growth rate and changes in the inflation rate. This is reasonable from the economic point of view, given that profit margins will tend to progressively absorb fluctuations in unit labour costs which are considered to be highly temporary and are expected to be rapidly reversed or even inverted.

(ii) The rise in the inflation rate in 2001 was associated with an increase in external inflation, which was translated into the acceleration of import prices of consumer goods and intermediate goods during the past two years. The estimated contribution from import prices to the average inflation rate increased from 0.4 p.p. in 2000 to 1.1 p.p in 2001.

(iii) In addition, in 2001 the component which was not explained by the model recorded a positive figure (0.5 p.p.), against a negative figure in the previous year (-0.2 p.p.), which shows the importance of erratic factors to the rise in the inflation rate in 2001. In this respect, stress should be laid on the excessive increase in some food prices, whose rather erratic behaviour is not, as already mentioned, liable of being anticipated by the forecast model used. The relevance of these erratic factors in inflation developments in 2001 is confirmed by the fact that the actual inflation rate stood persistently above the inflation trend indicator throughout 2001, in contrast to that seen in the two previous years (see Chart 3).[(2)]

Chart 3
CPI
Year-on-year rates of change



(2) The values of the residual component for the two previous years (particularly for 1999) may be associated with developments in import prices of intermediate goods, whose impact on the inflation rate may have been overestimated due to the administrative consumer fuel price policy. It should be noted that import prices of intermediate goods (excluding oil) have been showing a significant positive correlation with oil price developments. The results obtained in the estimation process were based on a sample period which recorded, except in recent years, a pass-through of oil prices to consumer fuel prices. Thus, the estimated ratios seem, at least partially, to record indirect effects on other product prices associated with fluctuations in the world oil price.

Box 2 – THE PORTUGUESE ECONOMY IN THE EURO AREA: IMPLICATIONS FOR ADJUSTMENT MECHANISMS AND FOR THE CONDUCT OF ECONOMIC POLICY

Portugal was one of the founding members of the euro area. The regime of macroeconomic stability underlying the project of European monetary unification ensures the maintenance of low interest rates with reduced volatility in the euro area as a whole. This is expected to have a positive impact on the trend output of the Portuguese economy, thus contributing to an increase in "per capita" income and to the strengthening of real convergence. Integration in the euro area may also add to a reduction in macroeconomic fluctuations in Portugal. The environment of economic stability and deeper financial integration will tend to attenuate the effects of asymmetric disturbances, i.e., disturbances which affect especially the Portuguese economy. The materialisation of these benefits implies however that economic agents and in particular economic policy makers, adapt their behaviour to the new regime, so as not to exacerbate potential imbalances. In this sense, it is important to understand the implications of EMU participation for the dynamics of possible macroeconomic imbalances in Portugal, for the adjustment mechanisms and for the conduct of those economic policies that remain under the responsibility of the national authorities.

One of the main risks faced by the Portuguese economy in terms of macroeconomic imbalances is presumably that of an excessive growth of domestic demand, fuelled by overly optimistic expectations concerning the future trend of production, i.e. a situation in which the pattern of domestic demand is not sustainable in view of prospects for the trend of potential output in the economy. An excessive growth of domestic demand is reflected in a widening current account balance and in the emergence of a positive inflation differential with the euro area as a whole. In turn, excessive price rises translate into a loss of competitiveness, increasing the initial external imbalance. When such an imbalance persists, the growth of external indebtedness may become unsustainable. It should be noted however that an increase in external indebtedness and/or the persistence of a positive inflation differential in relation to the remaining euro area countries does not necessarily imply that domestic expenditure is on an unsustainable path. The external deficit and the inflation differential may reflect the process of real convergence and the (desirable) adjustment of the economy to an inflation regime with lower nominal interest rates. In this case, the indebtedness level will not be "excessive" and the situation cannot be termed as an "imbalance".

In the period prior to the adoption of the euro, an excessive widening of the external deficit led to increasing pressure on the escudo exchange rate, making a relatively fast adjustment inevitable. Currently, in the context of monetary union, the external imbalance of a small economy such as the Portuguese economy is financed in the common currency, and therefore it is not limited by the risk of a currency crisis. The elimination of the exchange rate risk premium allowed for a substantial reduction of interest rates and therefore liquidity restrictions faced by many resident economic agents were substantially eased. Solvability conditions derived from these agents' intertemporal budget constraints continue to be relevant. The easier access to external financing associated with the participation in the euro area implies less pressure from international financial markets on the correction of possible macroeconomic imbalances in Portugal. Accordingly there is a risk of imbalances accumulating for a long period of time, leading to adjustment costs that are much more significant.

The correction of an external imbalance requires a change in relative prices vis-à-vis the remaining euro area countries, i.e. a depreciation of the real exchange rate against these countries. In the past, the correction of the real exchange rate was to a large extent ensured by the change in the nominal exchange rate. The exchange rate depreciation was the instrument set to bring real wages back into line with a sustainable growth of domestic demand and with the competitiveness of the economy. The flexibility shown by real wages, in a context of high inflation, enabled the adjustment of the economy without a very significant rise in the unemployment rate. At the current juncture, the depreciation of the real exchange rate can only be induced by an increase of domestic prices lower than the euro area average during the period of correction of the imbalance. This implies a very moderate growth of nominal wages during a relatively long period. The behaviour of social partners will determine the scale and duration of the rise in the unemployment rate required to achieve the necessary wage moderation. The increase in

unemployment will be limited if social partners understand the need for wage moderation at an early stage – conversely, if they take a long time to get the perception that an adjustment will be inevitable, a larger and longer increase in unemployment will need to take place.[(1)]

The fact that the exchange rate no longer exists as an adjustment instrument presents thus major challenges for the authorities responsible for the conduct of the economic policies. In the absence of an autonomous monetary and exchange rate policy, the pursuance of adequate fiscal and structural policies is instrumental to avoid the accumulation of imbalances.

Fiscal policy should act as a stabilisation factor of the Portuguese economy, limiting cyclical divergences from the euro area as a whole and thus contributing to contain the accumulation of possible imbalances. The stabilising function of fiscal policy should essentially rely on the operation of automatic stabilisers. The latter have the advantage of not requiring accurate data on the economic cycle and of acting independently from the political process, thus avoiding time lags associated with the implementation of active stabilisation measures. It should be noted that the operation of automatic stabilisers implies as a prerequisite that the sustainability of public accounts be ensured. In this sense, strict compliance with the requirements of the Stability and Growth Pact, which imposes a balanced fiscal budget on average throughout the economic cycle, is crucial for fiscal policy to fully play its stabilising role.

Structural policies of a microeconomic nature should be clearly oriented so as to enhance efficiency and flexibility in the operation of the goods, services and factor markets. The further liberalisation of markets will ensure that supply will adequately respond to changes in demand, preventing that rises in demand translate in increased monopolistic rents by companies in those sectors less exposed to foreign competition. In turn, microeconomic flexibility of the labour market will facilitate the adjustment of labour to the structural changes in the economy, namely at the level of the sectoral composition of output.

In sum, Portugal may reap substantial benefits from its participation in the euro area, both as regards the strengthening of real convergence and the attenuation of macroeconomic fluctuations in the Portuguese economy. However, participation in the euro area also entails major risks, since the increased access to credit may encourage an excessive indebtedness by economic agents, leading to an adjustment process with high costs. In this context and as referred to above, the materialisation of the benefits from participation in the euro area depends crucially on the pursuance of adequate fiscal and structural policies.

(1) The mobility of labour for other euro area economies could act as a supplementary adjustment mechanism to idiosyncratic shocks, easing the magnitude of the required correction of real wages. The existence of linguistic, cultural and institutional barriers suggests however that this mechanism is likely to be negligible in the context of monetary union. The required adjustment of real wages might also be smaller if there were a Community budget with stabilising functions, ensuring the transfer of financial resources to the regions affected by unfavourable shocks. However, this type of mechanism is frequently associated with perverse effects, in so far as it contributes to postpone the required adjustments, prolonging situations of unemployment and fostering the dependence on fiscal transfers.

LOCAL FINANCE AND FISCAL CONSOLIDATION IN PORTUGAL*

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*Patrícia Silva***

1. INTRODUCTION

According to the fiscal federalism theory,(1) the local government should gear its activity so as to ensure an efficient allocation of resources, through the provision of local goods and services. The promotion of equity and economic stabilization should be confined to the central government. Additionally, for public spending to be efficient at the local level, the budget constraint imposed on local authorities should make it possible to match the marginal social benefit of expenditure with the marginal social cost of raising revenue to finance such expenditure.

The legislation currently in force in Portugal concerning the tasks and powers of local authorities(2) establishes a distribution of powers that basically complies with the fiscal federalism theory, by concentrating the activity of the local government on the allocation function. The new Local Finance Law of 1998,(3) similarly to the previous one approved in 1987,(4) when defining how the local government can raise funds, envisages the use of borrowing according to rules that allow, in the current economic framework, a significant accumulation of public debt. In addition, the rules on local authority revenue established in both Laws do not allow these entities to have a significant influence on its amount. Consequently, the marginal social cost of raising this type of revenue is not taken into account by the local government when deciding the allocation of resources.

The Local Finance Law of 1998 introduced essentially changes in the calculation of transfers from the State to the local authorities. Taking into account these changes, the first objective of this article is to assess to what extent the approval of the Local Finance Law of 1998 had a positive or a negative impact on the overall general government deficit.

In the context of Economic and Monetary Union, the Stability and Growth Pact (SGP) requires all European Union Member States to achieve in the medium term a fiscal position close to balance or in surplus for the general government as a whole. Table 1 shows the fiscal targets set in the updated Stability and Convergence Programmes submitted to the European Commission between September and December 2001. As it can be seen, Portugal along with Germany, France and Italy, belongs to the group of countries that in 2001 still recorded a significant fiscal deficit and which, therefore, will have to make a greater consolidation effort to achieve a fiscal position close to balance or in surplus within the horizon of the Programmes. As the fiscal targets refer to the general government as a whole, their achievement depends on the consolidated fiscal balances of the several general government sub-sectors, including

* The views expressed in this article are those of the authors and not necessarily those of the Banco de Portugal. We are grateful for the comments and suggestions by Carlos Coimbra, Cláudia Braz, Luís Morais Sarmento, Maximiano Pinheiro and Orlando Caliço.
** Economic Research Department.
(1) See for example Musgrave, R. and Musgrave, P., Public finance in theory and practice, chapter 27, 5th edition, McGraw-Hill International Editions, 1989.
(2) Law no. 159/99, of 14 September.
(3) Law no. 42/98, of 6 August.
(4) Law no. 1/87, of 6 January.

Table 1

FISCAL BALANCE IN THE UPDATES OF THE STABILITY AND CONVERGENCE PROGRAMMES OF THE END OF 2001

As a percentage of GDP

	2001[a]	2002	2003	2004	2005
Stability Programmes					
Belgium	0.0	0.0	0.5	0.6	0.7
Germany	-2.5	-2.0	-1.0	0.0	0.0
Greece	0.1	0.8	1.0	1.2	-
Spain	0.0	0.0	0.0	0.1	0.2
France	-1.4	-1.4	-1.3 / -1.0	-0.5 / 0.0	0.0 / 0.3
Ireland	1.4	0.7	-0.5	-0.6	-
Italy	-1.1	-0.5	0.0	0.0	-
Luxembourg	4.1	2.8	3.1	3.4	-
Netherlands	0.7	0.4	0.2	0.5	1.0
Austria	0.0	0.0	0.0	0.2	0.5
Portugal	-2.2	-1.8	-1.0	0.0	0.4
Finland	4.7	2.6	2.1	2.6	-
Convergence Programmes					
Denmark	1.9	1.9	2.1	2.1	2.1
Sweden	4.6	2.1	2.2	2.3	-
United Kingdom	-0.2	-1.1	-1.3	-1.1	-1.0

Note:
(a) Excluding the receipts from the sale of UMTS licences.

the local government. However, a set of fiscal solidarity rules between general government sub-sectors ensuring the achievement of the objectives set in the Stability Programme for the sector as a whole has not been defined yet in Portugal. In addition, there is frequently a delay in the compilation of data on the budget outturn of some general government sub-sectors, namely the local government, rendering more difficult the monitoring and assessment of the fiscal position of the sector as a whole. Obviously, this situation raises a problem of credibility and feasibility of the targets assumed in the updates of the Stability Programme. Thus, the second purpose of this paper is to present a set of rules ensuring solidarity between all general government sub-sectors in the fiscal consolidation process.

This paper is organised as follows. Section 2 describes briefly the budget constraint of the local government sector in Portugal. Section 3 tries to assess how the Local Finance Law of 1998 contributed to the increase in public expenditure. Section 4 focuses on the changes in the institutional arrangements that will be necessary to ensure that the fiscal consolidation effort will be shared by all general government sub-sectors. Section 5 concludes. It should be highlighted that the problems concerning the recent creation of a significant number of municipal companies are not considered in the analysis.

2. THE BUDGET CONSTRAINT OF THE LOCAL GOVERNMENT

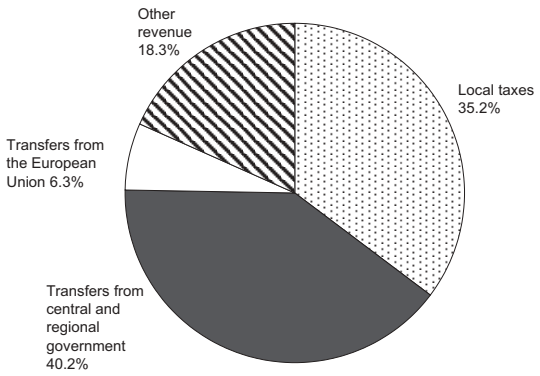
2.1. Revenue

The local authorities revenues are described in the Local Finance Law. Amongst the several sources of revenue established by Law, mention should be made to local taxes, transfers from the central and regional government[5] and transfers from the European Union to co-finance investment projects. In 2000 these three sources of revenue as a whole accounted for 81.7 per cent of the total revenue of local authorities (Chart 1 and Table 2). Amongst the local taxes, the most important revenues are the ones from the property transfer tax

(5) It should be noted that transfers from the central and regional government are almost exclusively composed by State transfers.

Chart 1

COMPOSITION OF LOCAL GOVERNMENT REVENUE IN 2000



Source: General Directorate of the Local Government.

Table 3

SHARE OF THE LOCAL GOVERNMENT[a] IN THE REVENUE OF THE GENERAL GOVERNMENT[b] BY ITEMS IN 2000

Percentage

Total revenue	**5.7**
Current revenue	**5.1**
Direct taxes	11.8
Indirect taxes	1.1
Other current revenue	7.2
Capital revenue	**15.0**

Sources: General Directorate of the Local Government and General Directorate of the Budget.

Notes:

(a) Excluding transfers received from other general government sub-sectors.

(b) Consolidated revenue.

Table 2

COMPOSITION OF LOCAL GOVERNMENT REVENUE IN 2000[a]

	Millions of euros	Share of the total
Total revenue	**4 896.7**	**100.0**
Current revenue	**3 513.0**	**71.7**
Direct taxes	1 548.8	31.6
Local property tax	507.8	10.4
Property transfer tax	673.9	13.8
Municipal surcharge	287.3	5.9
Other	79.8	1.6
Indirect taxes	177.1	3.6
Currents transfers of which:	1 091.9	22.3
Central and regional government	1 065.9	21.8
European Union	4.0	0.1
Sale of goods and services	379.1	7.7
Other current revenue	316.2	6.5
Capital revenue	**1 383.7**	**28.3**
Sale of investment goods	118.2	2.4
Capital transfers of which:	1 250.5	25.5
Central and regional government	901.8	18.4
European Union	303.8	6.2
Other capital revenue	15.0	0.3

Source: General Directorate of the Local Government.

Note:

(a) The revenue composition varies widely among municipalities; the weight of tax revenue is higher in the larger municipalities along the cost, while in the inland areas transfers from the State play a key role.

(*sisa*) (13.8 per cent), the local property tax (*contribuição autárquica*) (10.4 per cent) and the municipal surcharge (*derrama*) (5.9 per cent). Transfers from the central and regional government and from the European Union accounted for 40.2 and 6.3 per cent of total revenue, respectively.

Table 3 shows the share of the local government revenue, net of the transfers received from other sub-sectors, in the consolidated revenue of general government in 2000. It should be highlighted the small share of the local government in the total revenue of the general government (5.7 per cent) and the higher relative weight of the local government in capital revenue (15.0 per cent).

It should be noted that local authorities have a very limited ability to influence the amount of these revenues. Thus, in terms of taxes, it is the Portuguese Parliament that lays down the main rules regarding their implementation. In the case of the property transfer tax, the brackets and the tax rates applicable are set by the Portuguese Parliament, whereas for the local property tax it previously sets a range for the rate to be used by the municipalities.[6] With respect to the municipal surcharge, it is the municipality that defines the

(6) The tax rate of the local property tax to be used on urban property must be within 0.7 and 1.3 per cent, while the tax rate on rural property is 0.8 per cent.

tax to be levied, provided that its annual value does not exceed a maximum of 10 per cent of the corporate income tax (CIT) collection generated in the respective geographical area.

Transfers from the State, in turn, are calculated on the basis of rules derived from parameters, which are beyond the scope of the decision-making powers of local authorities. The total amount of resources transferred from the State Budget to the local authorities is defined according to the revenue from some taxes that are considered State revenue. The distribution of funds among local authorities is subsequently made according to several factors, which cannot be affected by their decisions. The method of calculation of this type of revenue is shown in detail in the following section. From the total transfers received by municipalities, 60 per cent are to be included in the respective budget as current revenue and 40 per cent as capital revenue.

Finally, in what concerns to transfers from the European Union, the power that local authorities have to influence the amount received is slightly higher. Indeed, the total amount of the transfers from the European Union is set in the Community Support Framework and its distribution among the several institutions, including the municipalities, depends on the quality and eligibility of the investment projects submitted for co-financing purposes.

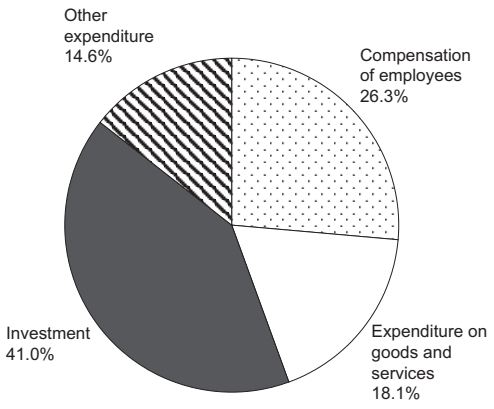
2.2. Expenditure

The expenditure made by local authorities is aimed at the carrying out of projects within the field of their functions and powers, as well as at the financing of the operation of local authority services and bodies. The composition of local authorities expenditure is conditioned by both the distribution of transfers from the State between current and capital revenue and the restraints on the purposes of short, medium and long-term loans. In addition, according to the fiscal rules and principles defined in Decree-Law no. 341/83, local authorities also have to ensure the existence of non-negative current balances. Provided that local authorities comply with these rules, they have full autonomy to decide on the amount and purpose of the resources spent. Chart 2 and Table 4 show the composition of local government expenditure in 2000. As it can be seen, expenditure on investment accounts for a large share of the total (41.0 per cent), followed by compensation of employees (26.3 per cent) and expenditure on goods and services (18.1 per cent).

Table 5 shows the share of the local government expenditure, net of transfers to other sub-sectors, in the consolidated expenditure of the general government in 2000. The share of the local government in the total expenditure of the general gov-

Chart 2

COMPOSITION OF LOCAL GOVERNMENT EXPENDITURE IN 2000



Sources: General Directorate of the Local Government.

Table 4

COMPOSITION OF LOCAL GOVERNMENT EXPENDITURE IN 2000

	Millions of euros	Share of the total
Total expenditure	**5 273.3**	**100.0**
Current expenditure	**2 781.8**	**52.8**
Compensation of employees	1 388.7	26.3
Goods and services	954.7	18.1
Interest	60.4	1.1
Current transfers	310.3	5.9
of which:		
Parishes	54.9	1.0
Other current expenditure	67.8	1.3
Capital expenditure	**2 492.0**	**47.3**
Investment	2 161.3	41.0
Capital transfers	324.2	6.1
Other capital expenditure	6.5	0.1

Source: General Directorate of the Local Government.

Table 5

SHARE OF THE LOCAL GOVERNMENT[a] IN THE EXPENDITURE OF THE GENERAL GOVERNMENT[b] BY ITEMS IN 2000

Percentage

Total expenditure	**10.0**
Current expenditure	**6.1**
Compensation of employees	8.3
Goods and services and other current expenditure	15.2
Interest	1.7
Subsidies	0.0
Current transfers	1.8
Capital expenditure	**37.9**
Investment	45.5
Capital transfers	19.5
Other capital expenditure	3.9

Sources: General Directorate of the Local Government and General Directorate of the Budget.
Notes:
(a) Excluding transfers to other general government sub-sectors.
(b) Consolidated expenditure.

ernment (10.0 per cent) highlights that the public expenditure decentralization in Portugal is still low, in opposition to the important share of the local government in the total investment of the general government (45.5 per cent). Concerning current expenditure, it should be noted the share of the expenditure associated to the provision local goods and services (compensation of employees and expenditure on goods and services).

2.3. Borrowing

The Local Finance Law also establishes the use of short or medium and long-term loans to finance the difference between local authorities expenditure and revenue. Short-term loans may be used to meet cash constraints, whereas medium and long-term loans, including bonds, are only allowed to finance investment spending or to face situations of structural financial imbalance or financial collapse. The amounts of short-term loans and the annual charges with capital and interest payments of medium and long-term loans are limited by law, depending on the total amount of funds transferred by the State to the local authority and past investment spending. These limits do not include medium and long-term loans contracted for carrying out projects co-financed by European structural funds, within the scope of the Community Support Framework, loans used for the repayment of other loans, loans to meet extraordinary expenditure resulting from public calamity situations, and loans for the acquisition, construction or repair of real estate for social housing purposes.

It should be noted that the setting of limits to the debt burden resulting from medium and long-term loans, in a context of low interest rates, is not a bidding constraint on the deficits and on the growth of the local government debt.

3. THE LOCAL FINANCE LAW OF 1998 AND THE GROWTH OF PUBLIC EXPENDITURE

The main change in the Local Finance Law of 1998 vis-à-vis the Law previously in force, approved in 1987, concerns the calculation of transfers from the State to local authorities. The rules regarding borrowing were also subject to some, albeit relatively minor, changes.

The Local Finance Law of 1987 established a transfer from the State Budget to municipalities, the so-called Financial Balance Fund (FBF) (*Fundo de Equilíbrio Financeiro*). The total amount of this transfer increased at the growth rate foreseen for the value-added tax (VAT) revenue, according to the following formula:

$$FBF_n = FBF_{n-1} \times \frac{VAT_n}{VAT_{n-1}}$$

where *n* stands for the year to which the State Budget refers.

The allocation of the total amount of the FBF to the municipalities was made according to criteria related to their characteristics. These criteria have been subject to changes over time, but the number of inhabitants has always remained an important factor. In each year, the State Budget Law set the percentages of the FBF that corresponded to current and to capital transfers. The share of capital transfers could not stand below 40 per cent. The parishes did not receive transfers directly from the State, but were entitled to a share of the revenue of the municipalities.

With the new Local Finance Law, the FBF was abolished and the transfer from the State Budget

to local authorities was set equal to 33 per cent of the average of the revenue from the personal income tax (PIT), the CIT[7] and the VAT, in the year prior to the draft of the State Budget. Therefore, the transfer from the State to local authorities in year is now calculated according to the following formula:

$$Transfer_n = 0.33 \text{ x } \frac{PIT_{n-2} + CIT_{n-2} + VAT_{n-2}}{3}$$

According to the initial version of the Law, the total transfer to be made was allocated to three different funds: the Municipal General Fund (MGF) (*Fundo Geral Municipal*), the Municipal Cohesion Fund (MCF) (*Fundo de Coesão Municipal*) and the Parishes Financing Fund (PFF) (*Fundo de Financiamento das Freguesias*). The first two funds were a revenue of the municipalities and corresponded, respectively, to 24.0 and 6.5 percentage points (p.p.) of that average. The remaining 2.5 p.p. out of the 33 per cent were directly transferred from the State Budget to the parishes, constituting the PFF. The structure of the transfers from the State to municipalities was subsequently changed[8] with the creation of the Municipal Base Fund (MBF) (*Fundo de Base Municipal*), which corresponds to 4.5 p.p. of the average of the revenue from the PIT, the CIT and the VAT, while the MGF and the MCF represent now 20.5 and 5.5 p.p., respectively. At a first stage, the MGF is allocated to the Autonomous Region of Madeira, the Autonomous Region of the Azores and the Mainland, according to the resident population, the number of municipalities and the area. Within each territorial unit, the allocation to municipalities is made according to two main factors: the resident population and the daily average of nights spent in hotels and camping sites, and the area, weighted by a factor relative to the altitude range of the municipality. The MCF is allocated to the municipalities on the basis of a comparison between the Tax Need Index (TNI) (*Índice de Carência Fiscal*)[9] and the Inequality of Opportunities Index (IOI) (*Índice de Desigualdade de Oportunidades*)[10] of the municipalities and the national average. The allocation of the MGF and the MCF to the municipalities should ensure an increase in the amount of each municipality vis-à-vis the previous year, equivalent to or higher than the forecasted inflation rate. The MBF is aimed at providing the municipalities with the minimum financial capacity for their functioning and is equitably allocated to all of them. From the total transfer received by the municipalities, 60 per cent is included in the municipalities budget as current revenue and 40 per cent as capital revenue. At a first stage, the PFF is also allocated to the three territorial units mentioned above in a way similar to the MGF and, at a second stage, the PFF is allocated to the parishes according to the number of inhabitants, the area and the number of parishes.

Table 6 compares the transfers from the State to local authorities, according to the Local Finance Law of 1998, with the transfers that would take place within the framework of the former Law, from 1999 to 2002. As illustrated in the table, the new rules on transfers from the State to the local government led to a loosening of the budget constraint of this sub-sector, which was not matched by a significant increase in its powers and tasks.[11] Thus, in 1999 transfers of the new funds (MGF, MCF and PFF) accounted for an increase of 19.7 per cent vis-à-vis the FBF transfer in 1998. If the previous legislation had remained in force, the State transfer to the local government would have increased only by 6.3 per cent. In the following years, the growth rates of the transfers to local authorities came closer to those that would have resulted from the FBF, although they are higher in

(7) It should be noted that the value considered for the CIT excludes the amounts related to the municipal surcharge.

(8) Law no. 94/2001, of 20 August.

(9) According to paragraph 2 of Article 13 of Law no. 42/98, of 6 August, the TNI of each municipality corresponds to the difference between the municipal taxes per capita at a national level and in each municipality.

(10) According to paragraph 3 of Article 13 of Law no. 42/98, of 6 August, the IOI represents the positive difference of opportunities for the inhabitants of each municipality, arising from the inequality of access to the required conditions for a longer life, with better standards of health, comfort, basic sanitation and acquisition of knowledge. The annex to Law no. 42/98, of 6 August, explains the formula used for the calculation of the IOI.

(11) The Law no. 159/99, of 14 September, in paragraph 2 of Article 3 establishes that the transfer of tasks and powers is accompanied by the human, financial and property resources needed to accomplish the function transferred, and in paragraph 3 of Article 4 states that the State Budget sets on an annual basis, according to the amount and conditions previously established between the central government and local authorities, the resources to be transferred in order to perform the new tasks. Therefore, these amounts are not included in the transfer from the State to the local government defined in the Local Finance Law.

Table 6

TRANSFERS FROM THE STATE TO THE LOCAL GOVERNMENT

		Millions of euros					Growth rates			
		1998	1999	2000	2001	2002	1999	2000	2001	2002
MGF+MCF+MBF[a]+PFF . . .	(A)		1 620.3	1 775.4	2 012.2	2 243.0	19.7[c]	9.6	13.3	11.5
FBF[b]	(B)	1 354.1	1 438.8	1 594.3	1 757.8	1 888.8	6.3	10.8	10.3	7.4
Difference	(C)=(A)-(B)		181.5	181.2	254.4	354.3				
(as a percentage of GDP) .			0.2	0.2	0.2	0.3				

Sources: State Budgets from 1998 to 2002 and estimates of the Banco de Portugal.

Notes:

(a) The MBF was created by Law number 94/2001, of 20 August.

(b) The figures estimated are based on the amount of the FBF in 1998 and on the macroeconomic estimates and projections of the VAT included in the State Budgets.

(c) Growth rate according to the amount of the FBF in 1998.

2001 and 2002, due to a slowdown in the economic activity. Indeed, in periods of deceleration in the economic activity, the new rule for the calculation of transfers tends to result in a higher amount of transfers from the State, since this rule is based on past values of tax revenue, conversely to the FBF, whose growth depended on the rate of change forecasted for the VAT. By contrast, in periods of economic growth acceleration, the transfer foreseen in the former Local Finance Law would tend to be higher than the total amount of the transfer resulting from the application of the Law currently in force. In 2002 transfers from the State to local authorities as a whole will be 0.3 p.p. of GDP higher than the figure that would have resulted from the application of the legislation in force until 1998, whereas in the previous years this difference stood at around 0.2 p.p. of GDP.

The limits set on borrowing by the local authorities, foreseen in the new and in the former Local Finance Laws, are identical as far as municipalities are concerned. According to the Law of 1987, the amount of short-term loans to municipalities could not exceed 10 per cent of the value of the FBF transfer. In addition, annual charges with capital and interest payments of medium and long-term loans could not exceed the highest of two limits: three twelfths of FBF allocated to the municipality or 20 per cent of the investment expenditure of the municipality in the previous year. The new Local Finance Law kept the limits set on borrowing by municipalities unchanged, using currently the MGF and the MCF instead of the FBF for their calculation, and extends to the parishes the possibility to use short-term loans, provided they do not exceed 10 per cent of PFF.

This naturally raises the question of whether the increase in resources placed at the disposal of local authorities reduced net additional borrowing by the local government or whether it was, by contrast, reflected in an increase in expenditure. Table 7 presents the recent evolution of net borrowing by local authorities from resident monetary financial institutions. Although the new Law only came into force very recently, there seems to be a drive to a higher borrowing by the local government from 1999 onwards, allowed not only by an increase in transfers from the State, resulting from the Law itself, but also by the fall in interest rates in recent years. Therefore, the increase in resources transferred by the State to local authorities has probably given rise to an increase in expenditure by the general government as a whole, thus contributing to a widening of the deficit.

Table 7

CHANGE IN GROSS AND NET OF DEPOSITS BANK BORROWING BY THE LOCAL GOVERNMENT

Millions of euros

		1995	1996	1997	1998	1999	2000	2001
Gross bank borrowing[a] [b]	(A)	724.8	790.4	987.8	1 237.6	1 427.9	1 744.8	2 381.7
Change in gross bank borrowing			65.6	197.4	249.8	190.3	317.0	636.8
Deposits[a] [c]	(B)	382.6	489.2	471.4	667.4	688.4	663.5	731.9
Net bank borrowing[a]	(C)=(A)-(B)	342.2	301.2	516.4	570.2	739.5	1 081.3	1 649.8
(as a percentage of GDP)		0.4	0.3	0.6	0.6	0.7	0.9	1.3
Change in net bank borrowing			-41.0	215.2	53.8	169.3	341.9	568.4
(as a percentage of GDP)			0.0	0.2	0.1	0.2	0.3	0.5

Source: Banco de Portugal estimates.

(a) Figures on 31 December.

(b) Borrowing from resident monetary financial institutions.

(c) Deposits in resident monetary financial institutions.

4. FISCAL TARGETS OF THE STABILITY AND CONVERGENCE PROGRAMMES AND FISCAL RULES FOR THE LOCAL GOVERNMENT

As already referred to in the introduction, the fiscal targets set in the SGP relate to the general government as a whole, i.e. not only to the central government and the social security. This calls for some co-operation among the various general government sub-sectors so as to ensure that the targets assumed in the Stability and Convergence Programmes are achieved. Most European Union Member States have implemented fiscal rules that serve this purpose, regardless of having been or not defined to take into account the implementation of the SGP. Those rules may be more or less comprehensive: in some countries they are actually internal stability pacts, while in others they merely provide for the limits to be set by the central government on the regional and local government borrowing.

In Portugal, the State Budget Law includes limits to the net additional borrowing by the Autonomous Regions of the Azores and Madeira. As to the local government, the limits on medium and long-term borrowing refer to the debt service (capital and interest payments), rather than to additional borrowing in each year or to the stock of the debt. In this context, it is possible that the local government reaches relatively high deficits, which has happened sometimes, in particular, in election years, without the Government having any control instrument. In addition, data on the budget outturn of municipalities are compiled with a lag, not allowing the central government to accommodate possible deviations of the local government deficit from the initial forecasts.[12]

With the current financing system of local authorities it is not possible to establish an adequate relationship between the decisions to increase expenditure and the responsibility for raising additional revenue (in particular through tax increases), with the ensuing political burden. This stems from the reduced powers of municipalities to change their revenue, including tax revenue. In fact, "automatic" revenue has a nil marginal cost for municipalities and is used to finance expenditure, regardless of its social utility. Within the current institutional framework, it will only be possible to ensure that the behaviour of local authorities does not jeopardise the fulfilment of the commitments assumed by the country within the scope of the Stability Pact, if annual limits to additional borrowing are set and very strict rules established on the timely compilation of data on the budget outturn. In both cases penalties must be defined

(12) Information on the local government financing calculated by the Banco de Portugal, though with a small lag, is only an approximation to the balance that would result from the financial and non-financial National Accounts.

for institutions that do not comply with the rules, in the form of a suspension or of a partial cut in transfers from the State and / or in the access to the structural funds.

The Public Expenditure Reform Programme, approved in last June, points in this direction, as in the summary of measures made public it includes the control of borrowing by the local government and the approval of a Fiscal Stability Law. The first measure would consist of defining in the State Budget Law, on an annual basis, the limits to the additional borrowing capacity of local authorities. The Fiscal Stability Law would be aimed at ensuring, by means of a legal requirement, solidarity among the various general government sub-sectors, in order to meet the fiscal targets defined for the sector as a whole. This co-operation would consist in the setting of fiscal balances for the various general government sub-sectors, compatible with the fiscal deficit assumed in the Stability Programme. In addition, the Law would also require a timely treatment of data on the budget outturn. In both cases, penalties would be imposed in the event of non-compliance.

The limits set for additional borrowing by the local government are already provided for in the State Budget for 2002, although only in the form of a legislative authorisation. In turn, the Fiscal Stability Law was presented in the updated Stability Programme sent by the Portuguese Government to the European Commission, in last December, as a key measure to the consolidation of public finances.

5. CONCLUDING REMARKS

Within the current institutional framework, increases in resources allocated to the local government, namely due to transfers from the State without a simultaneous transfer of powers, translates necessarily into an increase in general government total expenditure, with a direct impact on the deficit. The implementation of the Local Finance Law of 1998, which led to an increase in the transfers from the State to local authorities, not matched by a significant increase in their powers, resulted, ceteris paribus, in a 0.2-0.3 per cent of GDP increase in the total general government deficit.

The changes in the calculation of transfers from the State to local authorities, introduced in the 1998 Law, tend to increase the general government expenditure and deficit in periods of slowdown in economic activity, compared to what would have occurred under the implementation of the 1987 Law. The opposite occurs in periods of economic acceleration. This effect is due to the fact that the transfer from the State is now based on past values of tax revenue, conversely to the FBF, whose amount depended on the forecasted growth rate for the VAT.

In the Local Finance Laws of 1987 and 1998, constraints on medium and long-term borrowing by municipalities are similar, i.e. they set limits to the annual burden of capital and interest payments, rather than to the stock of the debt or its change. However, the decline in interest rates and the diversification of the methods of financing seen in recent years eased, to a large extent, the limits to borrowing based on the debt service, which can lead to an increase of the local government deficit and debt. This trend may have already started in the past three years.

Compliance with the fiscal targets for the general government as a whole set in the SGP requires a set of rules that ensure solidarity among the various sub-sectors in the process of fiscal consolidation. Those rules should include the setting of limits to additional borrowing by the local government in each year and compulsory deadlines for the compilation of data on its budget outturn. Effective compliance with these rules requires, in addition, the definition of the penalties to be imposed on non-compliant institutions, possibly in the form of a suspension of or a partial cut in transfers from the State or in the access to structural funds.

Turning to the present situation, from the point of view of economic efficiency it would be desirable to make the budget constraint of the local government more flexible in two ways. First, with an increase of the power of the local government to influence tax revenue, e.g. through the widening of the range of the local property tax rates. Second, by means of a reshaping of the transfers from the State to local authorities. On the one hand, the relative weight of the “automatic” transfer from the State should be reduced. On the other hand, it should be created a “non-automatic” transfer fund, whose total amount would be set by the Portuguese Parliament on a discretionary basis, taking

into account the fiscal targets set for the general government as a whole. The allocation of this fund to municipalities should be carried out according to the submission of projects, as is currently the case with the European structural funds. Thus, expenditure decisions of local authorities would better reflect the assessment of the associated marginal social costs and benefits. This alternative framework for the local government financing would not put at risk, obviously, an increase of resources in the context of an eventual enlargement of tasks and powers of local authorities.

CYCLICAL DEVELOPMENTS OF THE PORTUGUESE ECONOMY IN THE 1910-1958 PERIOD: BRIEF ANALYSIS*

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*Frederico Belo***

1. INTRODUCTION

The major purpose of this study is to analyse the cyclical developments of the Portuguese economy in the 1910-1958 period. This study was motivated by the release of National Account estimates for the above period in Batista *et al*. (1997). Previous studies on the behaviour of economic cycles either did not cover this period, as in Dias (1997), or used different series, as in Correia *et al*. (1992a) and Neves (1994).

This paper is organised as follows: Section 2 presents a brief description of the series utilised. Section 3 shows the major characteristics of the cyclical developments of the Portuguese economy over the period under review. Section 4 establishes a comparison with results obtained for other countries, for the same period. Finally, section 5 presents the conclusions.

2. BASIC INFORMATION

This analysis is based on annual data presented in Batista *et al*. (1997). These series cover the period from 1910 to 1958. According to the authors, the selection of the starting year reflects the significant improvement in economic statistics after the establishment of the First Republic. The final year coincides with a new period of real progress in the statistical coverage of economic activities in Portugal and, in addition, it also coincides with the start of the first Long Series for Portuguese Economy published by the Banco de Portugal in Santos et al. (1992). From a geographical point of view, due to data limitations, the Autonomous Regions of the Azores and Madeira were excluded and only Mainland Portugal was considered.

The methodology utilised by Batista *et al*. (1997) corresponds to a direct output-oriented estimation of Gross Domestic Product (GDP). In general, the indices were broken down at the most detailed level available, with a subsequent aggregation at the industry level. GDP was obtained by its weighting towards each sector. In terms of comparison with previous series for this period, stress should be laid on the clear advantage of the utilisation of a higher number of indicators broken down for the economy. Batista *et al*. (1997) present a thorough discussion on statistical selections.

Batista *et al*. (1997) presented production based National Accounts with a rather detailed sectoral breakdown. In addition, they presented output estimates for the major expenditure aggregates. It should also be noted that, in the case of exports and imports, data are presented at a relatively high breakdown level.

The analysis of the cyclical developments naturally requires a distinction between the trend component and the cyclical component. Since there is

* The views expressed in this article are those of the authors and not necessarily those of the Banco de Portugal. The authors thank Isabel Horta Correia, Maximiano Pinheiro, Jaime Reis and Diana Bonfim for their valuable comments and suggestions. The authors are fully responsible for any possible inaccuracies.

** Economic Research Department. This study was carried out when the second author participated in a training period at the Banco de Portugal.

no consensus as to the best methodology to identify these two components, the selection made in this study was restricted by the intention to allow their comparability with studies for other economies over the same period.(1) That comparison is carried out in section 4 of the present study. The Hodrick-Prescott filter was thus selected, with a smoothness parameter equal to 400. Every variable is considered at constant 1958 prices. The series are expressed in per capita – using for the purpose the population series presented in Mata and Valério (1994) – and logarithm terms.

Chart 1 presents the fluctuations of output around its trend, obtained from the application of the Hodrick-Prescott filter. Chart 2 presents the cyclical component of output, i.e., output deviations from this trend. This chart shows that the cyclical component presents a relatively low persistence, with frequent changes in signal. As mentioned in the following section, the high weight of the agricultural sector on the productive structure of Portuguese economy in the first half of last century, associated with the intense volatility of the value added in this sector, determines a somewhat transitory behaviour of output.

In effect, the weight of the primary sector (agriculture, forestry, hunting and fishing) on Gross Domestic Product stood in 1910 at 37.1 per cent, decreasing gradually to 26.8 per cent in 1958. In turn, the weight of agricultural employment on total employment was clearly higher in Portugal than in major European economies. Therefore, whereas in 1910 the weight of agricultural employment was slightly below 60 per cent in Portugal – and close to, albeit above, the figures for Italy and Spain – in France, it stood at approximately 40 per cent, in Belgium and the Netherlands at around 25 per cent and in the United Kingdom at slightly below 10 per cent. In 1950, the share of agricultural employment in total employment stood above 48.8 per cent in Portugal, compared with 45.4 per cent in Italy, 28.3 per cent in France, 13.9 per cent in the Netherlands, 10.1 per cent in Belgium and 5.1 per cent in the United Kingdom.(2)

Charts 1 and 2 illustrate the behaviour of the Portuguese economy in some specific periods.

Chart 1
GROSS DOMESTIC PRODUCT AND TREND

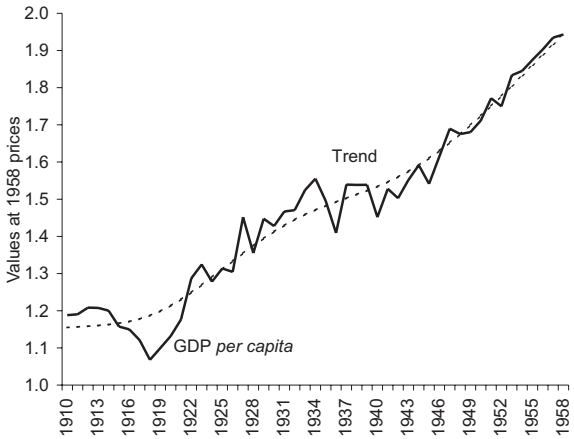
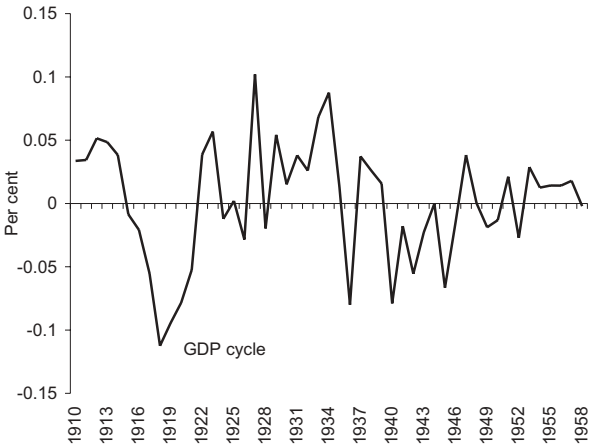


Chart 2
CYCLICAL COMPONENT



Therefore, the first period with a lower level of economic activity occurred during Portuguese participation in World War I and in the ensuing period of high inflation. The second period, albeit not as marked, occurred during World War II. It is interesting to note that, as can be concluded from the charts, the effects of the Great Depression on real activity were relatively minor. This reflects two major factors. First, at that time, Portuguese economy was considerably more closed vis-à-vis abroad than it is today, in terms of both flows of goods and services and financial activities(3). Second, trade flows of Portuguese economy were largely concentrated on economies that were relatively little affected by the Great Depression: for-

(1) See Correia *et al.* (1992b).

(2) Data obtained in Maddison (1995) and Pinheiro *et al.* (1999). 1953 data were used for Portugal.

(3) See, for instance, Reis (1995) and Lains (1999).

mer African territories, Brazil, Spain and the United Kingdom. During part of the 1930s and, albeit to a lesser extent, during the 1950s, economic activity seems to have exceeded the output trend.(4) Neves (1994) presents similar results, although using different statistical series.

Chart 3 presents the trend of the implicit deflator of private consumption.(5) Worthy of note are the very high inflation periods at the end of the 1910s and at the beginning of the 1920s. This trend chiefly reflected monetary issue financing of considerable budget deficits, in a context of domestic financial markets moderately developed and with much difficulty in obtaining external financing.(6) It is interesting to note that, also in the first half of the 1920s, some European countries experienced hyperinflation periods, such as Austria, Germany, Hungary, Poland and Russia. The trend of prices in those five countries had some characteristics in common: the average monthly inflation rate stood at 50 per cent or higher, as a result of the monetary financing of very high budget deficits.(7) In the Portuguese case, inflation did not reach such high levels, and therefore it does not fall within the definition of hyperinflation.

Chart 3 shows that, in the Great Depression period, there was no deflation in the Portuguese economy. In the latter part of the 1930s, as well as in the 1950s, Portugal registered a period of price stability. On the contrary, during World War II, the shortage of some goods led to periods of relatively high inflation that actually reached 20 per cent.

Chart 4 shows the degree of openness of the Portuguese economy, calculated from series at current prices. These charts clearly indicate that Portugal was a relatively closed economy, since the simple arithmetic mean of exports and imports fluctuated between 15 per cent and 20 per cent of GDP. Mention should be made of the degree of openness of the economy in the second half of the 1920s and early 1930s. This trend was the result of a rather significant increase in custom taxes, an important instrument in the financial stabilisation occurring during that period.(8) For comparison purposes, the degree of openness of Portuguese economy at the end of the 1990s oscillated between 35 per cent and 37.5 per cent of GDP.

Net exports, defined as the difference between exports and imports and expressed as a percentage of GDP, are presented in Chart 5. It clearly illustrates the persistent trade deficit in Portugal, only interrupted in the early 1940s, in the wake of the wolfram episode.

Chart 3
CHANGES IN THE PRIVATE CONSUMPTION DEFLATOR

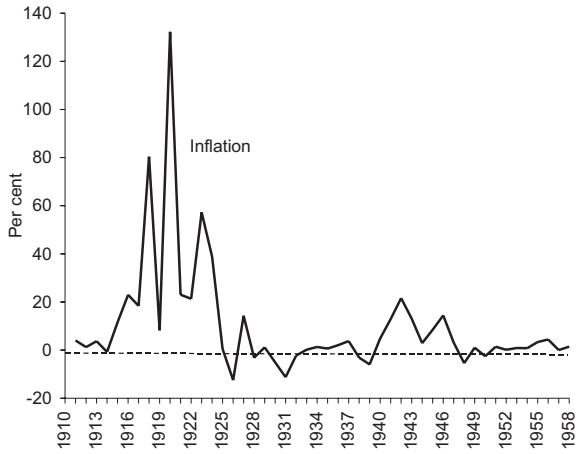
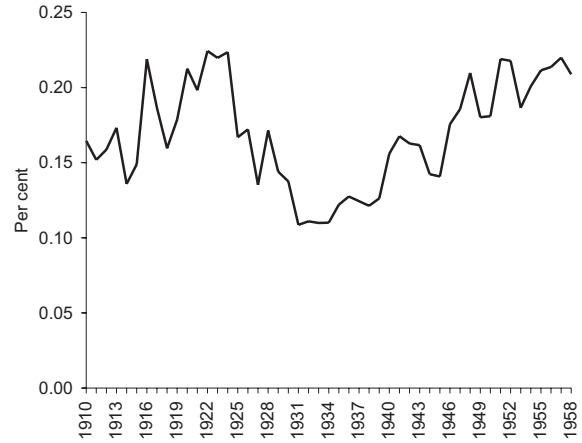


Chart 4
DEGREE OF OPENNESS



(4) The extension of the GDP series, as from the utilisation of Long Series for Portuguese Economy, does not imply significant changes in the cyclical component of GDP over the 1950s.

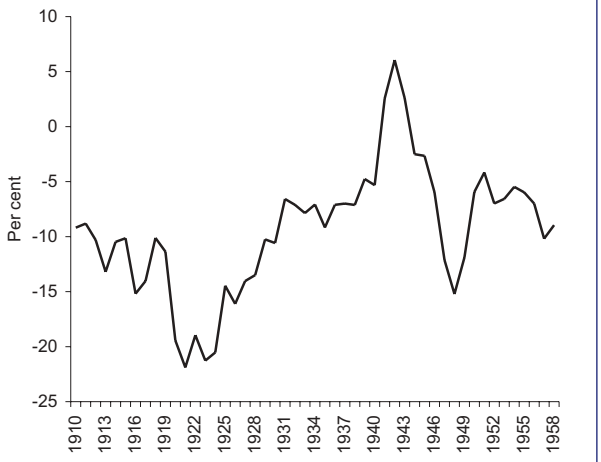
(5) It should be noted that in Batista *et al.* (1997), private consumption and the changes in stocks are presented as a whole. Therefore, the series in question in this study is an approximate measure of the private consumption deflator.

(6) See, for instance, Reis (1995) and Mateus (2001).

(7) See, for instance, Blanchard (1997).

(8) See, for instance, Mateus (2001).

Chart 5
NET EXPORTS



3. ANALYSIS OF THE CYCLICAL DEVELOPMENT IN PORTUGAL

Table 1 presents the usual statistics describing the cyclical components of the variables considered: standard deviation (in absolute terms and in terms of the standard deviation of the cyclical component of GDP), autocorrelation coefficients, and correlation coefficients (contemporaneous and with a delay of up to two periods) with the cyclical component of output.

As regards the major aggregates on the expenditure side, the main results are as follows:

(a) In the period under review, every component of expenditure show a higher volatility than output; imports and gross fixed capital formation are the components with the highest relative volatility; on the contrary, private consumption is the expenditure component with the lowest relative volatility, albeit higher than that of output.

(b) The persistence of output is rather low. As previously mentioned, the high weigh of the agricultural sector on the productive structure and the extreme volatility of value added in this sector are the major factors behind this type of behaviour. Account should also be taken of the low persistence of consumption and, chiefly, of exports. The latter may reflect the very high weight on total exports of the sales abroad of foodstuffs – many of those affected by irregular agricultural production – and intermediate products. These goods accounted for approximately 95 per cent of total exports in 1910 and around 90 per cent in 1958.

(c) The expenditure variables reveal a pro-cyclical behaviour that is more marked in the values of contemporaneous correlations. Private consumption is the variable for which there is a more marked statistical association with output. In turn, the faint statistical association between the cyclical components of output and exports reflect the fact that Portugal is an economy relatively closed vis-à-vis abroad. During most of the period under review – except the latter part – exports were surely not the driving force of the Portuguese economy.(9) Public consumption shows a counter-cyclical behaviour, with slightly higher correlations for output lagged values.

(d) Private consumption and GDP deflators reveal a very similar behaviour. They show a pro-cyclical behaviour, apparently moving ahead towards higher correlations with output lagged values.

The level of breakdown presented in Batista *et al*. (1997) also permits to make an analysis of the cyclical behaviour of the main productive sectors of the economy. The corresponding descriptive statistics are also presented in Table 1, with emphasis on the following results:

(a) Agriculture, industry and construction show clearly more volatile cyclical components than those observed in services.

(b) As previously mentioned, the persistence of the cyclical component of output is extremely low, largely reflecting the erratic and transitory behaviour (the first order autocorrelation coefficient is negative) of the agricultural sector. Note in this respect that, excluding from GDP the GVA of the agricultural sector, the first order autocorrelation coefficient of output will increase from 0.39 to 0.70.

(9) For an analysis of the behaviour of Portuguese exports in the 1851-1913 period, see Lains (1995).

Table 1

DESCRIPTIVE STATISTICS OF THE MAIN MACROECONOMIC VARIABLES

Calculation of trend with HP-400 filter

Logarithm of *per capita* values at 1958 constant prices

Period: 1910 to 1958

	Standard deviation (sd)	Sd(x) /sd()GDP	Autocorrelation coefficient		Autocorrelation coefficient of x(t) with GDP(t+i)				
			-1	-2	i=-2	i=-1	i=0	i=1	i=2
Expenditure									
GDP	4.69	1.00	0.39	0.27	0.27	0.39	1.00	0.39	0.27
Consumption	7.84	1.67	0.56	0.36	0.25	0.47	0.91	0.46	0.39
Public consumption	13.83	2.95	0.70	0.36	-0.20	-0.44	-0.45	-0.53	-0.51
GFCF	17.42	3.72	0.65	0.36	0.19	0.46	0.56	0.45	0.34
Exports	12.70	2.71	0.17	-0.06	0.02	-0.11	0.12	0.06	-0.15
Imports	18.40	3.93	0.61	0.23	0.08	0.27	0.51	0.36	0.26
Price indices									
Private consumption deflator	27.44	5.85	0.84	0.63	-0.21	0.00	0.17	0.29	0.46
GDP deflator	26.38	5.63	0.84	0.63	-0.17	0.03	0.21	0.31	0.51
Output									
Agriculture, forestry, hunting and fishing	8.72	1.86	-0.12	0.05	0.12	0.06	0.81	0.02	0.10
Mining and quarrying	25.67	5.48	0.56	0.18	0.08	0.28	0.40	0.28	0.02
Manufacturing industry	6.20	1.32	0.74	0.27	0.24	0.53	0.73	0.57	0.24
Construction	14.31	3.05	0.74	0.37	0.21	0.39	0.49	0.38	0.20
Electricity, gas, water and sewage	6.93	1.48	0.72	0.57	0.35	0.58	0.67	0.56	0.41
Trade, financial intermediation and rents	3.83	0.82	0.34	0.17	0.16	0.32	0.95	0.35	0.23
Transports and communications	5.28	1.13	0.60	0.19	0.07	0.25	0.37	0.39	0.25
Services	3.25	0.69	0.57	-0.01	-0.31	-0.18	0.01	0.21	0.43
PIBcf excluding primary sector	3.74	0.80	0.70	0.29	0.14	0.44	0.82	0.60	0.38
External sector									
Net exports /GDP	3.53	0.75	0.63	0.18	0.13	-0.16	-0.13	-0.14	-0.06
GDP Germany	13.07	2.79	0.66	0.25	0.00	0.08	0.09	-0.01	0.02
GDP France	12.42	2.65	0.75	0.40	0.44	0.43	0.46	0.33	0.10
GDP Italy	10.34	2.21	0.76	0.36	0.21	0.00	-0.18	-0.35	-0.42
GDP Netherlands	11.25	2.40	0.71	0.32	0.27	0.23	0.35	0.33	0.15
GDP Belgium	7.43	1.58	0.72	0.36	0.34	0.48	0.57	0.45	0.38
GDP United Kingdom	5.54	1.18	0.75	0.43	0.10	-0.15	-0.32	-0.50	-0.44
GDP United States	11.53	2.46	0.79	0.43	-0.21	-0.25	-0.21	-0.14	0.02

(c) Activity in the different productive sectors taken into consideration reveals a pro-cyclical behaviour, in which the highest correlations are the contemporaneous ones. The services sector, however, is an exception, since it shows a null contemporaneous relationship and some advance indications. Indeed, the highest correlation coefficient is 0.43, leading output by two periods.

Net exports, as a percentage of GDP, show a negative, albeit slight, correlation with the cyclical component of output. Therefore, the trade balance (deficit) is counter-cyclical (pro-cyclical), reflecting the significant positive correlation between the cyclical components of output and imports.

Chart 6 presents the cyclical components of output vis-à-vis the five major components of expenditure, GDP and private consumption deflators, GDP excluding the primary sector and eight sectoral GVAs.

The cyclical synchronisation of the Portuguese economy with other economies is also an interesting issue for analysis. For the purpose, we used Maddison series (1995)[10] and calculated the correlations of the cyclical components in Portugal by comparison with those of a set of 7 countries, presented in Chart 7. The values obtained for the contemporaneous correlations are also shown in Table

(10) See also Maddison (2001).

Chart 6

CYCLICAL COMPONENTS (to be continued)

Cyclical development

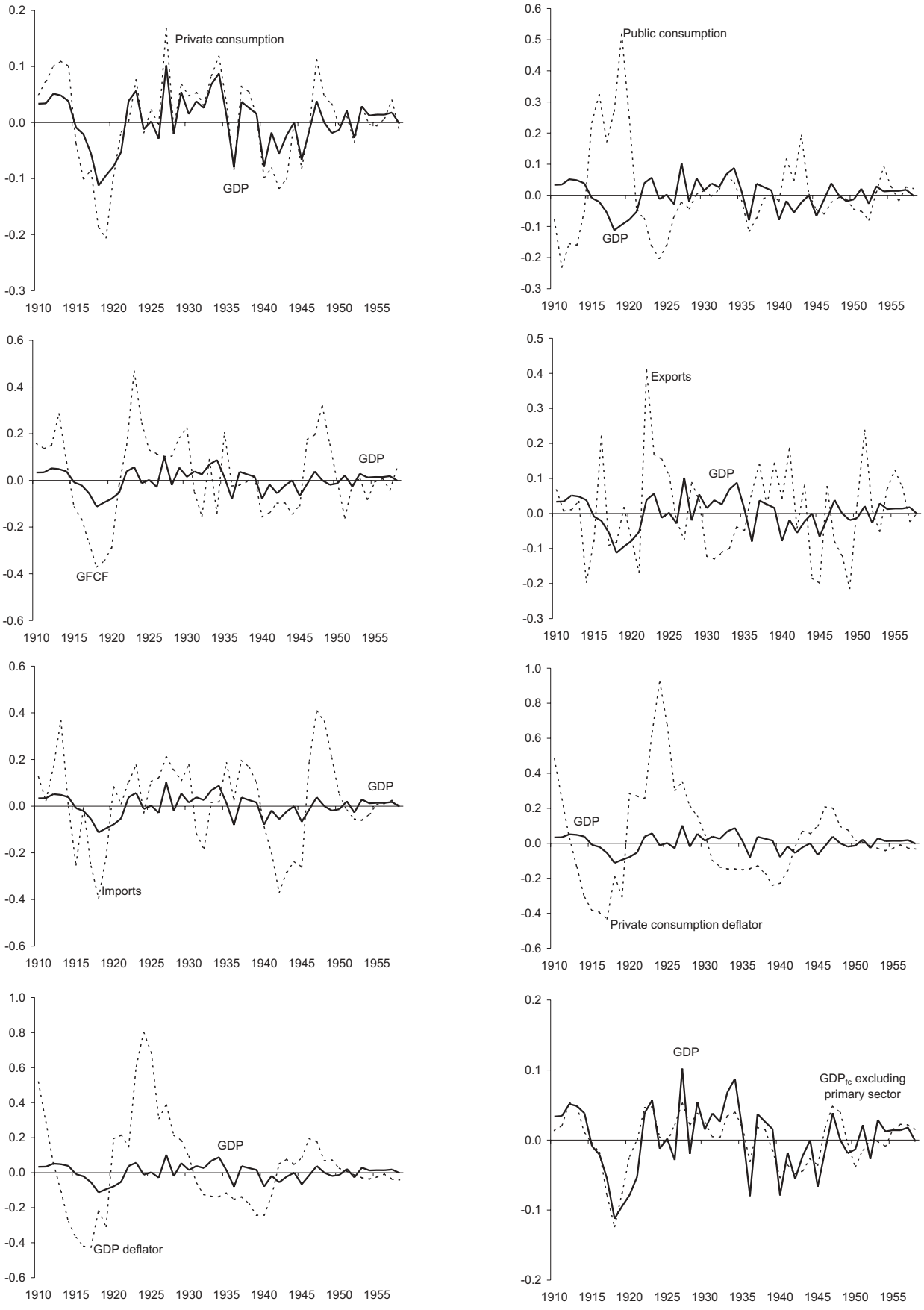


Chart 6 (continued)

CYCLICAL COMPONENTS (continued)

Cyclical development

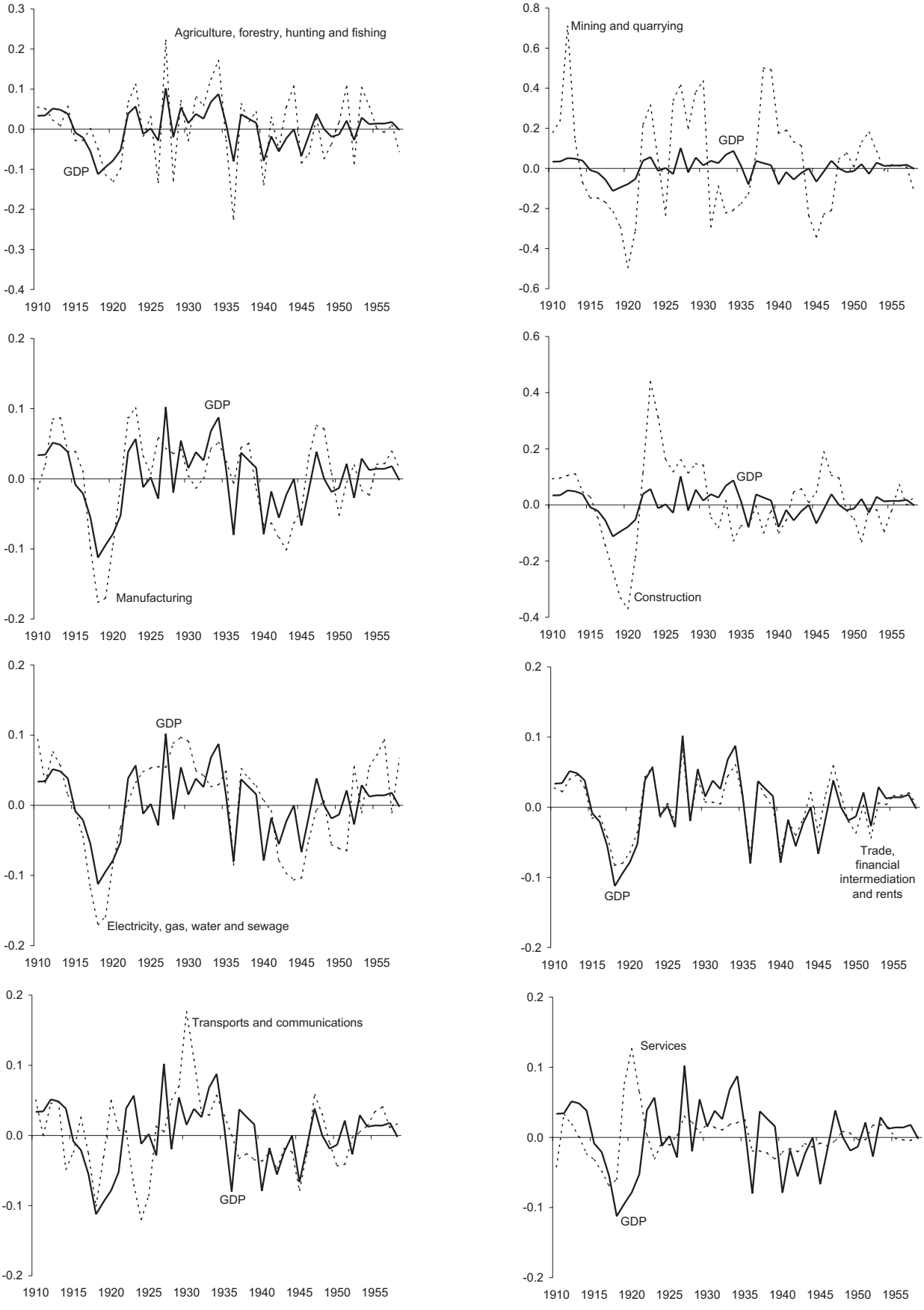


Chart 7

CYCLICAL COMPONENTS OF OUTPUT

Cyclical developments GDP

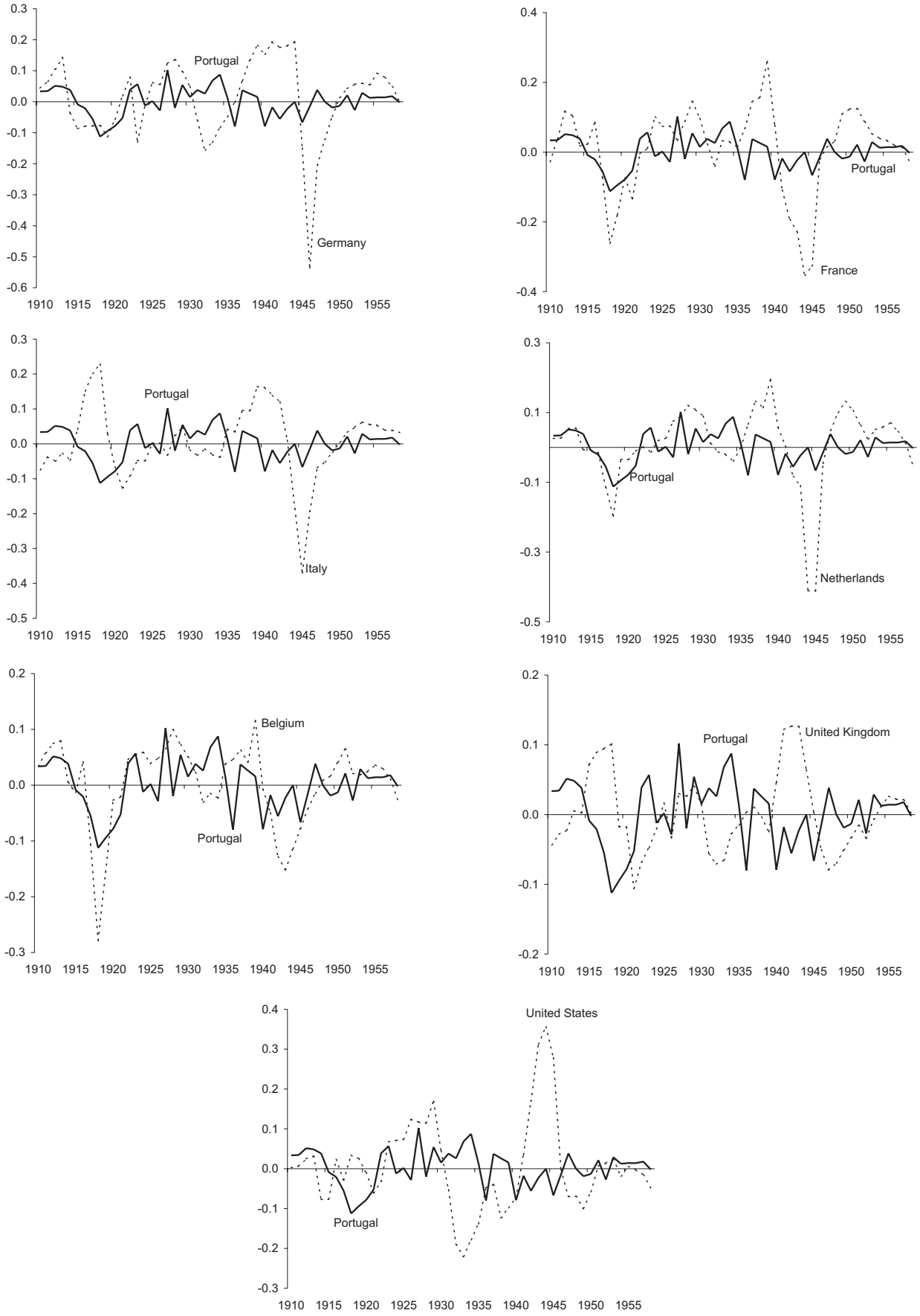


Table 2

CONTEMPORANEOUS CORRELATION OF OUTPUT CYCLICAL COMPONENTS

Period: 1910 to 1958

	Germany	France	Italy	Netherlands	Belgium	United Kingdom	United States	Portugal
Germany	1.00							
France	0.12	1.00						
Italy	0.36	0.31	1.00					
Netherlands	0.19	0.88	0.40	1.00				
Belgium	0.22	0.85	-0.06	0.71	1.00			
United Kingdom	0.42	-0.33	0.51	-0.30	-0.42	1.00		
United States	0.33	-0.50	-0.26	-0.50	-0.25	0.50	1.00	
Portugal	0.09	0.46	-0.18	0.35	0.57	-0.32	-0.21	1.00

1. The reading of this table permits to reach the following conclusions:

(a) Every country considered shows a higher variability of the cyclical component of output. For most European countries considered – except the United Kingdom – this result reflects the marked effects on economic activity of military conflicts that occurred during the period in question. In the case of the United States, the considerable variability of the cyclical component chiefly reflects the strong impact on real activity of the Great Depression and of the participation in the World War II.

(b) The persistence of the cyclical component of output is considerably lower in Portugal than in most of the countries considered.

(c) There is a very low correlation between the trend of economic activity in Portugal and in most other countries. The highest associations are with France and Belgium. This result reflects different factors: the relatively closed nature of the Portuguese economy during most of the period in question; the low weight of trade relationships with most of those countries, except the United Kingdom;[11] the high weight of the agricultural sector in Portugal, that contributed to the little persistent nature of the cyclical component of output. In addition, it should be mentioned that the economies were subject to rather different shocks. Note, by way of example, that the military conflicts occurring in Europe in the period in question led to particularly marked cyclical components in countries such as Germany, Italy and even France, which contributed to a low statistical correlation.[12]

Table 2 shows the contemporaneous correlations among the cyclical components of output in the different countries. These values permit to reinforce the notion of a low correlation between the trend of economic activity in Portugal and in the other countries, by comparison with high correlations between, for instance, the USA and the United Kingdom, on the one hand, and France, Belgium and the Netherlands, on the other hand. When you calculate the statistical association between the cyclical component of exports in Portugal and the cyclical component of output in the other countries, you continue to obtain low positive correlations. This result reflects the scarcely persistent nature of the cyclical component of Portuguese exports, as a result of its structure, the relatively closed nature of our economy and also the low weight of trade relationships with most of those countries, except the United Kingdom.

(11) In the 1905-1914 period, the major geographical destinations of Portuguese exports were the following: United Kingdom (23.1 per cent), Brazil (18.2 per cent), Spain (16.1 per cent) and African territories (15.5 per cent). See Lains (1995).

(12) The calculation of the correlations may be somewhat affected by considerable cyclical components, reflecting, for instance, military conflicts. Chart 7 clearly illustrates this.

Table 3

DESCRIPTIVE STATISTICS OF MAJOR MACROECONOMIC VARIABLES

Comparison with study by Correia *et al.* (1992)[(a)]

	Standard deviation (sd)(%)	sd(x)/sd (GDP)	Autocorrelation coefficient		Correlation coefficient of x(t) with GDP(t+i)				
			1	2	i=-2	i=-1	i=0	i=1	i=2
Portugal: period 1910-58									
GDP	4.69	1.00	0.39	0.27	0.27	0.39	1.00	0.39	0.27
Consumption	7.84	1.67	0.56	0.36	0.25	0.47	0.91	0.46	0.39
Public consumption	13.83	2.95	0.70	0.36	-0.20	-0.44	-0.45	-0.53	-0.51
GFCF	17.42	3.72	0.65	0.36	0.19	0.46	0.56	0.45	0.34
Exports	12.70	2.71	0.17	-0.06	0.02	-0.11	0.12	0.06	-0.15
Imports	18.40	3.93	0.61	0.23	0.08	0.27	0.51	0.36	0.26
Private consumption deflator	27.44	5.85	0.84	0.63	-0.21	0.00	0.17	0.29	0.46
GDP deflator	26.38	5.63	0.84	0.63	-0.17	0.03	0.21	0.31	0.51
United Kingdom: period 1914-50									
GDP	7.88	1.00	0.80	0.47	0.47	0.80	1.00	0.80	0.47
Consumption	5.29	0.67	0.71	0.29	-0.49	-0.45	-0.33	-0.15	0.14
Public consumption	51.43	6.53	0.82	0.54	0.61	0.80	0.90	0.72	0.39
GFCF	28.06	3.56	0.74	0.29	-0.50	-0.52	-0.41	-0.24	0.01
Exports	27.44	3.48	0.70	0.31	-0.59	-0.55	-0.43	-0.24	0.03
Imports	15.91	2.02	0.48	-0.14	0.20	0.44	0.47	0.25	0.08
Private consumption deflator	18.02	2.29	0.74	0.40	0.54	0.52	0.32	0.00	-0.26
GDP deflator	12.75	1.62	0.87	0.56	0.58	0.29	-0.08	-0.42	-0.58
United States: period 1914-50									
GDP	12.66	1.00	0.81	0.45	0.45	0.81	1.00	0.81	0.45
Consumption	5.94	0.47	0.76	0.47	0.38	0.49	0.51	0.39	0.27
Public consumption	39.56	3.12	0.68	0.18	0.27	0.57	0.71	0.57	0.25
GFCF	32.79	2.59	0.75	0.32	0.12	0.14	0.16	0.15	0.18
Exports	32.45	2.56	0.76	0.37	0.45	0.73	0.84	0.69	0.35
Imports	20.00	1.58	0.52	0.20	0.18	0.52	0.76	0.64	0.37
Private consumption deflator	10.12	0.80	0.83	0.49	0.33	0.32	0.26	0.13	0.01
GDP deflator	10.06	0.79	0.77	0.39	0.20	0.15	0.09	0.02	-0.05

Note:
(a) Data referring the United Kingdom and the United States were withdrawn from Correia *et al.* (1992).

4. COMPARISON WITH CYCLICAL DEVELOPMENTS IN OTHER COUNTRIES

As previously mentioned, this section establishes a comparison of the results now presented for Portugal with those obtained for other economies. In particular, it makes a comparison with the results obtained in the analysis of economic cycles in the United Kingdom and in the United States, presented in Correia *et al.* (1992b).

The study by Correia *et al.* (1992b) presents the most relevant cyclical characteristics of the economic cycles in the United Kingdom and the United States for the 1850-1950 period. For comparison purposes, only the results for the 1914-1950 period will be analysed, since they coincide almost fully with the period of the sample used for Portugal.

Table 3 presents the descriptive statistics relative to the economic cycle in Portugal, the United Kingdom and the United States. Note that the series used in section 3 differ from those used in Correia *et al.* (1992b). Therefore, the values presented in Table 2 differ from those presented in Table 3. The major conclusions are the following:

(a) In Portugal, the real macroeconomic variables analysed present a cyclical volatility significantly lower than in the United Kingdom and in the United States. Exceptions are private consumption, for which volatility in Portugal is higher, and imports, for which,

curiously, volatility is rather similar in the 3 countries.

(b) In terms of volatility vis-à-vis the cyclical component of output, it is worth noting the considerably higher volatility of private consumption in Portugal. A possible explanation may be the high weight of the agricultural sector on the productive as well as consumption structures, in a context of low trade flows with abroad.

(c) The price indices analysed (CPI and GDP) reveal a contrasting trend, since the volatility of the cyclical components of the output and CPI deflators was significantly higher in Portugal than in the United Kingdom and in the USA. This result may reflect the period of very high inflation in Portugal that did not occur in any of the other two countries.

(d) In Portugal, persistence was significantly lower in real variables. This result is particularly marked for the output series (even after exclusion of the agricultural sector), private consumption and exports.

(e) Price indices analysed show a considerable persistence in the three countries under study.

(f) Most expenditure components present a pro-cyclical behaviour in Portugal (except public consumption) and in the USA. On the contrary, in the case of the United Kingdom, the high positive correlation of public consumption and output, together with the fact that private consumption and investment variables are countercyclical, suggest that, in this country, the shocks induced by changes in public consumption were very significant.(13)

(g) Turning to prices, the results presented for the three countries point to a pro-cyclical behaviour of the private consumption deflator.(14) It should be noted, however, that the correlation is relatively low, especially in the Portuguese case. Contrary to developments in the United Kingdom and in the United States, price indices in Portugal behaved like advanced variables vis-à-vis activity.(15)

5. CONCLUSIONS

The major conclusions of this analysis are the following:

(a) The cyclical component of output in the 1910-1958 period, in Portugal, revealed a very low persistence, with frequent changes in sign. This trend results, to a large extent, from the volatility and low persistence of agricultural output. In particular, the persistence of the cyclical component of output is extremely low when compared with that observed in the economies of the United Kingdom and the Unites States.

(b) In Portugal, private consumption presented in this period a high volatility, both in absolute terms and in terms of output. The persistence of this macroeconomic aggregate is also low in international terms. A possible explanation may be the high weight of the agricultural sector on productive and consumption structures, against a background of low trade flows with abroad.

(c) The cyclical component of exports shows a low persistence, probably reflecting the high concentration of exports in foodstuffs – many of them affected by irregular agricultural production – and intermediate products. In addition, there is also a low correlation with the cyclical component of output, which also seems to reflect the closed nature of Portuguese economy during the period under review.

(d) The development of activity in Portugal does not reveal in the sample period a significant correlation with major economies in Europe and the United States, reflecting the fact that these economies were subject to shocks rather different to those occurred in Portugal (for instance, World War I, Great Depression and World War II). It should also be mentioned that during the period under

(13) See, in this respect, Correia *et al*. (1992b).

(14) It should be noted that this pro-cyclical behaviour of prices seems to be typical of the pre-second World War period, when prices presented, in general, a countercyclical behaviour (Backus and Kehoe (1989)).

(15) The calculation of these correlations may be influenced, in a non-negligible manner, by the observance of cyclical components of a very high magnitude.

review our economy was relatively closed vis-à-vis abroad and had strong trade links with other geographical areas (former African territories and Brazil).

(e) The price indices considered revealed a pro-cyclical behaviour in every country analysed.

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BAYESIAN FORECASTING MODELS FOR THE EURO AREA*

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1. INTRODUCTION

The introduction of the euro in 1999 and the growing economic integration among the countries, which have adopted it, recommends an increasing utilization of area wide models by opposition to multi-country approach when forecasting euro area aggregates.

The multi-country approach consists in forecasting the main euro area economic variables (e.g. the gross domestic product, consumer prices or nominal wage rate) by aggregating the forecasts for each one of the constituent countries. Alternatively, the approach applied in this article is based on the construction of aggregate time series for the euro area interesting variables and then modelling euro area as if it was a single country.

The construction of time series for the euro area by aggregating data from the constituent countries and the subsequent forecasting exercises has the double advantage of reducing the scale of the models and mixing data from the different countries. However, the aggregation of data has also disadvantages, since aggregation problems can emerge when countries have different economic structures.

In this article, it is presented an estimation method of Bayesian kind for a VAR (Vector Auto-Regression) model that enables mixing sample with prior information through Bayes rule.

The efficient estimation of a VAR model requires a huge amount of sample information, however, as a rule, the available sample information is restricted. Once the sample size cannot be enlarged, it will become advantageous to incorporate prior information using restrictions on model parameters.

A possible approach is to impose economic theory based restrictions on model parameters, building thus what is known in the literature as a structural VAR. However, structural VAR models are better for simulation exercises (that is, exercises where the purpose is to obtain the impulse response function of an economy to certain types of shocks) than to forecasting.

When the objective of the model is to forecast, the Bayesian approach is most satisfactory. This approach consists in imposing prior restrictions over the VAR model parameters' distribution. The model parameters are obtained by mixing the prior distribution with sample information. Thus, higher efficiency is obtained in the estimation of the parameters and, consequently, more accurate forecasts. This kind of models is known in the literature as Bayesian VAR or BVAR models.

Another aspect treated in this article concerns with modelling the long-run relationships. None of the known articles on BVAR models for the euro area explicitly models long-run relationships. This article presents a set of BVAR models for the euro area incorporating explicitly long-run relationships.

* The views expressed in this article are those of the authors and not necessarily those of the Banco de Portugal.

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The immediate purpose of this work is to forecast a set of economic variables that usually play an important role in euro area forecasting exercises: real GDP, unemployment rate, consumer prices, nominal wage rate, interest rate and real effective exchange rate. Since there are more wide-ranging methods to produce forecasts for the euro area, the BVAR model permits to own an additional instrument to validate and evaluate the quality of the forecasts from remaining models. Moreover, the possibility of incorporating prior information in the VAR model enables an explicit treatment of the judgmental at which all forecasts are submitted.

This article is structured as follows. In section two it is summarized the VAR framework and its main drawbacks. In section three, BVAR models are introduced with an explanation of its advantages and disadvantages and the issue on long-run relationships is made. In section four, Bayesian and non-Bayesian models forecasting performance are compared. In the last section, final considerations are made and some conclusions are presented.

2. FORECASTING AND VAR MODELS

VAR models are an alternative to structural macroeconometric models as a methodology to obtain point estimates and measures of the uncertainty surrounding it, that is, to quantify the probability associated to future events. VAR models overcome some disadvantages of structural models and the opacity that surrounds predictions made by experts based on non-explicit subjective models. At the same time, this type of models exploits the advantages of multivariate analysis, overcoming the limitations of univariate models as ARIMA models (that is, AutoRegressive Integrated Moving Average).

VAR models have a very flexible and simple structure. The definition of the model only requires the researcher to choose the variables entering the model and the order of the autoregressive process to be considered. VAR models specification and estimation are simple, since it is neither necessary to specify the variables entering each equation nor to incorporate restrictions derived from economic theory. Thus, estimation and forecasting using a VAR model are purely mechanical processes and the number of series required to build a reasonable model is quite small.

An unanswered question is how to choose variables and the order of the autoregressive process. It is obvious that it neither can be included all available variables in order to capture the maximum number of economic relationships, nor a huge number of lags, since the number of parameters to estimate grow exponentially with the number of variables and lags. Generally, sample information is limited and the risk of few degrees of freedom to estimate parameters becomes considerable. Therefore, an efficient estimation of the model requires the choice of variables and lags to be made meticulously.

The application presented in this article is based on quarterly models. Consider a vector Y of six variables to be forecasted: real GDP, unemployment rate, price index, nominal wage rate, long term interest rate and effective nominal exchange rate of the euro. Assume that each one of these variables is linearly correlated with: its past values up to four lags; the past values of the remaining variables included in Y up to the same lag; a vector X of three exogenous variables – economic activity outside euro area, price index outside euro area and a short term interest rate – up to the aforementioned lag; and a vector D of four deterministic components (intercept and three seasonal dummy variables). Thereafter, a VAR model can be broadly represented as follows:

$$Y_t = CD_t + A_1 Y_{t-1} + \ldots + A_4 Y_{t-4} + B_1 X_{t-1} + \ldots + B_4 X_{t-4} + \varepsilon_t$$

where

- Y_t, is a vector of endogenous variables;
- X_t, is a vector of exogenous variables;
- D_t, is a vector of deterministic components;
- A_i, is a matrix of the coefficients of i-th lag of endogenous variables;
- B_i, is a matrix of the coefficients of i-th lag of exogenous variables;
- C, is a matrix of coefficients of deterministic components;
- ε_t, is a vector of unobserved innovations assumed to be independent and identically distributed.

The main reason to use VAR models derives from the simplicity of its estimation. Since it could

be guaranteed that the equations of the model share all the same right hand side variables, VAR models can be consistently and efficiently estimated using ordinary least squares.

The arguments exposed above favour the utilization of VAR models in macroeconomic forecasting and present these models as an alternative to more complex forecasting models. However, VAR models are not exempt from criticisms.

On theoretical grounds, it can be argued that VAR models have no theoretical basis behind them, in the sense that they did not incorporate any economic theory. However, the bigger criticism lies on statistical grounds.

Actually, VAR models contain the seeds of its major drawback, the excessive parameterization, that is, a huge amount of parameters to estimate. The VAR models for the euro area presented section four of this article imply the estimation of 240 parameters.(1) The number of parameters to estimate increase drastically with the number of endogenous variables or lags that is considered. Since the amount of information is, in general, limited, the danger of not having enough degrees of freedom to estimate efficiently the model becomes higher. As a result, forecasts become erratic and poor in terms of accuracy and, in most cases, the system exhibits an explosive behaviour.(2) These are known in VAR models literature as overfitting problems. This kind of properties is not desirable in a forecasting model that must behave as a filter, since it is supposed to capture the systematic relationships among relevant variables but not the accidental sample variability. The model must capture the signal, not the noise, and reveal the most likely future path of variables of interest.

In literature, it can be found two ways of overcoming overfitting problems. The first is to use what is known in the literature as a structural VAR, which consists in imposing theoretical based restrictions on some parameters, reducing, thus, the number of parameters to estimate. However, this solution is more appropriate in simulation contexts, when the main issue is how the economy will respond to certain types of shocks, than in forecasting exercises as the one presented in this article. The second one is to use an alternative method of estimation, to provide more efficient parameter estimators, which deliver more reliable forecasts.

For what has been argued above, in this work the second approach was chosen and a more efficient estimation method of Bayesian inspiration to estimate VAR model parameters' is used.

3. FORECASTING AND VAR MODELS

The estimation method employed lies on Bayesian statistical theory and combines prior with sample information.

Bayesian VAR models diminish the risk of overfitting by imposing some general restrictions on the VAR parameters, incorporated through their prior probability distribution functions. These prior probability distribution functions synthesize the priors from the researcher about VAR model parameters: the mean of the distribution stands for the prior about the value of the coefficient; and its variance stands for the confidence of the researcher on the prior mean. Prior probability distribution functions for the parameters represent the range of uncertainty around a prior mean and can be modified by sample information if its underlying distribution is sufficiently different from the prior. A posterior distribution function for each parameter can be obtained based on prior distribution function and on the distribution function underlying sample information, using the Bayes rule.

The prior specification is an important step in BVAR modelling. An excessively diffuse prior, that is, a prior with large variance around the prior mean of the parameters, can be easily modified by accidental sample variability (noise). An informative prior with reasonable values for parameter variances around prior mean can only be influenced by systematic sample variability (signal), diminishing the risks of overfitting and unreliable forecasts. Thus, efficiency gains in parameter estimation and better forecasting performances can be obtained.

In this work, it was used a prior based on the well-known Minnesota prior of Doan *et al.* (1984).

(1) The number of parameters in a VAR model is given by $N^2p + NpM + Nd$, being, N, the number of endogenous variables (6, in the models presented below); M, the number of exogenous variables (3, in the models presented below); and d, the number of deterministic variables (4, in the models presented below).

(2) The stability conditions of VAR model can be found in the Technical Annex.

In spite of the modifications introduced, the basic features remain unchanged. As Doan *et al.* (1984), it was postulated that most macroeconomic series could be described as pure random walks.(3) Thus, a broad data-generating process is selected and it is assumed that the prior distributions for the VAR parameters are independent normal probability distribution functions, with its means set by random walk parameters' values. The prior variances of these probability distribution functions are fixed by a second set of parameters, smaller than the first one, known as hyperparameters. These hyperparameters control the probability of each parameter of the VAR model assuming values farther or closer to the random walk prior mean, that is, the degree by which sample information influence the prior mean.

The prior probability distribution function is incorporated in the VAR model by setting a functional relation between the variance of prior distribution function for each parameter and the hyperparameters, which control basic dimensions of the model in line with some empirically observable relationships. Thus, it is assumed that: the best prediction for the future value of a variable is its current value, that is, all variables follow a random-walk behaviour; lagged values closer in time have more information content concerning current values than lagged values that are farther apart in time; the own lags of a variable have more information content than lagged values of other variables.

For instance, what is being assumed for consumer prices behaviour is that: the best prediction for prices behaviour in the current quarter is the behaviour of prices in the previous quarter; current prices' behaviour is most influenced by prices' behaviour in the previous quarter than by the behaviour of prices two quarters ago; additionally, the past values of prices contain more information than the past values of nominal wage rates.

Based on these empirical regularities, three kinds of restrictions can be identified. The restrictions concerning the way each equation and the model as a whole are tighten around the random walk prior are called overall restrictions. These restrictions give rise to a set of overall tightness hyperparameters that can differ from equation to equation. A second restriction is the one that controls the increase of tightness around the random walk prior for lags farther apart in time. However, to avoid an excessive number of hyperparameters, it is assumed that tightness increases with the lag, that is, the variance for higher lags decay inversely with the lag. Finally, the restrictions that control the way variables are related with the lags of other variables are called cross-lag restrictions; the hyperparameters that control cross-lag relationships can differ from variable to variable and for each equation.

In spite of being Bayesian in its philosophy, a BVAR model is not completely Bayesian since hyperparameters are usually calibrated using an optimisation algorithm based on an objective function that depends on out-of-sample forecast errors. In the case of the quarterly models for the euro area, 12 quarters ahead out-of-sample forecast errors are used.

The statistical and mathematical details of the BVAR estimation are presented in the technical annex.

BVAR models have advantages that are concerned not only with overcoming the overfitting problems associated with unrestricted VAR models, but also with its objectivity and flexibility. The main advantage of BVAR models is the possibility of mixing sample information with prior information in a fully transparent way. The possibility of mixing different pieces of information enables the researcher to build a model that accounts not only for the stochastic behaviour of economic variables, but also for the uncertainty surrounding economic relationships behind the economic system under analysis. This kind of flexibility leads to a better model in terms of economic forecasting when compared to structural models with more restrictions; and to a more accurate model than traditional VAR models, whose coefficients are estimated by ordinary least squares with the overfitting problems aforementioned. A BVAR model enables the researcher to characterize the future path of economic variables in probabilistic terms. The objectivity behind this kind of models is also an important advantage, since interested researchers can easily reproduce forecasts.

However, BVAR models also contain some disadvantages, the most obvious is the lack of eco-

(3) That is, variables for which the best forecast that can be done for next quarter is the value observed in the current quarter.

nomic interpretation. More than a disadvantage, the lack of economic interpretation must be seen as an option of the researcher, because it gives the possibility of conforming the model according to the regularities of sample data, without having to impose any prior assumption about the true economic model behind the data.

Another criticism pointed to VAR and BVAR models is the fact of not taking into account explicitly the long-run relationships among variables. Theory postulates that certain variables follow a common path in time, or, at least, that they not diverge continuously, that is, they are cointegrated. Take as an example the nominal wage rate; the time path of nominal wage rate cannot diverge continuously from the time path of prices, otherwise there would be a continuous increases or decreases in real wage rate.

A BVAR model with an error correction mechanism (known as Bayesian VECM or BECM)(4) can be used to combine BVAR models' advantages with the benefits of taking into account explicitly long-run relationships in forecasting exercises. In this work, long-run relationships were estimated using both Engle-Granger(5) and Johansen(6) methodologies. In the case of Engle-Granger methodology, it is implicitly assumed the existence of a unique cointegration vector; this assumption can conflict with Johansen methodology results.(7) The resulting error correction terms (that is, the deviations vis-a-vis the long-run relationships) are then plug-in the BVAR model for the first differences of the considered variables.

In spite of the theoretical support, the results presented in some studies on BVAR models about the hypothetical gains from imposing long-run relationships are quite conflicting among them. For instance, in Joutz *et al*. (1995) it is empirically observed that imposing long-run restrictions through error correction mechanisms (ECM) may not improve forecasts in the context of BVAR models.

(4) For further details see technical annex.
(5) For further details see Engle and Granger (1987).
(6) For further details see Johansen (1988).
(7) It worth to be mentioned that cointegration vectors were estimated in a non-Bayesian context.

4. A BVAR WITH ERROR CORRECTION MECHANISM FOR THE EURO AREA

4.1. The data

The database used in the empirical application of the previously described models to the euro area was built by recovering country series from a variety of sources (BIS, AMECO, IMF, OECD and Eurostat). The sample covers a period from 1977 to 1997 on a quarterly basis. All series were transformed into indices based on 1990. Euro area variables were obtained by aggregation of country variables using the so-called "index method" suggested by Fagan and Henry (1997). Nominal and price variables were built by taking a geometric weighted average of national variables, where weights for each country were taken from GDP at PPP exchange rates of ECU's for 1993.

From the aggregation formula:

$$Y_t^{EU11} = \prod_{i=1}^{11} \left(\frac{Y_t^i}{Y_{1990}^i} \right)^{w_i}$$

where,

Y_t^i, country i variable at moment t;
w_i, weight of country i in the euro area.

Taking the logarithm of the above formula, then it follows that:

$$\ln\left(Y_t^{EU11}\right) = \sum_{i=1}^{11} w_i . \ln\left(\frac{Y_t^i}{Y_{1990}^i} \right)$$

Therefore euro area aggregates can be built as arithmetic weighted averages of the logarithms of country variables. The same applies for the rates of change of euro area variables can be approximated by arithmetic weighted averages of the rates of changes of country variables. Since fixed weights are used, real variables can also be obtained in this way or derived by deflating nominal variables.

A similar formula can be used to aggregate interest rates and unemployment rates, since they can be computed as arithmetic averages using the same fixed weights. External variables were built by applying the method described above to a set of non-euro area countries (USA, UK and Japan).

The choice of variables is based on its importance in regular forecasting exercises for the euro area. A set of exogenous variables has been consid-

Table 1

DESCRIPTION OF VARIABLES

	Description	Status	Block
Y	GDP at constant prices, as a measure for economic activity in euro area (index)	Endogenous	Real
U	Unemployment rate, as a measure of labour market conditions in euro area (in percentage of the labour force)	Endogenous	Real
P	Private consumption deflator, as a measure of inflation rate in euro area (index)	Endogenous	Price
W	Nominal wage rate, as a measure for capital and investment costs in euro area (in percentage)	Endogenous	Price
ILT	Long-term interest rate, as a measure for capital and investment costs in euro area (in percentage)	Endogenous	Price
S	Effective nominal exchange rate of euro, as a measure of currency market conditions (index)	Endogenous	Price
YW	World GDP at constant prices, as a measure of activity outside euro area (index)	Exogenous	Real
PW	World GDP deflator, as a measure of external prices (index)	Exogenous	Price
IST	Short-term interest rate, as a measure of monetary authority policy instrument (in percentage)	Exogenous	Price

ered and, since forecasts are not conditional on a macroeconomic scenario, exogenous variables are projected into the future through autoregressive processes. The variables used in the VAR, BVAR and BECM models for the euro area are presented in Table 1.

In the autoregressive processes four lags are considered, given that the models under study are quarterly models, it was assumed that current variables behaviour are correlated at most with what happened in the previous four quarters.

In the calibration of the hyperparameters of the model, a simple average of 12-quarters ahead forecast errors was considered, since some models include long-run relationships that are more likely to operate in longer forecast horizons. The choice of three years as the horizon to calibrate hyperparameters seems reasonable, given the sample size and the need of having enough observations to evaluate the forecasting performance of the models.

4.2. The hyperparameterization scheme

The hyperparameters play a crucial role in BVAR models as a statistical device to overcome overfitting problems of traditional VAR models. In this work the hyperparameterization scheme used is quite different from the one used in Doan *et al.* (1984), since a special treatment of the hyperparameters governing cross-variable relationships is considered. The hyperparameters are presented in Table 2.

Additionally to the prior assumptions previously presented, the hyperparameterization scheme lies on a classification of variables in two

Table 2

DESCRIPTION OF HYPERPARAMETERS

	Description
λ_1	Overall tightness for real variables equations
λ_2	Overall tightness for price equations
θ_1	Tightness of parameters of real (price) variables in real (price) variables equations
θ_2	Tightness of parameters of price (real) variables in real variables (price) equations
θ_3	Tightness of parameters of exogenous real (price) variable in real variables (price) equations
θ_4	Tightness of parameters of exogenous price (real) variable in real variables (price) equations
θ_5	Tightness of parameters of monetary instrument in real variables equations
θ_6	Tightness of parameters of monetary instrument in price equations
Ω	Tightness of ECM factor loadings

Chart 1

HYPERPARAMETERS SCHEME

			Real variables		Price variables				Exogenous variables		
			Y	U	P	W	ILT	S	YW	PW	IST
Real variables equations	λ_1	Y	1	θ_1	θ_2				θ_3	θ_4	θ_5
		U	θ_1	1							
Prices equations	λ_2	P	θ_2		1	θ_1	θ_1	θ_1	θ_4	θ_3	θ_6
		W			θ_1	1	θ_1	θ_1			
		ILT			θ_1	θ_1	1	θ_1			
		S			θ_1	θ_1	θ_1	1			
Exogenous variables equations	∞	YW	0		0				1	0	0
		PW	0		0				0	1	0
		IST	0		0				0	0	1

groups: real block variables and price block variables. Based on this classification additional prior assumptions are made.

It is considered that cross-relations involving endogenous variables of the same block can have a different degree of tightness around prior mean relative to the cross-relations between endogenous variables of different blocks. That is, it is considered that the equations of the variables of the block of prices are more influenced by variables of the block of prices, than by variables of the real block and vice-versa.

In the same manner, it is considered the parameters of exogenous variables can have different degrees of tightness around prior mean in real equations and in price equations. That is, it is considered that the exogenous variable of the block of prices have more influence on the equations of the variables of the block of prices, than on the equations of the variables of the block of prices and vice-versa.

Finally, in what concerns with the monetary policy instrument, it is considered that the degree of tightness of the associated parameters can be different for prices block and for real block. It is considered that short-term interest rate can have a major influence in variables as prices or long-term interest rates, than on economic activity.

This specification increases the flexibility of the BVAR model. If the appropriate degree of tightness were the same in all these situations, the calibration process is able to obtain the same value for all θ's. This kind of procedure is implemented through parameters θ_1 to θ_6 as presented in the Chart 1.

It can be seen that, for exogenous variables equations, the tightness around the prior mean is set at the maximum, except for the diagonal where the θ parameter assume a value of 1, meaning that exogenous variables are supposed to be influenced only by its own past values and not by any other variables. That is, exogenous variables and the monetary policy instrument are projected through a univariate autoregressive process, since the forecasting exercise considered is not conditional on a specific macroeconomic scenario.

In what concerns overall tightness hyperparameters, it is considered that exogenous variables have an uninformative prior, what is equivalent to project this variables using an unrestricted univariate autoregressive process, that is, with no priors on its parameters. Furthermore, different overall tightness hyperparameters are considered for

Table 3

DESCRIPTION OF MODELS UNDER ANALYSIS

	Description	Status
RW	Random-walk prior	Non Bayesian
AR	Univariate autoregressive process of order 4 with variables in levels	Non Bayesian
VAR	Vector autoregressive process of order 4 with variables levels	Non Bayesian
VAR–1st dif.	Vector autoregressive process of order 4 with variables in first differences	Non Bayesian
VECM(EG)	Vector autoregressive process of order 4 with variables in first differences and ECM estimated by Engle-Granger methodology	Non Bayesian
VECM(J)	Vector autoregressive process of order 4 with variables in first differences and ECM estimated by Johansen methodology	Non Bayesian
BVAR	Bayesian vector autoregressive process of order 4 with variables in levels	Bayesian
BVAR–1st dif.	Bayesian vector autoregressive process of order 4 with variables in first differences	Bayesian
BECM(EG) – FP	Bayesian vector autoregressive process of order 4 with variables in first differences, ECM estimated by Engle-Granger methodology and flat prior on factor loadings	Bayesian
VECM(J) – FP	Bayesian vector autoregressive process of order 4 with variables in first differences, ECM estimated by Johansen methodology and flat prior on factor loadings	Bayesian
BECM(EG) – IP	Bayesian vector autoregressive process of order 4 with variables in first differences, ECM estimated by Engle-Granger methodology and informative prior on factor loadings	Bayesian
VECM(J) – IP	Bayesian vector autoregressive process of order 4 with variables in first differences, ECM estimated by Johansen methodology and informative prior on factor loadings	Bayesian

the endogenous variables of each block, thus, allowing restrictions on the equations of prices block to differ from those imposed on real variables block.

Finally, the hyperparameter Ω is used to impose an informative prior on the coefficients of ECM (henceforth called factor loadings) in BECM models. The coefficients of the ECM have a zero prior mean, in order to ensure the consistency with the random walk prior mean, and a variance governed by the Ω hyperparameter. The utilization of a diffuse prior on factor loadings, that is, an unrestrictive prior, raise the problem of an excessive weight of long-run relationships relative to short-run dynamics, what can endanger the forecasting performance of the models. The introduction of the referred restriction minors this problem.

4.3. A "horse race"

In this subsection the results obtained using different Bayesian models are compared with their non-Bayesian counterparts and among them in order to evaluate their forecasting performance.

The relative forecasting performance of the models is evaluated by comparing a measure of the forecasting errors committed by each model in a forecasting horizon sufficiently long to incorporate the effect of long-run relationships in they are relevant. The measure considered is root of the mean square error (RMSE) in each period and for each variable in a 12-quarter horizon. In order to obtain a synthetic measure of the forecasting error for each model, an average of RMSE of these models for all endogenous variables adjusted for its standard deviation was taken.

As the BVAR is a very flexible model, non-Bayesian counterparts of Bayesian models can be obtained from the Bayesian framework by properly setting hyperparameter values. For instance, pure autoregressive model can be obtained in the Bayesian framework by setting $\lambda = \infty$ and $\theta = 0$, as in the case of exogenous variables.

Some models are compared in this work: a random walk, five non-Bayesian models and six Bayesian models. Bayesian models are compared with its non-Bayesian counterparts in order to evaluate the importance of Bayesian methods of estimation; Bayesian models with and without ECM are also compared to study the role played by long-run relationships in forecasting accuracy. Both Johansen and Engle-Granger approaches were used to estimate the cointegrating vectors. The first methodology points to the existence of cointegration, while the second one points to the existence of four cointegration vectors. The models considered are presented in Table 3.

Table 4

COMPARISON AMONG MODELS

Models	RMSE12	c.c.p
RW	6.938	1.000
AR	7.612	1.097
VAR	14.396	2.075
VAR-1st dif	11.406	1.644
VECM(EG)	10.074	1.452
VECM(J)	21.508	3.100
BVAR	5.071	0.731
BVAR-1st dif.	5.820	0.839
BECM(EG)-FP	5.948	0.857
BECM(J) - FP	8.867	1.278
BECM(EG) - IP	5.229	0.754
BECM(J) - IP	5.587	0.805

The values of the hyperparameters for the Bayesian models were obtained by minimizing the RMSE of forecasting up to 12 quarters ahead, as explained with detail in the technical annex.

Table 4 presents the values for the average of RMSE of forecasting for each model and its comparison with the random-walk prior mean (c.w.p.). If the c.c.p value is greater than the unity, then the model performs worse than the random walk, while a value smaller than the unity points to a better performance than obtained with the random walk.

The clearest evidence from the comparison is that all Bayesian models, except for the BECM (J) model with FP, perform better than the random-walk prior. This is the minimum requirement on a forecasting model to be interesting in terms of prediction, since random walk best forecast for the next period is the last value observed. It worth to be mentioned that non-Bayesian models always perform worse than the random walk in terms of forecasting.

Additionally, it is also clear that all Bayesian models perform better than their non-Bayesian counterparts, which is a support of the evidence that Bayesian approach to VAR modelling delivers a better forecast accuracy. So, the Bayesian approach seems adequate to overcome the over-fitting problems of VAR models.

Regarding long-run relationships, BECM models do not perform better than BVAR models in levels; thus, the explicit modelling of long-run relationships does not seem to improve forecasting, at least significantly. At first glance, this is a rather surprising result, but in the literature there are other cases where this kind of results can also be found, namely in Joutz *et al.* (1995). It is interesting to note that although the BVAR-1st dif. performs poorer than the BVAR in levels, if an ECM term is included in a BVAR-1st dif. with an informative prior, then it performs almost as good as a BVAR in levels.

Finally, the difference between BECM with an informative prior (IP) on factor loading and BECM with a flat prior (FP) on factor loading is clear by observing the results presented in table 4. If long-run relationships were not relevant for the forecasting performance, the Ω hyperparameter would assume values next to zero and the corresponding RMSE would be equal to those of BVAR in differences. This is a first evidence of the relevance of imposing an informative prior on factor loadings

A detailed analysis of the forecasting performance variable-by-variable reveals heterogeneity of results not captured by the global criterion function used above. These results are presented in Table 5.

In spite of the BVAR model in levels being the best model in almost every case, real GDP is best predicted by BECM (EG)-FP. BECM (J)-IP is the second best model to forecast euro area unemployment rate and the third best model to forecast long-term nominal interest rate, real GDP and price index. The BECM (EG)-IP model is the second best model to predict long-term nominal interest rate and the third best model to forecast euro area unemployment rate and nominal wage rate. The BVAR-1st dif. is the second best model to predict price index and nominal wage rate.

As usual, nominal effective exchange rate exhibits a random-walk behaviour, which is captured by the BVAR model. The second best model to predict this variable is the random-walk prior model. The third best model to predict exchange rate is a univariate AR model in levels. This result is consistent with the belief that exchange rates tend to exhibit random walk behaviour.

The profile of the RMSE for each variable across the forecasting horizon gives an idea of the role played by the estimated long-run relation-

Table 5

AVERAGED RMSE 16 QUARTERS FOR EACH VARIABLE

Models	Y	U	P	W	ILT	S
RW	1.977	0.782	1.761	5.191	1.724	5.127
AR	2.841	0.998	1.868	4.591	2.697	5.815
VAR	5.040	2.224	4.581	4.564	3.316	14.900
VAR 1st dif.	3.521	1.165	4.954	5.137	3.217	11.521
VECM(EG)	7.723	1.602	6.934	14.598	6.964	16.079
VECM(J)	4.587	1.339	10.424	11.603	4.551	16.361
BVAR	1.594	0.516	1.256	2.836	1.436	4.941
BVAR - 1st dif.	1.799	1.033	1.291	3.873	1.754	6.247
BECM (EG) - EP	1.498	0.801	1.675	4.410	1.888	6.944
BECM (J) - FP	1.979	0.774	2.996	7.304	2.033	8.041
BECM (EG) - IP	1.716	0.650	1.341	3.961	1.699	6.249
BECM (J) - IP	1.711	0.621	1.311	4.157	1.700	6.720

ships and the IP on factor loadings. In the following charts only the most relevant models for each variable are presented.

The best performing model to predict real GDP for the euro area is the BECM model with one cointegrating vector and a flat prior on factor loadings (BECM (EG)-FP), followed by the BVAR in levels (BVAR) model (see Chart 2). The BECM (EG)-FP model clearly beats the BVAR for forecasting at more than 12-quarters ahead; in this case there is evidence that including one long-run relationship improves forecasts at longer horizons. The BECM (J)-FP model is the worst performer; this may suggest that including a larger number of long-run relationships with an uninformative prior on factor loadings can endanger forecast accuracy.

Both BVAR in levels and BECM models with one cointegrating vector and an informative prior on factor loadings (BECM (EG)-IP) show a good forecasting accuracy in unemployment rate prediction. The BVAR in first differences (BVAR-1st dif.) shows a bad performance (see Chart 3). This result suggests that if the first difference BVAR is used, when there is at least one long-run relationship, then a misspecification error occurs and this will endanger forecast accuracy of the model. However, the model with the long-run relationship per-

Chart 2

REAL GDP

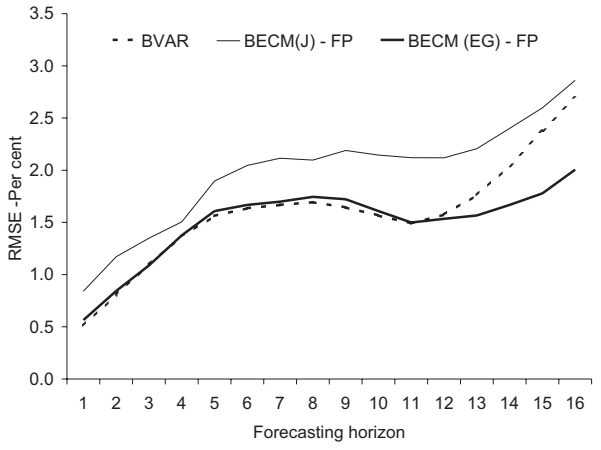


Chart 3

UNEMPLOYMENT RATE

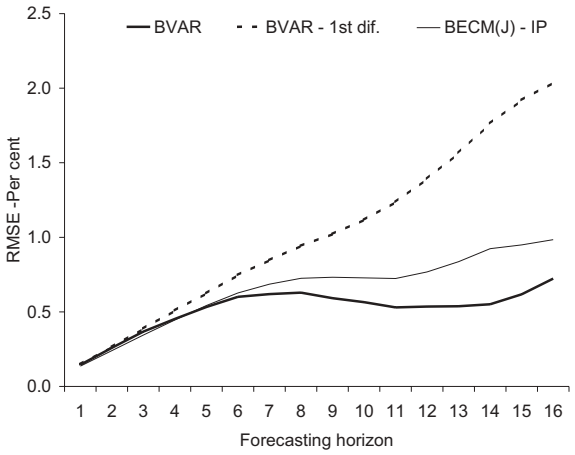


Chart 4
PRIVATE CONSUMPTION DEFLATOR

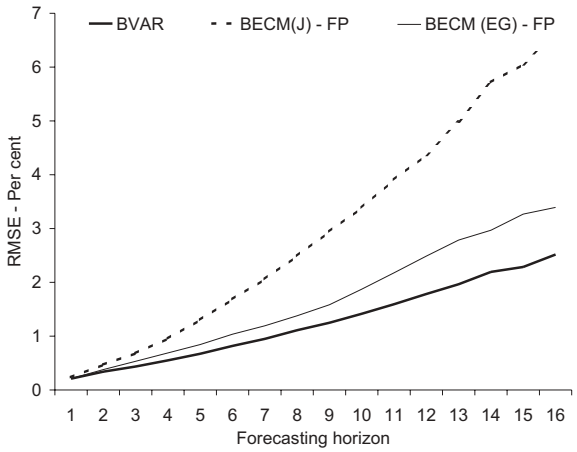


Chart 5
NOMINAL WAGE RATE

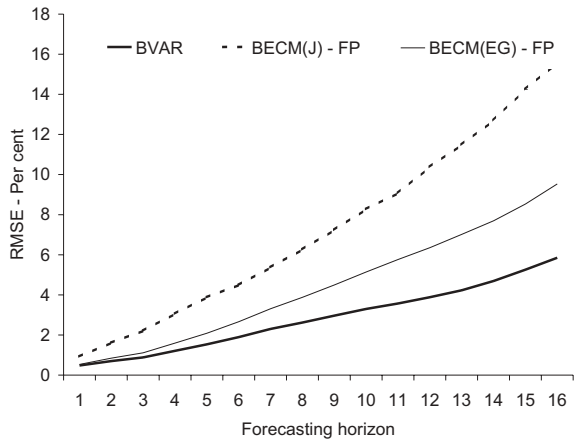


Chart 6
LONG-TERM INTEREST RATE

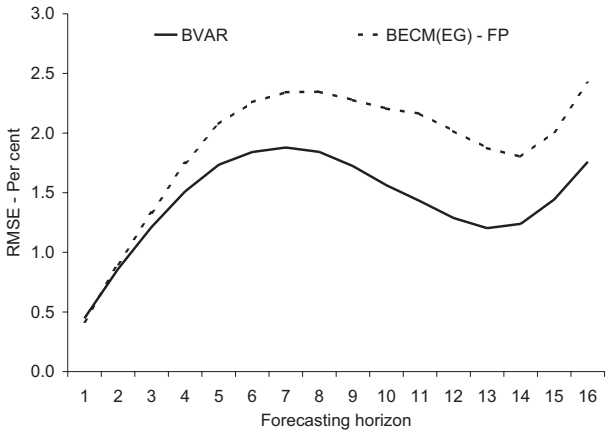
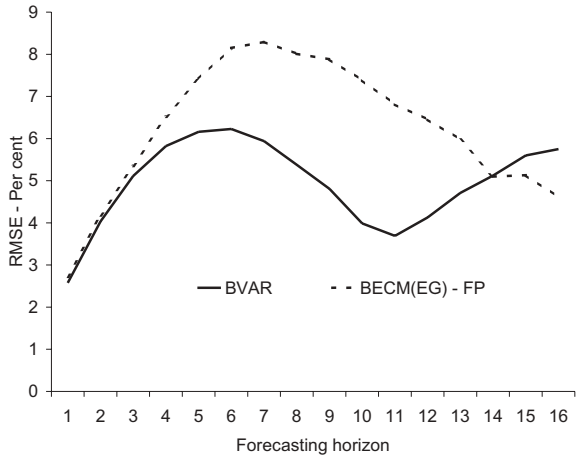


Chart 7
NOMINAL EFFECTIVE EXCHANGE RATE



forms slightly worse than the BVAR even at longer forecast horizons. The imposition of an IP on factor loadings restricts the weight given to long-run relationship and points to results closer to the BVAR model.

The BVAR model is the one that delivers best forecasts for price consumption deflator. Both BECM (J)-FP and BECM (EG)-FP models perform poorer (see Chart 4). Once more, a larger number of long-run relationships endanger forecast accuracy leading to poor performances. The imposition of an IP on factor loadings would lead to forecasting performances closer to the BVAR. The same analysis applies for nominal wage rate given that these variables exhibit a similar behaviour (see Chart 5).

The model that delivers the best forecast for the long-term nominal interest rate is the BVAR in levels (see Chart 6). If a BECM (EG)-FP model is considered then the forecast performance becomes poorer. This may be due to the uninformative prior on factor loadings and, probably, to the fact that the long-run relationship estimated by the Engle-Granger methodology is inadequate, so it does not help forecasting this variable.

Finally, nominal effective exchange rate forecasts are very poor (see Chart 7). Even short-term forecasts have very high RMSE that can be justified by the random-walk nature of nominal exchange rates. This is not an unexpected result given that, in general, exchange rates are not predictable, since foreign exchange markets adjust

very fast and take into account a very large information set.

The analysis of the results obtained for the euro area model suggests some conclusions about the usefulness of considering cointegration in Bayesian VAR models, which are reported in the next section.

5. CONCLUSIONS

The results presented in this article were obtained from an application of Bayesian methods of estimation to euro area aggregates usually forecasted in euro area projection exercises. In spite of the conclusions resulting from this empirical evidence cannot be generalized for every BVAR model, the treatment of long-run relationships and the priors on factor loadings presented here can be applied to any BVAR model when there are cointegration relationships among the variables considered.

The first conclusion is that Bayesian models perform better than its non-Bayesian counterparts in terms of forecasting accuracy. It may worth mentioning that only Bayesian models perform better than the random walk. Bayesian models seem to offer a reasonable answer to overcome the problems of overfitting and overparameterization in the estimation of VAR models.

A second conclusion arising from the analysis of the results is that modelling long-run relationships with ECM models under a Bayesian framework can lead to a poorer forecast accuracy when compared to BVAR models in levels, even in longer forecast horizons. But, if BECM models are compared with BVAR in first differences, a better forecast accuracy is obtained. These results are consistent with the existence of misspecification problems in BVAR models in first differences of the variables, if no long-run relationships are considered regardless of its importance.

Finally, a larger number of long-run relationships do not warrant a better forecasting accuracy. The cointegrating vectors were estimated and selected using Engle-Granger and Johansen methodologies, which are non-Bayesian, this procedure introduce an inconsistence that may endanger forecast accuracy. Of course, this inconsistence can be magnified by the utilization of a greater number of cointegrating vectors. The introduction of an informative prior on factor loadings could help to minimize the consequences of this inconsistence.

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TECHNICAL ANNEX

1. Stability Condition of a VAR model

A crucial issue in VAR models concerns with the integration order of the variables entering the model. It can be proofed that the stability condition of VAR (*p*) process is determined by matrices A_1 to A_p and can be expressed using the characteristic roots of the following polynomial:(8)

$$\det\left(I_N - A_1 z - \ldots - A_1 z^p\right) = 0$$

The VAR model will be stable if the characteristic roots of the polynomial above are all outside the unit circle.

2. Methodology and estimation of the BVAR model

Bayesian methods of estimation use the information synthesized under the form of probability density functions (*pdf*) and combine available information through the Bayes Theorem. Bayesian estimation problems there are, as a rule, two pieces of information: a prior parameter distribution, g(α); and a sample probability distribution function, $f(Y \mid \alpha)$. Bayes Theorem combines these two pieces of information through the following expression:

$$g(\alpha \mid Y) = \frac{f(Y \mid \alpha).g(\alpha)}{f(Y)}$$

where,

α,	is a vector of parameters;
$f(Y \mid \alpha)$,	is the sample *pdf* conditional in the parameters;
$g(\alpha)$,	is the prior sample *pdf*;
$f(Y)$,	is the unconditional sample *pdf*;
$g(\alpha \mid Y)$,	is the posterior *pdf*.

For a given sample, $f(Y)$, the unconditional sample *pdf* is just a normalizing constant, so it can be simplified by considering that posterior *pdf* for parameters; $g(\alpha \mid Y)$ is proportional to $g(\alpha)$ times $f(Y \mid \alpha)$. Moreover, conditional sample *pdf*, $f(Y \mid \alpha)$, is algebraically equivalent to the sample likelihood function, $l(\alpha \mid Y)$. So it follows that:

$$g(\alpha \mid Y) \propto f(Y \mid \alpha).g(\alpha) = l(\alpha \mid Y).g(\alpha)$$

where $g(\alpha \mid Y)$ combines all available information under the form of a *pdf* and where posterior parameter estimators can be recovered from posterior *pdf* means.

A VAR model of order *p* with no deterministic terms, no exogenous variables and with Gaussian white-noise disturbances can be represented as follows:

$$Y_t = A_1 Y_{t-1} + \ldots + A_p Y_{t-p} + \varepsilon_t$$

with $\alpha = vec\left(A_1, \ldots, A_p\right)$, the prior probability density function considered is the following:

$$g(\alpha) = (1/2\pi)^{\frac{N^2 p}{2}}.|V_\alpha|^{-1/2}.\exp\left[-1/2\left(\alpha - \alpha^*\right)' V_\alpha^{-1}\left(\alpha - \alpha^*\right)\right]$$

where α^* is a vector of prior means and V_α is a prior covariance matrix of this *pdf*. Sample information can be represented by a Gaussian likelihood function of the form:

$$l(\alpha \mid Y) = (1/2\pi)^{\frac{NT}{2}}.|I_T \otimes \Sigma_\varepsilon|^{-1/2}.$$

$$.\exp\left[-1/2\left(Y - \left(X' \otimes I_N\right)\alpha\right)'\left(I_T \otimes \Sigma_\varepsilon^{-1}\right)\left(Y - \left(X' \otimes I_N\right)\alpha\right)\right]$$

where *T* is the number of observations in the sample, Σ_ε is the white-noise covariance matrix, I_T and I_N are identity matrices of order *T* and *n* respectively. $Y = vec\left(Y_1, \ldots, Y_T\right)$ and $X_t = \left(Y_t', \ldots, Y_{t-p+1}'\right)$, and so it can be defined $X = \left(X_0, \ldots, X_{T-1}\right)$; $\otimes$ is the usual notation to define the Kronecker product.

(8) The derivations of the stability conditions of a VAR (p) process can be found in Lüthkepohl (1993).

The posterior *pdf* for the parameters can be defined as:

$$g(\alpha \mid Y) \propto l(\alpha \mid Y).g(\alpha)$$

$$\propto \exp.\left\{-1/2\left[\left(V_{\alpha}^{-1/2}(\alpha-\alpha^{*})\right)'\left(V_{\alpha}^{-1/2}(\alpha-\alpha^{*})\right)+\right.\right.$$

$$+\left(\left(I_T \otimes \Sigma_{\varepsilon}^{-1/2}\right)Y-\left(X' \otimes \Sigma_{\varepsilon}^{-1/2}\right)\alpha\right)'.$$

$$\left.\left.\left.\left.\left(\left(I_T \otimes \Sigma_{\varepsilon}^{-1/2}\right)Y-\left(X' \otimes \Sigma_{\varepsilon}^{-1/2}\right)\alpha\right)\right]\right\}\right.$$

where it is assumed that $\sum_{\varepsilon}$ is known. This posterior *pdf* of the parameters can be described as a multivariate normal distribution:

$$\alpha \sim N\left(\overline{\alpha}, \overline{\Sigma}_{\alpha}\right)$$

where,

$$\overline{\alpha} = \left[V_{\alpha}^{-1}+\left(XX' \otimes \Sigma_{\varepsilon}^{-1}\right)\right]^{-1}\left[V_{\alpha}^{-1}\alpha^{*}+\left(X \otimes \Sigma_{\varepsilon}^{-1}\right)Y\right]$$

$$\overline{\Sigma}_{\alpha} = \left[V_{\alpha}^{-1}+\left(XX' \otimes \Sigma_{\varepsilon}^{-1}\right)\right]^{-1}$$

This distribution can be used to make inferences on the parameters of a Bayesian VAR model.

Since all relevant information could be specified under the form of a probability distribution function and since it can be known the way to compute the mean and variance of posterior distribution function based on prior and sample information, it seems easy to estimate a BVAR model, taking into account that prior means and variances incorporate the Minnesota prior.

If a variable is integrated of first order, prior means are all set to zero with the exception of the first lag of each variable in its own equation, which is set to one. If it is believed that a variable is stationary, then prior means will all be set to zero.

The specification of prior variances is more elaborated. For intercept terms, variance is set to infinity, that is, a completely diffuse prior for deterministic terms is considered. For the remaining coefficients, prior variances follow a rule such that the variance of $\alpha_{ij,l}$, the *ij*-th element of matrix A_l, is equal to:

$$v_{ij,l}\begin{cases} \left(\lambda_i / l\right)^2, & \text{se} \quad i = j \\ \left(\lambda_i \theta_{ij} \sigma_i / \sigma_j \, l\right)^2, & \text{se} \quad i \neq j \end{cases}$$

where λ_i is the overall tightness parameter of equation *i*; θ_{ij} is the hyperparameter that controls the cross-variable relationships and σ_i is the *i*-th diagonal element of matrix Σ_{ε}. The values assumed by hyperparameters are crucial in a BVAR model, because they determine how far the BVAR is allowed to from the prior mean and how close it is from a non-Bayesian VAR model, that is, the unrestricted VAR. A BVAR model gets closer to an unrestricted VAR model as λ and θ go to infinity; on the contrary, as they go to zero, a BVAR model gets closer to the random-walk prior mean. If λ goes to infinity and θ goes to zero, then a BVAR model operates as pure univariate autoregressive model. The term σ_i / σ_j scales the variables to account for differences in units of measurement and thus enables a specification of the prior without having to adjust for the magnitude of different variables. The values for σ_i are usually obtained from the estimated standard error of a univariate autoregressive model for each variable.

One last issue concerning BVAR estimation is the inversion of the matrix:

$$V_{\alpha}^{-1}+\left(XX' \otimes \Sigma_{\varepsilon}^{-1}\right)$$

which is a computationally expensive task, since the dimension of this matrix is generally rather large. One solution is to estimate the BVAR equation by equation and, in this case, $\overline{\alpha}$ and $\overline{\Sigma}_{\alpha}$ can be written as:

$$\overline{\alpha}_k = \left[V_k^{-1}+\sigma_k^{-2}XX'\right]^{-1}.\left[V_k^{-1}\alpha_k^{*}+\sigma_k^{-2}XY_{(k)}\right]$$

$$\overline{\Sigma}_k = \left[V_k^{-1}+\sigma_k^{-2}XX'\right]^{-1}$$

where,

α_k, parameters of k^{th} equation of the BVAR
$\overline{\Sigma}_k$, posterior covariance matrix of α_k;
V_k, prior covariance matrix of α_k;
$Y_{(k)}$, k^{th} row of *Y*.

This set of formulae is usually known in the literature on BVAR models as the Theil mixed estimation process.(9)

However, it remains unanswered the question of how to find reasonable values for hyperparameters. Several methods to calibrate hyperparameters can be found in the literature, the next subsection describes the method followed in this study.

3. The calibration of hyperparameters

The problem to be answered in this subsection is how to choose reasonable values for the hyperparameters λ and θ. If the way to answer this problem is to estimate parameters based on a search for the best fit in-sample, a trivial result will be found, that is, λ and θ will be set to infinity and the traditional unrestricted VAR model will be used with all overfitting problems referred above. A calibration process could also be made by successive trials and stopped when the researcher is happy with some particular properties of the BVAR model, however this is a discretionary and subjective procedure. Since BVAR models are used for forecasting purposes, the calibration of hyperparameters usually proceeds by optimising some objective function based on the out-of-sample *h*-steps ahead forecast errors.

In the approach followed in this work the sample is split in two sub-samples: the first one is used to estimate BVAR parameters; the second one is used to compute out-of-sample forecast errors. The model is then re-estimated increasing the number of observations in the first sub-sample, with one more observation each time, and computing the *h*-steps ahead forecast errors up to the point where there are not enough observations available in the second sub-sample to compute the *h*-steps ahead forecast errors. The value of the objective function can be computed and optimised, provided that a reasonable number of *h*-steps ahead forecast errors could be computed this way.

The root of mean squared error (RMSE) of forecasting *h*-steps ahead is the most common measure used to evaluate the quality of the forecasts for a single variable. Since N variables are included, the optimisation criterion must combine the RMSE of all variables, so the average of the RMSE of all variables is used. Hence the objective function used to obtain reasonable values for the hyperparameters is the following:

$$EQM^{h} = \sum_{i=1}^{N} \frac{1}{N\sigma_i} \left[\sum_{t=1}^{T} T^{-1} . \left(\varepsilon_{it}^{h} \right)^2 \right]^{1/2}$$

where ε_{it}^{h} is the *h*-steps ahead forecast error for variable *i* in the *t*-th iteration; T is the total number of *h*-steps ahead forecast errors for variable *i*.

It may worth to be mentioned that there are some criticisms to this criterion, since it does not account for the fact of BVAR being a multivariate model. Many alternative objective functions that care for the multivariate nature of the BVAR models have been used; however all of them are subject to greater criticisms as in Malinvaud (1984). In this work, hyperparameters were calibrated using as optimisation criterion the RMSE of 12 quarter ahead forecasts.

It must be noted that the objective of this search procedure is to find reasonable values for the hyperparameters, which are unknown and not to find literally optimal values for the objective function. Once reasonable values are found, further optimisation only increases marginally the forecast accuracy, however it will increase the risk of overfitting out-of-sample data, endangering, thus, BVAR model forecast accuracy.

4. A Bayesian VECM model

Two alternative methods of estimating long-run relationships and two alternative priors on the coefficients associated to ECM variables were used, giving rise to the four types of BECM models considered.

The Engle-Granger approach identifies only one cointegrating vector, which results from a linear combination of all the cointegrating vectors in the cointegration space. The Johansen approach allows identifying more than one cointegrating vector, when there is more than one in the cointegration space, but it has the disadvantage of the lack of economic interpretation of cointegrating vectors. If an additional set of restrictions is imposed, then cointegrating vectors can be identified as long-run relationships with economic meaning.

(9) For further details see Theil and Goldberger (1961).

The factor loadings have an increased relevance in a BECM model since they determine the importance of long-run relationships and how fast variables converge to their long-run levels. An uninformative prior on factor loadings combined with an informative prior on the short-run dynamics would have given an exaggerated weight to long-run relationship relatively to short-run, since only short-run dynamics would be restricted by the prior. Thus, it seems reasonable to consider the BECM with an uninformative prior on factor loadings and, as an alternative, a BECM model with an informative prior on factor loadings in order to compare the forecasting performances of both models in terms of forecasting.

The BECM model can be represented in general terms as follows:

$$\underset{(Nx1)}{\Delta Y_t} = \underset{(Nxd)}{C^+} . \underset{(dx1)}{D_t} + \underset{(NxN)}{A_1^+} \underset{(Nx1)}{\Delta Y_{t-1}} + ... + \underset{(NxN)}{A_p^+} . \underset{(Nx1)}{\Delta Y_{t-p}} +$$

$$+ \underset{(NxM)}{B_1^+} . \underset{(Mx1)}{\Delta X_{t-1}} + ... + \underset{(NxM)}{B_p^+} . \underset{(Mx1)}{\Delta X_{t-p}} + \underset{(Nxr)}{Z} . \underset{(rxN)}{\beta'} \underset{(Nx1)}{\left(Y_{t-1} : X_{t-1}\right)} + \varepsilon_t^+$$

where,

- ΔY_t, is a vector of endogenous variables in differences;
- ΔX_t, is a vector of exogenous variables in differences;
- β, is the matrix cointegrating vectors;
- D_t, is the vector of deterministic component;
- A_i^+, is the matrix of coefficients of i-th lag of the endogenous variables;
- B_i^+, is the matrix of coefficients of i-th lag of the exogenous variables;
- Z, is the matrix of factor loadings;
- C^+, is the matrix of coefficients on deterministic components;
- ε_t^+, is a vector of white noise Gaussian disturbances.

The *r* cointegrating vectors can be estimated by one of the two alternative methods referred above. It must be noted that if there are no cointegrating vectors or if the tightness associated to the factor loadings is very high, the BECM model is in fact a BVAR in first differences and in this case there are no misspecification problems.

January*

7 January (Regulation no. 8/2001 of the Stock Market Commission, Official Gazette no. 299, Supplement, Series II)

Pursuant to the provisions set forth in subparagraph n) of Article 9 and Article 26 of the Statute of the Stock Market Commission, approved by Decree-Law no. 473/99, of 8 November, and in subparagraph b) of paragraph 1 of Article 353 of the Stock Market Code, approved by Decree-Law no. 486/99, of 13 November, sets the rates to the paid to the Stock Market Commission. Revokes Regulation no. 35/2000, of 14 December. This Regulation takes effect on 1 January 2002.

7 January (Circular Letter of Banco de Portugal no. 1/2002/DET)

Informs about the process of exchanging banknotes and coins denominated in escudos for banknotes and coins denominated in euro, namely about the provisions set forth in Articles no. 3, 4 and 6 of Decree-Law no. 117/2001, of 17 April. The afore-mentioned exchange cannot be subject to restrictions that are not provided for by law. It also makes known that the charging of fees or any other type of commissions is against the legal tender status of the currency.

15 January(Decree-Law no. 8-D/2002, Official Gazette no. 12, 2nd Supplement, Series I - A)

Amends Decree-Law no. 394/99 of 13 October, which approved the legal framework of managing companies of transferable securities markets and related systems, publishing it again.

23 January (Decision no. 1598/2002, Official Gazette no. 19, Series II)

Under the terms laid down in paragraph 1 of article 63 of Law no. 5/98 of 31 January, approves the introduction of adjustments in the Chart of Accounts of Banco de Portugal which shall be applied to the 2001 fiscal year accounts.

23 January (Circular Letter of Banco de Portugal no. 8/02/DSBDR)

Clears doubts on the prudential framework of securities with a higher degree of subordination, issued within the scope of securitisation operations, held by entities which, albeit belonging to the group of the institutions which has originally sold the assets, are not subject to the provisions set forth in Notice no. 10/2001 of 6 November.

26 January (Council Regulation (EC) no. 134/2002, OJEC L 24)

Amends paragraph 2 of article 7 of Council Regulation (EC) No. 2531/98 of 23 November 1998 concerning the application of minimum reserves by the European Central Bank.

February

4 February (Circular Letter of Banco de Portugal no. 2/DMR)

Following Circular Letter no. 347/DMR of 27 October 1999, fixes the rate of return of Deposit Securities, Series B, at 3.34%, for the quarterly accounting period to start on 4 February 2002.

5 February (Regulation no. 1/2002 of the Stock Market Commission, Official Gazette no. 30, Series II)

Pursuant to the provisions set forth in paragraph 1 of article 36 of Decree-Law no. 453/99, of 5 November, establishes a regime to which the accounts of the credit securitisation funds must adhere.

6 February (Executive Order no. 113-B/2002, Official Gazette no. 31, Supplement, Series I - B)

In accordance with paragraph 3 of article 1 of Decree-Law no. 88/94, of 2 April, establishes that government debt securities issued pursuant to the provisions set forth in Cabinet Resolution no. 9-A/2002, of 12 January, shall be added to the list published in Executive Order no. 377-A/94, of 15 June.

9 February (Regulation no. 4/2002 of the Stock Market Commission, Official Gazette no. 34, Series II)

Pursuant to the provisions set forth in subparagraph b) of paragraph 1 of article 353 of the Stock Market Code, and in accordance with paragraph 2 of article 47-A and article 47-B, which form part of Decree-Law no. 276/94, of 2 November, lays down the terms and conditions on which entities managing securities investment funds may constitute index-linked funds and guaranteed funds.

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

11 February (Regulation no. 3/2002 of the Stock Market Commission, Official Gazette no. 35, Series II)	In accordance with Decree-Law no. 276/94, of 2 November, lays down the rules applicable to securities investment funds in respect of the valuation of their assets, the costs which may be imputed to them, and the calculation of the value of the investment units and the action taken by the managing entities whenever errors occur. Revokes Regulations no. 16/99, of 14 October, 4/2000, of 16 February, and 26/2000, of 19 August.
13 February (Circular Letter of Banco de Portugal no. 5/DET)	Provides information to credit institutions on the procedures to be adopted regarding the deposit of euro-denominated banknotes with the Banco de Portugal.
13 February (Circular Letter of Banco de Portugal no. 6/DET)	Following a Decision of the European Central Bank of 3 December 2001, provides information on the conditions under which the Banco de Portugal will exchange legal tender euro-denominated banknotes, which are mutilated or damaged. The above-mentioned Decision became effective on 1 January 2002.
13 February (Directive 2001/108/EC of the European Parliament and of the Council, OJ L41)	Amends Council Directive 85/611/EEC on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS), with regard to investments of UCITS. Member States shall adopt, up to 13 August 2003, at the latest, the legal, regulatory and administrative provisions required to enforce the above-mentioned Directive. Member States shall forthwith inform the Commission thereon. Member States shall implement these measures up to 13 February 2004, at the latest.
14 February (Circular Letter of Banco de Portugal no. 17/02/DSBDR)	Establishes that a report shall be sent to Banco de Portugal, on a half-yearly basis, quantifying the economic provisions required for the coverage of risk implicit in a credit portfolio.
15 February (Decision no. 3497/2002, Official Gazette no. 39, Series II)	Pursuant to the provisions set forth in paragraph 2 of article 74 of Law no. 109-B/2001, of 27 December, authorizes the Public Credit Management Institute to intervene in the secondary public debt market as a party in repurchase operations, based on securities representing the direct public debt quoted in the special public debt market (MEDIP - *mercado especial de dívida pública*).
15 February (Instruction of Banco de Portugal no. 3/2002, BNBP no. 2/2002)	Provides for a simulation exercise of a regime known as anti-cycle or dynamic provisioning.
15 February (Instruction of Banco de Portugal no. 4/2002, BNBP no. 2/2002)	Defines the information elements relating to liabilities on account of retirement and survivorship pensions that must be sent to Banco de Portugal. Revokes Instruction no. 13/99, published in BNBP no. 6, of 15 June 1999.
19 February (Circular Letter of Banco de Portugal no. 11/DPGCO)	Warns credit institutions that, following some complaints about the printing of a deadline on euro-denominated cheques, they must take into account some aspects related to their obligations to provide information to their customers in the case of contracts associated with cheque movements in deposit accounts.
20 February (Circular Letter of Banco de Portugal no. 18/02/DSBDR)	Makes known that Banco de Portugal has decided to change the valuation criterion mentioned in item b) of number 1 of Chapter V of the Chart of Accounts for the Banking System, following suggestions made by some institutions in order to be able to value their portfolios at the prices prevailing in the special public debt market (MEDIP - *mercado especial de dívida pública*). Also informs that this change is valid, in accordance with paragraph 10 of Notice no. 3/95, for the calculation of capital losses on investment portfolio securities and the setting up of the corresponding provisions. The above-mentioned change takes effect on 1 March 2002.

March

2 March (Decree-Law no. 42/2002, Official Gazette no. 52, Series I - A)	Establishes the legal framework of electronic money institutions. Transposes into the Portuguese legal system Directive 2000/28/EC, of the European Parliament and of the Council of 18 September 2000 amending Directive 2000/12/EC, of 20 March, relating to the taking up and pursuit of the business of credit institutions, and Directive 2000/46/EC of the European Parliament and of the Council of 18 September 2000 on the taking up, pursuit of and prudential supervision of the business of electronic money institutions.
13 March (Notice of Banco de Portugal no. 1/2002, Official Gazette no. 61, Series I - B)	Redefines the Direct Debiting System. Revokes Notice no. 3/2000, of 11 August, published in Official Gazette no. 193, Series I - B, of 22 August 2000.
14 March (Regulation no. 5/2002 of the Stock Market Commission, Official Gazette no. 62, Series II)	Introduces changes in articles 29, 31, 32 and 34 of Regulation no. 5/2000, of 23 February, which governs the operation of markets, in general, and of stock markets, in particular. This Regulation was amended by Corrigendum no. 686/2002, of 14 March, published in Official Gazette no. 74, Series II, of 28 March 2002.
14 March (Circular Letter of Banco de Portugal no. 10/DET)	Calls the attention to the fact that the rules set forth in Decree-Law no. 117/2001, of 17 April shall be complied with in the exchange into euro of banknotes and coins denominated in escudos. This Circular Letter also emphasises the recommendations laid down in Circular Letter no. 1/DET, of 7 January 2002.
20 March (Decree-Law no. 60/2002, Official Gazette no. 67, Series I - A)	Approves the new legal framework of real estate investment funds, which shall enter into force 90 days after publication. With the entry into force of this legal framework, Decree-Law no. 294/905, of 17 November, as amended by Decree-Law no. 323/97, of 26 November, shall be revoked.
20 March (Decree-Law no. 61/2002, Official Gazette no. 67, Series I - A)	Rewords articles 16 and 17 of the Stock Market Code, approved by Decree-Law no. 486/99, of 13 November.
20 March (Decree-Law no. 62/2002, Official Gazette no. 67, Series I - A)	Rewords articles 7, 8, 18 and 35 of Decree-Law no. 276/94, of 2 November, as worded by Decree-Law no. 323/99, of 13 August, which lays down the legal framework of real estate investment funds.
27 March (Executive Order no. 323/2002, Official Gazette no. 73, Series I - B)	Introduces changes in articles 1, 3, 4 and 6 and adds articles 3-A and 7-A to Executive Order no. 1303/2001, of 22 November, so as to widen the incidence base of the supervision rates to be paid to the Stock Market Commission.
27 March (Notice of Banco de Portugal no. 2/2002, Official Gazette no. 88, Series I - B)	Adds paragraph 2 - A to Notice no. 1/95 of 17 February, on the provision of information on services and products that may be requested or purchased through the Internet. This Notice takes effect within 30 days as of the date of its publication.

April

5 April (Decree-Law no. 82/2002, Official Gazette no. 80, Series I - A)	Introduces changes in articles 4 to 7, 12, 16, 17, 19, 23, 27, 28, 34, 37 and 38 and in Chapters III and IV of Decree-Law no. 453/99, of 5 November, which defines the system governing the securitisation of credit. Decree-Law no. 453/99, as amended by Decree-Law no. 82/2002, shall be republished in attachment.
26 April (Circular Letter of Banco de Portugal no. 6/DMR)	Following Circular Letter no. 347/DMR of 27 October 1999, fixes at 3.30%, the rate of return of the Certificates of Deposit, Series B, to prevail in the quarter started on 4 May 2002.

30 April (Executive Order no. 505/2002, Official Gazette no. 100, Series I - B)

Pursuant to the provisions laid down in article 5 of Decree-Law no. 232/96 of 5 December, and for the purposes of Council Directive 93/22/EEC, approves the list of regulated markets. Revokes Executive Order no. 27/99 of 18 January.

May

4 May (Decree-Law no. 122/2002, Official Gazette no. 103, Series I - A)

Approves the legal framework of the new series of saving certificates. Rewords article 7 of Decree-Law no. 172-B/86 of 30 June, and articles 18 and 19 of Decree-Law no. 43454 of 30 December 1960.

7 May (Regulation no. 6/2002 of the Stock Market Commission, Official Gazette number 105, Series II)

In accordance with the provisions laid down in sub-paragraph b), of article 247 and in article 11 of the Stock Market Code, and within the scope of the obligation to provide financial information to the market, lays down that the issuers of transferable securities listed in a regulated market must compulsorily prepare and publish information by batches. This regulation shall be applicable as from the disclosure of the annual accounts for the fiscal year started on or after 1 January 2002 and whose disclosure takes place after the entry into force of this regulation. With respect to entities that have not adopted the Official Chart of Accounts, as for instance, credit institutions and financial companies, this regulation shall only be applicable as from the date of publication of a subsequent regulation by the Stock Market Commission.

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