THE PORTUGUESE ECONOMY IN 1998 AND PROSPECTS FOR 1999

1. INTRODUCTION

1998 was marked by the announcement on 2 May of the decision of the Portuguese participation in the euro area. The increasing probability attributed to this participation throughout 1997 but especially in 1998, and its confirmation in May, provided the leading context of the developments in the Portuguese economy. These developments culminated in a macroeconomic stabilisation process consistent with the fulfilment of the conditions stipulated for the adoption of the single currency.

The participation in the euro area provides an important structural change. Firstly, the full integration of Portugal in a wide and highly stable monetary area — which concentrates the bulk of our international economic relations — translates into a supply shock reflecting favourably to potential output growth, and consequently to current investment decisions. Second, the participation in the euro area raises households' expectations of higher future income flows, which influence current consumption decisions. Such expansionary effects on private domestic demand (consumption and investment) were strengthened by the convergence of interest rates to significantly lower levels than those observed previously, in a context where this reduction is greatly seen as being irreversible — since it stands as an outcome of the change to a new regime. Furthermore, budgetary policy gave in 1998 an additional stimulus to the dynamism of domestic demand, through the acceleration of real public consumption and of transfers to households.

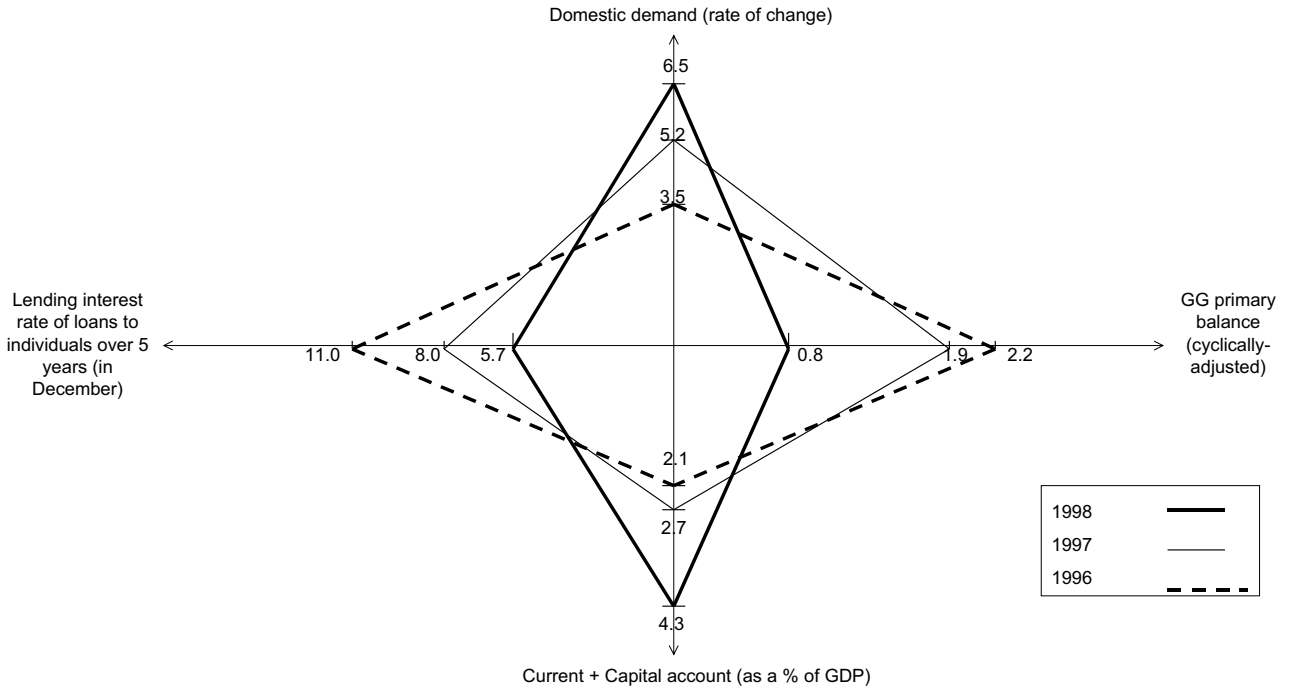
In 1998, alongside the behaviour of domestic demand — which implied a particularly strong growth of imports — exports recorded a slight slowdown from the previous year, and from the first to the second half-year. This development was in line with the slowdown of external demand directed towards Portuguese merchandise exports. The significant gain in terms of trade — due to the fall in oil prices — and the favourable and temporary influence of the EXPO 98 on services exports were not enough to compensate for the slowdown of real merchandise exports. As a result, the expansion of domestic demand in 1998 — estimated to have reached 6.5 per cent in real terms — transmitted incompletely to the growth of Gross Domestic Product (GDP). This was due to the particularly negative contribution of net external demand to output growth (-3.1 per cent). Nevertheless, the Banco de Portugal estimates that real GDP grew 3.9 per cent in 1998, accelerating slightly from 1997 (3.8 per cent). The expansion of economic activity and the labour market flexibility led to a further reduction of the unemployment rate, to 5.0 per cent in annual average terms.

In a small open economy — as is the case of the Portuguese economy — a strong growth of domestic demand in a context close to potential output tends to translate into a worsening of the trade account balance. As mentioned above, the worsening of the trade deficit in 1998 was due not only to the growth of imports but also to the slowdown of exports. As a result, the current plus capital account deficit rose from 2.7 per cent of GDP in 1997 to 4.3 per cent in 1998 (see box "*Changes to the Portuguese Balance of Payments Statistics*").

Chart 1 summarises the recent developments in the indicators presented above. The sharp fall of interest rates and the conduction of budgetary policy — illustrated by the behaviour of the interest rate on loans to individuals over 5 years and the cyclically adjusted primary balance — resulted in

Chart 1

THE PORTUGUESE ECONOMY: 1996 - 1998



Source: INE and Banco de Portugal.

a strong growth of domestic demand, above that recorded in 1997, and the worsening of the current plus capital account balance.

In 1998, inflation, measured by the annual average rate of change of the Consumer Price Index (CPI) rose to 2.8 per cent, 0.6 p.p. more than in 1997. This increase was partly due to momentary factors — namely those reflected in the prices of non-processed foodstuff goods, upper education fees and some services related with the EXPO-98. In addition to these anomalous effects, the behaviour of inflation in 1998 resulted also from the combination of several factors. The reduction of some international prices on the one hand, and the dynamism of consumption but especially the escudo depreciation — partly as an outcome of the process of convergence towards the central bilateral parities vis-à-vis the other euro area participating currencies — on the other should be mentioned.

The trend inflation indicators usually used by the Banco de Portugal point towards the stabilisation or a lower growth of prices than that yielded by the annual average growth rate of prices in 1998.

In the first quarter of 1999, the year-on-year rate of change of the CPI was 2.8 per cent, 0.3 p.p. below that recorded in the third and fourth quarters of 1998. The trend inflation indicators suggest that the rate of change of prices has stabilised or decreased slightly**,** continuing to indicate lower growths than those exhibited by the CPI. Therefore, the behaviour of the CPI in the first quarter of 1999 kept reflecting the irregular behaviour of some foodstuff good prices.

According to the forecasts of the Banco de Portugal disclosed in this Economic Bulletin, the Portuguese economy is expected to record a slowdown of economic activity in 1999. Output growth shall stand between 2¾ and 3¼ per cent, reflecting a significant slowdown of both external and domestic demand. Nevertheless, the current plus capital account deficit may worsen vis-à-vis 1998. This deficit is estimated to reach between 4½ and 5½ per cent of GDP in 1999.

It should be noted that some factors of uncertainty may lead to deviations from this scenario: if external demand comes to record a sharper slowdown than that expected according to the technical assumptions of this forecast, output growth

will tend to stand closer to the lower boundary of the forecast interval; if, on the contrary, external demand is stronger or domestic demand records a stronger growth than that currently expected, output growth shall be closer to the upper limit of the forecast interval. This being the case, the stronger growth of output shall be recorded alongside with a deeper aggravation of the current plus capital account balance.

The maintenance of very low interest rates and the cyclical position of the Portuguese economy have enable households and non-financial companies' use of credit to finance consumption and investment. As a result, the level of indebtedness of the private sector has increased in the last years, especially in 1998. This took place alongside the reduction of households' saving. Altogether, these developments are the expected process of adjustment to a structural change as was that taking place with the Portuguese participation in the euro area. Due to their increasing indebtedness, economic agents — especially households — are currently in a situation of enhanced vulnerability to adverse shocks affecting their ability to meet the debt service (e.g. shocks resulting in interest rate increases or in the worsening of the labour market situations) — see box 1 "*Saving and Indebtedness of the Private Sector in Portugal*".

2. MONETARY AND EXCHANGE RATE POLICY IN THE CONTEXT OF THE PRE-ADHESION TO THE MONETARY UNION

In 1998, as a result of the increasing probability strengthening to the Portuguese participation in the euro area — which came to be confirmed in May — domestic conditions lost their importance in the Portuguese monetary and exchange rate policy decision making process.

The intervention rates of the Banco de Portugal strengthened their downward path in 1998. Between December 1997 and December 1998, the rate of liquidity injection at auction fell 2.3 percentage points (p.p.) which follows to the 3.2 p.p. cut recorded in 1996 and 1997 as a whole.

In a context of strengthening competition in the banking system, the transmission of the reduction in the intervention rates was sharper in the case of bank lending rates than in borrowing rates. Over the course of 1998, the active rates of loans to private non-financial companies for the 91 to 180-day maturity fell 2.4 p.p., strengthening the 4.3 p.p. reduction in the previous two years; lending rates of loans to individuals for the same maturity fell 3.8 p.p. between December 1997 and December 1998, strengthening the 6.7 p.p. fall recorded in the previous two years; lending rates of loans to individuals for maturities over 5 years fell 2.3 p.p. in 1998, after having decreased 4.4 p.p. between December 1995 and December 1997; finally, borrowing rates of time deposits between 181 days and one year decreased 1.3 p.p. in 1998 (4.0 p.p. reduction in the previous two years).

As a result, the significant differences between the main lending and borrowing interest rates in Portugal and those recorded on average in the euro area disappeared. Since inflation in Portugal and in the euro area behave differently, those nominal interest rates translated into lower real interest rates in Portugal. This development shall have led to a different behaviour of domestic demand.

Meanwhile, the convergence of the escudo exchange rate towards its bilateral central rates was concluded also in 1998, alongside the progressive reduction of the exchange rate volatility vis-à-vis the other currencies in the Exchange Rate Mechanism of the EMS. After an appreciation vis-à-vis the Deutsche mark throughout 1996 (by 3.8 per cent between December 1995 and December 1996), the escudo depreciated throughout 1997 and up to May 1998, while converging towards its central bilateral parity (1.5 per cent, comparing the May 1998 average with the December 1996 one). Afterwards, up to the end of 1998, the Deutsche mark / escudo exhibited relatively low changes.

In 1998, the escudo effective exchange rate depreciated 1.2 per cent in annual average terms (1.9 per cent depreciation in 1997). Vis-à-vis the currencies in the Exchange Rate Mechanism of the EMS only, the depreciation amounted also to 1.2 per cent, compared with the 0.6 per cent appreciation recorded in 1997. The escudo exchange rate vis-à-vis the US dollar depreciated 2.8 per cent in annual average terms in 1998 (13.7 per cent depreciation in 1997).

Chart 2A

CHANGE IN THE OVERALL BALANCE

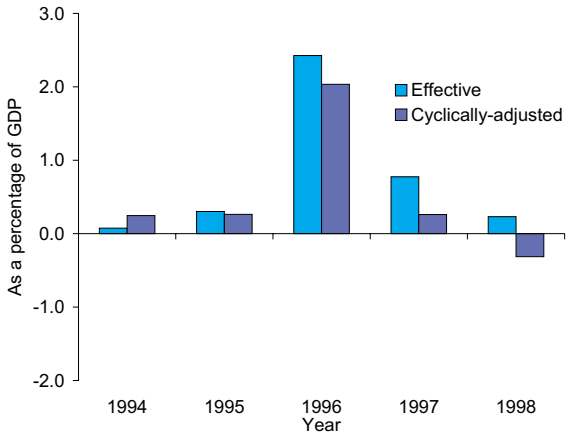
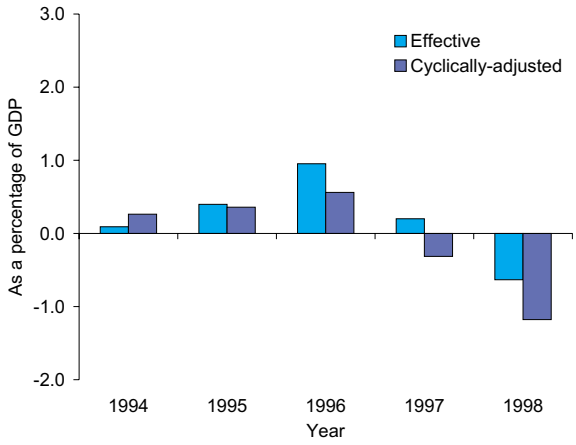


Chart 2B

CHANGE IN THE PRIMARY BALANCE



Source: Ministério das Finanças and Banco de Portugal.

3. BUDGETARY POLICY

The General Government overall deficit[1] decreased from 2.5 per cent of GDP in 1997 to 2.3 per cent in 1998, while public debt was reduced from 61.4 per cent of GDP to 57.0 per cent. Both real public consumption and transfers to households accelerated in 1998.

The primary surplus decreased for the first time since 1993, to 1.1 per cent of GDP (1.7 per cent in 1997). This development resulted from the 0.6 p.p. increase in the primary debt to GDP ratio, since public revenue remained constant as a percentage of GDP. Debt expenditure decreased by 0.9 p.p.

Taking the primary balance adjusted for cyclical changes (as a percentage of GDP) as an indicator for the guidance of budgetary policy, a fall amounting to 1.2 p.p. of GDP was recorded in 1998, after a 0.3 p.p. reduction in 1997 (chart 2)[2].

This behaviour reflects the 0.5 p.p. reduction of cyclical-adjusted public revenue as a percentage of GDP, due to the absence of temporary measures in 1998, unlike in 1997. This development also reflects the 0.7 p.p. increase of cyclical-adjusted primary expenditure as a percentage of GDP. The latter resulted chiefly from the 10.2 per cent increase in the compensation of employees, which in turn reflects the increase in the number of civil servants, the rise in wages — strengthened by updates to the wage scales and career revaluations — and the increased borrowing requirement of the civil servants' social security system.

The 7.7 per cent increase in the intermediate consumption of goods and services is greatly explained by the increase in the expenditure within the National Health Service (SNS). Total transfers also grew (by 10.5 per cent), chiefly reflecting the increase in subsidies on interest on mortgage lending, the extension in coverage of the Means-tested Income Programme, the increase in the GDP transfer to the European Union and the rise in Social Security expenditure. Public direct investment recorded a slowdown, but capital expenditure grew 9.4 per cent, remaining constant as a percentage of GDP.

4. DEVELOPMENTS IN OUTPUT IN 1998: EXPENDITURE AND PRODUCTION

According to the estimates of the Banco de Portugal, the Portuguese economy grew 3.9 per cent in 1998, accounting for a slight acceleration from the previous year (3.8 per cent). The pattern of economic growth was characterised by the very dy-

(1) General Government accounts used in the preparation of this article are estimated by the Banco de Portugal on the basis of the 1995 National Accounts of the INE and the General Government accounts compiled by the Ministério das Finanças to support the excessive deficit procedure notification.

(2) The estimate for the change in the cyclically-adjusted balances should be interpreted with caution. Indeed, the results presented are strongly dependent on the procedures of estimation of a reference path for output – usually called potential output - as well as those used in estimated sensitivity of different tax revenue to changes in the output growth rate.

Table 1

MAIN ECONOMIC INDICATORS

Percentage rates of change

	1996	1997	1998
Private consumption	2.8	3.3	5.6
Public consumption	1.5	2.3	3.8
GFCF	7.5	12.3	9.8
Domestic demand	3.5	5.2	6.5
Exports	9.0	9.5	8.8
Overall demand	4.7	6.1	7.0
Imports	7.7	12.3	14.7
GDP	3.6	3.8	3.9
Current + capital account balance (as a percentage of GDP)	- 2.1	- 2.7	- 4.3

Chart 3

CONTRIBUTIONS OF EXPENDITURE COMPONENTS TO GDP GROWTH

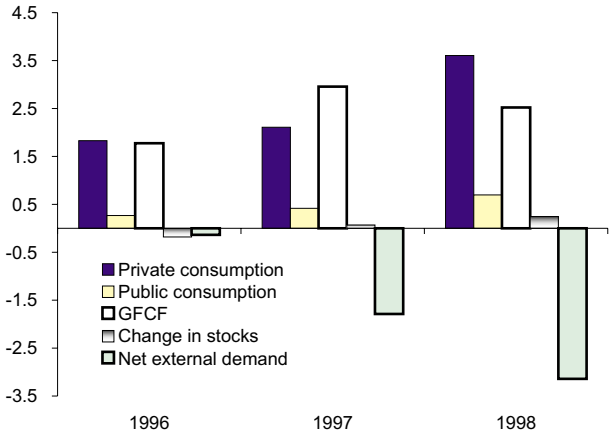
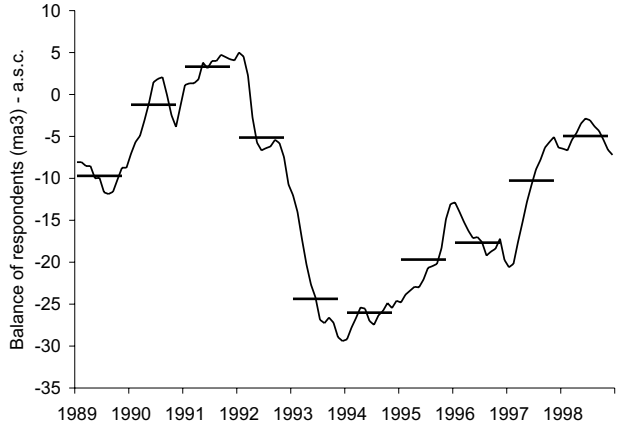


Chart 4

CONSUMERS' CONFIDENCE INDICATOR



Source: European Commission.

namic behaviour of domestic demand and by the increasingly negative contribution of net external demand to GDP growth (table 1).

For the first time in the current economic cycle, private consumption grew above GDP in real terms in 1998. This yielded a qualitatively important change in the contributions to output growth, with private consumption substituting Gross Fixed Capital Formation as the leading engine of economic growth (chart 3). Meanwhile, the contribution of net exports to growth became more negative.

In 1998, domestic demand grew 6.5 per cent in real terms (5.2 per cent in 1997), reflecting a particularly strong expansion of all components. According to the estimates of the Banco de Portugal, private consumption grew 5.6 per cent in 1998 (3.3 per cent in 1997), while Gross Fixed Capital Formation (GFCF) is estimated to have grown 9.8 per cent (12.3 per cent in 1997). The slowdown of GFCF was due to the deceleration of public investment — as a result of the conclusion of some important public works — since private investment continued to exhibit high dynamism.

Several factors account for the acceleration of private consumption. In addition to the reduction in interest rates, stress should be laid on the expansion of disposable income and the high consumers' confidence levels. Households' disposable income (excluding external transfers) grew 4.9 per cent in real terms (3.2 per cent in 1997). This reflects the growth of employment, the behaviour of real wages and the increase in domestic transfers to households. Total employment grew 2.3 per cent (1.9 per cent in 1997), while the number of wage-earners grew 2.1 per cent (1.4 per cent in 1997). Wages per employee in the private sector are estimated to have recorded the same nominal growth as in 1997 (5.1 per cent). Lastly, domestic transfers to households accelerated from 1997, growing 10.1 per cent in nominal terms (7.1 per cent in 1997).

In 1998, consumers' confidence indicator recorded on average higher levels than in the previous year (chart 4). The rise in consumers' confi-

Box 1: SAVING AND INDEBTEDNESS OF THE PRIVATE SECTOR IN PORTUGAL

The integration of Portugal in the EMU, associated to a change to a new macroeconomic regime, can be regarded as a permanent shock in aggregate supply, the same kind of which is usually assumed to take place in the context of economic and financial liberalisation(1). The increased range of possibilities of future growth of the economy tends to yield immediate consequences on aggregate domestic demand. The permanent income increase perceived by households' leads to an anticipation of consumption expenditure with resource to indebtedness, hence to a reduction in households' saving rate. In parallel, the adjustment of the capital stock to the level compatible with the new trend output growth rate, translates into an increase of investment and a resulting rise in indebtedness. In the context of a small open economy like Portugal, financing the rise in domestic demand requires at first the accumulation of liabilities vis-à-vis the rest of the world, repayable in the future while output growth converges to its new natural growth rate. This development yields welfare gains and constitutes the expected process of adjustment to a favourable supply shock — reflected in a higher level of indebtedness of the private sector, therefore in an increased vulnerability to adverse shocks.

The reduction of interest rates in Portugal, in a context of the nominal convergence process, provides a favourable background to the expansion of domestic demand. This effect was strengthened by the recent reduction of the Euro system intervention rates, in a context where the Portuguese economy is in a more advanced stage in the economy cycle than the EU-11 average. As a result, real short-term interest rates reached particularly low levels in Portugal, below those recorded in the euro area as a whole(2). This development provided a strong incentive to credit-financed expenditure — and naturally a disincentive to households' saving.

The acceleration of expenditure of the non-financial private sector, only partly followed by the growth of output and disposable income, was associated to a significant increase of this sector's indebtedness. In addition to the reduction of real interest rates, the reduction of nominal interest rates alone shall have contributed to this development. Indeed, when lower nominal interest rate levels are perceived as being permanent, they reduce liquidity constraints, appeasing agent's resource to credit.

The acceleration of credit-financed private expenditure — especially in durable consumer goods and investment — had as a counterpart the deterioration of the current account deficit and the reduction of the net external position of the Portuguese economy — i.e,. the balance between foreign financial assets and liabilities of resident sectors as a whole(3). Net foreign assets fell from 3.6 per cent of GDP in 1997 to 0.4 per cent in 1998 (in 1996, the net external position amounted to 7.6 per cent of GDP). A significant part of the reduction of the net external position in 1998 resulted from banks' operations with abroad. Therefore, the significant increase of bank lending to the resident private sector was financed with resource to the reduction of banks' net foreign assets.

The strong acceleration of private consumption in 1998 was mirrored in a reduction in households' saving rate (chart 1). According to the estimates of the Banco de Portugal, the saving rate in 1998 was of 9.4 or 5.5 per cent, depending on whether external transfers are included or not (10.2 and 6.2 per cent, respectively, in 1997)(4).

As an outcome of this development, and due also to the increase of housing investment, in 1998 households exhibited for the first time a saving shortage in relation to investment (amounting to around 1 per cent of GDP), after a virtual equilibrium in 1997 — i.e., households shall have presented a positive borrowing requirement in 1998, unlike the usual situation, where this sector finances the remaining sectors of the economy.

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(1) See on this issue Barbosa et al., "The impact of the Euro in the Portuguese Economy", chapter VII, Ministério das Finanças, 1999. The arguments therein presented regarding the macroeconomic impacts of the EMU on the Portuguese economy are identical to those usually presented when discussing the impacts of economic and financial liberalisation.

(2) The year-on-year rate of change of the CPI in Portugal reached 2.8 per cent in the first quarter of 1998. In the same period, the HICP grew 2.7 per cent in year-on-year terms in Portugal (0.8 per cent in the EU-11 as a whole).

(3) Does not include direct investment positions, neither portfolio positions comprising securities representing equity of Portugal abroad and of non-residents in Portugal.

(4) According to data from the European Commission, households' saving rate in Portugal was of 9.4 per cent in 1998, compared with 12.5 per cent for the euro area as a whole. In the latter, only Austria and Ireland presented lower saving rates than Portugal (respectively 8.2 and 8.5 per cent).

Chart 1
HOUSEHOLDS' SAVING RATE

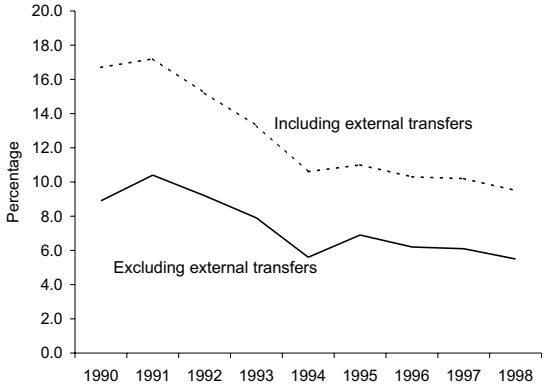
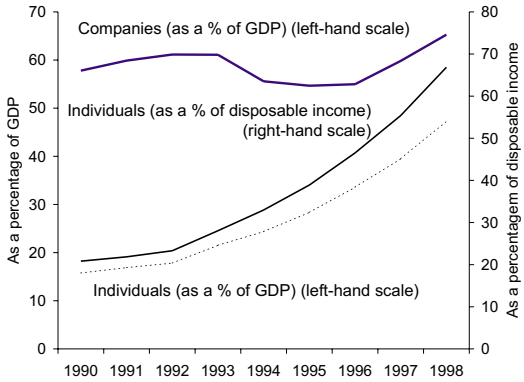


Chart 2
INDEBTEDNESS OF INDIVIDUALS AND NON-FINANCIAL COMPANIES



This development in the relationship between saving and investment is the counterpart, in terms of domestic flows, of the significant deterioration the Portuguese current account deficit in 1998.

Regarding credit from banks and other credit institutions(5), the indebtedness of individuals grew quite quickly in the last years, reaching 66 per cent of disposable income in 1998. This figure compares with 54 per cent in 1997 and 20 per cent in 1990 (chart 2). This growth was greatly related with the strong growth of banks' mortgage lending. In 1998, this credit grew above 25 per cent in year-on-year terms, as in the previous two years (34.8 per cent in 1998, compared with 27.4 and 26.0 per cent in 1997 and 1996, respectively). Bank credit to housing accounts for the bulk of households' debt. It reached 71 per cent of total individuals' indebtedness in December 1998. Households' investment in housing is estimated to have grown more than 10 per cent in real terms in 1998. This investment was financed mostly through bank credit. The sharp fall in the interest rates on lending to individuals allowed for a reduction of households' interest service as a share of their disposable income from 4.7 per cent in 1997 to 4.0 per cent in 1998, despite the increased indebtedness.

The indebtedness of non-financial companies(6) has not shown a marked trend in recent years. As a share of GDP it has floated pro-cyclically around 60 per cent. In December 1998, non-financial companies' indebtedness reached 65 per cent of GDP, 10 percentage points more than in December 1996. This development stands in line with the cyclical situation of the Portuguese economy and the resulting rise in investment. The expansion of the indebtedness of non-financial companies was more marked between 1996 and 1998 than in the corresponding stage of the previous cycle. This is a reaction to the current monetary conditions — characterised by very low real interest rates — and to favourable perspectives regarding the behaviour of demand directed towards companies.

In short, the optimistic sentiment linked to the improvement of households' financial conditions resulting from the lower interest rates and the improved perspectives regarding future income balances, has stimulated the growth of private consumption. In addition, the maintenance of significantly low real short-term interest rates, resulting from the monetary conditions in the euro area and the cyclical position of the Portuguese economy enabled credit granting for households and companies' investment purposes.

Despite the absence of precise data on the proportion of floating-rate credits in total bank credit, it is common knowledge that mortgage lending usually consists of floating-rate contracts. Regarding companies, about two thirds of credit is contracted in short-term maturities (up to one year). These aspects suggest the vulnerability of these sectors to an increase in the interest rate, to some tax changes and to a possible slowdown of economic activity, given the current level of indebtedness of the private sector.

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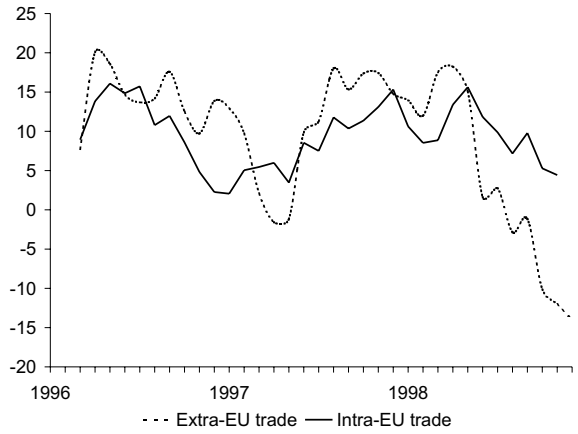
(5) This aggregate does not include payables to non-financial companies, namely commercial credits (credit sales for instance).

(6) Includes the financing raised by this sector from resident credit institutions through stock markets (bonds and commercial paper) and abroad.

Chart 5
EXPORTS
Year-on-year rates of change - ma3



Source: INE, "Foreign Trade" and "Extra-EU Trade".

dence levels, together with the reduction in interest rates, contributed also to the strong growth of consumption of durable goods, which constitutes a feature of the current stage in the economic cycle, with a strong impact on imports.

Gross Fixed Capital Formation grew 9.8 per cent in real terms in 1998 (12.3 per cent in 1997). GFCF growth was widespread to its components (equipment, transport material and construction). Investment made by the private sector (households and companies) recorded a very strong growth, accelerating vis-à-vis 1997. General Government direct investment grew 5.7 per cent in nominal terms, which accounts for a slowdown from the previous year (12.0 per cent in 1997).

Several factors explain the dynamism of private investment. Regarding investment by companies, the main determinants of this behaviour were the fall in interest rates in a context of improved competition in the banking sector and of financial innovation; the high level of productive capacity utilisation in industry, which reached the highest levels in the current economic cycle; industrials' high confidence level, which rose up to mid-1998; the favourable appraisal of the behaviour of domestic demand throughout 1998, and of the behaviour of external demand up to mid-1998. The dynamism of households' investment shall have been determined by the reduction in interest rates; the existence of subsidised interest schemes in mortgage lending, the expansion of disposable income and employment, and the high confidence levels should be added to this factor.

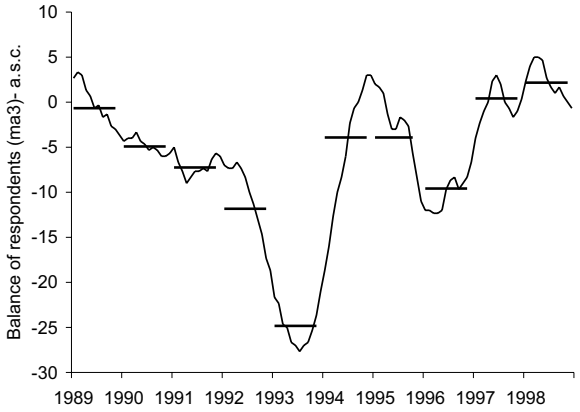
Real exports of goods and services recorded a slowdown in 1998, to 8.8 per cent (9.5 per cent growth in 1997). This slowdown was concentrated in merchandise exports (7.4 per cent growth, compared with 10.0 per cent in 1997). In 1998, exports of services were favourably and temporarily influenced by the EXPO-98. The slowdown of merchandise exports was particularly sharp in the second half of the year, reflecting the behaviour of both intra-EU and extra-EU exports (chart 5). Nevertheless, the slowdown of Portuguese exports to the extra-EU — which in 1997 accounted for about 19 per cent of total merchandise exports — was sharper, recording negative changes in the second half of 1998.

The European economies recorded a further unfavourable external demand shock in 1998, following to that experienced as a result of the Asian crisis in 1997. The 1998 shock was an outcome of the Russian crisis and its spreading to other emerging economies and countries under transition processes. This shock was followed by the particularly sharp fall in the international prices of some commodities — especially oil prices. Alongside the behaviour of extra-EU external demand — and partly as its outcome — economic activity in three of our European leading trade partners — Germany, the United Kingdom and Italy — recorded a slowdown in the second half of 1998. This slowdown was quite evident in the last quarter of the year.

The indicators usually calculated by the Banco de Portugal do not indicate a reduction of competitiveness of Portuguese exports in 1998, which shall have remained virtually unchanged. The real effective exchange rate based on consumer prices appreciated 0.1 per cent. This development follows to a 1.6 per cent depreciation in 1997 and to a 0.3 per cent appreciation in 1996. Also the competitiveness measure based on unit labour costs in industry virtually did not change (0.2 per cent deterioration in 1998, following to a 0.3 per cent improvement in 1996 and in 1997).

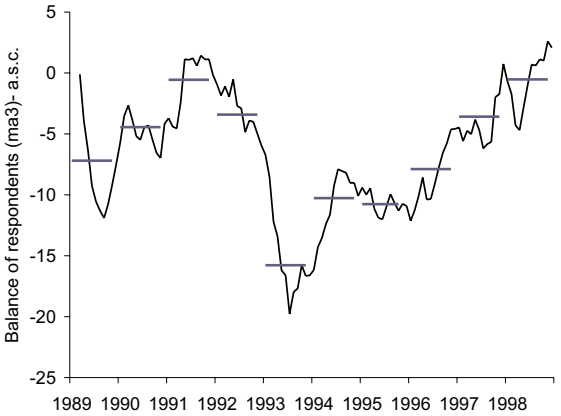
As expected in a small economy with a high level of openness — as is the Portuguese case — the strong growth of overall demand in 1998 (7.0 per cent in real terms, compared with 6.1 per cent

Chart 6
CONFIDENCE INDICATOR IN INDUSTRY



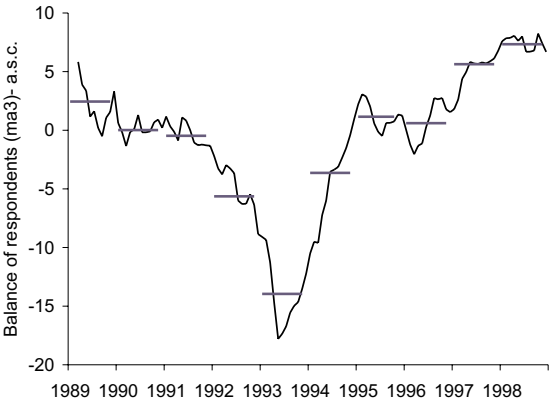
Source: European Commission.

Chart 7
CONFIDENCE INDICATOR IN RETAIL TRADE



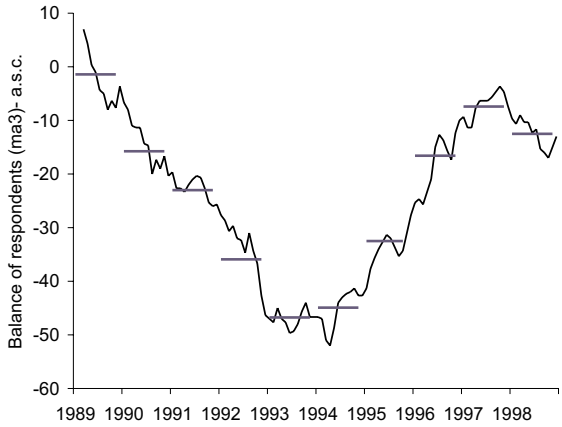
Source: INE, "Monthly Trade Survey".

Chart 8
CONFIDENCE INDICATOR IN WHOLESALE TRADE



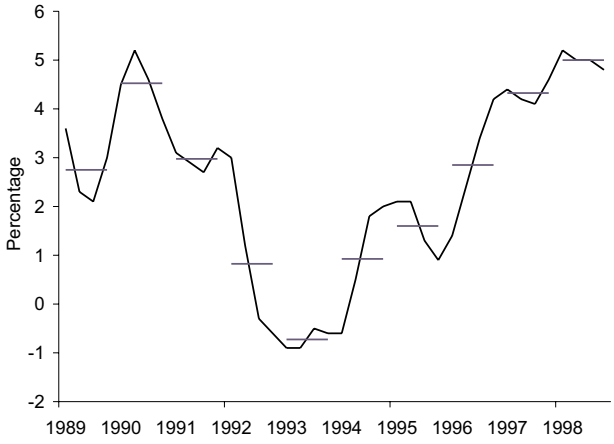
Source: INE, "Monthly Trade Survey".

Chart 9
CONFIDENCE INDICATOR IN CONSTRUCTION



Source: European Commission.

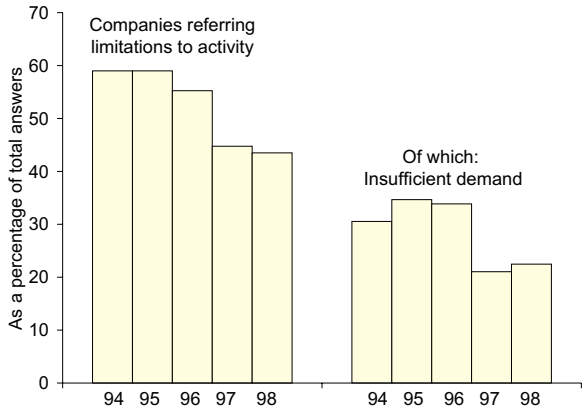
Chart 10
COINCIDENT INDICATOR OF ACTIVITY
Year-on-year rates of change



in 1997) led to a particularly strong growth of real imports of goods and services, in acceleration from the previous year (12.3 and 14.7 per cent growth, respectively in 1997 and 1998). The strong growth of consumption of durable goods, of companies' investment in transport material and other equipment — i.e., demand items exhibiting a high imported context — and the bad harvest year translated into an increase in the elasticity of imports vis-à-vis overall demand.

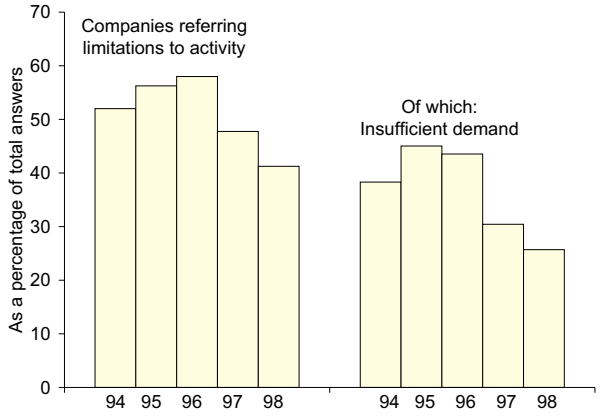
Supply-side indicators corroborate the described behaviour of demand. Confidence indicators in industry, retail trade and wholesale trade also recorded the highest annual average levels in the current economic cycle (charts 6, 7 and 8). The

Chart 11
LIMITATIONS TO PRODUCTION IN MANUFACTURING INDUSTRY



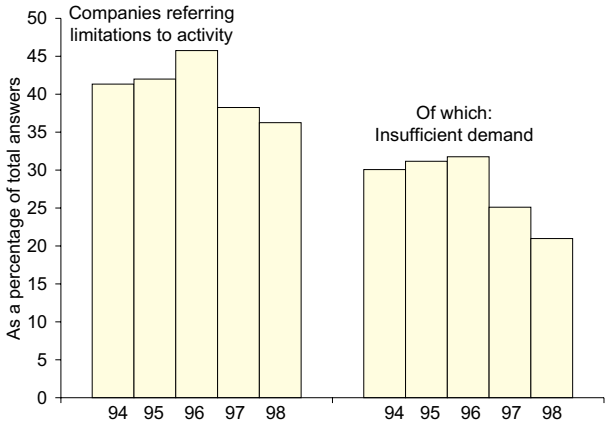
Source: INE, "Monthly Manufacturing Industry Survey".

Chart 12
LIMITATIONS TO ACTIVITY IN RETAIL TRADE



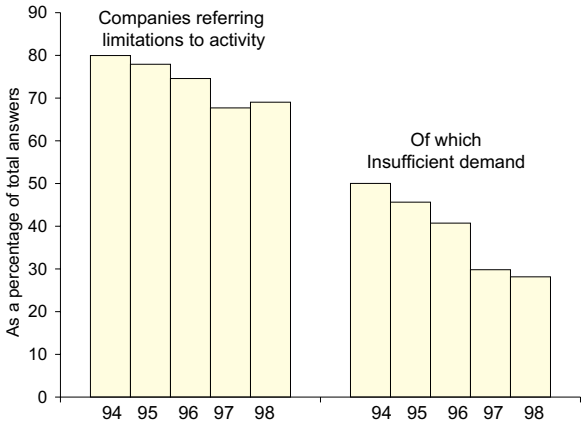
Source: INE, "Monthly Trade Survey".

Chart 13
LIMITATIONS TO ACTIVITY IN WHOLESALE TRADE



Source: INE, "Monthly Trade Survey".

Chart 14
LIMITATIONS TO ACTIVITY IN CONSTRUCTION AND PUBLIC WORKS



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

confidence indicator in construction presents a less favourable appreciation than in the previous year (chart 9), reflecting the slowdown of investment in public works. Nevertheless, the sector as a whole continued to present a strong growth in activity from the previous year. In 1998, the coincident indicator of the Banco de Portugal, which synthesises the behaviour of activity in industry, construction and trade, recorded the strongest annual average growth in the current economic cycle (chart 10). Finally, it should be noted that 1998 saw a sharp fall in agricultural output.

Qualitative surveys show a significant reduction in the share of companies referring the existence of factors limiting activity, widespread to industry, wholesale and retail trade and construction. The fall in the percentage of companies indicating insufficient demand as a limiting factor to activity should be highlighted (charts 11, 12, 13 and 14).

Some qualitatively relevant patterns in characterising the current economic cycle also became more marked in the supply side in 1998. Indeed, the bulk of the non-tradable sector of the economy — comprising both services and construction — recorded a strong growth in activity. On the other

hand, industry recorded a slowdown in activity in relation to the previous years, in agreement with the slowdown of external demand directed towards Portuguese merchandise exports in the second half of the year.

5. LABOUR MARKET

The labour market continued to exhibit strong sensitivity to the cyclical position of the economy. The strong expansion of economic activity in the last two years, as well as the favourable expectations regarding the future, translated into a high growth of total employment. Employment accelerated from 1.9 per cent in 1997 to 2.3 per cent in 1998(3). Employment growth was particularly strong in trade, hotels and restaurants, transports and communications, the public sector and in construction. The number of wage-earners exhibited a stronger acceleration, from a 1.4 per cent growth in 1997 to 2.1 per cent in 1998.

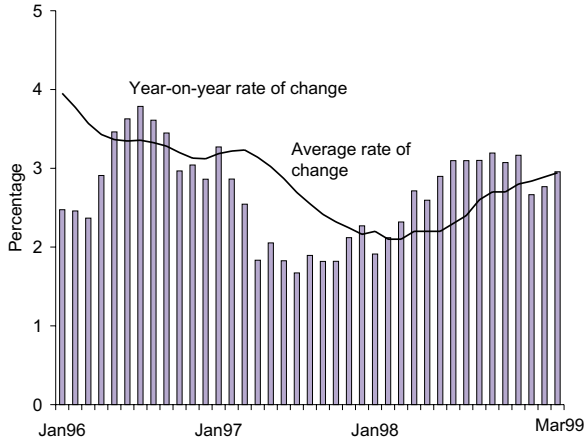
From the second half of 1996 onwards, the expansion of the Portuguese economy was reflected in a continued reduction in the unemployment rate. According to the Employment Survey of the Instituto Nacional de Estatística, the unemployment rate reached 5.0 per cent in annual average terms in 1998. As mentioned in the September Economic Bulletin, this survey underwent important methodological changes, resulting from the adoption of Eurostat guidelines towards greater statistical harmonisation. Therefore, the unemployment rate figure for 1998 is not directly comparable with that of 1997 (6.7 per cent). An Okun law exhibiting a good fit to the unemployment rate in the past, would have predicted a 0.8 percentage points reduction in the unemployment rate in 1998 due to factors of a cyclical nature.

Given the behaviour of inflation, the dynamism of employment and the reduction in the unemployment rate, the slowdown of compensations per employee in the private sector (i.e., excluding civil servants) is estimated to have been interrupted in 1998. Indeed, 1998 saw a growth rate equal to that recorded in the previous year (5.1 per cent). This development resulted in an estimated 2.2 per cent growth of real wages. The change in compensations per employee exceeded that of average wages implicit in collective agreements (3.1 per cent in 1998, against 3.6 per cent in 1997). As a result, the wage drift — defined as the difference between effective and contracted wages growth — shall have widened in 1998. This development provides another important evidence of the cyclical behaviour of the Portuguese labour market: the wage drift tends to widen in periods of stronger economical growth, decreasing (sometimes becoming negative) in recession periods.

6. INFLATION

In 1998, inflation increased. Measured by the annual average change of the Consumer Price Index (CPI), inflation reached 2.8 per cent in 1998, 0.6 p.p. more than in 1997 (chart 15). When a very open small economy in a context of virtually fixed exchange rates (as is the Portuguese case) faces domestic demand pressures as those recorded in 1998, these will tend to translate mainly into a worsening of the trade deficit — due to the improved buoyancy of imports — and to a lesser extent into the behaviour of prices. This must have been the case last year, since the rise recorded by the inflation measured shall have resulted partly from transitory factors. Indeed, in 1998, the favourable behaviour of most international prices and the trade deficit lessened the effects of domes-

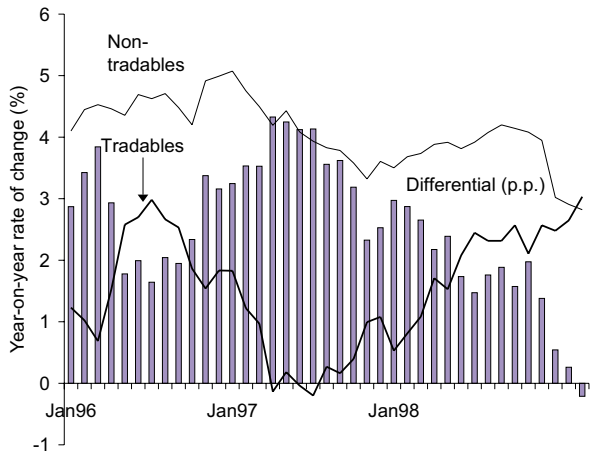
Chart 15
INFLATION
CONSUMER PRICE INDEX



Source: INE, and Banco de Portugal.

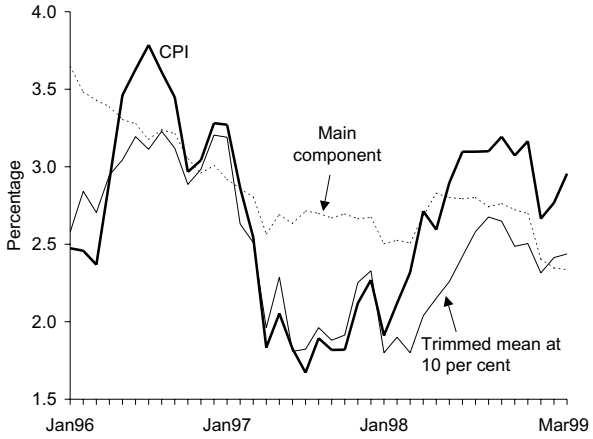
(3) Employment changes in 1998 were calculated using the data available in the Employment Survey regarding surveyed individuals' situation one year before.

Chart 16
INFLATION INDICATORS



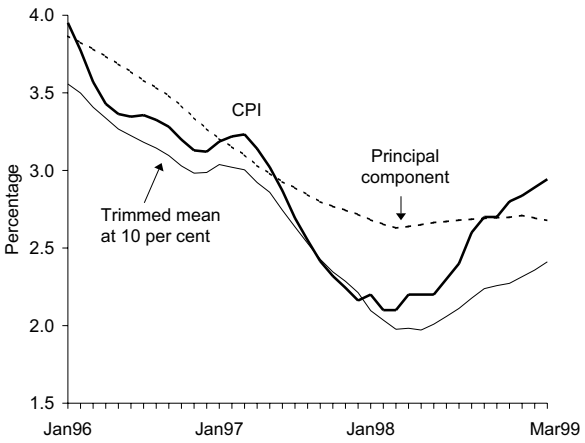
Source: INE and Banco de Portugal.

Chart 17A
TREND MEASURES
Year-on-year rates of change



Source: INE and Banco de Portugal.

Chart 17B
TREND MEASURES
Average rates of change



Source: INE, and Banco de Portugal.

tic demand dynamism and of the effective exchange rate depreciation on consumer prices.

Amongst the temporary factors that determined the behaviour of the CPI over the course of 1998, stress should be laid on the following: first, the significant price increases in some non-processed foodstuff goods (as a whole, the prices of goods under this item rose 5.5 per cent in 1998, in annual average terms, compared with 0.8 per cent in the previous year). This is reflected in the behaviour of tradables' prices, which accelerated from 0.6 per cent in 1997 to 1.8 per cent in 1998 in annual average terms; second, the adjustment made to the value of upper-level schooling fees carried out in early 1998; third, the significant price increases in some services, due to the EXPO-98. The last two factors influenced the behaviour of non-tradable prices, contributing to a sluggisher slowdown than in previous years (annual average changes of 4.1 and 3.9 per cent, respectively in 1997 and 1998) (chart 16).

Trend inflation measures[4] (chart 17) suggest that, disregarding temporary effects, the annual average growth of prices stabilised or rose slightly in 1998, interrupting the downward path recorded in previous years. The "trimmed mean at 10 per cent" recorded an average change of 2.3 per cent in 1998, 0.1 p.p. above that recorded in the previous year. In turn, the annual average change of the "principal component" remained unchanged at 2.7 per cent in 1998.

In 1998, international conditions were favourable to the reduction of inflation. Indeed, 1998 saw the reduction of prices of oil and of most commodities, and the absence of any kind of inflationary pressures in the euro area — the provenience of a quite significant part of Portuguese imports. This effect was hindered by the effective depreciation

(4) On the calculation of the inflation trend indicators usually analysed by the Banco de Portugal see Coimbra, C. and Neves, P. D. (1997), "Trend Inflation Indicators", Economic Bulletin of the Banco de Portugal, Vol. 3, No. 1, March 1997.

of the escudo, resulting both from the appreciation of the US dollar and the Sterling, as from the convergence of the escudo to its central parities vis-à-vis the remaining currencies in the exchange rate mechanism of the European Monetary System. The transmission of changes in import and export prices to domestic prices takes place with some lag, and its intensity depends on the cyclical position of the economy. Indeed, this transmission will tend to be faster and more intense in periods of stronger growth of domestic demand — as is the current case of the Portuguese economy. In addition, the anticipation of the convergence of the escudo towards its central parities may have yielded a faster transmission to domestic prices of the behaviour of the prices in escudos of intra-EU imports and exports.

In 1998, the strong acceleration of private consumption, both by residents and non-residents, led to a less favourable pattern of demand growth to price behaviour. Moreover, the expansion of the Portuguese economy translated into a real growth of wages, and in particular into a strong widening of the wage drift. Combined with the above referred temporary factors, this development led to a sluggisher slowdown of non-tradables' prices than in the previous year.

The behaviour of prices in the first quarter of 1999 was slightly more favourable than in late 1998. The year-on-year growth of prices was of 2.8 per cent in the first quarter, below that recorded in the last two quarters of 1998 (3.1 per cent in the third and in the fourth quarter). The year-on-year rate of change of non-processed foodstuff goods prices reached 5.5 per cent in the first quarter of 1999. This development continues to illustrate the irregular behaviour of the prices of specific goods. Worth noting that in March the growth of tradable prices exceeded that of non-tradables (3.0 and 2.8 per cent, respectively).

In the first months of 1999, the trend measures indicated a slight slowdown of prices. The year-on-year change of the "trimmed mean at 10 per cent" decreased from 2.5 per cent in December 1998 to 2.4 per cent in March 1999; in the same period, the year-on-year change of the "principal component" decreased from 2.7 to 2.3 per cent.

In 1998, the Portuguese inflation differential vis-à-vis the euro area widened. Three factors account for this development: the strong increase in the prices of some foodstuff goods, with no similar correspondence in the remaining euro area economies; the convergence of the escudo towards its central parities vis-à-vis the remaining currencies participating in the exchange rate mechanism of the European Monetary System; lastly, the fact that in Portugal, unlike in most other euro area economies, the strong reduction in oil prices was not transmitted to the fuel prices paid by consumers. Indeed, as in 1996-1997 — when oil prices increased — the Government opted to maintain the maximum prices of sale to the public.

In March, the year-on-year rate of change of the Harmonised Index of Consumer Prices (HICP) in Portugal was of 2.8 per cent, 1.8 p.p. above that recorded in the euro area. The year-on-year growth of goods prices was of 2.5 per cent in Portugal, 2.0 p.p. more than in the euro area. Worth highlighting is the differential between the growth of prices of non-processed foodstuff goods in Portugal (6.1 per cent) and in the euro area (1.7 per cent). In what concerns to services, the price change in Portugal reached 3.5 per cent, compared with 1.7 per cent in the euro area.

7. BALANCE OF PAYMENTS

The compilation of the Balance of Payments was subject to important methodological changes. It is now presented according to a structure incorporating the methodological recommendations of the 5th edition of the International Monetary Fund Balance of Payments Manual (see box 2 "*Changes to the Portuguese Balance of Payments Statistics*").

The combination of favourable expectations regarding the behaviour of the economy with the acceleration of both public consumption and transfers to households, and the reduction in interest rates contributed to the strong dynamism of domestic demand. The acceleration of domestic demand took place in a context of deceleration of external demand, hence of a lower contribution of exports to economic growth. As a result of this structure of growth, the contribution of net external demand to GDP growth became more negative, and the current plus capital account deficit increased.

The acceleration of imports and the slowdown of exports jointly contributed to a worsening of the Portuguese trade deficit amounting to 1.5 p.p. of

Box 2 - CHANGES TO THE PORTUGUESE BALANCE OF PAYMENTS STATISTICS

The Balance of Payments statistics compiled and disclosed by the Banco de Portugal were subject to significant changes (see the supplement of the March Statistical Bulletin, "New Presentation of the Balance of Payments Statistics"). First, the Portuguese balance of payments statistics were reformulated in order to incorporate the methodological recommendations of the 5th edition of the International Monetary Fund (IMF) Balance of Payments Manual. Second, the statistical data used in the preparation of the balance of payments improved, which translated into revisions to previously disclosed data.

In the new presentation, the balance of payments contains three main components (table 1): the Current Account, the Capital Account and the Financial Account. The Current Account basically corresponds to the former Current Account, exception made for capital transfers and the acquisition/disposal of non-produced non-financial assets(1). Therefore, the Current Account continues to include transactions between residents and non-residents associated to the external trade of goods and services, and to income of both labour and investment, as well as current unrequited transfers(2). However, it no longer comprises, for instance, transfers from the Cohesion Fund and the PEDIP, as well as a significant part of transfers from the ERDF and the EAGF - Guidance, which hereafter are included in the (new) Capital Account. The Financial Account reflects all transactions related with transfers of ownersihip of foreign financial assets and liabilities of the economy. This corresponds to the former non-monetary financial account, plus the change in banks' short-term net foreign assets and the change in net official reserves. These concepts are no longer in use in the new presentation.

In addition to conceptual and methodological changes, the improved coverage of statistical data now achieved led also to revisions to the published balance of payments figures. Namely, investment income recorded in the Current Account now include the item "reinvested earnings", estimated from the surveys of foreign direct investment in Portugal and Portuguese direct investment abroad, conducted by the Banco de Portugal. In net terms, taking into account this income item has resulted in an upward revision of the Portuguese current deficit in the last years, with the corresponding counterpart in the direct investment item of the Financial Account.

Table 2 presents for 1998 the comparison between the new Current and Capital Accounts, with the previous Current Account calculated upon the same data, but according to the former presentation. In 1998, the Current Account deficit amounted to 6.6 per cent of GDP, while the Capital Account surplus reached 2.4 per cent of GDP. As expected, the sum of these balances is virtually equal to the Current Account in the former presentation (-4.3 per cent of GDP).

The improved quality of the statistical data also explains the revisions to the statistics of the net external position of the Portuguese economy(3). The stocks of portfolio investment assets of the resident non-monetary sector are no longer calculated from an estimate obtained through accumulation of flows; instead, they hereafter consider the data compiled from the survey, meanwhile conducted, on the external portfolio investment assets of Portugal. Net foreign assets represented 0.4 per cent of GDP at the end of 1998 (3.6 per cent one year earlier).

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(1) The acquisition/disposal of non-produced non-financial assets covers transactions on intangibles assets (e.g. patents, licenses, copyrights, trade marks, franchises and other transferable contracts) and on tangible assets (e.g., the purchase of land by embassies).

(2) Note that some reclassifications also took place within the Current Account. Regarding insurance, only the part corresponding to the insurance service is now included in the Services Account. The remainder - including claims payable or receivable - is now recorded under Current Transfers (in the case of non-life insurance) or under Other Investment (in the case of life insurance). Transactions in royalties and license fees (like rights on patents, trade marks, copyrights and franchises) that were registered in the Investment Income Balance, are now included in the Services Balance.

(3) It should be noted that were also some methodological changes in some net external position items - namely in the Monetary Authorities' foreign assets and liabilities. Gold Swap operations were re-classified according to the current accountancy practises. Therefore gold allocated to these operations continues to be recorded as a foreign asset, being created a counterpart - a liability in the form of Repos (repurchase agreements). In addition, gold is hereafter valued at market prices.

Table 1

BALANCE OF PAYMENTS

Transactions basis

	1997	1998[P]	1997	1998[P]
	Balances in PTE billion		Balance as a% of GDP	
Current Account	-961.8	-1295.6	-5.4	-6.6
Merchandise fob	-1760.7	-2200.3	-9.8	-11.3
Services	234.1	284.2	1.3	1.5
Transportation	-63.5	-66.4	-0.4	-0.3
Travel	430.9	523.6	2.4	2.7
Insurance services	-7.4	-1.6	0.0	0.0
Royalties and license fees	-45.3	-45.0	-0.3	-0.2
Other services	-49.7	-85.5	-0.3	-0.4
Government services	-31.0	-41.0	-0.2	-0.2
Income	-78.7	-105.6	-0.4	-0.5
Compensation of employees	4.6	13.1	0.0	0.1
Investment income	-83.3	-118.7	-0.5	-0.6
Current transfers	643.6	726.2	3.6	3.7
Official transfers	86.2	153.0	0.5	0.8
Private transfers	557.4	573.2	3.1	2.9
Capital Account	469.7	458.9	2.6	2.4
Capital transfers	465.8	456.2	2.6	2.3
Official transfers	458.1	458.6	2.6	2.4
Private transfers	7.7	-2.4	0.0	0.0
Acquisition / disposal of non-produced non-financial assets	3.9	2.7	0.0	0.0
Financial Account	925.2	1097.7	5.2	5.6
Direct investment	106.8	-205.5	0.6	-1.1
Portuguese investment abroad	-340.2	-522.3	-1.9	-2.7
Foreign investment in Portugal	447.0	316.9	2.5	1.6
Portfolio investment	357.0	27.4	2.0	0.1
Assets	-1133.7	-1099.0	-6.3	-5.6
Liabilities	1490.7	1126.3	8.3	5.8
Other investment	685.4	1351.5	3.8	6.9
Assets	-1349.6	-1056.7	-7.5	-5.4
Liabilities	2035.0	2408.2	11.3	12.3
Financial derivatives	-4.0	20.2	0.0	0.1
Reserve assets	-220.1	-95.9	-1.2	-0.5
Monetary gold	-0.1	-199.2	0.0	-1.0
Special drawing rights	-3.2	-4.6	0.0	0.0
Reserve position in the IMF	1.4	-32.3	0.0	-0.2
Foreign exchange	-218.2	140.1	-1.2	0.7
Errors and omissions	-433.2	-261.1	-2.4	-1.3
Pour mémoire:				
Current plus Capital Account	-492.1	-836.6	-2.7	-4.3

Table 2

As a percentage of GDP

New Presentation- 1998	Balance	Former Presentation - 1998	Balance
Current Account	-6.6	**Current Account**	**-4.2**
Merchandise fob	-11.3	Merchandise fob	-11.3
Services	1.5	Services	1.6
Income	-0.5	Income	-0.7
Current Transfers	3.7	Unrequited transfers	6.2
Capital Account	2.4		
Capital Transfers	2.3		
Acquisition / disposal of non-produced non-financial assets	0.0		
Pour mémoire:			
Current plus Capital Account	**-4.3**		

GDP (from 9.8 per cent in 1997 to 11.3 per cent in 1998). The widening of the current plus capital acount deficit, from 2.7 per cent of GDP in 1997 to 4.3 per cent in 1998, is chiefly explained by this worsening of the trade deficit.

Two temporary factors contributed favourably to the behaviour of the current account in 1998. First, a significant gain in terms of trade was recorded, greatly as an outcome of the reduction in the international price of oil. Import prices of goods and services in escudos fell 1.5 per cent in 1998, while export prices rose 0.7 per cent. Second, the increased tourism activity linked to the EXPO-98 also rendered a positive impact on the services surplus. On the other hand, the bad harvest year led to an increase in imports, affecting unfavourably the current account balance.

8. FORECASTS FOR 1999[5]

According to the forecasts of the Banco de Portugal, economic activity is expected to slowdown in 1999. Several factors shall contribute to this deceleration: the more unfavourable international background, the progressive dissipation of the effects of the interest rate reductions and the General Government intentions in agreement with the Stability and Growth Programme.

Economic activity in the European economy is also expected to slowdown in 1999. According to the European Commission Spring forecasts, output growth in the euro area shall reach 2.2 per cent in 1999 (3.0 per cent in 1998). This figure represents a 0.4 p.p. downward revision of the autumn 1998 forecast. The economic activity slowdown in the euro area will translate naturally into less dynamic trade flows. According to the European Commission forecasts, external demand directed towards Portuguese exports is estimated to record a real growth of 5.2 per cent in 1999. This figure compares with 7.9 per cent in 1998.

The sharp fall of interest rates in 1998 shall continue to render an impact on domestic demand, despite the progressive dissipation of its effects.

(5) The forecast presented in this article was obtained according to the following technical assumptions: the intervention interest rates of the European System of Central Banks remain unchanged over the course of the forecast horizon, at the level of 9 April; the euro effective exchange rate remains unchanged at the level on this same date; external demand directed towards Portuguese exports was drawn from the Spring 1999 European Commission forecasts.

Table 2

MAIN ECONOMIC INDICATORS

Percentage rates of change

	1998	1999
Private consumption	5.6	4¼ - 4¾
Public consumption	3.8	2
GFCF	9.8	4½ - 5½
Domestic demand	6.5	4 - 4½
Exports	8.8	3¾ - 4¾
Overall demand	7.0	4 - 4½
Imports	14.7	6¾ - 7¾
GDP	3.9	2¾ - 3¼
Current plus capital account (as a percentage of GDP)	- 4.3	-5½ ; -4½

The 1999-2002 Stability and Growth Programme, presented by the Ministério das Finanças in December 1998, restates the public finance consolidation objectives: the gradual and sustained reduction of the budgetary deficit, the increase of the primary balance and the continuation of the reduction of the public debt to GDP ratio. According to this programme, public consumption is expected to grow 2 per cent in volume terms in 1999, which represents a slowdown from 1998.

Under these assumptions, the forecasts of the Banco de Portugal point towards a GDP growth ranging between 2¾ and 3¼ per cent (table 2). Domestic demand is expected to slowdown sharply, while the contribution of net external demand to economic growth shall become less negative than in 1998.

Residents' private consumption is expected to grow between 4¼ and 4¾ in real terms. Underlying this forecast is the slowdown of households' real disposable income, as well as a further reduction expected for the saving rate. The deceleration of households' disposable income reflects the slowdown in job creation, the reduction in the amount of net interest received by households and the slowdown of domestic transfers.

Gross Fixed Capital Formation is expected to grow between 4½ and 5½ per cent in volume terms. The sharp slowdown of this aggregate reflects its sensitivity to the cyclical conditions of the economy. The current economic situation provides several factors explaining this forecast: the worsening of industrials' confidence in manufacturing — reflecting chiefly the less favourable perspectives regarding the behaviour of external demand — the gradual dissipation of the lagged effects of the past interest rate reductions, and the changes to the system of subsidisation of mortgage lending.

Exports of goods and services shall grow between 3¾ and 4¾ per cent. This growth stands below that projected for merchandise exports, since tourism exports shall exhibit a reduction in real terms in 1999 — reflecting the arithmetic effect of comparing with the period in which the Expo-98 took place. The real growth of imports shall range between 6¾ and 7¾ per cent, in tune with the behaviour of overall demand and its composition. As a result, the contribution of net external demand to economic growth in 1999 is expected to become less negative than in 1998. The current plus capital account deficit shall reach between 4½ and 5½ per cent of GDP.

Many risks may drive output growth outside the indicated forecast interval. A more unfavourable international background — featuring a more intense slowdown of the euro area economy than that currently projected by international organisations — provides the leading risk behind lower economic growth in 1999. If the current forecast underestimates the lagged effects of past interest rate reductions on domestic demand, GDP may record a growth closer to the upper limit of the forecast interval. This being the case, it would take place alongside sharper deterioration of the current account deficit and by a faster growth of credit to individuals than that assumed in the central scenario.

9. CONCLUSION

The Portuguese economy has grown more than most of its leading trade partners. Between 1996 and 1998, average GDP growth reached 3.8 per cent, 1.4 p.p. above that recorded in the set of countries integrating the euro area since the beginning of 1999.

The stronger growth of output in Portugal reflects a greater expansion of domestic demand. All

domestic demand items grew above the euro area average between 1996 and 1998: private consumption grew on average by 3.9 per cent (2.0 per cent in the euro area), GFCF grew 9.9 per cent (2.2 per cent in the euro area) and public consumption 2.5 per cent (1.0 per cent on average in the euro area).

The stronger growth of economic activity in Portugal had consequences at the level of the relative behaviour of employment. Between 1996 and 1998, total employment grew 4.9 per cent in Portugal, considerably more than in the euro area (only 1.3 per cent). As a result, the unemployment rate recorded a sharper reduction than in the euro area.

The real convergence of the Portuguese economy in recent years, but especially in 1998, was accompanied by a combination of other macroeconomic developments: the widening of the external deficit, the increase of the inflation differential vis-à-vis the other euro area countries (though with no real appreciation of the escudo), the significant reduction of individuals' saving rate and the sharp growth of indebtedness. These developments provide, to a great extent, the usual process of adjustment of a small open economy to a favourable supply shock, and render welfare gains. However, the latter are not risk-free, given the private sector's increased indebtedness. Although the interest rate reduction is basically an irreversible process, the continuation of the current trend towards households' increasing indebtedness will enhance this risk. As a result, the necessary adjustments in the presence of an unfavourable shock shall become potentially stronger.

In a context where both exchange rate policy and budgetary policy are guided with reference to the economic conditions in the euro area as a whole, the budgetary policy gains improved importance — becoming the leading instrument available for national authorities to influence domestic demand. Therefore, it is imperative that the budgetary consolidation process proceeds in line with the objectives of the Stability and Growth Programme, which in turn shall yield corrective effects upon the current account balance.

In addition, the macroeconomic re-equilibrium may be eased by the efficient functioning of prices and wages. Empirical evidence available for Portugal points towards greater real wage flexibility vis-à-vis the cyclical conditions of the economy than in most euro area countries. This flexibility has translated into fast and significant reactions of real wages to changes in unemployment. This characteristic of the Portuguese labour market has enabled the adjustment to distinct economic conditions with limited fluctuations of the employment and unemployment levels. It is important that this characteristic of the Portuguese labour market, observed under inflation, is preserved under conditions of price stability. In this sense, it is crucial that measures with an impact on the labour market functioning are not carried out whenever these imply a rise of the "reserve wage" level, and in general a rise of labour costs above productivity.

Written with the information available as on 23 April 1999.

money has a negligible production cost, optimality is reached when the price of holding money is null (i.e. the interest rate is zero). This means that the inflation rate should equal the symmetric of the rate of return of capital (i.e., the real equilibrium interest rate), to which corresponds deflation. Even when principles of optimal taxation are taken into account, the Friedman rule seems to hold(11). The optimality of this rule should, however, be faced with caution since some considerations — of the kind of informal economy taxation, high costs of collecting taxes on consumption and / or income, and the rigidity of nominal wages towards reductions — justify a price stability policy in the long-run (i.e., zero or marginally positive inflation, instead of deflation). Furthermore, the Friedman rule is a long-run one, therefore overlooking the manner in which monetary policy should be managed in the presence of short-run shocks. Furthermore, the arguments on optimal taxation in favour of the optimality of the Friedman rule are conditioned to the kind of economic representation (i.e., the model) considered.

Some recent empirical research trying to measure the costs of losing the interest rate channel compares the effects on output due to unfavourable shocks to the economy in a context of moderate inflation with a zero-inflation one (Fuhrer and Madigan (1997) and Orphanides and Wieland (1998)). The general finding is that a moderate level of inflation is preferred to zero inflation. They conclude that output variability increases with close to zero inflation objectives (where recessions are more frequent and more intense). Other empirical research (Akerlof, Dickens and Perry (1996)) argues that permanent costs are present due to the existence of nominal wages downward rigidity, which also favours a non-zero inflation target.

These studies present, however, several drawbacks. First, they use data from a non-zero inflation environment, and extrapolate findings to a zero inflation regime, which is obviously subject to the Lucas critique (i.e., the adjustment of agents' behaviour to the change of regime is not taken into account). Moreover, as referred when discussing the Friedman rule, the results of the models considered in these research are conditioned to the type of model and to the simplifications assumed (for instance, the influence of monetary policy is limited to the interest rate channel, ignoring the direct transmission channels referred in section 5).

This discussion illustrates the fact that it is not possible to reach a definitive conclusion on what regime is preferable — a null inflation regime or a low inflation one. Nevertheless, even the Friedman rule critics defend low inflation levels, to which correspond moderate interest rates (as opposed to zero or close to zero interest rates).

7.CONCLUSION

The reflections above and the current European economic situation make us conclude that the euro area is not presently in a liquidity trap situation. First, the current interest rate levels are compatible with a moderately counter-cyclical monetary policy. Furthermore, if important shocks that lead the economy to virtually null interest rate levels come to happen, existing alternative monetary policy transmission channels (namely the exchange rate and policies of communication / management of expectations) should prevent the confirmation of pessimistic scenarios.

In the past, the situations closer to the liquidity trap (the great depression in the USA and the Japanese crisis in the 1990s) took place alongside banking crises, after speculative bubbles in asset prices burst. However, Meltzer (1999) also reports some cases for the USA where very low nominal interest rates were reached without a banking crisis; the Swiss case over the last decades provides also an illustration to this situation. Therefore, more than challenging to the guidance of the monetary policy in the euro area, taken in its strict sense, a situation of virtually null interest rates requires a special effort and awareness from banking supervision, namely in a context of inflation in asset prices.

(11) For instance Correia and Teles (1996;1999).

OPTIMAL INFLATION*

*Isabel Correia***
*Pedro Teles***

How should monetary policy be carried out in the long-run? Recent literature proves the optimality of the Friedman rule, implying that the nominal interest rate should on average be zero. Prices are then expected to decrease over time, since the real interest rate is positive. According to the Friedman rule, the Government should not tax money, despite the need to resort to distorting taxes to finance public expenditure.

1. INTRODUCTION

How should monetary policy be carried out in the long-run — and also in the short-run — in response to economic shocks? The study of the desirable monetary policy requires the prior identification of both long- and short-run effects of money. Only then follows the identification of the best policy strategy, i.e., the one leading to a better resource allocation in the economy. To attain this, it will also be necessary to use models that both reproduce the relevant facts and that address issue of optimality.

Long-run effects of monetary policy are well known and adequate models are available to measure such effects. On the contrary, research on the short-term effects of money still arouses some controversy as regards both the adequate theoretical model and the identification of the facts. Therefore, the answers to the question of how short-run monetary policy should be carried out are far from being definitive. Partly on these grounds, this article focuses on the presentation of the known findings on long-run optimal monetary policy.

In the identification of the long-run effects of money, the quantitative theory is consensual. Economies with higher money growth rates are economies with higher inflation rates and higher nominal interest rates. Effects on real interest rates and on growth rates are negligible (charts 1 and 2[(1)]). Even if there are no effects on growth there will be significant effects of inflation on resource allocation. Hence the issue of long-run monetary policy optimality is justified. Since it is a long-run policy, decisions concern the average growth rates of money and prices and secular averages of nominal interest rates. The distortions generated by a high average inflation rate or by high nominal interest rates are similar to those of any other tax. High inflation taxes transactions that use money, making consumption and investment costlier and deviating resources to leisure or to alternative ways of making transactions. As any other tax, a high average inflation also enables the government to collect more revenue, as it may finance deficits through the issuing of money, instead of paying high interest rates on the public debt. The objective of long-run monetary policy is to minimise the effect of distortions generated by the inflation tax, while taking into account that if this tax is cut, other taxes — also distorting — will have to be raised to finance public expenditure. Answers to the following issues are given in this article:

* The opinions of the paper represent the views of the authors, and are not necessarily those of the Banco de Portugal. All errors and omissions are the authors' responsibility.

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(1) Lucas (1996).

Chart 1

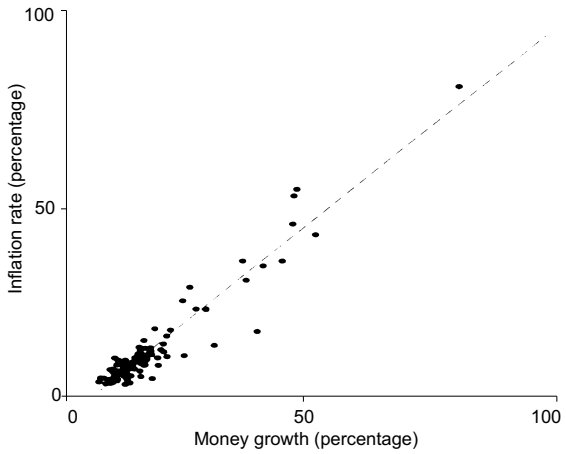
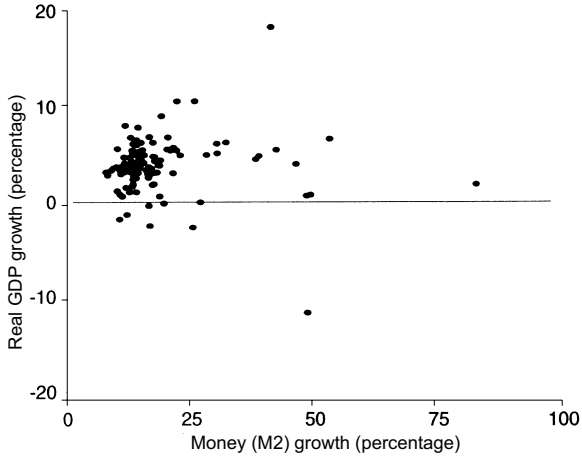


Chart 2



what is the optimal average inflation level, when the government needs to collect distorting taxes to finance public expenditure? What should be the average growth rate of money? What is the nominal interest rate on longer-term bonds, resulting from optimal long-run monetary policy?

In the Optimum Quantity of Money (1969), Milton Friedman proposed a monetary policy rule able of generating the lowest nominal interest rates possible: "the rule on the optimum quantity of money is met through an inflation rate generating a nominal interest rate equal to zero". The arguments defended by Friedman are simple Pareto optimality arguments which only hold true if taxes are non-distorting. A good with a zero production cost — indeed, money has very low marginal production costs — should have a price also equal to zero. As the nominal interest rate is the price of holding money — since it corresponds to private agents' foregone revenue when they opt for holding this more liquid asset — the long-term nominal interest rate should, according to Friedman, be equal to zero. This rule for the nominal interest rate means that prices should decrease on average at a rate equal to that of the long-term real interest rate: the money stock must decrease at a rate consistent with the required deflation.

The leading criticism to the Friedman rule was made by Phelps (1973), who used the optimum taxation principles of Ramsey (1927): in the absence of non-distorting taxes, the optimal taxation problem consists of financing an exogenous sequence of public expenditure in the less distorting way. In this context, the marginal distortion caused by one unit of tax revenue should be equal for all taxes. Implicitly it would seem that money should also be taxed, as any other good, and therefore the price of money should be higher than its production cost. The long-term nominal interest rate should, therefore, be higher than zero.

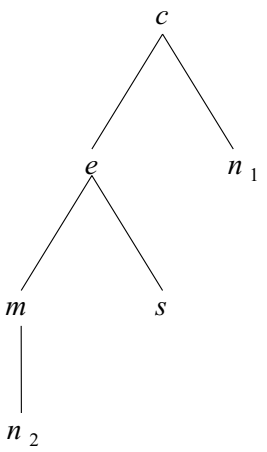
Recent developments in the general equilibrium monetary theory questioned the intuition of Phelps and recovered the bounty of the Friedman rule. Despite the need to resort to distorting taxes, money should not be taxed. This finding holds true in an economic environment where money is necessary for transaction purposes, explicitly through a transactions function where money can be replaced with other production factors(2). Considering that in this environment money is an intermediate good, the optimal taxation results of Diamond and Mirrlees (1971) concerning intermediate goods could apparently be invoked. These results suggest that under certain conditions intermediate goods should not be taxed. However, the conditions of the theorem of Diamond and Mirrlees (namely the linearity condition of the production function) do not occur necessarily in monetary models. For example if we think, as it is

(2) Kimbrough (1986), Faig (1986, 1988), Guidoti and Végh (1983), Chari, Christiano and Kehoe (1983) demonstrate the result, imposing restrictive conditions. Correia and Teles (1996) generalise these conditions.

reasonable, that the transactions technology proposed by Baumol (1952) and Tobin (1956) is a good description of the transactions process, the structure of production no longer has constant returns to scale, hence making taxation on intermediate goods desirable.

In an environment closer to that used by Phelps (1973), where money is an input to the provision of liquidity services — modelled as a final good — Correia and Teles (1999) derived optimal taxation rules and concluded also in this context, that the Friedman rule is the general rule of optimum (non) taxation of money. Therefore, they showed that the intuition of Phelps cannot be applied to money, because money is a zero-cost good, taxed through a specific tax, the nominal interest rate. The optimum taxation results of Ramsey (1927), or Diamond and Mirrlees (1971), refer to *ad valorem* tax rates on goods with a positive production cost. It follows that the general result according to which these tax rates should be positive does not imply that the specific tax must also be positive, when the production cost of the good is close to zero. Indeed, in this case the optimal is also close to zero.

Diagram 1
PRODUCTION STRUCTURE IN AN EQUIVALENT REAL ECONOMY



2. OPTIMAL INFLATION

This section describes in detail the optimal money taxation finding in Correia and Teles (1996). To address the issue of what should be long-term optimal inflation when all taxes are distorting, Correia and Teles (1996) use a monetary model where money is used in transactions in a way that the time spent in transactions is a function of the volume of transactions and the stock of money. In this model, money is an intermediate good necessary to carry out transactions. A possible justification for the transactions function — and the only one with a microeconomic theoretical foundation — is the transactions technology proposed in Baumol (1952) and Tobin (1956), according to which time spent in transactions is a function of the ratio of the volume of transactions per currency unit to the number of visits to the bank. This transactions function is homogeneous of degree zero.

In the model, there is a large number of households with endowments of time that can be used for leisure, the production of an aggregate good, the production of transactions, or the production of money itself. Transactions have a cost, measured in terms of the time dedicated to that activity. Money can reduce this cost. This friction allows money to have a value. Households have preferences over consumption goods and leisure. Markets for goods and labour and markets for assets, money and nominal bonds exist in every period. A benevolent government chooses the optimal combination of income tax and inflation tax, which finance an exogenous sequence of public expenditures.

In this economic environment, where money is an intermediate good, Correia and Teles (1996) concluded that, when money has a negligible production cost, it is desirable that money is no longer taxed, regardless of the degree of homogeneity of the transactions function. If on the contrary money requires significant production costs, then taxing money would be optimal, the tax rate depending on the level of homogeneity of the transactions function.

The result that intermediate goods should not be taxed in a second best environment — when technology exhibits constant returns to scale — is well known since Diamond and Mirrlees (1971). They proved that production efficiency is a characteristic of the second best solution when taxes on consumption are available. As a corollary to this result, intermediate goods should not be taxed.

Production efficiency means that labour is optimally allocated — as in the first best — between different uses. This means that the marginal productivity of labour used in the production of a given good equals the marginal productivity of the intermediate good (used in producing that good), times the marginal productivity of labour (used in producing the intermediate good). In the monetary model with one aggregate good and no capital, the consumption tax proposed by Diamond and Mirrlees (1971) is equivalent to a single tax on labour, the intermediate goods being untaxed. These optimal tax rules are rules on the value of *ad valorem* taxes.

The taxation rules of Diamond and Mirrlees (1971) do not apply directly to the monetary economy for two reasons: because the production structure is a specific one, and because there are natural constraints on the taxes that can be collected. The distinctive features of the production structure in the monetary model are: first, the consumption good is produced using labour and transactions according to a Leontief production structure; second, the interesting transactions functions — like the Baumol-Tobin one — do not present constant returns to scale. The other distinctive feature is that time spent in the production of transactions cannot be taxed, since the activity of transactions does not feed through to the market.

In the context of the monetary model, efficiency in production is attained when money and time spent in its production are not taxed, and only time spent in the production of the good is taxed. If the transactions function presents constant returns to scale, production efficiency is desirable, and so money is not to be taxed. If, however, the transactions function does not exhibit constant returns to scale — as is the case of the Baumol-Tobin function — then distorting production would already be first best, and the optimal *ad valorem* tax on money would no longer be zero. But a positive *ad valorem* tax corresponds to a zero unit tax when the production cost of money tends to be zero. Since the inflation tax is a unit tax, the result of the optimality of the Friedman rule is ultimately explained by the free good characteristic of money.

To understand deeply these optimal money taxation results, it is useful to think of the monetary economy in terms of an equivalent real economy with three vertical levels of production. The equivalent real economy is represented in Diagram 1. Here, economic agents have preferences over consumption, *c*, and leisure, *h*. *c* is produced using transactions, *e*, and labour, n_1, according to a Leontief production function, $c = \min(e, n_1,)$. The production of *e* requires time, *s*, and an intermediate good, *m*. The intermediate good *m* is produced with labour, n_2, at a constant marginal rate ($m = \alpha n_2$). Total time available in the economy is normalised to one unit. The taxation structure is such that *c*, n_1, n_2 and *m* can be taxed, but *e* and *s* cannot be taxed. These constraints on the taxation capacity are natural constraints of the equivalent monetary model because transactions are not marketed.

Assuming that function $s = l(e, m)$ is homogeneous of degree *k*, the optimal taxation solution is characterised by the following *ad valorem* tax rates on money

$$\tau_m = 0, \quad \text{when } k = 1$$
$$\tau_m > 0 \quad \text{when } k < 1$$
$$\tau_m < 0 \quad \text{when } k > 1$$

when the tax rate on labour used in money production is zero, $\tau_2 = 0$.

In this case, efficiency in the production of transactions, *e*, is optimal only when the production function of *e* is constant returns to scale. When there are profits, i.e., when the transactions function does not exhibit constant returns to scale, the effect of taxes on profits explains the deviations from production efficiency in the second best solution. When $k \neq 1$, the possibility of non-zero profits and the absence of a tax on those profits justifies optimal taxation rules that induce a reduction in profits. The reduction of profits, even when these are negative, is equivalent to a lump-sum tax. Thus the second best solution allows for a production distortion, through the taxation of intermediate goods, so as to reduce profits implicit in transactions production.

The reason why efficiency in the production of *e* is attained when τ_2 and τ_m are equal to zero is that τ_s is usually equal to zero. Therefore, suppressing taxation of labour used in the production of *m*, and taxation of m itself, maintains the efficiency in this transactions production branch.

Since transactions and hours worked are used in fixed proportions in the production of the con-

sumer good, production is not distorted by the taxation of n_1. For this reason the Ramsey solution, even with the above mentioned specific constraints of the tax system (i.e., *s* and *e* cannot be taxed), is a second best, not a third or fourth best. If imposing τ_2 equal to τ_1, production efficiency would imply a negative τ_m. Therefore we can assert that the result achieved for constant returns to scale technologies (i.e., that *m* should not be taxed) ensures production efficiency, but due to the constraints of the taxation instruments it does not provide a natural extension to the Diamond and Mirrlees result. In this case, the intermediate good is not taxed but labour income is taxed at very different rates, depending on the sector where they were originated.

Income from labour in the production of money and in the production of transactions is not taxed, while income from labour in the production of the consumer good is taxed at a positive rate.

When *m* is a free good, if the nominal interest rate equals zero — meaning that money is being fully used ($l_m = 0$) — the marginal effect of *m* on profit is zero. Despite the fact that, for transactions functions that are homogeneous of order $k \neq 1$, the level of implicit profits is different from zero and *m* generally exerts a marginal effect on profits. Moreover, at the satiation point of real money (i.e., the point where the free good has zero marginal productivity) this effect is null. Therefore the satiation point defines the optimum quantity of money. This finding can be interpreted as the limit result of the optimum unit tax charged on an intermediate good that uses resources, when the costs of producing the good become arbitrarily small. The intuition is that the unit tax equivalent to a finite *ad valorem* tax on a good with an arbitrarily low production cost, is arbitrarily low.

In any case, zero variable production costs of money stand as the essential assumption to derive the optimality of the Friedman rule. We take this assumption for granted despite the evidence of significant fixed costs associated with money creation. Therefore, money as a free primary input — and not as an intermediate good — is the relevant quantitatively reasonable assumption, as well as the fundamental theoretical justification behind the robustness of Friedman's optimality rule.

3. CONCLUSIONS

Long-run average inflation has real effects on the level of economic activity. To lessen these effects, the literature on long-run monetary policy rules recommends a policy that is consistent with close to zero nominal interest rates. According to the Friedman rule, of 1969, this corresponds to deflation. This result is surprising, since it holds even when the need the government has to resort to distorting taxes, to finance public expenditure, is taken into account (Correia and Teles, 1996; 1999). The basic intuition of the finding is that the nominal interest rate is a unit tax rate on a good (money) with a very low production cost. Therefore, even if in proportional terms it were optimal to tax money at a high rate, the equivalent specific tax is very low. Once optimum policy is defined, the quantitative issue of what are the welfare gains from reducing nominal interest rates to virtually null levels should be addressed. Correia and Teles (1994) calculate that the gain from reducing the nominal interest rate from 5 per cent to the Friedman rule amounts to about 1 per cent for GDP[3].

This limit result — i.e., the optimality of non-taxation of money — can, however, be adjusted according to various considerations — for instance, taxation of the underground economy, high tax administration costs, or costs due to price changes. Since the underground economy is precisely one sector that cannot be taxed through the tax system, for efficiency and equity reasons, the inflation tax should be used to this end. In quantitative terms, the optimal long-run inflation levels are marginally positive[4]. High costs of collecting taxes on consumption or income can also explain a deviation from the Friedman rule — still a minor deviation, amounting to about one percentage point in the nominal interest rate[5]. Costs of price changes can also explain deviations from the Friedman rule, towards the price stability objective.

(3) See also Lucas (1994).
(4) Nicolini (1998).
(5) De Fiore (1998).

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SOME REFLECTIONS ON THE LIQUIDITY TRAP AND THE CONDUCT OF MONETARY POLICY UNDER LOW INFLATION*

*Isabel Marques Gameiro***
*Maximiano Pinheiro***

1. INTRODUCTION

In the public debate over economic perspectives in the euro area, the risk of being close to a so-called "liquidity trap" has been frequently mentioned(1). The underlying idea is that, in a context of low inflation and low nominal interest rates, monetary authorities have little room to carry out further cuts to interest rates to counteract unfavourable shocks to the economy (since nominal interest rates cannot fall below zero). In this situation, monetary policy loses its capacity to influence the economy through the interest rate channel. This situation rises immediately the question of whether it is desirable that monetary policy counteracts those shocks — that is, if monetary policy should adopt a counter-cyclical posture.

Regardless of whether a counter-cyclical policy is desirable or not, economic literature is fairly consensual in pointing that monetary shocks should be counteracted (setting aside eventual problems of identification of the origin of the shock). The most cited empirical cases of liquidity traps (the great depression in the USA and the recent Japanese economic situation) provide examples of shocks originated in the monetary sphere, as they were related to a collapse in asset prices and to a banking crisis. Therefore, we are in the presence of cases where the interest rate channel is not the most relevant one, neither does it act as the active constraint.

Meanwhile, it is currently consensual that the interest rate channel is not the only existing one; indeed, at least two other channels are accepted — the assets price effects and the credit channel. In this context, the debate around the effectiveness of monetary policy in a situation of very low interest rates is reduced to the debate around the empirical relevance of these channels. In any case, in the context of the recognition of these channels (independently of their empirical significance), it seems difficult to argue that monetary policy is fully inoperative in a context of null or virtually null interest rates.

Finally, in spite of the existence of alternative channels there is the question of whether there are costs associated with the non-operation of the interest rate channel. Some empirical research tries to measure the costs of the reduction in effectiveness of monetary policy in the presence of a liquidity trap. However, the results of these studies are subject to the Lucas critique, since they build upon data from a non-zero inflation regime, and hence do not incorporate the adjustment of the agents' behaviour to the change in regime. On the contrary, several contexts exist (namely when considering optimal taxation principles) where the optimal result points towards null or virtually null interest rates (i.e., the Friedman rule).

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

** Economic Research Department. This article profited from the internal discussion of the issue, especially from comments made by Ana Cristina Leal, Isabel Horta Correia, Marta Abreu and Pedro Teles. All errors and omissions are the authors' responsibility.

(1) See for instance "*The Economist*" (February 20th 1999) and the "European Weekly Analyst" Goldman Sachs (January 29th 1999).

These issues are further developed in the following sections. Section 2 revisits the liquidity trap concept, and explores the reasons why this might be a current issue in Europe. Section 3 discusses the desirability of a counter-cyclical monetary policy, while situations of simultaneity between a liquidity trap and a banking crisis are analysed in Section 4. Section 5 discusses alternative channels of transmission of monetary policy, which are not directly related with the interest rate. Some consideration around the existence or not of transitory and/or permanent costs due to the non-operation of the interest rate channel in a regime of price stability are presented in Sechion 6. Finally, in the light of the previous reflections, section 7 draws some conclusions regarding the current situation of the euro area.

2. THE LIQUIDITY TRAP AND THE CURRENT ECONOMIC SITUATION IN EUROPE

To simplify the presentation without losing generality, consider a closed economy where beyond money (strictly defined as circulation plus demand deposits) exists solely one financial asset, that yield a nominal return at the rate of interest i; under these circumstances, interest rate i cannot be negative: no one would choose to hold an asset with a negative nominal return. In practise (admitting economic agents are risk-averse), the lower admissible boundary for the interest rate (this limit being denoted by i) is marginally positive, due to considerations of liquidity and /or risk.

If the nominal interest rate becomes close enough to lower boundary i, economic agents become virtually indifferent between holding money and holding the financial asset. Any additional amount of money injected in the economy by the monetary authority will render a relatively small effect on the demanded amount of the financial asset, hence the interest rate is not affected significantly. In other words, in the context of very low interest rate levels, money demand will tend to be perfectly elastic vis-à-vis the interest rate, and therefore any money injection will result chiefly in a reduction of money circulation velocity (defined as the ratio between nominal output and the money stock of the economy).

This situation, where no manoeuvre room is left to reduce the interest rate any further — implying the incapability of the monetary policy interest rate channel to counteract (or accommodate) eventual unfavourable shocks over the economy, is what Keynes referred to as the "liquidity trap".

The term "liquidity trap" is often related to the so-called deflationary spiral. The underlying idea is that, if the economy is caught in a liquidity trap and if an unfavourable shock to the economy leads to recession and deflation, the real interest rate will rise,yielding additional recessive and deflationary effects on the economy. These effects are widened if there is rigidity towards reductions of nominal wages. In this case, deflation also results in the rise of real wages, contributing to the further aggravation of recession.

In the public discussion around economic perspectives in the euro area, the risk of becoming closer to a liquidity trap situation has been referred frequently. Currently the euro area exhibits:

— low inflation (virtually null when adjusted for the bias in the consumer price index[2]. In March, the HICP in the euro area grew 1.0 per cent in year-on-year terms, and 1.0 per cent in annual average terms;
— relatively low nominal interest rates. Following to the decision of 8 April, the rate of the main refinancing operations of the ECB (the repo rate) was cut to 2.5 per cent, and the interest rates on the deposit facility and the marginal lending facility were cut respectively to 1.5 and 3.5 per cent. The 3-month Euribor rate fell to 2.6 per cent in mid-April;
— high growth rates of aggregate M1, significantly above those of broader aggregates. In March, aggregate M1 grew 10.8 per cent in year-on-year terms, while aggregate M3 grew 5.1 per cent.

In this context, some argue that the ECB room of manoeuvre to carry out further cuts to the intervention interest rates is quite narrow. These cuts

(2) For the USA, the commission headed by Michael Boskin concluded that the CPI overestimates inflation on average by 1.1 p.p. every year. In a similar exercise, the Bundesbank concluded that the bias of the CPI in Germany averages 0.75 p.p. every year.

would be seen as desirable if unfavourable shocks to the European economy took place, for instance:

— a sudden and significant fall in external demand (resulting inter alia from hard-landing of the USA economy); and / or
— a strong depreciation of the USD vis-à-vis the euro; and / or
— a stock market crash in Europe and in the USA (eventually due to the bursting of a speculative bubble).

3. DESIRABILITY OF A COUNTER-CYCLICAL MONETARY POLICY

The previous section raised doubts about the general effectiveness of monetary policy to respond to unfavourable shocks to the economy in a context of very low interest rates. Before further discussing effectiveness, it is convenient to ascertain if monetary policy should exhibit a counter-cyclical posture.

Nowadays, it is commonly accepted that the monetary authority should use at each period *t* its instruments to minimise a loss function of the following type(3):

$$L_t = (p_t - p^*)^2 + \lambda\left(y_t - y_t^n\right)^2 + \beta\left(i_i - i_{t-1}\right)^2$$

where p_t is the inflation rate forecast for a given horizon (one to two years), p^* is the inflation rate objective pursued by monetary authorities, y_t stands for the observed real output, y_t^n is natural or potential output of the economy, y_t^n is the short-term interest rate, λ is the (non-negative) relative weight monetary authorities attribute to the stabilisation of the output gap $\left(y_t - y_t^n\right)$ and β is the (non-negative) relative weight authorities ascribe to short-term interest rate stabilisation.

Although most economists subscribe the loss function above, they diverge widely in what concerns the levels or weights and the concept of potential output considered.

Regarding weights, the case where $\lambda=\beta=0$ corresponds to a strict inflation objective, while case where $\lambda > 0$ and / or $\beta > 0$ represent situations where the monetary authority bears concerns with the stabilisation of the output gap and / or the short-term interest rate.

As regards potential output and the output gap, three distinct concepts can be referred to, with distinct implications on the guidance of monetary policy. The most traditional concept views potential output simply as the trend of the observed output time series(4). In this case, if $\lambda > 0$, monetary authorities must counteract all shocks to the economy, to stabilise the output growth rate towards its recent average level.

A second concept of potential output lies upon the distinction made between different kinds of shocks to the economy(5):

— "aggregate demand shocks", defined as those yielding no lasting effects on output, rendering only cyclical fluctuation;
— "aggregate supply shocks", defined as those yielding a lasting effect on output - for instance, productivity / technology shocks and shocks on the international prices of commodities.

According to this perspective, potential output should be understood as the outcome of the accumulation of supply shocks (and not as a mere algebraic trend). Therefore, monetary policy should only attempt to counteract observed output volatility when it results from shocks rendering a temporary effect (i.e., aggregate demand shocks). However, a counter-cyclical monetary policy like this must bear in mind that:

— it appears to be quite difficult to recognise the nature of shocks to the economy, especially with due timeliness;
— lags associated to the guidance of monetary policy are relatively lengthy and variable.

In this context, the counter-cyclical posture of monetary policy should be assumed with modera-

(3) See for instance Svensson (1999).

(4) This is the underlying concept when potential output is calculated using linear trends or time filters, like the Hodrick-Prescott filter.

(5) For example, underlying monetary policy guidance by the Swedish central bank, in the context of the inflation target strategy, is a potential output concept of this type (see Sveriges Riskbank - Memorandum 1999.02.04).

tion, so it does not render effects opposite to the expected ones — i.e., so it does not widen, instead of narrowing, cyclical fluctuations of output and inflation.

Finally, the potential output concept present in Real-Business Cycle models is broader. These models identify real shocks and monetary shocks, the latter (basically shocks in money circulation velocity) being the only ones rendering potential output unaffected. Other kinds of shocks affect simultaneously potential and effective output. In this perspective, monetary policy must be neutral in relation to all non-monetary shocks. This neutrality does not mean that monetary policy is left with no manoeuvre room. If frictions exist (e.g., monopolistic competition and price rigidity, under multi-period contracts), monetary policy should act so that the economy emulates the "ideal" behaviour that would be recorded if no frictions were present. Admitting stable inflation, nominal interest rates may, for instance, reproduce the equilibrium adjustment behaviour of the interest rate. Examples of policy response vis-à-vis shocks to the economy idealised by this current are presented in Appendix.

Therefore, we conclude that the issue of the monetary policy posture towards shocks to the economy is far from consensual; furthermore we conclude that the relevance of the Keynesian "liquidity trap" problem is greater the less moderate is the counter-cyclical posture defended for monetary policy.

4. LIQUIDITY TRAP AND BANKING CRISIS

The most cited examples of liquidity trap situations (the great depression in the USA and the recent economic situation in Japan) were linked to a collapse of asset prices and to a banking crisis. In these cases, the interest rate channel is not the most relevant one, neither it is the active constraint. From what follows from the previous section, it is fairly consensual that the monetary authority should counteract monetary shocks, acting as lender of last resort if necessary.

Recall that this was not the policy pursued in the USA during the great depression in the 1930s; in fact, this period saw a contraction of the nominal stock of money[6]. Although prices fell 24 per cent between 1929 and 1933, the reduction of the nominal stock of money determined the maintenance of the real stock, eliminating one of the mechanisms that could have led to the recovery of the USA economy. The fall in the nominal stock of money did not result from a reduction of the monetary basis (H) (which rose from USD 7.1 billion in 1929 to USD 19.4 billion in 1933). Instead, it resulted from a reduction of the money multiplier (M1 / H) (from 3.1 in 1929 to 2.4 in 1933) due to the insolvency of more than 4,000 banks out of 20,000 existing in 1929. Indeed, the fact that the Federal Reserve Bank maintained a restrictive posture regarding banks' access to primary liquidity throughout this period magnified the effects of the burst of a speculative bubble on the banking system - hence determining the insolvency of a significant number of banks. In this context, monetary authorities in the USA have frequently been held responsible for the deepening of the depression.

However, the moral hazard problems associated to the existence of an entity acting as lender of last resort cannot be disregarded. In the absence of appropriate supervision, if the banking system foresees a bail-out from monetary authorities, institutions will tend to assume excessive risk, worsening their financial vulnerability.

5. ALTERNATIVE CHANNELS OF TRANSMITION OF MONETARY POLICY

The relevance of the liquidity trap depends crucially on the importance attributed to the interest rate channel in the monetary policy transmission mechanisms. The interest rate channel is usually motivated with the conventional Keynesian IS/LM model: the central bank determines short-term interest rates (through its intervention rates), which in turn affect long-term rates; these influence companies' investment decisions, as well as households' (durable good) consumption ones. Therefore, for the liquidity trap to constitute a problem to the management of monetary policy, it is required that short-term interest rates provide the dominant channel through which monetary decisions are transmitted to the economy.

(6) See for instance White (1990).

It is consensual nowadays that the interest rate channel is not the only existing one; the following complementary channels — the so-called direct channels — are often pinpointed:

— the relative asset prices channel (including the exchange rate);
— the credit channel.

The first channel recognises that central banks influence the structure of portfolios and/or asset prices, generating this way temporary effects on the demand for goods and services. A monetary shock[7] disturbs the equilibrium structure of economic agents' asset portfolios; it also induces changes in the demand for real assets and hence rendering changes to their relative prices. In addition, if the central bank induces an expansion of the monetary base through the purchase of foreign currency, the national currency depreciates, which in turn stimulates the demand for domestically-produced tradable goods and services. Note, however, that the devaluation may render perverse effects if domestic economic agents are highly indebted in foreign currency.

Meanwhile, regardless of the way liquidity injection is carried out, agents' expectations about future inflation in the economy may also be affected. At first, this will reduce real long-term interest rates, with the resulting expansionary effects on the economy.

As regards the credit channel[8], it stresses the special role played in monetary transmission by banking credit to the economy. This role is enhanced due to the limited access some economic agents (namely small companies and consumers) have to other financing sources. This credit channel can be broken-down into two sub-channels: the debtor's balance sheet channel and the bank lending channel. The first sub-channel takes into account the changes caused by monetary policy in the value of borrowers' collateral. In turn, the second channel stresses the central bank's ability to influence the amount of credit banks may grant to the economy. Therefore, due to the existence of these widely recognised direct transmission channels, which are complementary to the interest rate channel, the discussion around the inoperationality of monetary policy in a very low interest rate environment focuses on the debate around the empirical relevance of direct transmission channels. It should be noted that, with deflation and even without additional money injection, if direct channels are relevant in practice, an "automatic stabiliser" effect on economic activity (the so-called Pigou effect) is reached through increases to the real money stock. The money surplus vis-à-vis its desired level yields an effect that is equivalent to a liquidity injection by the central bank, thus stimulating the economy.

Pro-Keynesian economists[9] usually consider that the effects of monetary policy transmission through interest rate changes are dominant, paying little empirical relevance to direct effects taking place with no changes to the interest rate. On the other hand, economists of a more monetarist or neo-classical tradition[10] tend to emphasise direct channels, undramatising the dangers of the liquidity trap, but specially unrecognising monetary policy is inoperative in situations of very low interest rates.

6. INOPERATIONALITY VERSUS OPTIMALITY OF THE MONETARY POLICY GUIDANCE UNDER VERY LOW INTEREST RATES

Regardless of the issue of eventual inoperationality of monetary policy under null or virtually null nominal interest rates, there is the issue around whether there are costs associated to the loss of the interest rate channel. The analysis of this issue requires the comparison between a moderate inflation regime (exhibiting occasionally low interest rates) and a null inflation one (with low interest rates).

Curiously, economic literature on long-run monetary policy rules suggests that an optimal policy is consistent with null or close to zero nominal interest rates (this finding is known in literature as the Friedman rule). The underlying intuition builds upon the idea that the price of a good should equal its marginal production cost. Since

(7) The reference to shocks refers to unexpected events.
(8) See for instance Bernark and Gertler (1995).
(9) See for instance Summers (1991).
(10) For example, Friedman (1969) and Meltzer (1999).

money has a negligible production cost, optimality is reached when the price of holding money is null (i.e. the interest rate is zero). This means that the inflation rate should equal the symmetric of the rate of return of capital (i.e., the real equilibrium interest rate), to which corresponds deflation. Even when principles of optimal taxation are taken into account, the Friedman rule seems to hold(11). The optimality of this rule should, however, be faced with caution since some considerations — of the kind of informal economy taxation, high costs of collecting taxes on consumption and / or income, and the rigidity of nominal wages towards reductions — justify a price stability policy in the long-run (i.e., zero or marginally positive inflation, instead of deflation). Furthermore, the Friedman rule is a long-run one, therefore overlooking the manner in which monetary policy should be managed in the presence of short-run shocks. Furthermore, the arguments on optimal taxation in favour of the optimality of the Friedman rule are conditioned to the kind of economic representation (i.e., the model) considered.

Some recent empirical research trying to measure the costs of losing the interest rate channel compares the effects on output due to unfavourable shocks to the economy in a context of moderate inflation with a zero-inflation one (Fuhrer and Madigan (1997) and Orphanides and Wieland (1998)). The general finding is that a moderate level of inflation is preferred to zero inflation. They conclude that output variability increases with close to zero inflation objectives (where recessions are more frequent and more intense). Other empirical research (Akerlof, Dickens and Perry (1996)) argues that permanent costs are present due to the existence of nominal wages downward rigidity, which also favours a non-zero inflation target.

These studies present, however, several drawbacks. First, they use data from a non-zero inflation environment, and extrapolate findings to a zero inflation regime, which is obviously subject to the Lucas critique (i.e., the adjustment of agents' behaviour to the change of regime is not taken into account). Moreover, as referred when discussing the Friedman rule, the results of the models considered in these research are conditioned to the type of model and to the simplifications assumed (for instance, the influence of monetary policy is limited to the interest rate channel, ignoring the direct transmission channels referred in section 5).

This discussion illustrates the fact that it is not possible to reach a definitive conclusion on what regime is preferable — a null inflation regime or a low inflation one. Nevertheless, even the Friedman rule critics defend low inflation levels, to which correspond moderate interest rates (as opposed to zero or close to zero interest rates).

7.CONCLUSION

The reflections above and the current European economic situation make us conclude that the euro area is not presently in a liquidity trap situation. First, the current interest rate levels are compatible with a moderately counter-cyclical monetary policy. Furthermore, if important shocks that lead the economy to virtually null interest rate levels come to happen, existing alternative monetary policy transmission channels (namely the exchange rate and policies of communication / management of expectations) should prevent the confirmation of pessimistic scenarios.

In the past, the situations closer to the liquidity trap (the great depression in the USA and the Japanese crisis in the 1990s) took place alongside banking crises, after speculative bubbles in asset prices burst. However, Meltzer (1999) also reports some cases for the USA where very low nominal interest rates were reached without a banking crisis; the Swiss case over the last decades provides also an illustration to this situation. Therefore, more than challenging to the guidance of the monetary policy in the euro area, taken in its strict sense, a situation of virtually null interest rates requires a special effort and awareness from banking supervision, namely in a context of inflation in asset prices.

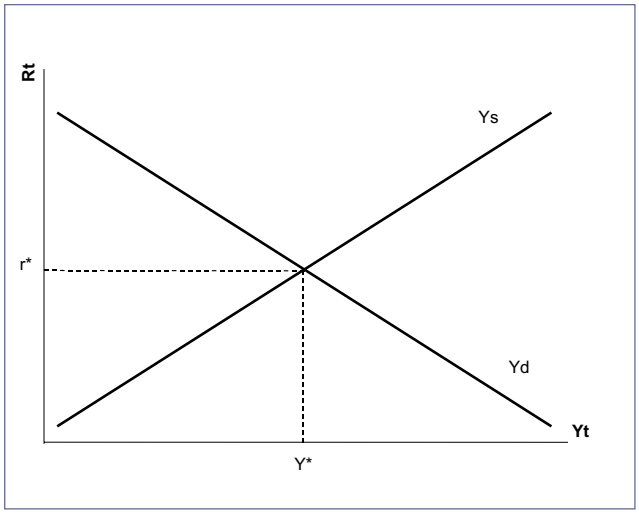
(11) For instance Correia and Teles (1996;1999).

Appendix [12]

In the context of Real-Business Cycle models, monetary policy should promote money neutrality over real activity even in the short-run (a neutral policy meaning a policy allowing to sustain output at its potential level in a context of price stability). This neutrality does not imply that no manoeuvre room is left to the short-run effectiveness of monetary policy. If frictions (e.g., monopolistic competition and price rigidity, with multi-period contracts) exist, monetary policy shall act so that the economy "emulates" the behaviour of an economy free of those frictions.

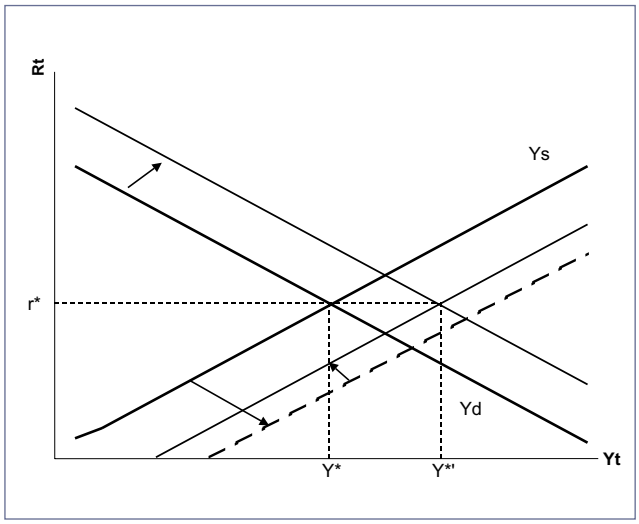
This position is illustrated below. Consider a closed economy with an aggregate supply curve (*Ys*) and an aggregate demand curve (*Yd*) defined in space (*Yt*, *Rt*), where *Yt* and *Rt* stand respectively for output and real interest rates. Admit the economy is initially at equilibrium (*Y**, *r**):

A favourable (and permanent) shock in productivity can be analysed as follows: an improvement in productivity shifts aggregate supply to the right while it also induces an increase in consumption and a reduction, through the wealth effect, of labour supply. The increase in consumption makes aggregate demand shift outwards, while the reduction of labour supply induces an inward shift of aggregate supply, offsetting part of the previous movement (see chart).



Therefore, a favourable productivity shock leads to a rise in equilibrium output, from *Y** to *Y*'*, but renders no significant effect on the real interest rate in the longer-run.

In the adjustment to the new equilibrium, it is possible that the impact on aggregate demand is faster than the impact on aggregate supply, and that the real interest rate rises temporarily. According to this current, to maintain price stability, monetary authorities should rise the nominal interest rate to accommodate the real interest rate increase, and to avoid that the expansionary impact of the shock is too great. This kind of directive contrasts, for instance, with the posture of the Federal Reserve Bank (the Fed) two or three years ago: the Fed argued that nominal interest rates needn't be raised to control inflation, since a favourable productivity shock had already limited inflationary pressures.



In the case of an unfavourable supply-side shock — of the kind of an increase in imported commodity prices — basically the symmetric of the example presented would have resulted.

(12) This Appendix is inspired in the discussion presented by Goodfriend and King (1997).

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January*

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

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

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

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

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

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

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

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

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

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

February

- ***10 February (Executive Order no. 118/99, Official Gazette no. 34/99, Series II)*** — Under the terms laid down in no. 4 of Article 295 of the Companies Act (*Código das Sociedades Comerciais*) (legal reserve), stipulates that the provisions set forth in no. 2 of the aforementioned Act shall not be applicable to the companies subject to the supervision of the Banco de Portugal and the

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

Portuguese Insurance Institute, as regards the reserves set up for the amounts referred to in paragraph a) of this Act. It further stipulates that reserves cannot be utilised for the payment of dividends or the acquisition of own shares.

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

- ***18 February (Instruction no. 2/99, Official Gazette no. 41/99, Series II)*** — Rewords Articles nos. 12, 16, 21, 22 and 23, and introduces other changes in Instruction no. 2-A/98 (Series II) of 22 December, as regards the rules governing the issue of Treasury bonds.

- ***20 February (Regulation no. 3/99 of the Stock Market Commission, 4th Supplement to Official Gazette no. 43/99, Series II)*** — Rewords no. 5 of Regulation no. 94/4 of 20 June, governing the special market for wholesale transactions.

March

- ***2 March (Decree-Law no. 58/99, Official Gazette no. 51/99, Series I, A)*** — Regulates the setting up and operation of risk capital funds. Revokes Decree-Law no. 187/91 of 17 May, and Decree-Law no. 214/92 of 13 October.

- ***8 March (Circular Letter of Banco de Portugal no. 16/DOC)*** — Informs credit institutions and financial companies that the rules governing operations on the primary and secondary markets of Treasury bills, through the SITEME (Electronic Market Transfer System) are laid down in Instruction No. 6/99.

- ***10 March (Regulation no. 4/99 of the Stock Market Commission, Official Gazette no. 58/99, Series II)*** — Rewords paragraphs 2.3.2 – Accounting Principles – Valuation Criteria – Securities Portfolio - of Regulations nos. 95/14 and 96/16, adding a new paragraph, which will become effective on 1 January 2000.

- ***12 March (Regulation no. 8/99 of the Portuguese Insurance Institute, Official Gazette no. 60/99, Series II)*** — Lays down a set of rules on the calculation and setting up of the solvency margin and of the guarantee fund of pension fund managing companies. Revokes Rule no. 3/98-R of 18 February, retaining no. 61 of Rule no. 298/91 of 13 November, previously revoked.

- ***12 March (Regulation no. 9/99 of the Portuguese Insurance Institute, Official Gazette no. 60/99, Series II)*** — Lays down a set of rules governing the calculation and setting up of the solvency margin and guarantee fund of insurance companies. Revokes Rule no. 2/98-R of 18 February.

- ***16 March (Decree-Law no. 75/99, Official Gazette no. 63/99, Series I, A)*** — Valuation of the gold of Banco de Portugal. Brings into line the gold valuation criterion with the one defined for the European System of Central Banks and harmonises the nomenclature and the meaning of the current "Gold revaluation reserve" with that adopted in the Chart of Accounts of the Banco de Portugal. Revokes Decree-Law No. 229-H/88 of 4 July, effective as of 1 January 1999.

- ***22 March (Circular Letter of the Banco de Portugal no. 9/DSB)*** — Sends a copy of Instruction no. 8/99, to be published in the BNBP no. 4, of 15 April 1999, relating to the procedures to be adopted by credit institutions and financial companies, as regards their clients, in the conversions between the escudo and other euro area currencies.

- ***30 March (Notice of Banco de Portugal no. 3/99, Official Gazette no. 75/99, Series I, B)*** — Provides for the flexibilisation of the procedures governing the setting up of country-risk provisions, enabling its adaptation by the Banco de Portugal to new situations, through the issue of instructions. Rewords no. 1 of no. 12 of Notice no. 3/95 of 30 June.

- ***31 March (Decree-Law no. 102/99, Official Gazette no. 76/99, Series I, A)*** — Changes the legal system governing mutual agricultural credit and agricultural credit co-operatives. Rewords articles 28, 44, 50, 53, 66, 68, 74 and 80 and adds articles 81 and 82 to Decree-Law no. 24/91 of 11 January,

amended by Decree Law no. 230/95 of 12 September and Decree-Law no. 320/97 of 15 November.

April

- ***1 April (Official Journal of the European Communities no.94, Series C)*** — Interest rate applied by the European Central Bank to its repurchase agreements since 1 April 1999: 3.00%; euro exchange rates.

- ***1 April (Executive Order no. 227/99, Official Gazette number 77, Series I, B)*** — Pursuant to the provisions set forth in no. 3 of Article 1 of Decree-Law no. 88/94, of 2 April, establishes that the securities representing the public debt, issued under the terms of the Resolution of the Council of Ministers no. 9-A/99, of 23 February, shall be added to the list published through Executive Order no. 377-A/94, of 15 June.

- ***16 de April (Regulation no. 5/99 of the Stock Market Commission, Official Gazette no 89, Series II)*** — Lays down the general rules governing the setting of the fees to be paid by the issuing entity to the Association of the Lisbon Stock Exchange (Portuguese acronym: ABVL) for the services provided by the latter, regarding the listing and relisting of securities, as well as their maintenance in the spot exchange markets. Revokes nos. 7 to 9 of Regulation no. 91/12 and no. 9 of Regulation no. 91/14 of the Stock Market Commission.
  Amended by Regulation no. 11/99, of 19 April, Official Gazette no. 113, Series II, of 15 May 1999.

- ***28 April (Circular Letter of the Banco de Portugal no. 24/DOC)*** — Informs that on 10 May 1999 a redenomination shall be made by the Banco de Portugal of the outstanding Certificates of Deposit, and explains the method to be used in the referred operation.

- ***28 April (Executive Order no. 293/99, Official Gazette no. 99, Series B)*** — Under the terms laid down in no. 2 of Article 27 of Decree-Law no. 415/91, of 25 October, adapts to the euro the rules governing the application of pension funds. Revokes Executive Orders no. 1152-E/94, of 27 December, no. 195/97, of 21 March and no. 46/98, of 30 January.

- ***30 April (Executive Order no. 299/99, Official Gazette no. 101, Series B)*** — Under the terms laid down in no.1 of Article 90 and in Article 187 of Decree-Law no. 94-B/98, of 17 April, adapts to the euro the rules governing assets representing the insurance companies' technical reserves. Revokes Executive Orders no. 1152-D/94, of 27 December, no. 194/97, of 21 March and no. 48/98, of 4 February.

- ***30 April (Circular Letter of the Banco de Portugal no. 26/DOC)*** — Informs that the rate of return on Certificates of Deposit, Series B, was fixed at 2.35%, to prevail on the quarter started on 4 May 1999.

May

- ***5 May (Notice no. 4/99, Official Gazette no. 104, Series I)*** — Fixes the contributions to the Agricultural Credit Guarantee Fund; lays down a transitional system to be applicable to the contributions of the Central Agricultural Credit Bank and the mutual agricultural credit banks, providing for their reassessment for the year 2000.

- ***12 May (Circular Letter of the Banco de Portugal no. 28/DOC)*** — Informs that an amended credit-risk centralisation for January 1999 shall be disclosed, thereby cancelling the one issued on 22 April last.

- ***16 May (Decision of the European Central Bank, of 1 December 1998 (1999/331/EC))*** — Decision on the national central banks' percentage shares in the key for the capital of the European Central Bank (ECB/1998/13). This decision replaces the ECB's Decision of 9 June 1998 (ECB/1998/1). The effects of this Decision are backdated to 1 June 1998. Pursuant to the provisions laid down in this Decision, the ECB's Executive Board is authorised to take all measures deemed necessary so as to make the adjustments to the amounts already settled by the NCBs, under the terms of the ECB's Decision of 9 June 1998, laying down the measures necessary for the paying-up of the capital of the European Central Bank.

- ***20 May (Decree-Law no. 172/99, Official Gazette no. 117, Series I, A)***

Lays down the legal system governing autonomous warrants issued, negotiated or traded in Portugal. Adds Article 157-A to the Stock Market Code, approved by Decree-Law no. 142-A/91, of 10 April, and rewords Article 3 of the Commercial Registration Code, approved by Decree-Law no. 403/86, of 3 December.

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