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## CONTENTS

## CONTENTS

### *Economic Policy and Situation*



### *Articles*



### *Chronology of Major Financial Policy Measures*

## ECONOMIC POLICY AND SITUATION

The Portuguese Economy in 2008

# THE PORTUGUESE ECONOMY IN 2008

## 1. INTRODUCTION

In the context of the largest economic and financial crisis in the last 80 years, the Portuguese economy also decelerated sharply in 2008, entering a recessionary period in the second half which is expected to be the most profound and prolonged of the last decades. The deterioration of the world economy was particularly severe and synchronised, with a large number of advanced economies in recession and a significant slowdown in the emerging market economies. These developments directly influenced the evolution of the Portuguese economy, owing to its strong economic and financial integration. Additionally, the persistence of several areas of weakness conditioning factor productivity and restricting the solvency conditions of agents from an inter-temporal viewpoint were contributory factors explaining why Portugal, once again, recorded one of the lowest growth rates of euro area and European Union countries in 2008.

Two factors associated with the financial crisis contributed to the significant increase in the Portuguese economy's external deficit in 2008. They were (i) the abrupt fall in external demand and exports, in particular in the end of the year, which contrasts with a smaller deceleration of imports, in the context of a virtual stabilization of the growth in private consumption and (ii) the unfavourable evolution of the terms of trade, due to the strong increase, on annual average terms, of the price of commodities in international markets, in particular oil. In macroeconomic terms, the increase in the external deficit reflects the decrease of private sector and general government savings rates and the maintenance of investment as a percentage of GDP. In this context, reference should be made to the reversal of the structural consolidation process of the public accounts, in 2008, after two years of significant structural adjustment (see "Box 3 *Fiscal prospects*").

Available information points to nil GDP growth in 2008, after 1.8 per cent in 2007 (Table 1.1). On the supply side, the strong deceleration of the Portuguese economy reflected an atypical fall in labour productivity, in a framework of moderate job creation and a slight fall in the unemployment rate which remained at historically high levels. On the demand side, the deceleration of activity was associated with the behaviour of Gross Fixed Capital Formation (GFCF) and exports, *i.e.* the most sensitive components to an internal and external framework characterised inter alia by a deterioration in aggregate demand expectations. By way of contrast, private consumption, particularly in the non-durable component, had a smoother growth profile, partly sustained by growth of consumer credit, in addition to significant growth in total wages.

In intra-annual terms, the Portuguese economy recorded in the fourth quarter a sharp and marked deterioration in its international trade flows and in domestic demand, particularly investment, in line with what was happening in the other advanced and emerging market economies. This behaviour reflected the convergence, in this quarter, of a set of shocks in international financial markets leading to an unprecedented crisis of confidence, translating into large scale asset liquidations and a marked increase in liquidity and credit risk premiums, whose effects spilled over to a growing number of institutions, financial market segments and countries. These effects were amplified by the conjugation with an economic situation already characterised by a financial deleveraging process in progress, a marked rise in the prices of commodities in the first half of the year and a dynamics of deceleration in several of the advanced economies, particularly those registering significant adjustments in their property markets. The combination of these effects increased levels of uncertainty and risk aversion and implied a rapid

**Table 1.1**

MAIN ECONOMIC INDICATORS
Rate of change, per cent

| | 2007 | 2008 |
|---|---|---|
| GDP | 1.8 | 0.0 |
| Private consumption | 1.6 | 1.7 |
| Public consumption | 0.0 | 0.5 |
| GFCF | 2.8 | -1.7 |
| Domestic demand | 1.5 | 0.9 |
| Exports | 7.5 | -0.4 |
| Imports | 5.6 | 2.1 |
| Employment | 0.2 | 0.5 |
| Unemployment rate (as a percentage of labour force) | 8.0 | 7.6 |
| Fiscal balance (as a percentage of GDP) | -2.6 | -2.6 |
| Net lending (+) / net borrowing (-) of the economy (as a percentage of GDP) | -8.1 | -10.5 |
| HICP | 2.4 | 2.7 |

**Sources:** *INE* and Banco de Portugal.

and marked deterioration of global growth prospects and a downward revision of expected inflation. These factors led to the reduction and postponement of the expenditure of economic agents and to a rupture in world trade at the end of the year, which was exacerbated by difficulties in access to commercial credit and the generalised phenomenon of the vertical specialisation of production at a global scale over latter years. The deterioration of economic prospects, in turn, tended to reinforce financial market tensions, in a spiral whose potential systemic impact on global economies was not inconsequential.

To face this systemic risk, governments and the central banks of several countries, including Portugal, adopted a wide range of unprecedented financial system support and economic activity stimulus measures in a framework of international cooperation. In spite of the fact that these measures have helped to diminish systemic risk and increase economic agents' confidence in the financial system, market uncertainty in the first months of 2009 remained very high with risk aversion by investors remaining at particularly high levels. Additionally, in the context of the approval of budget stimulus measures of an appreciable magnitude and of risk transfer from financial institutions to States, there were upward pressures on the yields of sovereign entities, including Portugal. This requirement for higher risk premiums on public debt returns also represented an additional penalty on the financing costs of domestic economic agents. In this sphere, reference should be made to the fact that, notwithstanding increased restrictions on the financing conditions of the non-financial private sector in Portugal, particularly mortgage lending, domestic credit maintained a strong dynamism in 2008, particularly credit to non-financial corporations, although clearly evidencing a slowing trend during the course of the second half of the year. This evolution was sustained by the banking system via a substantial increase of customer deposits, the recourse to the Eurosystem monetary policy operations and, to a lesser extent, the maintenance of access to financing on the wholesale international debt markets.

There was a significant increase in the Portuguese economy's external deficit in 2008, translating an unfavourable evolution of the balance of goods and services and, to a lesser extent, of the balances of income and current transfers. Significant recourse to external savings to meet the borrowing requirements of resident sectors implied an increase in the debtor international investment position of the Por-

tuguese economy, standing at 97.2 per cent of GDP in 2008, against 91.3 per cent in 2007. In contrast with previous years, the financing of the current and capital balance in 2008 involved a significant decrease in external financial assets flows (deriving from the sale of portfolio securities issued by non-residents by securities investment funds, to provide for the growing number of redemptions of investment units) in addition to a decrease in external financial liabilities flows (particularly associated with the reduction in bank finance in wholesale debt markets).

Continued major uncertainty over the evolution of domestic and external demand, in addition to the persistence of the effects of interaction between the global financial and economic crises, notwithstanding the stimulus measures implemented by national and international authorities, will tend to be reflected in a major contraction of external demand for national exports in 2009, as well as a reversal or postponement of consumption and investment decisions. At the start of this year, these effects were visible in the evolution of diverse Portuguese economic indicators, namely of a qualitative nature (see "Box 4 *The recent evolution of qualitative indicators*"). In such a context, the Banco de Portugal's most recent projections, produced on the basis of the information available up to end-March, point to a fall of 3.5 per cent in GDP in 2009, (see "Box 1 *Interim update of macroeconomic projections for 2009*"). In the case of GFCF and exports, the fall is expected to be particularly marked and only quantitatively comparable to the behaviour of these variables in the recession of 1975. Reference should, however, be made to the fact that these projections are surrounded by a very high degree of uncertainty, namely regarding the external environment to the Portuguese economy, on an economic and financial level, as well as in what refers to agents' responses to the current unprecedented macroeconomic environment.

As regards inflation developments, measured by the average annual change of the HICP (Harmonised Index of Consumer Prices) the current projections point to a marginally negative average inflation rate in 2009, against 2.7 per cent in 2008. This projection reflects an intra-annual profile, in 2009, which is clearly influenced by the impact of the base effects related with the evolution of the prices of energy goods and processed foodstuffs in 2008 (which determined a strong acceleration of prices in the first half of the year and a marked deceleration in the second half). Therefore, during the course of 2009, inflation is expected to decline from its current levels of close to zero to clearly negative values in mid-year, reverting once more to positive levels in the last quarter of 2009. In the context of a high level of heterogeneity characterising the disaggregated evolution of inflation at each point of time, it should be noted that the proportion of the components with year-on-year rates of change higher than zero is likely to continue to be significantly higher than the components which will record price declines during 2009. Accordingly, the marginal fall in prices projected for 2009 as a whole should not be construed as a deflation situation, taking into account its temporary and non-generalised nature. Owing to the uncertainty over the magnitude and persistence of the negative shocks which are currently affecting aggregate demand at a global level, it must be emphasised that the probability of the occurrence of a deflationary situation in the context of participation in the euro area will crucially depend on the maintenance of the ECB's credibility in anchoring medium to long term inflation expectations in the area at levels consistent with a situation of price stability (see "Box 2 *Recent consumer price developments and deflation risks in the euro area*").

## 2. INTERNATIONAL FRAMEWORK

During the course of 2008 there was a significant deterioration of the external environment of the Portuguese economy, in a context of growing interaction between an unprecedented international financial crisis and sharp weakening of world economic activity, with a large number of advanced economies in recession and a significant economic slowdown in emerging markets. The financial tur-

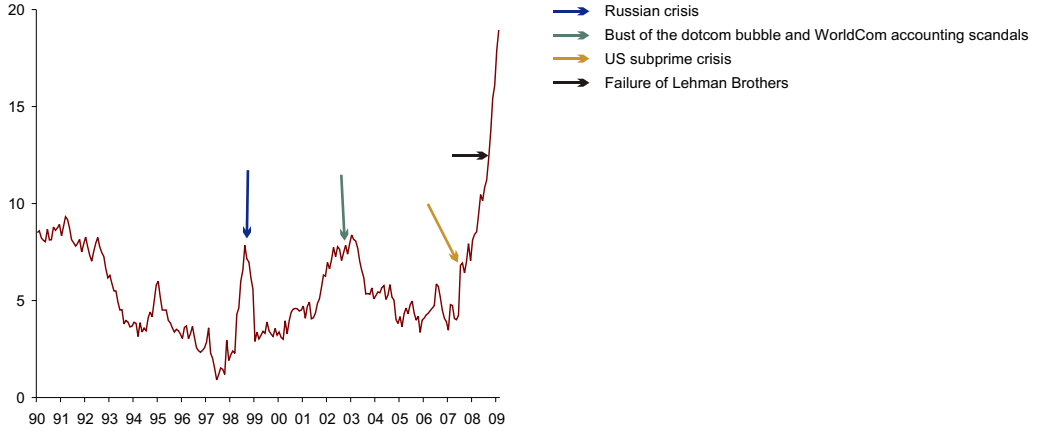
moil that started in the summer of 2007 in the sub-prime market in the United States, worsened significantly during the course of 2008, spreading into a growing number of institutions, financial market segments and countries, in particular in the wake of the mid-September failure of Lehman Brothers and the widespread crisis of confidence it triggered. The globalisation of the financial crisis occurred in a context of faltering economic activity in some advanced economies since mid-2007, financial deleveraging, major increases in commodity prices in the first half of the year and significant housing market corrections in several countries. The combination of such factors had severe consequences on the real economy at the end of the year, resulting in an abrupt deterioration of global economic prospects.

The sharp deterioration of economic activity exacerbated expectations of financial system losses, with the recent occurrence of several mutually reinforcing negative effects between weakening prospects for economic activity and strains on financial markets. To counter this situation, the governments and central banks of several countries, including Portugal, adopted a broad range of unprecedented financial system support and economic stimulus measures, both as regards the number of measures and the amounts involved, in a hugely cooperative international framework. Despite the fact that such measures helped to decrease systemic risk and increase the confidence of economic agents in the financial system, uncertainty in financial markets remained at very high levels in the first months of 2009 and investors' risk aversion continued to increase from particularly high levels (Chart 2.1). There was also growing concern over the ability of governments to finance their economic stimulus and financial support packages and over the sustainability of public debt in several countries, generating upward pressure on government bond yields. In early 2009, the main international organisations significantly revised downwards forecasts for world economic activity in 2009 and 2010. Such projections indicated that the world economy would experience the most severe and synchronised economic recession of the last decades in 2009. The projected recovery for 2010 is likely to be very gradual and moderate.

Turbulence in the financial markets intensified in 2008 and dramatically so from mid September. At the beginning of the year, financial markets were negatively affected by news of the deterioration of the balance sheets of financial institutions, particularly monoline insurance companies in the United States

**Chart 2.1**

RISK AVERSION INDICATOR
January 1990 – February 2009

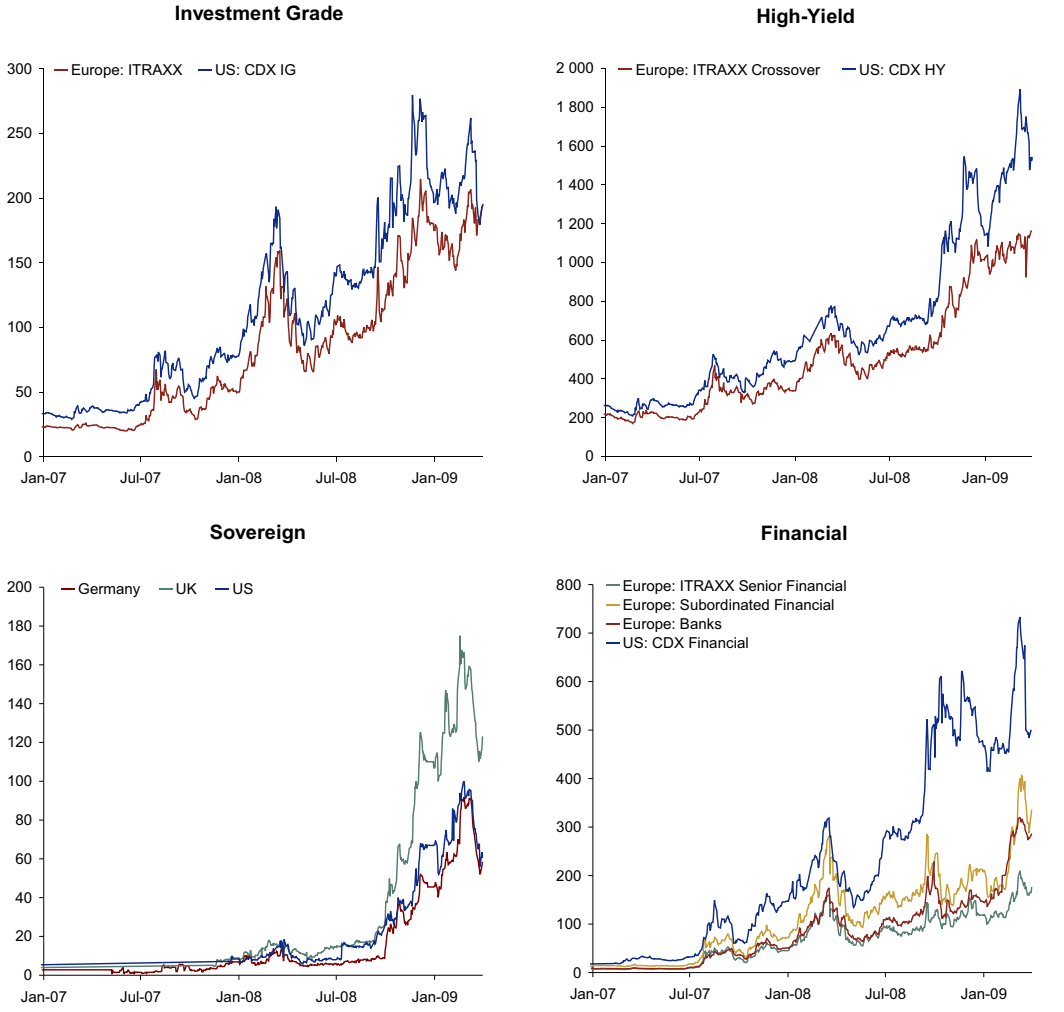



**Source:** Goldman Sachs.
**Note:** The GS risk aversion index measures investors willingness to invest in risky assets as opposed to risk-free securities, building on the premises of a consumption capital asset pricing model. A higher value of the index implies higher risk aversion and, other things being equal, less willingness to allocate investments towards risky assets.

and heightened fears of a recession in the United States and its impact on the world economy. Increased uncertainty and risk aversion also heightened in the first weeks of March with rising concerns over systemic risks. In a general endeavour to reduce risk exposure investors accelerated the ongoing withdrawal from various financial market segments, causing sharp falls in asset prices, higher risk premiums and a reduction in market liquidity while bringing additional pressures to bear on banks' balance sheets. Risks of corporate defaults, assessed by credit default swap (CDS) spread indices , and corporate bonds yield spreads relatively to government bond yields widened considerably, more sharply in the United States and in the financial sector (Chart 2.2). In the money markets, spreads between non-collaterised and collaterised operations for the dollar, euro and sterling increased, particularly over the longer maturities, indicating an increase in counterparty credit risk.[1]

**Chart 2.2**

CREDIT DEFAULT SWAP SPREADS (5 YEAR MATURITY)
Basis points




**Source:** Thomson Reuters.

(1) The relative importance of credit risk in the broadening of the interest rate differentials between non-collateralised and collateralised operations over the longer maturity periods is documented in "Box 2.1 *Risk premium in the money market during the period of financial market turmoil: credit or liquidity risk?*", Banco de Portugal, *Financial Stability Report 2007*.

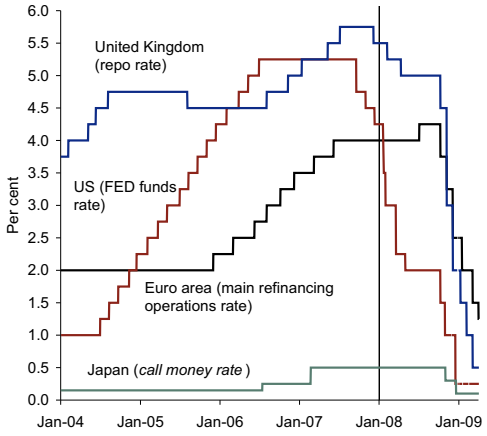
In this context, central banks introduced additional exceptional liquidity management measures, in which particular reference should be made to the joint action agreed between the US Federal Reserve, ECB and other central banks, to resume US-dollar liquidity-providing operations on 11 March 2008. The Federal Reserve also approved a financing plan for the acquisition of the distressed investment bank Bear Stearns on 16 March. These measures, compounded by the sharp policy interest rate cut by the Federal Reserve (the federal funds target was reduced by 2.0 percentage points (p.p.) in the first quarter of the year, to 2.25 per cent) and by banks' recapitalisation efforts, led to the perception of a reduction of systemic risks and the idea that the impact of the financial turmoil on the real economy could be less severe than expected (Chart 2.3). The following months therefore witnessed a certain level of moderation in financial market tensions. This period also witnessed growing concern over the prospects of inflation, owing to short term upward pressures associated with the strong growth of international commodity prices, particularly oil.

In the first half of the year commodity prices increased strongly. Brent oil reached a maximum price of USD 146 per barrel in early July (USD 91 at the end of 2007) and prices of non-energy commodities increased by 26 per cent in the first half of the year (Chart 2.4). This evolution reflected both the continuation of strong world demand for commodities in a framework of continued dynamism in emerging markets and relative tight conditions on the supply side. In the case of oil prices, the successive downward revisions of supply by non-OPEC countries and low spare capacity in OPEC members, generated concerns over supply disruptions, particularly owing to the geopolitical tensions involving several of the production countries. The strong increase in the price of agricultural commodities was also influenced by adverse supply side shocks, namely the export restrictions imposed by several production countries and poor harvests, in addition to the maintenance of the upward trajectory on demand for such products.

Against this background, over the first half of the year inflationary pressures increased worldwide and inflation reached high levels in several economies. Year-on-year inflation in the United States increased from 4.1 in December 2007 to 5.6 per cent in July 2008, from 3.1 to 4 per cent in the euro area, from 2.1 per cent to 4.4 per cent in the United Kingdom and from 0.7 per cent to 2.3 per cent in Japan, in the same period (Chart 2.5). With the objective of countering the growing risks to medium term price

**Chart 2.3**

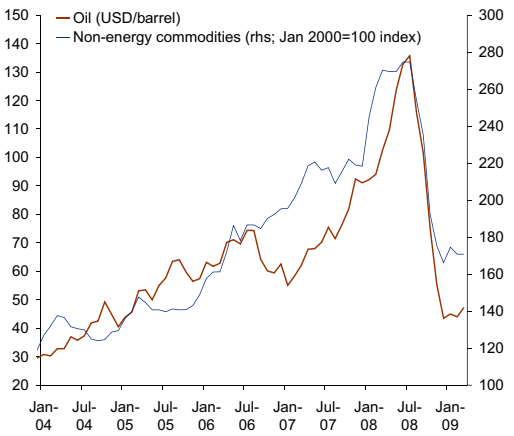
OFFICIAL INTEREST RATES




**Sources:** Bloomberg and ECB.

**Chart 2.4**

COMMODITIES PRICES
In USD




**Sources:** Bloomberg and HWWI.

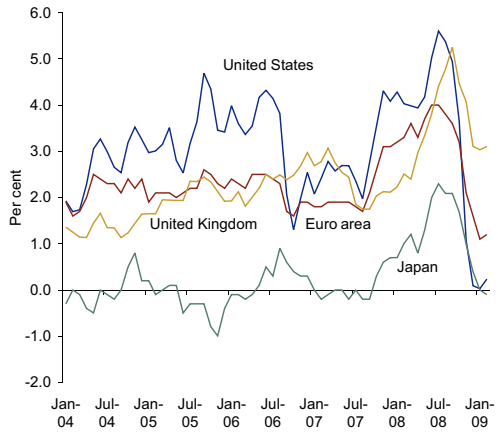
stability and preventing broad-based second-round effects, the Governing Council of the ECB decided to raise key interest rates by 25 basis points (b.p.) on 3 July 2008. Concerns over upward risks on inflation were also a factor behind the decisions taken by the Federal Reserve and Bank of England to keep official interest rates unchanged in this period.

A renewed upsurge of risk aversion and uncertainty was observed from end-May, becoming severe from September onward. The change was initially associated with growing signs of a world economic deceleration which, simultaneously with the increase in inflationary pressures and tighter financing conditions, suggested that corporate earnings and credit quality were likely to be eroded. Credit markets began to evidence expectations of gradually rising default rates, with spreads on CDS and corporate bond yield spreads widening once again and equity prices declining. At the same time, the housing market in the United States and in several other European economies continued to deteriorate significantly (Chart 2.6). The intensity of the correction in the United States, in progress since the end of 2005, showed no signs of abating, with the negative changes in housing price indices having accentuated during the course of the year, suggesting that the adjustment process was likely to take longer than expected. In several European countries in which the housing market was also showing signs of downward correction, year-on-year changes in nominal house prices were very negative, such as in the United Kingdom and Ireland, or under a very pronounced deceleration, such as in Spain, which witnessed a nominal fall in house prices in the last quarter of 2008 (for further details see "Box 1 *Housing markets in some advanced economies*", Banco de Portugal, *Economic Bulletin-Autumn 2008*). House prices, in Portugal in 2008 maintained moderate nominal growth, after a long period of annual growth rates of close to zero (see "Section 3.1 *ECB monetary policy and the Portuguese economy's monetary and financial conditions*" in this Bulletin). The broad-based weakness in housing markets implied further valuation losses on mortgage-backed securities, raising fears over the viability of several major specialised US mortgage finance agencies, leading the US government to formally take control of the Fannie Mae and Freddie Mac on 7 September. The deterioration of financing conditions in equity and credit markets added to pressures already faced by financial institutions in replenishing their capital and ongoing funding needs in particular those more dependent on wholesale funding (such as the investment banks) and heavily involved in credit market derivatives.

**Chart 2.5**

CONSUMER PRICES

Year-on-year rate of change

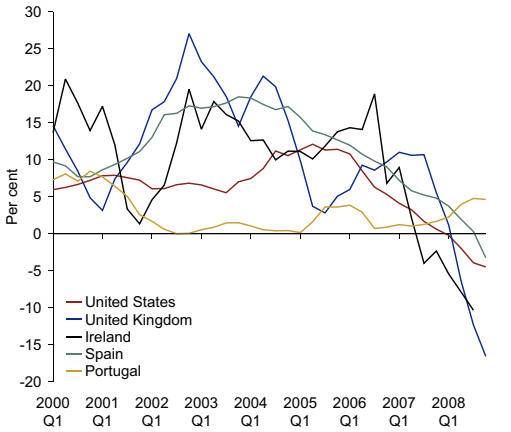



**Sources:** Eurostat and Thomson Reuters.

**Chart 2.6**

HOUSING PRICES

Year-on-year rate of change



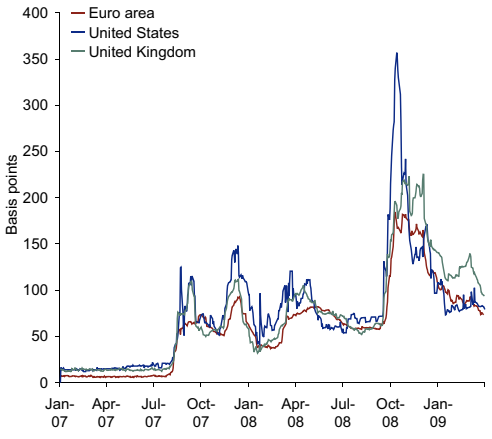

**Sources:** *Confidencial Imobiliário* Newsletter and Thomson Reuters.
**Note:** Prices in the United Kingdom, Spain and Portugal refer to all (new and second hand) houses, and to existing houses in Ireland and the United States.

The financial turmoil worsened considerably following the failure of Lehman Brothers on 15 September, giving rise to a crisis of confidence which quickly spread to the global financial system. The crisis of confidence led to massive sell-off affecting all segments of the financial market and particularly money markets and several segments of the credit market. Credit risk premiums reached their highest levels since the start of the turbulence. In the money markets of major economies, there was a sharp increase in interest rate spreads between non-collateralised and collateralised loans with major difficulties in terms of US dollar finance (Chart 2.7). The risk of corporate defaults, as measured by CDS spreads also rose sharply and corporate bonds yield spreads reached their highest levels since the start of the turbulence. Financial companies with the worst ratings were the most affected, both in the United States and in the euro area. Equity prices, in turn, fell sharply, including emerging markets which, for a long period appeared to be relatively immune to the current crisis (Table 2.1). In 2008, stock markets declined by 46 per cent year in the euro area and by 38 per cent in the United States, with banks' shares in these economies having fallen by 64 per cent and 50 per cent, respectively. In emerging markets equity prices fell by around 50 per cent. The demand for more liquid and safer financial instruments favoured government debt markets. The increase in uncertainty is clearly evident in the spike of implicit volatilities of stock markets (Chart 2.8). In such a context, the banks' financial situations worsened dramatically: firstly because access to external sources of finance became very difficult and, secondly because accrued asset losses led to the erosion of their capital base.

To contain systemic risks, the central banks and the governments of several countries have implemented a broad range of measures. On 8 October, in a coordinated action, major central banks reduced their official interest rates, with the ECB having reduced key interest rates by 50 b.p. (to 3.75 per cent for the interest rate on the main refinancing operations). The central banks have also endeavoured to boost market liquidity by providing substantial amounts of funds and, in several cases, by expanding the list of collateral and counterparts acceptable in monetary policy operations.[2] The

**Chart 2.7**

COLLATERALISED AND NON-COLLATERALISED 3-MONTH INTEREST RATE SPREADS




**Source:** Thomson Reuters.

**Chart 2.8**

IMPLICIT VOLATILITIES IN STOCK MARKETS


**Source:** Thomson Reuters.
**Note:** Market expectations of volatility in stock markets in the next 30 days based on options prices.

(2) The expanding of the list of collateral and counterparts accepted in monetary policy operations was more relevant in the cases of the Federal Reserve and Bank of England than the Eurosystem. The range of Eurosystem counterparts was already very broad and the list of eligible assets already included a broad range of tradable and non tradable assets (including securitised debt instruments, covered bonds and bank loans) - see "Box 2.1 *Euro area money market in the context of financial turmoil* ", Banco de Portugal, *Annual Report 2007*.

## Table 2.1

INTERNATIONAL FINANCIAL MARKETS
End-of-period values (daily data)

| | | | | | ***Vis-à-vis* the beginning of the financial crisis (percentage change or basis points) [b]** | |
|---|---|---|---|---|---|---|
| | **2006** | **2007** | **2008** | **2009 [a]** | **2008** | **2009 [a]** |
| Stock market indices (percentage change) | | | | | | |
| Dow Jones Euro Stoxx | 20 | 5 | -46 | -14 | -49 | -56 |
| Banks | 22 | -9 | -64 | -18 | -68 | -74 |
| S&P 500 | 13 | 4 | -38 | -12 | -41 | -48 |
| Banks | 12 | -33 | -50 | -45 | -64 | -80 |
| Nikkei 225 | 6 | -11 | -42 | -8 | -51 | -55 |
| FTSE 100 | 11 | 4 | -31 | -11 | -33 | -41 |
| MSCI - emerging market economies [c] | 26 | 30 | -47 | 4 | -44 | -42 |
| 10-year government bond yields (percentage) | | | | | | |
| Euro area | 4.1 | 4.4 | 3.8 | 4.1 | -71 | -46 |
| United States | 4.7 | 4.0 | 2.2 | 2.7 | -274 | -229 |
| Japan | 1.7 | 1.5 | 1.2 | 1.4 | -69 | -51 |
| United Kingdom | 4.7 | 4.5 | 3.0 | 3.2 | -230 | -215 |
| Spreads between corporate and government bond yields (basis points) | | | | | | |
| Euro area | | | | | | |
| AA | 26 | 88 | 196 | 191 | 156 | 152 |
| Non-financial corporations | 22 | 53 | 104 | 105 | 79 | 80 |
| Financial corporations | 27 | 96 | 217 | 218 | 175 | 176 |
| BBB | 73 | 145 | 573 | 586 | 501 | 514 |
| Non-financial corporations | 70 | 134 | 455 | 370 | 387 | 301 |
| Financial corporations | 98 | 240 | 1369 | 2432 | 1259 | 2322 |
| Banks | 35 | 105 | 399 | 429 | 354 | 384 |
| United States | | | | | | |
| AA | 51 | 171 | 420 | 415 | 344 | 339 |
| Non-financial corporations | 54 | 139 | 299 | 268 | 230 | 199 |
| Financial corporations | 51 | 176 | 458 | 495 | 381 | 418 |
| BBB | 113 | 262 | 802 | 756 | 669 | 623 |
| Non-financial corporations | 113 | 238 | 735 | 645 | 605 | 515 |
| Financial corporations | 130 | 458 | 1450 | 1775 | 1273 | 1598 |
| Banks | 75 | 250 | 656 | 779 | 562 | 685 |
| Emerging market debt spreads (basis points) | | | | | | |
| EMBI+ | 169 | 239 | 690 | 636 | 508 | 454 |
| Nominal effective exchange rates (percentage change) | | | | | | |
| Euro | 4.7 | 6.3 | 2.7 | -0.7 | 6.8 | 6.1 |
| UD dollar | -4.3 | -7.5 | 8.6 | 3.7 | 5.0 | 9.0 |
| Japanese yen | -6.1 | 0.8 | 30.8 | -3.8 | 38.2 | 33.1 |
| Pound sterling | 6.0 | -6.0 | -23.4 | 1.8 | -28.7 | -27.4 |
| *Memo:* | | | | | | |
| EUR/USD exchange rate [d] | 11.6 | 11.8 | -5.5 | -4.4 | 0.7 | -3.7 |

**Sources:** Bank for International Settlements, Bloomberg, ECB, Federal Reserve and JPMorgan.
**Notes:** (a) Data until 31 March. (b) Changes *vis-à-vis* 23 July 2007. (c) Morgan Stanley Capital International index for emerging market economies: Argentina, Brazil, Chile, China, Colombia, Czech Republic, Egypt, Hungary, India, Indonesia , Israel, Korea, Malaysia, Mexico, Morocco, Peru, Philipines, Poland, Russia, South Africa, Taiwan, Thailand and Turkey. (d) A positive change corresponds to an appreciation of the euro.

Eurosystem introduced fixed rate tenders with full allotment both in euro and USD operations, starting 15 October (in this latter case, jointly with the Federal Reserve to provide for the high demand for dollars) and reduced the corridor of the standing facilities from 200 to 100 b.p..[3] Governments, in turn, provided specific assistance to individual institutions experiencing the significant financial difficulties and also implemented more comprehensive intervention programmes. Owing to the global nature of the fi-

(3) In January 2009, the corridor was once again broadened to 200 basis points.

nancial crisis, significant efforts were also made to coordinate international policy response. In early October 2008, the G7 announced a joint plan of action to stabilise financial markets and restore the flow of credit. Following this action, euro area countries announced a concerted action plan, after the Heads of State and Government summit of 12 October 2008. The measures adopted by several countries concentrated on the following aspects: (i) additional guarantees on bank deposits with the aim of restoring depositors' confidence and ensuring the banking system's adequate operation; (ii) public guarantees on financial institutions' issuances of new debt securities to regain the confidence of investors;[4] (iii) voluntary recapitalisation programmes and public capital injections in distressed financial institutions; (iv) several governments also provided loan programmes to banking institutions or an exchange of less liquid assets.[5]

The measures taken helped to increase economic agents' confidence in the financial system and ease tensions in several market segments, namely in the money markets in which there was a progressive decrease in differentials between interest on non-collateralised and collateralised loans. Financial corporations CDS and corporate bond spreads declined to pre-September levels, while sovereign CDS spreads widened in the context of the transfer of risk from financial institutions' to governments' balance sheets pursuant to the individual bank rescues and broad-based support packages (Chart 2.2). By end of October, the accumulation of evidence suggesting a significant weakening of world economic activity, with a large number of advanced economies in recession and a significant slowdown in the emerging markets, lead to a renewed increase in uncertainty and risk aversion, as a consequence of sharp falls in asset prices. During the course of the last quarter of 2008, this situation translated into a very low level of confidence of economic agents and exacerbated financial system losses. The last two months of 2008 and the first quarter of 2009 were characterised by a greater interaction of negative impacts between weakening economic activity and financial markets strains, substantially aggravating global economic and financial prospects. It should be noted that the earning prospects of non-financial corporations, which remained relatively unchanged since the beginning of the crisis, were revised significantly downward since October 2008. In early 2009 CDS and corporate bond spreads increased further, more markedly in the financial sector. There were also fresh falls in equity markets, led by the financial sector, with volatilities remaining high. In the second half of March 2009, there was a certain reversal of these movements following the announcement of better than expected profits by financial institutions and the disclosure of new economic support measures in the United States and the United Kingdom. At the end of the first quarter of 2009, share prices in the euro area and United States were 14 per cent and 12 per cent lower than the end of 2008 levels, respectively, with shares in the banking sector of such economies having fallen by 18 per cent and 45 per cent in the same period (Chart 2.9). In the money markets, the interest rate differentials between non-collateralised and collateralised operations, in the first months of 2009, remained relatively unchanged at levels higher than those prior to the intensification of the financial turbulence in September 2008. At the end of March 2009, these differentials on 3-months maturities were 74 b.p. in the euro area, 79 b.p. in the United States and 94 b.p. in the United Kingdom.

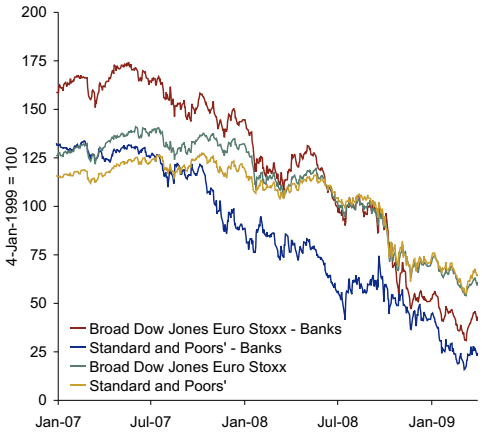
In a context of growing economic weakness and a reduction in inflationary pressures, the national authorities of major world economies have been taking measures to boost economic activity, both in terms of monetary and fiscal policies. Commodity prices started to move downward in July 2008. This movement was further exacerbated in September with the intensification of the financial crisis and spill over into the real economy. At the end of 2008, the price of Brent was USD 39.5 per barrel, or 58 per cent down over its level at the end of 2007 (56 per cent down in euros). The price of Brent remained

(4) In Ireland, the government issued a guarantee on all financial system liabilities between September 2008 and September 2010.

(5) Greece for example, issued public debt securities to be lent directly to the banks at their nominal value against the delivery of collateral and Spain created a fund for the purchase of high quality assets from financial institutions, for an amount of up to 50 billion euros.

**Chart 2.9**

STOCK MARKETS IN THE UNITED STATES AND IN THE EURO AREA




**Sources:** Bloomberg and Thomson Reuters.

highly volatile at an average of around USD 45 per barrel in the first quarter of 2009. There was also a sharp fall in the prices of non-energy commodities to around 28 per cent less at the end of 2008 than one year earlier, although remaining relatively unchanged in the first quarter of 2009. Official interest rates in the main advanced economies were reduced at an unprecedented pace and magnitude, in several cases to historical minimums at the end of 2008 (0.25 per cent in the United States, 2 per cent in the United Kingdom and 2.5 per cent in the euro area). In early 2009, several monetary authorities continued to reduce their official interest rates, to 0.5 per cent in the United Kingdom and 1.25 per cent in the euro area. Several central banks also adopted quantitative easing measures. For example, the Federal Reserve created direct financing facilities for the non-financial private sector – through its purchase of commercial paper and lending with a maturity of up to 3 years to financial and non-financial corporations guaranteed by securitised credits[6] – and announced the purchase of significant amounts of mortgage loans and specialised mortgage loan agency debts, as well as long term Treasury securities.[7] The Bank of England also set up a programme for the purchase of public and private debt securities on the secondary market, in 2009, (including commercial paper and corporate bonds).[8] The announcement of such measures had a significant impact on government bond yields which decreased in these economies but also in the euro area owing to the strong linkage between markets.

At the end of 2008 and early 2009, several governments announced programmes designed to stimulate economic activity and limit the impact of the current crisis on the real economy. The "American Recovery and Reinvestment Act" was approved in the United States in February 2009. In Europe, several countries had been adopting anti-crisis fiscal measures since the summer. The European Commission presented its "European Economic Recovery Plan" at the end of November 2008, in which it proposed a coordinated stimulus package (of around 1.5 per cent of European Union GDP, with 1.2 per cent of GDP being financed by national budgets), resulting in the adoption of several national packages by

(6) "Commercial Paper Funding Facility" announced on 7 October 2008 and the "Term Asset-Backed Securities Loan Facility" announced on 25 November 2008 (see "Box 2 *Authorities responses in the context of the financial crisis: liquidity management measures and intervention in financial systems",* Banco de Portugal, *Economic Bulletin-Autumn 2008*).

(7) On 18 March 2009, the Federal Reserve announced that it would purchase: (i) 300 billion dollars of long term public debt in the following six months; (ii) a further 750 billion dollars in mortgage loans from agencies (totalling 1.25 billion dollars) and (iii) a further 100 billion dollars in debt from agencies (totalling 200 billion dollars).

(8) "Assets Purchase Facility" announced on 5 March 2009.

Member States. A large number of measures, involving both the revenue and the expenditure side, have been adopted by different countries worldwide. The composition of such measures, however, varies substantially from country to country, with particular reference being made to personal and corporate income tax reductions as well as VAT, increased public investment, subsidies for purchases of consumer durables (such as cars in the United States, Germany, France and Italy) and an increase in social spending (for low-income households) (for Portugal see "Section 3.2 of this Bulletin *Fiscal Policy*").

Following the above measures, financial market participants began to note concerns over the sustainability of public finances in several countries related in particular with the issuance of large amounts of public debt which could be difficult to absorb. In the case of euro area, government bond yield spreads *vis-à-vis* Germany moved upwards across a range of countries to levels only observed in the period preceding the introduction of the single currency. This was probably a reflection of the greater relative liquidity of German debt securities in the context of "flight to liquidity" movements, in addition to a revaluation of credit risk in different countries, penalising those countries with the most pronounced macroeconomic imbalances and/or in which the fiscal positions could deteriorate the most, in particular through the transfer of risk from the financial sector. The evolution of credit risk premiums is also likely to have reflected the increase in the price of risk in global financial markets.[9] At the end of 2008, the highest 10 year-government bond yield spread was that of Greece at around 230 b.p.. Spreads in Ireland, Italy, Portugal, Spain and Belgium also recorded highly significant increases and, at the end of the year, were between 83 b.p. in Belgium and 142 b.p. in Italy. In Portugal spreads increased by 81 b.p. to 102 b.p. in 2008. The upward trend remained in force in early 2009, accompanied by high volatility in the context of a further deterioration of economic growth prospects, a downward revision of ratings on several countries in the euro area (Greece, Spain, Portugal and Ireland[10]) and greater fears of major disruptions in the Eastern European economies and consequent contagion effects to banks and euro area economies more exposed to the region. The spread on Irish public debt, in the same period, rose particularly sharply to around 223 b.p. at the end of March, a level similar to that of Greece. Increases in spreads in Portugal and Austria were also higher than that of the other economies under analysis (at around 132 b.p. and 103 b.p., respectively, at the end of the first quarter of 2009), which in the latter case reflected a high level of exposure to the Eastern European banking system (Chart 2.10). The increase in yield spreads on long term public debt also represents an additional penalty on the financing costs of economic agents in these countries. This implies, in particular, different costs of government-guaranteed debt issues by banks in the various countries in the euro area, as well as long term debt issues by non-financial corporations (Chart 2.11).

Notwithstanding the significant increase in spreads, 10-year government bond yields in the euro area, with the exception of Ireland and Greece, remain at levels lower that the ones recorded prior to the summer of 2007, although, in the case of Portugal and Italy the difference is very small (less than 0.3 p.p.) (Chart 2.12). By contrast, 10-year government bond yield in Germany declined significantly (-1.4 p.p. between the end of July 2007 and end of March 2009), to around 3.0 per cent since the beginning of 2009.

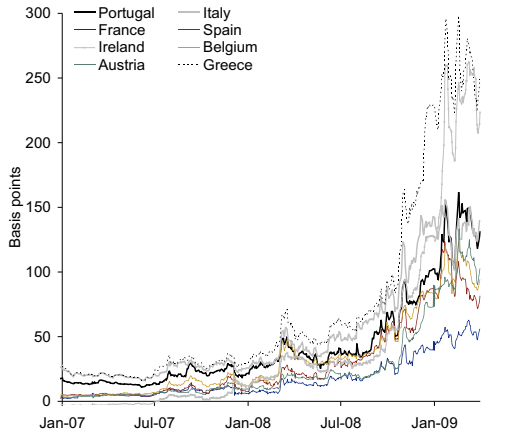
The foreign exchange market witnessed abrupt movements in terms of the evolution of the major currencies starting mid October 2008. The yen appreciated strongly in nominal effective terms, by around 31 per cent at the end of 2008 in comparison to the end of 2007, largely associated with the reversal of

(9) At times of less appetite for risk, the risk premium demanded by investors tends to increase, which, per se, generates an increase in the differentials between countries with greater as opposed to countries with lesser risk and, in situations of a deterioration of country risk, amplifies the impact of such a deterioration on the differentials.

(10) Reference should be made to the fact that in the first months of 2009 rating agencies reviewed their outlook on Irish public debt from stable to negative and, on 30 March, Standard & Poors' lowered its rating from AAA to AA+ maintaining its outlook negative.

**Chart 2.10**

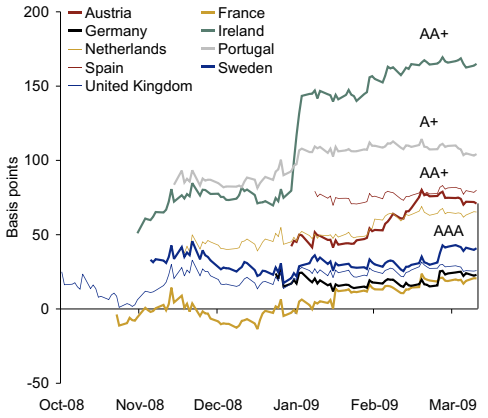
LONG TERM YIELD SPREADS AGAINST GERMANY




**Source:** Thomson Reuters.

**Chart 2.11**

ASSET SWAP SPREADS ON GOVERNMENT GUARANTEED BONDS ISSUED BY BANKS IN EUROS

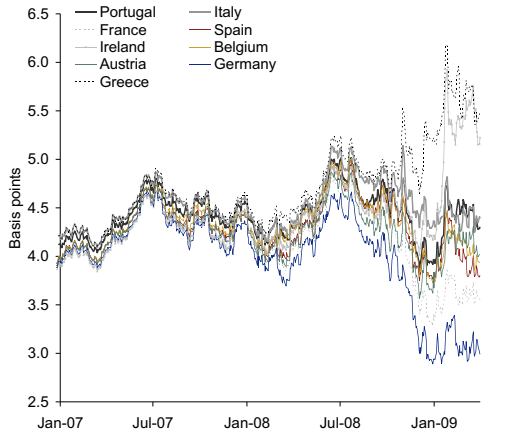



**Sources:** Bloomberg and Banco de Portugal.

carry trade movements in a framework of increased risk aversion and deleveraging, while sterling depreciated significantly by about 23 per cent. The dollar, in turn, appreciated by 8.6 per cent, coming into line with the long term average and the euro appreciated 2.7 per cent, remaining strong against the long term average (Chart 2.13). In bilateral terms, the euro depreciated by around 24 per cent against the yen, 6 per cent against the US dollar, 10 per cent against the Swiss franc and appreciated 30 per cent against sterling. In the first quarter of 2009, the dollar and sterling appreciated in effective nominal terms by 3.7 per cent and 1.8 per cent, respectively, while the yen depreciated by 3.8 per cent. During the same period, the euro appreciated against most of the currencies of the new member States of the European Union and against the yen, having depreciated 4.4 and 2.3 per cent respectively against the dollar and sterling, resulting in a nominal effective depreciation of 0.7 per cent.

**Chart 2.12**

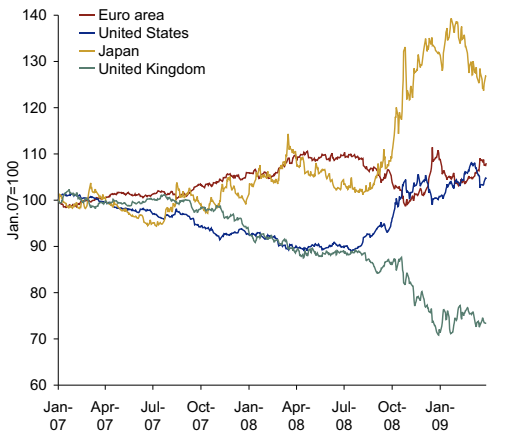
10-YEAR GOVERNMENT BOND YIELDS




**Source:** Thomson Reuters.

**Chart 2.13**

NOMINAL EFFECTIVE EXCHANGE RATES




**Sources:** Bank for International Settlements, ECB and Federal Reserve.

There was a significant deceleration in the world economy in 2008, with world GDP having grown by 3.2 per cent, after several years of recording growths of more than 5 per cent (Table 2.2). The deceleration was particularly marked at the end of the year, with year-on-year growth of world GDP, excluding the euro area, having decreased by 5 per cent in the first quarter of 2008, to no more than 0.6 per cent in the last quarter. World trade flows continued their deceleration trend, beginning in mid 2007, reflecting the slowdown in world economic activity, having recorded an abrupt fall in the latter months of the year. The collapse in world trade at the end of 2008 was precipitated by the generalised loss of confidence and high levels of uncertainty, leading economic agents to reduce or postpone expenditure and was exacerbated by increased difficulties in obtaining trade credit in the context of a worsening financial crisis. The phenomenon of the vertical specialisation of worldwide production, in evidence over latter years (with the delocalisation of parts of production of industrial activities and services) was also a contributory factor to this major contraction of world trade (see "Box 1.1 *Intensification of the globalisation process*", Banco de Portugal, *Annual Report 2005*). The vertical specialisation of global production increases the sensitivity of trade to changes of demand in a specific economy, having contributed to the rapid expansion of world trade flows over the last years and, more recently, its contraction. World trade, excluding the euro area, contracted by 1.8 per cent in year-on-year terms over the last quarter of 2008, in comparison to growths of 5.7 per cent in the preceding quarter. The contraction of imports, at the end of 2008, was a common factor in industrialised countries (excluding the euro area) and developing countries, whose robust demand had, up to that date, sustained world trade, notwithstanding the ongoing financial turmoil. The contraction of world trade at the end of 2008, was accompanied by a global fall in industrial production. The available qualitative indicators suggest that world imports, excluding the euro area, will continue to contract in the first months of 2009.

Similarly, according to UNCTAD estimates, global foreign direct investment flows were around 21 per cent down in 2008. In terms of regions, the advanced economies were those in which global foreign direct investment flows recorded the highest decreases (Chart 2.14). This evolution was a reflection of the significant increase in uncertainty over economic prospects, in addition to the deterioration of multinational companies' profits and a decrease in bank loans (notably syndicated loans) which made it difficult to finance such investments. Growth of foreign direct investment, in the case of developing economies, although much lower than that noted in 2007 (in which it was more than 20 per cent), main-

**Table 2.2**

DEVELOPMENTS IN WORLD ECONOMY
Rates of change as a percentage

| | Source | 2006 | 2007 | 2008 |
|---|---|---|---|---|
| **GDP** | | | | |
| World economy | (a) | 5.1 | 5.2 | 3.2 |
| US | (b) | 2.8 | 2.0 | 1.1 |
| Japan | (b) | 2.1 | 2.4 | -0.7 |
| Euro area | (c) | 3.0 | 2.6 | 0.7 |
| Germany | (c) | 3.2 | 2.6 | 1.0 |
| France | (c) | 2.6 | 2.1 | 0.7 |
| Italy | (c) | 2.1 | 1.5 | -1.0 |
| Spain | (c) | 3.9 | 3.7 | 1.2 |
| Portugal | (d) | 1.4 | 1.8 | 0.0 |
| United Kingdom | (b) | 2.8 | 3.0 | 0.7 |
| China | (b) | 11.6 | 13.0 | 9.0 |
| **World trade volume of goods** | (e) | 9.3 | 7.7 | 2.7 |

**Sources:** (a) IMF; (b) Thomson Reuters; (c) Eurostat; (d) Banco de Portugal; (e) CPB Netherlands Bureau for Economic Policy Analysis.

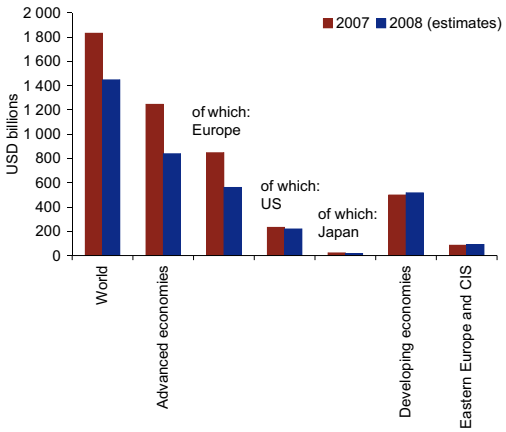
tained a positive value of around 4 per cent, in 2008. The globalisation of the financial crisis and worsening world economic prospects suggest that foreign direct investment flows to these economies will also be significantly affected in 2009.

There was also a significant decrease in the growth of international tourist arrivals worldwide in 2008, particularly in the second half of the year. After a year-on-year growth of 5 per cent in the first six months of 2008, world tourism contracted by around 1 per cent in year-on-year terms in the following six months, having expanded, over the year as a whole by no more than 2 per cent (against the preceding year's 7 per cent) (Chart 2.15). The number of tourist arrivals in European countries stagnated in 2008. This evolution reflects falls in tourism in northern and western European countries of 2.1 and 1.2 per cent, respectively. Growth in tourist arrivals in southern European and Mediterranean countries was very small in 2008, at 0.6 per cent, translating an expansion of 3.9 per cent in the first half of the year, followed by a contraction of 2.3 per cent in the following half year.

In the United States GDP growth was down from 2.0 per cent to 1.1 per cent in 2008. There was a decelerating trajectory of GDP during the course of the first half of 2008 although growth remained positive, sustained by temporary fiscal stimulus measures implemented in February, major reduction of official interest rates and depreciation of the dollar, together with continued robustness in external demand. During the second part of the year, however, the disappearance of the temporary effect of the fiscal stimulus, the continued downward correction of the housing market and the intensification of the financial crisis, with consequent tightened credit conditions and sharp fall in asset prices, had a sharply weakening effect on economic activity. In the last quarter of 2008, GDP contracted by 1.6 per cent quarter on quarter, compared with a contraction of 0.1 per cent in the third quarter. In contrast to developments in the first half of the year, the contribution of net external demand to GDP turned negative, particularly reflecting a sharp drop in exports. In terms of domestic demand, private consumption and non-residential investment which, in the first half of the year had, in conjunction with public consumption, offset the negative impact of the reduction of residential investment, recorded significant reductions in the second half of the year. In such a context, there was a particularly sharp fall in domestic demand in the last quarter of the year. According to Federal Reserve projections disclosed in February

**Chart 2.14**

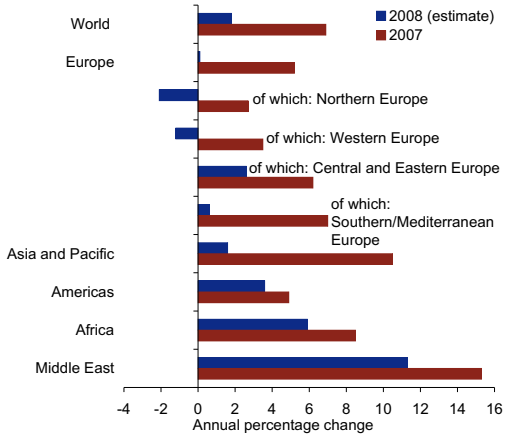
FOREIGN DIRECT INVESTMENT BY REGION




**Source:** UNCTAD.

**Chart 2.15**

TOURIST ARRIVALS BY REGION




**Source:** UNWTO World Tourism Barometer.

2009, in the fourth quarter of 2009 GDP is likely to record a year-on-year contraction of between -1.3 and -0.5 per cent with unemployment likely to increase to between 8.5 and 8.8 per cent.[11]

The slowdown in economic activity was particularly sharp in the euro area, where real GDP growth fell from 2.6 per cent in 2007 to 0.7 per cent in 2008. After a strong growth rate of 0.7 per cent in the first quarter of 2008, partly associated with temporary factors – particularly relatively mild weather in several countries which favoured construction activity - GDP fell successively in the following three quarters.[12] The contraction of economic activity was particularly sharp in the last quarter of 2008 (-1.5 per cent quarter on quarter), reflecting the impact of the intensification and globalisation of the economic and financial crisis on external demand and on consumption and the investment decisions of economic agents in the euro area. Private consumption, for the year as a whole, grew by no more than 0.5 per cent (1.6 per cent in the preceding year). Private consumption remained weak in the first three quarters, particularly reflecting the impact on real disposable household income of large increase in consumer prices, namely energy and food. The large falls in stock markets and substantially higher uncertainty over prospects for economic activity and employment at the end of the year, also had a significant effect in terms of eroding the confidence of consumers and in the contraction of private consumption in the last quarter of 2008 (-0.9 per cent quarter on quarter). The total investment growth rate, in turn, was sharply down, in 2008, to 0.4 per cent, after having recorded high values in the preceding years (4.3 and 5.9 per cent in 2007 and 2006, respectively). In intra-annual terms, there were significant falls in investment starting from and including the second quarter, with a contraction of 2.7 per cent in the last quarter of 2008. Exports of goods and services were also markedly down in 2008, with an annual growth rate of 1.6 per cent against the preceding year's 5.6 per cent. The last quarter of 2008 witnessed an abrupt contraction of 7.3 per cent in exports. The fall in exports was a factor common to all goods, but was particularly felt in the case of intermediate goods. An analysis by geographic markets shows that exports of goods to the United States, Japan and United Kingdom were markedly down but continued to expand to the new Member States of the European Union (EU) and to Asia excluding Japan, although at much lower rates than in the preceding two years (Chart 2.16). Imports in the euro area were also sharply down in 2008, to 1.7 per cent, against the preceding year's 5.3 per cent, reflecting weakening domestic demand. Goods imports also decelerated markedly in 2008, with particular reference to the falls in purchases from the United Kingdom, Japan and, to a lesser extent, countries in Asia excluding Japan. Growth in imports from the United States and the new Member States were positive. Net external demand made a nil contribution to the expansion of economic activity, for the year as a whole, and was negative in the second half of the year.

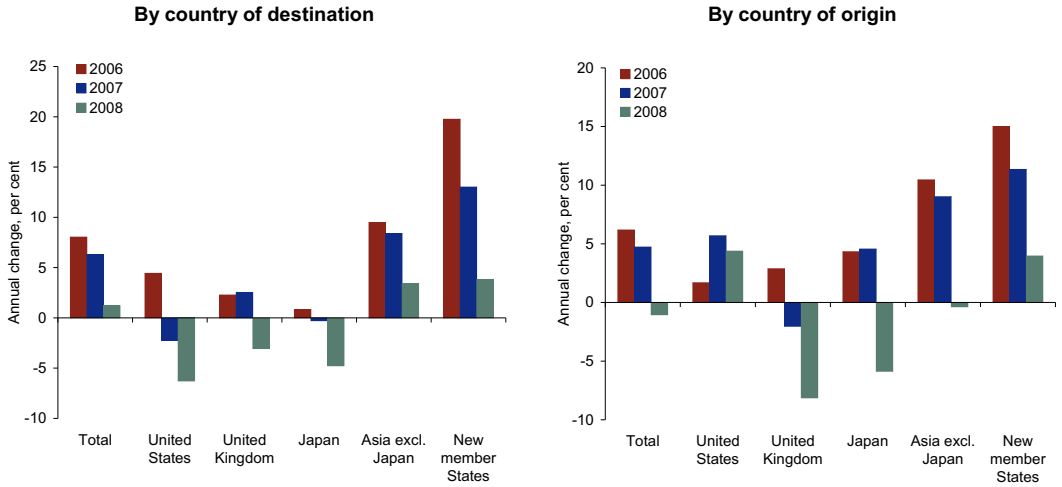
The deceleration of economic activity was common to all economies in the euro area and was particularly pronounced in Ireland, Finland and, to a lesser extent, in Spain and Italy. There was a contraction of activity in Ireland and Italy over the year as a whole, from 2 and 1 per cent, respectively, with GDP growth in Finland falling to 0.9 per cent (4.2 per cent in 2007) and to 1.2 per cent in Spain (3.7 per cent in 2007). The rate of economic expansion in Germany and France fell to 1 and 0.7 per cent, respectively, against 2.6 and 2.1 per cent in 2007. Portugal's performance was one of the weakest among euro area and EU countries, with a stagnation of economic activity, in 2008, in comparison to growth of 1.8 per cent in 2007 (Chart 2.17). There was also a slowdown in economic activity in non-euro EU countries, with the exception of Romania, in 2008. Most of the new Member States, however, continued to record growth rates significantly higher than the EU average. The worsening economic situation in the Baltics (Estonia, Latvia and Lithuania) was particularly significant, with Estonia and Latvia having posted the highest GDP contractions in terms of EU countries in 2008 (-3.6 and -4.3 per cent,

(11) The data on the US labour market in February 2009 indicated an increase in the unemployment rate to 8.1 per cent.

(12) The noted fall in activity in the second quarter of 2008 (0.3 per cent) partly reflects a correction to the appreciable growth recorded in the first quarter of the year.

**Chart 2.16**

VOLUME OF EXTRA-EURO AREA EXPORTS OF GOODS

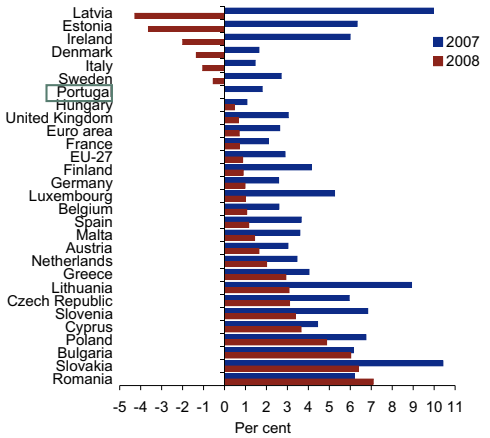



**Sources:** Eurostat and Banco de Portugal calculations.

**Chart 2.17**

GROSS DOMESTIC PRODUCT OF EUROPEAN UNION COUNTRIES

Real rate of change




**Sources:** European Commission, Eurostat and Banco de Portugal.

respectively). Of the remaining EU economies, reference should be made to the deceleration of GDP in the United Kingdom from 3.0 to 0.7 per cent.

The evolution of the economic situation in the main export markets for Portuguese goods and services was characterised by a significant weakening of their imports of goods and services, which showed a sharp and generalised contraction in the last quarter of 2008. This was particularly marked in the case of the Spanish economy's imports, which is Portugal's major export market, with a year-on-year contraction of 13.2 per cent in the last quarter of 2008 and 2.5 per cent for the year as a whole (against the preceding year's growth of 6.2 per cent) (Table 2.3). Germany's and France's imports were also significantly down in the last quarter of 2008, although growth rates remained positive, expanding by 3.6 and

**Table 2.3**

IMPORTS OF GOODS AND SERVICES BY SOME OF THE MAIN DESTINATION COUNTRIES OF PORTUGUESE EXPORTS
Real rate of change

| | | | | 2008 [a] | | | |
|---|---|---|---|---|---|---|---|
| | Weights 2007 | 2006 | 2007 | 2008 | Q1 | Q2 | Q3 | Q4 |
| Spain | 28.3 | 10.3 | 6.2 | -2.5 | 3.6 | 1.8 | -2.0 | -13.2 |
| Germany | 13.0 | 12.2 | 5.2 | 3.6 | 4.5 | 3.5 | 4.9 | 1.5 |
| France | 12.6 | 6.5 | 5.9 | 2.0 | 4.3 | 1.9 | 1.7 | 0.3 |
| United Kingdom [b] | 6.0 | 6.8 | 3.7 | -0.8 | 4.1 | 3.0 | -2.2 | -7.9 |
| USA | 4.8 | 6.0 | 2.2 | -3.5 | -1.0 | -1.9 | -3.5 | -7.5 |
| Italy | 4.1 | 6.2 | 3.3 | -4.5 | -2.4 | -2.7 | -4.1 | -8.8 |

**Sources:** Eurostat and Thomson Reuters.
**Notes:** (a) Year-on-year rate of change. (b) Excludes effects of VAT fraud according to estimates of the United Kingdom Office for National Statistics.

2.0 per cent, respectively, over the year as a whole. The United Kingdom's, United States's and Italy's imports contracted by 7.9, 7.5 and 8.8 per cent, respectively, in the last quarter of 2008 and also in the year as a whole. In such a context, the indicator of external demand for Portugal's exports of goods and services decelerated significantly in 2008, with a growth of no more than 1.5 per cent (in comparison to the preceding year's 5.6 per cent), helping to explain the fall in Portuguese exports of goods and services in 2008 (see "Section 5 of this Bulletin *Expenditure*"). According to available information, the share of Portuguese exports of goods and services in external markets recorded a loss, particularly in the last quarter of 2008.

# 3. MACROECONOMIC POLICIES

## 3.1. ECB monetary policy and the Portuguese economy's monetary and financial conditions

### ECB monetary policy

In the first half of 2008, the ECB left its key interest rates unchanged, with the minimum bid rate on the main refinancing operations standing at 4 per cent (Table 3.1.1). In early 2008, the prospects were that inflation would remain significantly above 2 per cent in the first few months of the year and would moderate gradually over the course of the year, returning to levels compatible with the definition of price stability only in 2009. Available information also continued to point to GDP growth at close to potential rates. Foreign demand was expected to continue to support euro area exports. Tight labour market conditions and the possibility of capacity constraints raised concerns over the possibility of stronger than expected wage growth. This fact, together with the possibility of further rises in oil and agricultural prices, as well as increases in administered prices and indirect taxes, represented upward risks on price stability over the medium term in the euro area. According to the Governing Council of the ECB, these risks were confirmed by continued high money and credit growth. In contrast, risks associated with the outlook for economic activity were on the downside, being particularly related with the potentially broader than expected impact of the ongoing reappraisal of risks in financial markets on financing conditions and economic sentiment, with a negative impact on world and euro area economic growth.

**Table 3.1.1**

ECB INTEREST RATES
Per cent

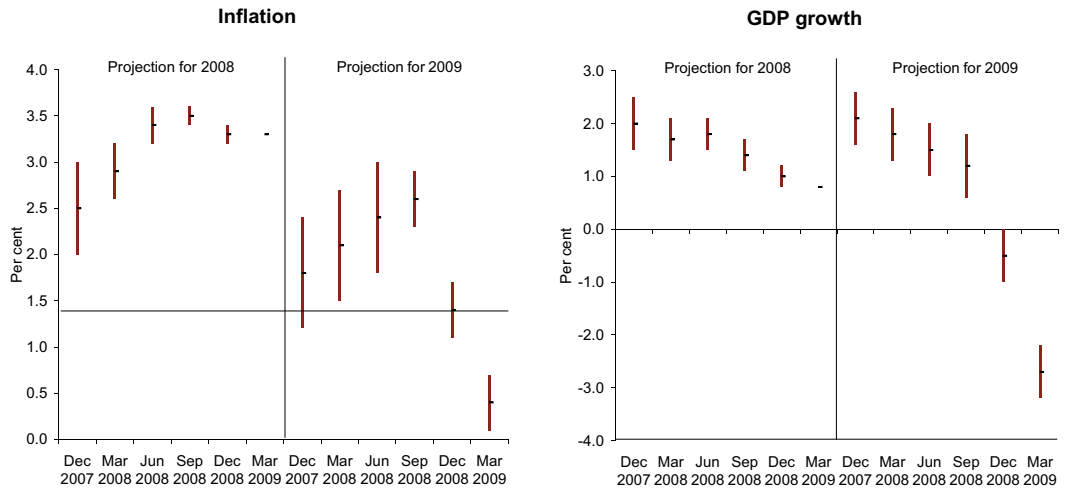
| Date of the decision | Deposit Facility | Main refinancing operations | Marginal lending facility |
|---|---|---|---|
| 6 Jun. 2007 | 3.00 | 4.00 | 5.00 |
| 3 Jul. 2008 | 3.25 | 4.25 | 5.25 |
| 8 Oct. 2008 | 3.25 | 3.75 | 4.25 |
| 6 Nov. 2008 | 2.75 | 3.25 | 3.75 |
| 4 Dec. 2008 | 2.00 | 2.50 | 3.00 |
| 15 Jan. 2009 | 1.00 | 2.00 | 3.00 |
| 5 Mar. 2009 | 0.50 | 1.50 | 2.50 |
| 2 Apr. 2009 | 0.25 | 1.25 | 2.25 |

**Source:** ECB.

In the following months, the continuation of the sharp upward trend in world prices of energy and food suggested that euro area inflation would remain at high levels for a longer than previously anticipated period. Year-on-year inflation, measured by the HICP (Harmonised Index of Consumer Prices), was sharply up over the first half year, to a historical maximum of 4 per cent in June and July. The projected inflation profile for 2008 and 2009 was also gradually revised upward, suggesting rates of more than 2 per cent until the end of 2009 (Chart 3.1.1). In this context, the Governing Council of the ECB, at its meeting of 3 July 2008, decided to increase its key interest rates by 25 b.p., with the minimum bid rate on the main refinancing operations being 4.25 per cent and the interest rates on the marginal lending facility and the deposit facility being 5.25 and 3.25 per cent, respectively. This decision was justified by the need to prevent broadly based second-round effects and to counteract the growing risks to medium term price stability. The Governing Council of the ECB maintained its assessment over the following months, with key interest rates remaining unchanged until September.

**Chart 3.1.1**

EUROSYSTEM PROJECTIONS
Mid-point and projection range




**Source:** ECB.

The intensification and broadening of the financial market turmoil since mid September 2008, materialised the main downward risks on economic activity earlier identified by the Council and lead to a decrease in the upward risks to price stability. There was a significant deterioration of global economic prospects in the last quarter of the year, as it became evident that the effects of the financial turbulence on the real economy would be more significant and would spill over from the advanced economies to the emerging market economies. The available indicators relating to activity in the euro area indicated further weakening in the second half of 2008 and real GDP growth for 2008 and 2009 was substantially revised downward. In this context, and taking into account the sharp fall in commodity prices since summer, inflationary pressures diminished and risks to price stability became more balanced. Expectations suggested that the year-on-year inflation rate, as measured by the HICP, would continue to fall to a level compatible with price stability in early 2009. Inflation projections for 2008 and 2009 were significantly revised downward since mid September. In this context, the Governing Council of the ECB, reduced rates on the main refinancing operations by a total of 175 b.p. on three occasions between early October and early December.

In the first months of 2009, the Governing Council continued to reduce key interest rates, in a framework of continuing dampening of inflationary pressures and indications of a further weakening of prospects for world economic activity. Interest rates were reduced by a total of 125 b.p., bringing the total reduction since October 2008 to 300 b.p.. The interest rate on the main refinancing operations currently stands at 1.25 per cent, which is the lowest level since the inception of the euro area. Available information confirmed strong contraction of economic activity in the euro area in the last months of 2008 and real GDP projections have been substantially revised downward to growth rates of between -3.2 and -2.2 per cent in 2009 and of between -0.7 and 0.7 per cent in 2010. The Council considered that the risks for economic activity in the euro area were more balanced owing to the possibility of stronger than anticipated positive effects, also on confidence, from the economic stimulus measures. There have also been signs of a more generalised reduction of inflationary risks, associated with the impact of weakening economic activity on wages and prices (see "Box 2 *Recent consumer price developments and deflation risks in the euro area*"). In this context, Eurosystem projections for inflation were revised substantially downward to between 0.1 and 0.7 per cent in 2009 and 0.6 and 1.4 per cent in 2010. The Council considers that inflation risks are broadly balanced.

In a context of weakening prospects for economic activity and tighter financing conditions there was a moderation of money and credit growth in the course of 2008, which was more marked since September (Table 3.1.2). The annual growth rate of M3 was down from 11.5 in December 2007 to 5.9 per cent in February 2009. The intensification of the financial turmoil since September 2008, also brought about changes to the portfolio composition of economic agents, who substituted negotiable instruments with market risk by highly liquid assets, in particular those with public guarantees, leading to changes on components of M3. Against this background, the contribution of marketable instruments (*i.e.* M3-M2)[13] and of short term deposits other than overnight (*i.e.* M2-M1)[14] to the annual growth rate of M3 decreased, while the contribution of M1 increased. The stronger growth of M1 from mid-September onwards was driven by the developments of both components although reference should be made to the increase in the demand for currency in circulation in October 2008, in the wake of the bankruptcy of Lehman Brothers and the generalisation of concerns regarding the financial stability of the banking system in the euro area (Chart 3.1.2). Demand for currency in circulation normalised in the following months in the context of the announcement of government measures to support the financial system, namely the increase in guarantees on deposits (see "Section 2 of this Bulletin *International Framework*" ).

(13) Including, for example: repurchase agreements, money market fund shares/units and debt securities issued with maturities of up to 2 years.
(14) Including, for example: deposits with an agreed maturity of up to 2 years and deposits redeemable at notice up to 3 months.

**Table 3.1.2**

MONETARY AND CREDIT AGGREGATES

Year-on-year rates of change, seasonally adjusted, per cent, end-of-period

| | 2006 | 2007 | 2008 | | | | 2009 |
|---|---|---|---|---|---|---|---|
| | | | Q1 | Q2 | Q3 | Q4 | Feb. |
| Monetary aggregates | | | | | | | |
| M1 | 7.6 | 3.9 | 2.8 | 1.5 | 1.2 | 2.3 | 6.3 |
| M2 | 9.4 | 10.1 | 9.8 | 9.5 | 8.9 | 8.2 | 7.0 |
| M3 | 10.0 | 11.5 | 10.0 | 9.6 | 8.7 | 7.5 | 5.9 |
| Loans | | | | | | | |
| Loans to the private sector | 10.8 | 11.2 | 10.9 | 9.9 | 8.5 | 5.8 | 4.2 |
| Non-financial corporations | 13.1 | 14.4 | 14.9 | 13.7 | 12.1 | 9.5 | 7.6 |
| Households [a] | 8.2 | 6.2 | 5.4 | 4.2 | 3.9 | 1.6 | 0.7 |
| Consumer credit | 7.7 | 5.3 | 5.3 | 4.9 | 4.4 | 1.7 | 1.0 |
| Loans for house purchase | 9.6 | 7.1 | 6.2 | 4.4 | 4.1 | 1.5 | 0.5 |

**Source:** ECB.
**Note:** (a) Includes loans to non-profit making institutions serving households.

The deceleration of credit to euro area residents reflected the evolution of credit to the private sector, as lending to general government moved into positive territory in the second half 2008. Monetary financial institutions' (MFI) purchases of securities other than shares increased during the course of the year, determining a slight increase in the contribution of this component to total credit to the private sector. This increase, to a large extent, reflects purchases of securities issued by other financial institutions related with securitisation activities. Despite decelerating, loans continued to be the dominant form of credit to the private sector provided by MFI in the euro area. In early 2008, the annual growth rates of loans to the private sector remained very high, at around 11 per cent in the first quarter, although decreasing during the course of the year and more noticeably so starting from the third quarter, to 4.2 per cent in February 2009. It should be noted that these rates sub-estimate the growth of loans to the private sector owing to the practice of derecognition of loans from the MFI statistical balance sheet due to their sale or securitisation. Indeed, estimates adjusted for loan sales and securitisation point to a annual growth rate of 5.9 per cent of loans to the private sector in February 2009.

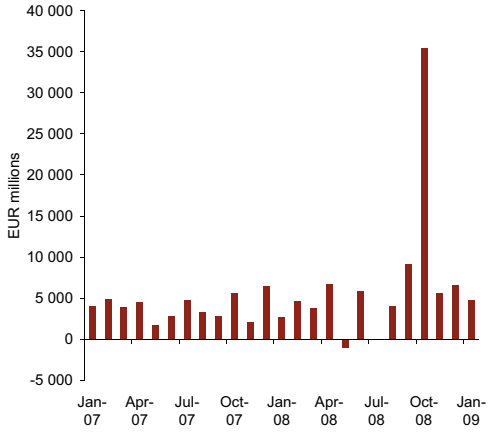
The deceleration in MFI loans to the private sector was broadly based across the various sectors of the economy. Loans to households, as in 2007, continued to fall sharply, with the annual growth rate having fallen to 0.7 per cent in February 2009 (against 6.2 per cent in December 2007), owing to the deceleration in loans for house purchase and consumer credit.[15] The evolution of loans for house purchases reflected the deceleration in prices and activity in the housing market in several euro area countries, a deterioration of general economic prospects and tighter financing conditions. Bank interest rates on loans to households up to October tended to increase, with a reversal at the end of the year in the context of abrupt reductions of official interest rates. For the year as a whole, interest rate on loans for house purchases were virtually stable, while interest rates on consumer credit were 0.2 p.p. up. There was, at the same time, an increase in the spreads on such rates *via-à-vis* the market ref-

(15) According to available information, loans for house purchases are the most affected by the practice of derecognition of loans from the MFI balance sheet due to their sale or securitisation.

**Chart 3.1.2**

CIRCULATION IN EURO AREA – MONTHLY FLOWS

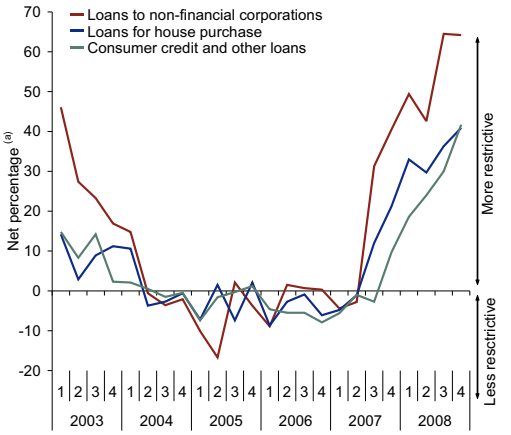
Adjusted for seasonal and calendar effects




**Source:** ECB.

**Chart 3.1.3**

CREDIT STANDARDS




**Source:** Bank Lending Survey.
**Note:** (a) Net percentage defined as being the difference between the percentage of banks responding "considerably" and "slightly more restrictive" and those reporting "slightly" and "considerably less restrictive" in the Bank Lending Survey. A positive value represents more restrictive criteria in comparison to the preceding quarter.

erence interest rates and an increase in the percentage of banks reporting tighter credit conditions on loans for house purchases and consumer credit (Chart 3.1.3).

Loans to non-financial corporations, in turn, started to moderate from the second quarter of 2008 onward, with the annual growth rate having fallen to 7.6 per cent in February 2009, against a peak of 14.9 per cent in March 2008. This evolution occurred in a context in which interest rates on loans to non-financial corporations were moving upward to October, followed by a very sharp fall up to the end of the year. For the year as a whole, interest rates on loans to non-financial corporations (new business) decreased by 1.0 p.p. over the short term and by 0.5 p.p. over the longer maturities. The spreads on such rates *vis-à-vis* the market reference interest rates evidenced an upward trend, which, in the case of long term maturities, was accompanied by some variability during the year, associated with the volatility of public debt yields. The results of the bank lending survey also indicated significantly tighter credit standards on loans to enterprises since mid 2007. Part of the growth of loans to non-financial corporations may be related with difficulties in getting finance from other sources, in particular through the issuances of bonds and shares. The growth rate of debt securities issued by non-financial corporations fell from 8.2 in December 2007 to 6.7 per cent in January 2009 and the issuance of quoted shares was virtually nil since the second half of 2008.

### The Portuguese economy's monetary and financial conditions

The crisis appearing in international financial markets in the summer of 2007 and its growing interaction with global economic deceleration has imposed significant constraints on the evolution of the monetary and financial conditions of the Portuguese economy. These constraints have been leveraged by the Portuguese economy's high level of economic and financial integration, which has translated, for instance, into a prolonged maintenance of the situation of recourse to external savings as a means of financing domestic expenditure. In such a framework, the policy measures defined by the authorities at

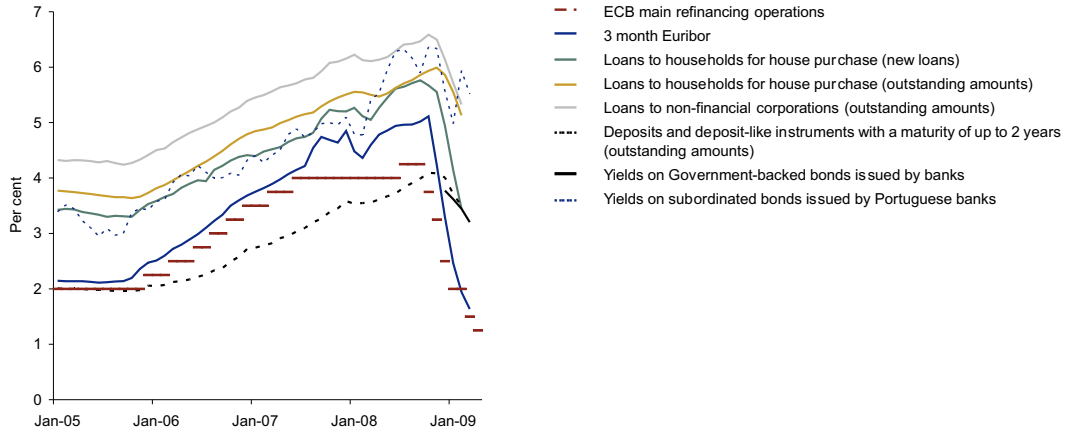
a global level to counter such developments has made it possible to mitigate the adverse evolution of the monetary and financial conditions of the Portuguese economy.

At an initial stage, in 2007, financing difficulties in wholesale markets essentially affected financial institutions in the advanced economies. Such institutions played a central role in the genesis, development and propagation of the financial crisis, having witnessed severe changes to their funding arrangements in the interbank, debt and equity markets. At a later stage, during the course of 2008 and first months of 2009, funding terms on wholesale markets also became progressively more difficult for the non-financial sector, affecting both private organisations and, more markedly so in the most recent period, national states themselves. In such a framework, banks have, on a global level, been imposing greater financing restrictions on their customers, whether in terms of volume, price and other credit operation conditions.

In the first three quarters of 2008, short term money market interest rates, used as a reference for bank interest rates in Portugal, continued their upward trend beginning in the last quarter of 2005, notwithstanding the quasi-stability of the ECB's rate on the main refinancing operations (Chart 3.1.4 and Table 3.1.3). This evolution was significantly conditioned by the high levels of uncertainty in international financial markets, the generalised loss of confidence and the increase in counterparty risk, which, since the appearance of the financial crisis, has led the banks to restrict their offer on the interbank money market, while also endeavouring to prevent the occurrence of liquidity problems. To a lesser extent and in a more specific time period *i.e.* in June, short term money market interest rates also reacted to the level of inflation occurring in the euro area, reinforcing expectations of an increase in the ECB's reference rates. The beginning of October witnessed a marked reversal of the evolution of official interest rates in the euro area, in a movement common to the monetary authorities of other countries. This reduction occurred in the context of an intensification of the global economic and financial crisis and expression of its effects in terms of lower risks to price stability, particularly owing to the evolution of international raw materials prices. The 3.0 p.p. reduction in official interest rates in the euro area since October was accompanied by a sharper fall in money market interest rates, reflecting both a significant decrease in the risk premium associated with non-collateralised operations and added expectations of

**Chart 3.1.4**

INTEREST RATES




**Sources:** Bloomberg, ECB and Banco de Portugal.
**Note:** Government guarantees on bonds issued by Portuguese banks are part of a series of financial stability support measures announced by the government on 12 October 2008. The bonds were issued with a maturity of 3 years.

## Table 3.1.3

### MONETARY AND FINANCIAL CONDITIONS OF THE PORTUGUESE ECONOMY

| | | | | Quarterly developments | | | | | | | | Monthly developments | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 2006 | 2007 | 2008 | 2007Q1 | 2007Q2 | 2007Q3 | 2007Q4 | 2008Q1 | 2008Q2 | 2008Q3 | 2008Q4 | Jan-09 | Feb-09 | Mar-09 |
| Nominal interest rates - period averages (per cent) | | | | | | | | | | | | | | |
| 3 month Euribor | 3.1 | 4.3 | 4.6 | 3.8 | 4.1 | 4.5 | 4.7 | 4.5 | 4.9 | 5.0 | 4.2 | 2.5 | 1.9 | 1.6 |
| 12 month Euribor | 3.4 | 4.4 | 4.8 | 4.1 | 4.4 | 4.7 | 4.7 | 4.5 | 5.1 | 5.4 | 4.4 | 2.6 | 2.1 | 1.9 |
| 10 year fixed-rate Treasury bond yields | 3.9 | 4.4 | 4.5 | 4.2 | 4.5 | 4.6 | 4.4 | 4.3 | 4.7 | 4.8 | 4.3 | 4.3 | 4.5 | 4.7 |
| Bank interest rates | | | | | | | | | | | | | | |
| On outstanding amounts of loans | | | | | | | | | | | | | | |
| Non-financial corporations | 4.9 | 5.8 | 6.3 | 5.5 | 5.7 | 5.8 | 6.1 | 6.2 | 6.2 | 6.4 | 6.4 | 5.7 | 5.3 | |
| Households for house purchase | 4.3 | 5.1 | 5.7 | 4.9 | 5.0 | 5.2 | 5.4 | 5.5 | 5.5 | 5.8 | 5.9 | 5.5 | 5.1 | |
| Consumer credit and other lending | 8.0 | 8.6 | 9.0 | 8.3 | 8.6 | 8.6 | 8.8 | 8.8 | 8.9 | 9.1 | 9.2 | 9.0 | 8.8 | |
| On outstanding amounts of deposits with an agreed maturity | | | | | | | | | | | | | | |
| Non-financial private sector - up to 2 years (excluding demand deposits, at notice) | 2.3 | 3.1 | 3.8 | 2.8 | 3.0 | 3.2 | 3.5 | 3.5 | 3.7 | 3.9 | 4.1 | 3.7 | 3.5 | |
| On new loan operations | | | | | | | | | | | | | | |
| Households for house purchase | 4.0 | 4.8 | 5.4 | 4.5 | 4.6 | 4.9 | 5.2 | 5.1 | 5.4 | 5.7 | 5.4 | 4.1 | 3.4 | |
| Exchange rates - period averages | | | | | | | | | | | | | | |
| Nominal effective exchange rate index[a],[b] | 100.9 | 101.8 | 103.0 | 101.3 | 101.7 | 101.8 | 102.4 | 102.9 | 103.5 | 103.2 | 102.5 | 103.3 | 103.0 | 103.6 |
| Nominal effective exchange rate index - percentage change from the previous corresponding period | 0.2 | 0.8 | 1.2 | 0.2 | 0.4 | 0.1 | 0.6 | 0.5 | 0.6 | -0.3 | -0.7 | 0.0 | -0.4 | 0.7 |
| Stock market - percentage change from the previous corresponding period (end-of-period values) | | | | | | | | | | | | | | |
| PSI General Index | 33.3 | 18.3 | -49.7 | 5.2 | 17.8 | -11.4 | 7.7 | -18.8 | -10.8 | -11.4 | -21.6 | 2.5 | -5.8 | 4.0 |
| Broad Dow Jones Euro Stock | 20.3 | 4.9 | -46.3 | 3.4 | 6.3 | -3.4 | -1.2 | -16.4 | -7.3 | -12.1 | -21.2 | -7.0 | -11.0 | 4.0 |
| Housing market prices end-of-period annual rate of change | | | | | | | | | | | | | | |
| *Índice Confidencial Imobiliário* [c] | 2.1 | 1.3 | 3.9 | 1.4 | 1.0 | 1.1 | 1.3 | 1.6 | 2.3 | 3.2 | 3.9 | 4.2 | 4.2 | |
| Assessment by banks (*INE*) | 0.3 | 0.5 | -4.3 | 0.0 | 0.5 | 1.0 | 0.5 | -0.2 | -1.7 | -3.0 | -4.3 | na | na | |
| Loans granted to the non-financial private sector - end-of-period annual rate of change | | | | | | | | | | | | | | |
| Loans granted by resident monetary financial institutions [d] | | | | | | | | | | | | | | |
| Non-financial private sector | 8.7 | 9.9 | 7.1 | 8.8 | 9.0 | 9.2 | 9.9 | 10.4 | 9.7 | 8.7 | 7.1 | 6.2 | 5.7 | |
| Households - Total | 9.9 | 9.0 | 4.6 | 9.6 | 9.4 | 9.2 | 9.0 | 8.5 | 7.7 | 6.3 | 4.6 | 3.9 | 3.5 | |
| For house purchase | 9.9 | 8.5 | 4.3 | 9.4 | 9.0 | 8.8 | 8.5 | 7.8 | 7.1 | 5.8 | 4.3 | 3.8 | 3.5 | |
| Consumer credit and other lending | 10.1 | 11.3 | 6.1 | 10.9 | 11.3 | 10.9 | 11.3 | 11.3 | 10.6 | 8.7 | 6.1 | 4.3 | 3.6 | |
| Non-financial corporations | 7.1 | 11.2 | 10.6 | 7.8 | 8.5 | 9.2 | 11.2 | 13.0 | 12.3 | 12.0 | 10.6 | 9.3 | 8.7 | |
| Deposits with resident monetary financial institutions - end-of-period annual rate of change | | | | | | | | | | | | | | |
| Non-financial private sector | 4.2 | 5.7 | 10.6 | 4.3 | 6.5 | 7.5 | 5.7 | 10.1 | 9.6 | 11.4 | 10.6 | 10.5 | 11.0 | |
| *Memo:* | | | | | | | | | | | | | | |
| HICP - End-of-period annual average rate of change | | | | | | | | | | | | | | |
| Portugal | 3.0 | 2.4 | 2.7 | 2.9 | 2.6 | 2.4 | 2.4 | 2.6 | 2.7 | 2.9 | 2.7 | 2.4 | 2.2 | |
| Euro area | 2.2 | 2.1 | 3.3 | 2.1 | 1.9 | 1.9 | 2.1 | 2.5 | 2.9 | 3.4 | 3.3 | 3.1 | 2.9 | |

**Sources:** Euronext Lisboa, Eurostat, *Imométrica*, *INE*, Thomson Reuters and Banco de Portugal.
**Notes:** (a) A positive change corresponds to an appreciation of the effective exchange rate index. (b) Calculations against a group of 22 trading partners For a detailed description of the methodology see Gouveia, A. C. and Coimbra, C. (2004), "*New Effective Exchange Rate Index for the Portuguese Economy*", Banco de Portugal, *Economic Bulletin-December*. (c) The *Índice Confidencial Imobiliário* tracks developments in the residential market in Portugal, particularly in the Lisbon and Porto metropolitan areas. In October 2006 this index adopted a new methodology and broadened its background information. The index uses information available at the *LardoceLar*.property portfolio which, in 2005, contained around 280,000 property entries. For further details on the methodology used see the article by "*Índice Confidencial Imobiliário*: methodological procedures " by Isabel Fonseca and Ricardo Guimarães, in the *Imobiliária Portuguesa - Confidencial Imobiliário* Newsletter of October 2006. (d) The annual growth rates are obtained from the relation between the outstanding amounts of bank loans at the end of the months, adjusted for securitisation operations, and the monthly transactions, which are calculated from the outstanding amounts correceted of reclassifications, write-offs/write downs, exchange rate changes and price revaluations.

further reductions to official interest rates, owing to the particularly negative and forecast context for economic activity in the euro area and on a global level.[16]

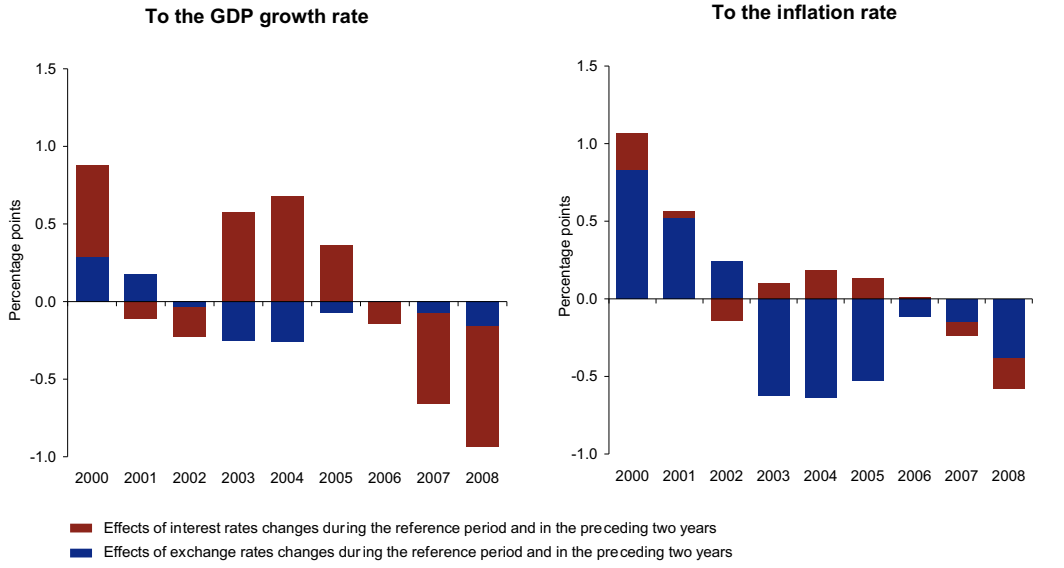
According to the monetary conditions index for the Portuguese economy, the evolution of interest rates over latter years shall have exerted a particularly restrictive effect on the growth of economic activity in 2008, reflecting both the upward cycle of official interest rates beginning at the end of 2005 and the increase in money market risk premiums in the more recent period (Chart 3.1.5).[17] The behaviour of the nominal effective exchange rate index shall have given a similar contribution although with a clearly lesser impact. Also in terms of the monetary conditions index, both the evolution of interest rates and, mainly, the appreciation of the nominal effective exchange rate index contributed to a reduction of inflation in the same period.

In such a context, reference should be made to the fact that Portugal's nominal effective exchange rate index maintained its appreciation trend beginning at the end of 2005 up to July 2008 (with a change of around 1 per cent in the first 7 months of 2008). It then depreciated by around 1.5 per cent up to October, recovering since December, to a level similar to the annual maximum level, reached in July. In average annual terms, the nominal appreciation in 2008 was 1.2 per cent (following 0.8 per cent in 2007).

There has been a significant change to the context of the performance of Portuguese banks since mid 2007, exacerbated by the particularly adverse evolution of capital markets and by the continued, significant and comprehensive deterioration of prospects in terms of the evolution of economic activity. On the other hand, and similarly to other Europeans banks in general, Portuguese banks have been affected both in terms of securing finance in wholesale markets as in their profitability, asset quality and

**Chart 3.1.5**

CONTRIBUTION OF MONETARY CONDITIONS




**Note:** For methodological information see Esteves, Paulo Soares (2003), "*Monetary Conditions Index for Portugal*, "Banco de Portugal, *Economic Bulletin-June*. The multipliers underlying the construction of this index (corresponding to the impacts of exchange and interest rate changes) were updated taking into consideration the key model currently used for the construction of economic projections for the Portuguese economy.

(16) The risk premium associated with non-collateralised operations is assessed by the repo-spread, *i.e.* the difference between interest rates on non-collateralised and collateralised operations in the interbank money markets. When a time span of 3 months is considered for euro operations, this indicator achieved its maximum level at the beginning of October 2008 (close to 180 b.p.), falling to around 75 b.p. at the end of March 2009.

(17) For methodological information, see Esteves, Paulo Soares (2003), "*Monetary Conditions Index for Portugal*", Banco de Portugal, *Economic Bulletin-June*.

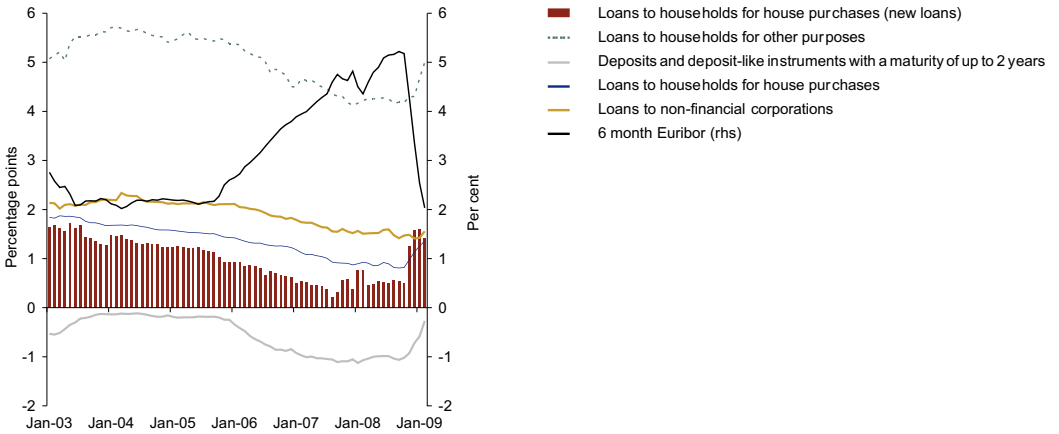
solvency. Accordingly, the financial intermediation role being developed by the Portuguese banking system over latter years, between foreign and resident sectors, has been significantly conditioned. Still, restrictions and liquidity constraints in the commercial paper and interbank markets have recently eased somewhat, allowing for a gradual normalisation in bank's funding. This is also benefiting from the government support measures to the banking sector, notably the provision of debt issuance guarantees. It should be remembered that, under the terms of its participation in the euro area and the particularly favourable financial context in force for a very long period up to the appearance of the financial crisis, Portuguese banks found it easy to secure euro funding for long term maturities in international financial markets, permitting them to sustain a high differential between growths in domestic demand and income, translating into significant deficits on the current plus capital account.

The appearance of access difficulties to wholesale funding markets, in terms of quantities and prices, since mid 2007, led the banks to change their relationship with customers on several levels, in line with what was observed in several other European countries. They paid higher returns on customer deposits (by reducing interest rate spreads on these operations *vis-à-vis* money market interest rates) and increased lending restrictions on the non-financial private sector, both on a level of interest rates (increasing spreads) as on a level of other contractual conditions (such as maturities, amounts lent, collateral required and the relationship between these two latter variables).

Up to the third quarter of 2008, in Portugal, the highest interest on deposits with an agreed maturity date was not clearly reflected in a reduction of spreads between interest rates on the outstanding amounts of deposits with an agreed maturity of up to 2 years and money market rates (Chart 3.1.6). In addition to the usual gradual transmission of changes in short term money market interest rates to banking interest rates on new operations, the increase in rates may have only benefited a small proportion of total deposits outstanding, particularly new deposits made in the meantime, or renewals, comprising a renegotiating of rates in the form of active customer involvement.[18] Similarly, the evolu-

**Chart 3.1.6**

INTEREST RATE MARGINS




**Sources:** ECB and Banco de Portugal.
**Note:** The interest rate margin on the outstanding amounts of loans is calculated as being the difference between the interest rate on outstanding amounts and the six month moving average on 6 month Euribor. In the case of new operations, the interest rate margin is the difference between the interest rate on new operations and 6-month Euribor.

(18) These requirements have been defined for the statistical classification of a credit or deposit operation as a new operation. Situations of an automatic extension of pre-existing deposits and loan contracts, are, accordingly, excluded from this concept, *i.e.* when not requiring any active involvement by the customer and when not involving any renegotiation of the terms and conditions of the contract (including interest rate) and changes of variable interest rates deriving from automatic adjustments, as they are not considered to be new agreements. It should also be noted that, in each month, only a fraction of the outstanding amounts of deposits comprises the constitution of new operations in the period. This fraction was, on average, slightly higher than 10 per cent during the course of 2008.

tion of interest rate spreads on outstanding lending operations reflected these inertia factors. It was also constrained by the impact of an eventual higher prevalence of collateralised operations as opposed to the imposition of higher spreads on operations with the same risk level.[19] At a later stage, owing to the marked reduction of money market rates, there was a substantial broadening of spreads on lending operations (and a reduction on deposit operations), which also points to the possibility of relatively significant reductions on bank interest rates in the future. However, given the worsening of the economic and financial situation, bringing about an increase in credit risk, a stabilisation of such spreads to levels higher than those observed in recent years is to be expected. The most recent information on the interest rate spreads for new lending operations to households seems to confirm this change.

Taking bank's financing constraints in international wholesale markets into account and the slowdown in economic activity, translating into a deceleration in nominal GDP from around 5 per cent in 2007 to 1.8 per cent in 2008, bank loans to the non-financial private sector maintained an annual rate of change which can be considered high during the course of 2008 and beginning of 2009, although evidencing a clear trend towards a slowdown during the course of the second half of the year. Differentiation, however, continued to exist between loans to households and to non-financial corporations. In the case of loans to households, the slowdown was part of a trend beginning in mid 2006, which accentuated in the second quarter of the year, when the rate of change of consumer credit and for other purposes hit its highest value for the year at 11.4 per cent. In December 2008, the rate of change of loans to the sector was 4.6 per cent (in comparison to the preceding year's 9.0 per cent), with housing and consumer and other credit having reached 4.3 and 6.1 per cent (8.5 and 11.3 per cent in December 2007), respectively. In February 2009, the rates of change of total loans to households and the housing and consumer and other loans segment aggregate reduced further to 3.5, 3.5 and 3.6 per cent, respectively, with reference being made to the fact that the most recent loan dynamics (assessed by annualised quarterly rates of change, calculated on the basis of seasonally adjusted values) clearly points to additional reductions of annual rates of change in the course of the coming months (in February, the annualised quarterly rate of change on total loans to households was 1.5 per cent) (Charts 3.1.7 and 3.1.8).

The profile of a progressive slowdown in the intra-annual evolution of loans to households is in line with the results of the Bank Lending Survey, pointing, as factors inducing such an evolution, to the continued reduction of consumer confidence, deterioration of housing market prospects and reduction of expenditure on durable goods (*e.g.* cars and furniture).

The growth of bank loans to non-financial corporations was, in turn, significant over a large part of 2008 (between 12 and 13 per cent), indicating significant deceleration starting only in the last quarter (Chart 3.1.9). Nevertheless, they continued to evidence high rates of expansion in February 2009, with a year-on-year rate of 8.7 per cent and 5.9 per cent in the case of the annualised quarterly rate of change (calculated on seasonally adjusted values). Bank finance to non-financial corporations, in 2008, also involved the acquisition of very substantial volumes of debt securities, particularly commercial paper. In the first half of the year, net issuances of this instrument were up strongly (to around 3700 million euros, in comparison to around 1000 million euros in the same period 2007 and slightly more than 2700 million in the second half of 2007), and were mostly acquired by banks, which fact was associated with the difficulties involved in the issuance of debt securities for the longer maturities by companies. There was, however, a drastic reduction in the issuance of debt securities by this sector in the last quarter, particularly in commercial paper. Therefore, a broader aggregate of bank finance to non-financial cor-

(19) This prevalence of collateralised operations was referred to by the banks participating in the Bank Lending Survey, with the aim of demanding greater guarantees on credit operations.

**Chart 3.1.7**

LOANS TO HOUSEHOLDS FOR HOUSE PURCHASE BY RESIDENT MONETARY INSTITUTIONS

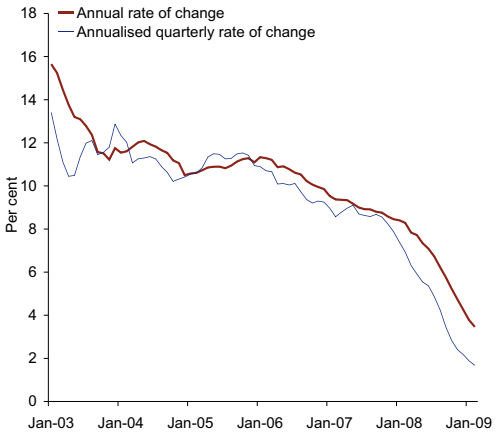
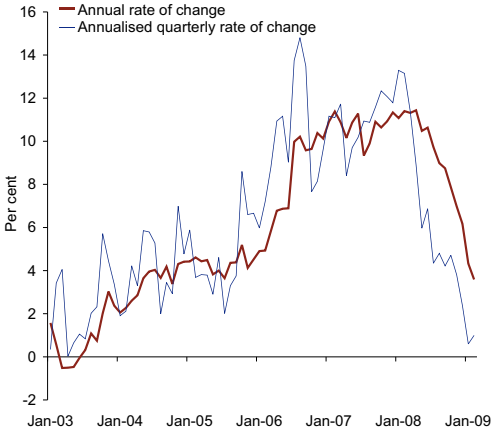



**Chart 3.1.8**

LOANS TO HOUSEHOLDS FOR CONSUMPTION AND OTHER PURPOSES BY RESIDENT MONETARY INSTITUTIONS




**Source:** Banco de Portugal.
**Note:** The annual and quarterly rates of change are calculated on the basis of the relationship between the outstanding amounts of bank loans at the end of the month, adjusted for securitisation operations, and monthly transactions, which are calculated on outstanding amounts corrected for reclassifications, write-offs and foreign exchange and price revaluations. The quarterly rate of change is seasonally adjusted.

porations, encompassing loans and debt securities issued by this sector and registered in bank portfolios, recorded even stronger growth levels than bank loans, of around 16 per cent in the first three quarters of 2008, although also slowing down as from the last quarter (year-on-year growth of 9.8 per cent and 4.8 per cent in terms of the annualised quarterly rate of change in February 2009) (Chart 3.1.10). According to the institutions participating in the Bank Lending Survey, the credit slowdown is

**Chart 3.1.9**

LOANS TO NON-FINANCIAL CORPORATIONS BY RESIDENT MONETARY INSTITUTIONS

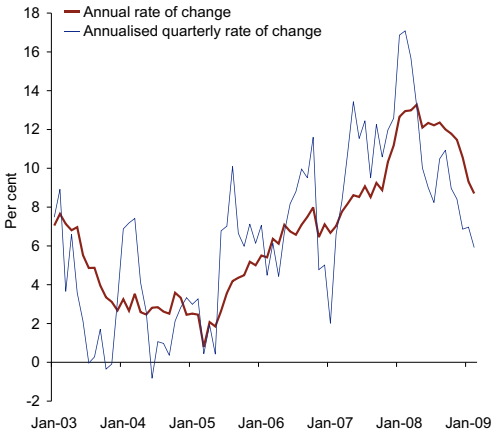
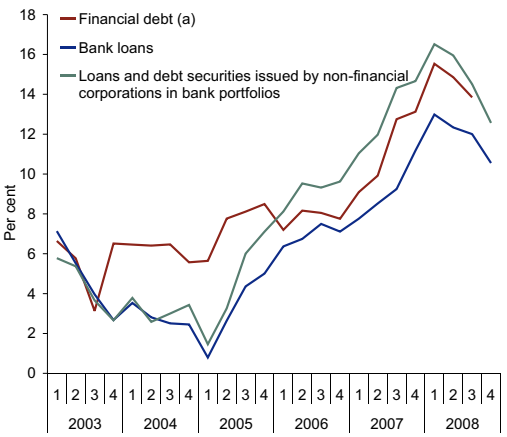



**Chart 3.1.10**

NON-FINANCIAL CORPORATIONS DEBT
Annual rates of change




**Source:** Banco de Portugal.
**Note:** The annual and quarterly rates of change are calculated on the basis of the relationship between the outstanding amounts of bank loans at the end of the month, adjusted for securitisation operations, and monthly transactions, which are calculated on outstanding amounts corrected for reclassifications, write-offs and foreign exchange and price revaluations. The quarterly rate of change is seasonally adjusted.

**Source:** Banco de Portugal.
**Note:** (a) Includes loans granted by resident and non-resident credit institutions; loans/partners' loans granted by non-resident companies in the same economic group (excluding loans to non-financial corporations having their head office in the Madeira free trade zone); debt securities issued by non-financial corporations in the possession of other sectors.

associated with the decrease in investment financing needs and for mergers/acquisitions and corporate restructuring operations (simultaneously reporting a progressive decrease in demand for long term loans). In opposition, factors incentivising demand for credit included debt restructuring operations, inventory financing and working capital requirements.

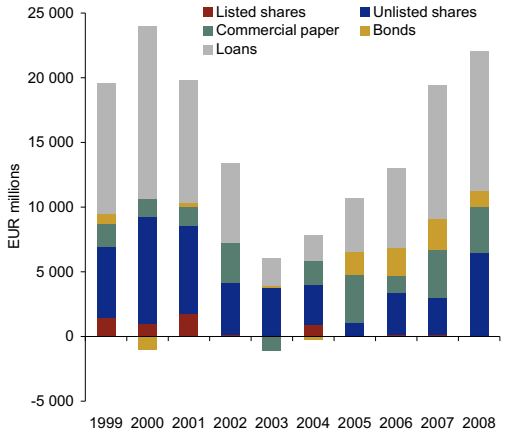
Accordingly, the total financial debt of non-financial corporations, which includes loans and debt securities placed with banks and other investors, has accompanied the evolution of the referred to broader aggregate of bank finance to non-financial corporations, recording only a slightly lower growth. Therefore, the end of 2008, shall have witnessed an increase in the indebtedness debt and in the financial debt ratio in relation to the capital of non-financial corporations over the preceding year (Chart 3.1.11).[20]

The relative sustainment of bank finance to non-financial corporations, notwithstanding the unfavourable environment existing in international wholesale debt markets, was enabled by the significant expansion of customer resources, notably deposits by individual resident customers, with a rate of growth of close to 15 per cent in February 2009 (Chart 3.1.12). In addition to reflecting the already mentioned adoption of more competitive strategies by banking institutions in securing customer resources, in a context of disruptions in the wholesale funding markets, this evolution is essentially reflecting increased investor demand for financial investments which are less sensitive to market fluctuations. The supply of credit was also supported by added recourse to funding through the Eurosystem's monetary policy operations. The securitisation of loans also represents an important, albeit indirect, source of funding for Portuguese banks. In the current framework, there has been a sharp decrease in the demand for securities resulting from securitisation operations. In such a context, and as in the case of other European banks, several Portuguese banks have acquired the securities resulting from such operations from securitisation vehicles owned by third parties, using them to as collateral for Eurosystem credit operations. Finally, notwithstanding the already referred to adverse conditions in wholesale funding markets, Portuguese banks have succeeded in maintaining some access to pri-

**Chart 3.1.11**

FINANCING OF PORTUGUESE NON-FINANCIAL CORPORATIONS

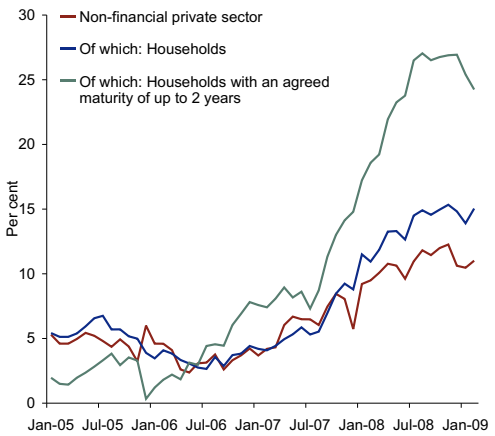
Net issues




**Source:** Banco de Portugal.

**Chart 3.1.12**

YEAR-ON-YEAR RATES OF CHANGE OF BANK DEPOSITS




**Source:** Banco de Portugal.

(20) There was a significant increase in the issuances of shares for the year as a whole in comparison to 2007. The amounts, however, were relatively concentrated in a small number of issuances, with one of them, for around 1900 million euros, being associated with the formation of *Capitalpor*, a holding company created by *Parpública* as part of the reorganisation of its financial investments.

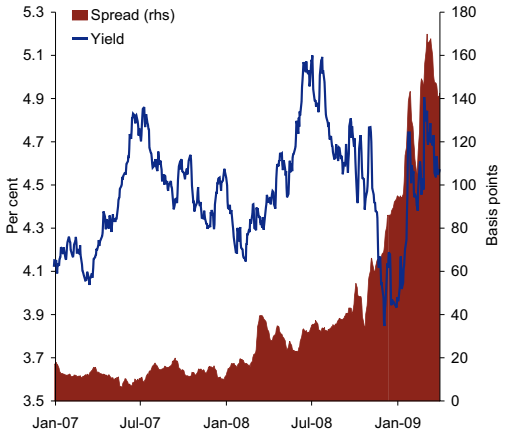
mary debt securities markets, particularly in the second quarter of 2008, albeit at relatively high costs and with shorter maturities, reflecting the global difficulty in issuing medium and long term securities (Chart 3.1.4). Since the last quarter of 2008 this access has benefited from government support measures to the banking sector, as in other European countries, notably the provision of debt issuance guarantees. Benefiting from such guarantees, several of the main Portuguese banking groups realised market debt issuances in December 2008 and January 2009, of more than 4000 million euros.

As already referred to in the preceding section and as with other euro area countries, the last quarter of 2008 and first months of 2009 witnessed an increase in the differential between the yield on Portuguese Treasury bonds with a residual maturity of 10 years and that of German debt, as a reflection of higher liquidity and credit risk premiums and the reduction in the rating notation of the Portuguese republic by the Standard & Poors' (Charts 3.1.13 and 3.1.14). However, it should be noted that the widening of the differentials of yields of public debt occurred simultaneously to a large number of European countries (see Chart 2.1.10 and "Section 2 *International framework*"). The requirement for higher risk premiums on public debt yields also took the form of additional penalties on the financing costs of domestic economic agents. Reference should, however, be made to the fact that, after peaking in June and July, the yields on Portuguese Treasury Bonds with a residual maturity of 10 years maintained a downward trajectory up to the end of 2008, to an end of year level of close to 4 per cent, around 50 b.p. less than at the end of 2007.[21] The first months of 2009 witnessed an upward trend on the rate on Portuguese public debt, in line with the increase in the differential with the interest rate on German public debt, to a level similar to the end of 2007.

Similarly, in the same context of assessment of risks by market investors, implying a clearly more significant price discrimination between the different levels of risk, 2008 witnessed a clear increase in the interest rate differentials on the bonds of non-financial Portuguese corporations in comparison to public debt securities with a comparable maturity, which evolution was particularly pronounced in the last

**Chart 3.1.13**

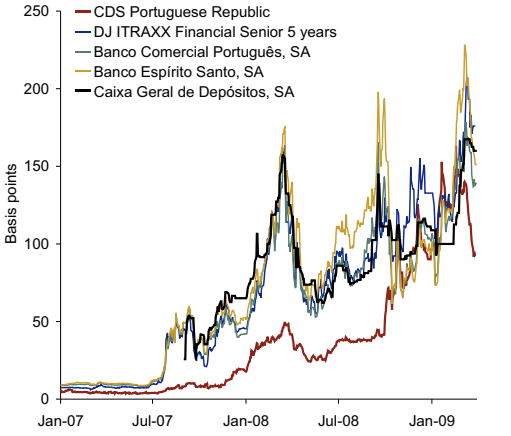
PORTUGUESE PUBLIC DEBT YIELD AND SPREAD *VIS-À-VIS* GERMAN PUBLIC DEBT (10 YEARS)




**Sources:** Thomson Reuters and Banco de Portugal.
**Note:** Yields obtained at close of business. The spread was calculated by interpolating the German yield curve, to guarantee that the yield on the 10 year Portuguese benchmark is being compared with a German yield with a similar maturity. The spread was calculated on the basis of a 5 day moving average.

**Chart 3.14**

CREDIT DEFAULT SWAPS SPREADS OF PORTUGUESE BANKS – 5 YEARS SENIOR




**Sources:** Bloomberg and Thomson Reuters.

(21) In terms of average annual values, the level in 2008 was 10 b.p. higher than in 2007, although clearly less than in the first few years of the euro area.

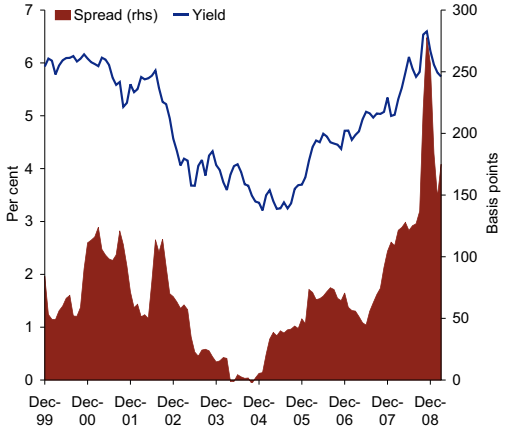
quarter of the year, although partly reversed at the beginning of 2009 (Chart 3.1.15). Reference should be made, in this case, to the fact that, both in terms of the annual average as in end-of-period values, 2008 witnessed an increase in the level of interest rates and therefore in the financing costs of non-financial corporations on the use of this instrument. It should, however, be remembered that financing via the issuance of bonds only represents a small proportion of the total financing operations of non-financial corporations in Portugal.

Global financial conditions were significantly affected by the major loss of value in equity markets in 2008. The PSI – Geral index fell in value by 50 per cent during the course of the year, as in the case of the euro area. This evolution reflected increasing problems in the global financial system and growing interaction with the observed and forecasted deceleration of economic activity. In addition to having a very direct effect on the profitability and solvency of financial institutions, this evolution has also compounded the financing difficulties of the non-financial sector, by increasing the cost of finance through shareholders' equity.

Owing to the developments occurring in several financial market segments, the real financing costs of Portuguese non-financial corporations in the major categories of financial instruments (considering an indicator which summarises the costs associated with shares and other investments, bank loans and debt securities) were up in 2008 over the level of the preceding year (Chart 3.1.16).[22] This evolution essentially derived from the increased estimate of financing costs via shareholders' equity, which reflected the significant fall in share prices, although the indicator's remaining components also recorded a slight increase.

**Chart 3.1.15**

PORTUGUESE NON-FINANCIAL CORPORATE BOND YIELDS AND SPREAD *VIS-À-VIS* PUBLIC DEBT SECURITIES OF A COMPARABLE MATURITY

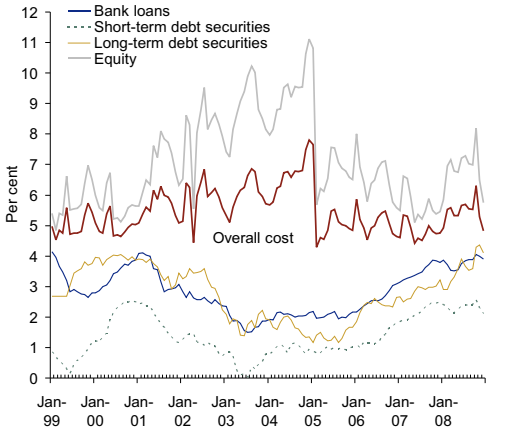



**Sources:** Barclays Capital and Banco de Portugal.

**Chart 3.1.16**

DEVELOPMENTS IN THE FINANCIAL COSTS OF NON-FINANCIAL CORPORATIONS IN PORTUGAL

In real terms




**Sources:** Barclays Capital, Consensus Economics, ECB, Thomson Reuters and Banco de Portugal calculations.
**Note:** There was a break in the series in January 2003 with the introduction of harmonised statistics on a Eurosystem level for bank interest rates charged by MFI.

(22) The synthetic indicator used for non-financial corporations' financing costs is calculated as a weighted average of the costs of the different types of financing. The component with the greatest weight in this indicator is the equity financing cost which is calculated by the formula $r = \frac{D}{P}\left[(1+gn)+8\,(ga-gn)\right]+gn$, in which $r$ is the cost of capital, $\frac{D}{P}$ the dividend yield, $gn$ corresponds to the rate of growth of dividends over the long term and $ga$ to the respective rate of growth over the next four years. The cost associated with the remaining categories of instruments is calculated on the basis of representative interest rates. For methodological information see Gameiro, I. and Ribeiro, N. (2007), "*Financing Costs of Portuguese Companies*", Banco de Portugal's *Economic Bulletin-October* .

One of the most marked aspects of the international economic and financial crisis is associated with the adjustment to the overvaluation of property markets in several countries (United States, United Kingdom, Ireland and Spain), in which prices have already decelerated sharply, even to significant nominal decreases. The available evidence does not point to the possibility of a comparable adjustment in Portugal. In aggregate terms, Portugal does not appear to suffer from situations of excessive valuation of property assets, notably in the residential component. The data set out in the *Confidencial Imobiliário* (Confidential Property) index shows that since the beginning of the current decade, the average annual rate of change of prices in the Portuguese residential market was 3 per cent in nominal terms and close to nil in real terms. This being the case, the possibility of a certain price adjustment in this market should not be excluded. This could derive from the environment of economic and financial crisis conditioning demand for property assets via expectations (on the evolution of income and actual property market prices) and fewer bank finance facilities for this type of investment. Reference should be made, in this context, to the fact that the Bank Housing Survey (realised by *INE*) indicates that the average banking valuations on house prices have recorded progressively negative year-on-year rates of change since the end of 2007 to -6.3 per cent at the end of 2008.[23] It should, however, be noted that as bank valuation indicators, these values are influenced by the increased restrictions on banks' credit supply. The *Confidencial Imobiliário* index, in turn, recorded a year-on-year rate of change of 4.2 per cent in January 2009. This percentage, to a large extent, reflects an improvement in the average quality of supply, translating into a rate of change of new property prices of 5.5 per cent, which is clearly different from the rate of change of 1.3 per cent[24] on second hand property.

## 3.2. Fiscal policy [25]

The general government deficit, in national accounts, stood at 2.6 per cent of GDP in 2008, the same as in 2007 (Table 3.2.1). This outcome is higher than the official target for the deficit which had been set at 2.2 per cent of GDP. The public debt ratio increased by 2.9 p.p. in 2008, reaching 66.4 per cent at the end of the year.

Notwithstanding the fact that the actual deficit remained below the reference value of 3 per cent of GDP, fiscal developments in 2008 were characterised by a highly significant amount of temporary measures. Following the Eurosystem approach, temporary measures accounted for 1.1 per cent of GDP in 2008 (in comparison to 0.1 per cent in 2007), deriving from revenue raised through concessions granting, deducted in national accounts from capital expenditure.[26]

According to Banco de Portugal estimates, the structural deficit, *i.e.* cyclically adjusted and excluding the effect of temporary measures, reached 4.6 per cent of trend GDP[27] in 2008, showing a deterioration of 1.4 p.p. from 2007. Macroeconomic developments contributed to the improvement of the fiscal position. Notwithstanding the major deceleration in economic activity in 2008, the composition of economic growth was favourable to public accounts, as private consumption and particularly private sec-

(23) This evolution is in line with the results of the Bank Lending Survey, whose participating credit institutions have consistently indicated and more significantly so since the end of 2006, the risks associated with housing market prospects as a factor inducing more restrictive conditions on their supply of credit for home purchases and prospects for the housing market as a contributory factor to reducing demand in the segment.

(24) It should be remembered that this index is calculated on the basis of offer prices and weighted per region and the property's condition of use. The quality adjustment in the calculation of the index, however, does not enable the changes in this parameter to be fully controlled. For methodological information, see the *Índice Confidencial Imobiliário* (base 2005) published by *Imométrica*, in October 2006.

(25) This section is based on the excessive deficit procedure notification and the provisional accounts of general government, in national accounts, sent by *INE* to Eurostat at the end of March.

(26) The revenues classified as temporary measures derive from extending the concession period of currently existing dams (€759 million), new concessions for dams which have not yet been built (€624 million) and road concessions (€471 million, of which €200 million relates to the '*Douro Litoral*' motorway and €271 million are associated with the extension of several concession periods in contracts with *Brisa*).

(27) The total structural deficit as a percentage of GDP was 4.5 per cent.

**Table 3.2.1**

MAIN FISCAL INDICATORS
As a percentage of GDP

| | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|
| Overall balance | -6.1 | -3.9 | -2.6 | -2.6 |
| Primary balance | -3.5 | -1.2 | 0.2 | 0.3 |
| Temporary measures | -0.1 | 0.0 | 0.1 | 1.1 |
| Overall structural balance [(a)] | -5.5 | -3.8 | -3.2 | -4.6 |
| Primary structural balance [(a)] | -2.9 | -1.0 | -0.4 | -1.6 |
| Total structural revenue [(a)] | 41.6 | 42.6 | 43.6 | 43.3 |
| Primary structural expenditure [(a)] | 44.6 | 43.6 | 43.9 | 45.0 |
| Primary current structural expenditure [(a)] | 40.3 | 40.2 | 40.2 | 41.1 |
| Public debt | 63.6 | 64.7 | 63.5 | 66.4 |

**Sources:** *INE* and Banco de Portugal.
**Note:** (a) The structural figures are cyclically adjusted, exclude the effect of temporary measures and are presented as a ratio to trend GDP. The cyclical components and temporary measures are assessed by Banco de Portugal according to the methodologies used at the Eurosystem.

tor wage bill grew above their respective trends. Interest expenditure as a ratio to GDP increased only slightly, essentially owing to the growth of debt outstanding. In such a context, fiscal policy in 2008 was clearly expansionary, as shown by the decline of the structural primary balance by 1.2 p.p. of trend GDP, in contrast with 2006 and 2007 outcomes. The worsening of the fiscal position predominantly reflects the increase in structural primary current expenditure as a ratio to trend GDP (+0.9 p.p.), after a quasi-stabilisation in the preceding two years, partly explained by the growth of expenditure on pensions and, to a lesser extent, intermediate consumption.

The tax burden as a ratio to GDP stabilised in 2008, as a result of the increase in the receipts of taxes on income and wealth and social contributions, offsetting the reduction of the proceeds from taxes on production and imports (Table 3.2.2). In the former case, the favourable outcome essentially derives from the behaviour of the Corporate Income Tax, based on firms' good results in 2007 and additional gains generated by effectiveness improvements in tax collection, though of a much smaller magnitude than in the preceding years. The positive effect of social contributions on the fiscal balance is explained by the contributions to the Social Security subsystem, whose growth was closely in line with the private sector wage bill. Lastly, the decrease in revenue from taxes on production and imports resulted from the evolution of the Value Added Tax (VAT), the Tax on Oil Products,[28] the Tax on Motor Vehicles Sales and the Municipal Tax on Real Estate Transactions. The developments concerning VAT collection exceeded the expected impact of the reduction of the standard rate from 21 to 20 per cent by mid 2008, and were particularly affected by the major deceleration of its proceeds over the last months of the year and the beginning of 2009.[29] The Tax on Oil Products revenue was crucially influenced by the decline in petrol and diesel consumption and the Municipal Tax on Real Estate Transactions collection by the slowdown in transactions. Changes to legislation on motor vehicles taxation by mid 2007 were the main explanatory factor behind the decrease in the Tax on Motor Vehicles Sales revenue.

The change in primary current expenditure in 2008 at a disaggregated level was affected by the transformation of several public hospitals into corporations in February and August 2007 and in September

(28) Including the road service contribution, which, starting February 2008 accrues to *Estradas de Portugal*.

(29) VAT recorded in national accounts in year *t* includes 75 per cent of the January and February tax collection in year *t*+1 and excludes 75 per cent of January and February receipts in year *t*.

**Table 3.2.2**

GENERAL GOVERNMENT ACCOUNTS

| | As a percentage of GDP | | | Rate of change | |
|---|---|---|---|---|---|
| | 2006 | 2007 | 2008 | 2007 | 2008 |
| Total revenue | 42.3 | 43.1 | 43.2 | 6.9 | 2.1 |
| Current revenue | 41.2 | 42.2 | 42.3 | 7.6 | 2.0 |
| Taxes on income and wealth | 8.8 | 9.7 | 9.9 | 15.9 | 3.9 |
| Taxes on production and imports | 15.4 | 15.0 | 14.6 | 2.5 | -1.1 |
| Social contributions | 12.5 | 12.7 | 13.0 | 7.0 | 4.0 |
| Actual | 11.4 | 11.7 | 11.9 | 7.7 | 4.1 |
| Imputed | 1.1 | 1.0 | 1.0 | -0.5 | 3.2 |
| Sales [(a)] | 2.4 | 2.5 | 2.5 | 9.7 | 0.6 |
| Other current revenue | 2.1 | 2.2 | 2.3 | 11.3 | 5.8 |
| Capital revenue | 1.1 | 0.9 | 0.9 | -17.4 | 6.0 |
| Total expenditure | 46.3 | 45.7 | 45.9 | 3.7 | 2.2 |
| Current expenditure | 42.9 | 42.2 | 43.2 | 3.4 | 4.1 |
| Compensation of employees [(a)] | 13.6 | 12.9 | 12.9 | -0.5 | 1.5 |
| Intermediate consumption [(a)] | 4.1 | 4.1 | 4.4 | 5.7 | 7.5 |
| Interest | 2.7 | 2.8 | 2.9 | 7.6 | 4.9 |
| Social benefits | 18.8 | 19.2 | 19.9 | 7.4 | 5.4 |
| in cash | 15.1 | 15.1 | 15.6 | 5.5 | 5.1 |
| in kind [(a)] | 3.7 | 4.1 | 4.3 | 15.2 | 6.8 |
| Subsidies | 1.4 | 1.2 | 1.2 | -14.8 | 1.6 |
| Other current expenditure | 2.2 | 2.0 | 2.0 | -3.2 | 1.6 |
| Capital expenditure | 3.4 | 3.5 | 2.7 | 7.4 | -21.4 |
| Gross fixed capital formation | 2.4 | 2.3 | 2.1 | 1.8 | -5.8 |
| Other capital expenditure | 1.0 | 1.2 | 0.6 | 20.3 | -52.1 |
| Overall balance | -3.9 | -2.6 | -2.6 | | |
| Overall balance (excluding temporary measures) | -3.9 | -2.7 | -3.7 | | |

**Sources:** *INE* and Banco de Portugal.
**Note:** (a) Items affected by the change in the perimeter of the general government sector following the transformation of some hospitals of the National Health Service into corporations in 2007 and 2008. The figures presented in this table are not corrected by the impact of this change.

and October 2008. This break in the series, that decreases compensation of employees and intermediate consumption and increases social payments in kind, is corrected in the following analysis.[30]

In 2008 there was a highly significant increase in social payments in cash as a percentage of GDP (+0.5 p.p.). Indeed, pension expenditure recorded again a rise as a ratio to GDP (+0.4 p.p.), though decelerating, in particular in the *Caixa Geral de Aposentações* subsystem. Unemployment benefits outlays declined as a ratio to GDP, although this effect was partially offset by the evolution of other social expenditure, namely following the measures introduced by mid 2008. These included the broadening of the supplement to senior citizens and the introduction of further health benefits, in addition to an increase in family allowances for low income households and the creation of transport passes for students. Transfers to households in the form of payments in kind remained practically unchanged as a ratio to GDP, notwithstanding the acceleration in expenditure on medicines and medical acts co-payments relative to the preceding year.

The wages of general government employees stabilised as a ratio to GDP, recording a growth of 1.3 per cent. This evolution, to a large extent, derived from the 2.1 per cent update of the wage scale and

(30) But not in Table 3.2.2.

the fall in the average wage owing to retirement/recruitment[31]. Expenditure on intermediate consumption, in turn, grew significantly, increasing its ratio to GDP by 0.3 p.p., partly as a result of the increase in payments to concessionaires of toll-free motorways.

Public investment declined in nominal terms, as its evolution was influenced by the acceleration of proceeds from the sale of real estate *vis-à-vis* the preceding year. Excluding this impact, the rate of change was positive. Other capital expenditure recorded a sharp decline owing to the already referred temporary measures. Net of this effect, it increased as a ratio to GDP, to a large extent because in national accounts the amortisation of the tariff deficit in the electricity sector is classified as a capital transfer.

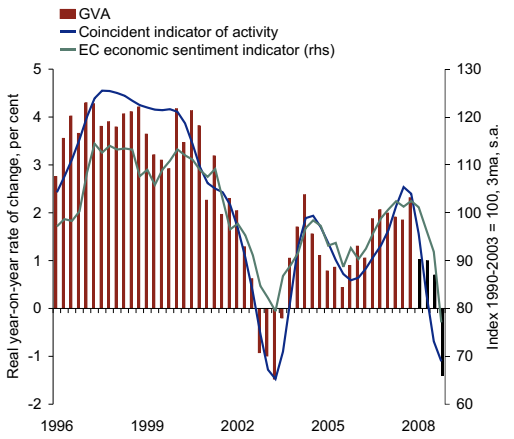
In 2008, after the reduction in the preceding year, the debt ratio increased substantially (+2.9 p.p.), reaching 66.4 per cent of GDP at the end of the year. This outcome essentially reflects the effect of the differential between the implicit interest rate on public debt and the rate of growth of nominal GDP (+1.7 p.p.) and deficit-debt adjustments (+1.4 p.p.), as the primary balance contribution to the decrease of the debt was small.

## 4. SUPPLY

According to current estimates, GVA (gross value added), in the Portuguese economy, in 2008, was 0.3 per cent up over 2007. In intra-annual terms, there was year-on-year growth of 1.0 per cent in the first and second quarters, 0.7 per cent in the third quarter and -1.4 per cent in the last quarter, in comparison to growth of 2.0 per cent, for 2007 as a whole. This profile of the gradual deceleration of activity in the first three quarters of 2008 and a sharp contraction in the last quarter, is confirmed by the Banco de Portugal's coincident indicator and the European Commission's "Economic Sentiment Indicator" which maintained the downward trajectory that began in the last quarter of 2007 (Chart 4.1) during the course of the year. The indications provided by the range of available qualitative indicators (*i.e.* confidence indicators for manufacturing industry, construction, services, retail trade and production fore-

**Chart 4.1**

GVA, COINCIDENT INDICATOR OF ACTIVITY AND ECONOMIC SENTIMENT INDICATOR




**Sources:** European Commission, *INE* (Quarterly Accounts) and Banco de Portugal.

(31) The average wage of workers leaving public administration, essentially for retirement, is clearly higher than that of new employees.

casts for the coming months, order books, including exports) are similar, with most such indicators, in early 2009 continuing to evidence a strong downward trend.

In sectoral terms (Table 4.1), the change of GVA essentially derives from the strong contraction in construction (-5.1 per cent over 2007) and industry (-2.4 per cent). GVA in these sectors began to contract in the first half of the year (with a year-on-year change of -4.0 per cent for the first quarter and -1.7 per cent for the second quarter in the construction sector and a year-on-year change of -1.6 per cent for the first quarter and -1.1 per cent for the second quarter in industry). In the third quarter, industry GVA fell by no more than 0.9 per cent as opposed to 4.4 per cent in construction. Special reference should, however, be made to the particularly sharp contraction in the last quarter (with a year-on-year change of -10.5 per cent for the construction sector and -5.9 per cent for industry). Agriculture and fisheries posted strong recovery in 2008, as opposed to the contraction occurring in 2007, confirming the high level of volatility characterising the change of GVA in this sector.

For 2008 as a whole, services GVA maintained a dynamic of growth, although lower than in previous years (1.2 per cent, in comparison to an average growth of 2.0 per cent between 2004 and 2007). There was a gradual deceleration of services GVA over the first three quarters (year-on-year growth of 1.9 per cent for the first quarter, 1.5 per cent for the second quarter and 1.2 per cent for the third quarter) and more markedly so in the last quarter (growth of no more than 0.2 per cent in year-on-year terms). The services sector therefore continued to increase its proportion of total GVA, making a systematically positive contribution to its growth, as opposed to construction and industry (Chart 4.2), particularly in economic downturns. 2008 also witnessed GVA growth of 2.6 per cent over 2007 in financial and property activities, which have maintained strong growth dynamics over the last decade.

GDP for 2008 as a whole is estimated to have stagnated (see "Section 5 *Expenditure*"). The capital factor is estimated to have contributed 0.4 p.p. to GDP growth, in line with developments over the last three years, whereas the labour factor contributed 0.3 p.p. in comparison to practically nil contributions in 2006 and 2007. Total factor productivity is also estimated to have made a negative contribution of -0.7 p.p. in 2008,[32] in contrast with a contribution of 1.2 p.p. in 2007. The evolution of total factor productivity mainly resulted from the (typically pro-cyclic) evolution of the rate of use of production capac-

**Table 4.1**

GROSS VALUE ADDED BY VECTOR OF ACTIVITY
Real rate of change, per cent

| | Weights 2004 [(a)] | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|
| Agriculture, forestry and fishing | 3.2 | 5.8 | -5.6 | 2.5 | -4.2 | 4.3 |
| Industry | 15.5 | 0.2 | -0.9 | 0.8 | 2.8 | -2.4 |
| Electricity, gas and water | 2.8 | 3.2 | -3.0 | 11.3 | 5.7 | 0.7 |
| Construction | 7.1 | -0.3 | -3.0 | -3.3 | 0.7 | -5.1 |
| Services | 71.4 | 2.0 | 2.0 | 1.8 | 2.1 | 1.2 |
| GVA | 100.0 | 1.7 | 0.7 | 1.6 | 2.0 | 0.3 |
| *Memo:* | | | | | | |
| GDP [(b)] | | 1.5 | 0.9 | 1.3 | 1.8 | 0.0 |

**Sources:** *INE* and Banco de Portugal.
**Notes:** (a) As a percentage of GVA at current prices. (b) GDP at market prices. The nominal value of GDP includes taxes and subsidies on goods and tax on imports, in addition to sector GVA.

(32) A detailed description of the decomposition of GDP growth, including the care to be taken over its interpretation, can be found in Almeida, V. and Félix, R. (2006), "*Computing Potential Output and the Output Gap for the Portuguese Economy*", Banco de Portugal, *Economic Bulletin-Autumn* .

ity which, in the first half of 2008, interrupted a sharp growth stage beginning in the second half of 2006 (Chart 4.3).

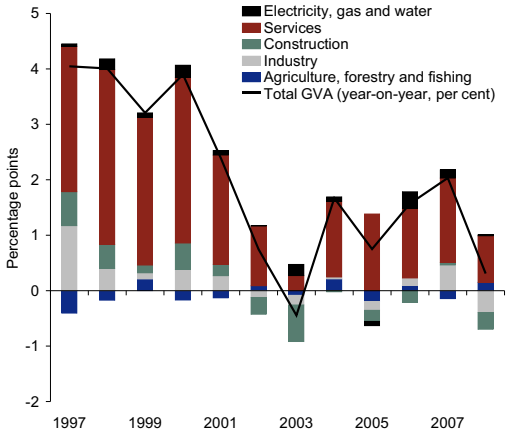
Apparent labour productivity, in the private sector, is estimated to have decreased by 0.3 per cent in 2008, which is the first time this has happened in the Portuguese economy and in comparison to growth of 1.7 per cent in 2007 (Chart 4.4). In global terms, the evolution of productivity has been significantly constrained by the relatively strong dynamics estimated for total employment in the economy (including in the private sector), in 2008, according to the *INE* Employment Survey (Chart 4.3). The employment dynamic is globally consistent with the historical relationship between the evolution of employment and activity in the private sector in the Portuguese economy (Chart 4.5).

According to the *INE*'s Employment Survey data, the participation rate in 2008 was 74.2 per cent (Table 4.2), in comparison to a rate of 74.1 per cent in 2007. The participation rate, which had been increasing over the last few years, has therefore stabilised, principally owing to the increase in the participation rate of women and demographic factors. More specifically, the decrease in the proportion of age groups with lower participation rates and increase in the proportion of the group with the highest participation rate (30 - 54 year olds) have resulted in an increase in the aggregate participation rate.[33]

Total employment, in the economy, in 2008, increased by 0.5 per cent over 2007 (Table 4.2). The improved employment situation, in the context of a deceleration of economic activity beginning in the first half of the year is unusual, even when considering the time lag between the evolution of employment and activity. Reference should, however, be made to the strong growth of employment in the first half of the year in contrast to the slight contraction in the second half of the year. The increase, for 2008 as a whole, resulted from the growth of both salaried unemployment (1.2 per cent) and self-employment (0.9 per cent), which, since the second half of 2007 has been making a remarkable recovery in comparison to the previous downward trend beginning in 2001, to which a contributory factor was the in-

**Chart 4.2**

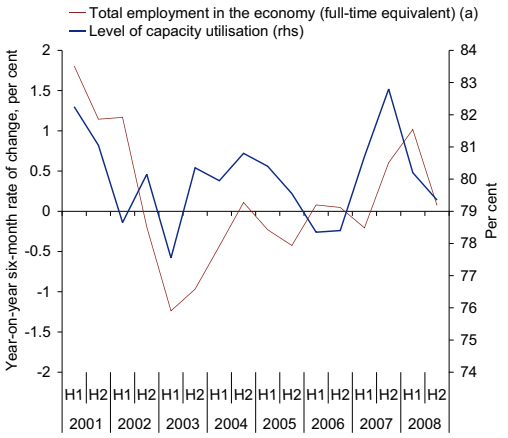
SECTORAL CONTRIBUTIONS TO CHANGE OF GVA




**Sources:** *INE* and Banco de Portugal.

**Chart 4.3**

TOTAL FULL TIME EMPLOYMENT IN ECONOMY AND USE OF PRODUCTIVE CAPACITY

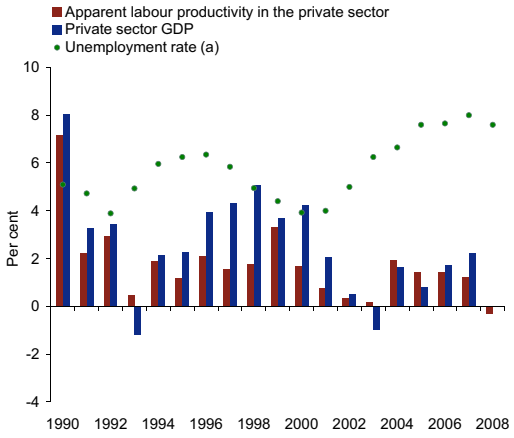



**Sources:** *INE* and European Commission.
**Note:** (a) The level of employment used corresponds to the level of total employment in the economy adjusted for the number of hours worked. In particular, each employment corresponds to a number of full time hours worked. For 2007 and 2008 this data is provisory and reflects the growth of employment determined in the Employment Survey.

(33) This estimate assumes that there is no change to the participation rate for each age level, in 2008, in comparison to 2007. For a more detailed analysis of the impact of the demographic evolution on participation rates see "Box II.4.1 *Implications of developments in the age structure of the Portuguese population for the participation and unemployment rates*", Banco de Portugal, *Annual Report 2001*.

**Chart 4.4**

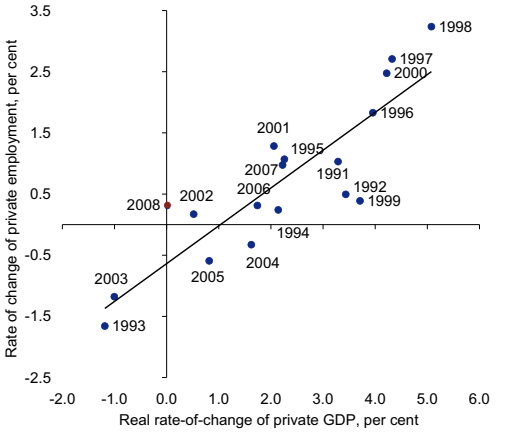
CHANGE OF APPARENT LABOUR PRODUCTIVITY AND GDP IN PRIVATE SECTOR




**Sources:** *INE* and Banco de Portugal.
**Note:** (a) The construction of the unemployment rate series was realised in accordance with the methodology described in Castro, G. L. and Esteves, P. S. (2004), "*Quarterly Series for the Portuguese Economy: 1977-2003*", Banco de Portugal, *Economic Bulletin-June*. Private sector employment is defined as being total employment excluding employment in general government, health and education defined in the Employment Survey.

**Chart 4.5**

PRIVATE GDP GROWTH AND PRIVATE FULL TIME EMPLOYMENT [a]




**Sources:** *INE* and Banco de Portugal.
**Note:** (a) Private sector employment is defined as being total employment excluding employment in general government, health and education defined in the Employment Survey. For 2007 and 2008, the private full time employment series assumes the maintenance of the average number of hours worked per worker. Private GDP is calculated as total GDP less compensation and fixed capital consumption by general government. The private GDP series does not include "corporatised" public hospitals.

**Table 4.2**

POPULATION, EMPLOYMENT AND UNEMPLOYMENT
Rate of change, per cent, (unless otherwise specified)

| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|
| Population | 0.8 | 0.6 | 0.5 | 0.2 | 0.2 | 0.2 |
| Labour force | 1.0 | 0.5 | 1.0 | 0.8 | 0.6 | 0.1 |
| Participation rate 15-64 years (% of population) | 72.8 | 72.9 | 73.4 | 73.9 | 74.1 | 74.2 |
| Total employment | -0.4 | 0.1 | 0.0 | 0.7 | 0.2 | 0.5 |
| Dependent employment | -0.3 | 1.2 | 0.8 | 2.2 | 0.1 | 1.2 |
| Permanent contract | 0.9 | 2.2 | 1.3 | 0.9 | -2.2 | 0.6 |
| Fixed-term contract | -2.6 | -1.9 | 1.7 | 9.3 | 8.0 | 6.2 |
| Employment excluding dependent employment | -0.5 | -3.0 | -2.4 | -3.6 | 0.5 | -1.5 |
| Self-employment | 0.5 | -3.1 | -2.8 | -2.7 | 1.3 | 0.9 |
| Unpaid family workers and other | -12.1 | -2.3 | 2.9 | -14.2 | -10.3 | -37.6 |
| Total unemployment | 26.5 | 6.6 | 15.7 | 1.3 | 4.9 | -4.8 |
| Total unemployment rate (% of the labour force) | 6.3 | 6.7 | 7.6 | 7.7 | 8.0 | 7.6 |
| Long term unemployment (% of total unemployment) [a] | 37.7 | 46.2 | 49.9 | 51.7 | 48.9 | 49.8 |

**Sources:** *INE* (Employment Survey) and Banco de Portugal.
**Note:** (a) Long term unemployment is an individual seeking work for 12 months or more.

crease in the mandatory social security contributions of such workers. There was, notwithstanding, a contraction of 1.5 per cent, in 2008, in terms of employment, excluding salaried employees (including not only the self-employed but also unpaid family workers and others).

The composition of salaried employment by type of labour contract, showed a continuation of the trend towards a decrease in the proportion of permanent contracts in this employment category. The number of workers with a permanent contract increased by only 0.6 per cent over 2007, as opposed to a 6.2 per cent increase in the number of workers with fixed-term contracts and a 2.2 per cent increase in the

**Chart 4.6**

QUARTERLY AVERAGE FLOWS IN THE LABOUR MARKET

Volume in thousands and in brackets, as a percentage of the labour force [a]


**Sources:** *INE* and Banco de Portugal.
**Note:** (a) Considering the common component of the sample for the quarter t and quarter t-1, and using the populational weighting factors of the quarter t. Average values relating to four quarters of 2008.

number of service providers. This recomposition of employment by type of contract may contribute to explain the simultaneity of the increase in employment and deceleration of activity, although reference should be made to the fact that this recomposition was fundamentally determined by the developments occurring in the first half year. There was a relative growth in the number of workers with permanent contracts in the second half of the year and particularly so in the last quarter, which is surprising in light of the current economic situation. There has, in any event, been a polarisation of the labour market which, since 1995 and more markedly so over the last three years, has translated into a systematic increase in the proportion of workers with fixed-term contracts in terms of the employment total, continuing to be a significant factor for younger workers and for shorter lengths of employment. This clear polarisation is the response of agents to the restrictions imposed by the permanent contract labour regime.

In sectoral terms, reference should be made to the 3.0 per cent increase in employment in services, which reinforces the proportion of tertiary labour in terms of total employment, a movement consistently observed over the last decades. Within this sector, employment in general government, education and health has increased by 1.7 per cent, which appears to be inconsistent with information obtained from other sources, including expenditure on general government employees (see "Section 3.2, *Fiscal policy*"). There has been a fall in employment in all of the other sectors, particularly in the second half of the year. Employment in manufacturing fell 3.9 per cent in 2008 (year-on-year change of -3.0 per cent in the first half of the year and -4.8 per cent in the second half of the year), with employment in construction falling 3.0 per cent (year-on-year change of -0.1 per cent in the first half of the year and -5.8 per cent in the second half of the year). Employment in agriculture and fisheries fell by 1.0 per cent over the year as a whole.

The unemployment rate hit 7.6 per cent, in 2008, in comparison to 8.0 per cent in 2007 and is therefore at a level close to 2006 (Table 4.2). The number of unemployed has fallen by 4.8 per cent. However, in

the first half of the year the unemployment rate was 7.5 per cent, as opposed to 7.8 per cent in the second half of the year. In global terms, the slight decrease in the unemployment rate over 2007 is unusual, owing to the profile of a continuously deteriorating economic situation during the course of the year (with a marked contraction towards the end) and the fact that the lag between movements in the unemployment rate and those in economic activity is smaller in recessionary periods. However, data supplied by the Institute of Employment and Professional Training points to an exceptional growth in the number of unemployed registered with job centres in the first months of 2009. Even with a relative stabilisation of the unemployment rate in 2008, reference should be made to the fact that it is at historically high levels in the Portuguese context. The average unemployment rate between 1990 and 2006 was 5.5 per cent. Structural factors, such as slow adaptation by several sectors to increased external competition, in interaction with labour legislation and the poor qualifications of a relevant number of workers, are contributing towards the maintenance of the unemployment rate at a higher than over the last years. Such a context creates an added risk that substantial increases in wages, notably the minimum wage, when not associated with productivity gains, will contribute towards a worsening of labour market conditions.

Total flows between the various labour market stages – inactivity, employment and unemployment – represented 7.0 per cent of the working population in 2008, at close to the 6.8 per cent noted in 2007. Chart 4.6 sets out information on the quarterly averages of such flows in 2008. An average of 49.1 thousand individuals moved from employment to inactivity with 45.1 thousand moving in the opposite direction 56.2 thousand individuals (only 6.3 thousand with a permanent contract) moved from unemployment to employment with 48.2 thousand individuals (14.9 thousand with a permanent employment contract) moving in the opposite direction. Finally 53.2 thousand individuals moved from inactive to employed status with 52.3 thousand moving in the opposite direction. The dynamics of such flows are similar to 2007 and very much in line with the last 10 years. Reference should, however, be made to the fact that the proportion of movements from unemployment to inactivity (which includes "discouraged individuals", *i.e*. willing to work but not actively seeking employment) has gradually increased over the last 10 years, from around 0.85 per cent of the working population, in 2000, to 1.2 per cent in 2008 (similar to the figures for 2007).

2008 witnessed an increase in the proportion of long term unemployment (12 months or longer), from 48.9 per cent in 2007 to 49.8 per cent of the total number of unemployed. This increase derives from a sharper decrease of short term unemployment, as there has also been a decrease in long term unemployment (3.2 per cent) in absolute terms. There is still a clear trend towards an increase in the proportion of long term unemployment in terms of total unemployment, registered since 2004. The average proportion of long term unemployment between 1998 and 2003 was 40.5 per cent of the total unemployment.

The average length of unemployment increased from 22 months in 2007 to 22.6 months in 2008, reflecting the trend towards an increase in the proportion of long term unemployment over latter years. Reference should also be made to the fact that the legislative changes in November 2006, in allowing workers with unemployment subsidies to exercise greater control over their active search for employment, resulted in a trend towards the maintenance of unemployment (as opposed to inactive) status, specially by the long term unemployed.

## 5. EXPENDITURE

According to Banco de Portugal estimates, the Portuguese economy stagnated in 2008 after recording a growth of 1.8 per cent in the preceding year, thus interrupting the trajectory of moderate and gradual recovery in force since 2006 (Table 5.1). The marked deceleration in economic activity in 2008 occurred in a context of interaction between an unprecedented financial crisis in international financial markets, which intensified in the second half of the year, and a major slowdown in global economic activity. Notwithstanding the significant deceleration of GDP in the euro area, Portugal will, for the seventh consecutive year post, a negative growth differential in comparison to the area as a whole and will continue to have one of the lowest euro area and European Union growth levels (Chart 5.1 and "Section 2 *International framework*").

The deceleration of economic activity in 2008 was a result of the virtual stabilisation of growth in private consumption and lower growth in other components of global demand, particularly exports and GFCF, which were down *vis-à-vis* the preceding year, in a context of the growing deterioration of demand prospects in domestic and external markets. The deceleration of exports of goods and services in 2008 was more marked than the estimated slowdown in external demand translating into a loss of market share for the year as a whole (Chart 5.2).[34] As stated, private consumption, countering the trend of the other expenditure components, recorded a rate of change similar to that of 2007, thus continuing to show a smoothing behaviour, notwithstanding the adverse economic and financial framework and high level of household debt. In a context of a major deceleration of economic activity and weighted global demand, imports of goods and services were also significantly down *vis-à-vis* 2007.

The intra-annual GDP growth profile in 2008 was characterised by a clearly downward path, with particular reference to the sharp and abrupt fall in the last quarter (Chart 5.3). The deceleration of GDP in the last quarter of the year (from 0.4 per cent in the third quarter, to a change of -1.8 per cent, in year-on-year terms) was a common factor to all of the main components, with a particular emphasis on

**Table 5.1**

GDP AND MAIN EXPENDITURE COMPONENTS [(a)]
Real rate of change, per cent

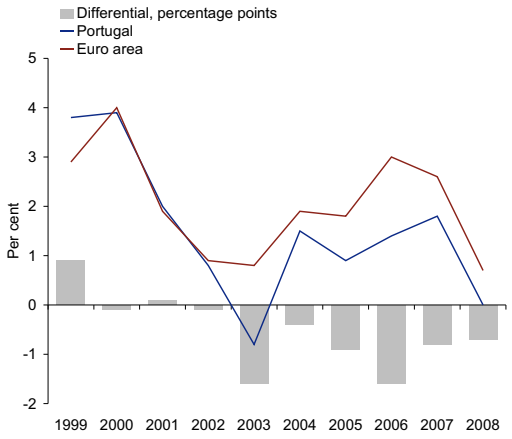
| | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|
| GDP | -0.8 | 1.5 | 0.9 | 1.4 | 1.8 | 0.0 |
| Private consumption | -0.2 | 2.5 | 1.9 | 1.9 | 1.6 | 1.7 |
| Public consumption | 0.2 | 2.6 | 3.2 | -1.4 | 0.0 | 0.5 |
| Investment | -8.3 | 2.5 | -1.5 | -0.3 | 2.7 | -0.9 |
| GFCF | -7.4 | 0.2 | -0.9 | -0.7 | 2.8 | -1.7 |
| Change in inventories [(b)] | -0.3 | 0.5 | -0.1 | 0.1 | 0.0 | 0.2 |
| Domestic demand | -2.0 | 2.5 | 1.5 | 0.8 | 1.5 | 0.9 |
| Exports | 3.9 | 4.0 | 2.1 | 8.7 | 7.5 | -0.4 |
| Imports | -0.9 | 6.7 | 3.5 | 5.2 | 5.6 | 2.1 |
| Contribution of domestic demand to GDP [(b)] | -2.2 | 2.7 | 1.6 | 0.9 | 1.7 | 1.0 |
| Contribution of net external demand to GDP [(b)] | 1.4 | -1.2 | -0.7 | 0.5 | 0.2 | -1.0 |

**Sources:** *INE* and Banco de Portugal.
**Notes:** (a) Banco de Portugal derived from the *INE*'s National Accounts for the years 1995 to 2006 (SEC95). (b) Contribution to the rate of change in GDP in p.p..

(34) The behaviour of exports in the most recent period has been strongly influenced by the expressive growth of several markets, particularly Angola and which, not being included in the external demand indicator, owing to statistical limitations, adds to the difficulty in analysing market shares.

**Chart 5.1**

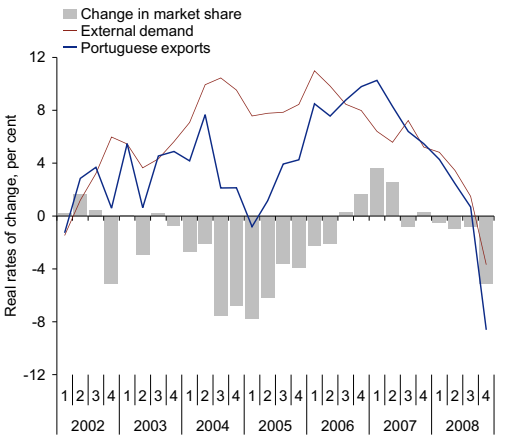
GROSS DOMESTIC PRODUCT
Real rate of change




**Sources:** Eurostat, *INE* and Banco de Portugal.

**Chart 5.2**

MARKET SHARE OF PORTUGUESE GOODS AND SERVICES EXPORTS




**Sources:** ECB, Office of National Statistics of the United Kingdom and Banco de Portugal calculations.
**Note:** External demand adjusted for fiscal fraud effect in United Kingdom.

the marked fall of exports (-8.9 per cent) and GFCF (-8.6 per cent). Notwithstanding the estimated pointed major fall in external demand at the end of the year, the market share of national exports should have decreased significantly in the last quarter of 2008. Private consumption was also down over the preceding quarter, particularly the component relating to durables which was 0.7 per cent down in year-on-year terms. The available quantitative and qualitative indicators point towards a continuation of the downward trajectory of GDP growth in early 2009 (see "Box 4 *The recent evolution of qualitative indicators*").

In comparison to the projection made in early 2008, the current estimate for GDP growth has been substantially revised (-2.0 p.p.), largely reflecting a highly significant downward revision of GFCF growth (-5.0 p.p.) and exports of goods and services (-5.3 p.p.).[35] In the opposite direction, private consumption was 0.5 p.p. up over the projections at the beginning of the year, notwithstanding a downward revision of the component relating to the consumption of durables. The intensification of the financial crisis in the second half of the year and, particularly, its respective impact on agents' expectations relating to the evolution of income and wealth levels, together with the persistence of a high level of uncertainty, led to a significant deterioration of the international outlook and successive and marked revisions of global economic growth prospects. This process, whose impact was particularly significant in the more advanced economies, had a negative effect on the levels and prospects for global demand. The major revision of exports occurred both in the goods and services components, particularly tourism. The revision of GFCF was, in turn, generalised to all of its components, in which particular reference should be made to the behaviour of corporate GFCF, with a significantly lower change than projected in early 2008, deriving, to a large extent, from the major drop in investment in construction.

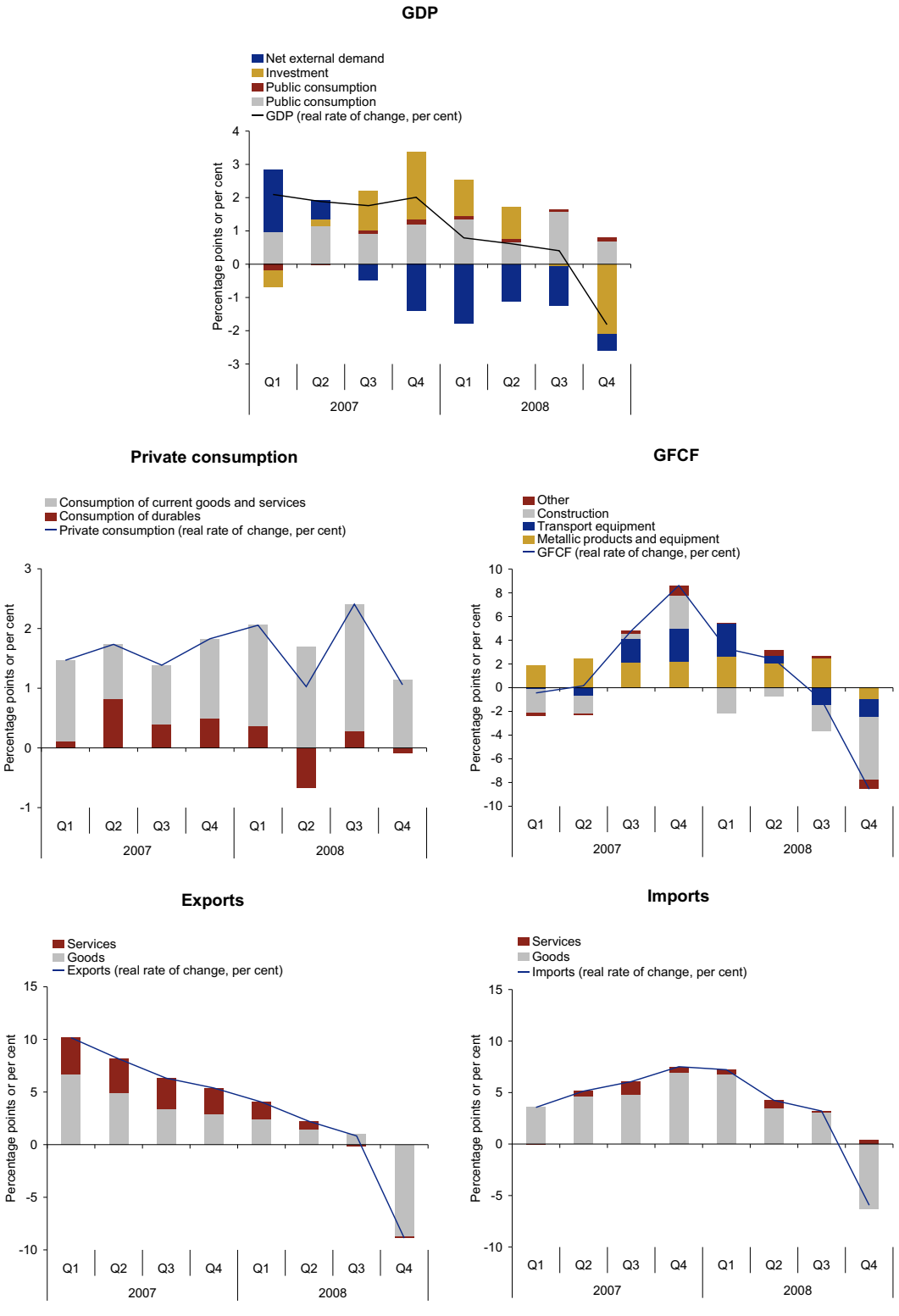
Growth of private consumption, in 2008, was similar to the preceding year and clearly higher than that of GDP, in line with the trend of latter years, which was only interrupted in 2007. The rate of growth of private consumption in 2008 was also higher than that of the euro area as a whole, in which this expenditure component was sharply down. Unlike 2007, the growth of private consumption was essentially

(35) See Banco de Portugal, *Economic Bulletin-Winter 2007*.

## Chart 5.3

QUARTERLY PROFILE OF GDP AND PRINCIPAL COMPONENTS

Contributions, in percentage points, (unless otherwise indicated)




**Source:** *INE* (Quarterly National Accounts).

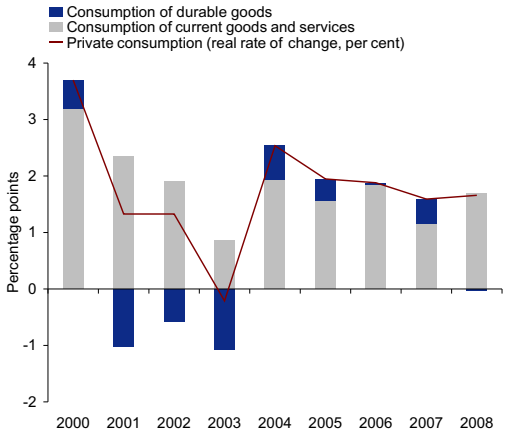
supported by the behaviour of the component relating to the consumption of current goods, in a context of a strong deceleration of durables consumption (Chart 5.4). The consumption of durables, in 2008, was down by 0.3 per cent, in comparison to a growth of 4.0 per cent in the preceding year, in line with the habitual pro-cyclical behaviour of this component. By way of contrast, the consumption of current goods, which represents around 90 per cent of total household consumer expenditure was up by 0.6 p.p. to 1.9 per cent.

Private consumption, particularly the component relating to the consumption of current goods is typically characterised by a smooth inter-temporal profile, in comparison to other expenditure components. One of the contributors to this smooth behaviour of private consumption in 2008 was the maintenance of a wage growth above the inflation rate in addition to some improvement in labour market conditions. Total employment in the economy increased by 0.5 per cent for the year as a whole, whereas the unemployment rate declined by 0.4 p.p. in to 7.6 per cent. However, reference should be made to the fact that employment growth in 2008 was concentrated in the first half of the year, with a slight contraction in the second half of the year, resulting in an increase in the number of workers with permanent employment or services provider contracts, in the context of a continuation of the trend towards a decrease in the share of permanent contracts in total employment. Simultaneously, the continued significant growth of bank loans to households, although easing during the course of the year, also operated as a private consumption smoothing factor. It is, however, expected, that the current economic and financial crisis, both on account of the uncertainty generated in relation to household earnings and wealth prospects and an eventual deterioration of labour market conditions, will tend to limit future consumer expenditure. Accordingly, households demand for credit is expected to be down, in a context in which, notwithstanding the downward path of interest rates, lending conditions are more restrictive. In particular, greater difficulty in getting access to credit in international markets, in comparison to the period preceding the appearance of turbulence in the those markets, should result in less capacity in terms of the supply of banking products to make it possible to adapt debt servicing to households' capacity to pay, notwithstanding the strong growth of customer deposits. According to the Bank Lending Survey, most institutions tightened their restrictions on criteria for the approval of loans to households for consumption and other purposes in 2008. The results of the survey, published in

**Chart 5.4**

BREAKDOWN OF REAL CHANGE OF PRIVATE CONSUMPTION

Contributions, in percentage points




**Sources:** *INE* and Banco de Portugal.

January 2009, point to an increase in the level of restrictions, in the first quarter of 2009. In January 2009, seasonally-adjusted bank loans to households had an annualised quarterly growth rate of 1.6 per cent, in comparison to changes of 8.6 and 2.2 per cent, respectively, in December 2007 and December 2008. Particular reference should be made to the strong deceleration in the consumption and other purposes segment, after the highly dynamic levels noted up to mid-2008. This trend remained in force in the first months of 2009.

The profile of the consumption of current goods remained relatively stable in the first three quarters of 2008, with growth rates of around 2 per cent, recording a significant deceleration in the last quarter of the year (from 2.4 to 1.3 per cent, in year-on-year terms). The intra-annual profile of private consumption in 2008 also reflected the irregular pattern of durables consumption, whose behaviour was conditioned by a number of tax changes in 2007 and 2008, particularly on motor vehicles. Accordingly, after a very sharp reduction in year-on-year terms, in the second quarter, there was a significant growth in the consumption of durables in the following quarter. This behaviour reflected both the base effects associated with the July 2007 tax changes on motor vehicles which led to an anticipation of the purchase of motor vehicles in the second quarter of 2007 and the reduction of the standard rate of VAT in July 2008, which is likely to have originated the postponement of several decisions on consumption to the third quarter. Sales of light passenger vehicles were down in 2008 as a whole, recording a growth of 2.1 per cent as opposed to an increase of 6.1 per cent in the preceding year, accompanied by another decrease in average annual motor vehicle prices (Chart 5.5).[36] However, when adjusted for the quality effect, sales of light passenger vehicles were slightly down (0.6 per cent), reflecting a marked reduction in sales of top of the range motor vehicles, particularly at the end of the year.[37] Sales of light passenger vehicles were particularly significant in December 2008, in which a contributory factor were the changes in motor vehicle taxes in force since January 2009.[38,39] Reference should be made, in this context, to the continued high rate of growth of car sales under the Tax Incentives Programme for the Retirement of End-of-Life Vehicles, which represented 27 per cent of the total sales of light passenger vehicles in December 2008 (Chart 5.6).

Public consumption is estimated to have recorded real growth of close to zero in 2008. This estimate is based on a decrease in the number of civil servants. This is offset by the positive change in the expenditure on goods and services, which to a large extent reflects the behaviour of intermediate consumption and social payments in kind, particularly the component relating to the part share of the payment of medicine and conventions.

After having recorded one of the highest growth levels of the decade, in 2007, although clearly lower than at the same stage of the preceding cycle, GFCF fell once again, in 2008, with Banco de Portugal estimates pointing to a change of -1.7 per cent. The behaviour of GFCF in 2008 was characterised by a clearly decelerating intra-annual profile, with a particular emphasis on the significant year-on-year fall in the last quarter in line with the evolution of confidence indicators in services and manufacturing. These indicators suggest a continued weak performance by GFCF in the first months of 2009.

(36) These values exclude purchases of light motor vehicles by rent-a-car companies which are classified as corporate investment. Purchases of this type of vehicle, recorded a growth of 5.2 per cent, in 2008, as opposed to a fall of 6.1 per cent in the preceding year. Accordingly sales of light passenger vehicles, including vehicles purchased by rent-a-car, companies were 5.7 per cent up (3.7 per cent in 2007).

(37) The quality effect endeavours to adjust the volume of vehicle sales based on the respective segments. A nil quality effect translates into a uniform distribution of vehicle sales over the different segments whereas a positive (negative) quality effect implies a bias in this distribution towards higher sales of vehicles in the higher (lower) range segments.

(38) Sales of light passenger vehicles, excluding acquisitions by rent-a-car companies, were 29.7 per cent up in December – followed by a strong correction in January and February 2009 (-37.4 and -36.4 per cent, respectively).

(39) These changes included: i) the increase of rates on the vehicle tax; ii) the removal of the €500 tax deduction on the purchase of diesel vehicles with emissions of less than 5 milligrams per km; and iii) and the change in Tax Incentives Programme for the Retirement of End-of-Life Vehicles that abolish the possibility of purchasing vehicles under the program with carbon dioxide emissions exceeding 140 grams per km.

**Chart 5.5**

MOTOR VEHICLES PRICE DEVELOPMENTS

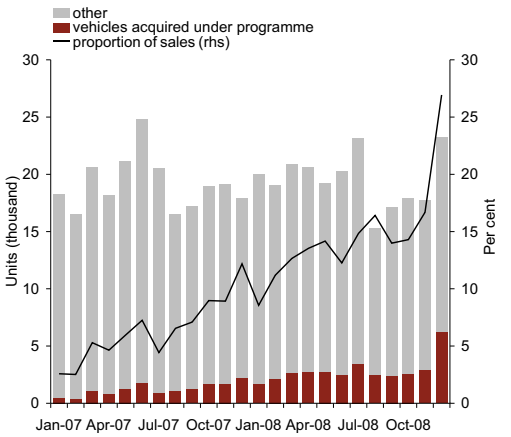
Year-on-year rate of change, per cent


**Source:** *INE*.

**Chart 5.6**

INCENTIVES PROGRAMME FOR END-OF-LIFE VEHICLES

Total sales and weight of sales of light passenger vehicles




**Source:** *ACAP*.

Uncertainty over the evolution of the international financial situation and its interaction with the significant deterioration of world economic activity conditioned corporate investment decisions in 2008. Estimates point to a strong deceleration of corporate GFCF with a close to zero growth. According to the *INE*'s Investment Survey, published in January 2009, the percentage number of companies in various sectors indicating the existence of limitations on investment in 2008 was 48.6 per cent, which represents a significant reassessment in comparison to the value obtained in the July 2008 survey (42.5 per cent). The upward revision of the percentage of companies having limitations on investment is likely to be associated with the intensification of the economic and financial crisis in the second half of the year and, particularly, its impact on prospects for demand, in a context of continued high levels of uncertainty. Indeed, there has been a considerable increase in the number of companies identifying the deterioration of sales prospects as the main limiting factor on investment (Chart 5.7). Simultaneously, there has been an increase in the relative importance of difficulties in obtaining credit as a limiting factor on investment, in contrast with the decrease in the relevance of interest rates, in the context of a general decrease in interest rates worldwide in the last quarter of the year. According to the Bank Lending Survey, published in early 2009, the five major banking institutions tightened the level of restrictions on the criteria applied to the approval of loans to companies in the last quarter of 2008, with such increased restrictions having resulted from difficulty in getting access to credit in international wholesale and the deterioration of risks associated with expectations over developments in economic activity in general. The surveyed banks also stated that the restrictions on the approval of loans to companies continued to increase in the first quarter of 2009, irrespective of companies' sizes and the maturity of the loans. Reference should, however, be made to the fact that demand for loans by companies has not changed significantly in the last quarter of the year. Debt restructuring and, to a lesser extent, inventory and working capital financing continue to be the main factors behind the increase in credit demand, as opposed to needs to finance investment which remained as a the main factor contributing to its decrease. In such a context, it should be noted that bank loans to non-financial corporations, although continuing to have high growth rates, tended to gradually decelerate during the course of 2008, which trend is likely to continue in the first months of 2009. The annualised quarterly growth

rate on such loans in January 2009 was at 7.1 per cent, similar to the situation at the end of 2008, but clearly lower than the very high changes recorded in first half 2008.

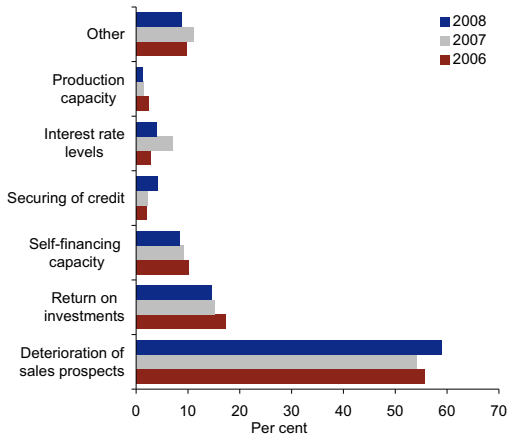
The deceleration of GFCF in 2008 reflects an across-the-board slowdown of its components. GFCF in "Machinery and equipment" was the most dynamic component of investment, with a deceleration of 2.4 p.p. to 4.9 per cent, in line with the evolution of confidence indicators and in a context of deteriorating order books. After a practically nil change in 2007, GFCF in "Construction" recorded a fall of 5.8 per cent, which was consistent with the evolution of the confidence indicators in the sector and cement sales by national companies to the domestic market (Chart 5.8). GFCF in "Construction" in 2008 continued to be influenced by the behaviour of the component relating to house purchases by households, which fell for the eighth consecutive year. The evolution of this component in 2008 is consistent with the behaviour of bank credit to households for house purchase, whose growth reached historic lows at the end of 2008. Available information points to a continued loss of dynamism in construction in the first months of 2009. GFCF in "Transport material" – the most dynamic investment component over the last two years – recorded a major deceleration in 2008, particularly in the second half of the year. The deceleration occurring in this component, for the year as a whole, essentially reflects the behaviour of investment relating to the acquisition of light commercial vehicles. In 2008, sales of this type of vehicle were 19.0 per cent down, after an increase of 6.1 per cent in the preceding year, with an accumulated fall of 42 per cent, in year-on-year terms, in the first two months of 2009. Reference should be made to the fact that the intra-annual profile of GFCF was strongly influenced by the evolution of GFCF in "other transport material", associated with the acquisitions of air transport material. Such acquisitions, however, failed to influence the magnitude of the slowdown of GFCF over the year as a whole.

In a context of a growing deterioration in the international outlook, notably in Portugal's main trading partners, exports of goods and services recorded a very pronounced deceleration in 2008. The real rate of change in exports was -0.4 per cent (7.5 per cent in 2007), representing a considerably sharper

**Chart 5.7**

PRINCIPAL FACTOR LIMITING INVESTMENT

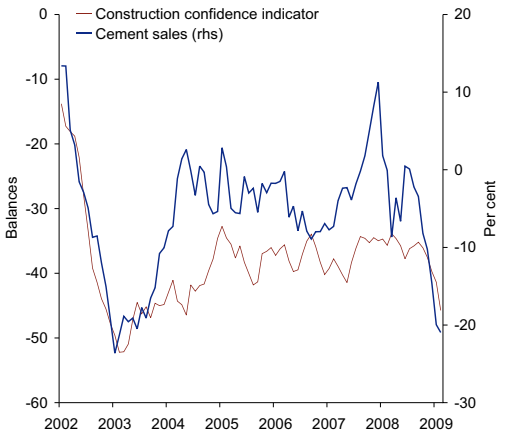
Per cent of total number of companies with investment limitations




**Source:** *INE* (Investment Survey). The results produced for each year are based on the first Investment Survey published in the following year.

**Chart 5.8**

CONSTRUCTION CONFIDENCE INDICATOR AND CEMENT SALES TO THE DOMESTIC MARKET




**Sources:** *Cimpor*, European Commission and *Secil*.
**Note:** Confidence indicator calculated on the basis of the quarterly year-on-year moving average of extreme responses; cement sales to the domestic market by Portuguese companies calculated on the quarterly rate of change.

deceleration than in the euro area as a whole.[40] The behaviour of exports reflects less dynamic behaviour of both goods exports, with a significant deceleration in 2008 (from 5.6 per cent, in 2007, to -1.3 per cent), and of services exports, with a real growth rate of 1.7 per cent, after the highly dynamic levels noted in 2006 and 2007, with changes of, 11.7 and 12.6 per cent, respectively.

According to the available information on merchandise trade, published by *INE*, the trajectory of the deceleration of nominal exports of goods, beginning in the second quarter of 2007, was sharply accentuated in the last quarter of 2008, with the fall in exports likely to continue through the first quarter of 2009.[41] For the year as a whole, medium to high technology goods comprising "Machinery and equipment", were the highest contributors to the deceleration of exports, and in particularly sales of this type of goods to Spain (Table 5.2). However, the fall in exports noted in the last quarter of 2008 was transversal to diverse groups of goods.

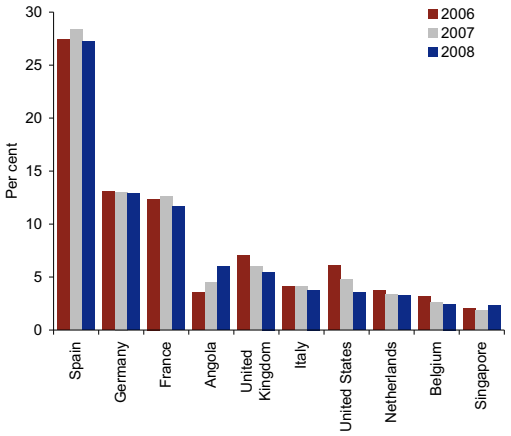
In terms of destination, reference should be made to the fall of intra-Community exports, particularly in the leading markets for national exports such as Spain, France and, to a lesser extent, Germany (Table 5.3). This was offset by non-Community exports which were slightly up in 2008, reinforcing the trend noted in the most recent years towards an increase in the share of these markets in total Portuguese exports. In such a context, reference should be made to the continued high level of dynamism of goods exports to Angola, with a nominal growth of 34.8 per cent (39.2 per cent in 2007), which has become the fourth largest export market and the most important in non-Community terms (Chart 5.9).[42]

After the highly substantial growths of the last two years, exports of services were sharply down in 2008, with nominal growth of 5.6 per cent, in comparison to 16.0 per cent in 2007. This evolution reflects a deceleration in both tourism exports and exports of other services, in particularly transport services (Table 5.4). According to balance of payments information, the decelerating trajectory of nominal

**Chart 5.9**

MAIN EXPORT MARKETS FOR PORTUGUESE GOODS

Weight of total goods exports, nominal values




**Source:** *INE* (International Trade Statistics).

(40) Exports of goods and services in the euro area recorded a real growth of 1.7 per cent, in 2008, as opposed to a change of 5.3 per cent in 2007.

(41) Considering the preliminary information on international trade, published by the *INE*, in January 2009, nominal exports of goods were 29.4 per cent down in year-on-year terms, in comparison to a fall of 11 per cent in the last quarter of 2008.

(42) In addition to Angola, reference should be made to the highly dynamic rate of exports to other non-Community markets, particularly Singapore, with a 22.2 per cent growth of exports in 2008.

## Table 5.2

**PORTUGUESE EXPORTS OF GOODS BY GROUPS OF PRODUCTS, MAJOR ECONOMIC CATEGORIES AND LEVEL OF TECHNOLOGICAL INTENSITY**
Year-on-year rate of change and respective contribution; nominal values

| | Wheigts 2007 | Year-on-year rate of change (per cent) | | | | | | | | | | Contribution to the year-on-year rate of change (p.p.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2007 | 2008 | 2007 | | | | 2008 | | | | 2007 | 2008 | 2007 | | | | 2008 | | | |
| | | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| Total | 100.0 | 8.9 | 1.0 | 13.6 | 9.9 | 6.4 | 6.0 | 5.2 | 4.6 | 5.4 | -11.0 | 8.9 | 1.0 | 13.6 | 9.9 | 6.4 | 6.0 | 5.2 | 4.6 | 5.4 | -11.0 |
| *Classification by groups of products* | | | | | | | | | | | | | | | | | | | | | |
| Agriculture | 3.9 | 16.1 | 19.4 | 13.0 | 8.3 | 18.7 | 23.7 | 20.7 | 31.6 | 24.4 | 4.8 | 0.6 | 0.8 | 0.5 | 0.3 | 0.7 | 0.9 | 0.8 | 1.1 | 0.9 | 0.2 |
| Food | 4.6 | 19.0 | 10.2 | 18.5 | 19.7 | 18.9 | 18.9 | 13.1 | 11.7 | 12.3 | 5.1 | 0.8 | 0.5 | 0.7 | 0.8 | 0.8 | 0.9 | 0.5 | 0.5 | 0.6 | 0.3 |
| Mineral fuels | 4.5 | -9.6 | 30.3 | -20.3 | -22.7 | 2.7 | 4.1 | 63.6 | 58.6 | 28.0 | -17.6 | -0.5 | 1.4 | -1.0 | -1.4 | 0.1 | 0.2 | 2.3 | 2.6 | 1.5 | -0.9 |
| Chemicals | 5.0 | 7.6 | -7.6 | -2.9 | 9.0 | 5.0 | 21.5 | -2.7 | -2.0 | -2.8 | -22.9 | 0.4 | -0.4 | -0.2 | 0.4 | 0.3 | 0.9 | -0.1 | -0.1 | -0.1 | -1.1 |
| Plastic, rubber products | 5.7 | 17.0 | 5.1 | 16.5 | 11.9 | 16.0 | 24.0 | 14.7 | 10.2 | 10.8 | -14.2 | 0.9 | 0.3 | 0.9 | 0.6 | 0.9 | 1.2 | 0.8 | 0.6 | 0.6 | -0.8 |
| Leather, leather products | 0.3 | 1.3 | -0.3 | 7.7 | 3.5 | 0.0 | -5.7 | -3.1 | -0.2 | 7.5 | -4.7 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Wood, cork | 4.3 | 10.1 | -5.1 | 11.6 | 12.7 | 12.0 | 3.9 | -0.4 | -2.4 | -5.2 | -13.6 | 0.4 | -0.2 | 0.5 | 0.6 | 0.5 | 0.2 | 0.0 | -0.1 | -0.2 | -0.5 |
| Cellulose, pulp and paper | 4.4 | 6.5 | 0.5 | 6.5 | 3.1 | 4.1 | 12.4 | 7.6 | 3.1 | 2.7 | -10.3 | 0.3 | 0.0 | 0.3 | 0.1 | 0.2 | 0.5 | 0.3 | 0.1 | 0.1 | -0.5 |
| Textiles products | 4.5 | 3.3 | -6.9 | 6.9 | 2.7 | 4.1 | 0.0 | -2.4 | -6.7 | -5.6 | -12.8 | 0.2 | -0.3 | 0.3 | 0.1 | 0.2 | 0.0 | -0.1 | -0.3 | -0.2 | -0.6 |
| Clothing | 6.9 | 5.2 | -7.4 | 4.4 | 3.6 | 1.9 | 11.0 | -4.3 | -5.8 | -9.2 | -10.6 | 0.4 | -0.5 | 0.4 | 0.2 | 0.1 | 0.7 | -0.3 | -0.4 | -0.6 | -0.7 |
| Footwear | 3.5 | 3.8 | 2.1 | 2.4 | 5.8 | 3.6 | 4.1 | 0.0 | -0.3 | 7.9 | -0.1 | 0.1 | 0.1 | 0.1 | 0.2 | 0.2 | 0.1 | 0.0 | 0.0 | 0.3 | 0.0 |
| Mineral, ores | 5.7 | 14.8 | -1.0 | 17.7 | 16.5 | 15.9 | 9.7 | 6.0 | 4.5 | 4.4 | -18.3 | 0.8 | -0.1 | 0.9 | 0.9 | 0.8 | 0.5 | 0.3 | 0.3 | 0.3 | -1.0 |
| Common metals | 8.8 | 14.1 | 1.1 | 20.0 | 18.8 | 10.1 | 7.2 | 0.7 | 8.9 | 9.0 | -14.9 | 1.2 | 0.1 | 1.7 | 1.6 | 0.8 | 0.6 | 0.1 | 0.8 | 0.8 | -1.2 |
| Machinery, appliances | 19.8 | 8.7 | -2.5 | 22.2 | 18.9 | -0.8 | -2.5 | -1.5 | -1.9 | 5.1 | -11.1 | 1.7 | -0.5 | 4.2 | 3.5 | -0.2 | -0.5 | -0.3 | -0.4 | 1.0 | -2.2 |
| Vehicles, other transport materials | 12.7 | 5.0 | -2.7 | 25.7 | 6.2 | 1.3 | -9.8 | 4.3 | -5.6 | 1.3 | -11.2 | 0.7 | -0.3 | 3.1 | 0.9 | 0.2 | -1.4 | 0.6 | -0.8 | 0.2 | -1.3 |
| Optical and precision instruments | 0.9 | 8.0 | 1.3 | 6.8 | 12.0 | 3.0 | 9.6 | 11.0 | 12.6 | 0.7 | -16.3 | 0.1 | 0.0 | 0.1 | 0.1 | 0.0 | 0.1 | 0.1 | 0.1 | 0.0 | -0.2 |
| Other products | 4.6 | 23.5 | 4.5 | 25.6 | 20.1 | 23.6 | 25.1 | 7.5 | 10.7 | 7.2 | -7.3 | 1.0 | 0.2 | 1.1 | 0.9 | 0.9 | 1.0 | 0.3 | 0.5 | 0.3 | -0.3 |
| *Classified by broad economic categories* | | | | | | | | | | | | | | | | | | | | | |
| Intermediate goods | 33.6 | 13.0 | -1.7 | 15.0 | 13.5 | 10.0 | 13.1 | 3.6 | 4.8 | 3.6 | -19.1 | 4.3 | -0.6 | 5.1 | 4.7 | 3.3 | 4.2 | 1.2 | 1.7 | 1.2 | -6.6 |
| Capital goods | 26.7 | 14.1 | -0.9 | 23.5 | 24.3 | 6.5 | 3.7 | 3.7 | -1.0 | 5.7 | -11.7 | 3.8 | -0.3 | 6.2 | 6.2 | 1.8 | 1.0 | 1.1 | -0.3 | 1.5 | -3.2 |
| Consumer goods [a] | 33.6 | 4.5 | 0.5 | 10.0 | 1.6 | 4.1 | 2.4 | 1.4 | 0.9 | 2.5 | -2.6 | 1.5 | 0.2 | 3.3 | 0.5 | 1.4 | 0.8 | 0.4 | 0.3 | 0.8 | -0.8 |
| Fuels | 5.1 | -12.8 | 36.7 | -22.6 | -27.7 | 2.6 | -1.6 | 71.1 | 70.3 | 32.0 | -13.0 | -0.7 | 1.5 | -1.1 | -1.6 | 0.1 | -0.1 | 2.3 | 2.7 | 1.6 | -0.6 |
| Other | 1.1 | -2.4 | 20.6 | -1.2 | 5.5 | -11.1 | -1.6 | 5.2 | 4.6 | 5.4 | -11.0 | 0.0 | 0.2 | 0.0 | 0.1 | -0.1 | 0.0 | 0.1 | 0.2 | 0.2 | 0.2 |
| *Classified by level of technological intensity* [b] | | | | | | | | | | | | | | | | | | | | | |
| High Technology | 9.8 | 6.9 | 3.2 | 4.3 | 14.0 | -3.0 | 12.5 | 17.6 | 6.4 | 3.8 | -13.9 | 0.7 | 0.3 | 0.4 | 1.4 | -0.3 | 1.2 | 1.7 | 0.6 | 0.4 | -1.4 |
| Medium to high technology | 31.4 | 8.4 | -4.4 | 24.3 | 12.6 | 3.8 | -4.6 | -3.7 | -4.8 | 3.2 | -12.0 | 2.7 | -1.4 | 7.3 | 4.0 | 1.2 | -1.5 | -1.2 | -1.6 | 1.0 | -3.6 |
| Medium to low technology | 24.8 | 9.3 | 7.0 | 9.7 | 6.7 | 10.5 | 10.4 | 15.0 | 17.0 | 12.5 | -15.9 | 2.3 | 1.7 | 2.4 | 1.7 | 2.6 | 2.5 | 3.5 | 4.3 | 3.2 | -4.0 |
| Low technology | 34.0 | 9.7 | 0.9 | 9.9 | 8.5 | 8.7 | 11.7 | 3.5 | 3.7 | 2.4 | -5.6 | 3.3 | 0.3 | 3.5 | 2.8 | 2.9 | 3.9 | 1.2 | 1.2 | 0.8 | -2.0 |
| *Memo*: Total excluding fuels | 94.9 | 10.1 | -0.5 | 15.4 | 12.2 | 6.6 | 6.4 | 3.0 | 2.0 | 4.0 | -10.9 | 9.6 | -0.5 | 14.7 | 11.4 | 6.3 | 6.1 | 2.9 | 1.9 | 3.8 | -10.4 |

**Sources:** *INE* (International Trade Statistics).
**Notes:** [a] Including passenger vehicles. [b] Breakdown of exports by level of technological intensity of the following correspondence with the two digit Combined Nomenclature classification : High Technology (30; 84; 88; 90 and 91); Medium to high technology (28; 29; 31-38; 85-87; 89 e 92-95); Medium to low technology (25-27; 39-40; 68-83); Low technology (1-24; 41-67; and 96-99).

## Table 5.3

PORTUGUESE EXPORTS OF GOODS BY GEOGRAPHIC AREAS

Year-on-year rate of change and contributions; nominal values

| | Weights 2007 | Year-on-year rate of change (per cent) | | | | | | | | | | Contribution to year-on-year rate of change (p.p.) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | 2007 | 2008 | 2007 | | | | 2008 | | | | 2007 | 2008 | 2007 | | | | 2008 | | | |
| | | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 | | | Q1 | Q2 | Q3 | Q4 | Q1 | Q2 | Q3 | Q4 |
| TOTAL | 100.0 | 8.9 | 1.0 | 13.6 | 9.8 | 6.4 | 6.0 | 5.2 | 4.6 | 5.4 | -11.0 | 8.9 | 1.0 | 13.6 | 9.8 | 6.4 | 6.0 | 5.2 | 4.6 | 5.4 | -11.0 |
| **Intra-EU** | 76.7 | 7.8 | -2.8 | 12.1 | 8.3 | 6.3 | 4.7 | 3.3 | 1.5 | 0.2 | -16.4 | 6.1 | -2.2 | 9.6 | 6.5 | 4.7 | 3.6 | 2.6 | 1.1 | 0.2 | -12.4 |
| *of which:* | | | | | | | | | | | | | | | | | | | | | |
| Spain | 28.3 | 12.5 | -3.0 | 14.8 | 9.8 | 13.1 | 12.6 | 3.9 | 5.3 | 0.8 | -21.8 | 3.4 | -0.8 | 4.2 | 2.8 | 3.4 | 3.4 | 1.1 | 1.5 | 0.2 | -6.2 |
| Germany | 13.0 | 8.2 | -0.3 | 28.9 | 9.7 | 2.8 | -5.0 | 2.6 | -0.5 | 4.4 | -7.7 | 1.1 | 0.0 | 3.5 | 1.3 | 0.4 | -0.7 | 0.4 | -0.1 | 0.6 | -1.0 |
| France | 12.6 | 11.1 | -6.5 | 14.6 | 11.3 | 9.7 | 8.6 | -2.2 | -1.1 | -5.2 | -18.1 | 1.4 | -0.8 | 2.0 | 1.4 | 1.1 | 1.0 | -0.3 | -0.1 | -0.6 | -2.2 |
| United Kingdom | 6.0 | -7.4 | -7.7 | -7.4 | -0.3 | -8.7 | -13.1 | -3.7 | -8.7 | -3.0 | -15.3 | -0.5 | -0.5 | -0.5 | 0.0 | -0.6 | -0.9 | -0.2 | -0.6 | -0.2 | -0.9 |
| Italy | 4.1 | 9.6 | -7.7 | 10.6 | 6.7 | 4.6 | 16.9 | 1.3 | -3.5 | -10.3 | -18.4 | 0.4 | -0.3 | 0.5 | 0.3 | 0.2 | 0.6 | 0.1 | -0.1 | -0.4 | -0.8 |
| **Extra-EU** | 23.3 | 12.6 | 13.5 | 19.3 | 15.3 | 6.9 | 10.2 | 12.2 | 15.0 | 21.2 | 6.0 | 2.8 | 3.2 | 4.0 | 3.3 | 1.7 | 2.4 | 2.6 | 3.4 | 5.2 | 1.5 |
| *of which:* | | | | | | | | | | | | | | | | | | | | | |
| United States | 4.8 | -15.1 | -25.0 | 8.2 | -17.3 | -29.0 | -16.8 | -24.2 | -19.1 | -16.3 | -39.9 | -0.9 | -1.2 | 0.4 | -1.1 | -2.0 | -1.0 | -1.2 | -0.9 | -0.7 | -1.9 |
| *PALOP* | 5.5 | 35.3 | 30.4 | 40.9 | 35.8 | 34.7 | 31.5 | 20.2 | 23.9 | 36.6 | 38.2 | 1.6 | 1.7 | 1.6 | 1.5 | 1.6 | 1.6 | 1.0 | 1.2 | 2.1 | 2.4 |

**Source:** *INE* (International Trade Statistics).

**Table 5.4**

PORTUGUESE EXPORTS OF SERVICES
Year-on-year rate of change and contributions; nominal values

| | Weights 2007 | Year-on-year rate of change (per cent) | | | Contribution to year-on-year rate of change (p.p.) | | |
|---|---|---|---|---|---|---|---|
| | | 2006 | 2007 | 2008 | 2006 | 2007 | 2008 |
| Total | 100.0 | 19.4 | 16.0 | 5.6 | 19.4 | 16.0 | 5.6 |
| Tourism | 43.6 | 7.6 | 10.9 | 0.5 | 3.9 | 5.0 | 0.2 |
| Transportation | 25.4 | 40.7 | 18.8 | 10.5 | 8.6 | 4.7 | 2.7 |
| Other business services | 18.1 | 26.4 | 21.8 | 10.7 | 4.3 | 3.8 | 1.9 |
| Communications services | 3.4 | 6.5 | 15.9 | 8.8 | 0.2 | 0.5 | 0.3 |
| Construction services | 3.6 | 45.8 | 40.9 | 8.3 | 1.1 | 1.2 | 0.3 |
| Financial services | 1.4 | 14.5 | 25.0 | -4.0 | 0.2 | 0.3 | -0.1 |
| Computer and information services | 1.4 | 40.7 | 36.6 | 15.3 | 0.4 | 0.4 | 0.2 |
| Personal, cultural and recreational services | 1.1 | 22.2 | -6.2 | 7.2 | 0.3 | -0.1 | 0.1 |
| Government operations | 1.0 | 17.7 | 10.3 | 0.5 | 0.2 | 0.1 | 0.0 |
| Insurance | 0.6 | 14.1 | 5.9 | 5.4 | 0.1 | 0.0 | 0.0 |
| Royalties and licence fees | 0.4 | 34.1 | 9.3 | -22.8 | 0.1 | 0.0 | -0.1 |

**Source:** Banco de Portugal (Balance of Payments).

exports of services recorded since the beginning of 2008 heightened in the last quarter of the year and is likely to continue into the first quarter of 2009.[43] A contributory factor to the poorer performance of exports of services in the most recent period was the particularly unfavourable performance of the tourism sector, in line with the significant slowdown in world tourism demand.[44] Revenues from this sector were 4.2 per cent down, in the last quarter of 2008, in comparison to growths of 0.5 per cent, over 2008 as a whole, and 10.9 per cent, in 2007. The loss of dynamism in the tourism sector can also be noted in the number of overnight stays by non-resident tourists, which were 1.6 per cent down in 2008, after recording growth of 5.8 per cent in 2007 (Chart 5.10).

In 2008, imports of goods and services declined markedly *vis-à-vis* the preceding year. Less dynamism in terms of imports, in 2008, essentially reflects less vigorous imports of goods with a significant deceleration of 5.7 per cent, in 2007, to 1.9 per cent. Imports of services, in turn, continued to expand at a rate similar that of 2007. According to balance of payments information, in 2008, the nominal growth of imports of services was 8.6 per cent, against 9.1 per cent in 2007, in which particular reference should be made to the significant deceleration of imports of tourism and transport services, which, when taken together, represent around one half of the nominal imports of services (Table 5.5).

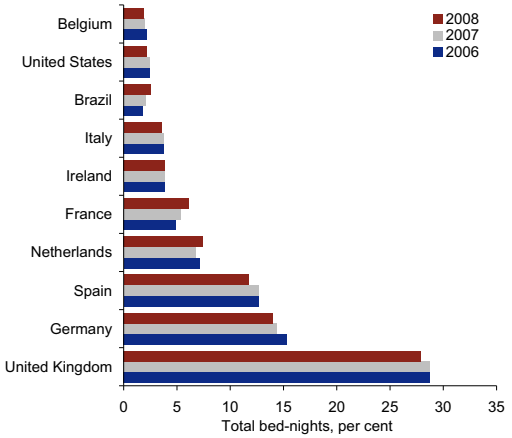
The deceleration of imports of goods in 2008 occurred in a context of a loss of dynamism of several domestic demand components with a high import content, such as the consumption of durables and investment in machinery and transport material (Chart 5.11). According to current estimates, imports of goods and services recorded a growth rate of 2.1 per cent (5.6 per cent in 2007), a value that was still higher than the estimated growth for domestic demand (and also weighted global demand), resulting into another increase in the penetration rate of imports in the Portuguese economy. In nominal terms, goods imports were slightly down in 2008 (from 7.4 to 7.2 per cent), notwithstanding the significant

(43) Nominal exports of services were 10.3 per cent down in year-on-year terms, in January 2009, in comparison to a change of 0.4 per cent in the last quarter of 2008.

(44) The publication of the Survey on the Movement of Persons across Borders, was discontinued in 2008, making it impossible to calculate the evolution of Portugal's market share on the basis of this indicator.

**Chart 5.10**

EVOLUTION OF OVERNIGHT STAYS BY NON-RESIDENTS IN HOTELS BY COUNTRY OF ORIGIN

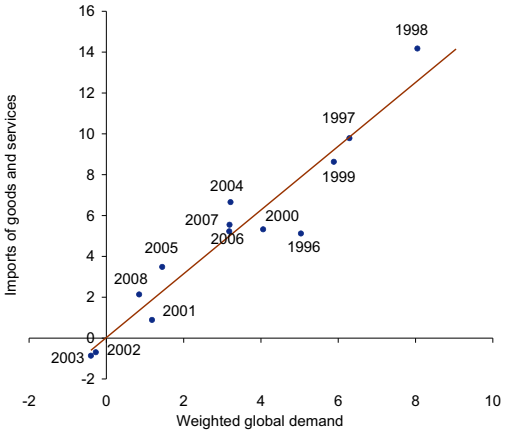



**Source:** *INE*.
**Note:** Total bed-nights by non-residents: 26205.2 thousand (2008), 26626.8 thousand (2007) and 25158.7 thousand (2006).

**Chart 5.11**

IMPORTS OF GOODS AND SERVICES AND WEIGHTED WORLD DEMAND

Real rate of change, per cent




**Sources:** *INE* and Banco de Portugal.

**Table 5.5**

PORTUGUESE IMPORTS OF SERVICES

Year-on-year rate of change and respective contribution; nominal values

| | Weights 2007 | Rate of change (per cent) | | | Contribution to rate of change (p.p.) | | |
|---|---|---|---|---|---|---|---|
| | | 2006 | 2007 | 2008 | 2006 | 2007 | 2008 |
| Total | 100.0 | 15.1 | 9.1 | 8.6 | 15.1 | 9.1 | 8.6 |
| Tourism | 27.2 | 8.3 | 7.9 | 2.4 | 2.4 | 2.2 | 0.7 |
| Transportation | 30.8 | 14.9 | 10.6 | 6.4 | 4.5 | 3.2 | 2.0 |
| Other business services | 20.2 | 11.7 | 9.7 | 17.8 | 2.4 | 1.9 | 3.6 |
| Communication services | 5.5 | 39.4 | 29.2 | 15.5 | 1.5 | 1.3 | 0.8 |
| Construction services | 1.2 | 22.4 | 15.8 | 28.2 | 0.2 | 0.2 | 0.3 |
| Financial services | 1.9 | 12.9 | -2.7 | 29.0 | 0.3 | -0.1 | 0.6 |
| Computer and information services | 2.8 | 29.7 | 11.4 | 17.4 | 0.7 | 0.3 | 0.5 |
| Personal, cultural and recreational services | 3.5 | 37.1 | -1.0 | 10.1 | 1.2 | 0.0 | 0.4 |
| Government operations | 2.0 | 67.7 | -7.2 | -21.9 | 1.1 | -0.2 | -0.4 |
| Insurance | 1.8 | 11.0 | 0.8 | 6.5 | 0.2 | 0.0 | 0.1 |
| Royalties and licence fees | 3.1 | 13.7 | 5.7 | 2.4 | 0.4 | 0.2 | 0.1 |

**Source:** Banco de Portugal (Balance of Payments).

growth of fuel imports which, for the year as a whole, was 30.2 per cent up, after a slight decreases in the preceding year (Table 5.6). Excluding fuel, nominal import growth was 3.6 per cent (9.1 per cent in 2007). The available information points to a continuation of the downward trajectory of goods imports in the first months of 2009.[45] The deceleration of goods imports reflected the lower growth of intra-Community imports, particularly in several of the main markets of origin, such as Spain and

(45) Considering the preliminary information on international trade, published by *INE*, in January 2009, nominal goods imports were 27.0 per cent down in year-on-year terms, in comparison to a fall of 6.4 per cent in the last quarter of 2008.

**Table 5.6**

PORTUGUESE IMPORTS OF GOODS BY GROUPS OF PRODUCTS
Year-on-year rate of change and respective contribution; nominal values

| | Weights 2007 | Rate of change (per cent) | | | Contribution to rate of change (p.p.) | | |
|---|---|---|---|---|---|---|---|
| | | 2006 | 2007 | 2008 | 2006 | 2007 | 2008 |
| Total | 100.0 | 8.1 | 7.4 | 7.2 | 8.1 | 7.4 | 7.2 |
| *Classification by groups of products* | | | | | | | |
| Agricultural | 8.9 | 9.2 | 14.9 | 9.5 | 0.8 | 1.2 | 0.9 |
| Food | 3.6 | 5.5 | 13.8 | 11.2 | 0.2 | 0.5 | 0.4 |
| Mineral fuels | 14.0 | 12.0 | -1.5 | 29.1 | 1.8 | -0.2 | 4.1 |
| Chemicals | 8.7 | 10.7 | 2.6 | 6.7 | 1.0 | 0.2 | 0.6 |
| Plastic, rubber products | 5.0 | 6.1 | 15.3 | 0.2 | 0.3 | 0.7 | 0.0 |
| Leather, leather products | 1.0 | 2.5 | 14.2 | -1.9 | 0.0 | 0.1 | 0.0 |
| Wood,cork | 1.3 | -1.8 | 17.3 | -6.1 | 0.0 | 0.2 | -0.1 |
| Cellulose pulp, paper | 2.4 | 5.0 | 6.8 | 0.2 | 0.1 | 0.2 | 0.0 |
| Textiles products | 3.1 | 3.1 | 0.6 | -8.2 | 0.1 | 0.0 | -0.2 |
| Clothing | 2.8 | 3.6 | 17.2 | 1.6 | 0.1 | 0.4 | 0.0 |
| Footwear | 0.9 | 7.0 | 15.2 | 4.1 | 0.1 | 0.1 | 0.0 |
| Minerals, ores | 1.6 | -2.0 | 4.6 | 1.8 | 0.0 | 0.1 | 0.0 |
| Basic metals | 9.9 | 23.7 | 10.8 | 0.7 | 2.0 | 1.0 | 0.1 |
| Machinery, equipment | 19.7 | 7.9 | 6.7 | 3.6 | 1.6 | 1.3 | 0.7 |
| Motor vehicles, other transport equipment | 11.9 | 1.0 | 9.5 | 5.8 | 0.1 | 1.1 | 0.7 |
| Optical and precision instruments | 2.1 | 3.8 | 5.4 | 1.2 | 0.1 | 0.1 | 0.0 |
| Other products | 3.1 | -0.4 | 8.0 | 1.2 | 0.0 | 0.2 | 0.0 |
| *Classified by main economic categories* | | | | | | | |
| Intermediate goods | 30.9 | 9.6 | 11.3 | 2.3 | 2.8 | 3.4 | 0.7 |
| Capital goods | 31.5 | 4.6 | 6.9 | 4.6 | 1.5 | 2.2 | 1.5 |
| Consumer goods | 23.5 | 8.5 | 9.3 | 3.6 | 1.9 | 2.1 | 0.8 |
| Fuels | 13.6 | 13.2 | -2.2 | 30.2 | 1.9 | -0.3 | 4.1 |
| Other | 0.5 | -20.5 | 14.6 | 23.1 | -0.1 | 0.1 | 0.1 |
| *Memo*: Total excluding fuels | 86.4 | 7.2 | 9.1 | 3.6 | 6.2 | 7.8 | 3.1 |

**Source:** *INE* (International Trade Statistics).

France. This was offset by an acceleration of non-Community imports, particularly from oil producing countries.

## 6. PRICES

Inflation, as measured by the average annual rate of change of the Harmonised Index of Consumer Prices (HICP) increased by 2.7 per cent in 2008, after increasing by 2.4 per cent in 2007 (Table 6.1). Total price growth in 2008 was higher than the Banco de Portugal's projections at the beginning of the year, reflecting the fact that the increase in the prices of energy goods was higher than projected and that the evolution of the component excluding these goods was identical to the projection.[46] The average rate of change of the HICP in the euro area also increased, from 2.1 per cent in 2007 to 3.3 per cent in 2008. Therefore, the inflation differential between Portugal and the euro area decreased from 0.3 p.p. in 2007 to -0.6 p.p. in 2008, which is a minimum since the beginning of the euro area.

The acceleration in prices in 2008 occurred in a context in which, on the one hand, wage developments remained relatively stable *vis-à-vis* 2007 and, on the other hand, notwithstanding the fall in prices of to-

(46) See Banco de Portugal, *Economic Bulletin-Winter 2007*.

**Table 6.1**

HIPC – MAIN AGGREGATES
Rate of change, per cent

| | Weights 2007 | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|---|
| Total | 100.0 | 3.7 | 3.3 | 2.5 | 2.1 | 3.0 | 2.4 | 2.7 |
| Total excluding energy | 90.8 | 3.9 | 3.1 | 2.3 | 1.4 | 2.5 | 2.3 | 2.2 |
| Total excl.unprocessed food and energy | 79.4 | 4.5 | 3.3 | 2.6 | 1.7 | 2.4 | 2.2 | 2.5 |
| Goods | 62.3 | 2.4 | 2.4 | 1.6 | 1.9 | 3.2 | 2.2 | 2.4 |
| Food | 21.9 | 1.9 | 2.6 | 1.4 | 0.1 | 3.6 | 2.8 | 4.2 |
| Unprocessed | 11.3 | 0.2 | 2.1 | 0.0 | -0.5 | 3.2 | 3.0 | 0.6 |
| Processed | 10.6 | 3.8 | 3.1 | 2.8 | 0.8 | 4.1 | 2.6 | 8.1 |
| Industrial | 40.4 | 2.7 | 2.4 | 1.8 | 2.8 | 3.0 | 1.9 | 1.4 |
| Non-energy | 31.1 | 3.1 | 1.8 | 0.8 | 1.0 | 1.5 | 1.4 | -0.2 |
| Energy | 9.2 | 1.2 | 4.9 | 5.4 | 10.0 | 8.1 | 3.5 | 6.6 |
| Services | 37.7 | 5.9 | 4.6 | 3.9 | 2.5 | 2.7 | 2.8 | 3.1 |
| *Memo*: | | | | | | | | |
| CPI[(a)] | - | 3.6 | 3.3 | 2.4 | 2.3 | 3.1 | 2.5 | 2.6 |
| Euro area HIPC | - | 2.2 | 2.1 | 2.1 | 2.2 | 2.2 | 2.1 | 3.3 |

**Sources:** Eurostat, *INE* and Banco de Portugal.
**Note:** (a) Up to December 2002, the rates of change were calculated using the CPI base 1997. Staring in January 2003 the rates of change used were calculated using the CPI base 2002.

tal imports of consumer goods, import prices of food (in particular, excluding tobacco) and energy increased, in average annual terms, in line with the prices of food and energy commodities in international markets (Table 6.2).[47] Wages, in 2008, grew at a rate relatively similar to the one registered in 2007 and to the evolution in the euro area (Table 6.3). According to Banco de Portugal's estimates, based on information from the *INE*'s (National Statistics Office) Employment Survey, there was, in turn, an acceleration in unit labour costs in the same period, which reflected an atypical deceleration of productivity (see "Section 4 *Supply*", in this Bulletin). The growth of unit labour costs in the euro area was

**Table 6.2**

PORTUGAL - MAIN INTERNATIONAL PRICE INDICATORS
Rate of change, per cent

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|
| Goods import prices[(a)] | | | | | | | |
| Total | -2.4 | -2.2 | 2.2 | 3.1 | 4.1 | 1.1 | 5.1 |
| Total excluding fuel | -1.8 | -2.9 | 0.8 | -0.6 | 1.4 | 1.2 | 0.6 |
| Consumer goods | -0.6 | -2.9 | -1.6 | -2.7 | 0.9 | -0.1 | -0.3 |
| International commodity prices | | | | | | | |
| Oil price (Brent Blend), EUR | -4.9 | -5.0 | 21.4 | 45.0 | 19.0 | 0.4 | 26.6 |
| Non-energy commodity prices EUR | -2.5 | -4.6 | 9.8 | 10.1 | 25.2 | 7.9 | 4.3 |
| *Memo:* | | | | | | | |
| Nominal effective exchange rate index for Portugal [(b)] | 0.6 | 2.6 | 0.6 | -0.2 | 0.2 | 0.8 | 1.2 |

**Sources:** Eurostat, HWWI, *INE*, Thomson Reuters and Banco de Portugal.
**Notes:** (a) Banco de Portugal based on information provided by *INE*. The classification by broad economic categories shown in this table differs from that used by *INE* given that light passenger vehicles are included in consumer goods rather than in investment goods. (b) A positive change corresponds to an appreciation. For a detailed description of the methodology see Gouveia, A. C. and Coimbra, C. (2004), "*New effective exchange rate index for the Portuguese economy*", Banco de Portugal, *Economic Bulletin-December*.

(47) For a more detailed discussion on the evolution of prices of processed food see "Box 5.1 *Developments in processed food prices throughout 2007*", Banco de Portugal, *Annual Report 2007*.

**Table 6.3**

WAGES AND PRODUCTIVITY IN PORTUGAL AND IN THE EURO AREA
Annual average rate of change, per cent

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|
| Portugal[a] | | | | | | | |
| Total economy | | | | | | | |
| Compensation per employee | 3.0 | 2.8 | 2.4 | 3.9 | 2.7 | 3.5 | 3.1 |
| Productivity | 0.3 | 0.3 | 1.7 | 1.2 | 1.3 | 1.6 | -0.6 |
| Unit labour costs | 2.7 | 2.5 | 0.7 | 2.7 | 1.4 | 1.8 | 3.6 |
| Euro area[b] | | | | | | | |
| Total economy | | | | | | | |
| Compensation per employee | 2.6 | 2.3 | 2.1 | 1.9 | 2.2 | 2.5 | 3.2 |
| Productivity | 0.2 | 0.4 | 1.1 | 0.8 | 1.4 | 0.8 | 0.0 |
| Unit labour costs | 2.4 | 1.9 | 1.0 | 1.1 | 0.8 | 1.7 | 3.2 |

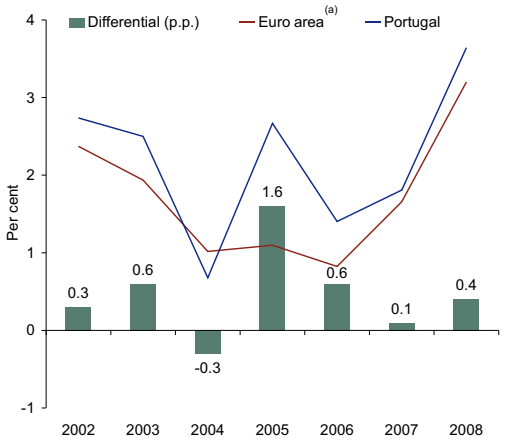
**Sources:** ECB, *INE* and Banco de Portugal.
**Notes:** (a) Compensation per employee excludes general government social contributions. (b) 2008 values are preliminary.

also higher than in 2007, associated with both the deceleration of productivity and acceleration of compensation per employee. As opposed to the previous year, there was an increase in the positive differential between the growth of unit labour costs in Portugal and in the euro area, from 0.1 p.p. in 2007, to 0.4 p.p. in 2008 (Chart 6.1).

However, inflation developments in annual average terms concealed a marked intra-annual evolution, as well as a notable heterogeneity between the diverse sub-aggregates (Chart 6.2). In particular, one can single out two periods in the evolution of prices during the course of 2008: a period of accelerating prices, from the end of 2007 up to September 2008; and a period of sharp deceleration in the last quarter of 2008 and early 2009. These intra-annual developments reflected the evolution of the prices of energy and processed food, which, in turn, were associated with the evolution of the prices of energy

**Chart 6.1**

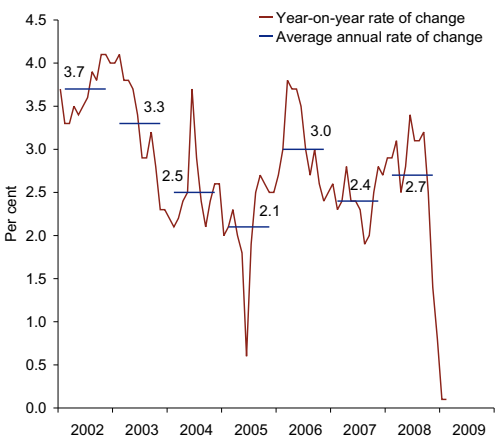
UNIT LABOUR COSTS IN PORTUGAL AND IN THE EURO AREA
Rates of change and differential




**Sources:** ECB, *INE* and Banco de Portugal.
**Note:** (a) The value for 2008 is preliminary.

**Chart 6.2**

HARMONISED INDEX OF CONSUMER PRICES
Average and year on year rates of change




**Source:** Eurostat.

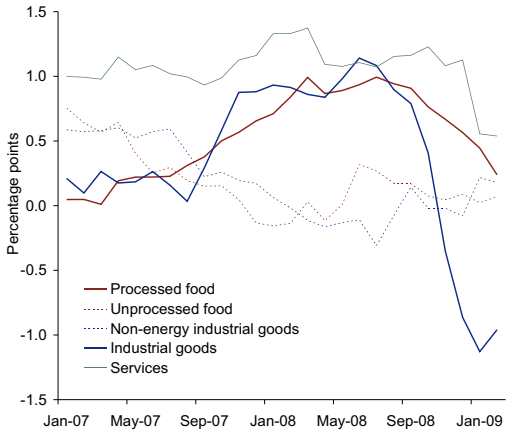
and food commodities in the world market (see "Section 2 *International framework*", in this Bulletin). (Charts 6.3, 6.4 and 6.5).[48]

As the disturbances in prices of specific goods or services can spill over into the prices of other goods or services through (direct or indirect) transmission mechanisms, which vary from market to market, also depending on their structure, this acceleration in the prices of processed food and energy may have, in turn, influenced the evolution of other prices. In particular, the changes in the prices of transport services appear to have been preceded by changes in the prices of fuel and lubricants, and the evolution of the prices of processed food seems to have influenced, with some lag, the prices of restaurants and cafés (Charts 6.6 and 6.7).[49] The lags which may occur in such a transmission depend on the nature, magnitude and persistence of the initial price disruptions, as well as on the structure of the markets. For example, in spite of the fact that the prices of food began to decelerate in August 2008, the same evolution was only perceptible in the prices of restaurants and cafés from November onwards. This intra-annual evolution led to the acceleration of the prices of restaurants and cafés in annual average terms (from 2.6 per cent in 2007 to 3.8 per cent in 2008) which, to a large extent, determined the slight acceleration of the prices of services in 2008. In the case of the prices of transport services, the changes in the prices of energy seem to have passed through more quickly.

Late 2008 and early 2009 witnessed a particularly sharp deceleration in prices, with year-on-year rates of change of the total HICP decreasing from 3.2 per cent in September 2008 to 0.1 per cent in February 2009. During this period there was a progressive increase of the weight of components with negative rates of change (Chart 6.8).[50] This evolution reflected, on the one hand, a continued deceleration of the prices of energy (with negative year-on-year rates of change between November 2008 and Febru-

**Chart 6.3**

EVOLUTION OF CONTRIBUTIONS TO YEAR-ON-YEAR RATE OF CHANGE OF TOTAL HICP

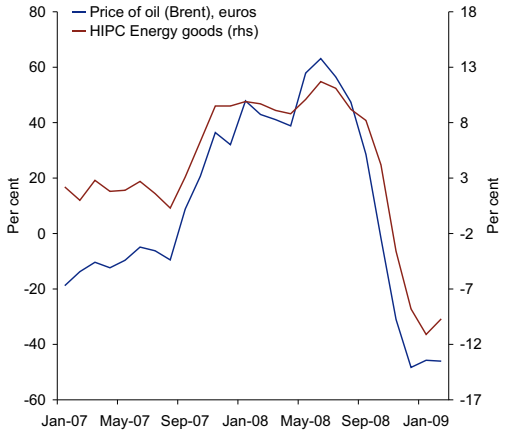



**Source:** Eurostat.

**Chart 6.4**

PRICES OF ENERGY GOODS

Year-on-year rate of change




**Sources:** Eurostat and Thomson Reuters.

(48) There were also some disturbances in relative prices of other goods, which gave rise to spells of higher volatility in the year-on-year monthly rates of change of prices. In particular, mention should be made to the deceleration observed in April 2008, which was to a large extent determined by the base effect of the sharp price increase in hospital services in the same month a year earlier.

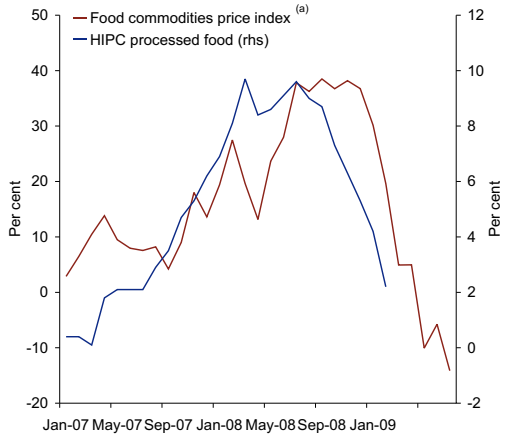
(49) The prices of other energy goods are usually influenced by the price of oil. However, this does not seem to be the case of electricity and gas prices in Portugal. Regarding the former, electricity prices increased in 2008 less than in the previous year. Moreover, natural gas sale tariffs to final customers have been set by Energy Services Regulatory Authority (ERSE) since July 2008. This have had a significant impact on the evolution of the price of gas to consumers (year-on-year rate of change of 2.5 per cent in the fourth quarter of 2008, after 4.3 per cent in the third quarter and 10.4 per cent in the second quarter).

(50) In "Box 2 *Recent consumer price developments and deflation risks in the euro area*" a similar analysis for the euro area is presented.

**Chart 6.5**

PRICES OF FOOD

Year-on-year rate of change

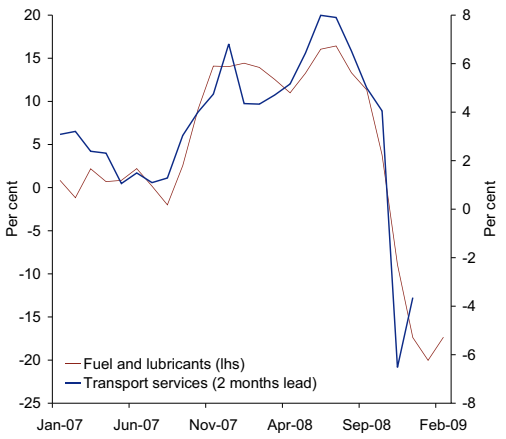



**Sources:** Eurostat and HWWI.
**Note:** (a) Lagged five periods.

**Chart 6.6**

EVOLUTION OF PRICES OF FUEL AND LUBRICANTS AND TRANSPORT SERVICES

Year-on-year rate of change

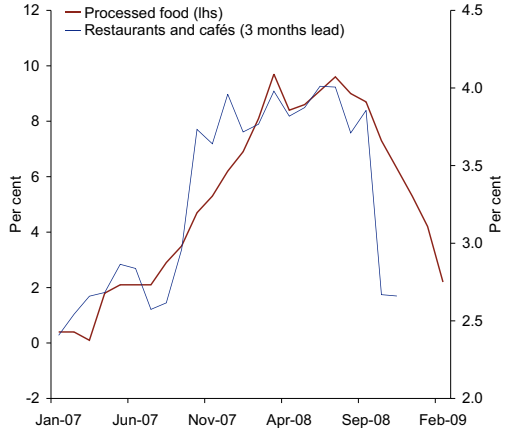



**Source:** Eurostat.

**Chart 6.7**

EVOLUTION OF PRICES OF PROCESSED FOOD AND RESTAURANTS AND CAFÉS

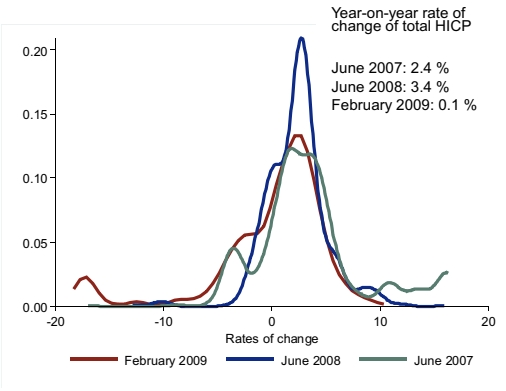
Year-on-year rate of change




**Source:** Eurostat.

**Chart 6.8**

EMPIRICAL DISTRIBUTION OF YEAR-ON-YEAR RATES OF CHANGE OF TOTAL HICP COMPONENTS




**Sources:** Eurostat and Banco de Portugal calculations.
**Note:** Empirical distribution obtained by the use of non-parametric methods, notably a Gaussian kernel weighting the diverse components (totalling 88 components) by their respective weight in the total basket.

ary 2009) and processed food. The deceleration of the prices of these goods, which registered very high rates of change at the end of 2007 and beginning of 2008, spilled over into other prices, such as the above-mentioned prices of transport services and restaurants and cafés. On the other hand, the decrease in HICP year-on-year rates of change also reflected a deceleration of services, which was particularly strong in the first two months of 2009 (1.5 and 1.4 per cent in January and February 2009, respectively, after 3.0 per cent in December 2008) associated with the drop in the prices of package

holidays and accommodation services, which may have been induced by the sharp slowdown in domestic and foreign demand in the last quarter of 2008 (see "Section 5 *Expenditure*", in this Bulletin).

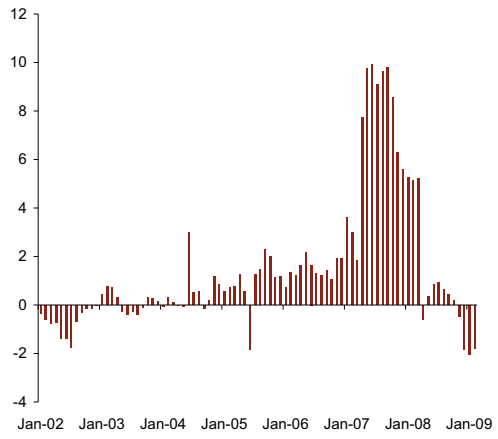
The existence of heterogeneity is a characteristic intrinsic to the distribution of rates of change of the prices of HICP components. Most recently, in addition to increased dispersion, there has also been a greater occurrence of large decreases, as opposed to large increases in prices, which led to a change in the sign of the skewness of the distribution of rates of change of the HICP, which became negative (Chart 6.9). It should also be noted that the components with year-on-year rates of change greater than zero continued to have a significantly bigger weight than the ones registering drops in prices (Chart 6.8).

The evolution of inflation in Portugal has been relatively stable, in annual average terms, within an interval with a range not wider than 1.0 p.p., over the last five years. One of the factors that contributed to this stability was participating in the euro area, and reference should be made to the anchoring of inflation expectations to values close to the average in the euro area (Chart 6.10). However, in this period there were inflation differentials between the euro area and Portugal, which may have been due to differences on the sources of price disruptions, on market structures and on transmission channels. In such a framework, the total inflation differential (with inflation measured by the HICP) between the euro area and Portugal has been decreasing more or less continuously since July 2007, being negative from September of the same year onwards, and reaching a minimum of -1.1 p.p. in February 2009 (Chart 6.11).

This evolution of the total differential was relatively generalised, mainly reflecting the components of non-processed food and of both energy and non-energy industrial goods. In particular, the existence of a negative differential in the case of non-energy industrial goods reflected the decrease in the prices of this aggregate in Portugal, which, being in line with the deceleration of the prices of imports of non-energy goods, in the context of an accumulated appreciation of the euro, was also significantly influenced

**Chart 6.9**

SKEWNESS OF THE DISTRIBUTION OF YEAR-ON-YEAR RATES OF CHANGE OF TOTAL HICP COMPONENTS

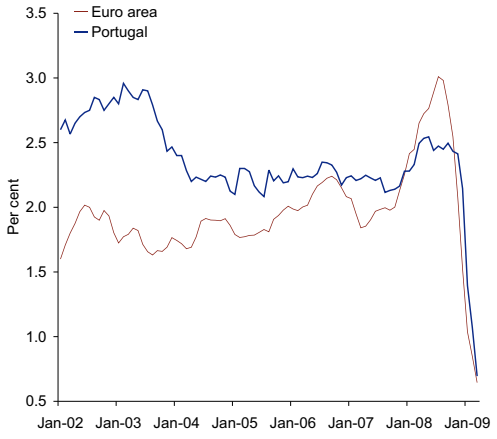



**Sources:** Eurostat and Banco de Portugal calculations.
**Note:** The skewness measure used is calculated as $m_3 / m_2^{3/2}$, in which $m_k$ is the centred moment of order $k$. The sign of this measure indicates the sign of skewness.

**Chart 6.10**

INFLATION EXPECTATIONS: PORTUGAL AND EURO AREA

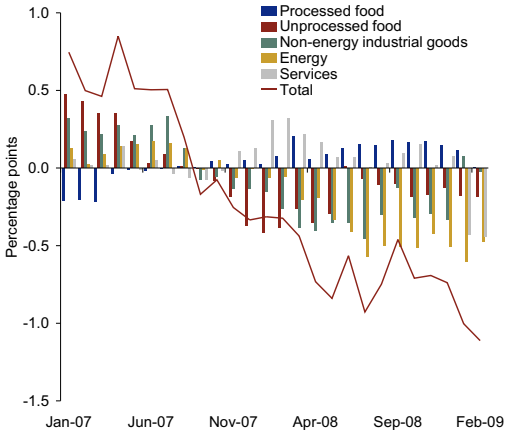
Expectations over a 12-month period




**Sources:** Consensus Forecasts and Banco de Portugal calculations.

**Chart 6.11**

BREAKDOWN OF THE DIFFERENTIAL BETWEEN YEAR-ON-YEAR RATE OF CHANGE OF TOTAL HICP IN PORTUGAL AND IN THE EURO AREA




**Source:** Eurostat.

by the drop in prices of motor vehicles.[51] The standard rate of VAT in Portugal was also reduced by 1.0 p.p. in July 2008, although there is some uncertainty about the actual extent of the pass-through of this reduction to final consumer prices.[52]

There was, in turn, a positive differential in terms of the change of prices between Portugal and the euro area in the services component, during the course of 2008, for which contributed the acceleration of restaurant and *café* prices in Portugal. In the first months of 2009 this differential became negative, mainly due to the fall in prices of transport services, accommodation services and package holidays in Portugal. The "Processed food excluding tobacco" aggregate registered positive differentials between the euro area and Portugal, in terms of the year-on-year rate of change, throughout 2008, being virtually nil in February 2009.[53] The existence of a negative inflation differential in 2008 does not seem to have been globally conditioned by the administered prices component, as the negative inflation differential in the case of goods with administered prices (*i.e.* electricity, gas and pharmaceutical products) was offset by the positive differential in the case of services with administered prices (particularly, refuse and sewerage collection services and actual rentals for housing). The first months of 2009 witnessed a negative differential in the administered prices component, reflecting the decrease in the positive differential in services with administered prices.

## 7. Balance of payments

There was an increase in the net external borrowing of the Portuguese economy as a percentage of GDP, in 2008, as opposed to the interruption to the worsening of Portugal's external imbalance in 2007 (Chart 7.1). This evolution reflected mainly the significant deterioration in the deficit of the goods and services account. This resulted, on the one hand, from the plunge in exports, especially in the end of

(51) For further insights into the fiscal changes associated with the evolution of the prices of motor vehicles, see "Section 5 *Expenditure*", in this Bulletin.

(52) See Banco de Portugal, *Economic Bulletin-Summer 2008*.

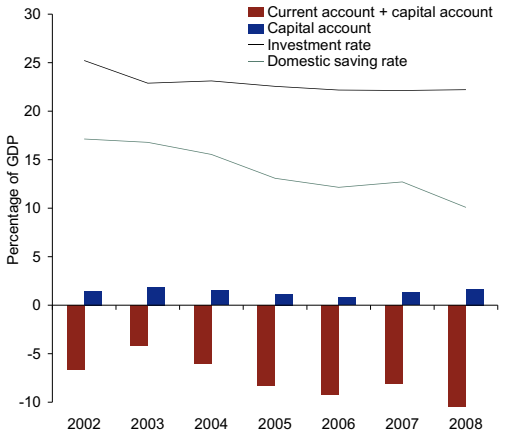
(53) In the case of tobacco, the inflation differential *vis-à-vis* the euro area is also positive. However, more recently, its contribution to the total inflation differential has remained relatively stable at around 0.1 p.p., and was virtually nil at the beginning of 2009.

the year, which contrasts with a slighter deceleration of imports, amid a virtual stabilisation of private consumption growth in Portugal. On the other hand, the terms of trade evolved unfavourably, due to the sharp increase, in annual average terms, of commodity prices in international markets, in particular oil prices.

In macroeconomic terms, the above-mentioned evolution reflected a reduction in the domestic savings rate, a slight increase in the surplus on the capital account and an investment rate that remained stable at a level close to the one registered in 2007. The deficit on the current and capital account was 10.5 per cent of GDP, in 2008, increasing by 2.4 p.p. of GDP over the previous year (Chart 7.2 and Table

**Chart 7.1**

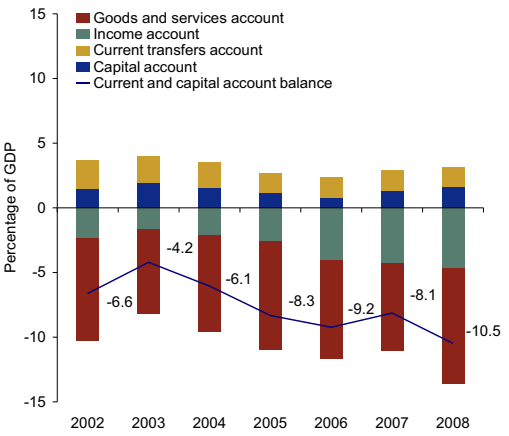
NET BORROWING FOR THE TOTAL ECONOMY




**Sources:** *INE* and Banco de Portugal.

**Chart 7.2**

CURRENT AND CAPITAL ACCOUNT




**Sources:** *INE* and Banco de Portugal.

**Table 7.1**

CURRENT AND CAPITAL ACCOUNT
Balance as a percentage of GDP

| | 2002 | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 |
|---|---|---|---|---|---|---|---|
| Current and capital account | -6.6 | -4.2 | -6.1 | -8.3 | -9.2 | -8.1 | -10.5 |
| Current account | -8.1 | -6.1 | -7.6 | -9.5 | -10.0 | -9.4 | -12.1 |
| Goods and services | -7.9 | -6.5 | -7.5 | -8.4 | -7.6 | -6.8 | -8.9 |
| Goods | -10.4 | -9.1 | -10.3 | -11.0 | -10.8 | -10.7 | -12.8 |
| Services | 2.5 | 2.6 | 2.8 | 2.6 | 3.2 | 3.9 | 3.9 |
| *of which:* | | | | | | | |
| Travel and tourism | 2.8 | 2.7 | 2.8 | 2.5 | 2.6 | 2.8 | 2.7 |
| Income | -2.3 | -1.7 | -2.1 | -2.6 | -4.1 | -4.2 | -4.7 |
| Current transfers | 2.2 | 2.1 | 2.0 | 1.5 | 1.6 | 1.6 | 1.5 |
| *of which:* | | | | | | | |
| Emigrants/immigrants remittances | 1.8 | 1.4 | 1.4 | 1.2 | 1.2 | 1.2 | 1.1 |
| Capital account | 1.5 | 1.9 | 1.5 | 1.2 | 0.8 | 1.3 | 1.7 |
| *Memo:* | | | | | | | |
| Current transfers account + capital account | 3.7 | 4.0 | 3.5 | 2.7 | 2.4 | 2.9 | 3.1 |

**Sources:** *INE* and Banco de Portugal.

7.1). In comparison to the projection disclosed in early 2008, the deficit on the current and capital account was revised upwards by 3.2 p.p. of GDP, notwithstanding a major downward revision in the growth of economic activity, to a large extent reflecting a significantly higher than initially projected deficit on the goods and services account, associated with a marked downward revision of exports of goods and services, a slight downward revision of imports of goods and services and a sharp deterioration of terms of trade.[54]

As regards the components of the current and capital account, the slight increase in the surplus on the capital account, in 2008, partly reflected the public transfers, which may have been influenced by the temporal overlapping of projects still financed under the 3rd Community Support Framework with projects already included in the National Strategic Reference Framework. The deficit on the current account increased, in turn, from 9.4 per cent of GDP, in 2007, to 12.1 per cent of GDP in 2008, offsetting the favourable evolution of the surplus on the capital account.

The deterioration of the deficit on the current account resulted from the unfavourable evolution of the balance of goods and services account and, to a lesser extent, of income and current transfers accounts. The deficit on the income account increased for the fifth consecutive year, from 4.2 per cent of GDP in 2007 to 4.7 per cent of GDP in 2008, to a large extent reflecting the marked increase in the deficit on the portfolio investment income account. This increase in the deficit on the income account is consistent with the continued deterioration of the Portuguese international investment position. In turn, the deficit on the goods and services account increased by 2.1 p.p. as a result of the deterioration of the deficit on the goods account, as the surplus on the services account remained stable in comparison to 2007.

The breakdown of the change in the balance of the goods and services account shows that all the effects considered in the breakdown contributed to increasing the deficit in 2008, namely volume, terms of trade and, to a lesser extent, price and cross effects (Chart 7.3). There was a significant decrease in the volume effect, *vis-à-vis* the previous year, being negative in 2008. This evolution reflected, on the one hand, the non-energy goods component, as a result of the major deceleration in the volume of exports of goods excluding fuel, which fell by 1.3 per cent in 2008, together with a less marked deceleration of imports excluding fuel, which grew by 2.9 per cent (Chart 7.4). There was, on the other hand, a significant decrease in the volume effect associated with the services account, which was virtually nil in 2008. As in the case of goods excluding fuel, exports of services also decelerated in volume, in 2008 (in particular, exports of tourism and transport services), having grown at a lower rate than imports, which decelerated more slightly (again, there was a greater slowdown in imports of tourism and transport services). The marked worsening of the volume effect of the goods and services account therefore reflected a fall in the volume of exports of goods and services (which was particularly significant in the last quarter of 2008), associated with a contraction of global consumption and investment, in the context of the economic and financial international crisis and the high level of uncertainty over the future developments of world economic activity. Additionally, and in spite of the adverse international context, there was a less marked deceleration of imports of goods and services in volume, reflecting the virtual stabilisation of private consumption growth, in real terms, in Portugal.[55]

The evolution of export prices of goods and services was close to the one registered in 2007, while import prices of goods and services accelerated in 2008, growing at a higher rate than export prices. This evolution led to a more negative price effect than in 2007 and to a loss in the terms of trade, which contrasts with the gain in 2007 (Chart 7.3). In line with the evolution of oil prices in international markets

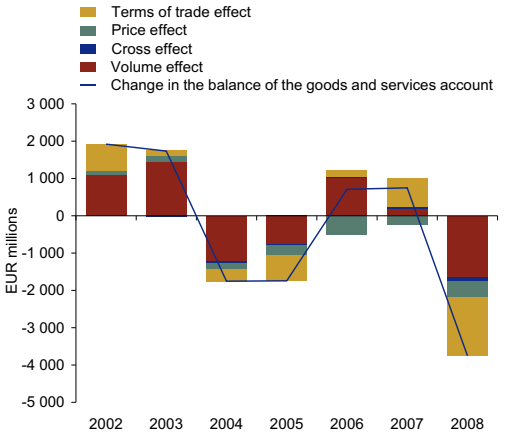
**(54)** See Banco de Portugal *Economic Bulletin-Winter 2007*.

**(55)** For a more detailed analysis of the evolution of consumption, exports and imports in 2008, see "Section 5 *Expenditure*", in this Bulletin.

**Chart 7.3**

BREAKDOWN OF THE CHANGE IN THE GOODS AND SERVICES ACCOUNT BALANCE

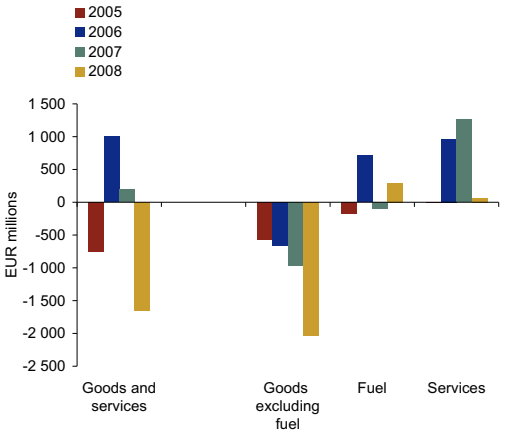
Breakdown in volume, price and terms of trade effect




**Sources:** *INE* and Banco de Portugal.
**Note:** A positive (negative) change means an increase (decrease) in the balance on the goods and services account. The change in the goods and services account balance may be broken down into four effects:
- volume effect - effect of the change in imported and exported volumes;
$[X_{t-1}.vx_t]-[M_{t-1}.vm_t]$
- price effect - effect of average growth of external trade prices;
$[X_{t-1}.p_t]-[M_{t-1}.p_t]$
- terms of trade effect - effect of the relative change in export and import prices;
$[X_{t-1}.(px_t-p_t)]-[M_{t-1}.(pm_t-p_t)]$
- cross effect - effect of the interaction between changes in volume and prices of exports and imports.
$[X_{t-1}.vx_t.px_t]-[M_{t-1}.vm_t.pm_t]$
where: $X_{t-1}$ and $M_{t-1}$ denote the exports and imports in year t-1 at current prices; $vx_t$ and $vm_t$ denote the rates of change in export and import volume in t; $px_t$ and $pm_t$ denote the rates of change of export an import prices in t; $p_t$ is the average rate of change of external trade prices in year t $\left((px_t+pm_t)/2\right)$.

**Chart 7.4**

BREAKDOWN OF THE VOLUME EFFECT OF THE CHANGE IN THE GOODS AND SERVICES ACCOUNT BALANCE




**Sources:** *INE* and Banco de Portugal.
**Note:** A positive (negative) change means an increase (decrease) in the balance on the goods and services account. For a description of the methodology used to calculate the various effects, see the note to Chart 7.3.

(see "Section 6 *Prices*", in this Bulletin) there was a particularly significant acceleration in the prices of fuel exports and imports, resulting in a strong negative price effect in the energy account.

Notwithstanding the fact that, in nominal terms, the deficit on the energy account continued to be higher than the one of the non-energy component of the goods and services account, net energy transactions between Portugal and abroad and other goods and services transactions made an equally important contribution to the worsening of the deficit on the goods and services account (Chart 7.5). However, underlying these contributions were disparate dominant effects. The contribution of the energy account was essentially determined by the evolution of prices, whereas in the case of the non-energy component, its contribution was dominated by the volume effect.

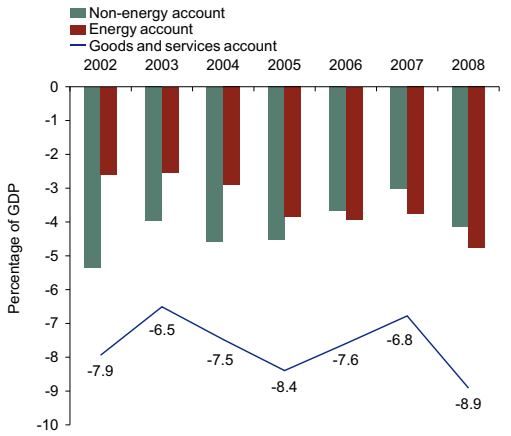
In 2008, the financial account continued to reflect the maintenance of a large deficit between domestic savings and investment. The year recorded net inflows of 10.9 per cent of GDP, in comparison to 8.0 per cent of GDP in 2007 (Table 7.2).[56] The significant recourse to external savings to meet the borrow-

(56) As in previous years, financial account records are affected by temporary end-of-year operations between banks and monetary authorities, which are only reflected in the distribution of the economy's external position between these two sectors, without affecting the overall financial account balance. Those operations affect statistics on other investment flows of these two sectors making it more difficulty to identify the importance of banks for the financing of the economy. The values corresponding to the adjusted end-of-year flows on such operations (representing 2.1 and 3.0 per cent of GDP, respectively in 2007 and 2008) are set out in brackets in table 7.2. For example, the values relating to 2008 are adjusted both for temporary operations occurring at the end of 2007 and reversed in the first days of 2008 (3.2 per cent of GDP) and temporary operations occurring at the end of 2008 (0.3 per cent of GDP). At the end of 2007, in the context of euro money market tensions, this effect was particularly relevant. In this period, deposits of resident credit institutions with the Banco de Portugal increased markedly, partly due to extraordinary liquidity-absorbing operations conducted by the Eurosystem. Given the temporary nature of the above mentioned operations, the analysis presented in this section is based on figures adjusted for these operations.

**Chart 7.5**

GOODS AND SERVICES ACCOUNT

Breakdown on energy and non-energy accounts




**Sources:** *INE* and Banco de Portugal.

ing requirements of resident sectors has led to a situation in which the international investment position of the Portuguese economy has become progressively more indebted.

Under the terms of its participation in the euro area and the particularly favourable financial context in force for a very long period up to the appearance of the financial crisis, Portuguese banks found it easy to secure euro funding for long term maturities in international financial markets, permitting them to sustain a high differential between growths in domestic demand and income, translating into significant deficits on the current plus capital account. Since mid 2007, developments in the framework and in the liquidity of several financial markets segments changed the financial conditions of European banks in general and, therefore, Portuguese banks' operating context also changed significantly, which was exacerbated by the particularly adverse evolution of capital markets and the continuous, significant and comprehensive deterioration of prospects relating to the evolution of economic activity. At the same time, in a context of increased risk aversion, residents have readjusted their portfolio of financial assets towards bank deposits to the detriment of financial investments more sensitive to market fluctuations, such as mutual funds units.

At an initial stage, in the context of the current financial crisis there was a progressive reduction of the intensity of external financial flows, *i.e.* smaller increases both in terms of liabilities and assets. Such developments, which were already evident in the second half of 2007, intensified in the first half of 2008 and followed a period characterised by growing financial integration, with very substantial flows of financial liabilities and assets with the rest of the world: in the former case, particularly reflecting the growing gross indebtedness of general government and banks to non-residents and, in the second stage, significant acquisitions of foreign securities by Portuguese investment funds. With the augment of the financial crisis in the second half of 2008, particularly in the fourth quarter, there was a sudden change in the direction and dimension of external financial flows (Chart 7.6).[57] Accordingly, in 2008 as

(57) In this period, financial derivatives item recorded very significant liabilities and assets flows. In the case of general government, this increase was associated with the significant issuance of public debt and with the respective use of interest rate and foreign exchange rate hedging instruments, particularly in the fourth quarter of 2008. Regarding other monetary financial institutions and other resident sectors, financial derivatives item in 2008 reflected the broadening of the questionnaire used to determine this account to include all other resident monetary financial institutions, which are required to report operations realised on their own account and on behalf of customers (up to 2007 only the main institutions were surveyed). Nevertheless, the contribution of the net change in financial derivatives to the external financial situation of the different sectors considered is virtually nil.

## Table 7.2

FINANCIAL ACCOUNT
As a percentage of GDP

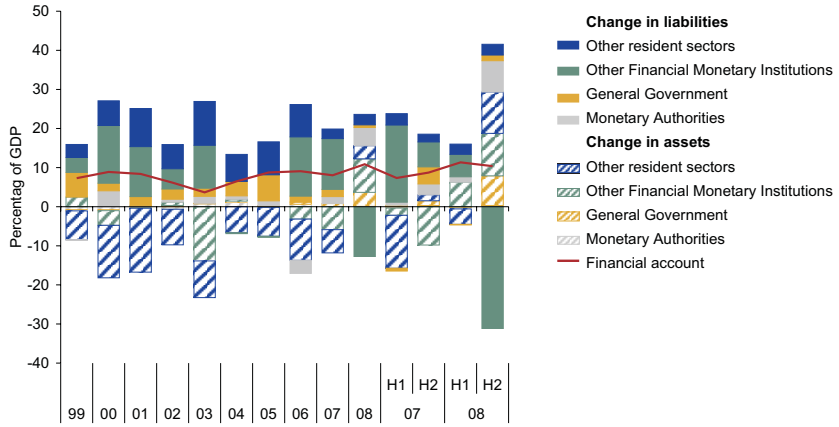
| | Jan-Dec 2007 | | | Jan-Dec 2008 | | |
|---|---|---|---|---|---|---|
| | Change in | | | Change in | | |
| | Liabilities | Assets | Net change | Liabilities | Assets | Net change |
| **Current plus capital account** | | | **-8.1** | | | **-10.5** |
| **Financial account** | **17.0 (19.1)** | **-8.9 (-11.0)** | **8.0** | **-1.8 (-4.7)** | **12.6 (15.6)** | **10.9** |
| Direct investment | 1.4 | -2.5 | -1.1 | 1.5 | -0.9 | 0.6 |
| *excluding Madeira and S. Maria (Azores) off-shores* | *1.5* | *-2.4* | *-0.9* | *0.9* | *-0.4* | *0.5* |
| Portfolio investment | 11.0 | -4.9 | 6.2 | 15.8 | -7.4 | 8.3 |
| Financial derivatives | -5.0 | 5.1 | 0.1 | -13.8 | 13.9 | 0.2 |
| Other investment | 9.6 (11.6) | -7.1 (-9.2) | 2.4 | -5.2 (-8.2) | 7.1 (10.0) | 1.9 |
| Reserve assets | | 0.4 | 0.4 | | 0.0 | 0.0 |
| By institutional sector of resident investor: | | | | | | |
| **Monetary Authorities** [(a)] | **-0.3 (1.8)** | **0.0** | **-0.3 (1.7)** | **7.6 (4.7)** | **0.1** | **7.7 (4.8)** |
| Portfolio investment | 0.0 | 0.6 | 0.6 | 0.0 | -2.3 | -2.3 |
| Financial derivatives | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Other investment | -0.3 (1.8) | -1.1 | -1.4 (0.7) | 7.7 (4.7) | 2.4 | 10.1 (7.1) |
| Reserve assets | | 0.4 | 0.4 | | 0.0 | 0.0 |
| **General Government** | **1.8** | **0.8** | **2.7** | **0.7** | **3.6** | **4.2** |
| Direct investment | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| *excluding Madeira and S. Maria (Azores) off-shores* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* | *0.0* |
| Portfolio investment | 1.7 | -0.1 | 1.6 | 5.7 | -0.3 | 5.4 |
| Financial derivatives | -0.5 | 0.6 | 0.1 | -3.9 | 4.1 | 0.2 |
| Other investment | 0.7 | 0.3 | 1.0 | -1.2 | -0.2 | -1.4 |
| **Other Monetary Financial Institutions** [(a)] | **13.0** | **-3.8 (-5.8)** | **9.2 (7.2)** | **-12.7** | **5.6 (8.6)** | **-7.1 (-4.2)** |
| Direct investment | 0.4 | -0.3 | 0.0 | 0.1 | 0.0 | 0.1 |
| *excluding Madeira and S. Maria (Azores) off-shores* | *0.4* | *-0.3* | *0.0* | *0.1* | *0.0* | *0.1* |
| Portfolio investment | 7.3 | -3.0 | 4.3 | 7.3 | -8.6 | -1.2 |
| Financial derivatives | -3.4 | 3.3 | -0.1 | -8.7 | 8.6 | -0.1 |
| Other investment | 8.8 | -3.8 (-5.9) | 5.0 (2.9) | -11.5 | 5.6 (8.5) | -5.9 (-2.9) |
| **Non-Monetary Financial Institutions** | **2.6** | **-1.6** | **1.0** | **3.3** | **4.0** | **7.2** |
| Direct investment | 0.4 | -0.1 | 0.2 | 0.3 | -0.1 | 0.2 |
| *excluding Madeira and S. Maria (Azores) off-shores* | *0.4* | *-0.1* | *0.2* | *0.2* | *-0.1* | *0.1* |
| Portfolio investment | 2.6 | -1.8 | 0.8 | 3.3 | 3.7 | 7.1 |
| Financial derivatives | -0.8 | 0.8 | 0.0 | -0.3 | 0.3 | 0.0 |
| Other investment | 0.3 | -0.4 | -0.1 | -0.1 | 0.0 | 0.0 |
| **Non-Financial Corporations and Households** | **-0.1** | **-4.4** | **-4.5** | **-0.6** | **-0.6** | **-1.2** |
| Direct investment | 0.6 | -2.0 | -1.4 | 1.1 | -0.8 | 0.3 |
| *excluding Madeira and S. Maria (Azores) off-shores* | *0.7* | *-2.0* | *-1.2* | *0.6* | *-0.3* | *0.3* |
| Portfolio investment | -0.6 | -0.6 | -1.2 | -0.6 | 0.0 | -0.6 |
| Non-financial corporations | -0.6 | -0.3 | -0.9 | -0.6 | -0.2 | -0.8 |
| Households | 0.0 | -0.3 | -0.3 | 0.0 | 0.2 | 0.2 |
| Financial derivatives | -0.3 | 0.3 | 0.1 | -0.9 | 0.9 | 0.0 |
| Other investment | 0.1 | -2.1 | -2.0 | -0.2 | -0.7 | -0.9 |
| **Errors and omissions** | | | **0.1** | | | **-0.4** |

**Sources:** *INE* and Banco de Portugal.
**Notes:** A (+) sign means an increase in foreign liabilities or a decrease in foreign assets, *i.e.* a financial inflow. A (-) sign means a decrease in foreign liabilities or an increase in foreign assets, i.e. a financial outflow. (a) The figures in brackets in other investment of monetary authorities and of other monetary financial institutions are adjusted for temporary end-of-year operations between the two sectors reversed on the first days of the subsequent year.

**Chart 7.6**

FINANCIAL ACCOUNT

Balance and flows by institutional sector




**Sources:** *INE* and Banco de Portugal.
**Note:** Figures for "Other investment" of Monetary Authorities and Other Financial Monetary Institutions are adjusted for temporary end-of-year operations between the two sectors, which were reversed in the first few days of the following year.

a whole, the deficit of the current plus capital account was financed by a reduction of external assets of approximately 13 per cent of GDP, and a fall of external liabilities of around 2 per cent of GDP.

In 2008, it should be stressed the reversal of the net financing flow of other monetary financial institutions, *i.e.* net outflows of funds of 4.2 per cent of GDP, contrasting with net inflows of 7.2 per cent of GDP in 2007. This reflected, mainly, a very significant reduction of loans or deposits in the Portuguese banking system by non-residents. This evolution may, in part, be associated with the amortisation of medium and long-term securities issued by subsidiaries and branches of Portuguese banks abroad.[58] Additionally, there was a significant increase in the Portuguese banking system's net investments in bonds and other medium and long term debt securities issued by non-residents, which may have been associated with credit securitisation operations.[59] These operations made a positive contribution to institutions' liquidity management, given that these securities are eligible as collateral in Eurosystem monetary policy operations. Despite unfavourable conditions in access to financing in international wholesale debt securities markets, other monetary financial institutions preserved some access to primary debt securities markets, particularly in the second quarter of the year, albeit with shorter maturities and higher costs. In fact, portfolio investment liability flows of other monetary financial institutions amounted to 7.3 per cent of GDP in 2008, value similar to the previous year. At the same time, in a context of disturbance in the functioning of the interbank money market and, in general, of the wholesale debt market, banks seem to have concentrated there liquidity at the domestic level, leading to a reduction of other investment assets, in contrast to the previous year.

(58) It should be remembered that the channelling of funds – obtained from the issuance of securities by subsidiaries and branches abroad – to their respective parent companies is registered in Portugal's financial account as an increase in liabilities of other investment by other financial monetary institutions, corresponding to loans or deposits made by non-resident financial institutions with resident institutions.

(59) These operations are materialised in the issuance of securities by non-monetary financial institutions, which are typically underwritten by non-residents, corresponding in the financial account to increases in portfolio investment liabilities of these institutions. In 2008, an amount of 4.9 per cent of GDP was issued in securities under the scope of securitisation operations and acquired by non-residents, which compares with 1.7 per cent of GDP in the previous year. Acquisitions by credit ceding banks (or by other resident banks usually belonging to the same banking group) of securities issued under the scope of securitisation operations are recorded, in the financial account, as an increase in the investment portfolio assets of other financial monetary institutions, as they correspond to acquisitions from non-resident institutions which initially acquired them. In this case, this does not signify a change in the type of bank lending to resident sectors, which remains in the banks' portfolios, although in the form of external securities values.

The above-mentioned financial assets portfolio reallocation by residents, which involved substantial redemptions of mutual funds units and, consequently, a reduction of investment in securities issued by non-residents by funds, is mirrored by a major change of the role of non-monetary financial institutions in financing the balance, noted since the beginning of the international financial markets crisis in the summer of 2007. It should be remembered that as part of participation in the euro area and in the context of a particularly favourable financial environment in force for a very long period up to the appearance of the financial crisis, institutional investors, particularly mutual funds, took advantage of this environment to diversify their financial assets portfolios, gradually increasing the relative importance of foreign securities and thus contributing significantly to the accumulation of external assets. As opposed to 2007, when net outflows associated with portfolio investment of this sector amounted to 1.8 per cent of GDP (-8.0 per cent of GDP in the first half of 2007 and 4.3 per cent of GDP in the second half), 2008 witnessed portfolio disinvestment of 3.7 per cent of GDP.

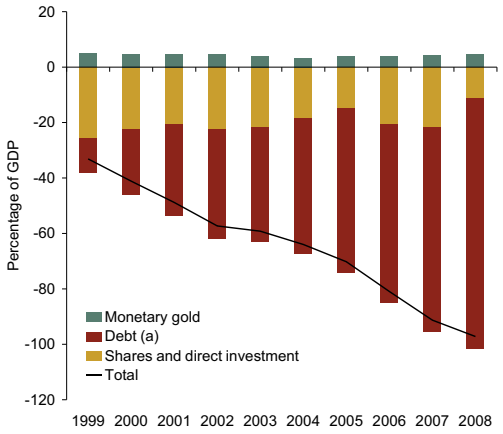
The net inflow of funds via non-residents' acquisition of general government debt was in 2008 significantly up over the previous year, reflecting to a large extent the direct acquisition of securities issued by the Treasury in the primary securities market, particularly in the last quarter of 2008. In turn, the repayment of short-term loans granted by non-resident financial institutions contributed to net outflows of funds in the first half of 2008.

In 2008, direct investment operations corresponded to net inflows of 0.6 per cent of GDP, in contrast to net outflows of 1.1 per cent of GDP in the previous year. This evolution mainly reflected a significant decrease of Portuguese direct investment abroad as a percentage of GDP.

The Portuguese economy's debtor position *vis-à-vis* the rest of the world, assessed by the international investment position, continued to increase, standing at 97.2 per cent of GDP in 2008, compared to 91.3 per cent in 2007 (Table 7.3). The increase in Portugal's external debtor position has been essentially associated with the accumulation of debt with non-residents, as the debt position in the form of direct investment and shares (net of Portugal's external investment position in the same instruments) has not been very significant (Chart 7.7).

**Chart 7.7**

INTERNATIONAL INVESTMENT POSITION




**Sources:** *INE* and Banco de Portugal.
**Note:** (a) Includes securities, other investment, financial derivatives, mutual funds units, securitisation units and other.

## Table 7.3

### INTERNATIONAL INVESTMENT POSITION

| | EUR millions | | | | | | | As a percentage of GDP | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | 2006 | 2007 | 2008 | | | | | 2006 | 2007 | 2008 |
| | End-of-period positions | | Transactions | Price changes | Exchange rate changes | Other adjustments | End-of-period positions | End-of-period positions | | |
| International investment position | -125 833 | -148 974 | -18 050 | 6 295 | -464 | -337 | -161 531 | -80.9 | -91.3 | -97.2 |
| Direct investment [a] | -26 179 | -32 339 | -974 | 7 406 | -170 | 82 | -25 996 | -16.8 | -19.8 | -15.6 |
| Portfolio investment [b] | -25 786 | -37 576 | -13 821 | -2 104 | 306 | 517 | -52 678 | -16.6 | -23.0 | -31.7 |
| Financial derivatives | 181 | 82 | -251 | 332 | 0 | 0 | 163 | 0.1 | 0.1 | 0.1 |
| Other investment [c] | -81 553 | -86 984 | -3 084 | 0 | -601 | -936 | -91 605 | -52.5 | -53.3 | -55.1 |
| Reserve assets | 7 504 | 7 843 | 79 | 662 | 1 | 0 | 8 585 | 4.8 | 4.8 | 5.2 |
| By institutional sector of resident investor: | | | | | | | | | | |
| Monetary Authorities | 15 370 | 16 894 | -12 877 | 805 | -12 | -22 | 4 787 | 9.9 | 10.4 | 2.9 |
| Portfolio investment | 10 692 | 9 656 | 3 841 | 147 | -1 | 2 | 13 645 | 6.9 | 5.9 | 8.2 |
| Financial derivatives | 0 | 0 | 3 | -4 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Other investment | -2 826 | -605 | -16 800 | 0 | -12 | -24 | -17 442 | -1.8 | -0.4 | -10.5 |
| Reserve assets | 7 504 | 7 843 | 79 | 662 | 1 | 0 | 8 585 | 4.8 | 4.8 | 5.2 |
| General Government | -67 314 | -72 275 | -7 031 | -2 882 | 261 | 2 | -81 925 | -43.3 | -44.3 | -49.3 |
| Direct investment | 118 | 101 | 0 | 0 | -1 | 0 | 100 | 0.1 | 0.1 | 0.1 |
| Portfolio investment | -70 880 | -72 396 | -8 976 | -3 203 | 174 | -1 | -84 402 | -45.6 | -44.4 | -50.8 |
| Financial derivatives | -59 | -57 | -333 | 321 | 0 | 0 | -69 | 0.0 | 0.0 | 0.0 |
| Other investment | 3 506 | 77 | 2.279 | 0 | 87 | 3 | 2 446 | 2.3 | 0.0 | 1.5 |
| Other Monetary Financial Institutions | -78 756 | -93 970 | 11 846 | 3 071 | -277 | 252 | -79 079 | -50.7 | -57.6 | -47.6 |
| Direct investment | 1 450 | 1 865 | -206 | -688 | -269 | -26 | 677 | 0.9 | 1.1 | 0.4 |
| Portfolio investment | 7 496 | -588 | 2 077 | 3 913 | 74 | -256 | 5 220 | 4.8 | -0.4 | 3.1 |
| Financial derivatives | 296 | 186 | 173 | -155 | 0 | 0 | 204 | 0.2 | 0.1 | 0.1 |
| Other investment | -87 998 | -95 433 | 9 802 | 0 | -82 | 534 | -85 179 | -56.6 | -58.5 | -51.3 |
| Non-monetary financial institutions | 30 620 | 27 680 | -12 041 | -6 612 | -2 | -89 | 8 936 | 19.7 | 17.0 | 5.4 |
| Direct investment | -5 335 | -6 294 | -335 | 4 | 1 | -46 | -6 670 | -3.4 | -3.9 | -4.0 |
| Portfolio investment | 36 584 | 33 800 | -11 727 | -6 727 | 7 | 471 | 15 823 | 23.5 | 20.7 | 9.5 |
| Financial derivatives | -55 | -50 | -61 | 111 | 0 | 0 | 0 | 0.0 | 0.0 | 0.0 |
| Other investment | -575 | 224 | 81 | 0 | -10 | -513 | -218 | -0.4 | 0.1 | -0.1 |
| Non-financial corporations and households | -25 754 | -27 304 | 2 052 | 11 915 | -433 | -479 | -14 251 | -16.6 | -16.7 | -8.6 |
| Direct investment | -22 413 | -28 012 | -433 | 8 089 | 99 | 154 | -20 103 | -14.4 | -17.2 | -12.1 |
| Portfolio investment | -9 678 | -8 048 | 964 | 3 767 | 52 | 301 | -2 964 | -6.2 | -4.9 | -1.8 |
| Financial derivatives | -1 | 3 | -33 | 58 | 0 | 0 | 28 | 0.0 | 0.0 | 0.0 |
| Other investment | 6 339 | 8 753 | 1 554 | 0 | -584 | -934 | 8 788 | 4.1 | 5.4 | 5.3 |

**Sources:** *INE* and Banco de Portugal.
**Notes:** (a) Includes quarterly estimates calculated by Banco de Portugal based on the accumulation of monthly flows and on the latest annual data obtained from Direct Investment Surveys. (b) Includes quarterly estimates calculated by Banco de Portugal based on the accumulation of monthly flows and on the latest annual data obtained from the "Survey on stocks of foreign securities held by residents". (c) Includes, in some components, quarterly estimates calculated by Banco de Portugal based on accumulation of monthly flows.

The worsening of the international investment position (5.9 p.p. of GDP) was lower than the balance on the financial account (10.9 per cent of GDP) chiefly as a result of changes in the value of foreign direct investment in Portugal. This resulted from the high level of depreciation of *GALP*, whose quotation decreased by around 60 per cent between December 2007 and December 2008 and whose capital is majority owned by non-residents (around 66 per cent).

## 8. CONCLUSION

The current worldwide recessionary period whose depth and persistence is unparalleled over the last decades, has created important challenges for monetary and budgetary authorities globally. Since the eruption of the financial crisis in summer 2007, the authorities have implemented a diversified set of policies, occasionally unconventional, to stabilise financial markets and stimulate economic activity. Governments have, in particular, initiated large scale budget stimulus programmes, centred on public revenues and expenditures, implying a substantial deterioration of projected budget balances for 2009. In a context such as the present, characterised by a growing deterioration of the macroeconomic environment and an ever increasingly diversified reaction from the authorities and in greater magnitude, reference should be made to several relevant principles in this respect.

Firstly, historical evidence suggests that the stabilisation of the financial system is a prerequisite for the resolution of situations characterised by the conjugated occurrence of financial and economic crises. This evidences the importance for economic growth of the maintenance of credit flows directed to solvent economic agents and with profitable investment projects. This principle has underlied a vast range of interventions by the authorities, among which particular reference should be made to the extraordinary liquidity management measures taken by the monetary authorities, the state guarantees on bank deposits, the state guarantees on new debt securities issuances by financial institutions, the voluntary recapitalisation programmes and the injections of public capital in distressed financial institutions. It should, however, be noted that several of these measures implied a transfer of risk from financial institutions to the state. In such a context, the need to ensure a sustainable situation with regard to the public finances in the long term is reinforced.

Secondly, there is a high level of heterogeneity between the several countries regarding their manoeuvring space for implementing significant discretionary budget measures. In particular, in the current context of difficulties in access to external funding and differentiation of costs in terms of the issuance of sovereign debt, the said manoeuvring space is crucially dependent on the assessment of the sustainability of the public finances. In Portugal, this dimension suggests the need for prudence and criterion in the implementation of any additional discretionary measures. In this perspective, it should be stressed that according to Banco de Portugal estimates, the general government structural deficit was 4.6 per cent of trend GDP in 2008, with a new increase being expected in 2009, in a context of an expansionary orientation of budget policy in accordance with the latitude established in the Stability and Growth Pact. Such high levels suggest the need to draw up a credible strategy in advance which ensures the resumption of a sustained trajectory of budget consolidation after the current period of a strong contraction of economic activity.

Finally, policy measures should minimise distortions on the incentives to economic agents which weaken the economy's structural framework. This would be the case for example of policies designed to increase the degree of autarky of the economy, via the amplification of barriers to the circulation of people, capital, goods or services. Similarly, unconditional financial support to specific sectors of activity or firms may, in certain cases, distort the incentives for a necessary corporate restructuring, encouraging the inefficient allocation of resources in an intertemporal perspective.

Owing to the nature and the combination of shocks which are currently affecting the world economy – and notwithstanding the strong response of monetary and budgetary policies – a more severe, persistent and comprehensive contraction than in previous recessionary periods is foreseeable. A small open economy such as the Portuguese will tend to share the main cyclical characteristics observed in the economies with which it is strongly integrated in economic and financial terms. It should, however, be stressed that the policies furthered and the reaction of national economic agents during the course of this economic and financial crisis will condition the Portuguese economy's capacity, after the crisis has ended, to once again achieve a level of sustained economic growth which ensures a return to the real convergence process towards average income levels in the euro area. Accordingly, it is important, in this recessionary period, to guarantee a trend wage evolution, in aggregate terms, in line with the average growth of productivity, to remain committed to improving the skills of the working population and the younger generations, not to introduce significant, permanent distortions on the allocation of the economy's productive factors and, in general, commit to improving the economy's institutional environment, namely in terms of its judicial system and the functioning of labour and product markets.

## Box 1: Interim update of macroeconomic projections for 2009

*During the course of 2008, the international environment of the Portuguese economy was marked by a progressive intensification of the financial crisis and its growing interaction with the evolution of global economic activity. This intensification was particularly felt since September and originated a significant contraction of economic activity in most developed economies and an economic slowdown in emerging markets, accompanied by a sharp fall in international trade in the fourth quarter of 2008 which is expected to have persisted at the beginning of 2009. Additionally, in a context of high levels of uncertainty and risk aversion, global growth prospects have been markedly revised downward. These developments were significantly more unfavourable than those estimated and projected on the basis of the information available at the end of 2008 and correspond to the materialisation, at a higher than anticipated magnitude, of the downward risk factors on economic activity and inflation identified in the projections published in the Economic Bulletin - Winter 2008. In this framework, the following box updates the macroeconomic projections of Banco de Portugal for 2009[1].*

*The information for the fourth quarter of 2008, published by the Statistics Portugal (INE) in mid-March 2009, indicated a substantially lower than projected growth of economic activity. Current estimates point to a stagnation of GDP in 2008, in comparison to the growth of 0.3 per cent estimated in the Economic Bulletin - Winter 2008 (Table 1). The revision reflects essentially a larger fall of exports and investment at the end of 2008, in a context in which the maintenance of a situation of turmoil in financial markets is significantly affected on the confidence of economic agents at the global level, determining the postponement of expenditure decisions. The Portuguese economy is particularly vulnerable to the evolution of the international economic situation owing to its high level of economic and financial integration.*

*The downward revision of growth prospects for the world economy, this year, will imply a reduction in the external demand addressed to Portuguese companies significantly higher than assumed in the Winter Economic Bulletin of 2008 (Table 2). This update is based on the information underpinning the projection of European Central Bank (ECB) staff, published in the ECB's Monthly Bulletin of March 2009, updated with the projections recently published*

### Table 1

PROJECTIONS OF BANCO DE PORTUGAL: 2009

Rate of change, per cent

| | Weights 2008 | Current projection | | EB Winter 2008 | | Revision | |
|---|---|---|---|---|---|---|---|
| | | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 |
| Gross domestic product | 100.0 | 0.0 | -3.5 | 0.3 | -0.8 | -0.3 | -2.7 |
| Private consumption | 66.5 | 1.7 | -0.9 | 1.4 | 0.4 | 0.3 | -1.3 |
| Public consumption | 20.7 | 0.5 | 0.4 | 0.2 | -0.1 | 0.3 | 0.5 |
| Gross fixed capital formation | 21.7 | -1.7 | -14.4 | -0.8 | -1.7 | -0.9 | -12.7 |
| Domestic demand | 109.5 | 0.9 | -3.5 | 1.0 | 0.0 | -0.1 | -3.5 |
| Exports | 32.8 | -0.4 | -14.2 | 0.6 | -3.6 | -1.0 | -10.6 |
| Imports | 42.2 | 2.1 | -11.7 | 2.4 | -1.0 | -0.3 | -10.7 |
| Contribution to GDP growth (in p.p.) | | | | | | | |
| Net exports | | -1.0 | 0.3 | -0.8 | -0.8 | -0.2 | 1.1 |
| Domestic demand | | 1.0 | -3.9 | 1.1 | 0.0 | -0.1 | -3.9 |
| *of which*: changes in inventories | | 0.2 | -0.2 | 0.3 | 0.1 | -0.1 | -0.3 |
| Current and capital account (% of GDP) | | -10.5 | -7.9 | -9.0 | -7.9 | -1.5 | 0.0 |
| Goods and services account (% of GDP) | | -8.9 | -6.6 | -8.0 | -7.0 | -0.9 | 0.4 |
| Harmonised Index of Consumer prices | | 2.7 | -0.2 | 2.7 | 1.0 | 0.0 | -1.2 |

**Note:** Revision in percentage points.

(1) *The current projections have been produced on the basis of information available up to the end of March 2009.*

**Table 2**

UNDERLYING ASSUMPTIONS OF THE PROJECTION

| | | Current projection | | EB Winter 2008 | | Revision[(a)] | |
|---|---|---|---|---|---|---|---|
| | | 2008 | 2009 | 2008 | 2009 | 2008 | 2009 |
| External demand | yoy | 1.5 | -12.9 | 2.5 | -2.5 | -1.0 | -10.4 |
| Interest rate | | | | | | | |
| Short term | % | 4.6 | 1.8 | 4.6 | 2.6 | 0.0 | -0.8 |
| Long term | % | 4.5 | 4.4 | 4.5 | 4.4 | 0.0 | 0.0 |
| Exchange rate (+ = appreciation) | | | | | | | |
| Effective Portugal | yoy | 4.8 | -2.4 | 4.3 | -3.8 | 0.5 | 1.4 |
| Euro-dollar | aal | 1.47 | 1.29 | 1.47 | 1.28 | 0.0 | 0.0 |
| Price of oil | | | | | | | |
| US dollars | aal | 98.0 | 49.3 | 98.7 | 56.5 | -0.7 | -12.7 |
| euros | aal | 65.8 | 38.2 | 66.5 | 44.3 | -1.1 | -13.8 |

**Notes:** Yoy, year-on-year rate of change; %, as a percentage; aal, average annual level. (a) Revisions of external demand and interest rates and nominal exchange rates are expressed iin percentage points with the rest being expressed as a percentage.

*by the OECD. In this context, the current projection considers a fall of approximately 13 per cent in the external demand addressed to Portuguese companies in 2009 (-2.5 per cent in the Winter Economic Bulletin of 2008).*

*In addition, the technical assumptions considered are also those underpinning the projection published in the ECB's Monthly Bulletin of March 2009. The assumptions point to a very significant reduction of short-term interest rates, and to a depreciation of the euro in effective terms of around 2.5 per cent (12 per cent against the US dollar). As regards the evolution of oil prices, the current assumptions point to a large drop of the average annual value, of around 100 dollars in 2008 to close to 50 dollars in 2009 (corresponding to a reduction of around 65 euros in 2008 to 38 euros in 2009). The current projection also considers the legally approved or sufficiently specified fiscal stimulus measures, in line with the usual procedures of the projection exercises of the Eurosystem.*

*Available indicators for the first months of 2009 point to the maintenance of a fall of demand in internal and external markets. In particular, qualitative indicators indicate a reduction to historically minimum levels of consumer confidence, production expectations in industry and export order books in the manufacturing industry (see "Box 4 The recent evolution of qualitative indicators). These indicators, in conjunction with available quantitative indicators, suggest a negative evolution of economic activity in the first quarter of 2009.*

*The current projection points to a situation in which the stagnation of GDP, in real terms, in 2008, will be followed by a contraction of 3.5 per cent in 2009. This evolution translates a projected fall both in domestic demand and exports, also accompanied by a pronounced reduction of imports (Table 1).*

*Private consumption is projected to decrease 0.9 per cent in 2009, reflecting a significant drop in expenditure with the acquisition of durable goods, as well as a slowdown of expenditure in non-durable goods. In a context of a particularly favourable evolution of real disposable income, benefiting from the stagnation of consumer prices, this evolution is marked by a deterioration of labour market conditions, in addition to the greater uncertainty over future levels of income and household wealth, which will tend to induce the postponement of consumption decisions, particularly the acquisition of durable goods. Additionally, notwithstanding the fall in interest rates assumed in this projection, the more restrictive bank criteria regarding new loans, in addition to the increase in bank spreads, reflecting the higher credit risk and the high bank financing costs in wholesale markets, will also particularly contribute to the projected evolution of durable goods consumption.*

*In terms of investment, the current projection includes a contraction of close to 15 per cent, reflecting the large fall in private investment, as public investment is expected to increase. The fall in private investment reflects a similar evolution of the business and residential components. Against a background of high uncertainty over the prospects of future demand (both in the domestic market as in the case of Portugal's export markets), increased restrictiveness levels in the national banking system's financing terms, notwithstanding a sharp fall in interest rates, and high*

*levels of uncertainty over household earnings prospects, it is likely that the private sector will postpone investment decisions.*

*Current projections point to a reduction of around 14 per cent in exports in 2009 (following the stagnation estimated in 2008), in line with the collapse of international trade that occurred since the last quarter of 2008. The projected evolution of exports is heavily contingent upon the contraction of world economic activity and by its impact on the international trade in goods. The Portuguese economy will also tend to be particularly penalised by exports of tourism services, to the extent that the current international financial crisis has particularly affected the most relevant markets for the Portuguese economy.*

*In the current scenario, characterised by a strong fall in global demand and, particularly, in its components with higher import content, a contraction of more than 10 per cent in imports is anticipated. This evolution of the volume of imports, in conjunction with the marked fall in the price of oil and in interest rates, in a context of the anticipated maintenance of the terms of trade in non-energy goods, is likely to imply a reduction of the Portuguese economy's external borrowing requirements to around 8 per cent in 2009 (10.5 per cent in 2008), notwithstanding the significant reduction in the volume of exports.*

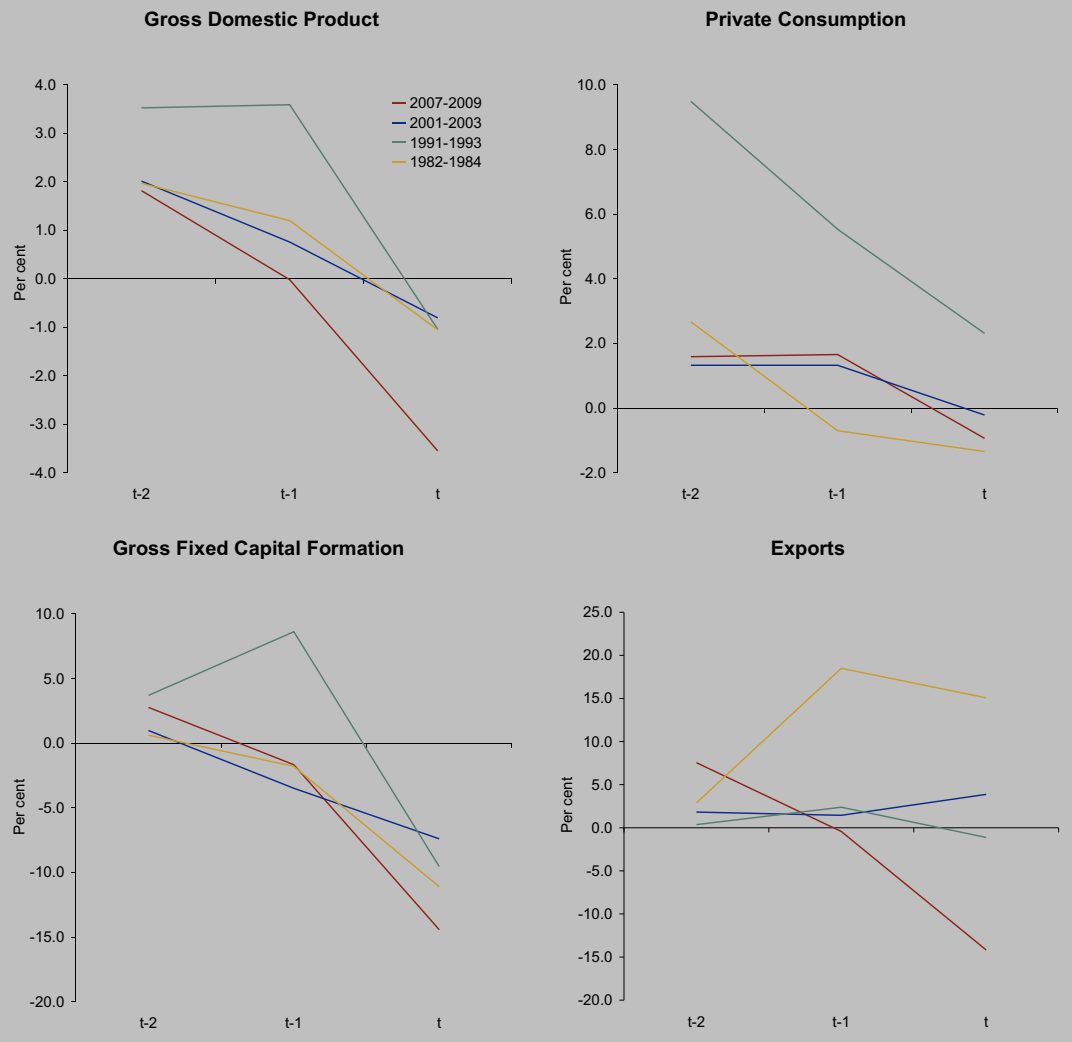
*The current projection points to a reduction of the Harmonised Index of Consumer Prices (HICP) of 0.2 per cent in 2009, after an increase of 2.7 per cent in 2008. According to the available information, this reduction in the overall consumer price index is different from a situation of deflation to the extent that it translates a temporary reduction that is highly conditioned by the evolution of the prices of energy goods, which are expected to record a large fall. The prices of other goods and services, which represent around 90 per cent of the HICP reference basket, are likely to continue to show positive growth. It should be stated that, however, the current projection points to a reduction of the rate of growth of these prices to close to 1 per cent in 2009 (2 per cent in 2008). In a context of a strong contraction in demand, this evolution of the prices of non-energy goods and services is likely to reflect narrowing profit margins, in a context of stagnant import prices of non-energy goods and high growth of unit labour costs in the private sector, notwithstanding the projected slowdown of nominal wages in this sector.*

*The unprecedented magnitude and nature of this recessionary period can be put into perspective by a comparison with previous recessionary periods (Chart 1). The last 30 years witnessed 3 recessionary episodes, besides the present one, and none of them recorded a contraction of more than 1 per cent of GDP. The analysis of the projected evolution of the global demand components makes it possible to conclude that this recession comprises an unparalleled fall in exports and investment in comparison to the others. This evolution of investment and exports translates, on the one hand, the strong impact of the financial crisis and its interaction with the deterioration of economic activity and, on the other, the global nature of the current contraction and its impact on international trade flows. On the contrary, the projected evolution of consumption is very similar to that registered in previous instances and is supported by an acceleration of real disposable income in contrast with a fall or stagnation of this variable in previous recessionary episodes.*

## Chart 1

EVOLUTION OF GDP AND EXPENDITURE IN RECESSIONARY PERIODS

Average annual rate of change




**Note:** *t* corresponds to the year of the identified recessionary period with the highest contraction of GDP.

## **Box 2:** Recent consumer price developments and deflation risks in the euro area

*The last few months of 2008 and early 2009 witnessed a relatively rapid deceleration of consumer prices in the main advanced economies, including the euro area. This evolution resulted mainly from the significant decline in international oil prices and in several food prices. The aim of this box is to assess the current developments of consumer prices in the euro area and the probability of the occurrence of a deflationary situation.*

*The economic definition of deflation applies to a situation involving a persistent and generalised fall in price levels. In this context, price reductions in specific sectors of the economy and/or a temporary fall in the overall price level cannot be qualified as deflation. The economic costs of deflation are essentially contingent upon the shock causing the generalised fall in prices. Episodes of deflation at a time of economic growth have been observed in the past[1]. In such cases, deflation probably resulted from a positive supply shock characterised by an increase in productive capacity, productivity gains and/or an increase in international commercial flows. In the case of a negative shock on aggregate demand, as in the current situation, deflation can have very adverse effects, contributing towards an amplification of the economic recession[2].*

*One of the implications of the generalised fall in price levels in a context of lower demand is an increase in debt in real terms, contributing to increased default rates on financial commitments by households and firms and, consequently, to a deterioration of the balance sheets of financial institutions. The economy's financing conditions can, accordingly, become more restrictive which will, in turn, contribute to lower aggregate demand. This deflation-debt spiral can be magnified in a context of falling asset prices, to the extent that the value of the collateral for already existing loans is lower, increasing the likelihood of default by households and firms. A second effect, deriving from a deflationary situation is related with the existence of wage rigidity which, by preventing a reduction of nominal wages according to the conditions prevailing in the labour market, contributes to a further increase in unemployment after a demand shock. Finally, expectations of economic agents regarding future inflation also play an important role in this type of episode. The incorporation of a generalised and substantial fall in prices in the expectations of economic agents may lead to a re-assessment of agents' expectations regarding future demand and income and, consequently, of their consumption expenditure. This process may significantly compromise the effectiveness of economic policy measures to boost demand and counteract the fall in prices, particularly that of monetary policy.*

*Euro area inflation, measured by the year-on-year change of the Harmonised Index of Consumer Prices (HICP), declined from a historical maximum of 4 per cent in mid 2008 to 1.2 per cent in February 2009. The same period also witnessed a sharp deceleration in several food and energy prices, which had been rising since mid 2007. Excluding food and energy, the year-on-year change in the HICP has remained relatively stable, at close to 1.8 per cent (Chart 1), which suggests that the evolution of the total HICP was, to a large extent, conditioned by the behaviour of specific prices. It should be noted, however, that the existence of downward pressures on prices associated with the lagged effects of the sharp reduction in food and energy prices in the recent past should not be excluded.*

*For a more detailed assessment of the level of generalisation of price reductions, an analysis of the monthly distribution of the year-on-year rate of change of the prices of goods and services included in the HICP was performed, with the objective of providing a better characterisation of its evolution. On account of the relatively rapid reduction of inflation over the last months it is interesting to assess the evolution of the proportion of components of the HICP with negative year-on-year growth. According to the distribution of the year-on-year change of the prices of the HICP components, the proportion of components with a year-on-year change of less than zero increased significantly relatively to mid 2008 (Chart 2). It should, however, be noted that a substantial part of this increase is likely to be temporary, as it is related with a downward correction of several processed food and fuel prices, which grew by more than 5 per cent in first half 2008. Most of the remaining prices of goods and services included in the HICP continued to record positive year-on-year growth, with a slight increase in the proportion of the components with growth rates between 1 and 4 per cent. Reference should also be made to the fact that the weight of components*

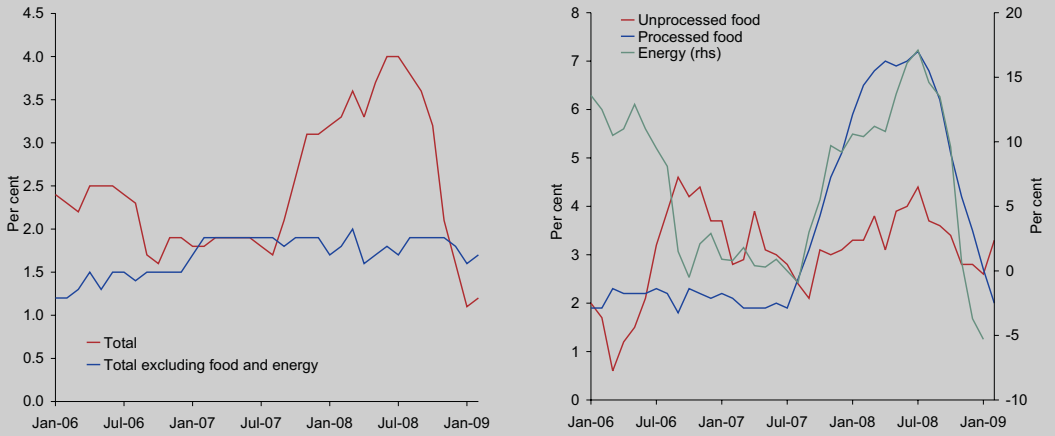
(1) *For example, at the beginning of the 20th century, prices fell at a moderate rate between 1925 and 1929 in most industrialised countries, while activity grew at a sustained pace.*

(2) *An example of this type of episode in the most recent period is that of Japan, where the fall in prices was accompanied by weak growth over a large part of the last decade.*

## Chart 1

HARMONISED INDEX OF CONSUMER PRICES

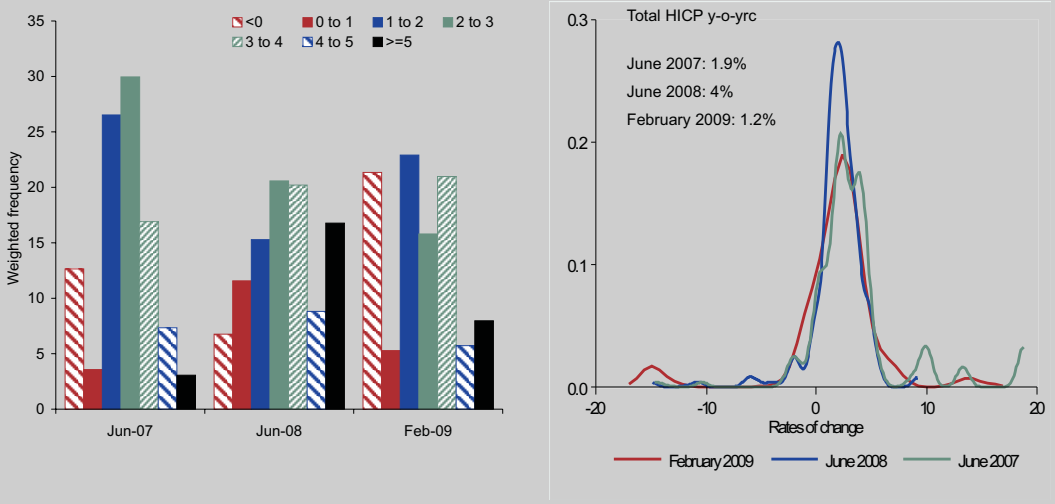
Year-on-year rate of change




**Source:** Eurostat.

## Chart 2

EMPIRICAL DISTRIBUTION OF YEAR-ON-YEAR RATES OF CHANGE OF TOTAL HICP COMPONENTS




**Sources:** Eurostat and Banco de Portugal calculations.

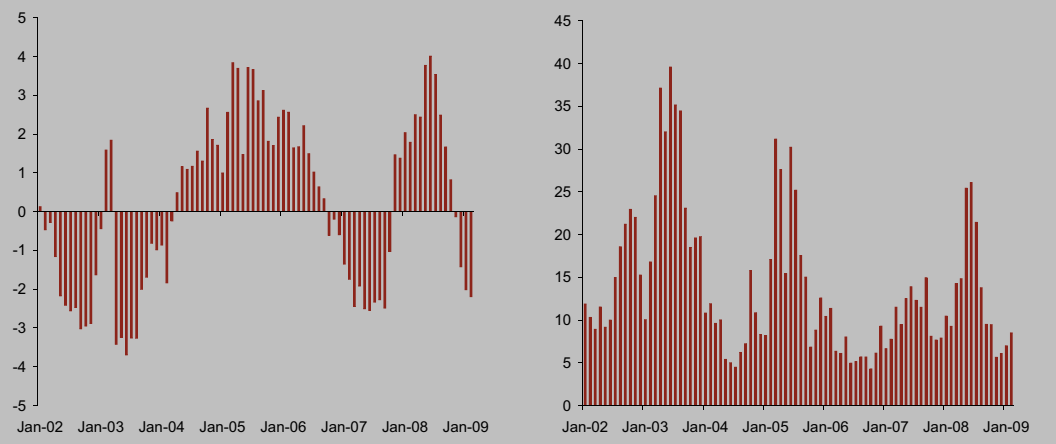
**Note:** Empirical distribution obtained by the use of non-parametric methods, notably a Gaussian kernel weighting the diverse components by their respective weight in the total basket.

*with year-on-year changes of more than 2 per cent was around 50 per cent in February 2009, in line with the average since the beginning of the period under analysis[3].*

(3) *The sectional analysis of the year-on-year change in the HICP used the most detailed breakdown available, which includes 93 components, for the January 2002 to February 2009 period.*

**Chart 3**

DISTRIBUTION OF YEAR-ON-YEAR RATES OF CHANGE OF TOTAL HICP COMPONENTS




**Sources:** Eurostat and Banco de Portugal calculations.

*With the objective of providing a more detailed characterisation of the distribution of consumer prices, measures of skewness and of the thickness of the distribution tails (kurtosis) were also calculated (Chart 3). As regards skewness[4], the distribution is currently negatively asymmetric, which means that there is a greater probability associated with year-on-year changes higher than the weighted average of the prices of the components, i.e. total HICP, rather than the opposite. The kurtosis measure[5] tells us that the distribution is characterised by having heavy tails, which increases the probability of the occurrence of extreme component changes.*

*Summing up, the analysis of the monthly distribution of the year-on-year rate of change of goods and services prices in the euro area suggests that the increase of the proportion of the components with negative changes is concentrated in the prices of specific goods and that there is a relative degree of heterogeneity in the behaviour of prices across HICP components. Thus, the current situation cannot be classified as deflationary, according to the definition provided at the beginning of this box.*

*Looking ahead, and according to European Central Bank (ECB) staff macroeconomic projections for the euro area released in March[6], the expected evolution of the international commodity prices and the deterioration of the economic outlook are likely to translate into a reduction of the euro area average annual HICP change from 3.3 per cent in 2008 to between 0.1 and 0.7 per cent in 2009. According to these projections, in 2010 inflation is expected to increase to between 0.6 and 1.4 per cent.*

*In the current context of a global economic and financial crisis, there remains a high level of uncertainty over both the magnitude and persistence of the current global recession and its effects on consumer prices. Against this background, there are some non-negligible downward risks to prices in the euro area. In such circumstances, the probability of the occurrence of a deflationary situation depends crucially upon the evolution of inflation expectations in the medium to longer term, which are, in turn, associated with the credibility of the monetary authority in ensuring medium-term price stability. In this context, it must be noted that, according to the most recent information, euro area medium and long-term inflation expectations remain anchored at around 2 per cent (Chart 4).*

(4) *The measure used is calculated as* $m_3 / m_2^{3/2}$, *where* $m_k$ *is the central moment of order k.*

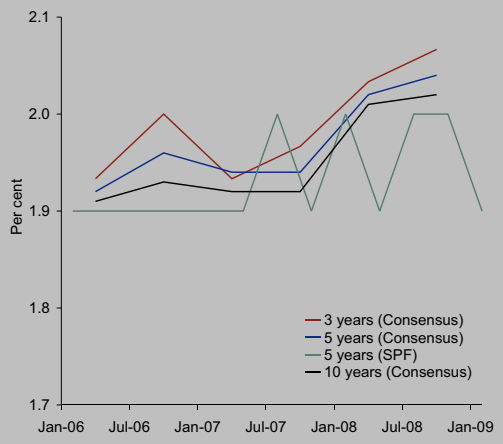
(5) *The measure used is calculated as* $\left(m_4 / m_2^2\right) - 3$, *where* $m_k$ *is the central moment of order k, which indicates an excessive kurtosis relative to the normal distribution. A positive value represents a distribution with a greater probability density concentrated at the tails than a normal distribution.*

(6) *See ECB Monthly Bulletin, March 2009.*

**Chart 4**

MEDIUM AND LONG TERM INFLATION EXPECTATIONS

Average forecast over different periods




**Sources:** ECB (Survey of Professional Forecasters-SPF) and Consensus Economics.

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*Groth, C. and P. Westaway (2009), "Deflation", Bank of England Quarterly Bulletin, Vol. 49, No. 1, March 2009.*

## Box 3: Fiscal prospects

*The January 2009 Stability Programme updated the medium term Portuguese fiscal policy guidelines, under the Stability and Growth Pact. Its date of presentation, a little later than usual, was conditioned by the Amendment to the State Budget for 2009, which was also published in mid January. The package of fiscal stimulus measures adopted to counter the economic crisis is one of the essential elements of both documents. According to data recently compiled in the framework of the excessive deficit procedure, the general government deficit in national accounts stood at 2.6 per cent of GDP in 2008, 0.4 p.p. higher than the official target. It should be pointed out, however, that the 2008 budgetary outcome was crucially influenced by a sizeable amount of temporary measures, which have reached 1.1 per cent of GDP.*

*The figures for the main budgetary indicators included in this Programme update are set out in Table 1. Reference should be made to the highly significant increase in the deficit for 2009, to 3.9 per cent of GDP, owing to the deterioration of the macroeconomic scenario and implementation of an important set of fiscal stimulus measures, whose effects on public accounts will, according to official estimates, total 1.2 per cent of GDP in 2009 (0.8 per cent resulting from the package approved in December and 0.4 per cent from the adoption of several measures since mid 2008). These measures are consistent with the European Economic Recovery Plan agreed in December 2008 at the European Council, which recommended a careful design of the fiscal stimulus based on the following guidelines: i) be timely, temporary, targeted and coordinated; ii) mix instruments on the revenue and expenditure sides; iii) be conducted within the Stability and Growth Pact. In the case of Portugal, the measures were focused on public investment, assistance to companies and exports, employment support and social protection, generally coming under the guidelines of the European Commission regarding the contents of anti-crisis budgetary packages. The Programme assumes a deficit reduction to 2.9 and 2.3 per cent of GDP in 2010 and 2011, as a result of some recovery of economic activity, the vanishing, essentially in 2010, of the effect on the deficit of the fiscal stimulus measures and additional gains from the implementation of reforms in previous years. The Programme forecasts an increase in the debt ratio up to 2010, then falling slightly in 2011 to 70 per cent.*

*The more detailed fiscal projections included in the Programme are set out in Table 2. Reference should be made to the significant increase in total expenditure as a ratio to GDP (3.6 p.p.) in 2009, essentially owing to the forecast evolution of social payments, subsidies and capital expenditure. The former reflects the growth of expenditure on pensions, the effect of the economic cycle on unemployment benefit outlays and the impact of several stimulus measures. The behaviour of subsidies and investment fundamentally derive from the anti-crisis measures. The other capital expenditure is affected by the assumed absence of temporary measures of the same kind of those implemented in 2008 (which, in national accounts, are recorded as disposals of non-produced non-financial assets).*

### Table 1

MAIN FISCAL INDICATORS IN THE STABILITY PROGRAMME UPDATE

As a percentage of GDP

| | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|
| Overall general government balance | -2.2 | -3.9 | -2.9 | -2.3 |
| Primary balance | 0.8 | -0.6 | 0.4 | 1.1 |
| Overall structural balance [(a)] | -2.2 | -3.3 | -2.1 | -1.7 |
| *Change* | 0.5 | -1.1 | 1.2 | 0.4 |
| Primary structural balance [(a)] | 0.9 | 0.0 | 1.2 | 1.7 |
| *Change* | 0.8 | -0.9 | 1.2 | 0.5 |
| Public debt | 65.9 | 69.7 | 70.5 | 70.0 |

**Source:** Stability Programme-January 2009.
**Note:** (a) Corresponds to the cyclically adjusted, as the Stability Programme update does not identify temporary measures.

**Table 2**

PROJECTIONS FOR THE GENERAL GOVERNMENT ACCOUNTS IN THE STABILITY PROGRAMME
As a percentage of GDP

| | | | | | *Memo:* |
|---|---|---|---|---|---|
| | 2008 [(a)] | 2009 | 2010 | 2011 | 2008 outturn [(a)] |
| Total revenue | 42.1 | 44.1 | 43.6 | 43.6 | 41.9 |
| Taxes on income and wealth | 9.9 | 9.8 | 9.6 | 9.7 | 9.9 |
| Taxes on production and imports | 14.8 | 14.8 | 15.0 | 15.0 | 14.6 |
| Social contributions | 11.4 | 11.4 | 11.5 | 11.4 | 11.6 |
| Other current revenue | 4.6 | 5.8 | 5.4 | 5.3 | 4.8 |
| Capital revenue | 1.4 | 2.4 | 2.1 | 2.1 | 0.9 |
| Total expenditure | 44.4 | 48.0 | 46.5 | 45.9 | 44.5 |
| Social payments | 19.5 | 20.8 | 20.8 | 20.7 | 19.9 |
| Compensation of employees | 11.4 | 11.1 | 10.9 | 10.7 | 11.5 |
| Intermediate consumption | 4.5 | 4.6 | 4.6 | 4.6 | 4.4 |
| Interest | 3.0 | 3.3 | 3.4 | 3.4 | 2.9 |
| Subsidies | 1.1 | 1.9 | 1.1 | 1.1 | 1.2 |
| Other current expenditure | 2.2 | 2.3 | 2.2 | 2.1 | 2.0 |
| Capital expenditure | 2.7 | 4.1 | 3.5 | 3.4 | 2.7 |
| Investment | 2.4 | 2.9 | 2.4 | 2.5 | 2.1 |
| Other capital expenditure | 0.4 | 1.2 | 1.1 | 1.0 | 0.6 |
| Overall balance | -2.2 | -3.9 | -2.9 | -2.3 | -2.6 |

**Source:** Stability Programme - January 2009.
**Note:** (a) There is a break in the series of the general government accounts included in the Stability Programme between 2008 and 2009, related to the recording of social contributions to the *Caixa Geral de Aposentações* subsystem. To eliminate this break an amount of €2292.9 million was deducted from social contributions and compensation of employees in 2008 (both to the outturn and the estimate included in the Programme) in this table, according to the information included in the Programme for correction purposes.

*The growth of total revenue as a percentage of GDP by 2 pp in a context of quasi-stabilisation of the fiscal burden, owing to the assumption made on the evolution of other current revenue and capital revenue, should also be mentioned. The decrease in the deficit projected for 2010 and 2011 is essentially based on the reduction of several expenditure headings, particularly subsidies and investment in 2010 and, to a lesser extent, compensation of employees in both years.*

*The European Commission's Interim Forecasts of last January presented a more unfavourable evolution of public accounts in Portugal, in 2009 and 2010[1], partly as a result of a sharper deterioration in the macroeconomic scenario (Table 3). Reference should be made to the fact that the most recent developments have made both estimates to the change in economic activity in 2009 outdated (see "Box 1 Interim update of macroeconomic projections for 2009"), the same happening with fiscal projections. Further, the assessment of the structural position of public finances in 2008 is negatively affected by the identification of temporary measures of a considerable magnitude. Also according to the Commission, the impact of reforms implemented in previous years, in particular the reform of public administration, could be less significant than projected in the Programme. Notwithstanding this less favourable prospect, the Commission in its assessment of the Stability Programme considers that the fiscal stimulus measures approved in 2008 are in line with the European Economic Recovery Plan and adequately respond to the fall in economic activity. It recommends, however, that the increase in the size of the deficit in 2009 should not exceed the forecast and that the consolidation planned to start in 2010 should be pursued with determination, increasing the pace of the adjustment if cyclical conditions are more favourable than foreseen. The Ecofin Council endorsed these guidelines in its opinion on the Programme.*

*The worsening of the structural fiscal imbalance in 2008, only partly explained by the effects of the anti-crisis measures, and the prospect of an increase in the general government deficit in 2009, to a much higher figure than the*

(1) *In spite of projecting deficits of more than 3 per cent of GDP, the European Commission, in February 2009, decided to initiate excessive deficit procedures only in the case of Member States whose deficits exceeded the reference value in 2008: i.e. Spain, France, Greece, Ireland, Latvia and Malta.*

**Table 3**

COMPARISON BETWEEN THE STABILITY PROGRAMME UPDATE AND EUROPEAN COMMISSION PROJECTIONS
As a percentage of GDP

| | 2008 | 2009 | 2010 | 2011 |
|---|---|---|---|---|
| **Overall general government balance** | | | | |
| Update of the Stability Programme | -2.2 | -3.9 | -2.9 | -2.3 |
| European Commission | -2.2 | -4.6 | -4.4 | - |
| **Temporary Measures** | | | | |
| Update of the Stability Programme | 0.0 | 0.0 | 0.0 | 0.0 |
| European Commission | 0.7 | 0.1 | 0.0 | - |
| **Structural balance** | | | | |
| Update of the Stability programme | -2.2 | -3.3 | -2.1 | -1.7 |
| European Commission | -3.0 | -3.9 | -3.3 | - |
| **Real GDP** (rate of change) | | | | |
| Update of the Stability programme | 0.3 | -0.8 | 0.5 | 1.3 |
| European Commission | 0.2 | -1.6 | -0.2 | - |
| *Memo:* Banco de Portugal [(a)] | 0.0 | -3.5 | - | - |

**Sources:** Stability Programme - January 2009, European Commission and Banco de Portugal.
**Note:** (a) See "Box 1 *Interim update of macroeconomic projections for 2009*" in this Bulletin.

*Stability Pact reference value, require an assessment of the budgetary developments necessary to ensure the sustainability of public finances. This is also particularly relevant to the financing conditions that the Portuguese economy will face. Several questions are particularly important in such a context. Firstly, the quantification of the impact of transitory factors, i.e. having a permanent effect on the levels but only temporary on the rates of change, on the evolution of revenue and expenditure in 2006 and 2007. Secondly, the confirmation of the reversible nature of the fiscal stimulus measures approved and implemented since mid 2008. Finally, an assessment of the additional effects which can be expected from the reforms implemented over the last years, with a particular emphasis on the reform of public administration.*

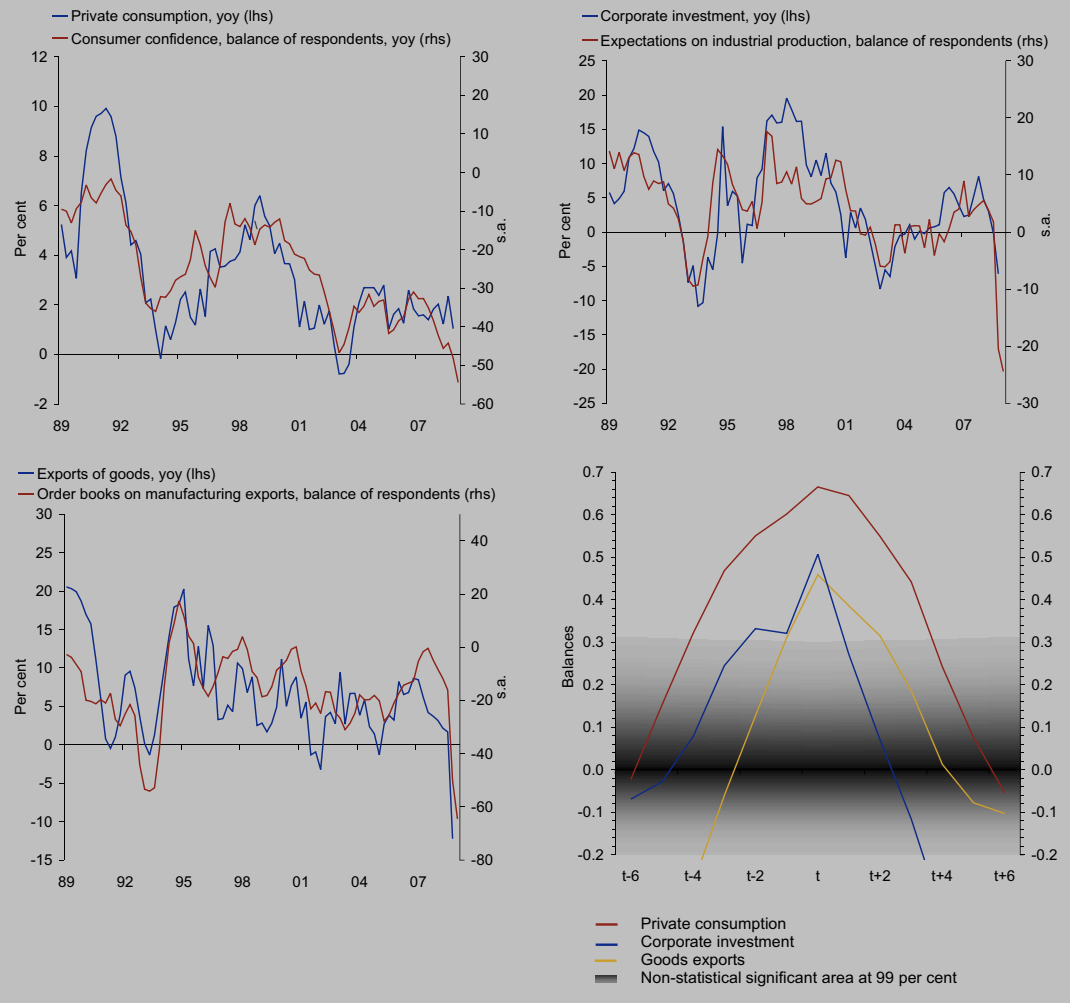
## Box 4: The recent evolution of qualitative indicators

*Qualitative indicators play an important role in the production of estimates and short term forecasts on the main macroeconomic variables. Their generalised use is associated with the fact that such indicators tend to reflect current and future economic conditions, and are usually produced at a much earlier stage than most quantitative indicators.[1] The relevance of this information is particularly important at the current stage of the economic cycle, characterised by a sharp fall in economic activity that started in the third quarter of 2008.*

*The importance of this type of indicator is illustrated in Chart 1, which sets out the relationship between the evolution in real terms of several expenditure components – private consumption, corporate investment and exports of*

### Chart 1

QUALITATIVE INDICATORS vs EXPENDITURE COMPONENTS
Quarterly data: 1989 - 2008




**Note:** The correlation structure between the expenditure component in *(t+i)* and respective qualitative indicator in *(t)*.

**Sources:** *INE* and Banco de Portugal.
**Note:** Variables measured by removal of trend of values presented in chart [HP filter ($\lambda$=1600)].

(1) *The monthly opinion surveys published by the European Commission, using base information provided by national statistics institutes, refer to various sectors in the European Union (EU) countries and are supplied on the last day of the respective month.*

*goods - and a selected series of qualitative indicators – consumer confidence, production forecasts and orders for exports.*

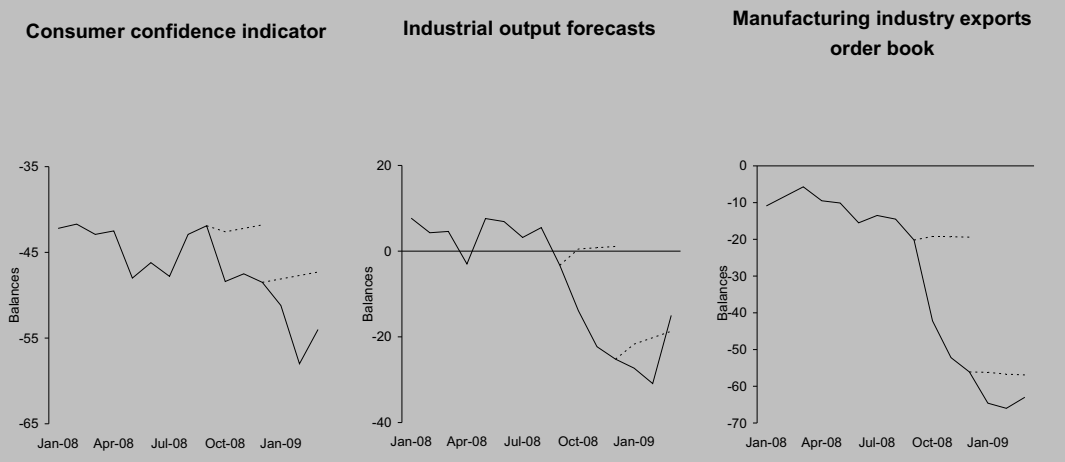
*Chart 1 also sets out information on the correlation structure, calculated after the removal of the trend of the series in order to interpret their statistical significance. The results show a strong association between the evolution of the variables, in the sense that they all depend upon a common set of determinants. In this illustrative analysis, the highest correlation coefficients occur contemporaneously between the evolution of the qualitative indicators and the corresponding quantitative variables. This fact highlights the importance of this type of indicator, to the extent that they can contribute to measure the contemporaneous evolution of the main macroeconomic variables, information on which is typically provided with a certain delay. Formal econometric results also show that the qualitative indicators also help to explain economic evolution in the following quarters.*[2]

*Chart 2 shows the most recent monthly evolution of such indicators. Notwithstanding a certain degree of recovery in March, the indicators recorded minimum historical levels, whose relevance should, however, be interpreted with caution owing to the eventual non stationarity of the series in the sample period, particularly in the case of the consumer confidence indicator. It should also be noted that several of the decreases recorded over the last months - particularly in October - were the highest recorded over the entire period for which these indicators are available. Finally the extraordinary character of the behaviour of these qualitative indicators is also stressed when their evolution is compared with the projections of univariate models in which the forecast is exclusively based on the extrapolation of historical regularities displayed in the past by each of the series.*

*The economic evolution in the fourth quarter has confirmed the initial indications provided by these indicators, with a particularly sharp fall in exports and investment having been recorded. In the case of private consumption, the significant deceleration suggested by the evolution of consumer confidence (Chart 1) has still not been confirmed. In the fourth quarter of 2008, its evolution reflected the fact that there has been only a slight deceleration in the con-*

## Chart 2

RECENT EVOLUTION
Monthly data: January 2008 - March 2009




**Sources:** *INE* and Banco de Portugal.
**Note:** The dotted lines refer to 3 months projections which would have been realised in September and December using univariate ARMA models of the first order.

(2) *In addition to the results obtained on consumption though this illustrative analysis, this conclusion has also been found in several recent studies related with short term forecasts for investments and exports. A study of the relationship between qualitative indicators and business investment using several alternative econometric techniques is provided in J. R. Maria and S. Serra (2008), "Forecasting investment: A fishing contest using survey data", Banco de Portugal, Working Paper 18. Several bridge-models for exports, based on qualitative indicators, are given in F. Cardoso and C. Duarte (2006), "The use of qualitative information for export forecasts", Banco de Portugal ,Economic Bulletin-Winter 2006.*

*sumption of durables, which are traditionally more sensitive to the economic cycle. This behaviour is explained by the strong increase of sales of motor vehicles at the end of 2008, deriving from the anticipation of purchases, owing to the announcement of fiscal changes for 2009.*

*In such a context, the current prospects for the Portuguese economy are obviously affected by this particularly marked evolution of qualitative indicators, which suggest the maintenance of weak economic performance, as one of the underlying elements behind the downward revision of growth prospects for 2009, published in this Economic Bulletin (see "Box 1 Interim update of macroeconomic projections for 2009").*

## ARTICLES

# THE MONETARY TRANSMISSION MECHANISM FOR A SMALL OPEN ECONOMY IN A MONETARY UNION*[1]

*Bernardino Adão***

## 1. INTRODUCTION

This paper develops a stylized model of a small open economy integrated in a monetary union. As the small country trades with countries inside and outside of the monetary union, there are three blocks in the model. The small open country, the block represented by all the remaining countries that belong to the monetary union, and the one that includes all countries that do not belong to the monetary union.

As in any monetary dynamic general equilibrium model, in our model too, the behavior of the equilibrium variables is described by a system of difference equations, with as many equations as endogenous variables, and some initial and terminal conditions. In general these additional restrictions to the system are not enough to determine a finite number of solutions.[2] There is, however, a way to obtain a unique locally-bounded equilibrium, that has the property that in its neighbourhood there is no other equilibrium.[3] The procedure is relatively simple, the central bank must follow an interest rate rule that obeys the Taylor principle.[4]

The Taylor principle says that the interest rate rule should be such that the response of the interest rate to a unitary change in the appropriate inflation must be larger than unity. The interest rate relevant for the small country is the one set by the central bank of the monetary union. The central bank of the monetary union follows an interest rate rule that is a function of the union's inflation and output. If the inflation rate in all countries of the union, except the one of the small country, was taken as exogenous the Taylor principle would be violated. The reason is easy to understand. If those union aggregate variables were taken as exogenous, a change in the small country's inflation would imply a negligible change in the interest rate, since the small country contributes little to the union's inflation. Thus, to guarantee local determinacy the variables associated with the countries outside the union can be assumed exogenous, but not the variables associated with the other countries in the union.

To guarantee that the model possesses the local uniqueness property we adopted a straightforward ad-hoc specification of two blocks of equations, each containing three equations, that specify the behavior of some aggregate variables inside and outside the union. One block contains three reduced

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(1) There is a working paper version of this article, Adão (2009), that has the technical detailed that this version lacks.

(2) J. Cochrane (2007) contains a critical survey of this issue.

(3) Besides the local unique equilibrium there are infinitely many explosive equilibria, that cannot be ruled out by transversality conditions.

(4) The Taylor principle is described in Taylor (1999). Unlike in less standard models, the Taylor principle is a necessary and sufficient condition to have local determinacy in our model.

form equations, an IS curve, a Phillips curve and an interest rate rule that describe the behavior of output, inflation and the interest rate for the countries outside the union. These three variables are determined entirely inside this block. The other block of equations contains three other similar reduced form equations, regarding the behavior of inflation, output and the interest rate in the union. This block of equations contains three equations and five variables. These variables are: the inflation rate and the output in the small open economy and in the remaining countries of the union, and the interest rate in the monetary union. The arguments in this block of equations associated with the small open economy are scaled down in accordance with the dimension of the small country in the union. These five variables interact with the other variables in the model, and are determined together with them.

Adolfson *et al.* (2007) developed a model of a small open economy with two blocks only: the small open economy and all the remaining countries. In that context, the Taylor principle is trivially satisfied if foreign inflation, foreign output and the foreign interest rate are taken as exogenously given. This paper can be seen as an extension to their paper, as it considers that the small open economy is integrated in a monetary union. Following their work and the literature, we consider various nominal and real frictions, such as sticky wages, sticky prices, variable capital utilization, capital adjustment costs, habit persistence and volume premium on the foreign interest rate.

Adolfson *et al.* (2007) calibrated and estimated their model using the euro area data. This paper presents a model designed to assess the transmission of monetary policy shocks in a small country integrated in a monetary union. As Portugal can be thought as such an economy, we used the Portuguese data to calibrate several of the parameters of our model. We assume that after the monetary shock, inflation, output and the interest rate outside of the union are unchanged and that inflation, output and the interest rate inside the union change according to the referred three equation block, containing an IS curve, a Phillips curve and an interest rate rule. More specifically, in the quantitative exercise performed we consider parameters for the IS curve, Phillips curve and the interest rate rule that, together with the remaining calibrated equations, generate responses of these variables to the typical euro area monetary shock that mimic the paths of the responses of these variables in the general equilibrium model of Adolfson *et al.* (2007) to the same shock.

Some of the model parameters are calibrated to the steady state values of the Portuguese economy variables, for others we do not have information and they correspond to the estimates obtained (or values assumed) by Adolfson *et al.* (2007) for the euro area. The shape and sign of the impulse responses of the main macro variables to an unanticipated temporary decrease in the nominal interest rate are well in line with the literature. When compared with the euro area, output, employment, investment and real wage in Portugal increase more and inflation adjusts quicker and reacts slightly more on impact. On the other hand, consumption in Portugal has a behavior almost identical to the one of the euro area. In general, economies where inflation adjusts faster in response to a given monetary policy shock, have smaller responses of the real variables to that shock. That is not the case here, since Portugal was assumed to have a higher net foreign debt level and a higher degree of openness than the EMU.

The trade with the two areas responds differently. Due to the change in the exchange rate, the trade with countries outside the euro area changes substantially more than the trade with countries inside the euro area. Both exports and imports to and from the euro area increase, with exports changing less. Imports from outside the euro area decrease initially and exports to outside the euro area increase.

The paper is organized as follows. In Section 2 the model is explained. Section 3 studies the effects of a monetary shock on the Portuguese economy. Section 4 provides some conclusions. The appendix describes how the model is solved and calibrated.

## 2. MODEL

The model has 3 economic blocks: the small open country, the other countries inside the monetary union and the countries outside the monetary union. We are concerned with the small open economy and assume the developments in the small open economy have small effects over the remaining economic areas. As such, in the model the small open economy is described in detail, but the other economic areas are not.

### 2.1. Households

There is a representative household in the small open economy, whose preferences over stochastic sequences of consumption $C_t$ real money $\frac{M_t}{P_t}$, and labor $L_t$ are represented by the utility function:

$$E_0 \sum_{t=0}^{\infty} \beta^t \left\{ \log\left(C_t - bC_{t-1}\right) + \nu \log\left\{\frac{M_t}{P_t}\right\} - \xi \frac{L_t^{1+\psi}}{1+\psi} \right\} \tag{1}$$

where $E_0$ is the conditional expectation operator, $\beta \in (0,1)$ is the discount factor, and $b$ is a parameter that controls the habit persistence. This utility function is similar to the one used by Christiano *et al.* (2005) and Adolfson *et al.* (2007). The aggregate consumption is a bundle given by a CES index of domestically produced and imported foreign goods:

$$C_t = \left[ \left(1 - \varpi_{o,c} - \varpi_{u,c}\right)^{\frac{1}{\eta_c}} + \left(C_t^h\right)^{\frac{\eta_c - 1}{\eta_c}} + \left(\varpi_{o,c}\right)^{\frac{1}{\eta_c}} \left(C_t^o\right)^{\frac{\eta_c - 1}{\eta_c}} + \left(\varpi_{u,c}\right)^{\frac{1}{\eta_c}} \left(C_t^u\right)^{\frac{\eta_c - 1}{\eta_c}} \right]^{\frac{\eta_c}{\eta_c - 1}}, \tag{2}$$

where $C_t^h$ denotes consumption of the home good, $C_t^o$ denotes consumption of the good produced outside of the union, $C_t^u$ denotes consumption of the good produced inside of the union, $\varpi_{o,c}$ is the share of imported consumption from outside of the union in total consumption, $\varpi_{u,c}$ is the share of imported consumption from inside of the union in total consumption and $\eta_c$ is the elasticity of substitution between the three consumption goods. Thus, consumers derive utility from the consumption of domestically produced goods as well as from the consumption of goods produced outside and inside of the

union. The price of aggregate consumption (defined as the minimum expenditure required to buy one unit of $C_t$) is given by:

$$P_t^c = \left[ (1-\varpi_{o,c}-\varpi_{u,c})(P_t)^{1-\eta_c} + \varpi_{o,c}\left(P_t^o\right)^{1-\eta_c} + \varpi_{u,c}\left(P_t^u\right)^{1-\eta_c} \right]^{\frac{1}{1-\eta_c}},$$

where $P_t$ is the price of the domestically produced good, $P_t^o$ is the price of the outside of the union imported good and $P_t^u$ is the price of the inside of the union imported good. All these prices are in units of the domestic currency. Consumers choose quantities of each of these three goods that for a given expenditure maximize aggregate consumption. The individual demands for each good that maximize (2) subject to $P_t C_t^h + P_t^o C_t^o + P_t^u C_t^u = P_t^c C_t$, are:

$$C_t^h = (1-\varpi_{o,c}-\varpi_{u,c})\left(\frac{P_t}{P_t^c}\right)^{-\eta_c} C_t,$$

$$C_t^o = \varpi_{o,c}\left(\frac{P_t^o}{P_t^c}\right)^{-\eta_c} C_t,$$

and

$$C_t^u = \varpi_{u,c}\left(\frac{P_t^u}{P_t^c}\right)^{-\eta_c} C_t.$$

Also, the aggregate investment is a bundle given by a CES index of domestically produced and imported foreign goods:

$$I_t = \left[ (1-\varpi_{o,i}-\varpi_{u,i})^{\frac{1}{\eta_i}}\left(I_t^h\right)^{\frac{\eta_i-1}{\eta_i}} + (\varpi_{o,i})^{\frac{1}{\eta_i}}\left(I_t^o\right)^{\frac{\eta_i-1}{\eta_i}} + (\varpi_{u,i})^{\frac{1}{\eta_i}}\left(I_t^u\right)^{\frac{\eta_i-1}{\eta_i}} \right]^{\frac{\eta_i}{\eta_i-1}},$$

where $I_t^h$ denotes the home good investment, $I_t^o$ denotes outside of the union investment good, $I_t^u$ denotes inside of the union investment good, $\varpi_{o,i}$ is the share of outside of the union investment good in total investment, $\varpi_{u,i}$ is the share of inside of the union investment good in total investment and $\eta_i$ is the elasticity of substitution between the three investment goods. The price of aggregate investment is equal to:

$$P_t^i = \left[ (1-\varpi_{o,i}-\varpi_{u,i})(P_t)^{1-\eta_i} + \varpi_{o,i}\left(P_t^o\right)^{1-\eta_i} + \varpi_{u,i}\left(P_t^u\right)^{1-\eta_i} \right]^{\frac{1}{1-\eta_i}}.$$

The individual demands for each investment good are

$$I_t^h = (1-\varpi_{o,i}-\varpi_{u,i})\left(\frac{P_t}{P_t^i}\right)^{-\eta_i} I_t,$$

$$I_t^o = \varpi_{o,i}\left(\frac{P_t^o}{P_t^i}\right)^{-\eta_i} I_t,$$

and

$$I_t^u = \varpi_{u,i}\left(\frac{P_t^u}{P_t^i}\right)^{-\eta_i} I_t.$$

Each household is a monopoly supplier of its own labor and can set its wage according to the mechanism described in Calvo (1983), to which we will come back later. In order to guarantee that this friction does not cause households to become heterogeneous we assume complete domestic financial markets against the outcomes of this friction. As a result all households have the same budget constraint:

$$\begin{aligned} &P_t^c C_t + P_t^i I_t + M_t + D_t + S_t B_t^o + B_t^u = P_t w_t L_t + P_t(r_t u_t - a(u_t))K_{t-1} + M_{t-1} + D_{t-1}R_{t-1} \\ &+ S_t R_{t-1}^o \Phi_o\left(\frac{B_{t-1}}{z_{t-1}}\right) B_{t-1}^o + R_{t-1}^u \Phi_u\left(\frac{B_{t-1}}{z_{t-1}}\right) B_{t-1}^u + T_t + F_t. \end{aligned} \tag{3}$$

The terms on the left hand side of the equality show how the households use their income and the terms on the right hand side the various sources of that income. Here, $M_t$ are money holdings, $D_t$ are deposits that pay nominal gross interest rate $R_t$, $B_t^o$ are holdings of foreign bonds denominated in foreign currency that pay a nominal gross interest rate $R_t^o \Phi_o$, $S_t$ is the nominal exchange rate, $B_t^u$ are holdings of foreign bonds denominated in domestic currency that pay a nominal gross interest rate $R_t^u \Phi_u$ and $w_t$ is the real wage. The term $P_t r_t u_t$ represents the household's earnings from supplying capital services. The function $a(u_t)K_{t-1}$ denotes the cost of setting the utilization rate of capital to $u_t$. We assume $a(u_t)$ is increasing and convex. These assumptions capture the idea that the more intensely the stock of capital is utilized, the higher are maintenance costs. We assume that $u_t = 1$ in steady state and that $a(1) = 0, a' > 0$, and $a'' > 0$. The expression $R_{t-1}^o \Phi_u\left(\frac{B_{t-1}}{z_{t-1}}\right)$ is the level-adjusted gross interest rate on foreign bonds denominated in foreign currency, $B_t \equiv \frac{S_t B_t^o + B_t^u}{P_t}$. The term $z_t$ is a unit root technology shock to be described later. The function $\Phi_i\left(\frac{B_t}{z_t}\right)$ for $i = o, u,$ is assumed to be strictly decreasing in $B_t$ and to satisfy $\Phi_i\left(\overline{B}\right) = 1$, where $\overline{B}$ is the steady state value of $\frac{B_t}{z_t}$. This function depends on the real holdings of the aggregate foreign assets. This means that domestic households take the functions $\Phi_i(.)$ as given when deciding on the individual optimal holdings of the foreign bonds.

Functions $\Phi_i$try to capture imperfect integration in the international financial markets. If the domestic economy as a whole is borrowing above its steady state, domestic households are charged a premium on the foreign interest rates, if borrowing below its steady state, domestic households pay less. The introduction of this premium is needed in order to ensure a well-defined steady-state in the model (see Schmitt-Grohë and Uribe, 2003, for further details). Without this premium, the stock of bonds and consumption would not be stationary. The remaining variables are $T_t$ which is a lump-sum transfer, and $F_t$ that stands for the profits of the firms in the economy.

Investment $I_t$ induces a law of motion for capital:

$$K_t = (1-\delta)K_{t-1} + \left[1 - V\left[\frac{I_t}{I_{t-1}}\right]\right] I_t, \tag{4}$$

where $\delta$ is the depreciation rate and $V$ is an adjustment cost function such that $V\ [\Lambda_i] = V'[\Lambda_i] = 0$, and $V'' > 0$, where $\Lambda_i$ is the growth rate of investment along the balanced growth path. The household chooses $\left\{C_t, L_t, M_t, D_t, B_t^o, B_t^u, u_t, K_t, I_t\right\}$ to maximize expected lifetime utility (1) subject to constraints (3), (4) and initial values for $M_0, D_0, B_0^o$, and $B_0^u$.

The labor used by the intermediate good producers is supplied by a representative competitive firm that hires labor to each family $j$.This firm aggregates the differentiated labor of households according to the production function,

$$L_t^d = \left[\int_0^1 L_{jt}^{\frac{\nu^w - 1}{\nu^w}} dj\right]^{\frac{\nu^w}{\nu^w - 1}}$$

where $\nu^w$ is the elasticity of substitution between the different types of labor and $L_t^d$ is the aggregate labor demand. This firm maximizes profits taking as given the labor wages $w_{jt}$ and aggregate labor wage $w_t$. Its maximization problem is:

$$\max_{L_{jt}} w_t L_t^d - \int_0^1 w_{jt} L_{jt} dj.$$

The demand for the labor of household $j$ is given by

$$L_{jt} = \left[\frac{w_{jt}}{w_t}\right]^{-\nu^w} L_t^d, \forall j.$$

As referred above households set their wages according to a Calvo's setting, Calvo (1983). In each period, a fraction $1-\theta^w$ of households can change their wages. All the other households can only partially index their wages to past inflation and past productivity growth. Indexation to past inflation is controlled by the parameter $\chi^w$ and indexation to past productivity growth by the parameter $\chi^p$. Both assume values in the interval [0,1]. Thus, a household that could not change her wage for *s* periods has real wage $\times_{\tau=1}^{s} \frac{\Pi^{1-\chi^w} \Pi_{t+\tau-1}^{\chi^w} \bar{z}^{1-\chi^p} \bar{z}_{t+\tau-1}^{\chi^p}}{\Pi_{t+\tau}} w_{jt}$, where $\Pi_t$ is gross inflation of the domestic good in period $t$, $\Pi$ is the steady state domestic inflation, $\bar{z}_t$ is gross productivity growth in period $t$ and $\bar{z}$ is the steady state productivity growth.

When setting the wage the relevant part of the objective function for the household is,

$$\max_{w_{jt}} E_t \sum_{s=0}^{\infty} \left(\beta\theta^w\right)^s \left[-\xi \frac{L_{jt+s}^{1+\psi}}{1+\psi} + \lambda_{jt+s} \times_{\tau=1}^{s} \frac{\Pi^{1-\chi^w} \Pi_{t+\tau-1}^{\chi^w} \bar{z}^{1-\chi^p} \bar{z}_{t+\tau-1}^{\chi^p}}{\Pi_{t+\tau}} w_{jt} L_{jt+s}\right]$$

subject to

$$L_{jt+s} = \left( \frac{\times_{\tau=1}^{s} \frac{\Pi^{1-\chi^w} \Pi_{t+\tau-1}^{\chi^w} \bar{z}^{1-\chi^p} \bar{z}_{t+\tau-1}^{\chi^p}}{\Pi_{t+\tau}} w_{jt}}{w_{t+s}} \right)^{-\nu^w} L_{t+s}^{d}, \forall j.$$

where $\lambda_{jt+s}$ is the marginal utility of consumption of the domestic good in period $t+s$ of household $j$.

In each period a fraction $1-\theta^w$ of the households set $w_t^*$ as their wage while the remaining fraction index their wage by past inflation. Thus the real wage evolves according to:

$$w_t^{1-\nu^w} = \theta^w \left( \frac{\Pi^{1-\chi^w} \Pi_{t-1}^{\chi^w} \bar{z}^{1-\chi^p} \bar{z}_{t-1}^{\chi^p}}{\Pi_t} w_{t-1} \right)^{1-\nu^w} + \left(1-\theta^w\right)\left(w_t^*\right)^{1-\nu^w}.$$

## 2.2. Final good producer

There is one domestic final good that is produced with intermediate goods:

$$Y_t = \left( \int_0^1 y_{j,t}^{\frac{\nu^d - 1}{\nu^d}} dj \right)^{\frac{\nu^d}{\nu^d - 1}}$$

where $\nu^d$ is the markup in the domestic goods market. The input demand functions of the final producer are:

$$y_{j,t} = \left( \frac{p_{j,t}}{P_t} \right)^{-\nu^d} Y_t,$$

where $p_{j,t}$ is the price of intermediate product $j$ and $P_t$ is the price of the final home good. $P_t$ is defined as the minimum expenditure in intermediate inputs to produce one unit of final output and is given by

$$P_t = \left( \int_0^1 p_{j,t}^{1-\nu^d} dj \right)^{\frac{1}{1-\nu^d}}.$$

## 2.3. Intermediate producers

There is a continuum of intermediate good producers. Each one has the following technology:

$$y_{j,t} = A_t k_{j,t-1}^{\alpha} l_{j,t}^{1-\alpha} - \rho z_t,$$

where $A_t$ is a total productivity technological shock that follows an autoregressive process:

$$A_t = A_{t-1} \exp\left(\Lambda_A + z_{A,t}\right), \text{where } z_{A,t} = \sigma_A \varepsilon_{A,t}, \varepsilon_{A,t} \sim N(0,1)$$

and

$$z_t = A_t^{\frac{1}{1-\alpha}}.$$

The parameter $\rho$ corresponds to the fixed cost of production that guarantees that economic profits are zero in the steady state. We have:

$$z_t = z_{t-1}\exp\left(\Lambda_z + z_{z,t}\right), \text{where } z_{z,t} = \frac{z_{A,t}}{1-\alpha} \text{ and } \Lambda_z = \frac{\Lambda_A}{1-\alpha}.$$

Intermediate producers solve two problems. First, given $w_t$ and $r_t$, they rent labor and capital in perfect competitive markets in order to minimize real expenditure.

The second problem intermediate producers must solve is to choose the price that maximizes expected discounted real profits. Firms set prices according to a Calvo set-up too. In each period, a fraction $1-\theta$ of firms can choose optimally their prices. The price chosen in period $t$ is denoted by $p_t$. We suppressed the firm's indexation because all firms that have the opportunity to choose the price set the same price. The remaining $\theta$ firms cannot choose the price. In period $t$ these firms update their price to $p_{j,t-1}\Pi^{1-\chi^d}\Pi_{t-1}^{\chi^d}$, where $p_{j,t-1}$ is the price firm $j$ was charging in period $t-1$, $\Pi_{t-1}$ is past inflation of the domestic good, $\Pi$ is the steady state domestic inflation and $\chi^d$ is an indexation parameter. The indexation parameter, $\chi^d$ assumes values in the interval $[0,1]$. Each firm uses the stochastic discount factor $\beta\theta\lambda_t$ to compute the value of its profits.

When a firm can choose its price at date $t$ its problem is:

$$\max_{p_t} E_t \sum_{s=0}^{\infty} (\beta\theta)^s \lambda_{t+s} \left\{ \left( \frac{x_{\tau=1}^{s}\Pi^{1-\chi^d}\Pi_{t+\tau-1}^{\chi^d} p_t}{P_{t+s}} - mc_{t+s}^{d} \right) y_{j,t+s} \right\},$$

where $mc_t^d$ denotes the marginal cost, subject to

$$y_{j,t+s} = \left( \frac{x_{\tau=1}^{s}\Pi^{1-\chi^d}\Pi_{t+\tau-1}^{\chi^d} p_t}{P_{t+s}} \right)^{-\nu^d} Y_{t+s}.$$

## 2.4. Central bank

The central bank sets the nominal interest rate according to the Taylor rule:

$$\frac{R_t}{R} = \left[\frac{R_{t-1}}{R}\right]^{\gamma_R} \left[ \left( \left(\frac{\Pi_t^u}{\Pi^u}\right)^{1-\varsigma} \left(\frac{\Pi_t}{\Pi}\right)^{\varsigma} \right)^{\gamma_\Pi} \left( \left(\frac{Y_t^u}{Y^u}\right)^{1-\varsigma} \left(\frac{Y_t}{Y}\right)^{\varsigma} \right)^{\gamma_Y} \right]^{(1-\gamma_R)} \exp(m_t)$$

where $m_t$ is a random shock to the monetary policy that follows $m_t = \sigma_m \varepsilon_{m,t}$, where $\varepsilon_{m,t} \sim N(0,1)$. Variable $\Pi^u$ is the target level for the inflation in the union, which is equal to the steady state inflation in the union, $\Pi_t^u$ is the inflation in period $t$ in the union without including the small open country, $Y^u$ is the steady-state output in the union, $Y_t^u$ is the output in period $t$ in the union without including the small open country.

The parameter $\varsigma$ is the weight of the small open country in the union, while $\gamma_R, \gamma_\Pi$, and $\gamma_\Pi$ are the usual parameters of the Taylor rule.

## 2.5. Government

The budget constraint of the government in the small open economy is:

$$P_t G_t + T_t = M_t - M_{t-1},$$

where $G_t$ is government consumption, which includes only domestic produced goods and we take as exogenous. The other variables are taxes, $T_t$ and money supply, $M_t$.

## 2.6. Evolution of net foreign assets

The evolution of net foreign assets at the aggregate level satisfies:

$$S_t B_t^o + B_t^u = S_t R_{t-1}^o \Phi_o\left(\frac{B_{t-1}}{z_{t-1}}\right) B_{t-1}^o + R_{t-1}^u \Phi_u\left(\frac{B_{t-1}}{z_{t-1}}\right) B_{t-1}^u + TB_t.$$

The trade balance is $TB_t = P_t X_t^u + P_t X_t^o - P_t^u M_t^u - P_t^o M_t^o$.

The total imports from the union are $M_t^u = \varpi_{u,c}\left(\frac{P_t^u}{P_t^c}\right)^{-\eta_c} C_t + \varpi_{u,i}\left(\frac{P_t^u}{P_t^i}\right)^{\eta_i} I_t$ and the total imports from outside of the union are $M_t^o = \varpi_{o,c}\left(\frac{P_t^o}{P_t^c}\right)^{-\eta_c} C_t + \varpi_{o,i}\left(\frac{P_t^o}{P_t^i}\right)^{\eta_i} I_t$. We assume that the demands from the other countries for the product produced domestically have the same functional form as the demands by the domestic consumers. Thus, the total exports to the union are $X_t^u = \varpi_{u,u}\left(\frac{P_t}{P_t^u}\right)^{-\eta^{u,x}} Y_t^u$ and the total exports to outside of the union are $X_t^o = \varpi_{o,o}\left(\frac{P_t}{P_t^o}\right)^{-\eta^{o,x}} Y_t^o$, where $\varpi_{u,u}$ and $\varpi_{o,o}$ are shares, and $\eta^{u,x}$ and $\eta^{o,x}$ are elasticity parameters. The variables $Y_t^u$ and $Y_t^o$ denote the output of the other countries in the union and the output of the countries outside of the union, respectively.

## 2.7. Relative prices

When deciding their consumption and investment baskets agents in the small open economy use the following relative prices: $\xi_t^{c,d} \equiv \frac{P_t^c}{P_t}$ and $\xi_t^{i,d} \equiv \frac{P_t^i}{P_t}$. To decide imports consumers use two relative prices: the relative price between imports from the union and the domestically produced good $\xi_t^{u,d} \equiv \frac{P_t^u}{P_t}$ and the relative price between imports from outside of the union and the domestically produced good $\xi_t^{o,d} \equiv \frac{P_t^o}{P_t}$.

From the definitions of prices we have:

$$\left(\xi_t^{c,d}\right)^{1-\eta_c} = (1-\varpi_{o,c}-\varpi_{u,c}) + \varpi_{o,c}\left(\xi_t^{o,d}\right)^{1-\eta_c} + \varpi_{u,c}\left(\xi_t^{u,d}\right)^{1-\eta_c},$$

$$\left(\xi_t^{i,d}\right)^{1-\eta_i} = (1-\varpi_{o,i}-\varpi_{u,i}) + \varpi_{o,i}\left(\xi_t^{o,d}\right)^{1-\eta_i} + \varpi_{u,i}\left(\xi_t^{u,d}\right)^{1-\eta_i}.$$

## 2.8. Aggregation

The aggregate demand in the small open economy is:

$$Y_t = C_t^h + I_t^h + a(u_t)K_{t-1} + G_t + X_t,$$

where $C_t^h$ and $I_t^h$ denotes consumption and investment of the home good. Thus, the demand for each intermediate good producer is:

$$y_{i,t} = \left(C_t^h + I_t^h + a(u_t)K_{t-1} + G_t + X_t\right)\left(\frac{p_{i,t}}{P_t}\right)^{-\nu^d}, \forall i.$$

Using the production function and market clearing we obtain:

$$A_t(u_tK_{t-1})^{\alpha}L_t^{1-\alpha} - \rho z_t = C_t^h + I_t^h + a(u_t)K_{t-1} + G_t + X_t.$$

## 2.9. Rest of the world

The rest of the world is composed by two regions: the remaining countries in the union and the countries outside of the union. The output, inflation and the interest rate in the union and outside of the union are given by two blocks one for each region, each containing three equations: an IS equation, a Phillips equation and an interest rate equation. More specifically,

$$Y_t^k = f_Y^k\left(Y_{t-1}^k, Y_{t+1}^k, \Pi_{t+1}^k\right),$$

$$\Pi_t^k = f_\Pi^k\left(\Pi_{t-1}^k, \Pi_{t+1}^k, Y_{t+1}^k\right),$$

and

$$R_t^k = f_R^k\left(R_{t-1}^k, \Pi_t^k, Y_t^k\right),$$

for $Y_t^k = Y_t^o$ or $Y_t^k = (1-\varsigma)Y_t^u + \varsigma Y_t$, $\Pi_t^k = \Pi_t^o$ or $\Pi_t^k = (1-\varsigma)\Pi_t^u + \varsigma\Pi_t$, and $R_t^k = R_t^o$ or $R_t^k = R_t$. The parameter $\varsigma$ is the size of the domestic country in the union.

### 2.10. Equilibrium

The definition of equilibrium for this economy is standard. It is a vector of prices, policy variables and quantities that satisfies certain conditions. These conditions are the following:

- The conditions that solve the households problem;
- The conditions that solve the firms problem;
- The government's budget constraint;
- The budget constraint with the foreign sector,
- The IS, Phillips and interest rate equations for each region,
- The markets clearing conditions.

## 3. IMPULSE RESPONSE FUNCTIONS

After solving and calibrating the model, which we describe in the appendix, we are ready to study the impulse response functions of the various variables to a monetary policy shock. The shock considered is a white noise shock to the nominal interest rate rule.

Except for inflation, the nominal interest rate and the interest rate premium, which are reported as annualized quarterly rates, the graphs associated with the impulse response functions have on the y-axis the percentage deviations of the variables from their steady state values.

There is a feature on the impulse response functions worth noting. As can be seen from Chart 1, with the exception of the variables associated with trade, most of the variables respond in a hump-shaped form, peaking after 3 or 4 quarters and returning to the preshock levels after about three years. The exceptions are the nominal exchange rate, some relative prices and the different imports and exports.

The euro area variables: the nominal interest rate, inflation and output replicate closely the path of the impulse responses of these variables to a monetary shock in the Adolfson *et al.* (2007) model. On impact the nominal interest rate drops by 40 basis points and returns to the steady state four years later. Both output and inflation have hump-shaped responses and achieve their peaks after about one year, around 0.3 percent of the steady state for output and around 10 basis points (annualized) for inflation.

The small open economy responses to the monetary policy shock are roughly similar to the ones obtained in a standard closed economy, even though the model possesses an additional channel of monetary policy transmission. We summarize these responses now. Because prices are sticky, the unexpected decrease in the nominal interest rate implies a decrease in the real interest rate. A lower real interest rate makes bonds less attractive than investment, which leads to an increase in investment. As the stock of capital increases the marginal productivity of labor increases also and firms increase their labor demand.

The temporary lower real interest rate has intertemporal substitution effects on consumption and labor supply. It makes present consumption and present leisure (since nominal wages are sticky) relatively less expensive, which lead households to increase consumption and decrease labor supply. The changes in the labor supply and labor demand lead to an increase in the real wage. Output increases, since consumption and investment increase, and capital utilization increases because there are costs in adjusting capital. As consumption and investment increase the demand for imports increases.

The additional channel for the monetary policy transmission associated with an open economy compels firms to increase production too. In a closed economy households can only smooth out the path of consumption by varying the path of investment. But in an open economy households have another alternative to accomplish that, the possibility of changing the path of net exports. The monetary shock considered leads to an increase in the domestic income. In order to smooth their path of consumption and leisure households increase their net foreign assets. This behavior of foreign assets implies an increase in net exports and a further increase in the output. After the shock, the stock of net foreign assets is above its steady state value for about four years.

There is an additional income effect in Portugal that is absent in the Adolfson *et al.* (2007) calibrated model of the EMU. They assumed that net foreign assets of the EMU in the steady state were zero, instead we assumed that the ratio between the steady state net foreign debt and GDP for Portugal, and the ratio between steady state euro denominated and total net foreign debt were equal to those ratios for Portugal in 2007. Given that most of the net foreign debt of Portugal is denominated in euro, the impact of a drop in the euro interest rate is more favorable for Portugal than for the EMU. For this reason alone, it should be expected that investment and output in Portugal would vary more than investment and output in the EMU.

The degree of openess is relevant too. The more open an economy is, the less it has to rely on investment to partially insulate consumption from economic disturbances, as it has access to more foreign assets, that can be used in addition to investment to smooth out consumption. For that reason, output in a more open economy tends to be more volatile, as the economy can take advantage of the temporary shocks it faces, by increasing production when the shock is positive or decreasing production when the shock is negative, without having to change consumption too much (*i.e.* at a lower cost), than a less open economy. Since the EMU has a smaller degree of openness than Portugal, it should be expected that in reaction to a positive temporary shock, like the monetary policy shock considered, consumption would increase less and output more in Portugal than in the EMU.

The output increases in percentage deviations from the steady state a little more in Portugal than in the euro area. The impulse response function for the output in Portugal is almost all the time above the one for the EMU. For Portugal the maximum response is just over 0.3 and in the EMU it is just below 0.3. The investment, employment and real wage in Portugal and in the EMU, as computed by Adolfson *et al.* (2007), have similar shapes but in Portugal those variables move more. The impulse response functions for investment, employment and real wage in Portugal are almost all the time above the ones for the EMU. For Portugal the maximum response for investment is just about 0.6 for employment is

about 0.25, and for the real wage about 0.1, while for the EMU the maximum response for investment is about 0.5 for employment is about 0.2 and for the real wage is about 0.07.

Inflation in Portugal responds quicker to the shock than inflation in the euro area, on impact it increases by more and returns faster to the steady state. The maximum increase of inflation in Portugal is 16 basis points while that maximum in the EMU is around 10 basis points. This should be associated with the fact that we assumed that in Portugal each quarter 20 percent of the firms change their prices optimally, while Adolfson *et al.* (2007) took that only 10 percent of the firms in the EMU change their prices optimally.

The relative price of the euro area's good is persistently below the steady state in response to the shock due to the referred differentiated behavior of inflation in Portugal and in the euro area. This fact, together with the shock having an impact in the output relatively higher in Portugal than in the euro area, implies that imports from the euro area increase more than exports to the euro area, in response to the shock.

Even though the effects of the shock are stronger in Portugal than in the euro area, consumption in Portugal and in the euro area have almost identical paths. This indicates that households in Portugal are successfully using the available saving instruments to smooth out consumption.

Now we interpret the behavior of the exchange rate. From the first order conditions of the households we obtain the uncovered interest rate parity (UIP) condition, which says that the expected depreciation of the euro is equal to the current interest rate in the monetary union minus the interest rate outside of the union minus the change in the volume premium.[5] The UIP does not restrict the depreciation rate of the euro in the impact period. Apart from the impact period, the nominal exchange rate behavior is the one implied by the UIP. The foreign interest rate is unchanged and the volume premium changes little, as the adjustment costs of the asset stocks were assumed to be relatively small. Thus, just after the impact period, from the second to the fifth quarter the euro appreciates as the decrease in the interest rate is larger in absolute value than the decrease in the volume premium on the foreign debt, and after the sixth quarter it depreciates, little, as the opposite happens.

In the impact period the currency depreciates because, as we observed before, net exports must increase to smooth out consumption. Net exports to the euro area did not increase due to the evolution, described above, of the main aggregate variables in Portugal and in the euro area. Thus, in order for net exports to increase, net exports to outside of the union must increase. That is possible only if the relative price of the good produced outside of the union increases, given that we assumed that the main aggregate economic variables outside of the union were constant. The current relative price of the good produced outside of the union is equal to the price in the previous period plus the current depreciation of the euro plus the differential of inflation between the outside of the euro area and Portugal. For the relative price of the good produced outside of the union to be persistently above its steady state, it is necessary that on impact the euro depreciates sufficiently to compensate its subsequent ap-

(5) Also known in the literature as risk premium, and denoted in the text by $\Phi$.

preciation, and the persistent domestic inflation. Summing up, in the short run, lower real interest rates in the euro area tend to reduce the foreign exchange value of the euro, which lowers the relative prices of the goods produced in Portugal and in the euro area. This leads to higher outside of the union aggregate spending on goods and services produced in Portugal and in the euro area.

The behavior of the net foreign assets impulse response function, which reflects the evolution of the net exports, is a result of the households choice to smooth out consumption through time. It has an hump-shaped pattern, achieves its peak after four quarters at about 0.18 of the steady state, and returns to the steady state after 4 years.

With respect to the impulse response functions of the exports and imports there is a striking difference between those to and from inside the euro area and those to and from outside of the euro area. Exports and imports to and from the euro area increase but imports increase more, imports achieve a maximum of 0.42 percent above the steady state while exports achieve a maximum of 0.24 percent above the steady state. As referred already, this behavior is explained by two facts. First, because output in Portugal increases more than in the euro area. Secondly, because the relative price of the good produced in Portugal increased due to the fact that inflation in Portugal is slightly above the euro area's inflation. As we noted previously too, the trade with the countries outside of the euro area evolves in a very different way. That is in part explained by the path of the relative price of the good produced outside the euro area, which jumps up on impact and returns with some persistence to its steady state 6 quarters after the shock. Both exports and imports to and from countries outside of the euro area change substantially. Exports on impact are about 0.54 percent above the steady state and imports on impact are about 0.32 percent below the steady state. Imports from outside of the union achieve its maximum when investment achieves its maximum, 5 quarters after the shock.

In our model the effects over the euro exchange rate are smaller than in Adolfson *et al.* (2007). In our model on impact the euro depreciates by about 0.4 percent from the steady state, while in Adolfson *et al.* (2007) it depreciates by about 0.5 percent from the steady state. Most likely, if we were to change some of the parameters in our model in order to get that higher value for the depreciation of the euro, the effects over many of the real variables like output, investment and real wages, which are already bigger in Portugal than in the union, would be further augmented.

## 4. CONCLUSIONS

In this paper we introduce modifications in the benchmark open economy monetary business cycle model of Adolfson *et al.* (2007) in order to incorporate a small country that trades with countries inside and outside of the monetary union to which it belongs. To guarantee local determinacy the variables associated with the countries outside the union can be assumed exogenous, but not the variables associated with the other countries in the union. As the interest rate rule for the union depends on the inflation and output of the union, if we were to take these variables as exogenous the interest rate would not obey the Taylor principle and there would not be a unique local equilibrium. To surpass this difficulty

we assumed that inflation, output and interest rate inside the union change according to a three equation block, containing an IS curve, a Phillips curve and an interest rate rule. The parameters for these three equations were chosen so that these equations, together with the remaining conditions of the model, could deliver the European Union's inflation, output and interest rate impulse response functions to a monetary shock, obtained by Adolfson *et al.* (2007).

We use the model to study the monetary transmission mechanism in Portugal. There are various findings. The shape and sign of the responses of the variables are similar to the ones obtained in the literature for the euro area. It seems that real variables in Portugal adjust more. When compared with the euro area, the output, investment, real wage and employment in Portugal expand more in response to an unexpected decrease in the interest rate. Inflation in Portugal adjusts quicker and reacts further on impact. The trade with the two areas responds differently to the referred monetary shock. Trade with countries inside the euro area increases, as both exports and imports increase. Imports from countries outside the euro area decrease in the first two quarters, increasing thereafter, while exports to countries outside of the euro area increase substantially on impact.

It could be worthwhile to conduct more empirical work in the context of this model. Different behaviors for the aggregate variables of the countries inside and outside of the euro area can be considered. For instance, to assume that the equations that determine the evolution of these variables are the ones given by an estimated VAR. Another dimension that can be explored is the estimation of some of the parameters of the model using Bayesian methods, as Adolfson *et al.* (2007) do.[6]

The model has many frictions, but is simplistic in various dimensions. As such it could be interestingly extended in various directions. It could incorporate government debt and non-Ricardian households so that fiscal policy could interact with the monetary policy in a less trivial way. It could incorporate a financial sector to study the so called financial accelerator channel of the monetary policy. It could consider the labor market as a more complex market allowing for unemployment. More sectors of production could be considered, in particular the nontradable good sector.

(6) According to Canova (2007) in general the estimation of this type of models is problematic for many reasons, but specially because it is prone to identification problems.

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# APPENDIX

## 1. Solving the model

The equilibrium conditions can be described by a set of difference equations, with the same number of endogenous variables, see Adão (2009). We want to solve this system of equilibrium equations. However, there are two main difficulties in determining the solution. First, since there is growth in the model, there are variables that are growing while others are stationary. Thus, to solve the model we need to make all the variables stationary. Second, the equilibrium equations are non-linear difference equations and typically their solution is not trivial. The usual procedure involves simplifying each equation of the system. Each equation of the system is approximated by a linear equation. More specifically, each equation is replaced by its first order Taylor approximation, and that approximation is taken around the equilibrium steady state.

To find the steady state it is necessary to give functional forms to $a(.)$, $V(.)$ and $\Phi(.)$. We take $a(u) = \gamma_1 (u-1) + \frac{\gamma_2}{2}(u-1)^2$. In the steady state we have $u = 1$, then $a(1) = 0$ and $a'(1) = \gamma_1$. The investment adjustment cost function is given by $V\left[\frac{I_t}{I_{t-1}}\right] = \frac{k}{2}\left[\frac{I_t}{I_{t-1}} - \Lambda_I\right]^2$. Thus, in the steady state, $V[\Lambda_I] = V'[\Lambda_I] = 0$. Finally the volume premium factor is given by $\Phi_i\left(\overline{B}_t\right) = \exp\left(-\phi_i\left(\overline{B}_t - \overline{B}\right)\right)$ at the steady state $\Phi_i\left(\overline{B}\right) = 1$ for $i = u, o$. To obtain a system in stationary variables we redefine the variables, see Adão (2009). The transformation of the original system of equations into a system of equations with stationary variables is involved but trivial.

The next step is to loglinearize the system of equilibrium conditions for the stationarized variables around the deterministic steady state. Once that is done we obtain a system of various difference equations. Let $state_t$ denote the vector of endogenous state variables, $nstate_t$ denote the vector of endogenous non-state variables and $exo_t$ the vector of exogenous variables. The system obtained has the format:

$$AA*state_t + BB*state_{t-1} + CC*nstate_t + DD*exo_t = 0,$$

$$E_t\left\{\begin{array}{c} FF*state_{t+1} + GG*state_t + HH*state_{t-1} \\ +JJ*nstate_{t+1} + KK*nstate_t + LL*exo_{t+1} + MM*exo_t \end{array}\right\} = 0,$$

where the symbols with two equal capital letters denote matrices.

There are a few available algorithms designed to solve this type of difference equations system. We used the one developed by Uhlig (1995). Uhlig's algorithm enables us to write all variables as linear functions of the vectors $state_{t-1}$, and $exo_t$, which are given at date $t$. More formally, it gives us matrices $P$, $Q$, $R$ and $S$ so that the equilibrium described by the recursive equilibrium law of motion,

$$state_t = P*state_{t-1} + Q*exo_t,$$

and

$$nstate_t = R * state_t + S * exo_t,$$

is stable.

### 6.2. Calibration

Most of the parameters can be related to the steady state values of the variables in the model and therefore, can be calibrated so as to match the sample mean of these. The remaining were taken from Adolfson *et al.* (2007). Proceeding in this way we minimized the dimensions in which Portugal is different from the euro area. That makes it easier to identify the causes for the differences between the results obtained for Portugal and the ones for the euro area obtained by Adolfson *et al.* (2007).

Many of the parameters were calibrated using the "Quarterly Series for the Portuguese Economy" data set, which refers to the period 77:Q1-07:Q4. This data set is included in the *Economic Bulletin* of the Bank of Portugal, Summer 2008, and is available online. For the period that starts in 1999, the year in which Portugal entered the European Monetary Union, and ends in 2007, *per capita* Private Consumption grew at 0.29 percent quarterly, *per capita* Public Consumption grew at 0.32 percent quarterly, *per capita* Investment grew at -0.11 percent quarterly, *per capita* GDP grew at 0.25 percent quarterly, *per capita* Exports grew at 1.05 percent quarterly and *per capita* Imports grew at 0.79 percent quarterly. We considered the average growth rate of $z_t$ to be 0.25 percent quarterly, which is the growth rate of real GDP *per capita* in the period 99:Q1-07:Q4.

The stock of capital was computed using the perpetual inventory method.[7] The quarterly aggregate depreciation rate, $\delta$, obtained was 0.011. Adolfson *et al.* (2007) set it equal to 0.013.

For many reasons it is difficult to determine the steady state real interest rate relevant for the representative Portuguese consumer. The average real interest rate measured by the ratio between the 3 month money market interest rate and the realized inflation rate was 0.041 percent quarterly in the period 99:Q1-07:Q4.[8] The usefulness of this real interest rate is problematic as it implies a discount factor $\beta$, the ratio between the average growth rate and the average real interest rate, larger than one. As such we discarded it and considered alternatives. The other available nominal interest rate series are implicit interest rates. They are obtained either by dividing interest received on bank deposits by bank deposits or by dividing interest received on bank loans by the bank loans. The interest rates on deposits we discard as they also imply a discount factor larger than one. Among the interest rates on credit, the mortgage interest rate is our preferred, as it is the lowest and the most relevant for the representative consumer. The average real interest rate measured by the difference between the implicit mortgage interest rate and the realized inflation rate was 0.46 percent quarterly in the period 99:Q1-07:Q4.

(7) The perpetual inventory method is a method of estimating a country's total capital stock, using the level of real investment in each year. Investment is classified by type of capital goods, which we denote by $j$, such as buildings, machinery, and vehicles. Assuming an appropriate rate of depreciation $\delta_{j,t}$ for each type of capital, the law of motion of the different types of capital, $K_{j,t}$, is $K_{j,t} = (1-\delta_{j,t})K_{j,t-1} + I_{j,t}$. Notice that if each type the investment series is sufficiently long, the initial stock of capital is irrelevant, as it is already completely depreciated, to determine the more recent values of the stock of capital. The aggregate stock of capital is obtained by aggregating the various types of capital.

(8) This money market interest rate series is the 3-month EURIBOR, and the inflation used was the GDP deflator growth.

This real interest rate together with assumed growth rate of $z_t$ implies a $\beta$ equal to 0.998. Adolfson *et al.* (2007) consider a similar value of $\beta$ for the euro area, 0.999.

Following Adolfson *et al.* (2007), we set the labor supply elasticity, $\psi$, to 1 and the habit parameter to 0.65. Christiano *et al.* (2005) consider similar values for these parameters. The constant associated with labor in the utility function, $\xi$ is chosen so that in the steady state agents work 30 percent of their time. Adolfson *et al.* (2007) assume agents work 30 percent of their time while Chari *et al.* (2002) assume agents work 25 percent of their total time in steady state.

We considered labor income to be the sum of *Remunerações do Trabalho* plus *Contribuições para a Segurança Social* and capital income to be all the remaining domestic income.[9] We took as the value of $\alpha$, the sample mean of the ratio between non-labor income and domestic income, which for the period 99:07 is 0.27. The value that Adolfson *et al*. (2007) consider to be the share of capital for EMU is 0.29.

The share of imports in the main components of the domestic expenditure were obtained from the national input-output matrices of *INE*. That calculation was done for the period 1996-1999. During that period the average share of private consumption that was imported was 27 percent and for the same period the average percentage of investment that was imported was 33 percent. The sample mean, for the period 99:1-07:4, of the share of imports from the euro area was 66 percent and the share of imports from countries outside of the euro area was 34 percent. The percentage of imported consumption from the union was assumed to be proportional to the ratio between total imports from the euro area and aggregate imports. Thus, the share, $\varpi_{u,c}$, was calibrated to match the sample mean, 0.18. Under this assumption, the other parameters, $\varpi_{u,i}$, $\varpi_{o,c}$ and $\varpi_{o,i}$, were set to 0.22, 0.09 and 0.11. For the period, 99:1-07:4, the ratio between the price of investment and the GDP deflator, and the ratio between the price of consumption and the GDP deflator, which we denoted by $\xi^{i,d}$ and $\xi^{c,d}$ respectively, averaged 0.98 and 0.99. The values of the elasticities $\eta_c$ and $\eta_i$ could be determined if we had information on the relative prices $\xi^{o,d}$ and $\xi^{u,d}$, which we do not have. Studies seem to indicate that for the United States and Europe the elasticity between home goods and foreign goods is between 1 and 2, and values in this range are generally used in empirical trade models.[10] We set $\eta_c = 1.5$ and $\eta_c = 1.6$, which are the estimates obtained by Adolfson *et al*. (2007) for the euro area, and set both $\eta^{u,x}$ and $\eta^{o,x}$ equal to 1.5.

The evidence from survey data, as described in Martins (2006), indicates that the frequency of price changes by Portuguese firms is 1.9 times per year. And of those firms that change prices only about 42 percent use forward looking information to set their price. This implies that in each quarter about 20 percent of the firms change their prices optimally. This value is higher than the one estimated by Smets and Wouters (2003) and Adolfson *et al*. (2007) which is around 10 percent, but lower than the one esti-

(9) As the national accounting data of GDP includes net indirect taxes, these need to be subtracted from the GDP to obtain the domestic income.

(10) For the US see, for example, the survey by Stern *et al*. (1976). For Europe see, for example, the discussions of Collard and Dellas (2002), Whalley (1985, Ch. 5) and Deardorff and Stern (1990, Ch. 3). In similar studies, for the United States, Chari *et al.* (2002) and Backus *et al.* (1994) set the substitution elasticity between foreign and domestic investment goods equal to 1.5, and for Europe Christoffel *et al.* (2008) estimate $\eta_c = 1.9$ and $\eta_i = 1.6$.

mated by Christiano *et al*. (2005), 40 percent. Following Adolfson *et al*. (2007) we set the mark-up equal to 16 percent.[11] We set the indexation parameter, $\chi^d$, equal to 0.22, which is the value estimated by Adolfson *et al*. (2007) for the euro area. Following Adolfson *et al*. (2007) and Christiano *et al*. (2005), the markup power in wage setting is set to 1.05. Following Adolfson *et al.* (2007), the indexation of wages, parameter, $\chi^w$, is set to 0.50, and the probability of not being able to change the wage, $\theta^w$, is set equal to 0.69.

The steady state of the model is independent of the adjustment cost functions, but the dynamics depend on them. The estimates in the literature concerning the adjustment costs of investment, capital utilization and foreign debt differ substantially. Christiano *et al*. (2005) find estimates of 2.48 and 0.01 for $V''$ and $\frac{\gamma_2}{\gamma_1}$, respectively. Altig *et al*. (2003) find a value of 0.049 for $\frac{\gamma_2}{\gamma_1}$. Adolfson *et al*. (2007) estimate a value of a 8.67 for $V''$ and estimate a value of 0.252 for $\phi_i$.[12] We took the values reported in Adolfson *et al.* (2007).

During the period 99:01-07:04 the share of the exports to countries outside of the euro area was 0.37, while as referred before, the share of imports from countries outside the euro area was 0.34. The parameters chosen replicate approximately these ratios as well as the average sample shares in the GDP of private consumption, public consumption, investment, total exports and total imports. It is common in the literature, including Adolfson *et al*. (2007), to assume that in the steady state exports are equal to imports, and the net foreign debt is zero. Instead, we assumed that the level and composition of the steady state net foreign responsabilities were the values for Portugal at the end of 2007. At this date the net foreign responsibilities were a large fraction of GDP, being 83 per cent denominated in euros.

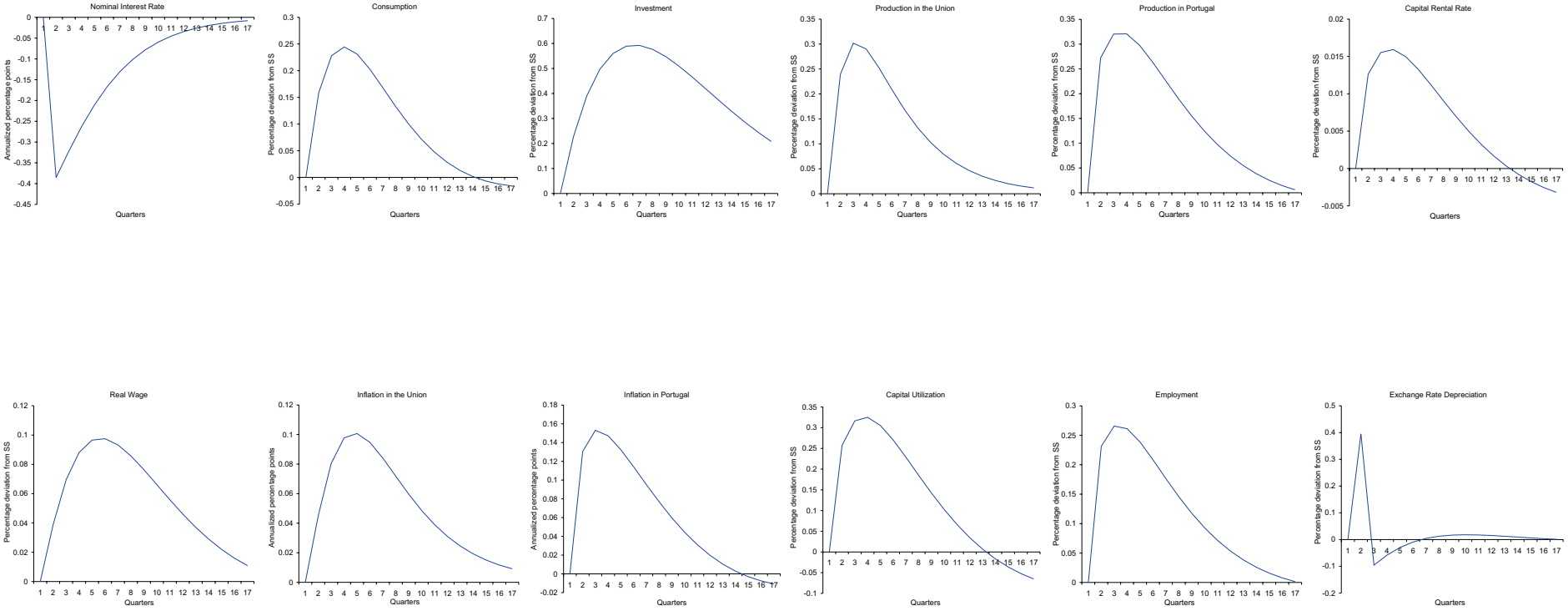
The parameters of the IS curve, Phillips curve and Taylor rule were chosen so that the impulse response functions of the union's inflation, output and interest rate to a monetary shock could mimic the impulse response functions of these variables to a monetary shock in the model estimated by Adolfson *et al*. (2007) for the euro area. The parameters of the interest rate rule are similar to the ones estimated for the euro area by Adolfson *et al*. (2007) and Smets and Wouters (2003). The parameter $\varsigma$ reflects the size of Portugal and is set to 0.05. The parameters in the equations that determine the nominal interest rate, output and inflation outside the union do not need to be specified as we assumed that these variables are not affected by a monetary policy shock in the union.

(11) Chari *et al.* (2005) have a mark-up of 11 per cent.

(12) These divergent results in the literature are due to the fact that the data sets are divergent and to the different estimation techniques used. Adolfson *et al.* (2007) use Bayesian estimation techniques while Christiano *et al.* (2005) match the impulse response functions of the identified shocks.

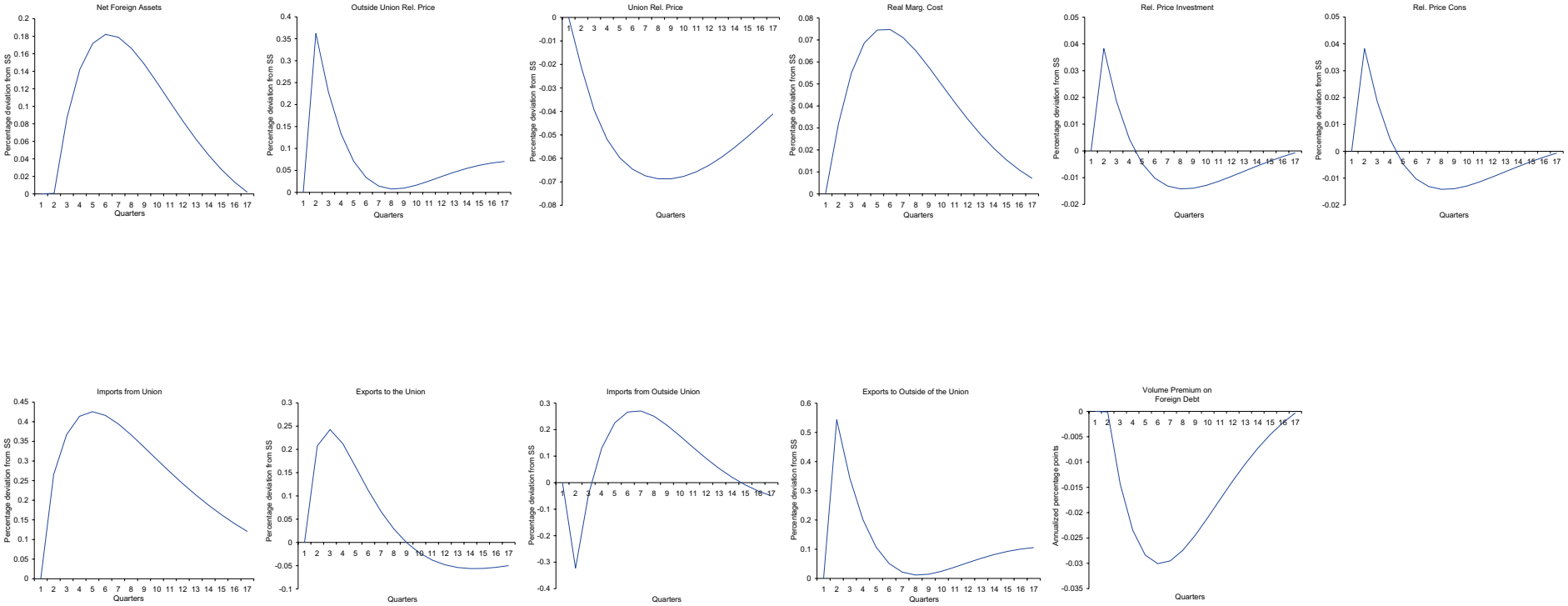
## Chart 1(to be continued)

IMPULSE RESPONSES TO THE MONETARY POLICY SHOCK



## Chart 1(continued)

IMPULSE RESPONSES TO THE MONETARY POLICY SHOCK



# NEW FACTS ON POVERTY IN PORTUGAL*[1]

*Nuno Alves***

## 1. INTRODUCTION

Poverty represents a deprivation of the basic right of individuals to fully participate in the social, economic, cultural and political life of their communities. The poor tend to be excluded from several markets, face limited access to legal and political institutions and invest insufficiently in acquiring assets that optimize their participation in economic activities, in particular human capital. Further, this exclusion tends to be transmitted across generations. In a context of imperfect markets, the importance of reducing poverty levels is thus founded not only on equity but also on efficiency grounds.

The persistently high poverty rates in Portugal represent an inescapable issue of the Portuguese development process in recent decades. A growing literature has analysed this question, starting with the seminal works of Silva (1982) and Costa *et al.* (1985). Subsequent important contributions may also be highlighted, in particular Silva *et al.* (1989), Pereirinha (1996), Ferreira (2000), Albuquerque *et al.* (2006), Rodrigues (2007) and Costa *et al.* (2008). This article builds upon these works and aims to present recent evidence on the characteristics of the poor in Portugal and on several mechanisms that determine poverty in Portugal.

Relative to the above references this article presents several novelties. First, it is based on the latest expenditure survey in Portugal, with data for 2005/06. The survey is also used to uncover evidence on a number of important phenomena, such as the life-cycle evolution of households' income and expenditure, the intergenerational transmission of education and the existence of positive assortative mating along education lines in Portugal. Second, the poverty indicators are based not only on income aggregates but also on expenditure aggregates, which potentially give different insights on the composition, dynamics and determinants of poverty. Finally, the article presents an analysis of several poverty determinants based on multivariate regressions, which allows assessing the relative contribute of each explanatory variable, controlling for the impact of the other.

To understand recent poverty trends in Portugal and to design optimal policies to fight poverty it is important to move beyond the simple statistical measurement of poverty and disentangle the mechanisms influencing poverty spells. Poverty may be usefully understood as the combination of (i) individuals and families' decisions in face of aggregate and idiosyncratic shocks; (ii) the set of institutional features characterizing the economy, including the socio-demographic structure, the level of hu-

* The opinions expressed in this article are of the author and do not necessarily coincide with those of Banco de Portugal or the Eurosystem. All errors and omissions are the sole responsibility of the author.

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(1) The author would like to thank António Antunes, Mário Centeno, Isabel Correia, Ana Cristina Leal, José Ferreira Machado and Miguel Marujo for very helpful comments and discussions.[111]

man capital and the functioning of goods, labour and credit markets; and (iii) the myriad of public policies affecting the choice-set and the incentive structure facing individuals. Naturally, these three dimensions are strongly interrelated. Below we will present several insights regarding the contribution of these features in explaining recent poverty trends in Portugal, even though it will not be possible to statistically identify, for each factor, causality in a strict sense.

The remainder of this article is structured as follows. In Section 2 we clarify the concept of poverty as well as several methodological assumptions adopted in the analysis. Section 3 presents a thorough account of poverty in Portugal in 2005/06 and a brief presentation of the main trends for the period 1994/95 – 2005/06. Section 4 estimates the quantitative importance of several covariates of poverty in Portugal within a Probit regression framework. Section 5 presents the main conclusions and, in this light, previews several forces influencing poverty dynamics in the near future.

## 2. CONCEPTS AND METHODS

There is probably no definition that captures simultaneously all the dimensions that characterize living in poverty (see Lang, 2007 and Jantti and Dazinger, 2000). In this article poverty will be conceptually defined as a situation of deprivation based on lack of resources which limits individuals from fully participating in society (for close definitions see Rodrigues, 2007, or Costa *et al.*, 2008). Two dimensions should be highlighted concerning this definition. On the one hand, the requirement of full participation in society implies that the poverty concept is relative and that the poverty threshold is linked to the overall resources of society in each period.[2] This implies that the evaluation of the existence of a situation of lack of resources includes "not only the commodities which are indispensably necessary for the support of life, but whatever the customs of the country renders it indecent for creditable people, even of the lowest order, to be without" (Adam Smith, The Wealth of Nations, 1776). On the other hand, the definition refers to the lack of economic resources as defining poverty and thus abstracts from broader concepts such as social exclusion or multidimensional poverty. In the latter case, the analysis would also focus on issues such as the inadequate access to housing, education, health care and justice, as well as to individual vulnerabilities preventing the fulfilment of basic human needs. It is nonetheless important to note that economic deprivation, as analysed in this article, is an important determinant of multidimensional poverty (Berthoud and Zantomio, 2008).

We will consider an individual to be poor within a given time period if her level of equivalized income (expenditure) is below 60 per cent of the median equivalized income (expenditure) in Portugal in that period. There are five dimensions of this definition worth clarifying and qualifying.

First, the definition of a poverty line equal to 60 per cent of median equivalized income (expenditure) follows the Eurostat definition of an individual "at risk-of-poverty". The link between the poverty line and median income reflects the relative nature of our poverty concept. This contrasts with the concept of

(2) In this context it is interesting to note that, as argued by Sen (2003 and 2006), a position of relative poverty in the space of income may contribute to a position of absolute poverty in the space of capabilities (where capabilities refer to the individual's freedom and ability to pursue the basic entitlements in society, whether material, social or political).[2]

absolute poverty, where the poverty line is defined with respect to the value of a specific basket of basic goods, which usually remains fixed over long periods.[3] There are no definite arguments in the literature sustaining the choice of one of these concepts. In practice, almost all studies undertaken in the European Union and a growing number of studies for the remaining advanced countries use measures of relative poverty (see Jantti and Dazinger, 2000, European Commission, 2009, OECD, 2008, or Jesuit and Smeeding, 2002). In the present study, the choice for a definition based on relative poverty is based in addition on the overall reasonability of the poverty lines using the admittedly ad-hoc threshold of 60 per cent of median income (expenditure).[4] In fact, we estimate that the poverty line computed using total expenditures, for the case of a household composed by just one individual, was €406 per month in 2006 (at 2006 prices). In turn, the poverty line computed with monetary income stood at €382 per month in 2005 (at 2005 prices)[5]. According to the equivalence scale used in this study (see below), those values would be multiplied by a factor of 2.1 in the case of a family composed by 2 adults and 2 children. To put these figures in perspective, it can be noted, for example, that the gross monthly income of an individual earning the minimum wage in 2006 stood at €437.

Second, we will compute the poverty measures using data from the latest three household expenditure surveys, conducted by Statistics Portugal (INE). The surveys were conducted in 1994/95, 2000 and 2005/06.[6] Around 10000 non-overlapping households participated in each survey. The surveys provide information not only on the income and expenditure patterns of each household but also on several socio-demographic characteristics of the households and the comprising individuals. Total income and expenditure include both monetary and non-monetary components. The non-monetary components correspond to owner-occupied housing, self-consumption, wages paid in goods and other non-monetary transfers. The measure of household income in the expenditure survey includes social transfers and is liquid of taxes and contributions to social security regimes. The surveys also provide household weights that allow extrapolating the results to the population as a whole (INE, 2008a). These weights were used in all computations in the present study. It should finally be noted that while the household expenditures refer to the main year of each survey (1995, 2000 and 2006), the income aggregates refer to the year preceding the survey (1994, 1999 and 2005, respectively).

Third, given that the measurement unit in the expenditure surveys is the household, we assume that resources are fully shared within each household. Everyone living in a poor household is thus equally poor. In addition, household income and expenditure has been rescaled in order to take into account the fact that different households – in terms of size and composition – have different needs. There is some dispute in the literature on the extent of economies of scale within households and thus on how

(3) For example, in the US, the official poverty line is computed with the method proposed by Orshansky (1965). This method starts by estimating the minimum cost of a nutritional diet for families of different sizes. Subsequently, this cost is multiplied by a factor corresponding to the inverse of the weight of food expenditures in total expenditures. The poverty line thus obtained is adjusted annually for inflation using the CPI-U. This methodology has been subject to numerous critiques in the literature (see Meyer and Sullivan, 2008b).[3]

(4) This conclusion contrasts with the one obtained if poverty lines were computed based on absolute concepts of poverty. In this case, as reported in Costa *et al.* (2008), the poverty line calculated on the basis of an absolute concept of poverty "for most recent dates is too high, leading to implausibly high poverty rates".[4]

(5) The poverty lines for all income and expenditure aggregates used in this article are presented in Table 1.[5]

(6) The first two surveys were named Survey to Household Budgets (*Inquérito aos Orçamentos Familiares - IOF*) and the most recent was named Survey on Household Expenditure (*Inquérito às Despesas das Famílias - IDEF*). For a thorough presentation of the questionnaire and sample design of the latest *IDEF* 2005/06, see *INE* (2008a).[6]

to "equivalize" income and expenditure. In this article, we use the OECD modified equivalence scale, which attributes a weight of 1.0 to the first adult in the household, 0.5 to other adults and 0.3 to children (below 15 years). Whenever income and expenditure measures are mentioned in this article they will always refer to equivalized aggregates.

Fourth, the analysis conducted in this article will focus symmetrically on income and expenditure aggregates. This contrasts with most of the recent studies for Portugal, which are uniquely based on income aggregates, but is consistent with the insights in the literature that no single measure yields a perfect account of the degree of resource deprivation (see Blundell and Preston, 1998). The authors favouring income measures typically underline that entitlement to a minimum income is a prerequisite for participation in society. In this case the premise is that there is a minimum right to resources (Atkinson, 1998). Those favouring expenditure measures focus primarily on the existence of a minimum standard of living. They also argue that expenditure captures best not only long-term living standards but also the role of government programs and credit markets (Meyer and Sullivan, 2008). Furthermore, there is evidence of underreporting of income in these types of surveys (Rodrigues, 2007). These arguments suggest that poverty indicators based on expenditure aggregates are, at a minimum, indispensable complements to the indicators based on income aggregates (see Meyer and Sullivan, 2008b, for an analysis of the evolution of poverty in the US using consumption and income indicators). Below, we will show that both measures yield several different conclusions regarding the level, composition and recent trends in poverty during the last decade but yield close insights as regards the underlying factors associated with poverty.

Further, we will study not only poverty indicators based on total expenditure and income but also indicators based on expenditure excluding rents and monetary income. Considering these latter aggregates is important (i) for comparability reasons, given that most poverty studies in the European Union refer to monetary income poverty; (ii) because imputed rents display a questionable surge between the 2000 and 2006 surveys, which significantly affects the intertemporal comparability of the results (see Subsection 3.3 below); and, (iii) because it is not clear theoretically whether housing services should be included in the income and expenditure measure.[7] For these reasons, in this article we will typically analyse two measures of income (total and monetary) and two measures of expenditure (total and excluding rents).

Finally, the cross-section nature of the data sets prevents an assessment of the degree of persistence of poverty in Portugal, an analysis of the main poverty triggers and mitigating factors, as well as a study of the reasons explaining the duration of poverty. It should be clear that analysing poverty dynamics is crucial to develop not only a better understanding of the causes underlying poverty experiences but also to design more effective policies targeted against poverty. The new EU Statistics on Income and Living Conditions (EU-SILC), available for Portugal since 2004, is an important step in this direction

(7) As mentioned by Lang (2007), the analysis of a measure of income and expenditure excluding housing services may be justified if the household depends on remaining in that specific house to participate fully in society.[7]

(see Costa *et al.*, 2008, for an analysis of poverty dynamics in Portugal using the European Union Household Panel, for the period 1995-2000).

## 3. UPDATED FACTS ON POVERTY IN PORTUGAL

In this section we present some facts on poverty in Portugal using the most recent expenditure surveys. Subsection 3.1 documents aggregate measures of poverty in 2005/06. Subsection 3.2 then presents several poverty profiles, identifying the main characteristics of the poor in 2005/06. Finally, Subsection 3.3 assesses the main poverty trends in Portugal over the last decade.

### 3.1 A picture of aggregate poverty in 2005/06

Chart 1 shows the distribution of the expenditure and income aggregates in Portugal in 2005/06. As can be seen from the figure, these distributions are highly skewed, with around 65 per cent of individuals having expenditure and income levels below average.[8] The figure also suggests that a significant number of individuals lies below the poverty line in each case.

Table 1 quantifies these observations. The table presents three indicators of poverty, as suggested by Foster *et al.* (1984).[9,10] These indicators take the form:

$$FGT(\alpha) = \int_0^z \left(\frac{z-y}{z}\right)^{\alpha} f(y)dy, \ \alpha \geq 0$$

where $z$ represents the poverty line and $y$ represents either the income or expenditure level. $FGT\ (0)$ corresponds to the headcount ratio, i.e., the proportion of the population that is poor. $FGT\ (1)$ corresponds to the average normalised poverty gap, i.e., the average distance between income and expenditure of poor individuals and the poverty line, as a fraction of the poverty line. $FGT\ (2)$ squares the average distance to the poverty line thus attributing more weight to the poor individuals that are farthest from the poverty line.

In Table 1, these indicators are presented with bootstrapped standard errors in parenthesis. The standard errors account for the fact that the data stems from a survey of households and thus inevitably contains some margin of error. When drawing comparisons between indicators or when analysing the evolution of a certain indicator over time it is important to take these standard errors seriously in order to be able to draw conclusions that are statistically significant.

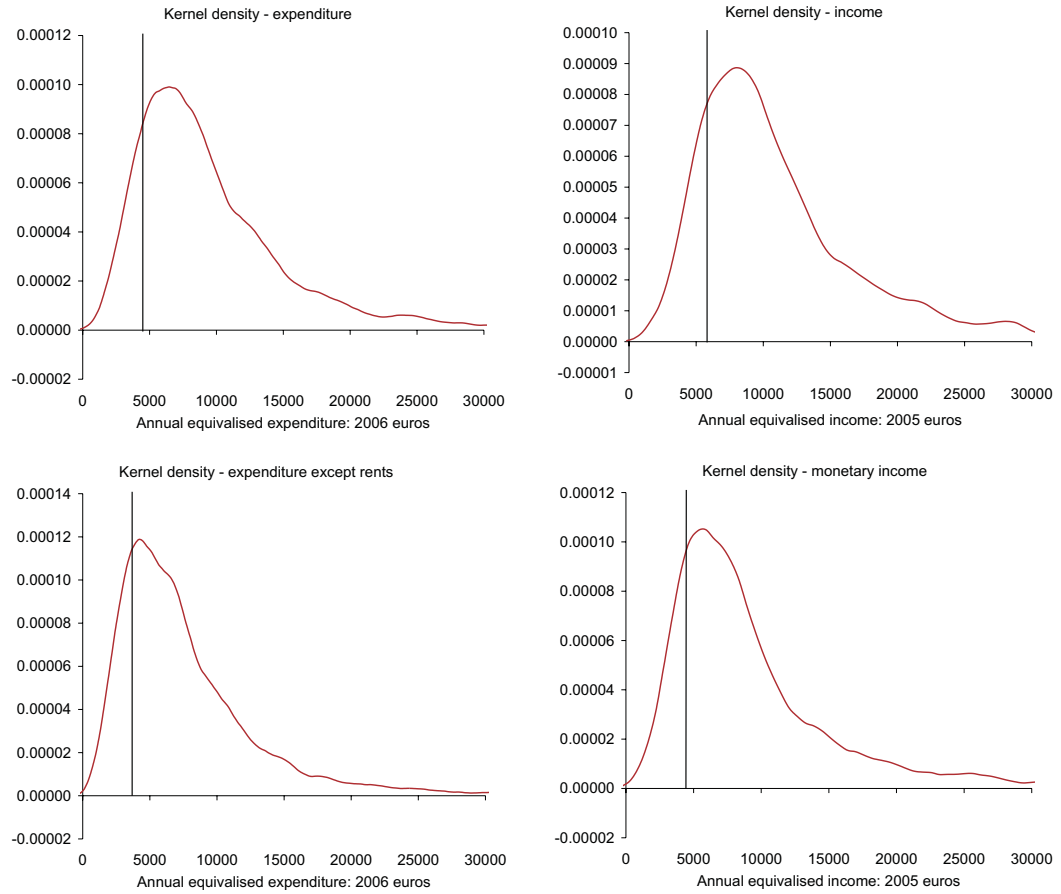
(8) According to the survey, the mean of total annual expenditures (total income) was €9793 (€12278); the 90th percentile of total annual expenditures (total income) was €17373 (€21944) and the 99th percentile of total annual expenditures (total income) was €35574 (€47605).[8]

(9) These indicators fulfil several important properties (see Jantti and Dazinger, 2000). In particular, they are additively decomposable, which allows straightforward breakdowns of poverty across groups in the population. See, however, the critique to the general decomposability nature of these indicators in Sen (2006).[9]

(10) For completeness Table 1 also presents some inequality indicators, namely the Gini index and several decile expenditure/income shares.[10]

## Chart 1

DISTRIBUTION OF EXPENDITURE AND INCOME




**Source:** *IDEF* 2005/06.
**Note:** The vertical line represents the poverty line for the case of a sole person.

There are important insights on aggregate poverty in Portugal that can be drawn from the table.[11] First, the level of poverty in Portugal is high irrespective of the indicator under analysis. In terms of international comparisons, while the proportion of poor in Portugal measured with monetary income stood at 18.5 per cent in 2005, the corresponding Eurostat figure for the European Union and the euro area at that time was 16 per cent. Only three euro area countries – Spain, Greece, and Ireland - displayed a slightly higher income poverty rate compared to Portugal, even though not statistically different at standard confidence levels (taking into account the standard errors reported in Table 1). In turn, the lowest poverty rates in the European Union – standing close to 10 per cent – were observed in Sweden, the Netherlands, the Czech Republic and Denmark.

Second, the table quantifies the number of poor in Portugal, also with a breakdown by age group, for the income and expenditure measures analyzed in this study. Taking into account the uncertainty

(11) Table 2 also highlights the strong inequality in the distribution of income and expenditure, one of the highest in the European Union. As a striking illustration of this pattern, it can be mentioned that the income (expenditure) of the highest decile amounts closely to the sum of the income (expenditure) of the first five deciles of the respective distribution.[11]

**Table 1**

MAIN INDICATORS

| | Expenditure | | Income | |
|---|---|---|---|---|
| | **Total** | **Exc. rents** | **Total** | **Monetary** |
| Poverty lines: one person household (euros per year) | 4 869.41 | 3 796.24 | 5 815.49 | 4 584.00 |
| Foster-Greer-Thorbecke poverty indices | | | | |
| FGT(0): headcount ratio (proportion poor) | 0.184 | 0.211 | 0.162 | 0.185 |
| | (0.005) | (0.006) | (0.005) | (0.005) |
| FGT(1): average normalised poverty gap | 0.047 | 0.060 | 0.038 | 0.049 |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| FGT(2): average squared normalised poverty gap | 0.019 | 0.026 | 0.014 | 0.020 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Number of poor | 1 951 033 | 2 235 992 | 1 717 759 | 1 959 267 |
| Children (under 15) | 282 618 | 326 476 | 299 158 | 313 396 |
| Prime-aged adults (15-64) | 1 102 760 | 1 259 934 | 979 179 | 1 116 875 |
| Individuals aged 65 or over | 565 655 | 649 582 | 439 422 | 528 996 |
| Gini index | 0.329 | 0.357 | 0.344 | 0.373 |
| | (0.004) | (0.004) | (0.005) | (0.006) |
| Decile group shares (in percentage) | | | | |
| Q1 (first decile) | 3.016 | 2.629 | 3.139 | 2.765 |
| | (0.051) | (0.047) | (0.060) | (0.058) |
| Q2 (second decile) | 4.607 | 4.159 | 4.607 | 4.220 |
| | (0.053) | (0.057) | (0.062) | (0.064) |
| Q10 (tenth decile) | 25.473 | 27.033 | 27.569 | 29.631 |
| | (0.344) | (0.372) | (0.515) | (0.594) |

**Source:** *IDEF* 2005/06.
**Notes:**Average values and poverty lines defined per equivalent adult. Values in euros per year (evaluated at 2005 prices for income and 2006 prices for expenditure). Observations weighted with sample weights. Bootstrapped standard errors in parenthesis.

around each of these measures, as well as the differing conclusions using each measure of income or expenditure, it can be concluded that the number of poor in Portugal in 2005/06 stood close to 2 million, of which around 300000 were children. These figures are globally in line with those reported in Rodrigues (2007), European Commission (2009) and INE (2008a, 2008b). They represent a represent a disquieting reality in the Portuguese development process.

Third, according to the expenditure survey, the non-monetary income components decrease the incidence and depth of poverty. This is mainly related to the prevalence of owner-occupied housing in Portugal, also among the poor. This finding, reported also in Rodrigues (2007), implies that the traditional monetary income indicators may overstate the true level of poverty in Portugal.

A fourth insight implicit in Table 1 is that the poverty depth – for example computed with – is not extremely deep. This is in part related to the fact that the survey does not capture the most destitute in society, who are thus also excluded in a statistical sense. In terms of income (monetary income), the mean of poverty gaps in 2005 stood at around €1350 (€1200) per year. Coupling this information with the properties of the income distribution in Portugal, we are able to calculate that the poverty gap in Portugal in 2005 corresponded to 3.9 percent per cent of the monetary income of the 30 per cent rich-

est individuals (3.5 per cent if total income was considered). This illustrates markedly the high income inequality prevailing in Portugal.

Finally, the table also highlights that the level of poverty measured with expenditure aggregates is higher than the one computed with income aggregates. This raises a natural question of understanding whether the individuals identified as poor when the expenditure aggregates are used coincide with those identified as poor with income aggregates.

Table 2 aims to answer this question. The main conclusion of the table is that the intersection between those groups is limited. From the group of individuals who are expenditure poor, only around half are also income poor. From the group of individuals who are income poor, around 63 per cent are also expenditure poor.[12] These are seemingly low figures but have also been reported for other economies (see Brewer *et al.*, 2006, for the case of the UK). The reasons behind this non-overlap may be threefold. First, expenditures may be lumpy in the short-term, in particular due to the acquisition of durable goods, and this may change the relative position of individuals in the expenditure/income scale. Second, expenditure surveys usually display significant measurement errors. In particular, it is well known that income is usually underreported in these surveys. Third, income varies significantly over the life-cycle of individuals and also in response to idiosyncratic shocks, such as unemployment, disability, work bonuses, retirement or breaks from employment due to family responsibilities. In face of these shocks, agents tend to smooth expenditures, by changing the level of savings or debt. This is actually

**Table 2**

INTERSECTION BETWEEN THE INCOME POOR AND THE EXPENDITURE POOR

| | IDEF 2005/06 | | | IPEF 2006 | |
|---|---|---|---|---|---|
| | Fraction | Expendit. (euros) | Income (euros) | Fraction | Net wealth (euros) |
| Expenditure poor | 100.0 | 3 628.2 | 6 192.4 | 100.0 | 25 642.5 |
| Expenditure poor and Income poor | 51.1 | 3 350.6 | 4 237.2 | 51.2 | 18 659.1 |
| Expenditure poor and Income non-poor | 48.9 | 3 905.6 | 8 146.4 | 48.8 | 32 390.7 |
| Expenditure poor and Expenditure exc. Rents poor | 89.3 | 3 498.1 | 6 145.2 | 89.5 | 26 697.2 |
| Expenditure poor and Expenditure exc. Rents non-poor | 10.7 | 4 520.0 | 6 515.4 | 10.5 | 18 326.2 |
| Income poor | 100.0 | 4 947.3 | 4 454.2 | 100.0 | 23 787.1 |
| Income poor and Expenditure poor | 62.7 | 3 350.6 | 4 237.2 | 63.0 | 18 659.1 |
| Income poor and Expenditure non-poor | 37.3 | 7 044.3 | 4 739.2 | 37.0 | 30 682.4 |
| Income poor and Monetary income poor | 83.8 | 4 913.3 | 4 253.4 | 84.1 | 27 123.3 |
| Income poor and Monetary income non-poor | 16.2 | 5 096.1 | 5 333.7 | 15.9 | 9 317.1 |
| Expenditure non-poor and Income non-poor | 100.0 | 11 577.6 | 14 493.4 | 100.0 | 80 098.0 |

**Sources:** *IDEF* 2005/06, *IPEF* 2006.
**Notes:** Observations were weighted with sample weights; variables defined per equivalent adult. Net wealth is computed only for the subset of households in the IPEF. Values defined in euros per year (evaluated at 2005 prices for income and 2006 prices for expenditure and net wealth).

(12) The Table 2 also highlights that there is a large intersection between the expenditure poor and the "Expenditure excluding rents" poor, as well as between the income poor and the monetary income poor.[12]

one of the reasons why expenditures may better represent the permanent income position of the agents instead of the more volatile information stemming from monetary income.[13] In this case, the information based on expenditure may better reflect longer-lasting poverty spells. The last column in Table 2 suggests this may actually be the case in the IDEF 2005/06. In particular the level of net equivalized wealth of the income poor individuals who were not expenditure poor was significantly higher that the net wealth of the remaining income poor (while the net wealth of the former stood at slightly above €30000, the net wealth of the latter was below €20000).[14] This fact suggests the existence of a relevant role of wealth in the smoothing of expenditure decisions by the income poor households.

The fact that different conclusions arise from the use of different aggregates implies that a thorough analysis of all the data is important to draw a robust and consistent picture of poverty in Portugal. In the next subsection we thus analyse a number of poverty profiles for various measures of income and expenditure.

### 3.2 Who were the poor in Portugal in 2005/06?

This subsection presents a set of disaggregate facts on poverty in Portugal, breaking down the aggregate poverty incidence across a number of socio-economic characteristics. These poverty profiles are presented in Table 3, based on geographical location, household size, marital condition, age, education and employment status (with the latter three features related to the household's representative).[15] It is important to note upfront that these poverty profiles do not establish causal relationships and do not allow inferring the underlying relationships between each variable and the incidence of poverty. A step in this direction will be undertaken in the regression analysis presented in Section 4.

Some fundamental facts are worth highlighting from the table.[16] In terms of geographical breakdown, the regions with the highest poverty rates are, in descending order, Madeira, Azores and Alentejo.[17] The Lisbon region and the Algarve consistently present the lowest poverty rates in Portugal. In this context it is important to note that the poverty lines are the same for all regions, which implies that differences in price levels – also associated with differences in the respective levels of income per capita – are not controlled for when measuring regional poverty.

As regards household size, the highest poverty rates are observed for households composed of 6 or more individuals (with poverty rates ranging between 31 to 42 percent). Households with just one indi-

(13) A quite striking example is reported in Costa *et al.* (2008), where it is shown that between 1995 and 2000 almost half of households in Portugal lived in poverty for at least one year. This high figure is in part associated with the fact that the analysis was based on monetary income aggregates.[13]

(14) The net wealth measure is computed with the latest Household Wealth and Indebtedness Survey (IPEF) carried out by Statistics Portugal and Banco de Portugal during the last quarter of 2006 and the first quarter of 2007. The sample of the survey is a sub-set of the respondents to the IDEF 2005/06, and is composed of about 8500 households. For a detailed presentation of the characteristics of the IPEF, see Farinha (2008).[14]

(15) The household representative is loosely defined as the member over 14 years which is recognized as such by the other members, and which must always reside on the same house.[15]

(16) The conclusions reported in table 3 for the incidence of poverty, FGT(0), would be qualitatively unchanged for other measures of poverty, such as FGT(1) or FGT(2). These results, as well as the corresponding bootstrapped standard errors, are available from the author upon request.[16]

(17) The North also records one of the highest poverty rates when total income is considered.[17]

## Table 3

BREAKDOWN OF POVERTY INCIDENCE, BY THE CHARACTERISTICS OF THE HOUSEHOLD OR THE REPRESENTATIVE

| | | Expenditure | | Income | |
|---|---|---|---|---|---|
| | % sample | Total | Exc. rents | Total | Monetary |
| Total | 100.0 | 0.184 | 0.211 | 0.162 | 0.185 |
| Region | | | | | |
| North | 35.4 | 0.185 | 0.205 | 0.191 | 0.213 |
| Center | 22.5 | 0.232 | 0.248 | 0.160 | 0.201 |
| LVT | 26.3 | 0.110 | 0.145 | 0.122 | 0.120 |
| Alentejo | 7.2 | 0.260 | 0.293 | 0.167 | 0.207 |
| Algarve | 4.0 | 0.151 | 0.198 | 0.136 | 0.187 |
| Azores | 2.3 | 0.264 | 0.333 | 0.217 | 0.232 |
| Madeira | 2.3 | 0.298 | 0.357 | 0.187 | 0.235 |
| Urban / rural | | | | | |
| Rural | 12.4 | 0.362 | 0.355 | 0.272 | 0.338 |
| Semi-urban | 16.7 | 0.224 | 0.243 | 0.196 | 0.235 |
| Urban | 70.9 | 0.144 | 0.179 | 0.135 | 0.147 |
| Household size | | | | | |
| 1 | 6.1 | 0.268 | 0.329 | 0.254 | 0.346 |
| 2 | 20.8 | 0.211 | 0.265 | 0.181 | 0.218 |
| 3 | 29.8 | 0.134 | 0.163 | 0.109 | 0.142 |
| 4 | 28.0 | 0.146 | 0.154 | 0.124 | 0.140 |
| 5 | 9.8 | 0.202 | 0.231 | 0.242 | 0.202 |
| 6 or more | 5.6 | 0.422 | 0.395 | 0.330 | 0.313 |
| Age | | | | | |
| Less than 25 | 0.7 | 0.152 | 0.288 | 0.178 | 0.186 |
| 25-34 | 9.9 | 0.136 | 0.196 | 0.131 | 0.149 |
| 35-44 | 28.7 | 0.146 | 0.168 | 0.146 | 0.153 |
| 45-54 | 22.0 | 0.146 | 0.158 | 0.136 | 0.156 |
| 55-64 | 17.6 | 0.173 | 0.191 | 0.145 | 0.183 |
| 65-74 | 13.4 | 0.284 | 0.305 | 0.218 | 0.236 |
| Equal or over 75 | 7.7 | 0.356 | 0.422 | 0.278 | 0.354 |
| Education (completed) | | | | | |
| None | 11.5 | 0.450 | 0.472 | 0.388 | 0.422 |
| 4 years | 39.0 | 0.234 | 0.255 | 0.200 | 0.232 |
| 6 years | 16.9 | 0.141 | 0.174 | 0.134 | 0.150 |
| 9 years | 12.8 | 0.084 | 0.127 | 0.083 | 0.106 |
| 12 years | 10.4 | 0.051 | 0.091 | 0.052 | 0.061 |
| Terciary | 9.5 | 0.015 | 0.028 | 0.012 | 0.010 |
| Employment status | | | | | |
| Worker (non self-emp.) | 47.8 | 0.126 | 0.157 | 0.107 | 0.111 |
| Self-employed | 15.4 | 0.120 | 0.141 | 0.121 | 0.175 |
| Unemployed | 6.4 | 0.306 | 0.325 | 0.339 | 0.353 |
| Retired | 25.2 | 0.278 | 0.304 | 0.218 | 0.252 |
| Non-worker | 5.2 | 0.303 | 0.322 | 0.305 | 0.373 |
| *For memory: subset of households with working-age representative (age over 14 and under 65 years)* | | | | | |
| Representative with no spouse/companion | | | | | |
| Working | 8.7 | 0.135 | 0.135 | 0.188 | 0.152 |
| Not working | 3.9 | 0.359 | 0.342 | 0.349 | 0.402 |
| Representative with spouse/companion | | | | | |
| Both working | 50.8 | 0.096 | 0.060 | 0.121 | 0.063 |
| One working | 28.5 | 0.203 | 0.231 | 0.223 | 0.272 |
| Both not working | 8.2 | 0.226 | 0.249 | 0.247 | 0.270 |
| *of which:* both unemployed | 0.8 | 0.489 | 0.443 | 0.501 | 0.421 |

**Source:** *IDEF* 2005/06.
**Notes:** Average values and poverty lines defined per equivalent adult. Values defined in euros per year (evaluated at 2005 prices for income and 2006 prices for expenditure). Observations weighted with sample weights.

vidual also face significantly higher than average poverty rates. The lowest poverty rates are observed for households with 3 or 4 individuals, which represent more than half of the population.

With respect to age, the highest poverty rates are clearly concentrated in households with representatives older than 64 years and, in particular, in households where the representative is older than 74 years. All the other age brackets record lower than average poverty rates (with the exception of households where the representative is younger than 25 years, which represent a negligible fraction of the population).

The number of years of education of the representative is an important variable to identify the incidence of poverty. In fact, the poverty rate consistently decreases as the number of years of completed education increases. This relation holds robustly across all income and expenditure measures. It is noteworthy that over 40 per cent of households whose representative has zero years of completed education – mainly older households – are in poverty according to most measures. Households whose representative has only 4 years of completed education also record higher than average poverty rates (these households correspond to almost 40 per cent of the population). In contrast, households with representatives with 12 years or more of education face poverty rates clearly below 10 percent, which are close to zero in the case of those with tertiary education.

These figures are directly associated with the high returns to education in the Portuguese labour market, which are closely related to the low supply of educated individuals (this issue is explored further in Section 4 below). As shown in Chart 2, households with higher education levels can expect on average higher labour market incomes, higher total monetary incomes and higher total expenditure levels. Chart 2 also shows that these patterns occur along the full life-cycle of the households, with the maximum expected wage earnings - for all education levels - occurring between 45 and 64 years. The returns to education throughout the working life of an individual also translate into the pension levels in retirement. In fact, the sharp fall in labour market earnings occurring at retirement is only partially translated in a fall in monetary income, which is related to the existence of a social security system in Portugal. Finally, in line with theoretical predictions, expenditure displays a smoother profile relative to income, and displays a much milder fall in older age brackets.

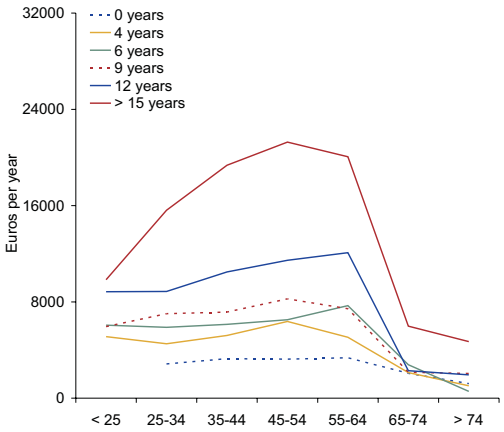
In terms of employment status, Table 3 shows that households where the representative works have clearly lower poverty rates relative to the cases where the representative is unemployed, retired or not working for other reasons (this is the case, for example, of students, individuals with disability, individuals in public service or individuals taking care of their home or family). When we focus on working-age representatives (presented in the lower panel of Table 3) we also conclude on the importance of participation in the labour market. Households where the representative (and the spouse/companion) works face much lower poverty rates relative to the case where the representative (or the spouse/companion) is not working[18]. A particularly vulnerable situation occurs when both the representative and the

(18) For expositional purposes, from now on references to spouses should be interpreted as including companions as well.[18]

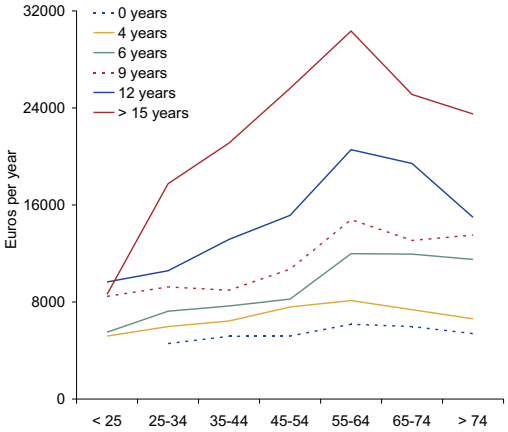
## Chart 2

THE LIFE-CYCLE PROFILE OF WAGES, INCOME AND EXPENDITURE, BY EDUCATION ATTAINMENT

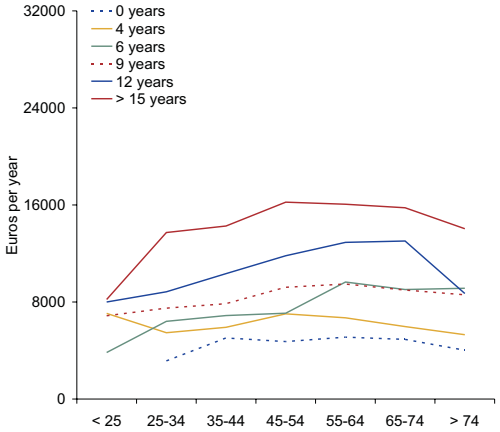
Wages including self-employment




Monetary income




Expenditure except rents




**Source:** *IDEF* 2005/06.
**Note:** The x-axis refers to the age of the representative. The level of education refers to the maximum education of either the representative or the spouse.

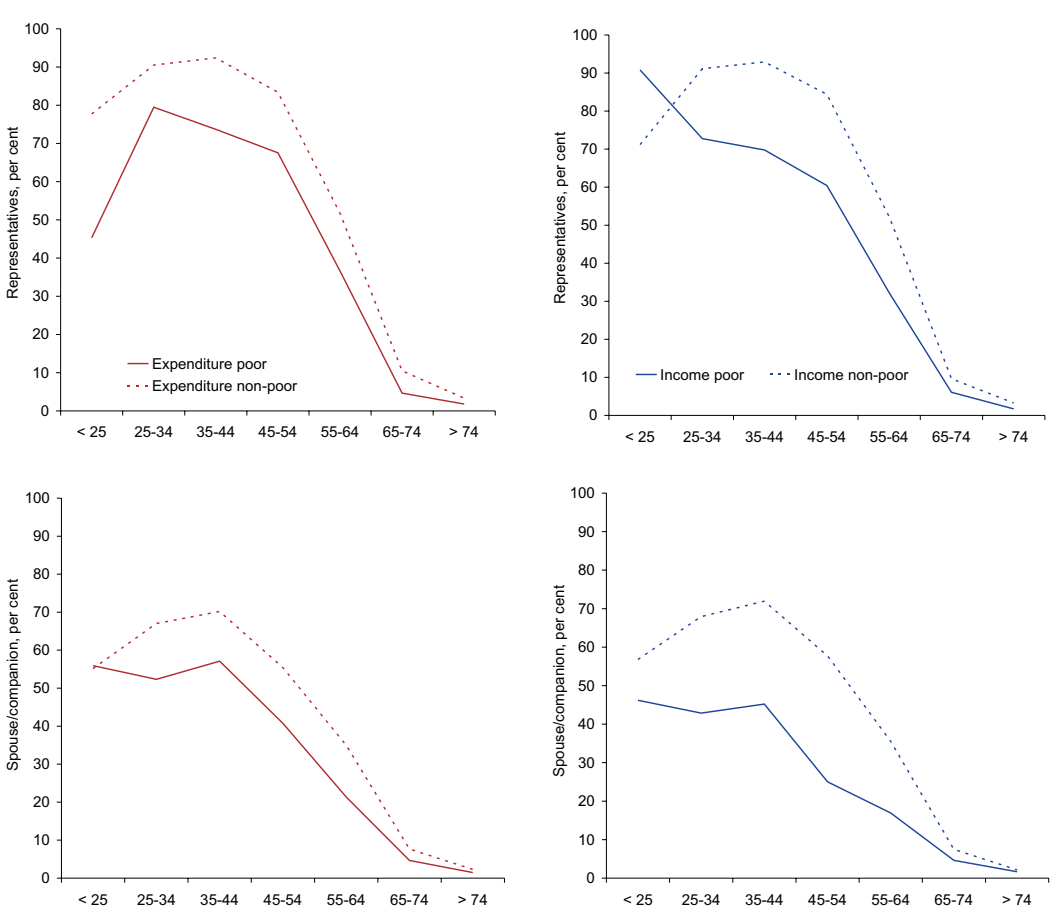
spouse are unemployed. Almost half of the households are in poverty in this case[19]. Another vulnerable situation occurs for households with children and a single representative who does not work. In results not shown in the table we conclude that over half of these households live in poverty, regardless of the expenditure and income aggregate analysed.

Despite the impact of participating in the labour market in lowering the incidence of poverty, it must be noted that the shares of poor representatives and spouses who work is quite significant, albeit lower than the corresponding figures for the non-poor. Chart 3 below illustrates this fact. The chart presents the share of working representatives and spouses – for poor and non-poor households - in each age

(19) Note that poverty rates for this group when we use income measures stand at a lower level, around 43 per cent. However, it should be noted that there is a calendar mismatch that may influence the interpretation of the results. In fact, while representatives reported their "usual" employment status, the reported income refers to the full year of 2005.[19]

## Chart 3

SHARES OF WORKING REPRESENTATIVES AND WORKING SPOUSES/COMPANIONS (WHERE APPLICABLE)




**Source:** *IDEF* 2005/06.
**Note:** The x-axis refers to the age of the representative.

bracket.[20] For example, in the age brackets between 34 and 54 years, around 70 per cent of representatives in poor households were working, while the corresponding figure for the non-poor was close to 90 per cent. For the same age brackets, between 40 and 50 per cent of spouses in poor households were working, while the corresponding figure for the non-poor was around 65 per cent.[21]

To end this subsection it is instructive to briefly summarize the breakdown of the poor in the population. Table 4 highlights that, when measures of expenditure are used, around 15 per cent of the poor are children (under 15 years), 30 per cent are working individuals, close to 30 per cent are retired and 25 per cent are not working for other reasons (including unemployed and students). The corresponding figures for income measures are, respectively, around 17, 25, 26 and 32 per cent.

(20) The figure presents results for total income and expenditure poverty. The results are analogous when monetary income or expenditure excluding rents are used.[20]

(21) The differences are relatively higher when poverty is measured with income, which is not surprising given that participation in the labour market directly influences monetary income.[21]

**Table 4**

BREAKDOWN OF THE POOR

Per cent

| | Expenditure | | Income | | *Memo:* |
|---|---|---|---|---|---|
| | Total | Exc. rents | Total | Monetary | % sample |
| Children | 14.5 | 14.6 | 17.4 | 16.0 | 15.5 |
| Worker | 29.3 | 31.3 | 25.4 | 24.8 | 44.0 |
| Unemployed | 7.6 | 7.4 | 8.9 | 8.4 | 5.4 |
| Retired | 29.8 | 29.3 | 25.6 | 26.9 | 19.3 |
| Other non-worker | 18.8 | 17.4 | 22.7 | 24.0 | 15.8 |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

**Source:** *IDEF* 2005/06.
**Notes:** Average expenditure / income and poverty lines defined per equivalent adult. Observations were weighted with sample household weights.

### 3.3. Recent trends in poverty in Portugal: 1994/95-2005/06

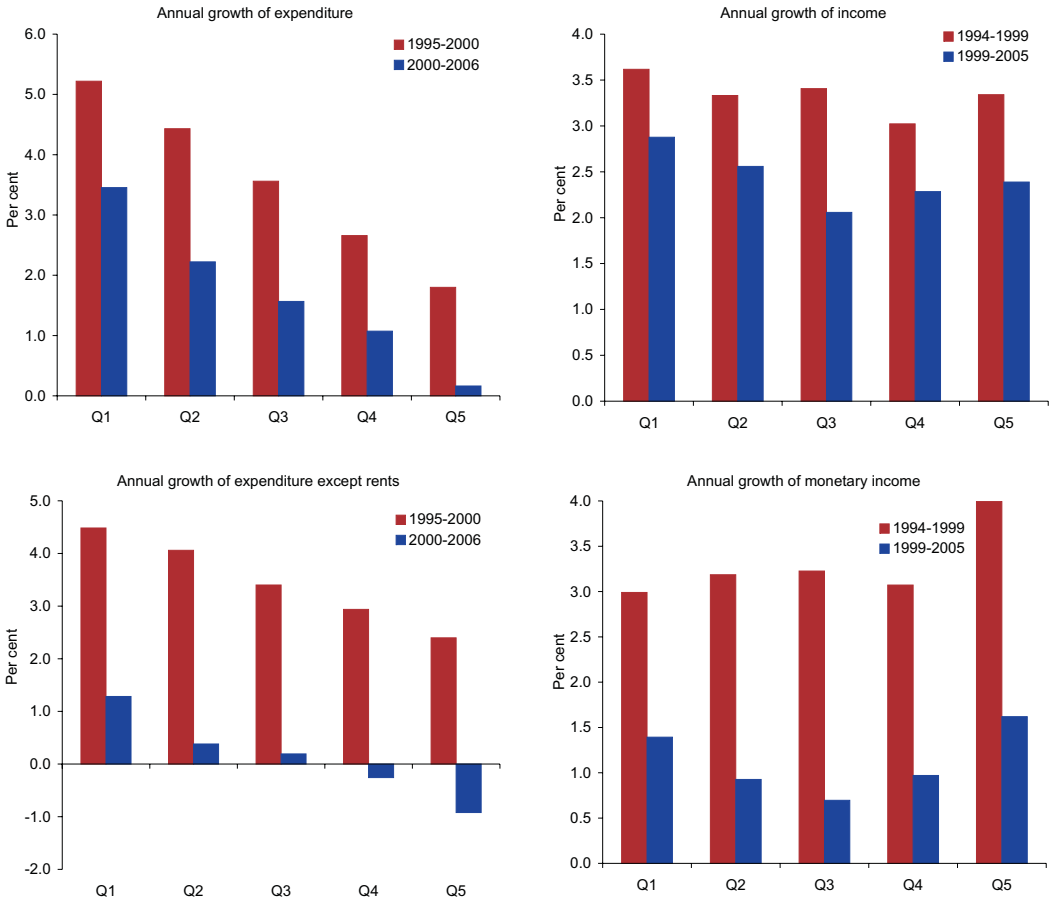
There is a long-standing conviction that poverty levels in Portugal have stood at high and relatively stable levels in recent decades (see Rodrigues, 2007, and Costa *et al.*, 2008). According to the most recent Eurostat statistics, poverty rates in Portugal, measured with monetary income, declined gradually from levels around 21 per cent in 1995 to 18 per cent in 2006 (even though it should be underlined that there is a methodological break in 2004). Further, INE (2008a) showed recently that according to the latest expenditure survey the incidence of poverty declined between 1999 and 2005. In this subsection we assess the recent poverty trends in Portugal with evidence from the three latest expenditure surveys (IOF 1994/95, IOF 2000 and IDEF 2005/06). We will show that recent poverty trends differ whether one uses expenditure or income aggregates. Further, we will also conclude that the sample design in each survey significantly affects the results. The breakdown of the sample in terms of education is particularly critical in this respect.

We start by presenting in Chart 4 the annual average growth of expenditure and income in Portugal in the sub-periods between the three expenditure surveys, for each quintile of the distributions. The main messages arising from the figure are the following. First, the average rate of growth of expenditure and income in the second half of the 90s was significantly higher than in the first half of the 00s, for all quintiles of the distributions. Second, between the 2000 and 2005/06 surveys there was an abnormal increase in the value of rents (which is included in the non-monetary components of expenditure and income). In particular, imputed rents grew over 50 per cent in cumulated terms between 1999 and 2005, according to the expenditure surveys. This is equally clear in Chart 4 when we compare the rate of growth of expenditures including or excluding rents. This fact leads us to favour an intertemporal analysis of poverty using expenditure excluding rents and monetary income.

The third feature worth highlighting from Chart 4 is that the evolution across quintiles is clearly different when we focus on expenditure or income aggregates. From the lower panel of Chart 4, it is clear that

**Chart 4**

ANNUAL GROWTH OF EXPENDITURE AND INCOME AGGREGATES, BY QUINTILE




**Sources:** *IOF* 1994/95, *IOF* 2000 and *IDEF* 2005/06.

when we look at the behaviour of expenditure excluding rents between 1994/95 and 2005/06 the lowest quintile consistently observed the highest rates of growth and the highest quintiles consistently observed the lowest rates of growth. This implied a decline in relative poverty and in the inequality of the distribution of expenditure except rents throughout this period. When we turn to the behaviour of monetary income, the picture is quite different. In fact, the lowest quintile did not perform significantly better than the median quintile and the highest quintile consistently observed the highest rate of growth of monetary income throughout the decade. This behaviour implied a slight increase in the inequality of the distribution of monetary income, while no conclusion can be drawn regarding the evolution of the poverty rate.[22]

In order to start analysing the main poverty trends between 1994/95 and 2005/06 Chart 5 presents the evolution of poverty rates during this decade, with 95 per cent confidence intervals around the point es-

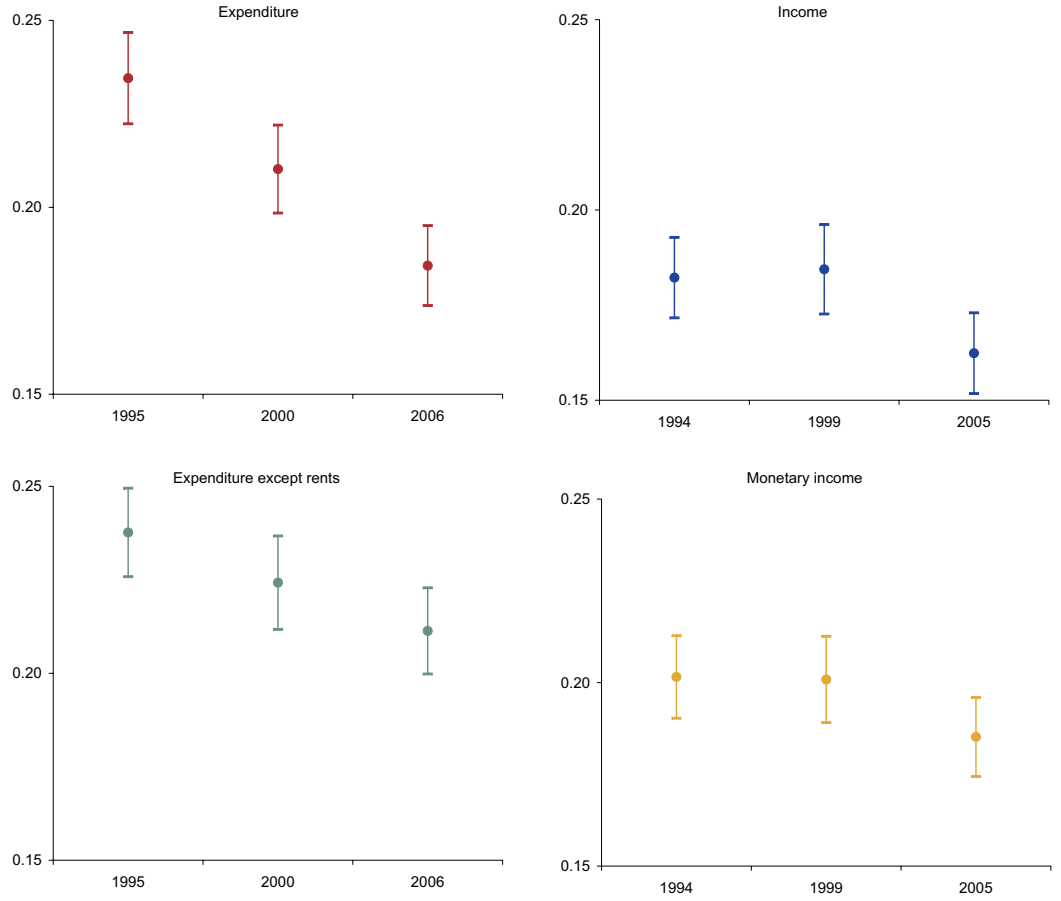
(22) A more thorough analysis of the evolution of inequality throughout this period is available from the author upon request. For completeness, it is worth reporting here that the Gini coefficients for monetary income in 1994/95, 2000 and 2005/06 were, respectively, 0.354, 0.364 and 0.373. The corresponding Gini coefficients for expenditure excluding rents were, respectively, 0.395, 0.377 and 0.357.[22]

timates. A straightforward interpretation of the figure would lead one to conclude that poverty rates computed with expenditure measures declined between 1995 and 2000, and again between 2000 and 2006, albeit not significantly in statistical terms in the case of expenditure except rents in each sub-period[23]. In turn, according to the income measures, we would conclude that poverty stayed broadly constant between 1994 and 1999 and declined significantly between 1999 and 2005. However, as we will show below, these conclusions are most likely not robust and must be qualified.

The main problem is that the survey samples do not consistently reflect the population under study in the respective years, in particular in 2000. In fact, while the 1994/95 and 2000 surveys were both designed based on the 1991 Census of the population, the sample for the 2005/2006 survey was based on the 2001 Census. This implies that in 2000 the survey was designed to reflect the structure of the population observed almost a decade earlier. Moreover, it turns out that older individuals are over-represented in the 2000 survey. For example, the share of individuals older than 64 years is 20.3 per cent

**Chart 5**

TRENDS IN POVERTY INCIDENCE 1994/95-2005/06




**Sources:** *IOF* 1994/95, *IOF* 2000 and *IDEF* 2005/06.
**Note:** Evolution of poverty rates, FGT(0), with 95 per cent confidence intervals around the point estimates.

**(23)** These results were confirmed with formal statistical tests.[23]

in the IOF 2000, which contrasts with 16.4 per cent the 2001 Census of the population (17.3 per cent in the IDEF 2005/06).[24] This evolution has a direct counterpart in the breakdown of the sample by education attainment. For example, in the IOF 2000, 65 per cent of the population over 25 years had at most 4 years of completed education. In the IDEF 2005/06, this figure drops to 51 per cent. This evolution is impossible in demographic terms. As we already attested above, education is a crucial covariate of poverty in Portugal. This implies that the incidence of poverty should be overstated in the IOF 2000.

To evaluate the impact of these sampling errors, several simple counterfactual scenarios were estimated, aiming to simulate how poverty rates would have evolved between 2000 and 2005/06 for different assumptions concerning the breakdown of the population in terms of years of education (Table 5).

A first counterfactual scenario presented in Table 5 estimates the evolution of poverty rates in case the breakdown of the population in terms of years of education had remained constant between 2000 and 2005/06 (and the poverty incidence by education group had evolved as described in the surveys). The table suggests that the poverty incidence would actually increase markedly between those years in this counterfactual exercise, instead of decreasing significantly as in Chart 5. However, this is obviously a very extreme exercise given that the stock of education has surely improved during this period. We thus computed a second counterfactual exercise taking into account an estimated evolution of the stock of attained education between 2000 and 2006 (using a conservative evolution of the education pyramid in the Census 2001). The results, also shown in Table 5, suggest that poverty rates may have actually stayed broadly constant during the 00s.

Given that the samples in the IOF 1994/95 and IDEF 2005/06 are both consistent with the Population Census undertaken a few years earlier, we think the results between these two surveys should be broadly comparable. Compiling all the above observations, it can be concluded that poverty rates decreased significantly between 1994/95 and 2005/06, in particular when measured with expenditure aggregates. Further, the evidence suggests that poverty rates decreased more markedly between

**Table 5**

COUNTERFACTUAL EVOLUTION OF POVERTY, FOCUSING ON THE ROLE OF EDUCATION

| | Expenditure | | | | Income | | | |
|---|---|---|---|---|---|---|---|---|
| | Total | | Except rents | | Total | | Monetary | |
| **Poverty incidence - FGT(0)** | **2000** | **2006** | **2000** | **2006** | **1999** | **2005** | **1999** | **2005** |
| Observed | 0.210 | 0.184 | 0.224 | 0.211 | 0.184 | 0.162 | 0.201 | 0.185 |
| Counterfactual based on constant education [a] | 0.210 | 0.222 | 0.224 | 0.248 | 0.184 | 0.194 | 0.201 | 0.220 |
| Counterfactual based on estimated education [b] | 0.210 | 0.207 | 0.224 | 0.232 | 0.184 | 0.182 | 0.201 | 0.207 |

**Sources:** *IOF* 2000 and *IDEF* 2005/06.
**Notes:** (a) Computations based on constant 2000 population shares, by education attainment. (b) Computations based on the estimated poverty incidence in 2000 and the likely evolution of education of the population between 2000 and 2006, estimated with standard mortality rates, the education pyramid in the Census 2001, and assuming a constant population.

(24) These figures are weighted with sample weights.[24]

1994/95 and 2000.[25,26] In results available from the author upon request, it can also be concluded - using the "TIP curve" analysis proposed by Jenkins and Lambert (1997) - that the overall decline in poverty between 1994/95 and 2005/06 is robust to the level of the poverty line and to the equivalence scale used, but only in the case where the poverty indicators are computed with expenditure measures.

The above discussion highlights the importance of moving beyond the simple statistical measurement of poverty trends and trying to understand the factors determining these trends. Further, it stresses the importance of keeping track of the quality of the sample, in particular in what regards the breakdown by education.

## 4. SOURCES OF POVERTY IN PORTUGAL

In the last section we described several social-economic characteristics of households living in poverty in Portugal. The problem with these poverty profiles is that they do not allow distinguishing the relative importance of the various factors associated with poverty. This section aims to tackle this issue. To this end we run several multivariate regressions, which incorporate the poverty covariates that are identifiable with the IDEF 2005/06.

In particular, we will estimate regressions where the dependent variable is binary, taking the value 1 when an individual is poor and 0 otherwise. The estimated model is called a Probit and can be formalized as follows:

$$\Pr(y_i = 1 | x_i) = \phi(x_i \beta)$$

In this equation, the probability that the dependent variable $y_t$ equals 1 (i.e., the probability that an individual $i$ is poor), given a set of explanatory variables $x_i$, is specified as a non-linear function of the explanatory variables $x_i$. $\beta$ represents the vector of coefficients to be estimated and $\phi$ is the normal cumulative distribution function. The estimation of the model is undertaken by maximum likelihood.

Before presenting the results of the estimations, it is important to underline three potential problems associated with this approach. First, representing poverty as a binary situation ignores information concerning the depth of poverty. In addition, when poverty is represented by a binary characterization, even marginal changes around the poverty line move the position of the households from the set of poor to non-poor (or vice-versa). Second, even though the multivariate regression framework is a step forward in understanding the covariates of poverty, it is important to underline upfront that these regressions do not identify causal relationships. Finally, there is an important problem associated with

(25) Further, as argued in Rodrigues (2007), during this period the depth of poverty was reduced, due in particular to the introduction of the *Rendimento Mínimo Garantido* (a minimum guaranteed income scheme, which was set at levels significantly below the poverty line).[25]

(26) The reasons underlying the poverty decline in the late 90s – in particular when expenditure aggregates are used – are beyond the scope of this study. Here it is worth highlighting that this evolution may be related *inter alia* to the significant increase in current transfers from the general government to households during this period, as well as to an increased access to debt of households who were traditionally excluded from the credit market for consumption (see Farinha, 2008, and references therein).[26]

the endogeneity of the variables.[27] In what follows, we proceed with this note of caution in mind, hoping that the overall results may be robust to this issue.

Table 6 presents the results of the Probit regressions for the poor population identified with each income and expenditure aggregate. The explanatory variables of the model include geographical data (region of the household and urban/rural breakdown), characteristics of the household (household size, number of members working beside the representative, maximum education level of the representative/spouse, existence of a spouse in the household) and characteristics of the representative (age and working condition). In Table 6 the estimated coefficients measure the marginal effect of each variable on the probability of an individual being poor, controlling for the impact of all the other covariates.[28] The standard errors of each coefficient are presented in parenthesis.

We turn now to the analysis of the results for each explanatory variable. It is important to note upfront that the sign and statistical significance of the estimated coefficients are globally robust to the expenditure and income aggregates used (with the exception of the dummy variables referring to the region where the household resides).

In what concerns the household size, Table 6 allows us to conclude that each additional household member significantly increases the probability that the household is poor, even controlling for the impact of the remaining explanatory variables. This effect is directly influenced by the fact that both expenditure and income are computed per equivalent adult.

In addition, the table includes results on whether having a spouse in the household influences the probability of the household being poor. For all expenditure and income aggregates, it can be concluded that having a spouse significantly decreases the probability of the household being poor. This is probably related to the existence of insurance mechanisms within the household but may also be affected by the existence of several economies of scale which are probably not captured accurately in the simplified equivalence scale used in this article. Anyway, this result confirms the aggregate evidence that was already observable in the lower panel of Table 4.

Regarding the variables related to geographical factors, it is clear that households living in urban areas have a lower probability of living in poverty, when compared with households living in rural areas. Furthermore, it is confirmed that households living in the Lisbon region and in the Algarve face a relatively lower probability of being poor.

Focusing now on the age of the representative, the table shows that there is a significant relation between the individuals' life cycle and the probability of living in poverty. In fact, the lowest probabilities of living in poverty occur when the representative belongs to the age bracket between 45 and 64 years (in

(27) The relation between education and poverty may be useful to illustrate this issue. It should come as no surprise that we will find that a low level of education is a significant determinant of poverty. The problem with this conclusion is that the permanence of children in poor households also implies, on average, lower levels of education attainment relative to comparable age-brackets in the rest of the population. This kind of endogeneity is inescapable in our data sets. Analogous examples could actually be presented for other variables such as unemployment or illness (see Smith and Middleton, 2007).[27]

(28) It is important to note that these marginal effects are evaluated at the mean of the independent variables, except in the cases of the variables which, when assuming a value equal to 1, imply that other associated variables are equal to zero (which is the case of the dummy variables representing the region, age, employment status and education). In these cases, the evaluation of the marginal effects takes into account the null restrictions over the respective associated variables.[28]

the case of the poverty indicators based on expenditure) and to the age bracket between 55 and 74 years (in the case of the poverty indicators based on income). In turn, the highest risk of poverty is observed in the lowest and highest age brackets

Table 6 subsequently presents the impact of the employment status of the representative A first conclusion in this respect is that households with an unemployed representative observe significantly higher probabilities of being poor relative to households where the representative is working. This effect amounts to about 15 percentage points when poverty indicators are based on expenditure aggregates and to about 20 percentage points when poverty indicators are based on income aggregates. A similar result – albeit of a lower magnitude – is found when the representative does not work (for reasons other than retirement or unemployment).

In case the representative is retired, the probability of being poor (compared with the case of a working representative) is positive but quantitatively close to zero. This fact suggests that, with the rules governing the fiscal and pension systems in 2005/06, moving into retirement did not imply a significant reduction in liquid income or expenditure. This result is not surprising given that the net replacement rates (relative to the final earnings before retirement) at the time were on average above 90 per cent (see OECD, 2007). Note that this figure reflects not only the gross replacement rates - which were on average close to 75 per cent - but also the difference in social security contributions and personal income taxes paid by workers and pensioners. It should be mentioned that after 2005 several new rules governing the expected liquid income after retirement were approved. These new rules significantly decreased the net replacement rate.

Table 6 also shows that the probability of being poor significantly diminishes with each additional working member in the household (besides the representative). Each additional working member decreases the probability of being poor by around 7 percentage points when poverty indicators are based on expenditure aggregates and in over 11 percentage points when poverty indicators are based on income aggregates.

The last evidence in Table 6 refers to the role of education in determining the probability of living in poverty. The table confirms that the education level of the representative/spouse is a fundamental element in determining that probability. In fact, compared with households whose representative and spouse had no formal education, households where the representative and/or spouse had 4 years of education displayed lower probabilities of being poor, by about 15 percentage points. The probability of being poor was over 35 percentage points lower in households where the representative and/or spouse had tertiary education. Thus, it is clear that the education level is an important explanatory factor of poverty levels in Portugal.

It is instructive to recall that from the poverty profiles in the last section it would not be possible to distinguish whether the high poverty incidence among the elderly was due to life-cycle issues, to their low average level of education or to their retirement status. The multivariate analysis in this section suggests that education is quantitatively the most relevant factor among the three.

## Table 6

PROBIT REGRESSIONS - MARGINAL EFFECTS

| | Expenditure | | Income | |
|---|---|---|---|---|
| | **Total** | **Exc. rents** | **Total** | **Monetary** |
| Household size | 0.051 | 0.041 | 0.055 | 0.049 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Family with spouse/companion | -0.038 | -0.033 | -0.039 | -0.030 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Urban | -0.088 | -0.058 | -0.057 | -0.081 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Region (relative to North) | | | | |
| Center | 0.046 | 0.047 | -0.011 | -0.001 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Lisbon region | -0.017 | -0.004 | 0.002 | -0.024 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Alentejo | 0.058 | 0.074 | -0.019 | -0.016 |
| | (0.000) | (0.001) | (0.000) | (0.000) |
| Algarve | -0.007 | 0.015 | -0.019 | 0.004 |
| | (0.001) | (0.001) | (0.000) | (0.001) |
| Azores | 0.019 | 0.086 | -0.023 | -0.024 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Madeira | 0.053 | 0.107 | -0.040 | -0.016 |
| | (0.001) | (0.001) | (0.000) | (0.001) |
| Age of representative (relative to 25-34 years) | | | | |
| Less than 25 years | 0.027 | 0.118 | 0.113 | 0.077 |
| | (0.002) | (0.002) | (0.002) | (0.002) |
| 35-44 years | -0.033 | -0.072 | -0.020 | -0.036 |
| | (0.000) | (0.001) | (0.000) | (0.000) |
| 45-54 years | -0.052 | -0.100 | -0.039 | -0.040 |
| | (0.000) | (0.001) | (0.000) | (0.000) |
| 55-64 years | -0.055 | -0.092 | -0.058 | -0.049 |
| | (0.001) | (0.001) | (0.000) | (0.001) |
| 65-74 years | -0.027 | -0.046 | -0.058 | -0.069 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Equal or over 75 years | 0.005 | 0.029 | -0.040 | -0.019 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Employment status of the representative (relative to working representative) | | | | |
| Unemployed | 0.152 | 0.152 | 0.191 | 0.206 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Retired | 0.026 | 0.001 | 0.022 | 0.008 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Other non-worker | 0.100 | 0.095 | 0.123 | 0.173 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| No. members working (besides representative) | -0.068 | -0.073 | -0.117 | -0.148 |
| | (0.000) | (0.000) | (0.000) | (0.000) |
| Maximum years of education of the representative / spouse (relative to 0 completed years of education) | | | | |
| 4 years of education | -0.168 | -0.153 | -0.169 | -0.146 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| 6 years of education | -0.249 | -0.227 | -0.242 | -0.228 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| 9 years of education | -0.287 | -0.259 | -0.288 | -0.265 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| 12 years of education | -0.344 | -0.319 | -0.327 | -0.319 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| Over 15 years of education | -0.385 | -0.390 | -0.355 | -0.355 |
| | (0.001) | (0.001) | (0.001) | (0.001) |
| *Memo:* | | | | |
| Poverty rate | 0.184 | 0.211 | 0.162 | 0.185 |
| Pseudo R2 | 0.180 | 0.171 | 0.209 | 0.223 |
| Prob > chi2 | 0.000 | 0.000 | 0.000 | 0.000 |

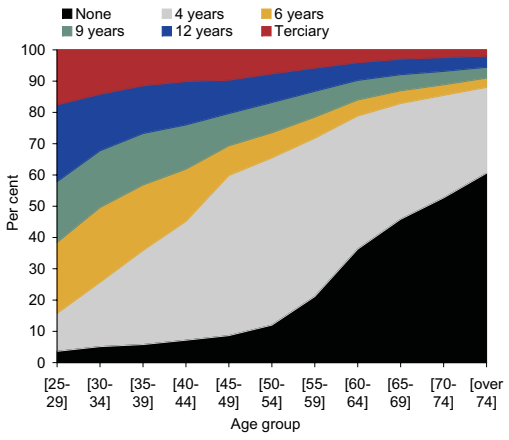
**Source:** *IDEF* 2005/06.
**Notes:** Standard errors in parenthesis; Observations were weighted with sample weights; dependent variables defined per equivalent adult.

Given the importance of education levels in determining the probability of a household being poor in Portugal, it is important to underline several elements of this relation which can be illustrated with the IDEF 2005/06. First, the stock of human capital in the Portuguese economy is particularly low (Chart 6). According to the information in the Census 2001, 55 per cent of the individuals aged above 24 years had 4 years or less of completed education (47 per cent for the subset of individuals aged between 25 and 64 years).[29] The most recent cohorts have a significantly higher level of education attainment, even though they continue to lag behind the respective average figure for the European Union. Again according to the Census 2001, 15 per cent of the individuals aged between 25 and 29 years had 4 years or less of completed education, only 62 per cent completed the mandatory level of 9 years of education and only 18 per cent had a tertiary degree. This low level of the stock of education – coupled with a slowly improving flow – contributes to the high returns on education in Portugal (see Machado and Mata, 2001).

A second element worth highlighting of the relation between education and the risk of poverty is the high positive assortative mating along education lines in Portugal (in line with the evidence for other countries). This means that spouses tend to have analogous levels of education. The share of women with education attainment below the current mandatory level of 9 years marrying with men within that education bracket lies around 80 per cent, according to the information in the IDEF 2005/06 (Chart 7). The same occurs for higher levels of education. This trend has not changed significantly in Portugal in the last decades, as can be observed by comparing the results for the different age brackets in Chart 7. Given that the education attainment of individuals is an important poverty risk factor, the prevalence of assortative mating along education lines hampers a sharing of this risk within the household: This in-

**Chart 6**

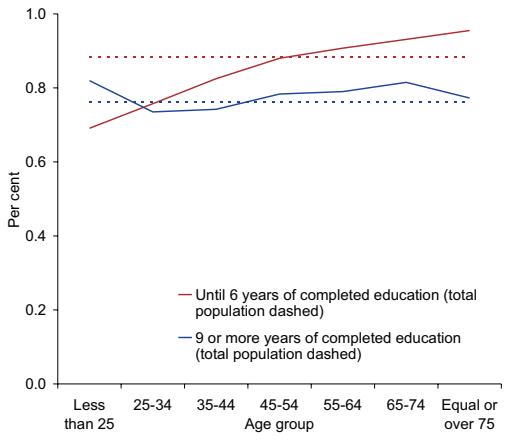
DISTRIBUTION OF EDUCATION ATTAINMENT IN PORTUGAL - CENSUS 2001




**Source:** Census 2001.

**Chart 7**

SHARE OF MARRIAGES WITHIN EDUCATION GROUPS (FROM THE PERSPECTIVE OF THE SPOUSE) - 2006




**Source:** *IDEF* 2005/06.

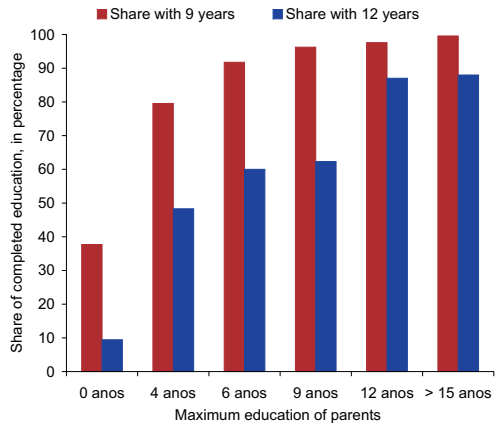
(29) In the weighted sample of the *IDEF* 2005/06, 51 per cent of the individuals aged above 24 years had 4 years or less of completed education.[29]

creases the returns of education at the household level and enhances the risk of poverty facing households on average.

Finally, it should be mentioned that there is a significant intergenerational transmission of education in Portugal, which also contributes to the intergenerational transmission of poverty. Chart 8 illustrates this fact using the information in the expenditure survey for 2005/06. The figure shows, for individuals aged 20-24 and living with their parents, the share which completed 9 and 12 years of formal education, compared with the maximum completed education level of their parents. If no intergenerational transmission of education existed, the completion shares would not depend on the level of the parents' education. The fact that both bars in Chart 8 trend upwards is a clear sign of the existence of intergenerational transmission of education and represents a failure of the education system to overcome differences in family backgrounds, even for the modest levels of mandatory education in Portugal. Analogous results are also reported in Carneiro (2008).

**Chart 8**

INTERGENERATIONAL TRANSMISSION OF EDUCATION, IN THE SUBSAMPLE OF INDIVIDUALS AGED 20-24 YEARS LIVING WITH THEIR PARENTS




**Source:** *IDEF* 2005/06.

## 5. CONCLUSIONS

This article aimed at contributing to the characterization of poverty and to a further understanding of the main determinants of poverty in Portugal. This analysis was mostly based on the latest expenditure survey in Portugal, with data for 2005/06. In this conclusion we will summarize several main insights stemming from the analysis, and highlight some features that will contribute to shape poverty trends in Portugal in the future.

**1.** A thorough characterization of the poor requires the analysis of several poverty measures. In this article we focused on poverty measures based on expenditure or income aggregates. We concluded that those aggregates yield different insights concerning poverty profiles and poverty trends in Portugal.

This is not surprising given that only about half of the expenditure poor are also income poor. The past accumulation of human capital and wealth contribute to this non-overlap. In this context, poverty indicators based on expenditure measures may better reflect the permanent income of individuals. Policies targeted specifically at the poor should take this fact seriously. Interestingly, the main insights regarding the underlying factors associated with poverty are overall robust to the type of aggregate used in identifying the poor. This robustness should in principle also apply to the policy interventions targeted at the structural determinants of poverty.

**2.** Between 1994/95 and 2005/06, there was a significant increase in expenditure and income, for all quantiles of the respective distributions. In the case of expenditure, this increase was sharper in the lower quantiles of the distribution. In this period, poverty indicators declined significantly, in particular when measured with expenditure aggregates. However, the incidence and depth of poverty in 2005/06 still remained at high levels in a European context. Taking into account the inescapable uncertainty due to the sampling design of the surveys, it is fair to conclude that the number of poor in Portugal in 2005/06 stood close to 2 million, of which around 300000 were children. Several types of households are particularly vulnerable to poverty: households where one or more adults are unemployed; elderly (couple or single) with low levels of education; households composed of a single non-working individual with children; and, large families with at least one non-working adult.

**3.** Labour market participation is an important element in mitigating the risk of falling into poverty. In fact, households where the representative was working in 2005/06 recorded a significantly lower-than-average poverty incidence. In addition, it can be estimated that the additional participation of household members in the labour market had a significant impact in reducing the probability of living in poverty. Still, it is worth noting that around 25 to 30 per cent of the poor in 2005/06 were working individuals.

In turn, households where a working-age representative was not working displayed a significantly higher-than-average poverty incidence. In particular, it is worth underlining that around half of the households where both the representative and the spouse were unemployed lived in poverty in 2005/06. In recent years the unemployment rate in Portugal has increased significantly, to historically highs. This was due to structural reasons and, more recently, to the recessive environment facing the Portuguese economy. In this context, the increase in the unemployment rate stands prominently in the set of factors which will contribute to increase poverty in Portugal in the near future.

**4.** The level of human capital within the household is a fundamental factor determining structural poverty levels in Portugal. In 2005/06 around 40 per cent of individuals over 14 years with no formal education were poor, while only 3 per cent of individuals with tertiary education were also poor. The transmission of human capital to the levels of household income and expenditure works through several channels. First, there are very high returns to education in the labour market. These returns were particularly high for tertiary education. Second, there is a positive assortative mating along education lines, which contributes to magnify the returns to education at the household level. Third, the level of wages throughout or at the end of the working life translates directly into the pension levels in retire-

ment. Finally, there is a significant intergenerational transmission of education, which contributes to the intergenerational transmission of poverty. In the near future, the new flows of increasingly educated individuals entering the labour market - which face a lower risk of poverty relative to the most elderly generations - should contribute to a decline in the poverty rate in Portugal. This is the case even though the returns to education – in particular for tertiary education – are expected to decrease from their current particularly high levels.

This article has not presented a thorough analysis of the role of public policies in explaining poverty in Portugal. To be sure, this is mainly related to the information contained in the databases under analysis, and not to any underestimation of the importance of these policies. The set of relevant policies in determining the level and dynamics of poverty is necessarily broad-based, crossing most areas of government intervention. Prominent among these are, on the one hand, policies that ensure equal opportunities for all and, on the other, policies that create a safety net which ensures an ample participation in society for every citizen. The former include, among others, a high-quality provision of education, health and child care, an equitable access to the judicial system, the availability of housing and affordable transports, and the general provision of fundamental public services to the children and the elderly. The latter include, for example, the existence of a sustainable pension system, the provision of unemployment benefits, the existence of a guaranteed minimum income scheme, or policies creating incentives for the participation in the labour market, such as the earned income tax credit existing in several developed economies. The effectiveness of these policies in fighting poverty depends crucially on the incentives generated in terms of human capital accumulation, of labour market participation, of the primary distribution of income and of the risk sharing in the economy.

Equity and efficiency arguments support the importance of fighting poverty. In Portugal, the poverty incidence and depth are significantly above the lowest levels observed in Europe. In this context, it is crucial to enhance the social awareness of the underlying causes of poverty. This is particularly important given that the policy willingness to mitigate poverty usually tends to reflect that awareness. In this context it would prove particularly helpful to[30] (i) set-up medium-term poverty goals in terms of incidence and intensity, and annually assess the success in achieving those goals, as well as their intertemporal sustainability; (ii) evaluate the poverty impact of specific public policy initiatives; and (iii) develop and analyse new panel datasets, incorporating information on consumption, income, wealth, living conditions and subjective perceptions of poverty.

(30) Several of these policies are embedded in the Parliament Resolution 31/2008, which recommends the setting-up of a poverty line and the evaluation of public policies aimed at eliminating poverty.[30]

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# TEXTILES AND CLOTHING EXPORTING SECTORS IN PORTUGAL – RECENT TRENDS*

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## 1. INTRODUCTION

Textiles and clothing sectors are a relevant part of the Portuguese manufacturing structure and foreign trade. Taken together, these two sectors represented 2.0 per cent of gross value added, 4.3 per cent of employment and 11.8 per cent of total manufacturing exports of the Portuguese economy in 2006. Nevertheless, these sectors have suffered strong shocks in the last two decades and have become relatively less important.

Textiles and clothing are distinct sectors with their own specificities but they are closely related both technologically and in terms of trade policy. The two sectors are naturally vertically linked since textiles are the major input for clothing products. However these linkages also involve distribution and sales activities since retailers in the clothing sector increasingly manage the supply chain of both clothing and textiles sectors (see Nordäs (2004)). In addition, up to 2005, international trade of textiles and clothing was internationally regulated by the World Trade Organization Agreement on Textiles and Clothing (ATC). As described by Hanzl-Weiβ (2004), textiles and clothing are labour-intensive sectors where production is mostly carried out in small and medium-sized firms. Nonetheless, it should be noted that textiles and clothing are not homogeneous in terms of the sophistication of production, as low and high value-added segments coexist within the same sectors or even within the same industry.[1] In high value-added segments, research and development is an important competitive factor: in the fashion industry or in sportswear, for example, materials, design and marketing play a crucial role.

In the last two decades, these sectors experienced several structural shocks with significant consequences on their relative size in the economy and on characteristics of the firms (see OECD, 2004). As for the Portuguese experience in textiles and clothing sectors, it should be noted that there is a long record of participation and competition in international markets, dating back to the accession to the European Free Trade Association (EFTA) in 1960. In fact, the trade liberalization resulting from EFTA strongly contributed to the expansion of the Portuguese textiles and clothing sectors, since its relatively labour-intensive nature matched the relatively labour-abundant factor endowment of the economy. As a result, the classical Balassa indexes for Portugal show a revealed comparative advantage in

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(1) Schott (2004), using product-level U.S. import data shows that, although this country increasingly sources the same products from both high- and low-wage countries, unit values within products vary systematically with exporter relative factor endowments and production techniques. The existence of within-product specialization is an important consideration for understanding the impact of globalization on firms and workers.

these sectors since the sixties (see Amador *et al.* (2007)). Portuguese accession to the European Economic Community (EEC) in 1986 and the implementation of the European Single Market in 1993 brought further liberalization in these sectors. Nevertheless, the EEC market was itself protected by the import quotas imposed under the Multi-Fibre Arrangement (MFA), giving the Portuguese exporters a competitive advantage in the European market. A progressive elimination of the quantitative restrictions took place under the ATC, to be phased in from 1995 until 2005. The consequences of this liberalization at the European and world levels were widely studied. In this respect see, for example, OECD (2004), Nordäs (2004), Francois *et al.* (2007) and Fox *et al.* (2008). One common result is that these changes were beneficial for the large scale quota constrained producers, notably China, who joined the WTO in 2001, after 15 years of negotiations.[2] Recent events, like the 2007 enlargement of the European Union to Romania and Bulgaria, countries with relatively lower labor costs and important textiles and clothing sectors, will pose further challenges to Portuguese exporters in what concerns the relocation of production. Overall, the background points to significant challenges and the existing data reveals a significant loss of Portuguese market share in the textile and clothing industries in the period 1997-2006 (see Amador and Cabral (2008)).

This article takes a descriptive approach of the evolution of the textiles and clothing sectors in Portugal adopting two complementary perspectives. Firstly, we look at aggregate data and analyze the main trends in the two sectors since the beginning of the eighties. Secondly, we use firm-level data on textile and clothing producers and exporters to examine more in detail the changes occurred in the two sectors from 1996 to 2005. In this context, we report the distribution of firms according to size, number of varieties exported and markets covered and we identify changes in the distribution of the unit values of textile and clothing products exported by Portugal-based firms to their main destination markets relative to the average unit values traded in those same markets. Two other interesting dimensions covered in this article are the demography of firms in these sectors and the decomposition of the observed annual nominal export growth rates according to the firm, product and destination margins. Data constraints make it impossible to aggregate the firm-based information to perform a compatible longer-term analysis.

The article is organized as follows. The next section describes the set of databases and classifications used. Section three reports an aggregate analysis of the main trends observed in the textile and clothing sectors in the last two decades. Section four describes the characteristics of textile and clothing producers and exporters with a particular emphasis on their products and destinations mix. Finally, Section five concludes.

## 2. DATA

The analysis carried out in this article combines several datasets containing information ranging from aggregate-level to firm-level. We use the STAN-OECD database for the period 1980-1994, complemented with national accounts from Statistics Portugal (*INE*) for the period 1995-2006, to obtain the

(2) For a paper on the impact of Chinese competition on the Belgium textiles industry see Monforte *et al.* (2008).

share of textiles and clothing in gross value added (GVA). The total number of firms, establishments and employees operating in textiles and clothing industries for the period 1982-2006 is obtained by aggregating firm-level data from *Quadros de Pessoal*, a comprehensive database maintained by the Portuguese Ministry of Social Security and Labour. We identify producers of textiles and clothing by selecting firms according to the classification of economic activity (CAE).[3] We use the CEPII-Chelem international trade database to compute the share of exports of textiles and clothing relative to total manufacturing exports for Portugal and other countries. This database contains information based on the International Standard Industrial Classification of all Economic Activities (ISIC rev.3), which has a correspondence with NACE. The recently available CEPII-BACI database was used to obtain unit values of exports and imports of textiles and clothing for Portugal and its main export markets from 1995 to 2004, using a 6-digits breakdown level of the 1992 version of the Harmonized System (HS) nomenclature (see Gaulier and Zignaro (2008) for a detailed description of this database).[4]

Our firm-based analysis is made possible by the use of a new database that combines detailed and comprehensive information on the trading behaviour of firms. The database includes all export transactions by firms that are located in Portugal, on a monthly basis, from 1996 to 2005. A transaction record includes the firm's tax identification, an 8 digits Combined Nomenclature product code, the value of the transaction, the quantity of exported goods (expressed in kilos), the destination country, an *incoterm* code describing how transportation cost, risks an insurance are allocated between the buyer and the seller (FOB, CIF, etc.) and a variable indicating the type of transaction (transfer of ownership after payment, return of a product, etc.).

The data used comes from customs forms in the case of extra-EU trade and from the Intrastat form in the case of intra-EU trade and it aggregates to total Portuguese exports as reported by Statistics Portugal (*INE*). In the analysis, we consider only transactions of goods from mainland Portugal that are worth more than 100 euro. Still, our data covers, on average, more than 99 per cent of total exports and about 75 per cent of the exporters. In our analysis, the data is aggregated at the annual level, all values are expressed in current euro and we restrict the product classification to HS at 6 digits.[5] In the appendix, for illustrative purposes, we show an example of a HS 6-digits product.[6]

Since many datasets are used in this study one clarifying remark about which source is used in the firm-level analysis is needed. Initially (Tables 1 to 3) we consider all the firms in the trade dataset that export textiles or clothing products. Later on (Tables 4 to 6 and Charts 4 to 7), when additional information on firms' characteristics are needed we consider firms that are included both in *Quadros de Pessoal* and in the firbases is not equal. Twenty per cent of the firms that export textiles and clothing are

(3) The classification of economic activities used by Statistics Portugal (*INE*) associates firms to industries on the base of the firm's most relevant activity in terms of production and utilization of inputs. In the period under analysis there were two revisions in CAE (from CAE rev.1 to CAE rev.2 and then to CAE rev.2.1), which required the use of correspondence tables. This classification is very close to the Statistical Classification of Economic Activities in the European Community (NACE).

(4) The Harmonized System (HS) is run by the World Customs Organization (WCO). This classification of commodities is used by most trading nations and in international trade negotiations. The Harmonized System, came into force in 1988, was updated on January 1st 1992, 1996, 2002 and 2007.

(5) The only exception to this is Chart5 where we convert values from 1995 to 2004 euros.

(6) Therefore, the product codes in the raw data follow HS 1996 for the period 1996-2001 and HS 2002 for the period 2002-2005.The Combined Nomenclature system is comprised of the HS nomenclature with further European Community subdivisions. The first six digits of the Combined Nomenclature system approximately coincide with the HS classification.

not present in *Quadros de Pessoal*, representing 10 per cent of total exports of these products. Therefore, the set of firms considered after Table 3 is different from the one used before. In addition, some effort was needed to make the aggregate part of the analysis that uses the ISIC rev.3 classification of the CEPII-Chelem database consistent with the firm-level part of the analysis that uses data expressed according to the HS nomenclatures. We used a correspondence table (from the documentation of the CEPII-BACI database) to match ISIC codes with HS 1992 codes. Then HS 1992 codes for textiles and clothing were matched with HS 1996 and HS 2002 codes.

## 3. AGGREGATE ANALYSIS (1982-2006)

Textiles and clothing represent a relevant share of the Portuguese economy, though their importance has declined significantly in the last two decades. The evolution over time of these two sectors has been substantially different. Chart 1 plots the evolution over time of textiles and clothing as a share in GVA, total employees, and total manufacturing exports in panels (a), (b) and (d) respectively. Panel (c) of Chart 1 instead reports the evolution over time of the number of textiles and clothing firms and establishments. In the beginning of the eighties the textile sector represented about 2.5 per cent of total GVA while the clothing sector represented about 1 per cent. Until EEC accession in 1986 both sectors increased their share in GVA, but they evolved quite differently afterwards. The relative importance of the textiles sector declined continuously after 1986, reaching a share of total GVA slightly above 1 in 2006. On the contrary, the clothing sector increased its importance until 1992, when it reached a share of 1.5 per cent of total GVA, progressively declining afterwards to a share slightly below 1 per cent in 2006.

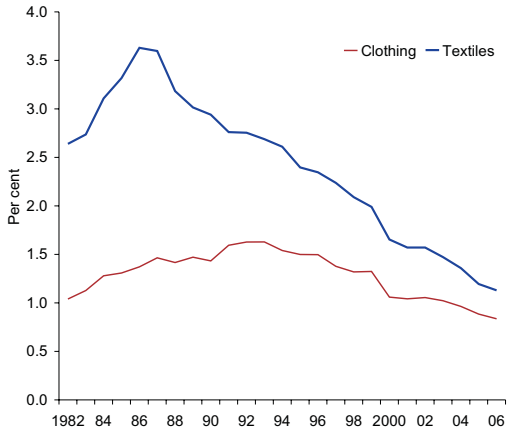
The evolution of these sectors in terms of share in total employees is similar to that in terms of share in GVA. The share of textiles in total employees was more than double that of clothing in the beginning of the eighties but this relationship was reversed in recent years. In addition, the share of employees operating in clothing increased until 1991, but declined to 3.1 per cent in 2007. The share of the textiles sector in total employment declined continuously since 1985 to around 2.3 per cent in 2006. Taken together the share of textiles and clothing sectors in total employees dropped from 11.6 per cent in 1982 to 5.4 per cent in 2006.

The number of firms (with one or more employees) and establishments whose main activity was classified in the textiles or clothing sectors (CAE 321 and 322 in rev.1, CAE 17 and 18 in rev.2 and 2.1, respectively) was similar in the beginning of the eighties, around 2000 firms. The number of firms and establishments increased until 2000, but at a much faster rate in the clothing industry. In 2000, the number of firms classified as clothing is 6.697, more than three times the number of firms two decades earlier. From 2000 to 2006, the number of firms and establishments declined by 1000 units in the clothing industry and became fairly stable in the textile industry. The different path of the number of firms when compared with the shares in GVA and employment is explained by the fact that this is an absolute measure and there have been some changes in the size distribution of firms, as reported in Subsection 4.3.

## Chart 1

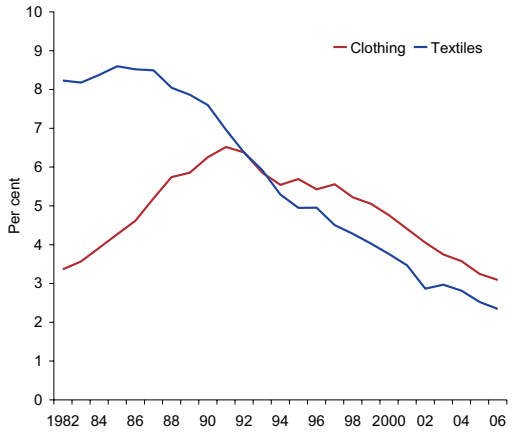
TEXTILES AND CLOTHING IN PORTUGAL

Share in GVA



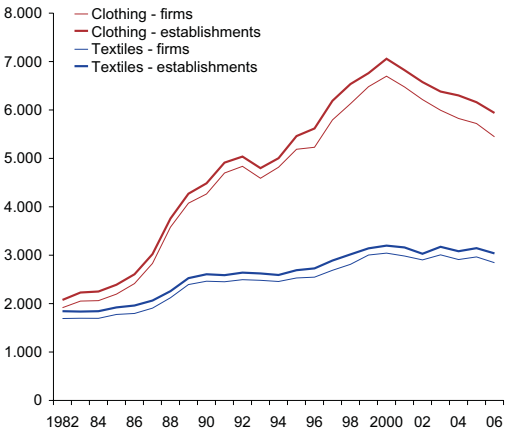

**Sources:** OECD-STAN and *INE*-National Accounts.

Share in total employees



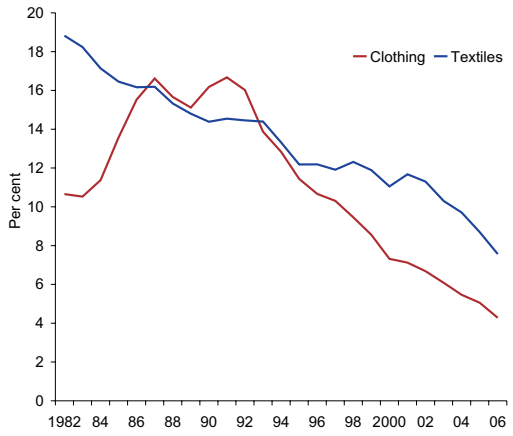

**Source:** *Quadros de Pessoal*.

Total number of firms/establishments




**Source:** *Quadros de Pessoal*.

Share in manufacturing exports



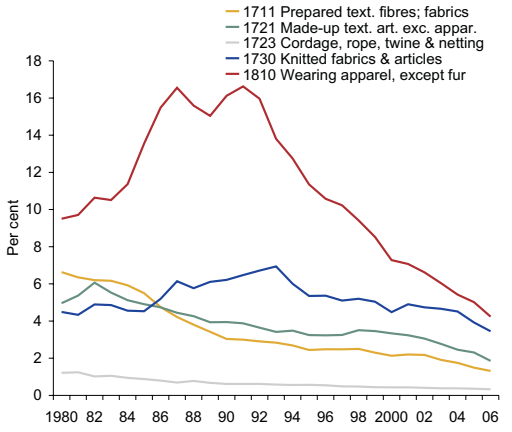

**Source:** CHELEM.

The evolution of the share of these sectors in terms of total manufacturing exports resembles the evolution of their shares in GVA and in total number of employees. The share of textiles exports decreased from 19 per cent in 1982 to 8 per cent in 2006 and the share of clothing exports increased from 11 per cent in 1982 to 16 per cent in 1992, declining to 4 per cent in 2006. Therefore, at present, the clothing industry accounts for a larger share in total employment and number of firms, but a smaller share in GVA and exports than textiles. Taken together the share of textiles and clothing sectors in total manufacturing exports dropped from 30 per cent in 1980 to 12 per cent in 2006.

The composition of Portuguese textiles and clothing exports according to ISIC rev. 3 4-digits codes reveals that the largest component has been that of ''wearing apparel, except fur'' (ISIC 1810), which reached 16 per cent of total manufacturing exports in the beginning of the nineties (Chart 2). Neverthe-

**Chart 2**

SHARES IN TOTAL MANUFACTURING EXPORTS
According to ISIC Rev.3



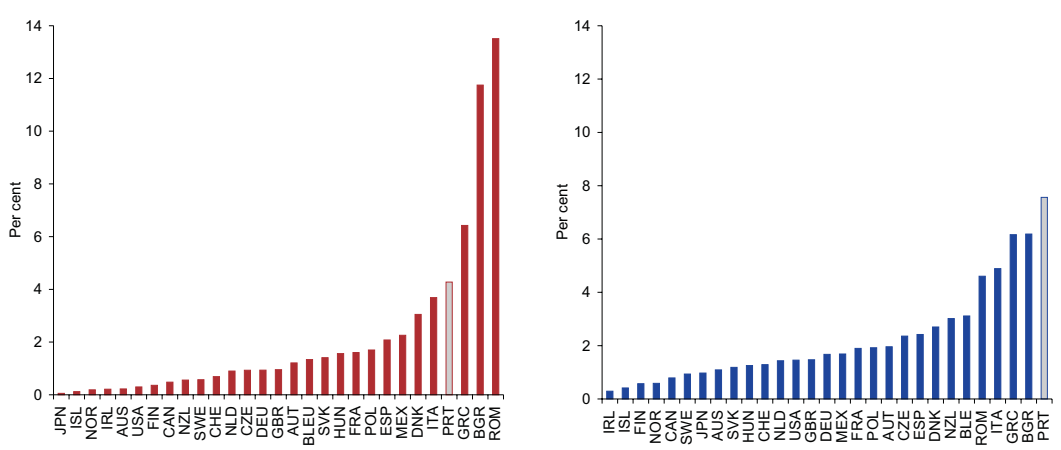

**Source:** CHELEM.
**Note:** Codes 1722, 1729 and 1820 are not shown in the Chart since their shares are very small.

less, from 1992 onwards its export share declined sharply to 4 per cent in 2006, a value close to that of the second largest and more stable export item ''knitted fabrics and articles''(ISIC 1730). The significance of each product in Portuguese textiles and clothing exports will be further detailed in Section 4, though using a different classification system.

The comparison of the Portuguese export share of textiles and clothing in total manufacturing exports with those of other European and OECD countries reinforces the idea that, despite the decline, these sectors are still very important in Portugal. Chart 3 shows that in 2006, the textiles sector in Portugal

**Chart 3**

SHARE OF TEXTILES AND CLOTHING IN TOTAL MANUFACTURING EXPORTS




**Source:** *CHELEM.*

had the highest share among the set of countries considered. As far as the clothing industry is considered, only three countries - Greece and, in particular, Bulgaria and Romania - had export shares higher than those of Portugal.

## 4. FIRM-BASED ANALYSIS (1996-2005)

### 4.1. A portrait of textiles and clothing exporters

In this section we proceed with a description of the Portuguese textiles and clothing sectors using firm-level data. In the first part of the section we adopt a product-focused analysis based on the HS nomenclature used in the trade data. In the second part of the section instead we focus on the nature of the firm, distinguishing in particular between producers and distributors on the basis of the CAE code available in *Quadros de Pessoal*. Table 1 lists the 14 chapters of the HS 2002 classification related to Section XI,''Textiles and textile articles''. It also reports, in parentheses, for each chapter, the number of sub-headings (6-digits level) for which Portuguese exports are positive in 2005. Note that we refer to chapters as ''industries'' and to sub-headings as ''products''. The table shows that Portuguese firms export products belonging to all 14 ''Textiles and textile articles'' industries. The highest number of exported products belongs to chapters ''52, cotton'' (125 products), ''55, man-made staple fibres'' (104 products), ''61, articles of apparel and clothing accessories, knitted or crocheted'' (113 products) and ''62, articles of apparel and clothing accessories, not knitted or crocheted'' (118 products). In the appendix we describe more in detail the degree of disaggregation associated to each classification level.

Table 2 reports some indicators of the relative importance of these industries. The second column shows the share of each industry in total textiles and clothing exports. The three most important indus-

**Table 1**

HARMONIZED SYSTEM 2-DIGITS INDUSTRIES AND NUMBER OF PRODUCTS EXPORTED IN 2005

| HS 2-digits code | Description | No. of 6-digits codes |
|---|---|---|
| 50 | Silk | 5 |
| 51 | Wool, fine or coarse animal hair; horsehair yarn and woven fabric | 27 |
| 52 | Cotton | 125 |
| 53 | Other vegetable textile fibres; paper yarn and woven fabrics of paper yarn | 18 |
| 54 | Man-made filaments | 63 |
| 55 | Man-made staple fibres | 104 |
| 56 | Wadding, felt and non-wovens; special yarns; twine, cordade, ropes and cables and articles thereof | 32 |
| 57 | Carpets and other textile floor coverings | 22 |
| 58 | Special woven fabrics; tufted textile fabrics; lace; tapestries; trimmings; embroidery | 38 |
| 59 | Impregnated, coated, covered or laminated textile fabrics; textile articles of a kind suitable for industrial use | 18 |
| 60 | Knitted or crocheted fabrics | 18 |
| 61 | Articles of apparel and clothing accessories, knitted or crocheted | 113 |
| 62 | Articles of apparel and clothing accessories, not knitted or crocheted | 118 |
| 63 | Other made-up textile articles; sets; worn clothing and worn textile article; rags | 53 |

**Sources:** Trade data from *INE*. Classification: Harmonized System 1996 and 2002, authors' correspondence.

**Table 2**

SUMMARY STATISTICS, BY 2-DIGITS INDUSTRIES, 2005

| Industry | % T&C export | No. of firms | % industry exporters | % core exporters | No. of destinations per industry firm | No. of products per industry firm |
|---|---|---|---|---|---|---|
| 50 | 0.02 | 28 | 0.25 | 0.18 | 1.4 | 1.3 |
| 51 | 2.15 | 106 | 0.27 | 0.23 | 4.1 | 3.2 |
| 52 | 4.07 | 407 | 0.34 | 0.26 | 3.1 | 4.3 |
| 53 | 0.1 | 94 | 0.17 | 0.00 | 2.0 | 1.3 |
| 54 | 1.48 | 288 | 0.3 | 0.18 | 2.1 | 1.8 |
| 55 | 3.53 | 281 | 0.35 | 0.21 | 2.8 | 2.6 |
| 56 | 3.56 | 279 | 0.55 | 0.14 | 2.4 | 1.7 |
| 57 | 1.61 | 310 | 0.56 | 0.23 | 1.7 | 1.6 |
| 58 | 1.39 | 425 | 0.26 | 0.15 | 2.2 | 1.6 |
| 59 | 2.27 | 226 | 0.56 | 0.11 | 2.2 | 1.4 |
| 60 | 1.13 | 268 | 0.21 | 0.17 | 1.9 | 1.7 |
| 61 | 41.73 | 1 734 | 0.77 | 0.66 | 3.2 | 5.7 |
| 62 | 21.24 | 1 362 | 0.63 | 0.50 | 2.4 | 7.1 |
| 63 | 15.72 | 1 098 | 0.69 | 0.38 | 2.6 | 2.9 |
| Total/average | 100 | 6 906 | 0.42 | 0.24 | 2.4 | 2.7 |

**Sources:** Trade data from *INE*. Classification: Harmonized System 1996 and 2002, authors' correspondence.
**Notes:** The second column shows industry export as a share of total export in the textiles and clothing sectors; the third column reports the number of firms that export at least one product in the corresponding 2-digits sector; the fourth column shows the percentage of firms (in column three) whose exports of products in the corresponding 2-digits sector represent at least 30 percent of firm's textile and clothing exports (industry exporters); the fifth column shows the percentage of firms (in column three) whose exports of products in the corresponding 2-digits sector represent at least 30 percent of firm's total exports (core exporters); the sixth column reports the average number of destinations reached by industry firms when selling products within the corresponding 2-digits sector; similarly, column seven shows the average number of products exported. The last row reports totals for columns one and two and averages for the other columns.

tries are ''61, articles of apparel and clothing accessories, knitted or crocheted'', ''62, articles of apparel and clothing accessories, not knitted or crocheted'', and ''63, other made-up textile articles; sets; worn clothing and worn textile articles; rags'', accounting for about 42 per cent, 21 per cent and 16 per cent, respectively of total textiles and textile articles exports in 2005. These three industries have always accounted for the highest shares since 1996. In 1996, the share of chapter 62, ''not knitted or crocheted'' products, was about 30 per cent, much higher than the current level, it declined steadily until 2002 and stayed constant thereafter. The share of ''knitted or crocheted products'' instead was stable at a level below 40 per cent until 2002 and increased in the last 3 years. The third industry has remained more stable throughout the sample period around a share of 15 per cent.

Column three of Table 2 lists, by industry, the number of firms that export at least one product in that industry. Some of these firms might be exporting a diversified range of textile products, spanning more than one industry while others might export textile products that belong to one industry only. We call ''industry exporters'' (see column four of Table 2) those whose exports of products belonging to the industry account for more than 30 per cent of their combined textiles and textile articles exports. These are firms whose *textile exports* are considerably concentrated in the particular industry under consideration. We call ''core exporters'' those whose exports of products belonging to the industry account for more than 30 per cent of their total exports. These are firms whose *total exports* are considerably concentrated in that specific textile industry. Column five of table 2 shows that while the majority of the firms exporting products belonging to the two main industries (61 and 62) are ''core exporters'' only

about one quarter of the firms exporting products in all textile industries are so. Finally, columns six and seven of Table 2 show that, on average, firms export 2.7 products to 2.4 destinations in 2005.

Table 3 reports the top five destination markets for each industry and, in parentheses, the share of total industry exports reaching each destination. The main export markets for textiles and clothing products (especially when considering the three main export industries 61, 62 and 63) broadly correspond to the main Portuguese overall export destinations: Spain, Germany, France, UK and US.

**Table 3**

TOP 5 DESTINATIONS, BY 2 DIGITS INDUSTRIES, 2005

| | First | Second | Third | Fourth | Fifth |
|---|---|---|---|---|---|
| 50 | Spain (65.4) | Germany (17.1) | Angola (3.7) | India (3.2) | Hong Kong (2.2) |
| 51 | Germany (42.8) | Spain (16.1) | UK (9.4) | Sweden (4.9) | France (4.5) |
| 52 | Spain (20.4) | Italy (12.7) | France (10.5) | Germany (10.3) | USA (3.8) |
| 53 | Spain (21.1) | Netherlands (16.2) | Italy (15.2) | Cape Verde (10.1) | Germany (4.2) |
| 54 | Spain (30.1) | Germany (12.7) | France (12.4) | UK (5.9) | Netherlands (4.4) |
| 55 | Germany (20.2) | Italy (15.5) | Spain (12.7) | France (8.0) | UK (6.0) |
| 56 | Spain (16.1) | France (13.9) | Netherlands (11.6) | UK (8.9) | Germany (7.3) |
| 57 | UK (35.5) | USA (17.5) | Germany (11.2) | Spain (9.4) | France (6.8) |
| 58 | Spain (25.7) | Czech Republic (11.4) | UK (8.3) | France (7.6) | Sweden (6.9) |
| 59 | Germany (39.4) | Spain (13.9) | France (5.7) | Czech Republic (4.2) | Belgium+Luxembourg (4.1) |
| 60 | Spain (25.7) | France (16.1) | Finland (9.8) | Belgium+Luxembourg (8.2) | UK (7.5) |
| 61 | Spain (27.1) | France (15.5) | UK (15.4) | Germany (12.2) | Italy (5.6) |
| 62 | Spain (36.5) | UK (16.4) | France (13.4) | Germany (6.3) | Italy (3.4) |
| 63 | USA (25.2) | Spain (16.8) | UK (13.9) | France (13.6) | Germany (5.3) |

**Sources:** Trade data from *INE*. Classification: Harmonized System 1996 and 2002, authors' correspondence.

We complement the previous product-focused analysis with some information on the nature of exporting firms. There is a difference between the set of firms that report textiles and clothing exports and those where such productions represent the core activity as defined by its CAE. Table 4 presents the breakdown of textiles and clothing exporters according to its CAE in 1996, 1999, 2002 and 2005. The relevant point to note is that, over this period, more than 20 per cent of textiles and clothing exporters are firms whose main activity is retail or wholesale trade, representing nearly 10 per cent of total exports of these products. This is understandable as many firms recur to commercial agents to export and, in some cases, exports might be re-exports of products manufactured in third countries. In addition, another 20 per cent of textiles and clothing exporters are firms whose main activity is not related either with those activities or with retail-wholesale. However, the exports carried out by this group of firms represent a small share of exports of textiles and clothing.

## 4.2 Participation in export markets and export intensity

Table 5 reports the fraction of firms that export with respect to the total number of firms whose main activity relates to textiles and clothing. The latter were identified by the CAE in *Quadros de Pessoal* while the former were identified employing the firm-based trade dataset. The data reveals that the proportion

## Table 4

DISTRIBUTION OF EXPORTERS OF TEXTILES AND CLOTHING ACCORDING TO MAIN ACTIVITY (CAE/NACE)

| Industry | Code | CAE | 1996 | | | 1999 | | | 2002 | | | 2005 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | Number of firms | % of firms | % of total exports | Number of firms | % of firms | % of total exports | Number of firms | % of firms | % of total exports | Number of firms | % of firms | % of total exports |
| Textile | | | | | | | | | | | | | | |
| Textile industries | 321 | CAE rev. 1 | 619 | 24.3 | 44.8 | | | | | | | | | |
| Preparation and spinning of textile fibres | 171 | CAE rev. 2 | | | | 57 | 2.0 | 4.3 | 46 | 1.6 | 2.1 | 30 | 0.9 | 2.1 |
| Textile weaving | 172 | CAE rev. 2 | | | | 91 | 3.2 | 12.1 | 83 | 2.9 | 12.7 | 100 | 3.2 | 12.8 |
| Finishing of textiles | 173 | CAE rev. 2 | | | | 26 | 0.9 | 1.3 | 17 | 0.6 | 1.6 | 26 | 0.8 | 1.4 |
| Manufacture of made-up textile articles, except apparel | 174 | CAE rev. 2 | | | | 92 | 3.3 | 7.1 | 84 | 2.9 | 5.9 | 115 | 3.6 | 7.5 |
| Manufacture of other textiles | 175 | CAE rev. 2 | | | | 127 | 4.5 | 7.2 | 131 | 4.5 | 8.7 | 131 | 4.1 | 9.8 |
| Manufacture of knitted and crocheted fabrics | 176 | CAE rev. 2 | | | | 63 | 2.2 | 3.6 | 54 | 1.9 | 2.4 | 66 | 2.1 | 4.5 |
| Manufacture of knitted and crocheted articles | 177 | CAE rev. 2 | | | | 223 | 7.9 | 9.1 | 191 | 6.6 | 8.7 | 213 | 6.7 | 11.1 |
| Clothing | | | | | | | | | | | | | | |
| Manufacture of apparel, except footwear | 322 | CAE rev. 1 | 774 | 30.4 | 39.8 | | | | | | | | | |
| Manufacture of leather clothes | 181 | CAE rev. 2 | | | | 6 | 0.2 | 0.0 | 6 | 0.2 | 0.0 | 6 | 0.2 | 0.0 |
| Manufacture of other wearing apparel and accessories | 182 | CAE rev. 2 | | | | 946 | 33.6 | 41.3 | 855 | 29.5 | 41.2 | 820 | 25.8 | 38.1 |
| Dressing and dyeing of fur; manufacture of articles of fur | 183 | CAE rev. 2 | | | | 3 | 0.1 | 0.2 | 2 | 0.1 | 0.4 | 3 | 0.1 | 0.3 |
| Retail | | | | | | | | | | | | | | |
| Retail trade | 610 | CAE rev. 1 | 437 | 17.2 | 7.7 | | | | | | | | | |
| Other retail sale of new goods in specialized stores | 524 | CAE rev. 2 | | | | 188 | 6.7 | 1.6 | 220 | 7.6 | 0.6 | 234 | 7.4 | 0.6 |
| Wholesale | | | | | | | | | | | | | | |
| Wholesale trade | 620 | CAE rev. 1 | 180 | 7.1 | 2.0 | | | | | | | | | |
| Wholesale on a fee or contract basis | 511 | CAE rev. 2 | | | | 67 | 2.4 | 0.7 | 80 | 2.8 | 1.7 | 141 | 4.4 | 2.4 |
| Wholesale of household goods | 514 | CAE rev. 2 | | | | 328 | 11.7 | 7.2 | 400 | 13.8 | 7.3 | 448 | 14.1 | 7.6 |
| Other wholesale | 519/517 | CAE rev. 2/2.1 | | | | 88 | 3.1 | 0.4 | 110 | 3.8 | 0.3 | 109 | 3.4 | 0.3 |
| Other sectors | | | 537 | 21.1 | 5.7 | 511 | 18.1 | 3.8 | 616 | 21.3 | 6.4 | 733 | 23.1 | 1.6 |
| Total | | | 2 547 | 100.0 | 100.0 | 2 816 | 100.0 | 100.0 | 2 895 | 100.0 | 100.0 | 3 175 | 100.0 | 100.0 |

**Sources:** Trade data from *INE* and *Quadros de Pessoal*. Classification: CAE rev. 1, rev. 2.1 and rev. 2.2.

## Table 5

SHARE OF EXPORTERS ON TOTAL FIRMS ACCORDING TO MAIN ACTIVITY (CAE/NACE)

| Industry | Code | CAE | Percentage of exporters on total producers | | | |
|---|---|---|---|---|---|---|
| | | | 1996 | 1999 | 2002 | 2005 |
| Textile | | | | | | |
| Textile industries | 321 | CAE rev. 1 | 29.5 | | | |
| Preparation and spinning of textile fibres | 171 | CAE rev. 2 | | 25.9 | 29.3 | 30.6 |
| Textile weaving | 172 | CAE rev. 2 | | 37.4 | 42.3 | 43.7 |
| Finishing of textiles | 173 | CAE rev. 2 | | 9.6 | 6.2 | 8.8 |
| Manufacture of made-up textile articles, except apparel | 174 | CAE rev. 2 | | 21.1 | 16.6 | 18.6 |
| Manufacture of other textiles | 175 | CAE rev. 2 | | 14.8 | 15.8 | 15.6 |
| Manufacture of knitted and crocheted fabrics | 176 | CAE rev. 2 | | 23.0 | 20.0 | 25.9 |
| Manufacture of knitted and crocheted articles | 177 | CAE rev. 2 | | 32.1 | 29.3 | 34 |
| Clothing | | | | | | |
| Manufacture of apparel, except footwear | 322 | CAE rev. 1 | 20.4 | | | |
| Manufacture of leather clothes | 181 | CAE rev. 2 | | 12.5 | 10.3 | 11.5 |
| Manufacture of other wearing apparel and accessories | 182 | CAE rev. 2 | | 14.8 | 14.1 | 14.5 |
| Dressing and dyeing of fur; manufacture of articles of fur | 183 | CAE rev. 2 | | 11.1 | 5.6 | 11.1 |
| Retail | | | | | | |
| Retail trade | 610 | CAE rev. 1 | 3.3 | | | |
| Other retail sale of new goods in specialized stores | 524 | CAE rev. 2 | | 0.7 | 0.7 | 0.7 |
| Wholesale | | | | | | |
| Wholesale trade | 620 | CAE rev. 1 | 0.5 | | | |
| Wholesale on a fee or contract basis | 511 | CAE rev. 2 | | 4.5 | 4.7 | 5.1 |
| Wholesale of household goods | 514 | CAE rev. 2 | | 6.5 | 6.7 | 6.3 |
| Other wholesale | 519/517 | CAE rev. 2/2.1 | | 5.0 | 4.9 | 4.7 |

**Sources:** Trade data from *INE* and *Quadros de Pessoal*. Classification: CAE rev. 1, rev. 2.1 and rev. 2.2.

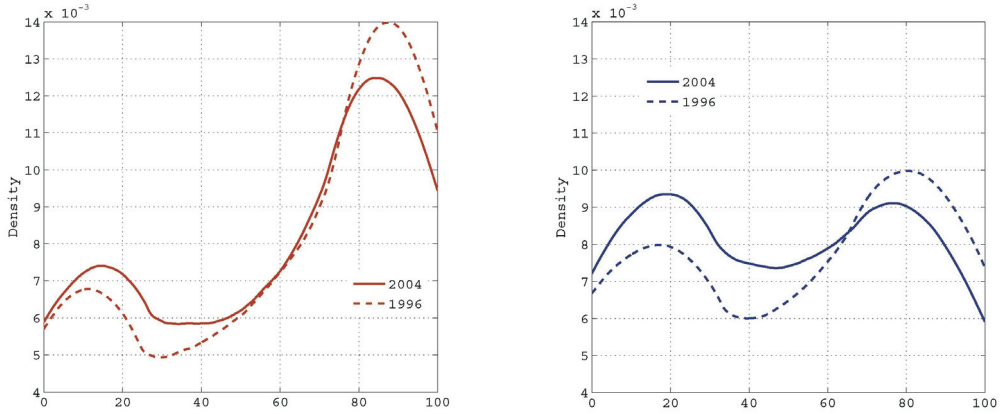
of exporters is relatively low.[7] ''Textile weaving'' and ''Manufacture of knitted and crocheted articles'' record the highest shares of exporters with average figures around 40 and 30 per cent, respectively, in the years 1999, 2002 and 2005. In general, low shares of exporters do not necessarily mean that only a minority of firms contribute to the value of textiles and clothing exports. Many firms may produce intermediate goods that are posteriorly incorporated in other domestic industries (including, naturally, textiles and clothing), whose final goods are exported. In addition, some firms may recur to trade agents to export, while others may be subsidiaries and suppliers of exporting firms.

Exporters are quite heterogeneous in terms of the fraction of production sold in foreign markets.[8] Chart 4 plots the Epanechnikov estimated kernel density of the export intensity (the ratio between firm's exports and total sales) for 1996 and 2004 for textiles and clothing producers.[9] The shape of the export intensity probability density is similar in the two sectors. In both sectors the density is bimodal. In the clothing sector, a substantial share of the density is associated to export intensities between 60 and 100 per cent, meaning that many firms are strongly export oriented. However, from 1996 to 2004, the distribution clearly shifted to the left implying an increase in the share of firms with low export intensity. In the textile sector a high share of the density is also associated to firms with high export intensity, even though it is substantially lower than in clothing. Nevertheless, in 2004 relatively more firms present lower export intensities. Overall, the distributions reveal that, both in textiles and clothing, there is more density in lower export intensities in 2004 relatively to 1996.

**Chart 4**

EXPORT INTENSITY OF PORTUGUESE EXPORTERS

Clothing | Textiles




**Source:** Authors' calculations.
**Note:** In these (and the following) estimated kernel densities, the integral is lower than one because the method attributes some density to values outside the relevant interval presented in the figure. Overall results are not qualitatively affected by the use of this methodology.

(7) Other studies (*e.g.*, Bernard *et al.* (2003)) have shown that the fraction of firms that export is generally low.
(8) See, among others, Bernard *et al.*(2003).
(9) In *Quadros de Pessoal* firm's total sales refer to the previous year, thus the last year available in our sample is 2004.

### 4.3. Producers' size and export unit values

In this subsection we maintain the focus on exporters whose main activity is the manufacturing of textiles and textile articles. The objective is to identify possible alterations in the structure of the sectors by examining changes in the shape of the estimated kernel distributions and in the histograms of firms' size. We concentrate on three definitions of size, namely total sales, number of products exported (identified as the number of HS 6-digits items covered) and number of destination markets. Next, we look at the changes in the distribution of the weighted relative unit values to shed some light on the prices of products exported by Portugal-based firms.

Chart 5 shows that the distributions of exporters according to the value of total sales (domestic plus export sales) is strongly skewed to the left in both textiles and clothing, revealing a significant amount of firms with low turnover. Adjusting for inflation to make nominal values comparable, the skewness towards low size firms seems to have been accentuated from 1995 to 2004. This picture is compatible with prior information if we recall that the total number of firms in textiles and clothing has broadly stabilized from 1995 to 2004 and the relative size of the sector in the economy has shrunk.

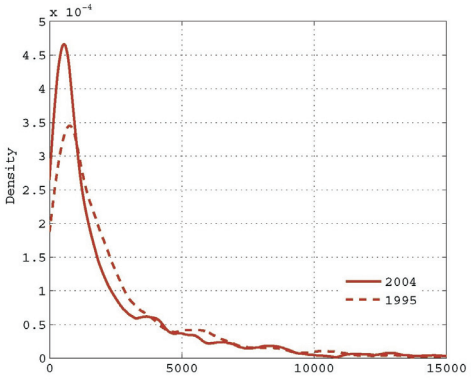
The distribution of firms across the number of products exported and destinations served also reveals a reduction in the scope of textiles and clothing firms' activities (Charts 6 and 7). Both in textiles and clothing sectors the large majority of firms export less than 10 different products, though in the clothing sector this proportion is somewhat higher. From 1996 to 2005 the distributions reveal a slight reduction in the number of exported products.

As for the number of destinations served, most textile and clothing firms operate in less than 10 foreign markets, though in the textile sector there seems to be a higher variety of destinations served (see

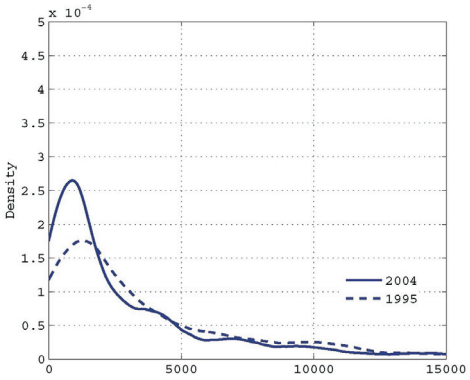
**Chart 5**

DISTRIBUTION OF PRODUCERS BY TOTAL SALES (2004 THOUSAND EURO)

Clothing




Textiles

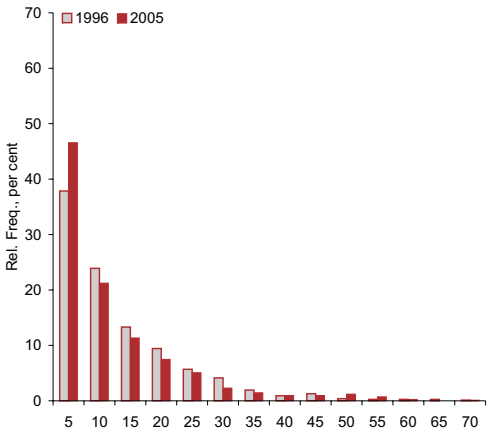



**Source:** Authors' calculations.

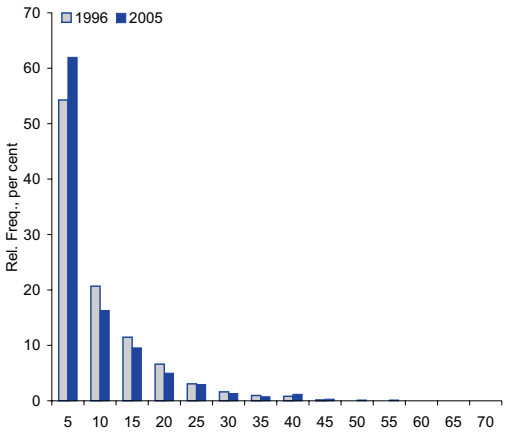
## Chart 6

DISTRIBUTION BY NUMBER OF PRODUCTS EXPORTED

Clothing




Textiles

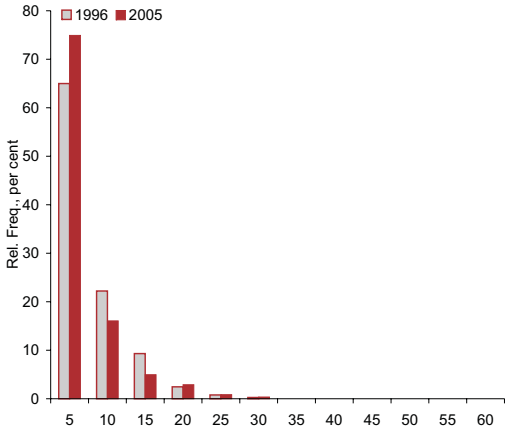



**Source:** Authors' calculations.

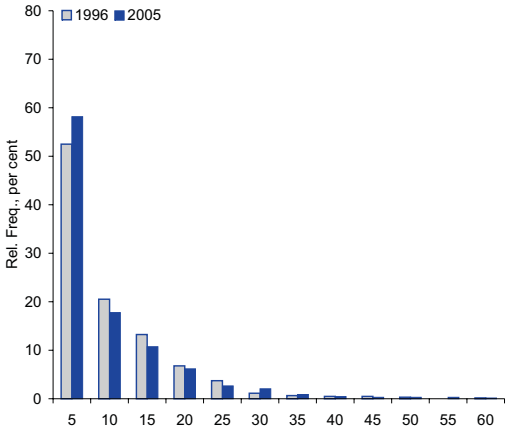
## Chart 7

DISTRIBUTION BY NUMBER OF DESTINATIONS SERVED

Clothing




Textiles




**Source:** Authors' calculations.

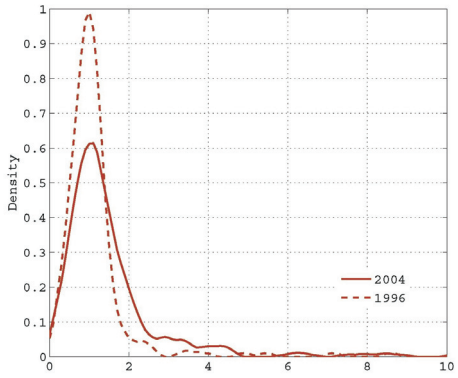
Chart 8). Again, from 1996 to 2005, the distributions become more concentrated towards lower numbers of destinations.

As for the evolution of the unit values of goods exported, we aim at comparing the unit values of products exported by Portugal-based firms to the unit values of the same products exported (to the same destinations) by their competitors. For this purpose we compute, using the CEPII-BACI database, for each HS 6-digits textiles or clothing product the average import unit value in 1996 and in 2004 in each of Portugal's top five trading partners. This computation requires identifying the average (across source countries from all over the world, except Portugal) unit value of each product imported by

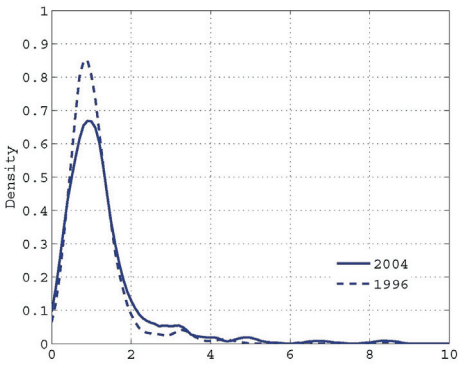
**Chart 8**

DISTRIBUTION OF EXPORT RELATIVE UNIT VALUES

Textiles




Clothing




**Source:** Authors' calculations.

Spain, Germany, France, United Kingdom and the United States of America. Then, this weighted product (FOB) import unit value for each Portuguese main partner is compared with the corresponding Portuguese product (FOB) export unit value. Finally, for each product, the relative unit value is averaged across the five main partners considered using as weights their shares in Portugal's textiles and clothing exports. We now describe more formally the procedure used to construct this relative price.

Consider exports of product $k$ by country $i$ to country $j$ in year $t$. Let $u_{ij}(k,t)$ be the average unit value charged in this trade flow. Let $w_{Ij}(i,k,t)$ be the share of country $i$ in total imports of product $k$ made by country $j$ in year $t$ and $w_{E,PT}(j,k,t)$ be the share of country $j$ in total exports of product $k$ made by Portugal in year $t$. The weighted unit value of product $k$ imported in market $j$ at time $t$, excluding Portugal, is:

$$u_j(k,t) = \sum_{i \neq PT} \left[ u_{ij}(k,t) . w_{Ij}(i,k,t) \right] \qquad (1)$$

where $j \in J \equiv \{ES, DE, FR, UK, US\}$. The second step consists in dividing the unit value charged by Portuguese exporters for product $k$ to destination $j$, $u_{PTj}(k,t)$, by the average unit value in destination $j$ as above and taking a weighted average across the five main partners:

$$u(k,t) = \sum_{j \in J} \left[ \frac{u_{PTj}(k,t)}{u_j(k,t)} \right] . w_{E,PT}(j,k,t). \qquad (2)$$

Chart 8 shows the distribution (along $k$) of the relative unit value index $u(k,t)$ in equation 2 for $t = 1996$ and $t = 2004$. In both years, the mode of the distribution is around one both in textiles and clothing, meaning that the unit value of Portuguese exports is generally close to the unit values of their competitors. Nevertheless, from 1996 to 2004, there appears to be a shift towards higher relative unit values, especially in the clothing sector. It is acknowledged that unit values are plagued by statistical and mea-

suring problems and they may not be good indicators of products' quality. Therefore, two opposite interpretations could be made. Either the shift of the distribution reflects increased competition faced by Portuguese textiles and clothing exporters by third countries with lower prices or it may reflect a true upgrade in the technological level or quality of domestically exported products.

### 4.4. Product and destination margins of exporting firms

This section analyzes how the dynamics of textiles and clothing exports is affected by firms' decisions on entry and exit into export markets, on where to export and which products to export. Firstly, we focus on the entry/exit decision. Adopting an approach proposed by the industrial organization literature and recently shared by the trade literature, we compare the number and average export size of firms with different export histories. Secondly, we extend the analysis to the destination and product margins and show how these dimensions interact with the entry/exit margin to drive changes in the year-on-year textiles and clothing export growth rates.

In what regards the demography of firms in textiles and clothing, we decompose the total number of exporters in each year into those continuing, exiting, entering or just staying one year. Here we follow Eaton *et al.* (2007) in defining firm categories. Entrants in year $t$ are those firms that did not export in $t-1$, export in $t$ and will export in $t+1$ as well; exiters in year $t$ are those firms that exported in $t-1$, export in $t$ but will not export in $t+1$; continuing firms in year $t$ are those firms that exported in $t-1$, export in $t$ and will export in $t+1$, as well; finally, single-year exporters in year $t$ are those firms that did not export in $t-1$, export in $t$ but will not export in $t+1$. The top panel of Table 6 reports the number of firms falling in each category over time and the bottom panel reports average exports per firm for each category.

**Table 6**

CONTINUING, ENTERING, EXITING AND SINGLE-YEAR EXPORTERS

| Clothing | | | | | Textiles | | | | |
|---|---|---|---|---|---|---|---|---|---|
| Year | Continuing | Exiting | Entering | Single-year | Year | Continuing | Exiting | Entering | Single-year |
| | Number of firms | | | | | Number of firms | | | |
| 1999 | 697 | 91 | 102 | 65 | 1999 | 481 | 80 | 67 | 51 |
| 2002 | 536 | 141 | 114 | 72 | 2002 | 392 | 87 | 84 | 43 |
| 2004 | 578 | 85 | 139 | 56 | 2004 | 462 | 67 | 111 | 42 |
| | Export per firm (thousand euro) | | | | | Export per firm (thousand euro) | | | |
| 1999 | 2 284 | 997 | 1 082 | 268 | 1999 | 3 606 | 1 633 | 944 | 495 |
| 2002 | 2 406 | 1 577 | 1 205 | 816 | 2002 | 3 572 | 2 599 | 871 | 637 |
| 2004 | 2 281 | 612 | 1 511 | 1 100 | 2004 | 3 684 | 553 | 1 619 | 285 |

**Sources:** Trade data from *INE* and *Quadros de Pessoal*. Classification: CAE rev. 1, rev. 2.1 and rev. 2.2.

Results show that more than two thirds of the firms are continuing exporters, single year firms represent less than 10 per cent of the total and the gross number of entering and exiting exporters is slightly higher than 10 per cent. Continuing exporters account for about 90 per cent of total exports in the clothing and textiles sectors. In contrast, to what happens in the total economy (see Amador and Opromolla (2008)) there are relatively less single year exporters but their relative size is bigger, especially in clothing where there is a clear upward trend. Entering and exiting firms in these sectors, like in the overall economy, are on average smaller, in terms of exports per firm, than incumbents.[10]

In the remaining part of this section we study more in detail the evolution of textiles and clothing exports over time, considering the firm, destination and product margins. In Section 3, panel (d) of Chart 1 shows the evolution of textile and clothing exports as a share of total manufacturing exports. The clothing share has been decreasing continuously since 1992, while the textile share remained fairly stable from 1994 to 2001, but then declined sharply. Column two of panel (a) of Table 7 reveals that the drop in clothing exports as a share of Portuguese manufacturing exports is due, in part, to an actual decrease in the exports of clothing products. In fact, the value of exports has been decreasing at progressively higher rates throughout the 1997-2005 period. Column two of panel (b) of Table 7 shows that textiles' exports as a share of Portuguese total manufacturing exports were fairly stable in the 1997-2002 period thanks to an actual rise in the exports of textile products. The decline that occurs later on is due, in part, to an actual drop in the exports of these products. In the remaining columns of Table 7 we decompose the nominal growth rate of exports of clothing and textile into three dimensions: firms, destinations and products. More specifically, we consider three types of firms' decisions: the decision to entry/stay/exit in export markets, the decision of where to export and the decision of what to export. We start by decomposing the total nominal export growth in the contribution of ''entering'', ''exiting'' and ''continuing'' exporters, that is, in the extensive and intensive margins at the aggregate level along the firm dimension (firms indexed by $j$):

$$\Delta Y_t = \sum_{j \in N} \Delta Y_{jt} + \sum_{j \in X} \Delta Y_{jt} + \sum_{j \in C} \Delta Y_{jt}\,, \tag{3}$$

where $\Delta Y_t$ is the change in exports from year $t-1$ to year $t$, $N$ is the set of entering exporters, $X$ is the set of exiting exporters and $C$ is the set of continuing exporters. The next step is to break down the change in exports of continuing exporters into ''added destinations'' ($AD$), ''dropped destinations'' ($DD$) and ''continuing destinations'' ($CD$), that is, in the extensive and intensive margin at the firm level along the destination dimension. At each continuing exporter, export growth can be further decomposed as:

$$\Delta Y_{jt} = \sum_{z \in AD} \Delta Y_{zjt} + \sum_{z \in DD} \Delta Y_{zjt} + \sum_{z \in CD} \Delta Y_{zjt}\,, \tag{4}$$

Finally, we consider the product that firms choose to export in ''continuing'' destinations. We distinguish among ''added products'' ($AP$), ''dropped products'' ($DP$) and ''continuing products'' ($CP$) ex-

(10) Nevertheless, the size of exiters in the textiles sector in 2002 was quite high.

## Table 7

DECOMPOSING AGGREGATE NOMINAL EXPORT GROWTH

**(a) Aggregate and Firms**

| Year | Aggregate | Exit+Entry | Exit | Entry | Continuing |
|---|---|---|---|---|---|
| 1997-1999 | -1.6 | 0.4 | -1.9 | 2.2 | -1.9 |
| 2000-2002 | -4.6 | -0.4 | -2.7 | 2.3 | -4.1 |
| 2003-2005 | -6.6 | 1.3 | -3.5 | 4.8 | -7.9 |

**(b) Aggregate and Firms**

| Year | Aggregate | Exit+Entry | Exit | Entry | Continuing |
|---|---|---|---|---|---|
| 1997-1999 | 7.1 | 1.4 | -1.2 | 2.6 | 5.7 |
| 2000-2002 | 5.0 | 0.8 | -1.6 | 2.4 | 4.2 |
| 2003-2005 | -8.9 | 0.6 | -1.9 | 2.5 | -9.4 |

**(c) Destinations**

| Year | cont. (a) | Dropped+Added | Dropped | Added | Continuing |
|---|---|---|---|---|---|
| 1997-1999 | -1.9 | -0.1 | -2.8 | 2.7 | -1.8 |
| 2000-2002 | -4.1 | -0.1 | -3.0 | 2.9 | -3.9 |
| 2003-2005 | -7.9 | -1.8 | -4.0 | 2.2 | -6.1 |

**(d) Destinations**

| Year | cont. (b) | Dropped+Added | Dropped | Added | Continuing |
|---|---|---|---|---|---|
| 1997-1999 | 5.7 | 0.3 | -2.8 | 3.2 | 5.3 |
| 2000-2002 | 4.2 | 0.5 | -2.8 | 3.3 | 3.7 |
| 2003-2005 | -9.4 | -2.7 | -5.5 | 2.7 | -6.7 |

**(e) Products**

| Year | cont. (c) | Dropped+Added | Dropped | Added | Continuing |
|---|---|---|---|---|---|
| 1997-1999 | -1.8 | -0.1 | -9.0 | 9.0 | -1.8 |
| 2000-2002 | -3.9 | -0.5 | -9.0 | 8.5 | -3.6 |
| 2003-2005 | -6.1 | 0.0 | -9.0 | 8.9 | -6.0 |

**(f) Products**

| Year | cont. (c) | Dropped+Added | Dropped | Added | Continuing |
|---|---|---|---|---|---|
| 1997-1999 | 5.3 | 0.9 | -4.4 | 5.3 | 4.5 |
| 2000-2002 | 3.7 | 0.5 | -4.1 | 4.6 | 3.2 |
| 2003-2005 | -6.7 | 0.0 | -4.7 | 4.7 | -6.6 |

**Clothing** **Textiles**

**Sources:** Trade data from *INE*. Classification: Harmonized System 1996 and 2002, authors' correspondence.

ported by firms in ''continuing destinations'', that is, the extensive and intensive margin at the firm level along the product dimension:

$$\Delta Y_{zjt} = \sum_{v \in AP} \Delta Y_{vzjt} + \sum_{v \in DP} \Delta Y_{vzjt} + \sum_{v \in CP} \Delta Y_{vzjt} \,, \tag{5}$$

Summing up, we can write the change in Portuguese textiles or clothing exports as:

$$\begin{aligned} \Delta Y_t = & \sum_{j \in N} \Delta Y_{jt} + \sum_{j \in X} \Delta Y_{jt} + \\ & + \sum_{j \in C} \left\{ \sum_{z \in AD} \Delta Y_{zjt} + \sum_{z \in DD} \Delta Y_{zjt} + \sum_{z \in CD} \left[ \sum_{v \in AP} \Delta Y_{vzjt} + \sum_{v \in DP} \Delta Y_{vzjt} + \sum_{v \in CP} \Delta Y_{vzjt} \right] \right\} \end{aligned} \tag{6}$$

We compute the per cent change in total export by dividing each term in equation 6 by $(Y_t + Y_{t-1})/2$, *i.e.*, the average between exports in $t$ and $t-1$.[11] Our decomposition procedure extends the one proposed by Bernard *et al*. (2006). These authors decompose the aggregate growth in real US manufacturing output between 1972 and 1997 taking into account the firm and the product margins only.

Our decomposition reveals two main results. The first result is that the growth rate of exports, for both clothing and textile, is mainly driven by a pure intensive margin effect. Column six of panels (a) and (b) of Table 7 shows that the growth rates of exports follow closely the variations in the foreign sales of continuing exporters. Similarly, the same columns of panels (c) and (d) show that variations in the sales of continuing exporters are mainly explained by variations in sales in continuing destinations. Finally, panels (e) and (f) show that variations in sales in continuing destinations are mainly due to sales of continuing products. Therefore sales of continuing products, in continuing destinations, by continuing exporters are responsible for the year-to-year variation in exports, for both clothing and textile products. The second result is that the extensive margin is nonetheless important. While the net effect of entry and exit of firms, destinations and products is usually fairly small, the gross contributions are particularly high. These are shown in columns four and five of Table 7. The magnitude of the gross contribution of entering and exiting firms and added and dropped destinations is quite similar for clothing and textile. The gross contribution of added and dropped products is instead much higher in the case of clothing. Considering that the aggregate growth rate of clothing exports is usually smaller than the corresponding growth rate of textile exports, the gross contributions of product additions and of product subtractions are remarkably big. This remains true when we compare clothing figures with those obtained from a similar decomposition made for total Portuguese exports.[12] All in all, the second result suggests the presence of a high degree of reallocation activity on all margins: the choice of starting or discontinuing exports of a product, the choice of entering or leaving a foreign market and the overall choice of beginning to export versus stopping to do it. We note that, with a few exceptions, the gross contribution of the entry margin (either of firms or destinations or products) has been declining over time while the gross contribution of the exit margin has become more and more negative. In this sense,

(11) As explained in Eaton *et al*. (2007), computing growth as the change between two dates divided by the average level in the two dates rather than the change divided by the level in the earlier date has at least two advantages: (i) x per cent growth followed by -x per cent growth returns us to the same level and (ii) values close to zero in the first year have a less extreme effect on the growth rate.

(12) See Amador and Opromolla (2008).

the extensive margin, even if less substantially than the intensive margin, has also contributed to the overall decline of textile and clothing export sales.

## 5. CONCLUDING REMARKS

Textiles and clothing have been sectors subject to significant shocks in the last two decades, mainly associated with increased international trade liberalization. In this context, Portugal has been identified as one of the most affected countries in the European Union. An aggregate analysis of the main indicators in the last two decades reveals that the relative importance of these sectors has been decreasing in the Portuguese economy. Although there was an expansion of the clothing industry until the beginning of the nineties, a sharp decline followed until recently. The textiles sector instead presented a progressive decline since the eighties.

The structure of the Portuguese textiles and clothing sectors is based on small-medium firms, the share of exporters is relatively small and its average export intensity is medium. The analysis of firm-level data reveals some reduction in its average dimension from 1996 to 2005. This reduction is visible along several dimensions, namely sales, number of products and number of destinations served.

As for the evolution of product export unit values, considering the five main Portuguese textiles and clothing destination markets in 1996 and 2004, we observe an increase in the proportion of national products whose export unit value is higher than the corresponding average import unit value in the referred markets, particularly in the clothing sector.

Finally, the breakdown of the growth rate of nominal exports of textiles and clothing reveals that the change in exports due to the net entry of exporters (the firm extensive margin) is much smaller than the change due to the variation in the sales of continuing exporters (firm intensive margin). In addition, the gross contributions of entry and exit of firms, destinations and products are relatively large, especially in the clothing sector. This suggests the presence of a high degree of reallocation activity along all margins: firms, destinations and products.

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# A APPENDIX: DATABASE

## A.1. Product Definition

The following is an illustration of the HS classification. Chapter 61 "Articles of apparel and clothing accessories, knitted or crocheted'' includes 17 headings at the 4-digits level:

| | |
|---|---|
| 6101 | Men's or boys' overcoats, car-coats, capes, cloaks, anoraks (including ski-jackets), wind-cheaters, wind-jackets and similar articles, knitted or crocheted, other than those of heading No 6103, |
| 6102 | Women's or girls' overcoats, car-coats, capes, cloaks, anoraks (including ski-jackets), wind-cheaters, wind-jackets and similar articles, knitted or crocheted, other than those of heading 6104, |
| 6103 | Men's or boys' suits, ensembles, jackets, blazers, trousers, bib and brace overalls, breeches and shorts (other than swimwear), knitted or crocheted, |
| 6104 | Women's or girls' suits, ensembles, jackets, blazers, dresses, skirts, divided skirts, trousers, bib and brace overalls, breeches and shorts (other than swimwear), knitted or crocheted, |
| 6105 | Men's or boys' shirts, knitted or crocheted, |
| 6106 | Women's or girls' blouses, shirts and shirt-blouses, knitted or crocheted, |
| 6107 | Men's or boys' underpants, briefs, nightshirts, pyjamas, bathrobes, dressing gowns and similar articles, knitted or crocheted, |
| 6108 | Women's or girls' slips, petticoats, briefs, panties, nightdresses, pyjamas, negligees, bathrobes, dressing gowns and similar articles, knitted or crocheted, |
| 6109 | T-shirts, singlets and other vests, knitted or crocheted, |
| 6110 | Jerseys, pullovers, cardigans, waistcoats and similar articles, knitted or crocheted, |
| 6111 | Babies' garments and clothing accessories, knitted or crocheted, |
| 6112 | Track suits, ski suits and swimwear, knitted or crocheted, |
| 6113 | Garments, made-up of knitted or crocheted fabrics of heading No 5903, 5906, or 5907, |
| 6114 | Other garments, knitted or crocheted, |
| 6115 | Panty hose, tights, stockings, socks and other hosiery, including stockings for varicose veins and footwear without applied soles, knitted or crocheted, |
| 6116 | Gloves, mittens and mitts, knitted or crocheted, |
| 6117 | Other made-up clothing accessories, knitted or crocheted; knitted or crocheted parts of garments or of clothing accessories |

Heading 6106, "Women's or girls' blouses, shirts and shirt-blouses, knitted or crocheted" further divides into the following subheadings at the 6-digits level

| | |
|---|---|
| 6106 10 | Of cotton |
| 6106 20 | Of man-made fibres |
| 6106 90 | Of other textile materials |

which is the disaggregation level that corresponds to the definition of products used in the article.

# INFLATION PERCEPTIONS AND EXPECTATIONS IN THE EURO AREA AND PORTUGAL[1]*

*Francisco Dias***

*Cláudia Duarte***

*António Rua***

## 1. INTRODUCTION

In the last few decades, the increasing interest of economists in agents' perceptions and expectations, in a context of improving data collection and statistical techniques, is associated with a surge in business and consumer surveys. Within the euro area, as well as in several other countries, various business and consumer surveys are conducted on a monthly basis.

Business and consumer surveys inquire individual firms and consumers directly about their assessment of the present and future short-term movements referring to a large number of variables. Since the answers only refer to the agents' opinion on the direction of change of a specific variable, the information gathered from these surveys is naturally of a qualitative nature. However, in order to use this information in economic models and econometric analysis, a great amount of effort has been put into converting this qualitative information into quantitative measures, so as to be comparable with the benchmark quantitative variables associated with each specific question.

Although several different variables have been investigated throughout the years (see, for example, Smith and McAleer (1995) or Driver and Urga (2004)), amongst all the questions of the surveys, the ones that have received more attention are those related to prices (see, among others, Carlson and Parkin (1975), Berk (1999), or Thomas Jr. (1999)). One example of a survey with questions on price developments is the European Commission's (EC) consumer survey, which inquires 23000 consumers each month in the euro area about their perceptions and expectations of price developments (see European Commission (2007)).

In order to quantify the qualitative data several methods have been put forward (see Nardo (2003) for a survey). One of these methods is the Carlson and Parkin (1975) (CP hereafter) probabilistic method. This method assumes that each consumer answers the questionnaire based on a subjective probability density function associated with the variable under question. This allows one to interpret the share of respondents that provide a particular answer as a specific area under the aggregate probability density function. The application of the CP method to the price questions is commonly found in the literature (see, for example, Forsells and Kenny (2002), Łiziak (2003) or Mestre (2007)).

* The opinions expressed in this article are of the authors and do not necessarily coincide with those of Banco de Portugal or the Eurosystem. All errors and omissions are the sole responsibility of the authors.

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(1) This article draws heavily on previous work by the authors (see Dias, Duarte and Rua (2007, 2008)).

The aim of this article is to provide a quantitative measure of perceived and expected inflation, for the euro area and Portugal, considering the qualitative data from the European Commission consumer survey and using the CP method, which can be directly compared with the observed inflation.[2] As a by-product, one can assess the issue of the impact of the euro cash changeover on inflation perceptions and test the rationality of inflation expectations.

## 2. INFLATION PERCEPTIONS

### 2.1. Measurement

Inflation perceived by consumers does not have to be equal to observed inflation. As Berk (1999) points out, individual agents may not be able to perceive accurately the overall rate of inflation, due to the signal extraction problem (see Lucas (1972, 1976)). Since at the end of the day what really influences agents decisions are their perceptions, assessing price perceptions and comparing their evolution with observed inflation is becoming more and more important, not only for economic researchers but also for policymakers.

In order to obtain a quantified measure of perceived inflation, from amongst the methods that have been put forward to convert qualitative data into quantitative variables, we rely on the CP method to quantify the qualitative information on inflation perceptions from the EC consumer survey. Though formal comparisons of the different methods are not always possible, there is some evidence in favour of using the method proposed by Carlson and Parkin (1975) as discussed in Nardo (2003).

The CP method assumes that each consumer, at each moment in time, responds to the questionnaire based on a subjective probability density function associated with the variable under question. This assumption allows one to associate the proportion of respondents that provide a particular answer as a specific area under the aggregate probability density function.

One of the key assumptions of CP method concerns the choice of the distribution for perceived inflation across the sample. Initially, and in most subsequent empirical applications, the choice fell on the Normal distribution. This choice can be justified based on statistical theory relying on the Central Limit Theorem. Nevertheless, the choice of the Normal distribution has been subjected to some criticism. For example, Carlson (1975) and Batchelor (1981) stress the fact that considering a symmetric distribution, as is the case of the Normal, may be a strong assumption. However, besides the analytical convenience of assuming a Normal distribution, there is also empirical evidence in favour of the use of this distribution. Balcombe (1996) and Berk (1999) did not find empirical evidence in favour of using asymmetric distributions. Moreover, the latter as well as Löffler (1999) conclude that results are similar with or without the normality assumption.

(2) See Dias, Duarte and Rua (2007, 2008) for the same measures calculated for other countries, namely, Germany, France, Italy, Spain, Belgium, The Netherlands, Ireland and Greece.

The initial formulae of the CP methodology were developed for surveys which included only three possible answers. Batchelor and Orr (1988) and Berk (1999) adapted the CP method to take into account a richer set of survey responses, in which it is possible to choose between five alternative answers. One such example of these surveys is the EC consumer survey. In particular, the question and the corresponding possible answers, regarding the evaluation of current price developments, are the following (see European Commission (2007)):

How do you think that consumer prices have developed over the last 12 months?

They have

1) risen a lot
2) risen moderately
3) risen slightly
4) stayed about the same
5) fallen
6) don't know

In other words, consumers are asked if year-on-year inflation rate is: 1) above its moderate level; 2) at its moderate level; 3) below its moderate level; 4) nil or 5) negative.

Due to the way the question is posed, in addition to the zero inflation, there is another reference value for the evaluation of the evolution of perceived inflation, which is the moderate inflation rate. Therefore, any measure for perceived inflation should not only reflect the different allocation of answers but should also be a function of this moderate inflation rate.

Denote $P_{it}$ as the proportion of the sample answers falling in the $i^{th}$ response category at time $t (i = 1,\ldots,5)$.[3] The fractions of responses can be regarded as the maximum likelihood estimates of the areas under the perceptions' distribution delimited by the relevant thresholds (see Batchelor and Orr (1988)). Let $F$ be the cumulative Normal standard distribution function and define the thresholds $(Z_{it})$ (Chart 1) as:

$$Z_{1t} = F_t^{-1}(1 - P_{1t})$$

$$Z_{2t} = F_t^{-1}(1 - P_{1t} - P_{2t})$$

$$Z_{3t} = F_t^{-1}(1 - P_{1t} - P_{2t} - P_{3t})$$

$$Z_{4t} = F_t^{-1}(P_{5t})$$

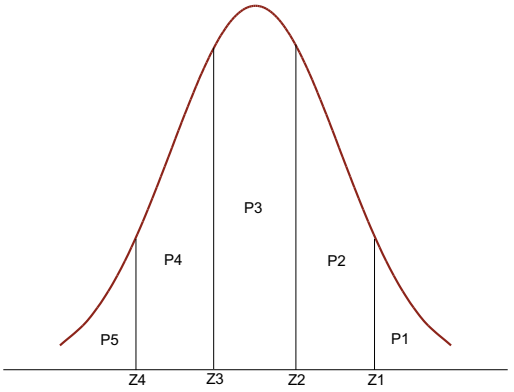
As shown by Batchelor and Orr (1988) and Berk (1999), the perceived inflation rate, $\pi_t^p$, is given as[4]

(3) Note that, as stressed by Mestre (2007), the "don't know" answer is not informative. Hence, it has been a current practice to reallocate proportionally the corresponding fraction of answers to the other response categories (see, for example, Forsells and Kenny (2002)).

(4) For details, see Dias, Duarte and Rua (2007).

**Chart 1**

DISTRIBUTION OF RESPONSES UNDER THE NORMAL ASSUMPTION




$$\pi_t^p = \frac{-Z_{3t} - Z_{4t}}{Z_{1t} + Z_{2t} - Z_{3t} - Z_{4t}} \pi_t^m$$

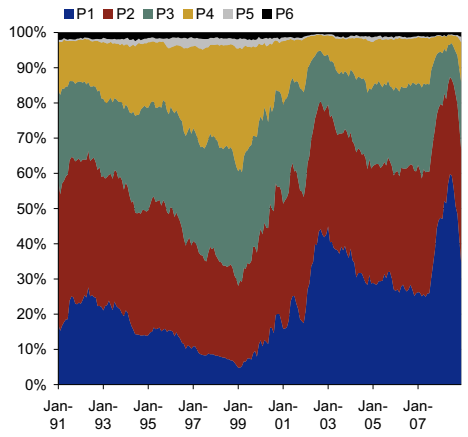
where $\pi_t^m$ represents the moderate inflation rate. From the expression above one can see that the moderate inflation rate plays a scaling role in relation to the perceived inflation rate. Batchelor and Orr (1988) argue that the moderate inflation rate reflects the individual's best guess of the permanent or trend inflation rate. Hence, one possible proxy for the moderate inflation rate could be obtained by using a filtering method that allows one to extract the trend component of the inflation rate. Such filtering could be attained through the use, for example, of the Hodrick and Prescott (1997) (hereafter HP) filter. The HP filter is a well-known standard filtering procedure which provides a mean of obtaining a smooth trend component for a series (see, for example, King and Rebelo (1993)). In practice, the HP smoothing parameter is set to 14400, a standard value when working with monthly data, and as usual, the end of the sample problem of HP filtering can be tackled by extending the series with forecasts. One should note that the trend is extracted using the whole sample data and not only the data available at the time perceptions are formed. Hence, at each moment in time, moderate inflation reflects past, present and future values of observed inflation. In a relatively stable inflation environment (as is the case of the last two thirds of the sample) such an assumption is innocuous, whereas during the disinflation process (the first third of the sample) this hypothesis is also reasonable as the commitment of the authorities towards price stability was well known to the public.

In Chart 2, we present the proportion of answers falling in the $i^{th}$ response category regarding the question on current price developments, and Chart 3 shows the measure of inflation perceptions obtained, both for the euro area and Portugal. One can see that, in general, the perceived inflation rate follows closely the observed inflation rate.

## Chart 2

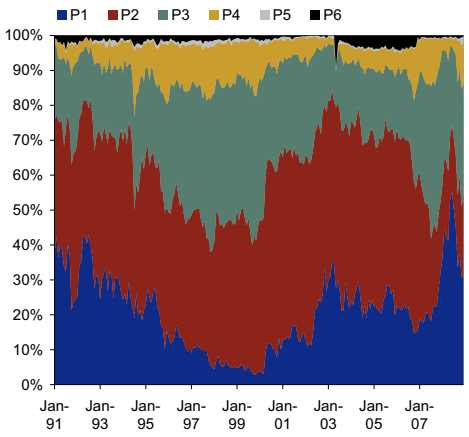
PROPORTION OF ANSWERS FALLING IN THE $i^{th}$ RESPONSE CATEGORY REGARDING THE QUESTION ON CURRENT PRICE DEVELOPMENTS

Euro area




**Source:** European Commission.

Portugal

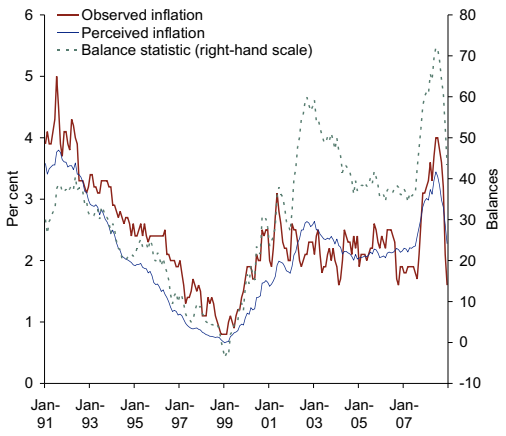



**Source:** *INE*.

## Chart 3

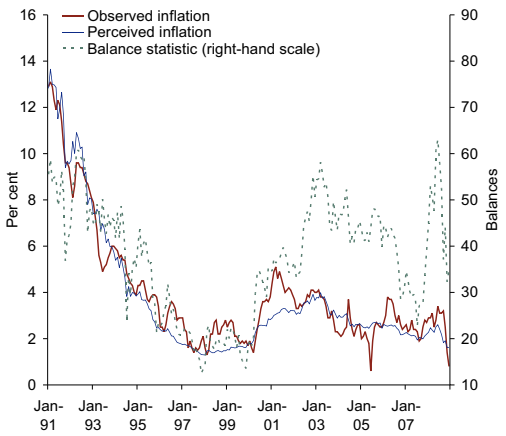
OBSERVED AND PERCEIVED INFLATION AND BALANCE STATISTIC

Euro area




**Sources:** European Commission, Eurostat and authors' calculations.

Portugal




**Sources:** Eurostat, *INE* and authors' calculations.

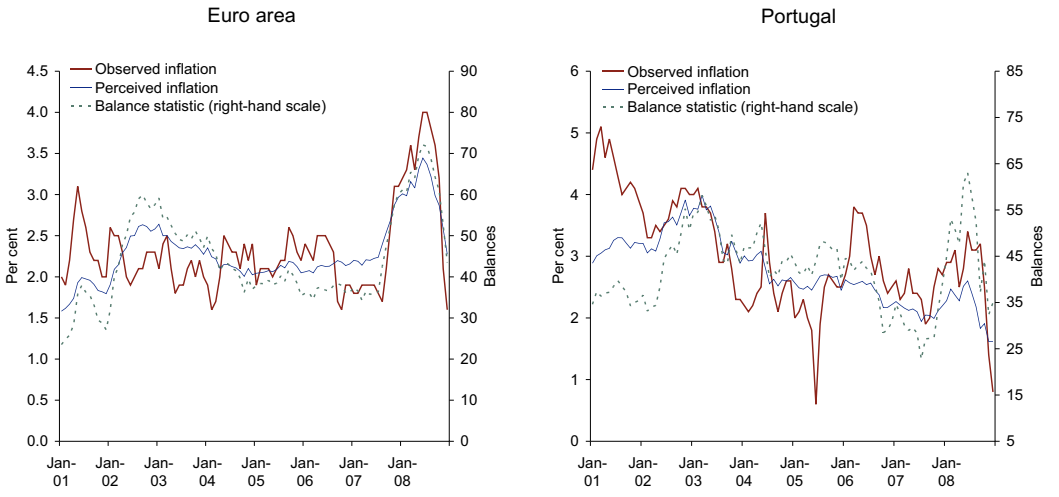
Additionally, we also present in Chart 3 the corresponding balance statistics. The balance statistic is the measure used by the European Commission to summarise survey results and is simply a weighted average of the five response proportions

$$b = -P_5 - \frac{1}{2}P_4 + 0P_3 + \frac{1}{2}P_2 + P_1$$

with *ad hoc* weights attached to each answer. The balance statistic is a popular summary measure as it is quite straightforward to compute and is released each month by the European Commission. Apart from the scale, the balance statistic for the question on inflation perceptions has been widely used as a proxy for perceived inflation (see ECB (2003, 2005 and 2007) or Dörring and Mordonu (2007), amongst others). However, the balance statistic for this particular question is not always a reliable measure of perceived inflation (see Dias, Duarte and Rua (2007) for a discussion). In fact, the standard procedure of plotting the observed inflation rate and the balance statistic, allowing for different scales, to assess the evolution of inflation perceptions is reasonable only in a context of a relatively stable inflation environment. For instance, by plotting the observed and perceived inflation rate and the balance statistic over the last years (Chart 4), a period in which the inflation has been relatively stable, one can see that the balance statistic and the proposed perceived inflation measure are relatively similar.

**Chart 4**

OBSERVED AND PERCEIVED INFLATION AND BALANCE STATISTIC




**Sources:** European Commission, Eurostat and authors' calculations.

**Sources:** Eurostat, *INE* and authors' calculations.

## 2.2. The euro cash changeover

In the last few years, there has been a growing debate on the divergent evolution of observed inflation and the balance statistic, which is the most commonly used indicator for perceived inflation (see, for example, ECB (2007)). Notwithstanding the fact that observed inflation did not change significantly[5], the balance statistic increased substantially after the physical introduction of the euro banknotes and coins, clearly diverging from the observed measure of inflation. The resulting gap between the two

(5) According to Eurostat (2003) the most significant impact of the euro changeover in the euro-zone observed inflation rate took place between December 2001 and January 2002 and is estimated to be within the range of 0.09 to 0.28 percentage points.

measures peaked somewhere at the beginning of 2003, and has been somewhat persistent since then (see Chart 3).

In the emerging literature on this subject (see, amongst others, ECB (2003, 2005, 2007), Aucremanne, Collin and Stragier (2007) and Dörring and Mordonu (2007)) the role of the euro cash changeover as the trigger for this gap has been presented in several ways. For example, it has been claimed that the euro cash changeover, and the extensive media coverage associated with it, may have drawn more attention to price increases, inducing an overreaction in inflation perception. Moreover, the rises in consumer prices that actually took place in the wake of the changeover appear to have been concentrated on the most frequently purchased goods, and that may have had a very significant effect on inflation perceptions. It has also been argued that a large number of European consumers still convert prices from euro to their former national currency, anchoring the relative prices to the pre-changeover levels.

As mentioned above, the balance statistic is not an appropriate measure to assess the evolution of perceived inflation over a sample period in which observed inflation is not stationary. Hence, this invalidates the use of the balance statistic to test the impact of euro cash changeover on inflation perceptions when the entire sample is considered, since in most countries it includes a pronounced disinflation period. In fact, the misuse of the balance statistic led wrongly to the conclusion that a divergence between observed and perceived inflation emerged, which could be associated with the introduction of the euro in January 2002. Furthermore, some of the explanations presented may be based on circumstantial evidence since, for example, some of the price increases that occurred at the time of the euro cash changeover, especially in frequently purchased goods, are not directly related with this event, in particular the increase in energy prices (related with the price of oil in international markets) and in unprocessed food prices (closely associated with the weather and harvest conditions) (see Eurostat (2003)).

From Chart 3, as opposed to what is perceptible when using the balance statistic, one can immediately suspect that such a breakdown does not seem to withstand when the measure of perceived inflation herein proposed is used. Dias, Duarte and Rua (2007) conduct a more formal test to assess whether there was a breakdown between perceived and observed inflation. In particular, after testing for unit roots, the existence of a cointegrating relationship between observed inflation and the proposed measure of perceived inflation is assessed. Resorting to the Johansen trace statistic, evidence was found in favour of cointegration. To test for a breakdown in the cointegrating relationship the authors used the test recently proposed by Andrews and Kim (2006) and no evidence of such a breakdown was found, for the euro area and Portugal, at the time of the euro cash changeover. Hence, using the proposed measure for inflation perceptions, for the whole sample, the evidence based on formal tests provides no support for the idea that a gap, motivated by the euro cash changeover, has emerged between observed and perceived inflation.

## 3. INFLATION EXPECTATIONS

### 3.1. Measurement

To obtain a quantitative measure for inflation expectations from qualitative data, namely the EC consumer survey, we apply the same CP method as discussed in section 2.1. In this case, the question and the corresponding set of answers, regarding the evaluation of future price developments, are the following (see European Commission (2007)):

By comparison with the past 12 months, how do you expect that consumer prices will develop in the next 12 months?

They will

1) increase more rapidly
2) increase at the same rate
3) increase at a slower rate
4) stay about the same
5) fall
6) don't know

In other words, consumers are asked if the year-on-year expected inflation rate will be: 1) above their current inflation perceptions; 2) the same as the perceived inflation; 3) below the perceived inflation; 4) nil or 5) negative. Note that, as before, there are two reference values for the evaluation of the evolution of expected inflation: zero and the perceived inflation.

Similarly, as in the case of perceived inflation, it can be shown that the expected inflation rate, $\pi_t^e$, can be written as:

$$\pi_t^e = \frac{-Z_{3t} - Z_{4t}}{Z_{1t} + Z_{2t} - Z_{3t} - Z_{4t}} \pi_t^p$$

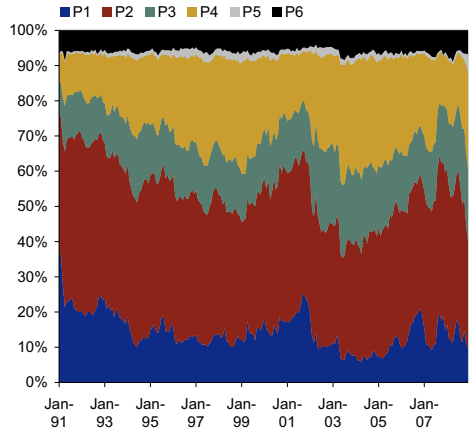
where, in this case, the perceived inflation rate plays a scaling role for the expected inflation rate. It seems natural to use the measure of perceived inflation proposed in Section 2.[6] In Chart 5, we present the proportion of answers falling in the $i^{th}$ response category regarding the question on future price developments, while in Chart 6 the resulting measures of expected inflation for the euro area and Portugal are presented.

(6) One should mention that the overall results are qualitatively similar when the observed inflation rate is used as a proxy for the perceived inflation rate.

## Chart 5

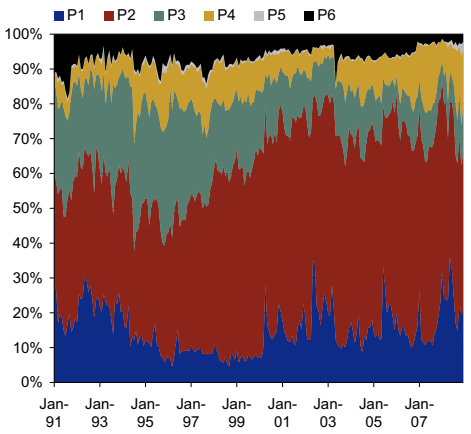
PROPORTION OF ANSWERS FALLING IN THE $i^{th}$ RESPONSE CATEGORY REGARDING THE QUESTION ON FUTURE PRICE DEVELOPMENTS

Euro area




**Source:** European Commission.

Portugal

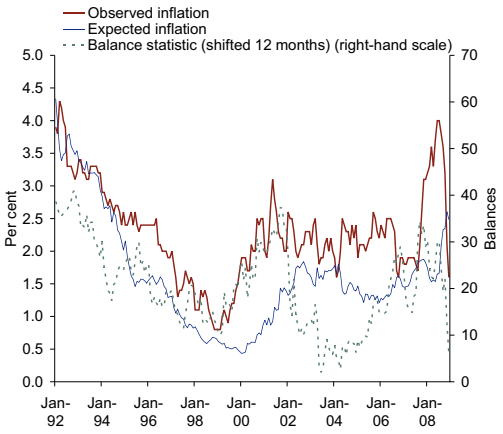



**Source:** *INE*.

## Chart 6

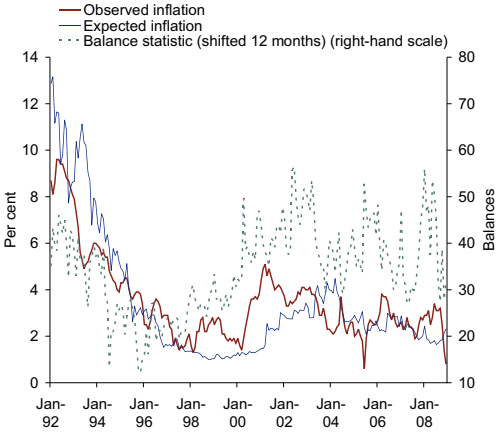
OBSERVED AND EXPECTED INFLATION AND BALANCE STATISTIC

Euro area




**Sources:** European Commission, Eurostat and authors' calculations.

Portugal




**Sources:** Eurostat, *INE* and authors' calculations.

### 3.2. Testing rational expectations

The concept of rational expectations was introduced by Muth (1961) and is based on the assumption that expectations are, in their essence, similar to the informed predictions derived from relevant economic theory. The predictions should exploit efficiently all available information in the dataset. In this section, the rational expectations hypothesis is tested for a particular kind of agents – consumers – regarding a specific variable – inflation.

In practice, for assessing the validity of the rational expectations hypothesis a set of formal tests has been proposed in the literature, namely tests for unbiasedness, lack of serial correlation, efficiency and orthogonality (see Pesaran (1989)). Unbiased expectations assume that rational agents do not commit systematic and persistent errors when forecasting inflation. This means that rational agents may over or under predict inflation at times, but that does not take place over a long time span. Considering the following testing equation for observed inflation:

$$\pi_t = \alpha + \beta \pi_t^e + u_t$$

where, $\pi_t$ is the observed inflation rate, then a formal test for unbiasedness can be carried out by jointly testing $\alpha = 0$ and $\beta = 1$. In a non-stationary context, the unbiasedness restriction requires the existence of a cointegration relationship between the observed and the expected inflation and the cointegrating vector $[\alpha \ \beta]$ to be equal to $[0 \ 1]$.

Regarding efficiency and orthogonality, both tests are concerned with the use of information by agents to forecast inflation: in the first case, with the use of past inflation rates, while, in the second, with the use of a wider information set. The terminology used for these tests is not consensual among the different authors. For example, Forsells and Kenny (2002) use weak- and strong-efficiency to designate the efficiency and orthogonality tests, respectively. Testing weak-efficiency (or efficiency) consists in assessing the statistical significance of past observed inflation values in a regression with the forecast error, defined as the difference between observed and expected inflation, as the dependent variable. If the set of coefficients in this regression associated with past inflation is significant, then lagged observed inflation can be helpful to improve inflation forecast accuracy, *i.e.* reduce forecast errors.

For strong-efficiency (or orthogonality), a similar testing framework is considered but, in this case, the purpose is to check if a broader information set is orthogonal to the forecast errors. Consider the following equation,

$$e_t = \mu + \gamma \Omega_{t-12} + u_t$$

where $e_t = \pi_t - \pi_t^e$ and $\Omega_{t-12}$ denotes the information set available at the time (12-month ahead) expectations are formed. Formally, forecast errors are orthogonal to the economic variables considered relevant for predicting inflation if $\gamma = 0$. Since nowadays, due to data dissemination progress, agents have access to a wider information set at a progressively lower cost, the relevant information set can encompass an extremely large number of variables. Following the seminal work of Stock and Watson (1998), one can rely on the common factors extracted from the original dataset. In this way, it is possible to overcome the problem of the dimension of the information set at hand by reducing the number of regressors in a parsimonious way, without neglecting a significant amount of information. As in Łiziak (2003), one can also control for lagged forecast errors and take into account data publication lags, by shifting the relative position of the series, so that at each moment in time the independent variables considered reflect the information available to the agents at the time of the survey (see, for example, Altissimo *et al.* (2007) and Barhoumi *et al.* (2008)). For this purpose, consider the following model:

$$e_t = \mu + \sum_{i=1}^{p} \rho_i e_{t-1} + \sum_{j=1}^{k} \Psi_j F_{j,t-12} + u_t$$

where $p$ is the number of autoregressive terms included in order to cope for autocorrelation, $F_j$ refers to the $j^{th}$ common factor extracted from the broad information set and $k$ denotes the number of common factors considered in the regression.[7] One can rely on the criteria proposed by Bai and Ng (2002) to determine the number of factors to include in the model. Hence, agents' inflation expectations are orthogonal to the information set considered or, in other words, agents are strongly efficient, if the hypothesis $\Psi_1 = \Psi_2 = \ldots = \Psi_k = 0$ is not rejected.

Dias, Duarte and Rua (2008) performed the above analysis for the euro area as a whole as well as for several member countries (including Portugal). Concerning bias, the authors found no evidence in favour of unbiasedness (as in Berk (1999), Łiziak (2003) and Mestre (2007)). Although the Johansen test results point to the existence of cointegration between the observed and the expected inflation, though the hypothesis of the cointegrating vector $[\alpha\ \beta]$ being equal to $[0\ 1]$ is clearly rejected for the euro area and Portugal (as well as for all the other countries covered in their analysis). Restricting the sample to the post-euro introduction period (*i.e.* since January 1999), the same result is found for the euro area, while for Portugal there are some signs of unbiasedness.

As the results of the unbiasedness test suggest that agents have, in general, biased inflation expectations, the hypothesis of rational expectations is ruled out, regardless the results of the efficiency and orthogonality tests. Nevertheless, even though agents incur in a systematic expectation error, Paquet (1992) argues that, in these cases, the existence of cointegration between the observed and expected inflation could also be interpreted as some sort of rationality, a so-called weak-form of rationality.

Concerning the weak-efficiency test, for the sample period as a whole, the results in Dias, Duarte and Rua (2008) suggest that one cannot reject weak-efficiency for the euro area. On the contrary, for Portugal, the authors found no evidence in favour of weak-efficiency. When the authors considered the post-euro introduction sample, the results remained qualitatively unchanged. As for strong-efficiency, the test results suggest that there is evidence in favour of strong-efficiency for the euro area. Focusing only on the post-euro introduction sample period, the same evidence holds.

Therefore, neither Portugal nor the euro area satisfies the whole set of conditions necessary to comply with the rational expectations hypothesis. This evidence holds not only for the full sample but also for the post-euro introduction period.

## 4. CONCLUSIONS

The aim of this article is twofold. First of all, we assess the quantification of inflation perceptions obtained from qualitative survey data. The measurement of inflation perceptions has gained a lot of attention in the last few years, particularly in the euro area. This renewed interest stems from the fact that

(7) For a discussion on the existence of autocorrelation in the forecast errors under the rationality hypothesis, see Dias, Duarte e Rua (2008).

apparently the euro cash changeover in January 2002 had a substantial impact on inflation perceptions. Considering the commonly used balance statistic, released by the European Commission, as a proxy for perceived inflation, a gap between observed and perceived inflation emerged after the introduction of the euro notes and coins. However, one should be careful when drawing conclusions from the simple balance statistic since it is an adequate measure of the evolution of perceived inflation only under special circumstances. To circumvent the limitations of the balance statistic, in this article, we propose a more refined measure of perceived inflation, which was computed for the euro area and Portugal. This measure is based on the well-known generalised version of Carlson and Parkin method and exploits the information referring to the question on inflation perceptions from the European Commission's consumer survey. In sharp contrast with previous works, which rely on the balance statistic, no evidence of a breakdown between observed and perceived inflation after the euro cash changeover is found using the measure of inflation perceptions herein proposed.

Secondly, we also obtain a similar measure of expected inflation for the euro area and Portugal. Again, we resort to the rich consumer survey data released on a monthly basis by the European Commission and use the probabilistic method. Such a quantified measure allows one to test whether inflation expectations are rational or not. In this respect, the assumption of rationality does not seem to hold empirically for consumer inflation expectations in the euro area as a whole as well as in Portugal.

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# CHRONOLOGY OF MAJOR FINANCIAL MEASURES

January to March 2009

## 2009

### January

- 9 January (Circular Letter of Banco de Portugal No. 4/2009/DET, Treasury and Issue Department)

  Informs on the implementation by cash-in-transit companies of the regulations applicable to euro banknote recycling, and on which companies are qualified for such activity in 2009, pursuant to Decree-Law No. 195/2007 of 15 May.

- 14 January (Circular Letter of Banco de Portugal No. 9/09/DSBDR, Banking Supervision Department)

  Credit institutions are requested to send to Banco de Portugal, within 10 working days, a summary evaluation of the implementation of Decree-Law No. 171/2008 of 26 August, which approved borrower protection measures in housing credit regarding the renegotiation of loan conditions.

- 14 January (Circular Letter of Banco de Portugal No. 10/09/DSBDR, Banking Supervision Department)

  Provides clarification on the implementation of Decree-Law No. 51/2007 of 7 March as regards advance payments in credit agreements concluded for the purchase, construction and improvement of permanent or secondary residential property or residential leased property, as well as for the acquisition of land for the construction of owner-occupied housing.

- 15 January (Instruction of Banco de Portugal No. 21/2008, BNBP 1/2009)

  Regulates reporting to Banco de Portugal of actual or contingent liabilities arising from credit operations, under any form, to be centralised and published by this central bank. Revokes Instruction No. 7/2006, published in the Official Bulletin No. 6 of 16 June 2006.

- 26 January (Circular Letter of Banco de Portugal No. 14/09/DSBDR, Banking Supervision Department)

  Following the conclusions of the meeting held by the Committee of Experts as regards the evaluation of measures against money laundering and terrorist financing (MONEYVAL), credit institutions and financial companies are advised to maintain enhanced surveillance procedures, and to examine with special caution all operations undertaken or intermediated by entities or institutions established in Azerbaijan.

- 28 January (Circular Letter of Banco de Portugal No. 15/09/DSBDR, Banking Supervision Department)

  Provides clarification on the procedures to be adopted by the institutions subject to the supervision of Banco de Portugal as regards the register of write-offs of loans in off-balance-sheet items.

- 28 January (Instruction of Banco de Portugal No. 1/2009, BNBP 2/2009)

  Introduces changes in Instruction No. 1/99, published in the Official Bulletin No. 1 of 15 January 1999, which laid down the general rules governing the Intervention Operations Market.

- 29 January (Circular Letter of Banco de Portugal No. 16/09/DSBDR, Banking Supervision Department)

  Informs that the list in Annex 1 of Instruction of Banco de Portugal No. 26/2005 should be replaced by the list of countries or jurisdictions integrating the concept “equivalent third country”, for the purposes of the implementation of Law No. 25/2008 of 5 June, defined in the Executive Order No. 41/2009 of 17 December 2008, published in the Official Gazette, Series II, Part C, No. 8 of 13 January 2009.

## February

- 3 February (Circular Letter of Banco de Portugal No. 19/09/DSBDR, Banking Supervision Department)

  Provides clarification on interest charged after total early repayment of lending for house purchase and, as a result, on the interpretation of Article 5 (2) of Decree-Law No. 51/2007 of 7 March, as reworded by Decree-Law No. 88/2008 of 29 May.

- 09 February (Instruction of Banco de Portugal No. 4/2009, BNBP 3/2009)

  Defines the locations, schedules, rules and conditions for euro banknote deposits and withdrawals over the counter at Banco de Portugal.

- 16 February (Instruction of Banco de Portugal No. 2/2009, BNBP 2/2009)

  Regulates the opening and operation of current accounts with Banco de Portugal and creates the AGIL (Portuguese acronym for: Integrated Settlement Management Application), for the local management of access to current accounts held with Banco de Portugal by institutions that are not direct participants in TARGET2-PT.

- 16 February (Instruction of Banco de Portugal No. 3/2009, BNBP 2/2009)

  Regulates the Interbank Clearing System (SICOI), which comprises the following sub-systems: cheques, bills of exchange, direct debits, Interbank Electronic Transfers and transactions via ATMs.

- 17 February (Circular Letter of Banco de Portugal No. 2/2009/DMR, Market and Reserve Management Department)

  Discloses, effective as of 1 March 2009, the new price list of the services provided by SITEME (market electronic transfer system), which replaces the one annexed to Circular Letter of Banco de Portugal No. 9/DMR of 15 December 2006. The changes introduced in the price list are mainly a consequence of the closure of the interbank money market (*Mercado Monetário Interbancário – MMI*) on 31 December 2008.

- 20 February (Circular Letter of Banco de Portugal No. 20/2009/DSB, Banking Supervision Department)

  Makes known that the understanding presented in Circular Letter of Banco de Portugal No. 49/2001/DSB of 29 November 2001 is no longer applicable, given the accounting framework established in Notice of Banco de Portugal No. 1/2005 of 28 February 2005.

- 26 February (Instruction of Banco de Portugal No. 5/2009, BNBP 03/2009)

  Amends Instruction of Banco de Portugal No. 1/99 of 15 January 1999, which regulated the intervention transactions market (*Mercado de Operações de Intervenção – MOI*).

- 26 February (Circular Letter of Banco de Portugal No. 06/2009/DMR, Market and Reserve Management Department)

  Makes known the alterations introduced in Instruction of Banco de Portugal No. 1/99 of 15 January 1999, relating to the end of the period of transition to TARGET2, on 2 March 2009.

- 27 February (Circular Letter of Banco de Portugal No. 24/2009/DSB, Banking Supervision Department)

  Transmits some recommendations regarding the professional qualification and independence of management and auditing bodies.

## March

- 2 March (Circular Letter of Banco de Portugal No. 10/2009/DET, Treasury and Issue Department)

  Informs that the cash-in-transit company ESEGUR, S.A., has set up in the Autonomous Region of Madeira - Funchal, a Cash Recycling Centre for the recycling of euro banknotes.

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| • 5 March (Notice of Banco de Portugal No. 1/2009, Official Gazette No. 45, Series II) | Amends some paragraphs of Notice of Banco de Portugal No. 5/2007 of 27 April (regulatory framework governing own funds requirements and solvency ratio). |