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CONTENTS

I ECONOMIC AND POLICY DEVELOPMENTS

II ARTICLES

ECONOMIC AND POLICY DEVELOPMENTS

I

THE PORTUGUESE ECONOMY IN 2011

OUTLOOK FOR THE PORTUGUESE ECONOMY: 2011-2012

THE PORTUGUESE ECONOMY IN 2011

1. Introduction

The year 2011 signs the beginning of the unavoidable adjustment process of the Portuguese economy. This process will be marked by a strong tightening of fiscal policy, a gradual but significant deleveraging of the private sector, including the banking sector, and a strengthening of the institutions favouring innovation, competition and the reallocation of resources in the economy. Given the magnitude of the current gap between domestic savings and investment – translated into high external financing needs – the period ahead is projected to bring a strong contraction in domestic demand. This adjustment will entail high economic and social costs, but is insurmountable. Indeed, only the request for financial assistance submitted to the European Union and the International Monetary Fund in April made it possible to avoid an imminent default of the Portuguese State vis-à-vis its creditors. Simultaneously, the non-standard policy measures implemented by the European Central Bank (ECB) have ensured the financing of the Portuguese banking system, in a context of virtual absence of financing in international medium and long term wholesale debt markets. Without this supranational support, the adjustment of the economy would be abrupt, with incomparably worse implications on welfare. Strict compliance with the conditionality associated with that support is therefore solidly founded purpose. Nonetheless, the path of the Portuguese economy in the near future is still surrounded by heightened uncertainty, due, in particular, to the characteristics of the institutional resolution of the current sovereign debt crisis in the euro area, as well as to the magnitude and persistence of the pace with which the international economy will decelerate.

Most recent developments in the international economy confirm that the recovery observed in 2010 was not based on sustained fundamentals. In a context characterized by an escalation of tensions in international financial markets, indicators point to a deeper–than-expected deceleration in the global economy, particularly in advanced economies. In the euro area, the sovereign debt crisis intensified and spilled over into some of the major economies in the area. This generalised increase in risk aversion passed through to a rise in financing costs in debt markets of countries with more marked structural weaknesses, as perceived by international investors. In addition, projections for world economic growth in 2011 and 2012 have been revised significantly downwards, in a framework where the scope for monetary and fiscal policies in advanced economies is relatively limited. These global developments have passed through directly to the Portuguese economy. Monetary and financial conditions have therefore deteriorated considerably in the course of 2011 and external demand for Portuguese goods and services has been revised significantly downwards.

Against this background, the Portuguese economy is expected to contract sharply in 2011 and even further in 2012 (see article "Projections for the Portuguese economy: 2011-2012", in this Bulletin). These developments will be characterised by a strong fall in domestic demand and a deceleration in exports over the projection horizon, translating into a significant adjustment of the imbalances in the Portuguese economy. In particular, the current and capital account deficit is projected to decline by around 6 p.p. in the next two years. This adjustment is the result, on the one hand, of some increase in the domestic savings rate and, on the other hand, of a significant contraction in investment. In particular, private investment will be held back by the high uncertainty surrounding the adjustment of macroeconomic imbalances, by the deterioration of expectations regarding the prospects for the economy and by the required adjustment of the balance sheets of firms from their high indebtedness level, amid increased financing restrictions from the banking system. On the supply side, a striking development concerns the

continued fall in employment since end-2008, which will tend to persist over the projection horizon. The upward trend in the unemployment rate is therefore not projected to be reversed in the near future.

Banks play a crucial role in the adjustment process of the Portuguese economy. In effect, the necessary deleveraging process of the private sector, including the banking sector, is a result of the high indebtedness level accumulated since the monetary unification, in a context of very favourable financing conditions, that persisted after the outbreak of the financial crisis in 2007. Faced with increased risk differentiation, banks only started to gradually adjust the structure of their balance sheets since the second half of 2010. The growth of assets of the Portuguese banking system decelerated in year-on-year terms to rates close to zero in July 2011. The economic and financial adjustment programme envisages a range of initiatives intended to strengthen the financial system, including an increase in bank capital and the convergence to a more stable market-based financing structure in the medium term. Worthy of note in this context are the medium-term funding and capital plans that the eight major banking groups are required to present on a quarterly basis. These plans combine a number of strategic objectives, specifically as regards the recourse to funding from the Eurosystem, the new credit flows to the private sector and the exposure to the public sector, including state-owned enterprises. The plans foresee that institutions shall gradually reduce the credit-to-deposit ratio to 120 per cent by 2014, where applicable. At the end of the first half of 2011, the average ratio for the eight institutions stood at 143 per cent, 16 percentage points less than in June 2010.

In this context, banks should give priority to deleveraging strategies that minimise the impact on new credit flows to the private sector. Therefore, the Programme foresees the need to ensure the consistency of the deleveraging process with the macroeconomic scenario implied in the Programme. This consistency will be continuously gauged, in particular as regards the principle of ensuring adequate support to the most productive sectors of the economy. This support should be consistent with the expected contraction in economic activity and should not hinder the balance-sheet restructuring process of firms and the economy in general. In the course of 2011, lending to the non-financial private sector has recorded a broadly-based but gradual slowdown, particularly in loans to households. These mitigated developments have been supported by an increase in deposits from customers and by a continued high recourse to Eurosystem financing.

From a structural sustainability perspective, meeting the fiscal targets is a key driver in the adjustment of the economy. In the course of 2011, the fiscal outturn of previous years has been revised by national statistical authorities, resulting in the deterioration of the starting point for the fiscal adjustment process under way. Moreover, according to the September Excessive Deficit Procedure notification, the target for the fiscal deficit in 2011 will only be achieved resorting to significant additional measures. Should these measures be temporary, the State Budget for 2012 will be particularly stringent, and, in principle, must incorporate a considerable number of structural measures. In particular, the sustainability of public finances will require a structural position characterised by substantial primary surpluses in the medium term. Meeting this objective will be crucial to ensure that the State – and the other economic agents – resume funding from international markets. Moreover, the full implementation of the Budgetary Framework Law and of the restructuring programme of state-owned enterprises is essential. The latter also implies positive externalities in other dimensions, such as minimising the impact of the deleveraging process of the banking system on the financing flows to the private sector.

Based on data available up to end-September 2011.

2. International framework

In the course of 2011, economic activity has slowed down gradually and significantly overall, followed by some recovery in 2010. Although part of this deceleration may have been due to temporary factors, specifically the negative economic impact of the natural disaster in Japan and the lagged effect of the strong increase in commodity prices, most recent developments point to a more in-depth and protracted deceleration. Global economy, in particular the advanced economies, has been affected by high turbulence in international financial markets, related *inter alia* to the deepening of the sovereign debt crisis in the euro area. In this period, after the request for external financial assistance made by Greece, Ireland and Portugal, the concerns of market participants as regards the public finance situation and its spillovers to banking systems passed through to other euro area countries during the summer. Fears of the economic consequences of a debt crisis in those countries led to strong falls in stock markets and a broadly based increase in risk aversion, which translated into higher financing costs in the debt markets of most affected countries faced with liquidity strains in the money markets. Against this background, business and household confidence indicators, which were already at relatively weak levels since the start of the year, fell significantly in most countries. Behind the deterioration in overall economic sentiment was also the release of unfavourable economic data for the United States and the euro area for the second quarter of the year. These developments have led to a strong downward revision of the outlook for global economic growth in 2011 and 2012 (Table 2.1), although forecasts continue to be relatively favourable for emerging market economies. In a climate of high uncertainty, the downward risks for economic activity have risen, which may be particularly stressful at a time when the scope for economic policy in advanced economies is relatively limited, in terms of both the fiscal and monetary policy.

Table 2.1

GDP | REAL RATE OF CHANGE, IN PERCENTAGE

		Forecasts		Revision *vis-à-vis* June (in p.p.)	
	2010	2011	2012	2011	2012
World economy	5.1	4.0	4.0	-0.3	-0.5
Advanced economies	3.1	1.6	1.9	-0.6	-0.7
US	3.0	1.5	1.8	-1.0	-0.9
Japan	4.0	-0.5	2.3	0.2	-0.6
Euro area	1.8	1.6	1.1	-0.4	-0.6
Germany	3.6	2.7	1.3	-0.5	-0.7
France	1.4	1.7	1.4	-0.4	-0.5
Italy	1.3	0.6	0.3	-0.4	-1.0
Spain	-0.1	0.8	1.1	0.0	-0.5
United Kingdom	1.4	1.1	1.6	-0.4	-0.7
Emerging and developing economies	7.3	6.4	6.1	-0.2	-0.3
Central and eastern Europe	4.5	4.3	2.7	-1.0	-0.5
Commonwealth of Independent States	4.6	4.6	4.4	-0.5	-0.3
Asian developing countries	9.5	8.2	8.0	-0.2	-0.4
China	10.3	9.5	9.0	-0.1	-0.5
India	10.1	7.8	7.5	-0.4	-0.3
Latin America	6.1	4.5	4.0	-0.1	-0.1
Middle East and North Africa	4.4	4.0	3.6	-0.2	-0.8
Subsarian Africa	5.4	5.2	5.8	-0.3	-0.1
World trade volume (goods and services)	12.8	7.5	5.8	-0.7	-0.9

Source: IMF.

Note: Based on the purchasing-power-parity valuation of GDP.

Slowdown in world economy and deterioration of the economic outlook more expressive in advanced economies

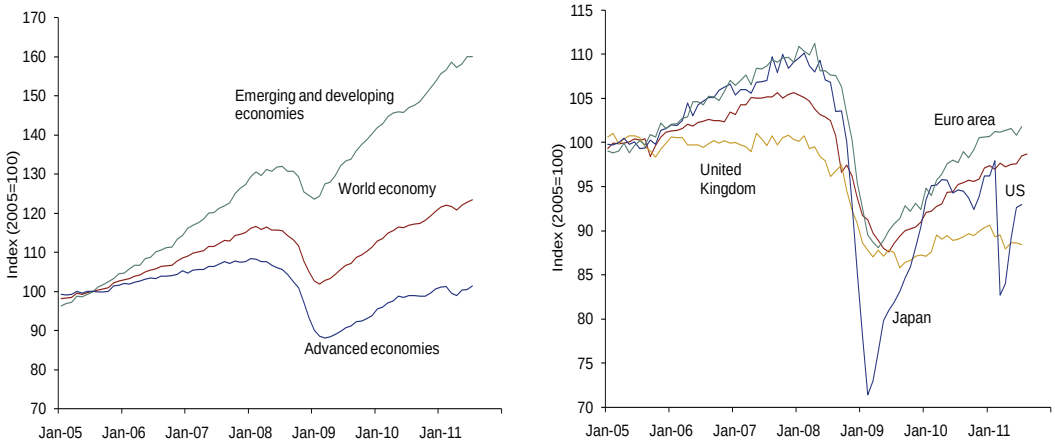
The slowdown in economic growth in 2011 was most pronounced in advanced economies. According to the outlook published by the International Monetary Fund (IMF) in September, the global economy might grow by 4 per cent in 2011, compared with 5.1 per cent in the previous year. These forecasts were revised downwards following the intensification of the sovereign debt crisis and weaker-than-expected data for the second and third quarters in the euro area and the United States. These dynamics were is part due to the early moderation of the industrial production global cycle. However, in spite of the recovery observed since 2009, these economies have not yet reached the industrial production levels seen before the 2007-09 crisis (Chart 2.1).

Domestic demand in advanced economies has been decelerating. The recovery of private consumption has been more fragile in a context of continued adverse conditions in the labour market in most major economies during 2011, with high unemployment levels and low or nil employment growth. In addition, in some countries, the need for adjustment of household and corporate balance sheets persists, which has constrained the recovery of both private consumption and residential investment. There are still some signs of slowdown in public consumption, given the pressing need for fiscal consolidation. As regards international trade flows, the pace of growth of imports is lower than in the previous year (Chart 2.2). This deceleration was particularly marked in the second quarter of 2011, and is projected to continue in the second half of the year and into 2012.

Emerging market economies have continued to evince stronger economic growth than advanced economies, reinforcing the divergent dynamics of the global economy. The possible overheating of some emerging market economies may influence commodity prices, which may translate into risks to consumer prices at the global level. These effects may arise not only from commodity prices, but also from the wealth effect resulting from the sharp increase in asset prices, in particular in the economies where domestic demand is more buoyant. Nevertheless, emerging market economies may slow down, reflecting tighter monetary policies and capacity constraints. Moreover, the slowdown in activity of advanced economies may be negatively reflected in exports of emerging market economies. Under these conditions, there are some risks of a sudden slowdown, which would result in negative effects on overall demand, but might, in turn, start a downward trend in commodity prices.

Chart 2.1

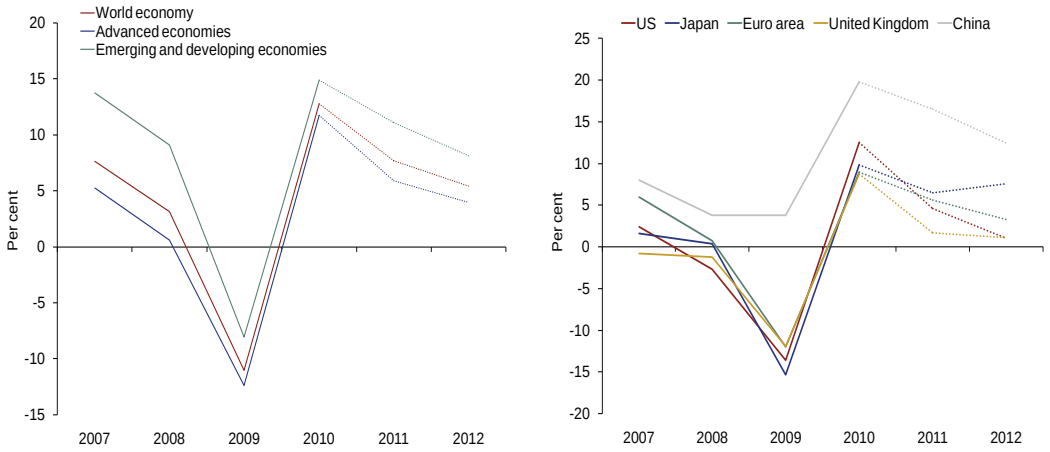
INDUSTRIAL PRODUCTION



Sources: CPB, Thomson Reuters and Eurostat.

Chart 2.2

IMPORT VOLUME OF GOODS AND SERVICES | YEAR-ON-YEAR RATE OF CHANGE



Note: Forecasts as dotted lines.
Source: IMF.

External demand for Portuguese goods and services continued to increase in 2011, but at a slower pace than in the previous year

Notwithstanding the economic slowdown during the first half of 2011, most major partners continued to raise their imports at a significant pace, which translated into an increase in demand for Portuguese goods and services (Table 2.2), in spite of some slowdown in the first half of 2011 *vis-à-vis* the previous year. This slowdown was particularly marked for the United Kingdom and the United States. In turn, imports from Spain, Germany, France and Italy continued to grow at a very expressive pace, but are forecast to decelerate in the second half of 2011 and in 2012 (see article "Outlook for the Portuguese economy: 2011-2012", of this Bulletin).

Little scope for the economic policy in major advanced economies

In the context of renewed tensions in international financial markets, the sustainability of economic recovery may be strongly affected by the scope for monetary and fiscal authorities, which is smaller now than it was in 2008. Both the public deficit and debt in major advanced economies rose significantly in this period, whereas monetary policy interest rates are at lower levels. Simultaneously, most countries are concerned about the situation of public finances. In effect, the indebtedness level in some countries is very high, in particular when taking into account the forecasts of low economic growth. In the euro

Table 2.2

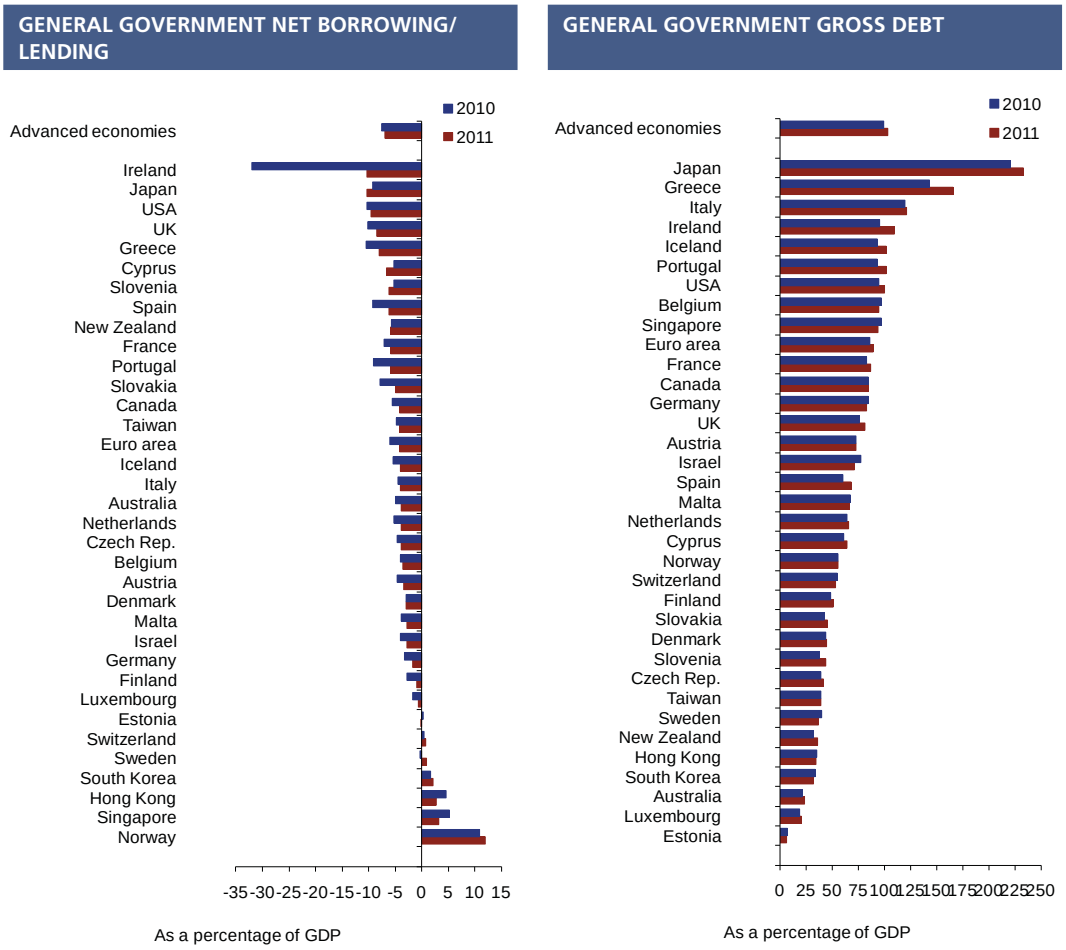
IMPORTS OF GOODS AND SERVICES BY SOME OF THE MAIN DESTINATION COUNTRIES OF PORTUGUESE EXPORTS | REAL RATE OF CHANGE

	Weights 2010[a]	2009	2010	1st half year 2011
Spain	26.6	-23.3	12.3	10.7
Germany	13.0	-15.2	16.5	11.9
France	11.8	-15.2	12.6	10.5
United Kingdom[b]	5.5	-11.9	8.8	1.0
US	3.6	-13.6	12.5	4.5
Italy	3.8	-20.2	19.7	12.4

Sources: Eurostat, Thomson Reuters and UK-ONS.
Notes: (a) Weight in Portuguese exports; **(b)** Excludes the effect of the VAT fraud, according to estimates of the United Kingdom's Statistical Institute.

area, fiscal consolidation criteria have emphasised this concern, wherefore a number of countries have adopted fiscal austerity programmes. Also in the United Kingdom, the United States and Japan, concerns about the indebtedness levels and the sustainability of public finances have become more evident. Ireland, the United States and Japan are projected to post the highest public deficits in 2011. Simultaneously, these countries are also among those with the highest gross public debt levels, together with Greece and Italy (Chart 2.3).

Chart 2.3



Sources: IMF and European Commission.

Downturn in GDP in the United States in the first half of 2011

In the United States, GDP slowed down in the first quarter, year on year, by 3.1 per cent to 2.2 per cent, and in the second quarter to 1.5 per cent. The downturn in GDP has largely reflected the dynamics of domestic demand. In particular, public expenditure and residential private investment contributed negatively to the year-on-year growth rate of GDP in the first two quarters of the year. According to quarter-on-quarter data, private consumption slowed down significantly in this period.

Private consumption has been negatively affected by unfavourable conditions in the labour market constraining developments in household disposable income. The unemployment rate in the United States continued to be high (9.1 per cent in July and August 2011). The decline in the labour participation rate may have mitigated the rise in the unemployment rate. In effect, the increase in the number of jobs has been weak in recent months. In spite of the cut in disposable income, the savings rate has stabilised

(slightly above 5 per cent, as a percentage of disposable income), which is explained by weak growth of private consumption. Business and consumer confidence have remained at low levels, influenced by negative results in the stock market and the absence of clear signs of a recovery in the housing market (Chart 2.5).

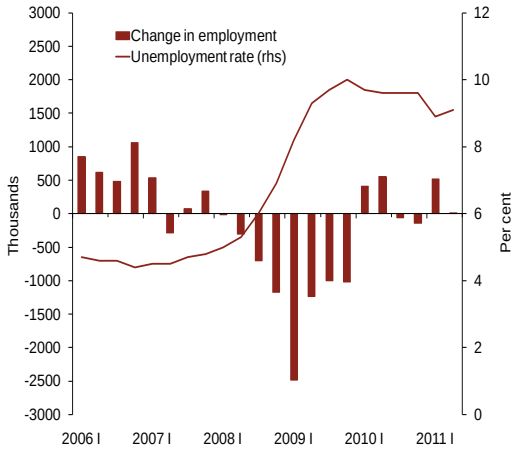
The North-American economy is forecast to grow significantly less in 2011 and 2012 than in 2010. However, developments in the economy may be constrained by the removal of fiscal stimuli, in particular by questioning the still incipient recovery in labour and housing markets (Charts 2.4 and 2.5). The need to implement fiscal adjustment measures may be yet a factor of tightened economic activity in coming years. Moreover, the possibility of dissemination of the sovereign debt crisis in the euro area and of new commodity price hikes may also curtail economic growth in the United States. In this context, monetary policy will likely remain accommodating, maintaining low benchmark rates, at least up to mid-2013, as announced by the Federal Reserve. In late September, the Federal Reserve announced changes in the average maturity of its US government securities portfolio, selling securities with a maturity of up to three years and buying the same amount in securities with a maturity of six to 30 years. This measure, known as the Operation Twist, aims at reducing long-term interest rates, contributing to the better operation of the financial markets and promoting economic recovery.

Slowdown in economic activity in the euro area in the first half of 2011 likely to continue into 2012, in the context of sluggish domestic demand and negative effects of the sovereign debt crisis

In the euro area, in spite of the positive economic growth of 0.8 per cent quarter on quarter and 2.4 per cent year on year in the first quarter, the second quarter saw a stronger slowdown than had been expected by financial market participants, to 0.2 per cent quarter on quarter, influenced by the negative contribution of domestic demand. In particular, private consumption fell by 0.2 per cent quarter on quarter, after 0.2 per cent growth in the previous quarter, and gross fixed capital formation almost came to a standstill (0.2 per cent, compared with 1.8 per cent in the first quarter). Public consumption rose moderately in the first quarter and declined in the second quarter, quarter on quarter, only slightly contributing to GDP growth in the first half of the year as a whole. The contribution of net exports remained unchanged, despite the decline in the buoyancy of imports and exports. The deceleration in

Chart 2.4

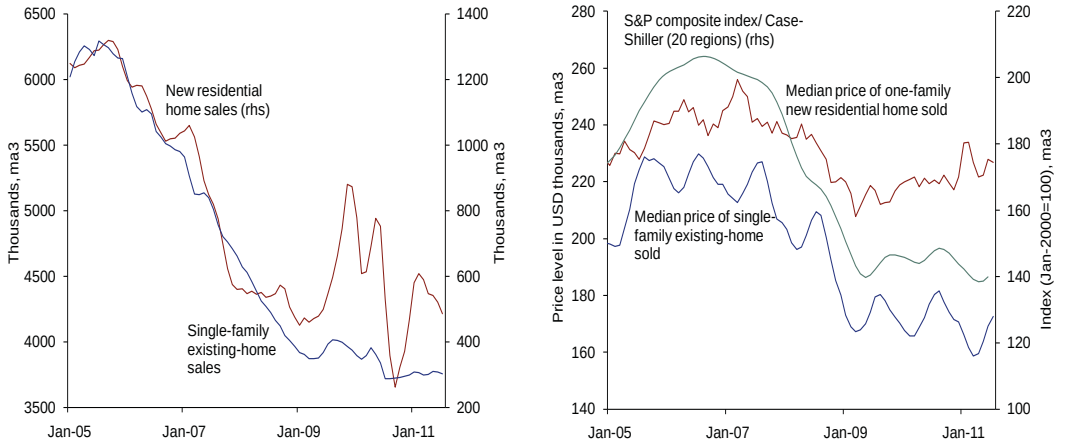
US – CHANGE IN EMPLOYMENT AND UNEMPLOYMENT RATE



Source: Thomson Reuters.

Chart 2.5

US - HOUSING MARKET INDICATORS



Source: Thomson Reuters.

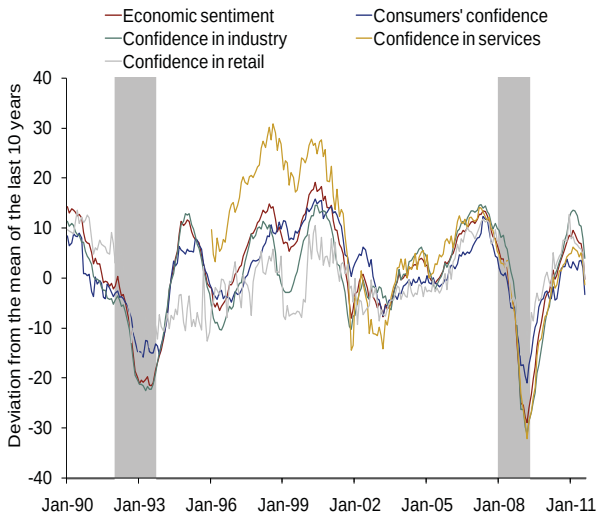
quarter-on-quarter growth in the second quarter was exacerbated by the base effect resulting from stronger growth in the first quarter, which was partly due to temporary factors. Notwithstanding the heterogeneity among member countries, GDP growth slowed in most countries in the second quarter, except Italy, Austria, Finland and Portugal.

In Germany, GDP grew by 1.3 per cent quarter on quarter in the first quarter and by 0.1 per cent in the second quarter. In spite of the slowdown in the second quarter, the German economy has been among the most dynamic in the euro area. Simultaneously, the labour market has had favourable developments, and the unemployment rate has declined to levels significantly below the euro area average. In France, economic growth in the first half of the year was somewhat weaker (0.9 per cent quarter on quarter in the first quarter and stagnation in the second quarter). The labour market has been marked by the rise in the unemployment rate and the freeze on civil servants' wages, within the scope of a range of fiscal retrenchment measures. In Italy and Spain, GDP growth was also very moderate in the first half of the year, given the weak contribution of private consumption. In both countries, the contribution of gross fixed capital formation in the construction sector was negative. In Spain, the unemployment rate continued the upward trend seen since the start of the year, to stand above 20 per cent. In Italy, in turn, the unemployment rate declined slightly. In Ireland, the GDP growth rate, quarter on quarter, was 1.3 per cent in the first quarter, and 1.6 per cent in the second quarter, with buoyant net exports offsetting the slowdown in private consumption. The unemployment rate increased further in August to 14.5 per cent. In Greece, growth in the first quarter was also positive but moderate, 0.2 per cent quarter on quarter, whereas in year-on-year terms GDP fell sharply (8.1 and 7.3 per cent in the first and second quarters respectively).

Developments in confidence indicators in the euro area point to continued moderate economic growth. Consumer confidence has shown a downward trend since February. Behind this were persisting unfavourable conditions in the labour market, with the unemployment rate remaining at around 10 per cent. The household disposable income rose very moderately in nominal terms in the first quarter, but declined in real terms. Business confidence decreased in the first half of the year and at the start of the third quarter. In manufacturing, retail trade and construction, confidence indicators are also contracting (Chart 2.6). Developments in the housing market have contributed to this negative sentiment. In most countries, housing prices are below the levels seen before the crisis. The exceptions are the countries where price growth has been more moderate, such as Portugal and Germany. In contrast, prices in France have continued to rise substantially (Chart 2.7).

Chart 2.6

EURO AREA – CONFIDENCE INDICATORS

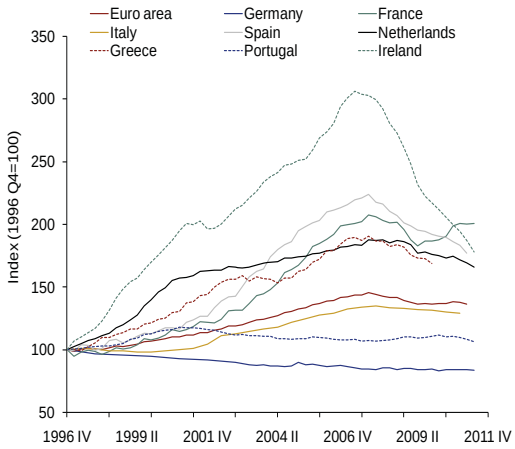


Sources: CEPR and European Commission.

Note: Grey-shaded areas correspond to recession periods identified by the CEPR.

Chart 2.7

EURO AREA – REAL HOUSE PRICES



Sources: ECB, Eurostat and Thomson Reuters.

Notes: Housing prices deflated by the Harmonised Index of Consumer Prices. Prices in Ireland, France and the Netherlands refer to existing dwellings. In the other countries, they refer to all housing (new and existing). In Germany, data prior to 2003 are annual. In Greece, data are available up to 2009.

European authorities have adopted new measures to counter the sovereign debt crisis

In 2011, the euro area economy was marked by the intensification of the sovereign debt crisis, which started a new stage. More specifically, the countries that had already resorted to international financial assistance continued to be under pressure, while in other countries, such as Spain and Italy, yields on government securities rose significantly in July and August 2011, resulting in a substantial deterioration of financing conditions in the public sector and also the banks of those countries.

Concerns about the sustainability of public finances in euro area countries started to intensify at the end of the second quarter of 2011, in view of Greece's need to resort to a second financial aid package. The

first loan by the European Union (EU) and the IMF to Greece, approved on 9 May 2010, proved insufficient to meet the country's financing needs and to allow access to market financing. In fact, in early July, it was clear that Greece would not be able to resume a sustainable path of public debt growth without additional external assistance, and a request for a second financial aid package was submitted to the EU and the IMF in July 2011.

Considering the risk of contagion to other countries, European authorities agreed on 11 July on a package of measures with a view to widening their scope of intervention in situations which may threaten financial stability. The European Stabilisation Mechanism, which will be a substitute for the current European Financial Stabilisation Mechanism in mid-2013, will make it possible: 1) to facilitate preventive action in financial markets; 2) to recapitalise financial institutions through credit lines to governments, even in countries not covered by financial assistance programmes; 3) to intervene in secondary debt markets, provided that the ECB acknowledges the existence of exceptional circumstances in financial markets and risks to financial stability.

On 21 July, the Heads of State or Government of the euro area and EU institutions agreed on a new financial assistance programme for Greece which, in addition to granting a second loan to the amount of €109 million, reducing the respective interest rate, and extending the maturity, provided for the voluntary involvement of the private sector, under terms not yet fully specified. Private investors, represented by the Institute of International Finance, are expected to agree with a partial debt reduction, in a programme that may include bond *swaps*. Some of the initiatives envisaged in this programme include the exchange of Greek government bonds close to maturity for new 30-year bonds, without any cut in the nominal value of the bond, or the exchange of bonds implying a cut in their nominal value but better collateralised and/or with higher interest for the investor.

In addition to these measures, the maturities on loans to Portugal and Ireland were extended, under the financial assistance programmes, and the interest rate was reduced. The maturities of loans to these countries will be extended from the current 7.5 years to 15 to 30 years, with a grace period of ten years. The interest rates on loans granted by the EU must be equivalent to the interest rates on loans granted through the medium-term financial assistance mechanism to Member-States' balance of payments, currently corresponding to approximately 3.5 per cent. These new measures are expected to improve public debt sustainability in EU-financed countries.

Against this framework, it is also important to stress that, in the context of normalisation of the regular operation of the monetary policy transmission mechanism, the ECB has purchased government securities from Italy and Spain on the secondary market. This has also contributed to mitigate financial market turbulence.

Slowdown in economic activity in the euro area expected to continue into 2012

IMF forecasts point to a deceleration of economic growth in the euro area in the second half of 2011 and 2012. In the same vein, ECB macroeconomic staff projections also point to a slowdown of GDP growth: between 0.4 and 2.2 per cent in 2012 (1.4-1.8 per cent in 2011). The euro area economy will be adversely influenced by the effects of the financial crisis, particularly in a context of continued uncertainty as to the response of European authorities to the sovereign debt crisis. In addition, the slowdown in global economy will tend to negatively condition the outlook for export growth in the euro area. In Germany and France, where economic growth has been stronger, the slowdown observed in the second quarter is forecast to continue. In Italy, the pace of growth has been weaker, and growth is forecast to be very moderate or to stagnate in 2012. In Spain, after the 2010 recession and very moderate growth in 2011, the IMF outlook points to a recovery in 2012 (Table 2.1).

Very moderate pace of growth will persist in the United Kingdom

In the United Kingdom, economic growth in the second quarter has also been disappointing, slowing from 0.5 to 0.2 per cent quarter on quarter, wherefore the monetary authorities revised downwards their growth projections. Domestic demand has had particularly negative developments. The decline in private consumption depends on unfavourable trends in the labour market: the unemployment rate rose, nominal wages grew moderately and the number of employees declined in the second quarter. Consumer confidence shows no signs of marked improvement, suggesting that private consumption continues to be weak. The high inflation level, measured by consumer prices, has also contributed to the fall in household real income. In turn, exports have contributed positively to GDP. Prospects for the economy in the United Kingdom are conditional on substantial fiscal consolidation measures.

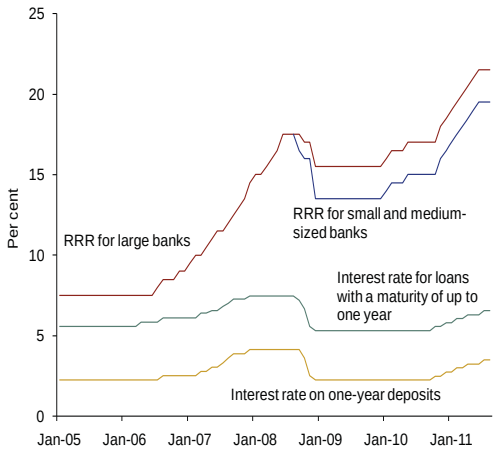
Moderation of economic growth in China

In 2010, China became the main extra-community supplier of Portugal. Developments in the Chinese economy in the first half of the year were marked by fears of a too pronounced slowdown, suggested by business confidence indicators and by fears of a sharp correction in the housing market. However, economic data releases suggest that growth will continue to be buoyant but to moderate slightly, largely due to tighter monetary policy. Since the start of the year, the Chinese monetary authority raised the reference interest rate on loans by 75 basis points, and increased the reserve ratio applying to banks (Chart 2.8). In addition, the Chinese Government took measures intended to ease the buoyancy of the housing market, for instance by penalising taxes on demand for second residence and luxury homes, and increasing the supply of social or price-controlled housing.

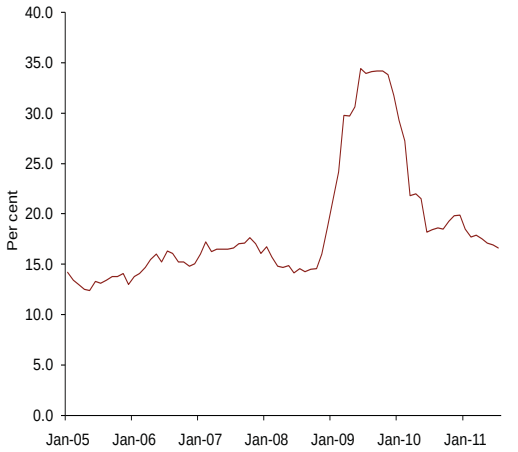
GDP growth in China slowed down in the first half of 2011 from the previous year, but remained at high levels in the first and second quarters, with year-on-year rates of change of 9.7 and 9.5 per cent respectively; the quarter on quarter rate of change stood at 2.1 and 2.2 per cent respectively. In cumulative terms, in the first half of the year, the main contribution to GDP growth came from final consumption expenditure, followed by investment. In the first half of 2011, the contribution of net exports was negative. In terms of private consumption, data on retail sales up to July did not reveal a significant

Chart 2.8

CHINA - MONETARY POLICY INSTRUMENTS



CHINA - CREDIT GRANTED BY FINANCIAL INSTITUTIONS - YEAR-ON-YEAR RATE OF CHANGE



Source: CEIC.
Note: RRR stands for reserve requirement ratio.

slowdown, suggesting that the strong dynamics of this component continues. At industrial production level, cumulative growth in 2011 also points to strong economic growth. Signs of a deceleration are given by monetary indicators: the year-on-year growth rate of credit granted by financial institutions declined from 19.9 per cent at the end of last year to 16.6 per cent in July, in tandem with the decrease in the annual rate of change of the monetary aggregate M2.

Persisting risks to the international economy stemming from global imbalances

The slowdown in international trade flows has contributed to the deterioration of external accounts in some countries. Seeking to address global imbalances, the group of the 20 major economies in the world (G20) agreed, in February, on monitoring a range of economic indicators in the different economies. These indicators are to be monitored for signs of economic imbalances, and include public debt and deficit levels, the savings rate and the private debt level. In addition, the range of indicators to be monitored for external imbalances includes the external deficit and international investment and transfer flows, and shall also consider the exchange rate and macroeconomic policies, including monetary and fiscal policies. Developments in these indicators will be monitored at multilateral level, by establishing different guidelines for individual economies.

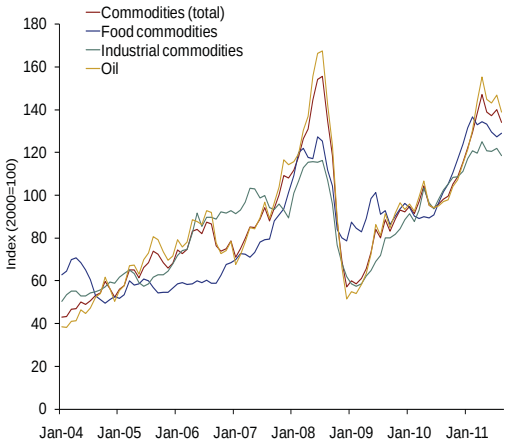
The European Parliament is set to approve the legislative package submitted by the Commission in September 2010 containing a set of measures to strengthen economic governance in the EU and the euro area. The purpose of this package is twofold: to facilitate preventive and corrective action ensuring fiscal sustainability and to reduce macroeconomic imbalances and promote competition.

Commodity prices rose in the first half of 2011, in spite of economic slowdown

Commodity prices in international markets rose significantly from the end of last year to April (Chart 2.9). In the second quarter there was some moderation and even a decline in prices, in the wake of a deterioration in global growth prospects. In 2011, food prices peaked in the first quarter and moderated subsequently. Industrial goods prices rose also, but less markedly. In addition to food, oil was also among the main factors behind the rise in commodity prices, and reached its yearly peak also in April. These developments were due, on the one hand, to the strong demand for commodities in some emerging market economies, such as China and India, where economic growth has been very strong

Chart 2.9

INTERNATIONAL COMMODITY PRICES IN USD



Source: Hamburgisches Weltwirschafts Institut (HWWI).

and commodity-intensive. On the other hand, the supply side was also subject to some caveats. In particular, political tensions in North Africa and the Middle East have raised some fears that eventually materialised of a discontinuance of oil supply in major producing countries. Crude oil production in Libya, according to the International Energy Agency, accounted for around 2 per cent of world supply of this commodity in 2010. Other oil producing countries, however, have contributed to maintaining the level of oil inventories, which led to a moderation in price rises in the second quarter de 2011. This moderation of commodity prices is expected to continue into the second half of 2011, taking into account the slowdown in global economy and the abatement of political tensions. In the case of crude oil, the prices implied by futures markets in early September suggested that they would remain unchanged over the next quarters, although at very high levels, when compared with the previous year.

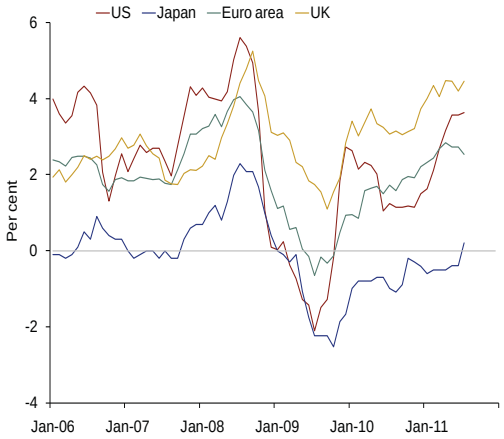
Increase in inflation in advanced economies and emerging market economies

Consumer price inflation rose in major advanced economies, *vis-à-vis* the end of last year (Chart 2.10). These developments notwithstanding, monetary policies in the United Kingdom and the United States remained accommodating, in contrast with the euro area, where the accommodative stance of monetary policy declined somewhat.

In emerging market economies, inflation continued to increase in 2011. In China, in spite of tighter monetary policies, inflation attained 6.5 per cent in July, *vis-à-vis* 4.6 per cent at the end of the previous year. In Brazil, inflation rose to 7.2 per cent in August (4.2 per cent in December 2010). However, faced with the prospects of a global economic downturn and continued pressure for an appreciation of real, the central bank decided in September to reduce the key interest rate by 50 basis points. Turkey also decided to reduce its key interest rate in August. Against this background, risks of sharper rises in consumer prices persist, and inflation is forecast to remain at high levels in emerging market economies.

Chart 2.10

INFLATION | YEAR-ON-YEAR RATE OF CHANGE



Source: Thomson Reuters.

In spite of the responses by European authorities to fears related to the sustainability of public finances, financial markets experienced severe turbulence, which has intensified further since July

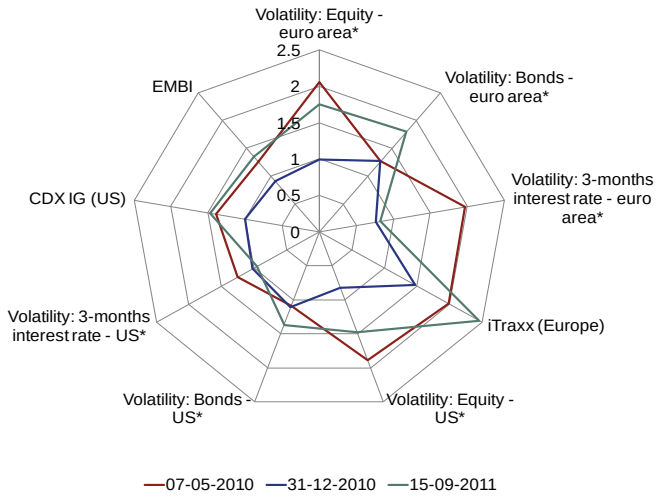
Volatility in international financial markets has increased in the wake of the debate on the Greek fiscal situation and the necessary involvement of the private sector in case of a public debt restructuring. Volatility in bond and stock markets rose to levels similar to those registered in the most critical period of the 2007-09 financial crisis, immediately after the bankruptcy of Lehman Brothers investment bank in September 2008 (Chart 2.11). This parallelism was particularly expressive in terms of the decline in stock market prices, chiefly in the euro area (Chart 2.12).

Tensions in international financial markets have intensified due to fears of systemic risk in the euro area. In addition to countries that resorted to financial assistance programmes, as Greece, Ireland and Portugal, other countries post high levels of public debt or deficit, thus raising the fears of international investors as to the sustainability of their public finances. In this context, government bond yields increased in Spain, Italy, Belgium and, to a lesser extent, France. These developments contrast with yields in other euro area countries, as Germany, Netherlands and Austria. This second group of countries seems to be benefitting from the rise in demand for safe assets within the euro area (Chart 2.13).

Yield developments in euro area member countries have also been influenced by the Securities Markets Programme (SMP) conducted by the ECB and implemented in May 2010. Its objective was to restore the appropriate monetary policy transmission mechanism, by addressing malfunctioning securities markets and providing for the purchase of eligible marketable debt instruments of some countries on the secondary market. The programme was extended in August 2011, to include government securities from Spain and Italy. ECB intervention within the scope of the SMP has contained the upward trend of yields in Spain and Italy, also contributing to their slight decline in Portugal and Ireland.

Chart 2.11

RISK INDICATORS IN FINANCIAL MARKETS



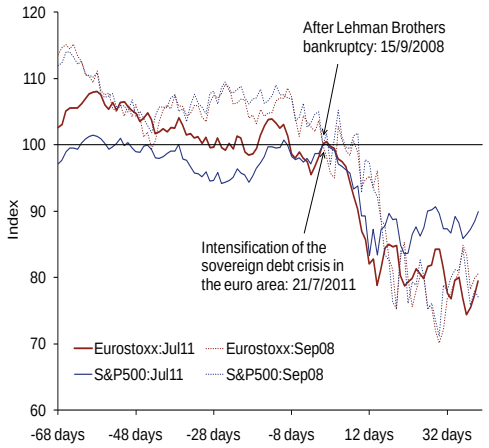
Sources: Bloomberg, Thomson Reuters and Banco de Portugal calculation.

Note: The scale represents the ratio of the values of the respective indicator between the mentioned date and 31 December 2009. iTraxx is the CDS index on European corporations. CDX IG is the CDS index on US corporations. EMBI is an index measuring government interest rate spreads of emerging market economies *vis-à-vis* the US.

***** Implied volatilities in options of the nearest futures contract over the respective instrument.

Chart 2.12

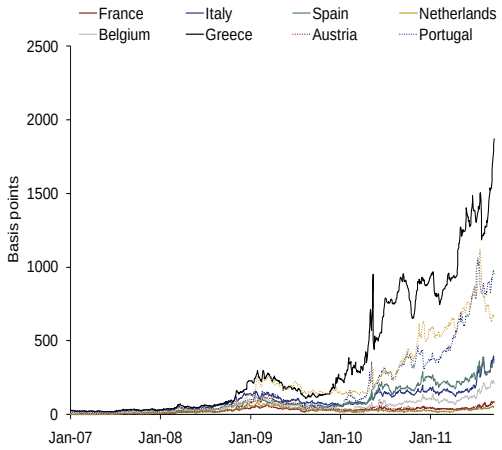
DAILY DEVELOPMENTS IN EQUITY INDICES



Source: Thomson Reuters.
Note: Daily data up to 15 September; Day 0=100 refers to 15 September 2008 in dotted lines and to 21 July 2011 in solid lines.

Chart 2.13

10-YEAR GOVERNMENT BOND YIELD SPREADS *VIS-À-VIS* GERMANY



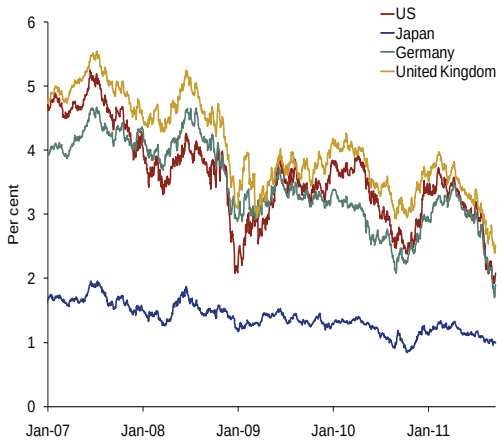
Source: Thomson Reuters.

Fears as to the sovereign debt credit risk in euro area countries did not pass through to other international economies. Yields in the United Kingdom and the United States remained at low levels, maintaining the trend seen in the previous year (Chart 2.14). In effect, government securities in these economies have benefitted enormously from the increasing demand for safe assets, against the background of increased risk aversion.

In the United States, yields remained at low levels, in spite of the downgrading of long-term sovereign debt by Standard & Poor's, from AAA to AA+. This decision took into account the high level of public debt and the political risks that may constrain its future trend. According IMF data, the fiscal deficit is set to attain 9.6 per cent of GDP in 2011, and public debt 100 per cent of GDP.

Chart 2.14

10-YEAR GOVERNMENT BOND YIELDS



Source: Thomson Reuters.

Fears regarding the vulnerability of the banking sector in Europe

Similarly to last year, the European Banking Authority performed a new stress-testing exercise to the banking systems of some European countries under adverse macroeconomic scenarios. The results revealed strong resilience by European banks, in spite of a recommendation that some banks under review should raise their capital ratios.

Nonetheless, the intensification of the sovereign debt crisis has contributed to the increase in credit risk of the public sector of more vulnerable economies and also the banking sector. Bank investment portfolios include government securities, the prices of which have declined in countries facing fears regarding the sustainability of public finances. The decline in the value of bank assets reduces their ability to raise funds in the market (given the decline in the collateral value) and augments the credit risk in the sector. In effect, in the euro area interbank market, the differential between collateralised and non-collateralised interest rates has widened considerably, contrary to developments in the United States and the United Kingdom (Chart 2.15).

In this context, rating agencies have downgraded a number of banks in euro area countries. Following the intensification of the sovereign debt crisis in the summer, the credit ratings of banks in Germany, France, Italy, Spain, Netherlands, Belgium, Greece, Austria, Portugal, Luxembourg, Cyprus, Slovenia and Slovakia were revised. In Italy, the credit rating was lowered in some banks as a result of the cut in the sovereign debt credit rating (from A+ to A) by Standard & Poor's.

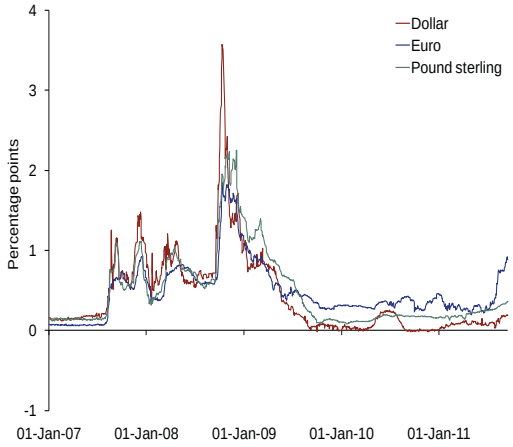
Financial turbulence was particularly strong in stock markets as of the second quarter

The main stock indices saw a significant decline in stock prices, which was more marked in the financial sector (Chart 2.16). In August and mid-September, the falls in stock prices attained the same levels seen after the collapse of the *Lehman Brothers* investment bank in 2008. The stock price indices at the end of August were below those observed in 2005.

Investors increased aversion to risk was also detected in the developments of gold prices, which is a safe asset and therefore tends to be most preferred during turbulence periods. In 2011, the price of gold rose by around 31 per cent, measured in US dollars.

Chart 2.15

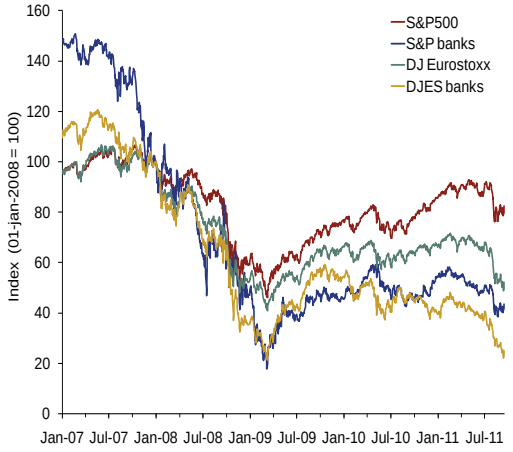
3-MONTH INTEREST RATES | DIFFERENTIAL BETWEEN COLLATERALISED AND NON-COLLATERALISED INTEREST RATES



Sources: Bloomberg and Thomson Reuters.

Chart 2.16

EQUITY INDICES IN THE US AND THE EURO AREA



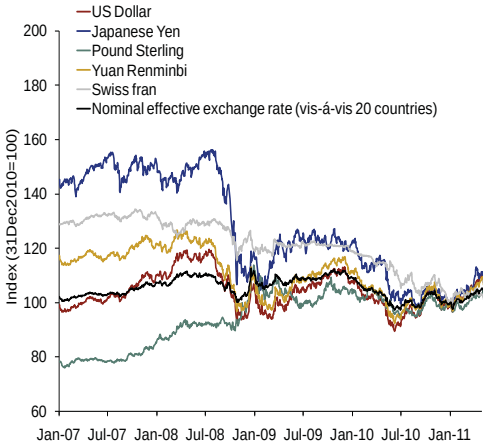
Source: Thomson Reuters.

Relative stability of developments in the foreign exchange market, with recent increase in implied volatility

Developments in the foreign exchange market have been relatively stable. The euro appreciated *vis-à-vis* the US dollar during the first half of 2011, and depreciated somewhat in the first months of the third quarter (Chart 2.17). In real effective terms, however, according to the IMF, the euro continues to be in line with the medium-term economic fundamentals. According to the same methodology, the yen is also balanced *vis-à-vis* macroeconomic developments in Japan. This foreign-exchange balance has been due, inter alia, to foreign exchange operations by the Japanese authorities, in a concerted intervention with the G7 countries, with a view to limiting the yen's exchange rate volatility. The US dollar, in spite of its recent depreciation, has slightly appreciated *vis-à-vis* its equilibrium values. During the first half of the year, the developments of the Swiss franc were also notable, as it appreciated to historical levels *vis-à-vis* the euro. In order to contain this trend, the authorities intervened in the market and, in September, the central bank governor informed that he would prevent the Swiss franc from appreciating beyond 1.2 EUR/CHF.

Chart 2.17

EURO EXCHANGE RATES



Source: ECB.

3. Monetary Policy of the ECB and Economic and Financial Conditions of the Portuguese Economy

3.1. Monetary policy of the ECB

The Governing Council of the ECB maintained prospects of a gradual adjustment of the accommodative stance of monetary policy

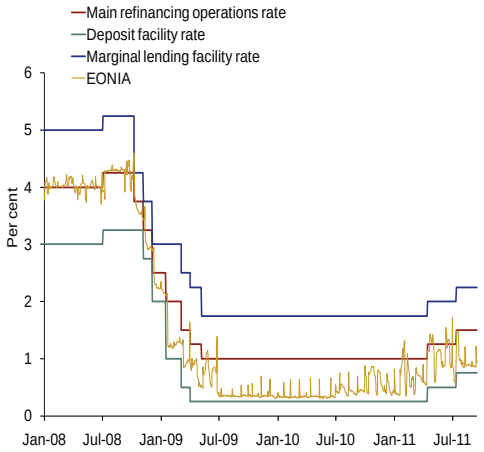
The Governing Council of the European Central Bank (ECB) kept its key interest rates at historically low levels between May 2009 and April 2011, at 1 per cent for the main refinancing operations (MROs) and at 0.25 and 1.75 per cent, for the deposit facility and the marginal lending facility respectively (Chart 3.1.1). This decision was justified by expectations of low economic growth in the euro area over the medium term and subdued inflation, in line with the objective of price stability, which aims to maintain HICP inflation below, but close to, 2% over the medium term.

Throughout 2011, the annual rate of change in the HICP continued the increasing trend already started in 2010, in part, due to the rise in commodity prices. In this context, the Governing Council of the ECB decided to increase its key interest rates by 0.25 percentage points at its April and July meetings, considering that risks to price stability were on the upside. In April the interest rate on the MROs was increased to 1.25 per cent and the interest rates on the deposit facility and the marginal lending facility were increased to 0.5 and 2 per cent respectively. At its July meeting, the Governing Council decided to further increase its key interest rates. Hence, the interest rate on the MROs was increased to 1.5 per cent and the interest rates on the deposit facility and marginal lending facility were increased to 0.75 and 2.25 per cent respectively. By taking these decisions, the Governing Council contributed to keeping inflation expectations firmly anchored at levels consistent with the definition of price stability, in order to avoid the materialisation of second round effects. In addition, the Governing Council considered that monetary policy continued to provide considerable support to economic activity, as it remained accommodative.

Data on price developments and economic activity in the first half of 2011 confirmed the Governing Council's assessment that an adjustment was required in the largely accommodative monetary policy stance. Economic data released for the first quarter of the year revealed positive euro area growth

Chart 3.1.1

EURO AREA - ECB OFFICIAL INTEREST RATES AND EONIA



Source: ECB.

dynamics, albeit surrounded by a high degree of uncertainty. The Governing Council's assessment took into account the moderation foreseen for GDP growth in the second quarter of the year and the maintenance of economic activity on a positive path. Prices in the euro area rose in the first half of the year, chiefly due to an increase in commodity prices. Therefore, risks remained on the upside, in particular as a result of increases in energy prices as well as in some indirect taxes and administered prices, following fiscal consolidation efforts in some countries.

In September, the ECB kept its key interest rates unchanged amidst financial market turbulence in the euro area and higher financing costs

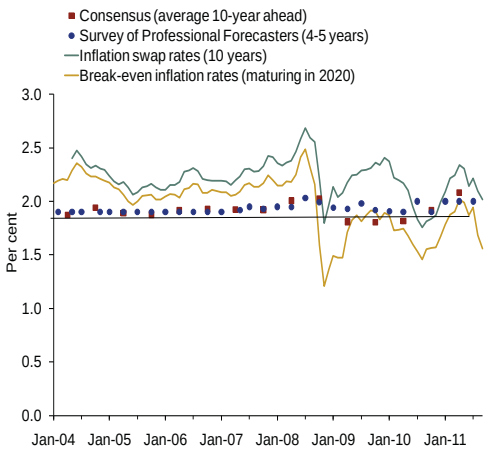
The Governing Council of the ECB, at its meeting in September, reiterated that the monetary policy stance remained accommodative, referring however that some financing conditions had tightened. The ECB staff macroeconomic projections foresee a moderation of economic growth in the euro area in 2011 and 2012 and inflation rates below 2 per cent in 2012. Inflation expectations over the medium to long term moved in tandem, with some indicators suggesting inflation levels above 2 per cent in the first half of the current year, while projections for implied inflation have declined considerably since the beginning of summer (Chart 3.1.2).

The ECB continued to conduct the already announced monetary policy operations and adopted additional non-standard measures

The Eurosystem's monetary policy operations started to be conducted through fixed-rate tenders with full allotment, in October 2008. This change enabled a better transmission of the monetary policy decisions, contributing to the stabilisation of money market interest rates and to a reduction of pressures on the financing of the banking system. However, in December 2009 the ECB announced its intention to gradually withdraw the monetary policy stimuli that had been introduced. Over the course of 2010 some operations that had been discontinued were reintroduced following tensions in sovereign debt markets in April and May 2010. In addition, the Governing Council announced the Securities Markets Programme (SMP) for the purchase of euro area public and private debt, with a view to restoring the appropriate functioning of these markets and the monetary policy transmission mechanism.

Chart 3.1.2

EURO AREA - LONG-TERM INFLATION EXPECTATIONS



Sources: ECB, Bloomberg, Consensus Economics, Thomson Reuters (ICAP) and Banco de Portugal calculations.

In 2011 financial market tensions resulting from fears about the sustainability of public finances in some euro area countries contributed to the maintenance of the already announced monetary policy operations. In March the Governing Council announced that it would continue conducting its MROs as fixed-rate tenders during the following months, reiterating in June that this procedure would continue in use, and in August the Governing Council decided that the fixed-rate tender procedures would continue until the beginning of 2012. In addition, the ECB continued to conduct special fixed-term refinancing operations with a maturity of one maintenance period, and three-month longer-term refinancing operations (LTROs) also to be conducted as fixed-term tender procedures with full allotment. The fixed rate applied on these operations is the same as the one applied on the MROs prevailing on that date. The rates in these three-month LTROs are fixed at the average rate of the MROs over the life of the respective LTRO. In August 2011 the Governing Council announced the prolongation of swap facility agreements. These operations will be extended until August 2012, and the liquidity swap arrangement with the Bank of England until the end of September 2012.

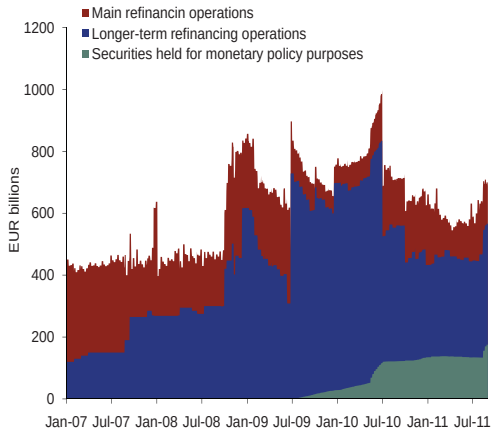
In March 2011, in view of the situation of public finances in Ireland, its government debt securities were downgraded by the major rating agencies, to higher-risk levels. In this context, the ECB suspended the application of the minimum credit rating threshold in the collateral eligibility requirements for the purposes of the Eurosystem's credit operations in the case of marketable debt instruments issued or guaranteed by the Irish government. Taking a similar decision, in July the ECB suspended the application of the minimum credit rating threshold in the case of marketable debt instruments issued or guaranteed by the Portuguese government. This decision was based on the positive assessment by the Governing Council of the ECB of the economic and financial adjustment programme proposed by the Portuguese government, following the approval of the financial assistance programme to Portugal on 17 May conducted jointly by the European Union and the IMF. Given the renewed tensions in some financial markets, at its meeting on 4 August 2011, the Governing Council decided to conduct a liquidity-providing supplementary LTRO with a maturity of six months. This operation was conducted as a fixed rate tender procedure with full allotment. On 7 August, the President of the ECB announced that the ECB was going to actively implement the Securities Markets Programme (SMP), in the context of the announcements made by the governments of Italy and Spain concerning new fiscal consolidation measures.

The size of the Eurosystem's balance sheet increased further from August onwards

In the course of 2011 the liquidity provided by the Eurosystem through its monetary policy operations decreased slightly, increasing again in August as a consequence of the ECB's response to the intensification of the sovereign debt crisis (Chart 3.1.3). More visible in terms of the balance sheet were the reintroduction of a LTRO with a maturity of six months and an increase in purchases of public debt securities in the secondary market under the SMP. In parallel, and mainly from August onwards, there was higher recourse by banks to the ECB's deposit facility. Purchases of debt securities under the SMP were sterilised, by means of specific liquidity absorbing reverse operations, ensuring that the monetary policy stance is not jeopardised with the execution of this programme. The non-standard monetary policy measures are temporary in nature and were designed so as not to jeopardise the primary objective of price stability.

Chart 3.1.3

EURO AREA - OUTSTANDING AMOUNTS OF THE EUROSYSTEM MONETARY POLICY OPERATIONS



Source: ECB.

Interest rate hikes in the main credit markets

Money market interest rates increased steeply during the first half of 2011, reflecting a change in the monetary policy conducted by the ECB (Chart 3.1.4). However, after the end of the second quarter, secured money market rates started a downward path, suggesting some shift in expectations about future developments in the key interest rates. In the unsecured money market the decline was less marked, with a substantial widening of the spread between these two rates.

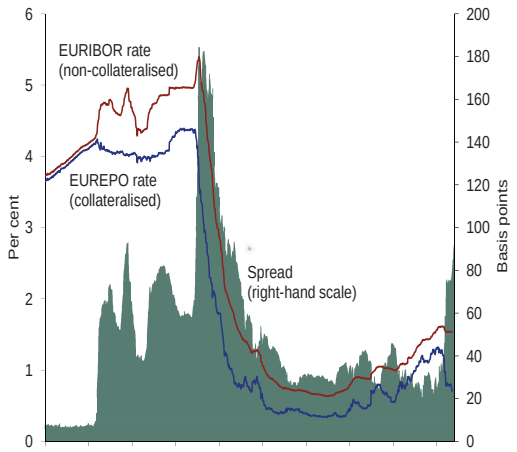
In the credit markets to the non-financial sector, interest rates also showed an upward trend, although somewhat heterogeneous across sectors. In the new bank loans to households, interest rates increased across the entire maturity spectrum, remaining at higher levels as regards loans for consumption (Chart 3.1.5). Interest rates on new loans for house purchase recorded lower rises, reaching levels close to those observed in mid-2009. In the new loans to non-financial corporations, the rise in interest rates was higher than in short-term loans. As for long-term loans, the spreads between lending rates and the relevant market benchmarks for comparable maturities narrowed significantly.

Relative stabilisation of money and credit expansion at a slow pace

The annual average growth rate of the monetary aggregate M3 was of around 2 per cent in 2011. This was due to a smaller contribution of the narrow monetary aggregate M1, offset by an increase in other short-term deposits (M2-M1) (Chart 3.1.6). In 2011 marketable instruments (M3-M2) made a slightly positive contribution for the first time since end-2008.

Chart 3.1.4

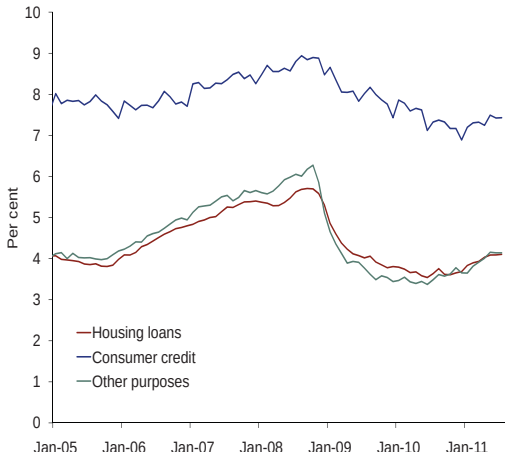
EURO AREA - 3-MONTH MONEY MARKET INTEREST RATES



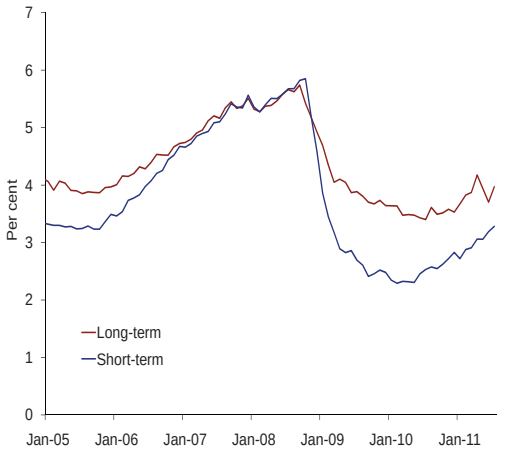
Source: Thomson Reuters.

Chart 3.1.5

INTEREST RATES ON NEW BANK LOANS TO HOUSEHOLDS



INTEREST RATES ON NEW BANK LOANS TO NON-FINANCIAL CORPORATIONS



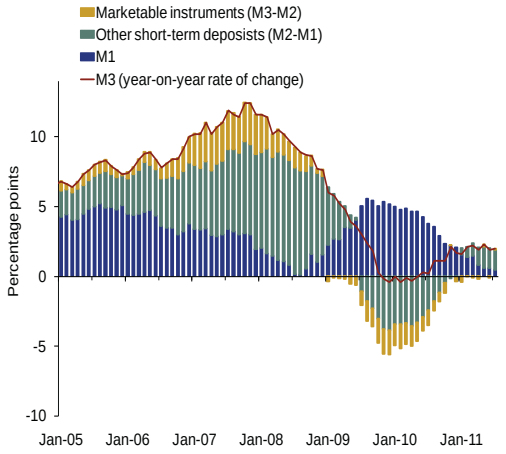
Source: ECB.

The annual growth rate of loans to the private sector granted by Monetary Financial Institutions (MFIs) was 2.6 per cent in July, up from 2.4 per cent in December 2010 (adjusted for sales and securitisation) (Chart 3.1.7). However, this recovery was not constant over past months, reflecting heterogeneous developments by sector of the counterpart. Given the prospects of slower economic growth, amidst financial market instability, and slower overall demand, the pace of credit growth is expected to moderate in the months ahead. These developments are already seen in loans to households (Chart 3.1.8). In fact, as of May, the annual growth rate of loans to households declined. This was mirrored in the slowdown of loans for house purchase and in a sharper reduction of consumer credit. In an opposite direction, albeit more moderately, the growth rate of loans to non-financial corporations increased in the course of 2011, in particular credit granted at the shorter maturities (of less than one year).

According to the results of the Banking Lending Survey, banks continued to apply tighter credit standards in loans to households and to enterprises of the euro area, in 2011. In the case of loans to households, banks started to report that the cost of funds and balance sheet constraints contributed to the tightening,

Chart 3.1.6

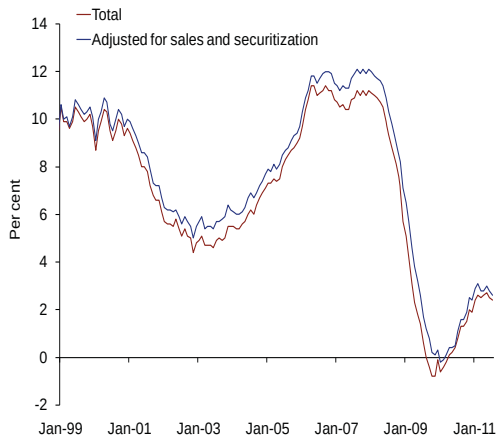
EURO AREA | CONTRIBUTIONS FOR THE YEAR-ON-YEAR CHANGE OF THE MONETARY AGGREGATE M3



Source: ECB.

Chart 3.1.7

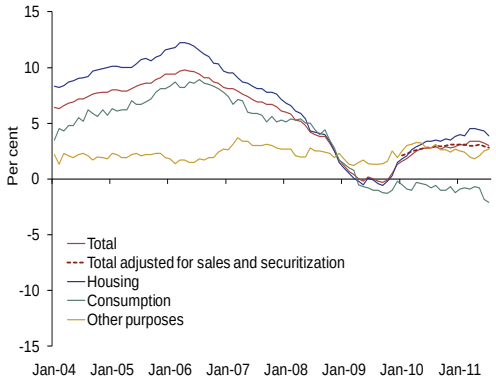
LOANS TO THE EURO AREA PRIVATE SECTOR | ANNUAL GROWTH RATE



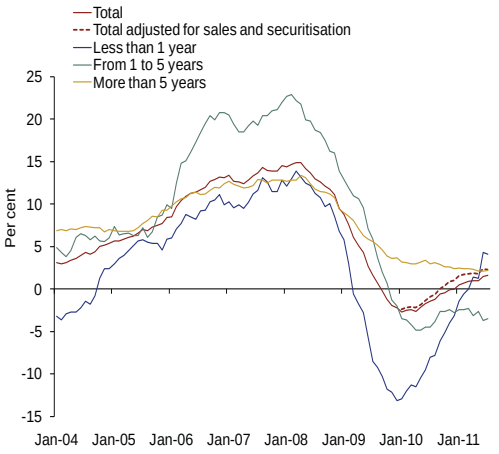
Source: ECB.

Chart 3.1.8

BANK LOANS TO THE EURO AREA HOUSEHOLDS | ANNUAL GROWTH RATE



BANK LOANS TO THE EURO AREA NON-FINANCIAL | ANNUAL GROWTH RATE



Source: ECB.

with banks' perceptions about developments in economic activity remaining an important factor. As to loans to non-financial corporations, banks' prospects for economic activity and the risks on the collateral demanded continued to be the main factors contributing to the tightening of credit standards. Despite these results for the euro area, heterogeneity across euro area countries remains high.

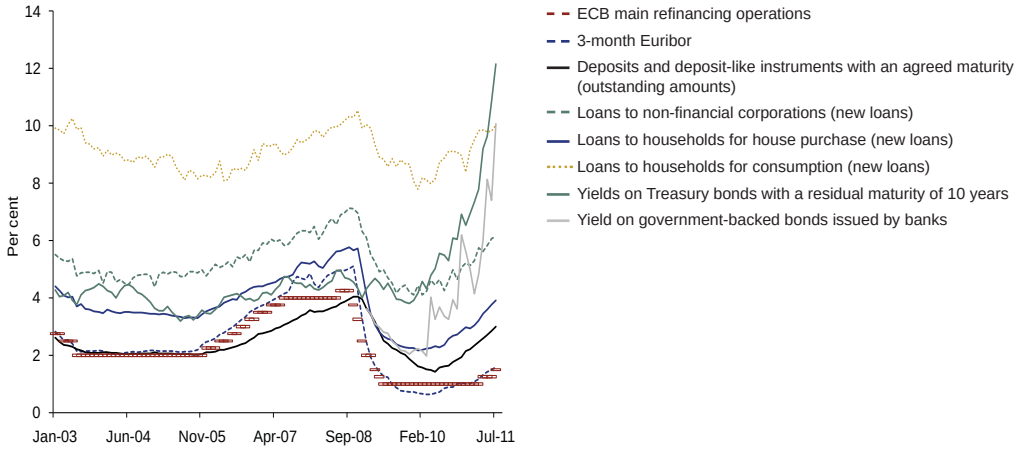
3.2. Monetary and financial conditions of the Portuguese economy

The monetary and financial conditions of the Portuguese economy considerably deteriorated in the course of 2011. In a period that continued to be marked by strong restrictions in the access by Portuguese banks to wholesale debt markets, an increasing differentiation in sovereign risk was seen in the euro area. Those developments contributed to the intensification of tensions in international financial markets, affecting in particular the banking systems. This situation was mirrored in escalating Treasury bond yields to economically unsustainable levels and increased difficulties in the public sector access to

funding. These resulted in a sharp rise in financing from domestic banks, exerting additional pressure on the financing conditions of the banking system. Overall, there was a sizeable reduction in non-residents resources, offset, in part, by shifts in the composition of the portfolio of the resident financial sector towards national securities, notably public debt securities. Despite the rise in short-term interest rates and the high materialisation of credit risk (Chart 3.2.1), the increase in the deposits taking from customers and the fact that the recourse to the liquidity-providing operations of the European Central Bank (ECB) remained at a high level, mitigated the impact of the more expensive funding on bank interest rates and on the amount of credit available to finance the economy. These developments frame the intermediation capacity of banks, which recorded a broad, but gradual, slowdown in loans to the non-financial private sector, in particular in loans to households.

Chart 3.2.1

INTEREST RATES



Sources: Bloomberg, ECB and Banco de Portugal.

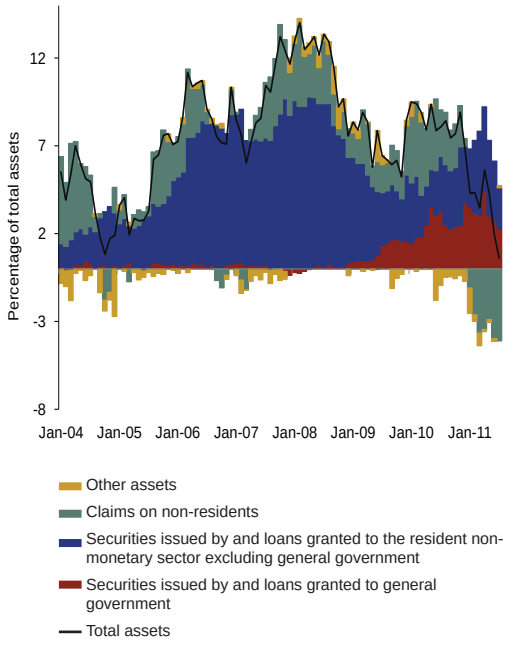
Notes: The yields on government-backed bonds issued by Portuguese banks refer to the asset-weighted average of bonds issued by BCP, BES and CGD covered by these government guarantees. The lack of market depth strongly restricts the existence of bonds with comparable characteristics within each segment, and therefore the rates shown should be interpreted as purely indicative. 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. Last observation: July 2011.

Strongly decelerating total bank assets, despite a considerable increase in financing granted to the public sector

In the course of 2011 there was a marked deceleration in the growth of the Portuguese banking system's assets, broadly in line with developments in the euro area as a whole. In July the year-on-year rate of change stood at 0.6 per cent, *i.e.* close to the figure recorded in the 2003 period of recession (Charts 3.2.2 and 3.2.3). However, it should be noted that, since the onset of the economic and financial crisis in 2007, the expansion of the Portuguese banking system's balance sheet was, on average, clearly higher than in the euro area. Focusing on each balance sheet item, claims on non-residents fell 16.4 per cent year-on-year in July, which represents a negative contribution (-4.1 percentage points) to the growth of total assets. These developments are in line with the usual adjustment pattern of banks amid tight financing conditions in international financial markets and reflect, inter alia, the effort to reconcile – through the sale of non-strategic assets – the deleveraging with the financing of domestic sectors. In line with the difficulties experienced by the Portuguese Government in obtaining funding in international markets, securities issued by and loans granted to the general government kept the strong contribution to the expansion of assets that has been recorded since mid-2009. In fact, since December 2009, the weight of this item in the total balance sheet has more than doubled, representing in July 2011 around 8 per cent of the banking assets. Credit granted to the resident private sector continued to record a positive

Chart 3.2.2

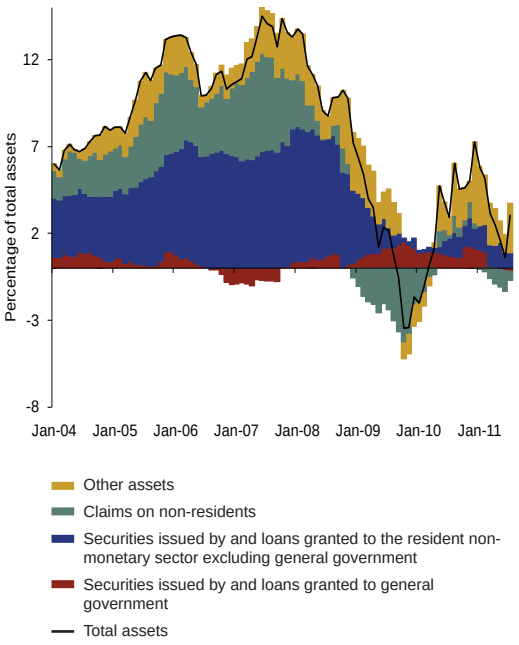
MAIN ASSETS OF THE PORTUGUESE BANKING SECTOR | CONTRIBUTION TO THE YEAR-ON-YEAR RATE OF CHANGE



Source: Banco de Portugal.
Note: Last observation: July 2011.

Chart 3.2.3

MAIN ASSETS OF THE EURO AREA BANKING SECTOR | CONTRIBUTION TO THE YEAR-ON-YEAR RATE OF CHANGE



Source: ECB.
Note: Last observation: July 2011.

contribution, although the slowdown trend has become stronger in the past few months. Within the framework of the international financial assistance programme and taking into account the measures proposed to ensure the adjustment of the financial system over the medium term,[1] banks are expected to continue to record modest, or even negative, balance sheet growth, in the quarters ahead. However, it should be noted the existence of appropriate mechanisms to ensure a gradual deleveraging process, without excessively conditioning the financing of the economy, in particular of companies with better growth prospects. Overall, an orderly and gradual deleveraging process in the financial system shall be followed by an improvement in the capital and liquidity ratios and by a reduction in external financing needs. Thus, the deleveraging process was conceived so as to reconcile the specific financing and deleveraging plans, at individual bank level, with the need to reduce, at an aggregate level, the tension between the gradual reduction of the banking system leveraging ratios and the importance of maintaining sufficient credit flows to ensure the financing of the most productive sectors of the economy.

The financing capacity of the Portuguese banking system in international markets remained strongly conditioned in 2011, being partly offset by an increase in the taking of deposits from resident customers

In the course of 2011 the financing of the banking system largely depended on the increase in the taking of deposits from the resident non-monetary sector; this item grew 14.7 per cent year-on-year compared with July 2010 (Chart 3.2.4). In turn, deposits of non-residents declined by 13.9 per cent in the same

1 For further details, see the box entitled "The economic and financial adjustment programme under the request for financial assistance to the European Union, the member countries of the euro area and the International Monetary Fund", Banco de Portugal, *Annual Report* 2010.

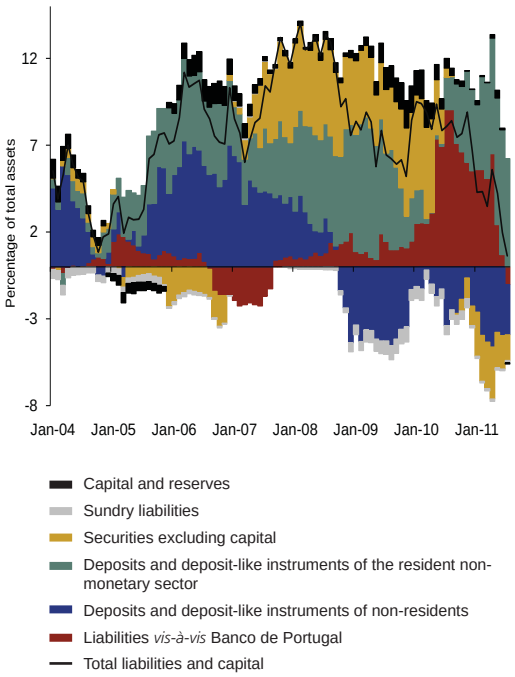
period, reflecting an increased risk perception associated to the Portuguese economy, including its financial institutions. Likewise, as a consequence of very tight access by banks to the international wholesale debt markets, liabilities represented by securities continued to make a negative contribution, which has been recorded since the fourth quarter of 2010. The recourse to the liquidity-providing operations of the ECB remained relatively stable, at high levels, representing at the end of July around 9 per cent of financing to the system. Data available for the past few months do not indicate significant changes in the banking system's liabilities, although important changes are expected in banks' financing structure over the medium term. In particular, is expected a decline in financing obtained from the Eurosystem and a return to the medium and long-term debt markets, following the return by the Government to these markets in the third quarter of 2013, as assumed in the international financial assistance programme.

The growing differentiation of sovereign risk in the euro area and the sharpening of tensions in international financial markets made a significant contribution to the increase in the risk associated to national issuers and, consequently, in their funding costs

Portuguese Treasury bond yield spreads *vis-à-vis* German sovereign bond yields continued to widen, a trend started at the end of 2009. The widening of the spread became more marked from mid-March onwards, in the wake of a series of downgrades of the Portuguese Republic sovereign credit rating and the formal request for international financial assistance. This trend was observable until mid-July, when it reached its highest level since the inception of the euro area (Chart 3.2.5). The widening of the spread between Portuguese sovereign debt yields vis-à-vis German comparable yields was also influenced

Chart 3.2.4

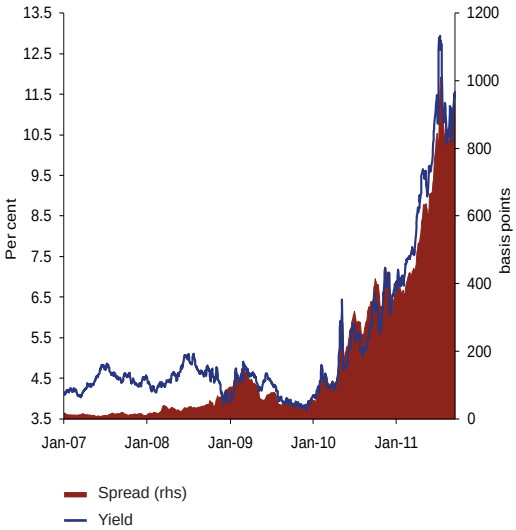
MAIN LIABILITIES OF THE PORTUGUESE BANKING SECTOR | CONTRIBUTION TO THE YEAR-ON-YEAR RATE OF CHANGE



Source: Banco de Portugal.
Note: Last observation: July 2011.

Chart 3.2.5

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



Sources: Thomson Reuters and Banco de Portugal.
Notes: Yields obtained at close of business. The spread was calculated by interpolating the German yield curve, so as to ensure that the yield of the Portuguese 10-year benchmark bond is compared to a German yield of a similar maturity. The calculation of the spread was based on 5-day moving averages. Last observation: 15 September 2011.

by the declining yield demanded by investors for holding German securities. In this sense, sovereign spreads in the euro area have more strongly mirrored the differences in credit quality and in the liquidity characteristics of the public debt securities of each country, to the detriment of common factors across countries.[2] In addition, uncertainty about the responsiveness of the financial assistance mechanisms of the European Union to a more severe contagion added to increasing pressure on the countries with higher structural vulnerabilities.

In the wake of the Summit of euro area countries (on 21 July 2011) – where the second assistance package to Greece was approved – the above-mentioned spread considerably narrowed. This reduction continued in August, after the ECB announced that it would again actively implement the Securities Market Programme (SMP), which had been suspended since the end of March. In September, the spread between Portuguese sovereign debt yields *vis-à-vis* German comparable yields widened again, amid heightened uncertainty about the fiscal and financial situation in Greece. On 15 September the spread stood at 970 basis points, representing an approximate increase of 600 basis points compared with end-2010.

However, it should be noted that developments in Portuguese long-term sovereign bond yields in the secondary market do not have direct impact on the State financing costs. In fact, by complying with the objectives set out in the economic and financial assistance programme, the medium to long-term general government funding needs are globally ensured until mid-2013, when the Portuguese State is assumed to return to the international financing markets. Nevertheless, the Programme only covers a small part of the short-term funding needs. Indeed, the Programme just covers 50 per cent of the refinancing of Treasury bills in 2011. In this context, the public sector – in particular public enterprises – has been faced with additional funding difficulties, due to the non-renewal by non-residents of short-term financing.

After a strong rise in 2010, credit default swap (CDS) spreads of the major Portuguese banking groups decreased considerably in the first half of 2011, coming closer to CDS spreads for Treasury bonds with a comparable maturity (Chart 3.2.6). However, after the formal request for financial assistance, the risk associated to Portuguese banks' debt resumed an upward trend. As a result, the average spread of domestic CDSs vis-à-vis the euro area benchmark index (Dow Jones iTraxx Financials) widened from around 20 basis points at the beginning of 2010, to approximately 900 basis points in mid-September. In this context, the shares of Portuguese listed banks have recorded a strong devaluation in 2011. The PSI Financial Services index accumulated a loss of 33.4 per cent from January to August, far above the 10.6 per cent drop of the PSI Geral index and the 23.1 per cent decrease recorded by the Dow Jones Euro Stoxx Financials index, which comprises euro area banks.

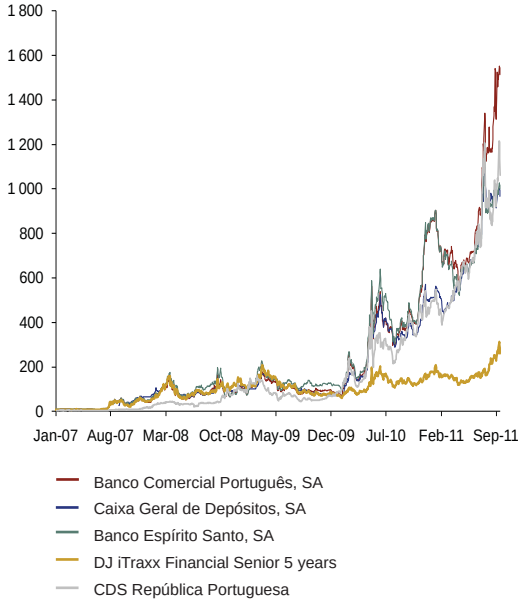
Higher spreads across new loans granted by banks, as a result of tighter credit standards

In a context of high materialisation of credit risk and where the access to the international wholesale funding market is virtually closed to domestic banks, the usual lagged transmission mechanism of money market interest rates to bank interest rates ceased to be observed, despite a high level of financing from the Eurosystem. In the course of 2011, in spite of a rise in Euribor rates, there was an immediate widening of the spread between lending interest rates and money market interest rates. These developments reflect the tightening of credit standards by most banks, translating inter alia into higher spreads, both in loans to households and in loans to non-financial corporations. Regarding deposit operations, margins became more negative, due to a business strategy more oriented towards an increase in the depositors' base. (Chart 3.2.7). Anyway, data available on deposit rates of non-financial corporations and households point to positive, but not excessive, real interest rates. In fact, increased competition for deposits has been more pronounced in deposits of higher amounts of public entities. It should be noted

2 See Barbosa, L. and Costa, S. (2010), "Determinants of sovereign spreads in the euro area in the context of the economic and financial crisis", Banco de Portugal, *Economic Bulletin* – Autumn.

Chart 3.2.6

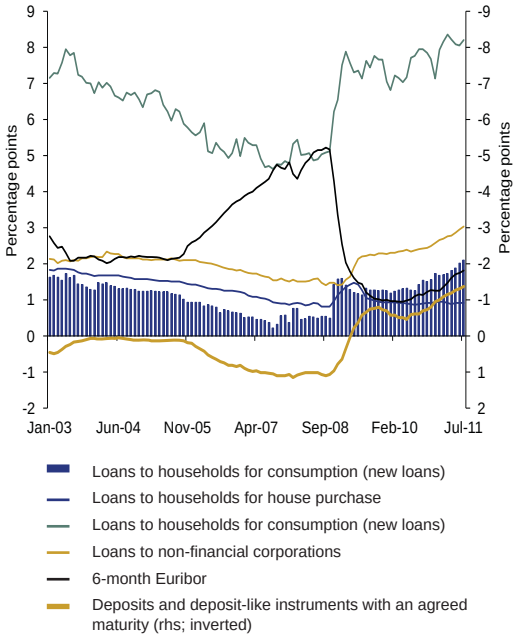
CREDIT DEFAULT SWAP SPREADS OF PORTUGUESE BANKS (5 YEARS SENIOR)



Sources: Bloomberg and Thomson Reuters.
Note: Last observation: 15 September 2011.

Chart 3.2.7

BANK INTEREST RATE MARGINS *VIS-À-VIS* MONEY MARKET INTEREST RATES



Sources: ECB and Banco de Portugal.
Notes: The interest rate margin in outstanding amounts of loans is calculated as the difference between the interest rate on outstanding amounts and the 6-month moving average of the 6-month Euribor. In the case of new loans, the interest margin is the difference between the interest rate on new loans and the 6-mont Euribor.The margin of lending operations is defined by the spread between interest rates on loans and the Euribor rate, while for deposit operations it is defined by the spread between the Euribor rate and the interest rate on deposits. Last observation: July 2011.

that Banco de Portugal – within the scope of its prudential supervisory functions – has asked banks to provide regular data on deposit rates, with a view to a potential intervention, if needed.

Significant increase in deposits of the non-financial private sector, reflecting shifts in the composition of households' financial assets portfolio

After a period of some stagnation in the first half of 2010, the deposits taking of the non-financial private sector increased again in the second half of the year, a trend that continued over the course of 2011. In particular, throughout this year, the year-on-year rate of change in household deposits has showed a rising trend, standing at 7.1 per cent at the end of July (Chart 3.2.8). It should be noted that the annualised quarterly rate of change, calculated on the basis of seasonally adjusted balances, stood close to 15 per cent in July, which allow to anticipate a rise in the annual rate of change in the months ahead. These developments were due both to an increase in the remuneration of deposits by banks and to shifts in the composition of the households' financial assets portfolio. In fact, the rise in bank deposits contrasts with a broadly based fall in the other savings instruments since the beginning of 2010, namely a decrease in debt securities issued by other monetary financial institutions placed with customers, a decline in the net acquisition of mutual fund units and an increase in the redemption of savings certificates. The strong expansion of households' deposits is particularly relevant taking into account their higher stability. However, in the medium term, these deposits are likely to decelerate, as

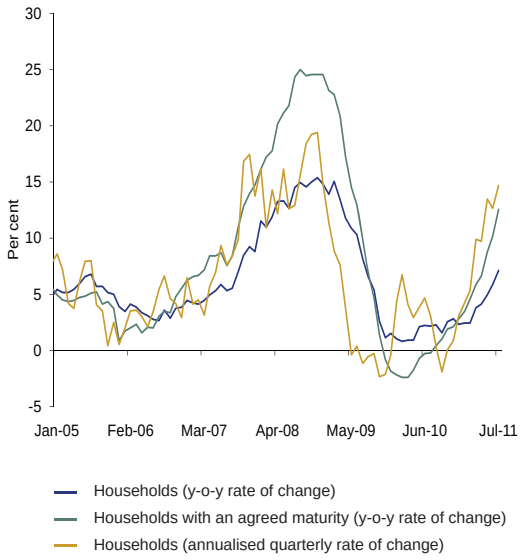
their strong growth is in part supported by household portfolio adjustments. Moreover, the breakdown of total bank deposits by institutional sector shows a deceleration in deposits of non-financial corporations in the course of 2011, after having been affected by temporary factors, by a significant decline in deposits of non-residents and by a rise in general government deposits, which typically features a more volatile behaviour (Chart 3.2.9).

In accordance with the financial assistance programme to Portugal, the eight largest banking groups shall target a loan-to-deposit ratio of 120 per cent by the end of 2014, gradually reducing this ratio, wherever this is applicable.[3] At the end of the first half of 2011, the loan-to-deposit ratio of the eight largest Portuguese banks stood at 143 per cent, *i.e.* less 16 percentage points than in June 2010 (Chart 3.2.10). Hence, the above-mentioned shifts in the composition of the households' portfolio is also due to financial institutions' incentives to incorporate in their respective balance sheets funds that were not included in the consolidation perimeter, such as resources invested in mutual funds or insurance corporations belonging to the same group .

As a consequence, a strong adjustment has been recorded in the securities portfolios of investment funds. According to data available, this adjustment has been essentially made through the reduction of debt securities of non-residents, while the stock of securities issued by residents has remained stable (Chart 3.2.11). As regards the portfolios of insurance corporations and pension funds, the exposure to the resi-

Chart 3.2.8

BANK DEPOSITS | RATES OF CHANGE

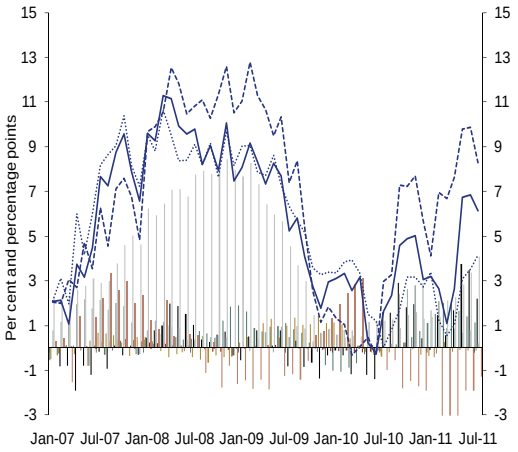


Households (y-o-y rate of change)
Households with an agreed maturity (y-o-y rate of change)
Households (annualised quarterly rate of change)

Source: Banco de Portugal.
Note: Last observation: July 2011.

Chart 3.2.9

BANK DEPOSITS | YEAR ON YEAR RATES OF CHANGE AND CONTRIBUTIONS BY INSTITUTIONAL SECTOR



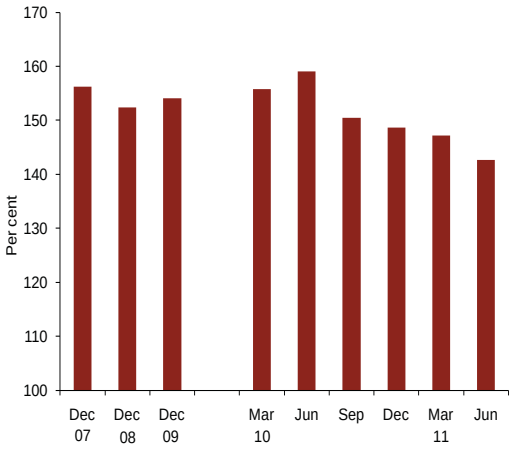
Insurance corporations and pension funds
Non-bank financial institutions excluding deposits with an agreed maturity of over 2 years
General government
Non-financial corporations
Households
Emigrants
Non residents
Total deposits[a]
Total deposits by the resident sector[a]
Total deposits excluding deposits by the general government[a]

Source: Banco de Portugal.
Notes: (a) Excluding deposits with an agreed maturity of over 2 years of non-bank financial institutions. Last observation: July 2011.

3 Loan means credit net of impairments and includes securitised and non-derecognised credit. Deposit excludes securities issued by banks and placed with customers and includes stable credit lines with the parent undertaking, qualified shareholders or multilateral institutions.

Chart 3.2.10

LOAN TO DEPOSIT RATIO OF THE EIGHT MAJOR RESIDENT BANKING GROUPS



Source: Banco de Portugal.
Note: Last observation: June 2011.

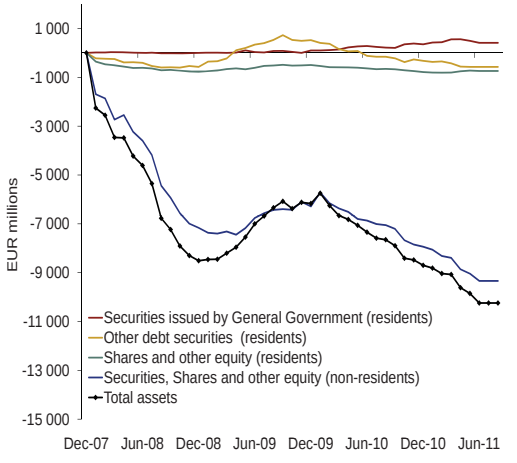
dent sector in the past two years increased, in particular the exposure to the public sector (Chart 3.2.12). This is a normal adjustment mechanism in the current economic conjuncture, where resident sectors sell assets of non-residents, offsetting the contraction of foreign capital available to finance the economy.

General government funding in the second quarter of 2011 through the first disbursements of the loan negotiated under the international financial assistance

General government funding in the first half of 2011 was strongly conditioned by the adverse situation in euro area debt markets and, subsequently, by the request for economic and financial assistance made to international institutions. Hence, in the first quarter of year, net credit flows to the General government represent a marginal value compared with the total funding needs of the government for 2011. Moreover,

Chart 3.2.11

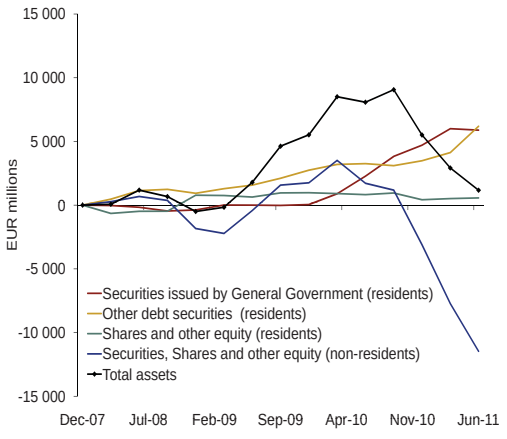
ASSETS OF MUTUAL FUNDS IN SECURITIES | CUMULATIVE TRANSACTIONS SINCE 2008



Source: Banco de Portugal.
Note: Last observation: August 2011.

Chart 3.2.12

ASSETS OF INSURANCE CORPORATIONS AND PENSION FUNDS IN SECURITIES | CUMULATIVE TRANSACTIONS SINCE 2008



Source: Banco de Portugal.
Note: Last observation: June 2011.

no significant changes in the weight of the holding sectors were observed. In the second quarter of the year, net credit flows mostly reflected the first disbursements of the loans granted by the International Monetary Fund, by the European Financial Stabilisation Mechanism and the European Financial Stability Facility, which roughly amounted to EUR 18,600 million. Therefore, loans granted by non-residents were the main funding source of the general government, with a net flow of approximately EUR 10,000 million. With regard to loans granted by resident monetary financial institutions, it is important to analyse developments in loans and deposits separately. In fact, when the assets and liabilities items are analysed separately, it can be seen that general government liabilities towards resident banks increased considerably in the second quarter of 2011, with the net position being in part mitigated by the rise in deposits.

Gradual deceleration in loans granted to the non-financial private sector in the first half of 2011, in particular in loans granted to households, with a negative variation being expected in the second half of the year

After a period of slight acceleration, in the second half of 2010, loans granted to households for house purchase resumed a decelerating path (Table 3.2.1, Chart 3.2.13). In fact, the annual rate of change declined steadily from the second half of 2010 onwards, to stand close to zero in July 2011. These developments contrast with those in the euro area as a whole, where an acceleration continued in 2011, with a year-on-year rate of change close to 4 per cent.

Analysing domestic institutions and non-domestic resident institutions separately, it can be seen that as regards domestic banks as a whole, the decline in the stock of loans to households for house purchase actually started at the end of 2010 (Chart 3.2.14). On the other hand, non-domestic banks continued to increase their share in the housing credit segment, presenting a positive credit flow, albeit lower than the observed at the end of 2010.[4] However, the spreads of domestic institutions *vis-à-vis* those of non-domestic institutions narrowed in the past few months, reflecting the increase in the credit risk associated to households and less favourable prospects for the real estate market.

Likewise, a deceleration trend continued to be recorded in loans to households for consumption, with the annual rate of change shifting to negative figures as from January 2011 (Chart 3.2.15). The evolution of this aggregate in Portugal is similar to the observed in the euro area. In July the annual rate of change stood at -2.9 per cent in Portugal compared with a -2.1 per cent rate of change in the euro area as a whole. In the consumption segment, the mitigating role of non-domestic institutions is relatively smaller, given that, at the end of July the flow of credit granted by these institutions was close to zero.

In turn, loans granted to non-financial corporations have showed slightly positive growth rates since mid-2010, with a virtually null rate of change in July 2011 (Chart 3.2.16). With regard to the euro area, the deceleration was more marked and condensed in time, with negative figures between September 2009 and November 2010, reaching a minimum at the beginning of 2010. Focusing the analysis on the most recent period, for which disaggregated data by company size is available, it can be seen that the deceleration in loans to enterprises was broadly based across the several categories considered, with converging annual growth rates, mostly from the beginning of 2011 onwards (Chart 3.2.17). Distinct developments in the subset of non-financial holdings may have been offset in some cases by an increase in the issuance of short-term securities placed with non-residents. Developments in credit stocks in recent months point to a reduction in loans to enterprises, although it is not possible to pinpoint a segment where such decline was more evident. At the end of the first half of 2011 loans granted by the resident banking sector to micro, small and medium-sized enterprises accounted for around 78 per cent of total credit granted to non-financial corporations.

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4 For a more detailed analysis until February 2011, see "Box 4.1 *The mitigating role of resident non-domestic financial institutions in the Portuguese economy's deleveraging process*", Banco de Portugal, *Financial Stability Report*, May 2011.

Table 3.2.1(to be continued)

MONETARY AND FINANCIAL CONDITIONS OF THE PORTUGUESE ECONOMY	2008	2009	2010.1	2010.2	2010.3	2010.4	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11
Nominal interest rates - period averages (per cent)														
3-month Euribor	4.6	1.2	0.7	0.7	0.9	1.0	1.0	1.1	1.2	1.3	1.4	1.5	1.6	1.6
12-month Euribor	4.8	1.6	1.2	1.3	1.4	1.5	1.5	1.7	1.9	2.1	2.1	2.1	2.2	2.1
10-year fixed-rate Treasury bond yields	4.5	4.2	4.3	5.1	5.6	6.5	6.9	7.3	7.8	9.2	9.6	10.9	12.2	10.9
Bank interest rates														
On outstanding amounts of loans														
Non-financial corporations	6.3	4.2	3.3	3.3	3.4	3.7	3.9	3.9	4.1	4.2	4.3	4.5	4.6	
Households for house purchase	5.7	3.3	1.9	1.9	1.9	2.1	2.2	2.2	2.2	2.3	2.4	2.4	2.5	
Households for consumption and other purposes	9.0	8.0	7.3	7.5	7.7	7.9	8.1	8.1	8.1	8.2	8.2	8.3	8.3	
On outstanding amounts of deposits with an agreed maturity														
Households	3.5	2.6	1.6	1.5	1.6	1.8	2.0	2.1	2.3	2.4	2.6	2.7	2.8	
On new loans														
Households for house purchase	5.4	2.7	2.2	2.3	2.5	2.8	2.9	3.0	3.2	3.4	3.6	3.8	3.9	
Households for consumption (excluding overdrafts)	10.0	8.9	8.0	8.3	9.0	8.8	9.2	9.5	9.8	9.9	9.8	9.8	10.0	
Exchange rate - period averages[a][b]														
Nominal effective exchange rate index	104.8	105.6	104.5	102.7	102.5	103.2	102.7	103.0	103.5	104.0	103.8	103.9	103.6	
Nominal effective exchange rate index - percentage change from the previous corresponding period	1.5	0.8	-1.4	-1.7	-0.2	0.6	0.0	0.4	0.5	0.5	-0.2	0.1	-0.3	
Stock market - percentage change from the previous corresponding period (end-of-period values)														
PSI Geral index	-49.7	40.0	-4.4	-9.1	5.2	2.5	2.9	1.7	-2.1	-0.5	1.6	-1.6	-4.8	-7.8
Broad Dow Jones Euro Stock	-46.3	23.4	0.8	-11.1	7.3	3.8	4.4	1.9	-2.6	3.1	-3.6	-1.1	-6.0	-12.9
Housing market prices - end-of-period year-on-year rate of change														
Confidencial Imobiliário index[c]	4.1	0.2	1.3	1.8	2.9	1.0	0.9	0.5	0.6	0.6	0.5	-0.3	-0.4	-0.9
Bank assessment (*INE*)[d]	-6.3	0.2	3.8	1.8	-0.3	-3.2	-3.3	-2.8	-1.8	-1.6	-2.0	-2.8	-4.1	-4.0
Loans granted to the non-financial private sector - end-of-period annual rate of change														
Loans granted by resident monetary financial institutions[e]														
Non-financial private sector	7.1	2.1	2.2	2.3	2.0	1.6	1.4	1.2	1.2	1.2	0.8	0.1	-0.1	
Households - Total	4.6	2.3	2.9	3.0	2.7	2.0	1.7	1.4	1.1	0.8	0.4	0.0	-0.4	

Table 3.2.1(continued)

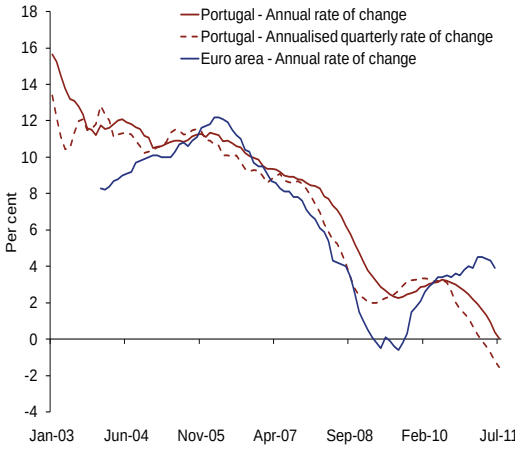
CONDIÇÕES MONETÁRIAS E FINANCEIRAS DA ECONOMIA PORTUGUESA	2008	2009	2010.1	2010.2	2010.3	2010.4	Jan-11	Fev-11	Mar-11	Abr-11	Mai-11	Jun-11	Jul-11	Ago-11
For house purchase	4.3	2.6	3.0	3.3	3.0	2.5	2.2	1.9	1.6	1.3	0.9	0.4	0.0	
For consumption and other purposes	6.2	0.9	2.3	1.9	1.1	0.1	-0.3	-0.7	-1.4	-1.2	-1.8	-1.9	-2.1	
of which: For consumption	8.9	1.7	1.9	2.1	1.7	0.9	0.6	0.1	-0.8	-1.2	-2.2	-2.3	-2.9	
Non-financial corporations	10.5	1.9	1.3	1.3	1.2	1.2	0.9	0.9	1.5	1.7	1.3	0.2	0.2	
Deposits in resident monetary financial institutions - end-of-period year-on-year rate of change														
Non-financial private sector	10.6	2.1	1.8	1.7	4.3	5.4	3.8	4.4	3.8	4.0	4.3	5.1	5.4	
Households with an agreed maturity	24.5	-1.9	-2.4	-0.3	1.0	2.8	3.5	4.5	5.9	6.6	8.7	10.2	12.5	
Memo:														
HICP - end-of-period annual average rate of change														
Portugal	2.7	-0.9	-0.8	-0.3	0.6	1.4	1.7	2.0	2.2	2.5	2.7	2.9	3.0	3.1
Euro area	3.3	0.3	0.3	0.7	1.2	1.6	1.7	1.9	2.0	2.1	2.2	2.3	2.3	2.4

Sources: ECB, 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 C. Coimbra, "New effective exchange rate index for Portugal", Banco de Portugal, *Economic Bulletin* – December 2004. **(c)** The *Confidencial Imobiliário* index tracks developments in the residential market in Portugal, in particular in the Lisbon and Oporto metropolitan areas. In October 2006 this index adopted a new methodology and broadened its background information. It uses data available at *www.lardocelar.com*, which in 2005 contained around 280,000 real estate registers. For further details on the methodology used, see the article "Índice Confidencial Imobiliário: procedimentos metodológicos", by Isabel Fonseca and Ricardo Guimarães, in the October 2006 issue of the Newsletter Imobiliária Portuguesa - Confidencial Imobiliário. **(d)** In January 2010 *INE* changed the method for the calculation of the bank assessment indicator for housing, which now includes information from a broader set of banks and is compiled on a monthly basis. *INE* published backward-looking data as of September 2009, and the new series comprises information starting from this date. **(e)** The annual rates of change are obtained from 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 from outstanding amounts adjusted for reclassifications, write-offs and exchange rate and price revaluations.

Chart 3.2.13

LOANS TO HOUSEHOLDS FOR HOUSE PURCHASE

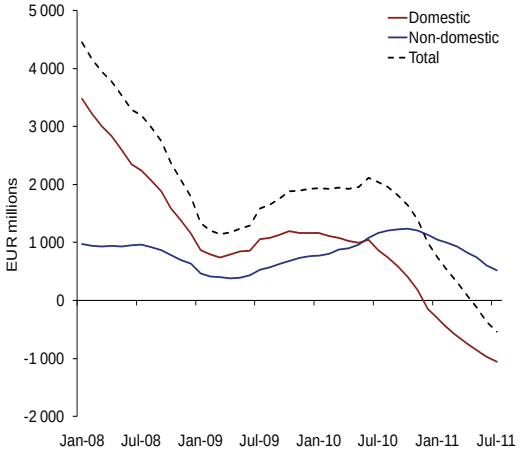


Source: Banco de Portugal.

Notes: The series shown refer to loans granted by resident monetary institutions. 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 monthly transactions, which are calculated from outstanding amounts adjusted for reclassifications, write-offs and exchange rate and price developments. The quarterly rate of change is seasonally The values presented were adjusted regarding the sale of a portfolio of loans by *BPN* to *Parvalorem*. Last observation: July 2011.

Chart 3.2.14

SEMI-ANNUAL FLOWS OF LOANS TO HOUSEHOLDS FOR HOUSE PURCHASE

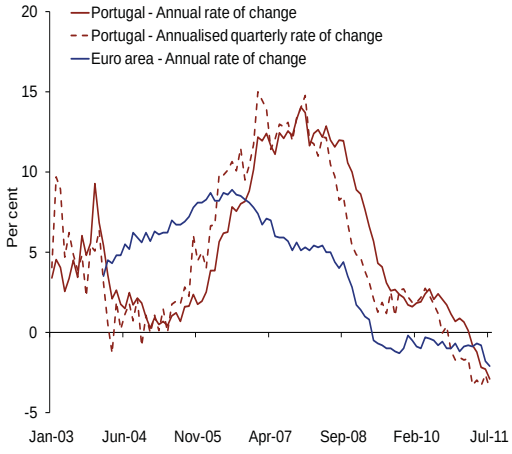


Source: Banco de Portugal.

Notes: Semi-annual flows 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 from outstanding amounts adjusted for reclassifications and write-offs. The values presented were adjusted regarding the sale of a portfolio of loans by *BPN* to *Parvalorem*. Last observation: July 2011.

Chart 3.2.15

LOANS TO HOUSEHOLDS FOR CONSUMPTION

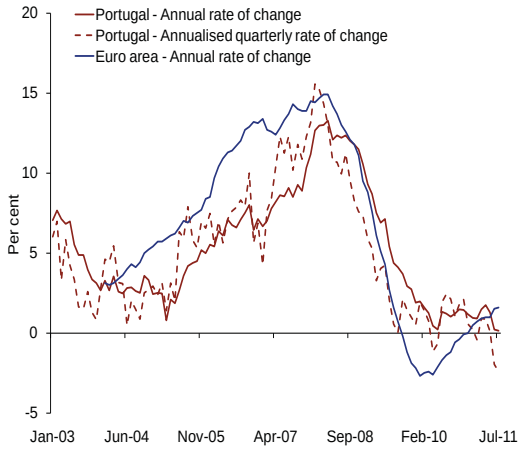


Source: Banco de Portugal.

Notes: Series shown refer to loans granted by resident monetary institutions. 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 from outstanding amounts adjusted for reclassifications, write-offs and exchange rate and price revaluations. The quarterly rate of change is calculated from seasonally adjusted figures. The values presented were adjusted regarding the sale of a portfolio of loans by *BPN* to *Parvalorem*. Last observation: July 2011.

Chart 3.2.16

LOANS TO NON-FINANCIAL CORPORATIONS

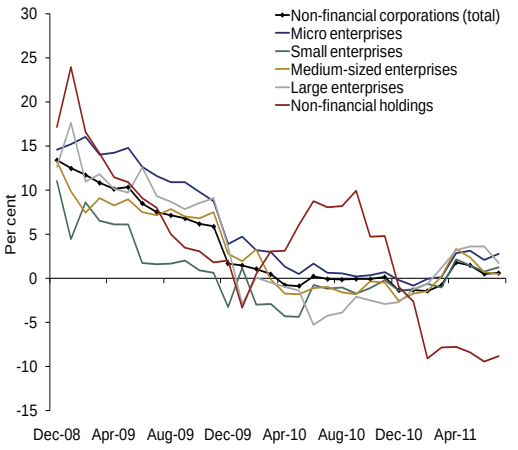


Source: Banco de Portugal.

Notes: Series shown refer to loans granted by resident monetary institutions. 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 from outstanding amounts adjusted for reclassifications, write-offs and exchange rate and price revaluations. The quarterly rate of change is calculated from seasonally adjusted figures. The values presented were adjusted regarding the sale of a portfolio of loans by *BPN* to *Parvalorem*. Last observation: July 2011.

Chart 3.2.17

LOANS TO NON-FINANCIAL CORPORATIONS | BREAKDOWN BY SIZE



Source: Banco de Portugal.

Note: Series shown refer to loans granted by resident monetary institutions and are not adjusted for securitisation operations, reclassifications, write-offs and exchange rate and price revaluations. The values presented were not adjusted regarding the sale of a portfolio of loans by *BPN* to *Parvalorem*. Last observation: July 2011.

Developments in these three credit segments in the past few months are consistent with data supplied by the Quarterly Bank Lending Survey. According to the results of the July survey,[5] credit standards applied to the approval of loans to the non-financial private sector were tightened in the second quarter of 2011. Tighter standards were largely due to an increase in the cost of capital and to banks' balance sheet restrictions, as well as to deteriorating expectations regarding general economic activity. The change in credit standards translated into widening spreads, declining maturities and amount of loans granted and higher fees and other charges, as well as more stringent guarantee requirements.

In the second quarter of the year, the demand for loans and credit lines by companies declined slightly in aggregate terms. Decreasing funding needs related to investment and mergers/acquisitions or corporate restructuring supported these developments. As regards households, the demand for loans has also declined, in particular in the loans for house purchase segment. Declining consumer confidence, as well as an increase in other consumption expenditure were the two main factors contributing to the reported developments.

For the third quarter of 2011, surveyed banks expected the tightening of credit standards on loans to enterprises and households. For the same period, no significant changes were expected in the demand for loans by companies. As to households, demand is expected to decline, both in the loans for house purchase segment and in the consumer credit and other lending segment.

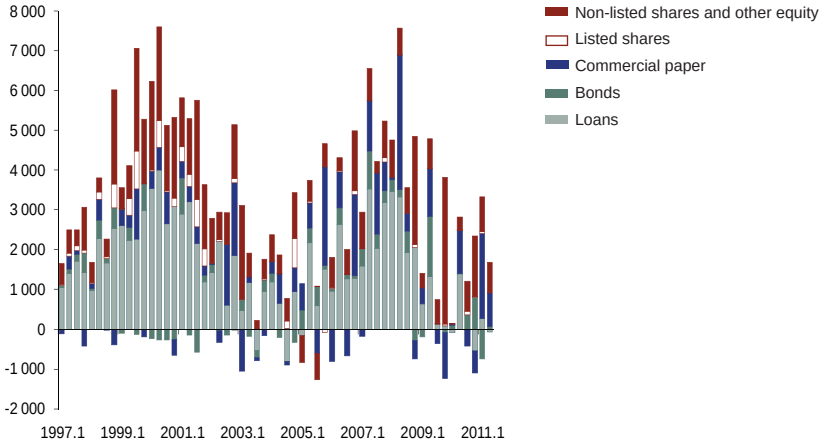
5 The results of the Bank Lending Survey are available from www.bportugal.pt/pt-PT/EstudosEconomicos/Publicacoes/IBMC/Publicacoes/Results_jul11_e.pdf.

Increased issuance of short-term securities by companies in the first half of the year reflected, inter alia, the tightening of credit standards on loans granted by banks

In the first half of 2011, due to the higher pricing of bank loans, the additional funding needs of non-financial corporations were chiefly met through the issuance of commercial paper, placed mostly with non-residents and through equity increases by unlisted companies (Chart 3.2.18). This behaviour contrasts with that seen in the second half of 2010, when net issuance of commercial paper was negative. As for the remaining items, there was a net repayment of debt obligations in the first quarter of the year, while the issuance of securities by listed companies and the used of bank loans remained virtually unchanged in the first half of 2011 as a whole. In the two-year period between July 2009 and June 2011, the net change in bank loans only represented 10 per cent of the net financing of non-financial corporations. This contrasts with the 50 per cent figure observed in the two preceding years (from June 2007 to July 2009), when bank loans to non-financial corporations recorded a strong growth. In fact, the expansion of bank loans made a significant contribution to the sharp rise in the indebtedness of non-financial corporations, which is one of the highest in the euro area.

Chart 3.2.18

FINANCING OF PORTUGUESE NON-FINANCIAL CORPORATIONS | QUARTERLY CHANGE



Source: Banco de Portugal.
Note: Last observation: July 2011.

Increase in funding costs of non-financial corporations, amid very tight funding conditions of banks in international markets and deterioration of expectations regarding general economic activity

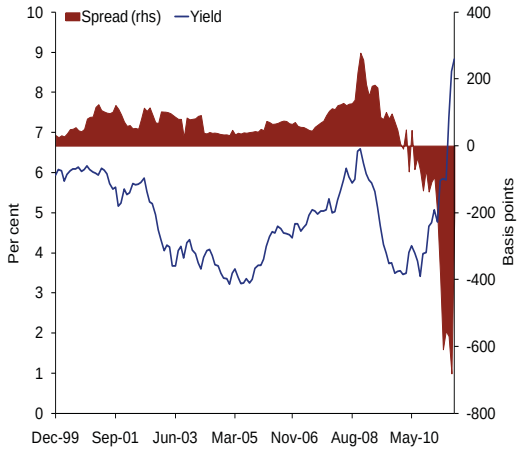
Yields on bonds issued by non-financial corporations increased significantly in recent months. In fact, at the end of August, the index published by Barclays Capital stood at 8.83 per cent (Chart 3.2.19).[6] These developments reflect disturbances in euro area sovereign debt markets, in particular, the rise in risk associated to the Portuguese Republic and to most national issuers. In addition, although the companies included in the index have high credit quality and a significant share of their earnings is generated through their international activity, less favourable prospects for the domestic activity reduce the attractiveness of investment in debt securities issued by Portuguese companies, thereby contributing to the widening of yields demanded by investors. In turn, the fact that the spread *vis-à-vis* Treasury bonds continues to

6 On 31 August 2011, the index published by Barclays Capital only included 15 debt issuances by large Portuguese companies.

record rather negative figures, should be interpreted with some caution against a background in which sovereign debt yields in the secondary market do not reflect a normal market condition. Anyway, the access to the market by the large companies continues to take place under less adverse conditions than those experienced by the Portuguese Republic. Chart 3.2.20 shows a synthetic indicator of the funding costs of non-financial corporations, which weighs information on the cost of capital, bank lending rates and yields on securitised debt, being therefore more representative of the average company.[7] In the course of 2011, corporate financing costs rose considerably in real terms. This rise was seen in several financing sources included in the index, namely in capital and long-term debt securities.

Chart 3.2.19

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

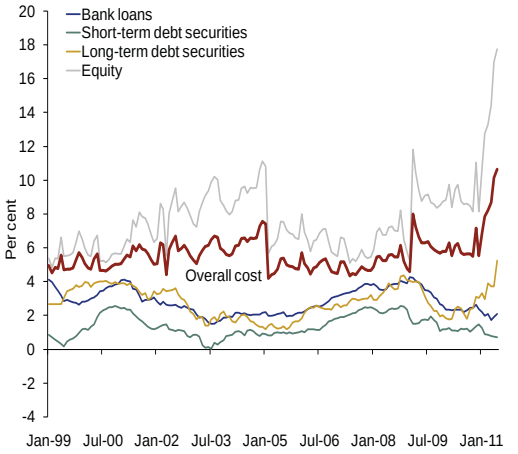


Sources: Barclays Capital and Banco de Portugal.

Note: Last observation: August 2011.

Chart 3.2.20

DEVELOPMENTS IN FINANCING COSTS OF NON-FINANCIAL CORPORATIONS IN PORTUGAL | IN REAL TERMS



Sources: Barclays Capital, Consensus Economics, ECB, Thomson Reuters and Banco de Portugal calculations

Note: Last observation: June 2011.

Price stagnation in the housing market

In a context of declining household disposable income – as a consequence of adverse labour market conditions and rising tax burden – real estate prices became more sensitive to developments in the credit market. Although there is no evidence of price overvaluation in the Portuguese residential market,[8] the need of financial deleveraging by households, the deteriorating situation of companies in the construction sector and the tightening of credit standards applied by banks to the approval of loans are expected to condition the performance of the real estate market. According to the Confidencial Imobiliário index, residential property prices recorded a slightly negative year-on-year change in June (-0.3 per cent),

7 The synthetic indicator of the financing costs of non-financial corporations is calculated as a weighted average of the costs of the different types of financing. The component with the highest weight in this indicator is the cost of equity financing, which is calculated through the following formula $r = \frac{D}{P}[(1+gn)+8(ga-gn)]+gn$ where r is the capital cost, D/P the dividend yield, gn corresponds to the growth rate of dividends in the long term and ga to the respective growth rate for the next four years. The cost associated with the remaining instrument categories is calculated on the basis of interest rates considered as representative. For methodological information, see Gameiro, I. and Ribeiro, N. (2007), "Financing costs of Portuguese companies", Banco de Portugal, *Economic Bulletin* – Autumn.

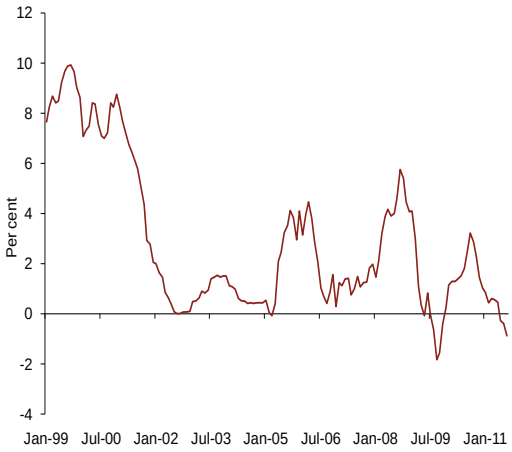
8 For further details, see "Box 1.1 *Housing markets in the euro area*", Banco de Portugal, *Annual Report* 2011.

following the decelerating trend that started in August 2010 (Chart 21).[9] In turn, the bank assessment index published by *INE* recorded a year-on-year negative change of 2.8 per cent in June (-1.8 per cent in March) (Table 3.2.1).[10]

Although it is still premature to make a comprehensive assessment, the measures included in the Memorandum of Understanding for the housing market may have an unfavourable impact on housing prices. In this respect, note that principal payments will not be deductible from the personal income tax (IRS), income tax deductibility of interest payments will be limited, and temporary exemptions of the municipal tax on real estate (IMI) for permanent owner-occupied dwellings will be reduced.

Chart 3.2.21

CONFIDENCIAL IMOBILIÁRIO INDEX | YEAR-ON-YEAR RATES OF CHANGE



Source: *Imométrica*.
Note: Last observation: August 2011.

9 This index is calculated on the basis of supply-side prices, weighted by region and state of use of the dwelling. The quality adjustment used for the calculation, however, means that it is not possible to exercise complete control over the parameters and this fact could well underlie the relatively high growth recorded towards the end of 2008. For information on methodology, see "Índice Confidencial Imobiliário: procedimentos metodológicos", Isabel Fonseca and Ricardo Guimarães", Newsletter *Imobiliária Portuguesa – Confidencial Imobiliário*, October 2006.

10 This indicator, up to January 2010, was calculated on the basis of data for seven banks accounting for around 60 per cent of credit granted. However, in January 2010, *INE* changed the method for the calculation of the bank assessment indicator for housing, which now includes all banks with a significant weight in housing loans and is now compiled on a monthly basis. INE published backward-looking information as of September 2009, and the new series comprises information starting from this date. This indicator is not quality adjusted.

4. Fiscal policy

The September Excessive Deficit Procedure notification confirms the target of 5.9 per cent of GDP for the fiscal deficit in 2011, which will require significant additional measures

The September Excessive Deficit Procedure notification kept the official target for the general government deficit in 2011 unchanged at 5.9 per cent of GDP, which compares with 9.8 per cent in 2010 (Table 4.1).[11] That figure coincides with the target set within the scope of the Economic and Financial Assistance Programme agreed in May with the European Commission, the European Central Bank and the International Monetary Fund. It should be mentioned that the deviations in the budgetary execution identified so far urge the adoption of additional measures not specified in the State Budget for 2011, in the Programme and in the Fiscal Strategy Document. According to the projection included in the September notification, the public debt ratio is forecast to stand at 100.8 per cent of GDP at the end of 2011.

The fiscal outcomes of previous years were revised by the national statistical authorities, implying a deterioration of the starting point for the fiscal adjustment process

In the first Excessive Deficit Procedure notification, in late March, the general government deficit and debt figures were revised upwards for the years from 2007 to 2010, following the reclassification of a number of State-owned enterprises from the transportation sector into that institutional sector. The fiscal balance of 2010 was also negatively affected by the assumption of *Banco Português de Negócios* impairments by entities classified within general government and by the call of a guarantee granted by the State to a loan to *Banco Privado Português*. Also within the scope of the March notification, *INE* changed the previously reported data, following a methodological decision by Eurostat. In particular, the general government deficit and debt ratios for the 2007-2010 period were revised upwards, reflecting a different treatment of three contracts for the construction and operation of road infrastructures, until then classified as public-private partnerships.

The September Excessive Deficit Procedure notification included a further change to the general government deficit and debt figures for the 2008-2010 period. Such revision was due to the identification of debt contracted since 2004 by the regional government and public enterprises from Madeira which, as

Table 4.1

MAIN FISCAL INDICATORS | AS A PERCENTAGE OF GDP

	2010	2011	2012	2013	2014	2015
			Fiscal balance			
State Budget for 2011 (October 2010)	-7.3	-4.6	-	-	-	-
Economic and Financial Assistance Programme (May 2011)	-9.1	-5.9	-4.5	-3.0	-2.3	-1.9
Fiscal Strategy Document (September 2011)	-9.1	-5.9	-4.5	-3.0	-1.8	-0.5
Excessive Deficit Procedure (September 2011)	-9.8	-5.9	-	-	-	-
			Public debt			
State Budget for 2011 (October 2010)	82.4	86.6	-	-	-	-
Economic and Financial Assistance Programme (May 2011)	93.0	101.7	107.4	108.6	107.6	105.7
Fiscal Strategy Document (September 2011)	93.0	100.8	106.1	106.8	105.0	101.8
Excessive Deficit Procedure (September 2011)	93.3	100.8	-	-	-	-

Sources: European Commission ("The Economic Adjustment Programme for Portugal", *Occasional Paper* No. 79, June 2011), *INE* and Ministry of Finance.

11 Note that the notification includes statistics until the end of the previous year compiled by *INE* and an estimate for the current year prepared by the Ministry of Finance.

mentioned in the joint press release by Banco de Portugal and *INE* in early September, had not been timely reported to the national statistical authorities.[12] The figures now computed for the general government deficit and debt in 2010 correspond to 9.8 and 93.3 per cent of GDP, respectively.

The adjustment process of the Portuguese economy includes a wide range of fiscal consolidation measures, framed by the Economic and Financial Assistance Programme

The State Budget for 2011 set the official targets for the general government deficit and debt in 2011 at 4.6 and 86.6 per cent of GDP, respectively. Following the request for financial assistance, new targets were defined, taking into account the revisions of fiscal outcomes of previous years, in particular the widening of the general government consolidation perimeter, and less favourable macroeconomic prospects. Indeed, the targets agreed under the Programme entail an upward revision of the targets laid down in the State Budget for 2011, to 5.9 per cent of GDP for the general government deficit and 101.7 per cent for the public debt ratio to GDP. For this purpose, the consolidation strategy for 2011 presented in the Memorandum of Understanding was chiefly based on the implementation and further strengthening of the measures envisaged in the State Budget. No significant additional measures were stipulated.

The commitments made by the Portuguese authorities are consistent with the medium-term objectives defined within the scope of the Stability and Growth Pact and the Budgetary Framework Law, which has recently been revised. Thus, the Programme foresees the adoption of a wide set of fiscal consolidation measures. On the revenue side are worth highlighting the increases in indirect taxation and the cuts in tax exemptions and benefits in the context of the Personal and Corporate Income Taxes and the Municipal Tax on Real Estate. The measures to reduce expenditure are expected to affect most of its items, but especially compensation of employees and social benefits. It is also envisaged the curtailment of transfers to local and regional governments, as well as cuts in the expenditure related to the National Health System. The Programme also entails a rationalisation of the State corporate sector and the acceleration of the privatisation programme. These measures are deemed to ensure a gradual improvement of the fiscal position, pointing to the correction of the excessive deficit by 2013. However, notwithstanding the magnitude of the privatisation programme, the public debt ratio is forecast to follow an upward trend up to 2013, declining afterwards.

In the first semester of 2011, the growth of tax revenue reflects the impact of consolidation measures in force since mid-2010 or included in the State Budget for 2011

According to the Quarterly National Accounts published by *INE* in late September, tax revenue rose by 3.7 per cent *vis-à-vis* the same period of 2010, reflecting increases of 3.9 and 3.5 per cent, respectively in the collection of taxes on income and wealth and on production and imports (Table 4.2). In both cases, these developments were influenced by the impact of measures approved by mid-2010 or in the context of the State Budget for 2011.[13] The developments concerning tax revenue in the first semester point to a slightly lower growth than foreseen in the Fiscal Strategy Document. In the second half of the year, tax revenue will benefit from the introduction of a Personal Income Tax surcharge and from

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12 See the joint press release by *INE* and Banco de Portugal of 16 September 2011, available on http://www.bportugal.pt/en-US/OBancoeoEurosistema/ComunicadoseNotasdeInformacao/Lists/LinksLitsItemFolder/Attachments/66/PR_RAM_BdP_INE.pdf.

13 As far as taxation on income is concerned, the marginal rates applicable to the different Personal Income Tax brackets were raised in June 2010 and a new bracket referring to earnings exceeding € 150 thousand was introduced. In addition, a surcharge on profits exceeding € 2 million was also introduced in the context of the Corporate Income Tax. Regarding revenue from taxes on production and imports, its growth has been relying on VAT collection, mostly as a result of the increases in VAT rates introduced in the summer of 2010 and in January 2011.

Table 4.2

GENERAL GOVERNMENT ACCOUNT[a] | IN NATIONAL ACCOUNTS					
	Budget outturn – First semester[b]			Economic and Financial Assistance Programme	Fiscal Strategy Document
	2010	2011	Rate of change	Rate of change[c]	Rate of change[c]
	EUR millions		Per cent	Per cent	
Total revenue	31 373	32 353	3.1	-0.6	1.9
Current revenue	30 977	31 903	3.0	2.9	3.8
Tax revenue	17 227	17 859	3.7	2.2	5.6
Taxes on income and wealth	6 358	6 608	3.9	1.6	7.9
Taxes on production and imports	10 869	11 251	3.5	2.6	4.0
Social contributions	10 096	10 221	1.2	1.8	1.7
Actual social contributions	7 371	7 689	4.3	3.8	3.3
Imputed social contributions	2 725	2 531	-7.1	-3.8	-2.6
Other current revenue	3 653	3 823	4.7	9.2	0.4
Capital revenue	396	449	13.4	-52.0	-25.7
Total expenditure	40 102	39 348	-1.9	-7.0	-5.0
Current expenditure	36 973	36 531	-1.2	-2.5	-0.8
Current transfers	20 217	19 849	-1.8	-1.9	-1.6
to households	17 411	17 240	-1.0	-0.5	-0.1
in cash	13 244	13 342	0.7	1.1	1.3
in kind	4 167	3 898	-6.5	-6.4	-4.7
to corporations	551	499	-9.5	-8.5	-8.5
other	2 255	2 111	-6.4	-11.5	-12.7
Interest	2 411	3 304	37.0	36.0	36.0
Compensation of employees	10 491	9 845	-6.2	-7.2	-5.7
Intermediate consumption	3 854	3 534	-8.3	-17.8	-7.5
Capital expenditure	3 129	2 817	-10.0	-46.4	-41.9
Gross fixed capital formation	1 908	2 018	5.8	-23.3	-25.6
Other capital expenditure	1 221	799	-34.6	-85.2	-69.4
Overall balance	-8 729	-6 995			

Sources: *INE* and Ministry of Finance.

Notes: (a) The inclusion of new information on the Autonomous Region of Madeira in the 2010 accounts does not affect the interpretation of this table, as changes introduced refer almost exclusively to the fourth quarter. **(b)** Interest expenditure used to compile the budget outturn for the first semester is in accordance with the European System of Integrated Economic Accounts. In the case of the projections presented in the Economic and Financial Assistance Programme and in the Fiscal Strategy Document, interest expenditure includes the impact of swaps and forward rate agreements, as defined for the Excessive Deficit Procedure. **(c)** Forecast.

the increase in the VAT rate on electricity and gas ahead of programmed (measures announced after mid-2011), as well as from the favourable performance of the Corporate Income Tax prepayments. In turn, the measures in force since mid-2010 will cease to impact on the rate of change of tax collection. For the year as a whole, several risks associated with the economic activity persist, especially as regards private consumption.

In the first semester of the year, the decline in public expenditure was less pronounced than forecast

The decline in current and capital expenditure in the first half of the year was significantly lower than foreseen in the Programme for the year as a whole. The deviation in the budget outturn for the first months of 2011 mostly stemmed from developments regarding compensation of employees and intermediate consumption. In the case of compensation of employees, the decline in the number of general government workers fell short than foreseen and promotions in some ministries implied additional expenditure. Public accounts were also negatively affected by operations related to the assumption of debt of two corporations in the Autonomous Region of Madeira and to the recapitalisation of *Banco Português de*

Negócios. The year-on-year rates of change of the main primary current expenditure items – current transfers to households, compensation of employees and intermediate consumption – considered in the Fiscal Strategy Document are less negative than those now obtained for the first semester. In contrast, the outcome of other current transfers and gross fixed capital formation in the first half of the year may signal risks, requiring a more in-depth analysis.

The fiscal deficit in the first semester of the year does not allow the fulfilment of the target for the deficit in 2011 without additional measures, thus increasing the relevance of the State Budget for 2012 in the context of the ongoing consolidation process

According to information compiled by *INE*, the general government deficit on a national accounts basis stood at €6995 million in the first half of the year. This figure compares with the €10068 million ceiling laid down in the Programme for the year as a whole. Considering that the gap *vis-à-vis* the official target may be chiefly met with recourse to temporary measures, the State Budget for 2012 gains additional relevance, and should incorporate a substantial package of structural measures, while implementing the fiscal procedures envisaged in the latest revision of the Budgetary Framework Law. These measures are crucial to ensure the sustained consolidation of public finances, which requires the adjustment of public expenditure to the capacity of the Portuguese economy.

5. Supply

Negative change in activity in line with developments in confidence

According to data published by Instituto Nacional de Estatística – INE (Statistics Portugal), gross value added (GVA) of the Portuguese economy decreased by 0.8 per cent year-on-year in the first half of 2011, compared with growth rates of 1.8 and 0.8 per cent in the first and second halves of 2010 respectively.

The process of correction of macroeconomic imbalances, under way in the Portuguese economy, and developments in economic activity in euro area countries contributed to this evolution. In the first half of 2011, the European economy grew 2 per cent on average, but decelerated in quarterly terms (see Section 1).

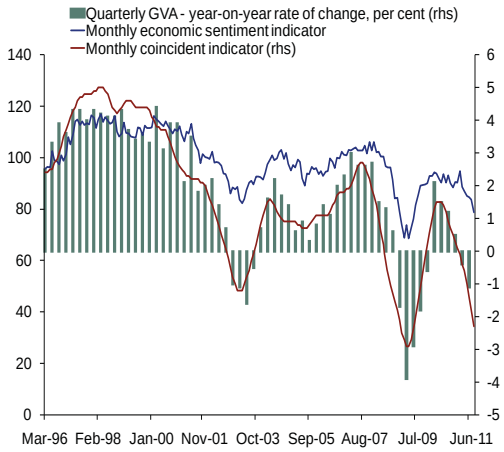
Developments in Portuguese economic activity were similar to those of the confidence indicators. In intra-annual terms, the upward trend of the European Commission's monthly economic sentiment indicator, which started in the second quarter of 2009 and stabilised in 2010, contrasts with the fall seen in the first half of 2011. The coincident indicator of activity prepared by Banco de Portugal showed the same trend, although a reversal had already been recorded in the second half of 2010 (Chart 5.1).

Sectoral developments in GVA were heterogeneous. In the first half of 2011, agriculture, forestry and fishing and industry grew by 0.5 and 2.1 per cent year-on-year, respectively, while construction and services decreased by 6.1 and 0.9 per cent, respectively (Chart 5.2). In cumulative terms, GVA decreased rather markedly in construction (around 20 per cent since 2008). During the same period, industry also declined, by around 9 per cent in cumulative terms, but returned to growth after the first half of 2010. The turnover index has recorded a positive change in this sector since the beginning of 2010, particularly in the external market, notwithstanding the deceleration observed since the beginning of 2011, which has recently become more marked (Chart 5.3). Among activity sectors as a whole, there was a slight shift towards the sectors that are basically tradable. This is an important factor in the adjustment process of the Portuguese economy.

The different developments at sectoral level in the Portuguese economy in the first half of 2011 are related with the changes in the confidence indicators for manufacturing, services and retail trade (Chart 5.4). The confidence indicator for construction has been on a downward path since the second half of 2008,

Chart 5.1

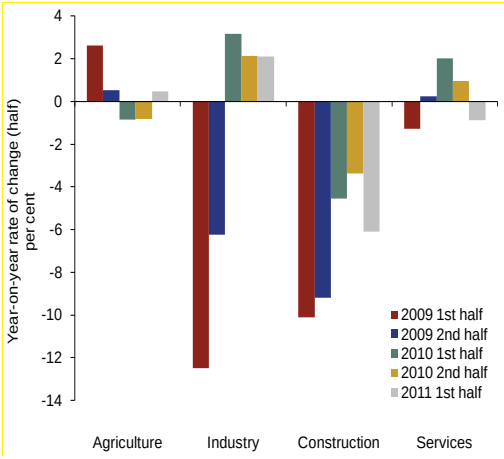
GVA, COINCIDENT INDICATOR OF ACTIVITY AND ECONOMIC SENTIMENT INDICATOR



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

Chart 5.2

SECTORAL GVA

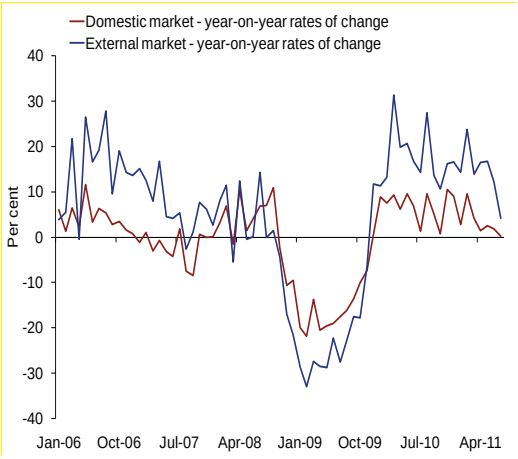


Source: *INE* (Quarterly National Accounts).

Note: Agriculture comprises the GVA of Agriculture, Animal production, Hunting, Forestry and Fishing; Industry comprises the GVA of Mining and quarrying and Manufacturing; Construction comprises the GVA of Construction; and Services comprise the GVA of Wholesale and retail trade; Repair of motor vehicles and motorcycles and Accommodation and food service activities; Transportation and storage and Information and communication activities; Financial and insurance activities and Real estate activities and Business services, Public Administration, Education and Health and Other services.

Chart 5.3

INDUSTRIAL TURNOVER INDEX | DOMESTIC AND EXTERNAL MARKETS

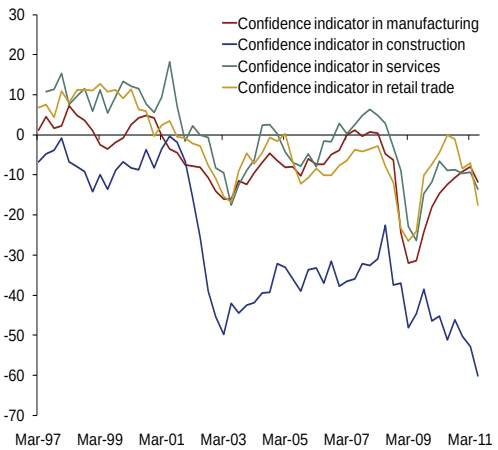


Source: *INE*.

reaching historically low levels. Developments in the confidence indicators in services and retail trade were negative compared with the second half of 2010, remaining at levels below those seen before the start of the economic and financial crisis. The confidence indicator in manufacturing stabilised compared with the second half of 2010. However, most importantly, all sectors experienced a strong deterioration of confidence in the second quarter of the current year, which became more marked in July and August.

Chart 5.4

CONFIDENCE INDICATOR BY BRANCH OF ACTIVITY | QUARTERLY AVERAGE



Source: European Commission.

For 2011 as a whole, GDP is projected to decrease by around 2 per cent (see Section 6). The analysis of GDP developments in 2011 from a supply perspective implies the existence of data on employment and unemployment. However, the analysis of developments in the labour market in the first half of 2011 is strongly conditioned by changes introduced in the methodology adopted by INE in its quarterly labour force survey.[14]

Due to the break in the series introduced in the quarterly labour force survey, it is not possible to make a detailed analysis of the year-on-year rates of change in the variables of the Portuguese labour market. This analysis may only be resumed when the results for the first quarter of 2012 are available. In this context, the analysis provided in this section focuses on the evolution of ratios which are admittedly not affected by this methodological change, with the exception of the unemployment and employment variables. For these variables, given the usefulness of maintaining compatible time series, the series were retropolated taking as a basis the levels of the new labour force survey for the first quarter of 2011 and using the year-on-year rates of change published under the previous methodology.

On this assumption, apparent labour productivity in the private sector is expected to decrease by 1.2 per cent in 2011, compared with an increase of 0.4 per cent in 2009 and 3.5 per cent in 2010 (Chart 5.5). Negative developments in labour productivity are considerably conditioned by the contraction of 2 per cent projected for private GDP in 2011, after a growth rate of 1.7 per cent in 2010. These developments occurred in parallel with the stabilisation of the capacity utilisation rate in the first half of 2011 (Chart 5.6).

The reduction of the apparent productivity of labour in the private sector is a rare phenomenon in the Portuguese economy, which occurred also in 2008, though more moderately and accompanied by a stabilization of the product. In fact, like in 2010, the situation forecasted for 2011 is not in line with the historical relation between the evolution of employment and private sector activity in the Portuguese economy (Chart 5.7). Nevertheless, the joint analysis of these two years reveals that, given the evolution of activity, the moderation in employment creation occurred in 2010 may have as a counterpart a more moderate reduction of this variable in 2011. In fact, over the business cycle and particularly in a context of unfavourable expectations such as the current one, firms adjust employment with a lag relatively to changes in output. In this sense, in a context of deeper economic recession, the reduction of employment may become stronger.

Net job destruction has persisted since 2009, with an adverse impact on the unemployment rate

The process of correction of macroeconomic imbalances under way in the Portuguese economy, including a restrictive fiscal policy and tighter financing conditions for the economy, contributed to a contraction in GVA in the first two quarters of 2011, shortly after a strong contraction in 2009, following the bankruptcy of the Lehman Brothers investment bank. Therefore, net job destruction has persisted since the start of 2009, albeit at a gradually slower pace (Chart 5.8). Nevertheless, taking into account the urgently required implementation of measures to correct the imbalances and expectations of a more marked deceleration in international economic growth, developments in employment are projected to remain unfavourable, adversely affecting the unemployment rate.

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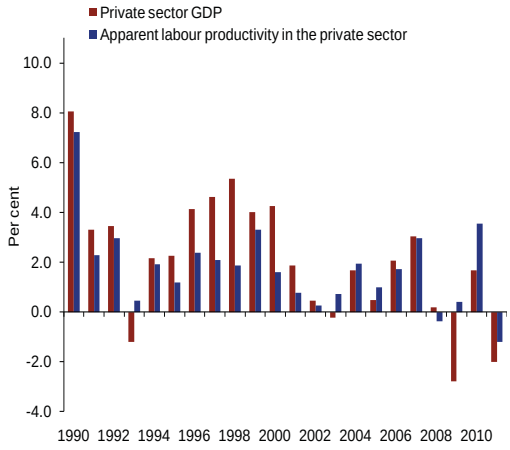
14 According to *INE*, the main changes introduced by the new data collection methodology were the use of telephone interviews, the adaptation of the questionnaire to this new type of surveying and the adoption of new technologies to develop and supervise field work. This led to a break in the series, due to which it is not possible to calculate year-on-year rates of change or compare historical levels. According to *INE* estimates, the unemployment rate calculated using the previous collection methodology would stand one percentage point below that of the new methodology. For more information, see the note "Medida do impacto da alteração do modo de recolha da informação no Inquérito ao Emprego no primeiro trimestre de 2011", in "Estatísticas do Emprego – 1.º trimestre de 2011", Chapter 6 (p.p. 31-40), *INE*.

Chart 5.5

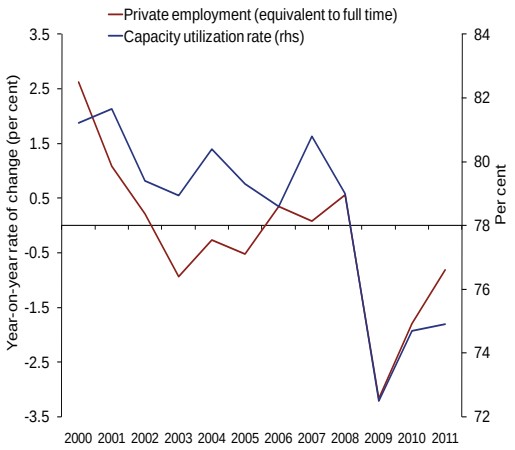
CHANGE IN APPARENT LABOUR PRODUCTIVITY AND PRIVATE SECTOR GDP



Sources: *INE* and Banco de Portugal.

Chart 5.6

PRIVATE EMPLOYMENT IN THE ECONOMY (EQUIVALENT TO FULL TIME) AND CAPACITY UTILISATION

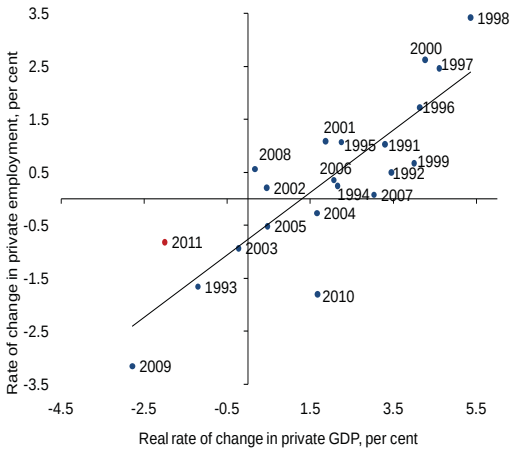


Sources: *INE* and Banco de Portugal.

Note: Private sector employment is defined as total employment excluding estimates by Banco de Portugal for employment in the general government and public hospitals converted into public corporate entities, adjusted for the number of hours worked. Therefore, the number of hours worked equivalent to full time corresponds to one job. From 2007 to 2011, the series for total employment is based on the assumption that the average number of hours worked per worker remained unchanged. The level of capacity utilisation for 2011 corresponds to the figures for the first quarter.

Chart 5.7

PRIVATE GDP AND PRIVATE EMPLOYMENT GROWTH (EQUIVALENT TO FULL TIME)



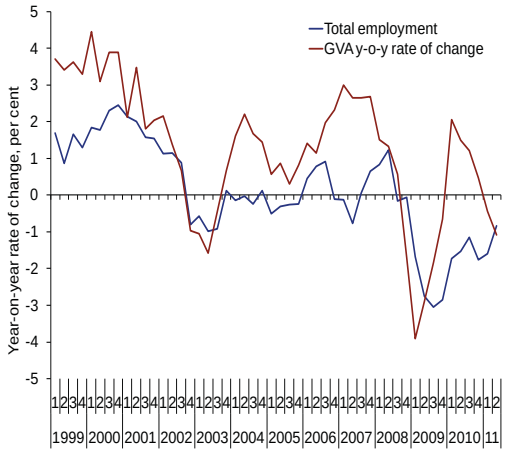
Sources: *INE* and Banco de Portugal.

Note: Private sector employment is defined as total employment excluding estimates by Banco de Portugal for employment in the general government and public hospitals converted into public corporate entities. Private GDP is calculated as total GDP less compensation and fixed capital consumption of the general government and public hospitals converted into public corporate entities, adjusted for the number of hours worked. Therefore, the number of hours worked equivalent to full time corresponds to one job. From 2007 to 2011, the private employment series is based on the assumption that the average number of hours worked per worker remained unchanged.

As for the composition of dependent employment, the share of fixed-term contracts in total employment stabilised in the first half of 2011 compared with the previous semester (14.8 per cent), although a clear upward trend has been observed in recent years (Chart 5.9). Shifts in employment by type of contract translate economic agents' response to the restrictions imposed by the regime of permanent contracts, especially in a context of high uncertainty as regards the duration of the adjustment period in the Portuguese economy.

Chart 5.8

TOTAL EMPLOYMENT AND GVA

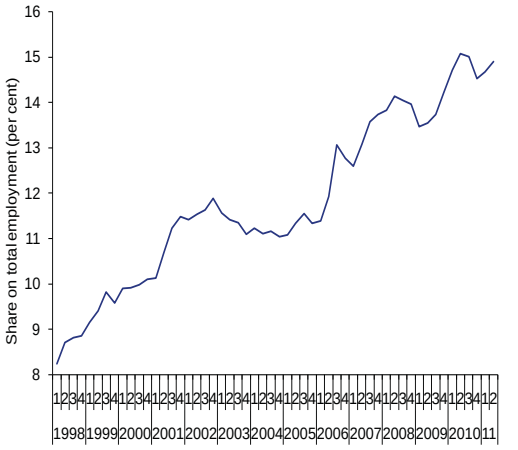


Sources: *INE* (Labour Force Survey and Quarterly National Accounts) and Banco de Portugal.

Note: A methodological change in the Labour Force Survey in the first quarter of 2011 led to a break in the series.

Chart 5.9

SHARE OF FIXED-TERM CONTRACTS



Source: *INE* (Labour Force Survey).

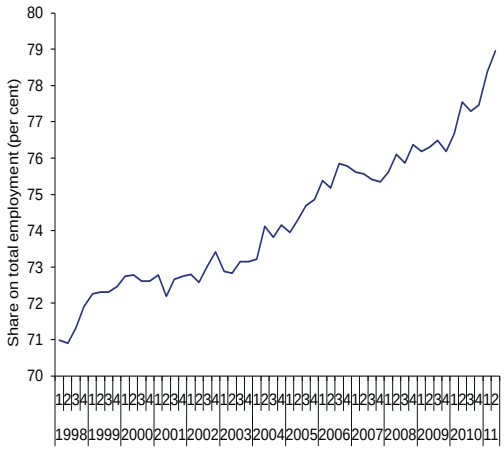
The increasing trend of the share of dependent employment in total employment became clearly more marked in the first half of 2011, as a result of a decrease in unpaid family work and particularly in self-employment. These developments are related to the characteristics of activities where these are the most frequent forms of employment, namely smaller and less productive companies, and hence more vulnerable in a context of a protracted fall in economic activity (Chart 5.10).

According to labour force survey data, the participation rate (age 15-64) stood at 74.3 per cent in the first half of 2011, slightly higher than in the same period in 2010 (74 per cent). The increase in the participation rate was mainly the result of developments in the male participation rate (78.6 per cent), which rose compared with 2010 (78.2 per cent), but decreased in comparison with the first semester of 2009 (78.9 per cent). The female participation rate stood at 70.1 per cent, increasing compared with both the first and second halves of 2010.

According to labour force survey data, in the first half of 2011 the unemployment rate stood at 12.3 per cent and the number of unemployed increased by around 8 per cent year-on-year, as a result of developments in the economic environment and the structural problems of the Portuguese economy (Chart 5.11). These developments are accompanied by a marked segmentation of the labour market where, as previously mentioned, employment dynamics is associated with developments in fixed-term contracts, which particularly affect younger age groups.

Chart 5.10

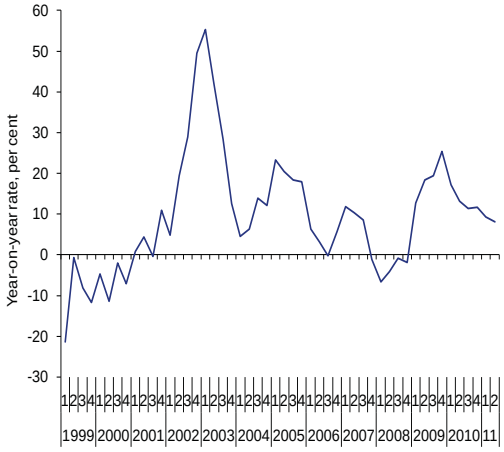
SHARE OF DEPENDENT EMPLOYMENT



Source: INE (Labour Force Survey).

Chart 5.11

CHANGE IN THE NUMBER OF UNEMPLOYED



Sources: *INE* (Labour Force Survey) and Banco de Portugal.

Note: A methodological change in the Labour Force Survey in the first quarter of 2011 led to a break in the series.

Long-term unemployment is more prevalent in the universe of the unemployed aged 35 or over and in the group with lower educational attainment

In relation to unemployment duration, the ratio of long-term unemployment (12 months or more) as a percentage of total unemployment remained above 50 per cent, although slightly below the levels of 2010 (Chart 5.12). The average duration of unemployment increased in the first half of 2011 (28.6 months) compared with the first and second halves of 2010 (24.3 and 25.1 months respectively). This is mainly the result of marked growth in longer-term unemployment in absolute terms, in particular for those unemployed for more than 25 months. Against this background, the share of the unemployed without access to the unemployment and social unemployment benefits increased in the first half of 2011, to stand above 65 per cent.

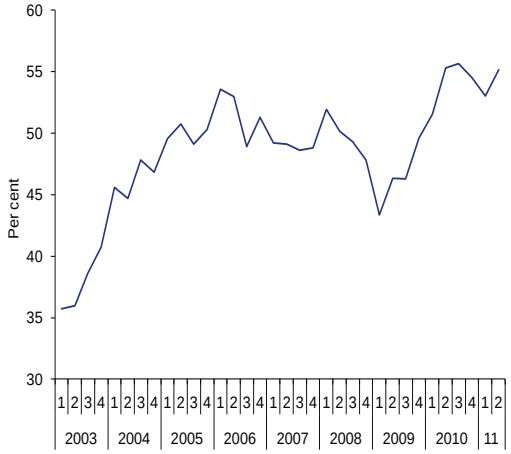
Issues related to unemployment duration are important in the sense that long-term unemployment tends to result in a sharp depreciation of human capital and loss of personal skills. Long-term unemployment is more prevalent among the unemployed aged 35 or over, reaching levels close to 65 per cent. Among younger workers, it stood at around 45 per cent in 2010, decreasing in the first half of 2011 to around 36 per cent (Chart 5.13). The specific characteristics of younger workers help them exit from unemployment, for example by emigrating. According to OECD data, the cumulative growth rate of Portuguese emigration to OECD countries stood at 37 per cent between 2001 and 2009 (the main destinations were Spain, Switzerland and Germany). Although updated information is difficult to obtain, there is also evidence of significant flows of Portuguese workers to countries outside Europe, namely Angola.[15]

According to the analysis of unemployment duration on the basis of educational attainment, the share of individuals with primary education in the long-term unemployed as a whole stands above 70 per cent, increasing slightly in the first half of 2011. For those unemployed for less than 12 months, the share of individuals with primary education is lower, albeit still high (above 60 per cent) (Chart 5.14). Although vocational training policies for the unemployed may help them return to the labour market, effective

15 According to Observatório da Emigração (Emigration Observatory), the Portuguese community in Angola totalled close to 100,000 individuals in 2009, with arrivals in the country reaching 16,000 in 2006, 22,000 in 2007 and 28,000 in 2008.

Chart 5.12

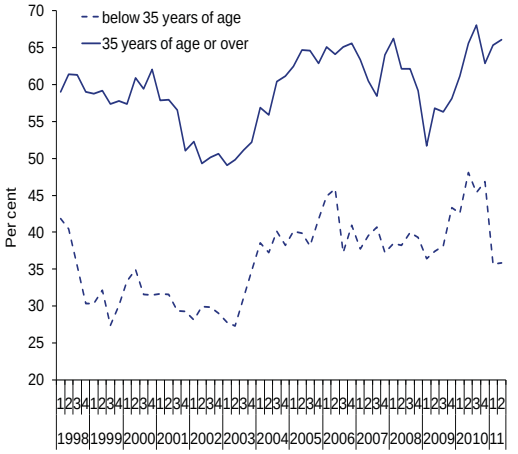
LONG-TERM UNEMPLOYMENT AS A PERCENTAGE OF TOTAL UNEMPLOYMENT



Source: *INE* (Labour Force Survey).

Chart 5.13

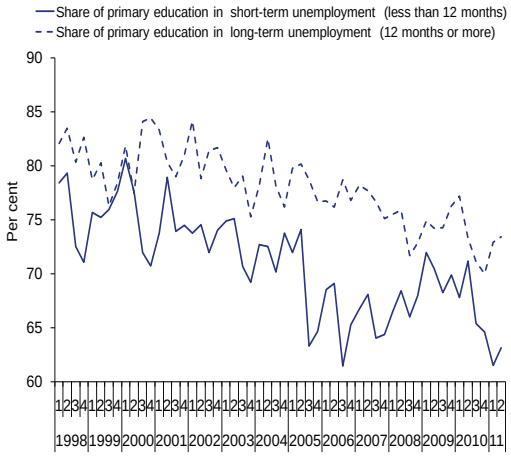
SHARE OF LONG-TERM UNEMPLOYMENT BY AGE GROUP



Source: *INE* (Labour Force Survey).

Chart 5.14

UNEMPLOYMENT DURATION AND EDUCATIONAL ATTAINMENT



Source: *INE* (Labour Force Survey).

mechanisms must be put in place to assess the effectiveness of these policies. Vocational training systems that are unable to create the skills needed in the business sector are not expected to have an impact on long-term economic growth.

6. Demand

The current projections of Banco de Portugal point to a decline in economic activity in Portugal of 1.9 per cent in 2011, in the framework of the adjustment process of macroeconomic imbalances. This process is part of the economic and financial adjustment programme prepared following the request for financial assistance agreed with the European Union, the euro area member countries and the International Monetary Fund. Therefore after growing in 2010, the Portuguese economy is again faced with a recession period, with a greater magnitude and duration in cumulative terms than in 2009 (Table 6.1 and "*Projections for the Portuguese economy: 2011-2012*", of this Bulletin). These developments reflect distinct dynamics between external and domestic demand. On the one hand, exports are expected to remain significantly buoyant in the year as a whole, although slowing down in the second half of the year, in line with expected developments in the world economy. On the other hand, public and private domestic demand are projected to post sharp and broadly based declines. Private consumption is thus expected to decrease markedly in 2011 (and, for the first time since 2001, to record a change lower than that of GDP) and investment to remain weak, further decreasing very sharply in 2011. Amid high uncertainty around developments in household income and the outlook for corporate demand, underlying the current projection is a more marked decline in most domestic demand components and a slowdown in exports in the second half of the year. This reflects the impact of fiscal consolidation measures, a continued adverse labour market situation, tight credit conditions and a significant slowdown in the growth pace of the main trading partners.

Comparing the current projection with the average value of the projection range for euro area GDP growth released in the September 2011 issue of the Monthly Bulletin of the European Central Bank (ECB), the negative differential between GDP growth rates in Portugal and the euro area is expected to widen significantly (Chart 6.1). A negative growth differential is projected to persist in the framework of the adjustment process of imbalances in the Portuguese economy.

Underlying the current projection for economic activity growth is a deceleration profile in the second half of the year, following -0.5 and -0.9 per cent year-on-year rates of change in the first and second

Table 6.1

GDP AND MAIN EXPENDITURE COMPONENTS[a] | REAL RATE OF CHANGE, PER CENT

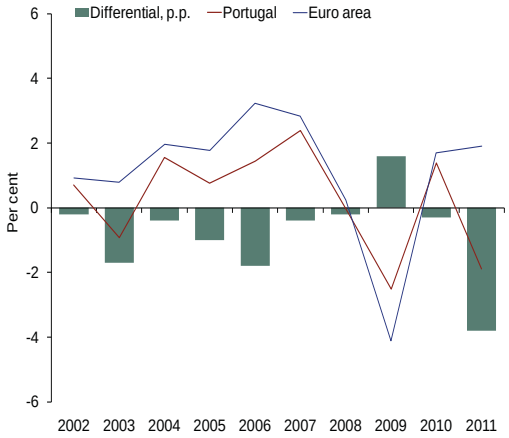
	2003	2004	2005	2006	2007	2008	2009	2010	2011[p]
GDP	-0.9	1.6	0.8	1.4	2.4	0.0	-2.5	1.4	-1.9
Private consumption	-0.2	2.7	1.7	1.8	2.5	1.3	-1.1	2.3	-3.8
Consumption of durable goods	-9.3	4.3	3.9	0.8	4.4	0.7	-13.8	10.6	-20.2
Current consumption	0.9	2.5	1.4	1.9	2.3	1.4	0.4	1.5	-1.9
Public consumption	0.4	2.4	3.3	-0.7	0.5	0.4	3.7	1.3	-3.3
Investment	-7.9	3.7	-0.9	-0.6	2.0	-0.1	-13.7	-5.3	-12.5
GFCF	-7.1	0.0	-0.5	-1.3	2.6	-0.3	-11.3	-4.9	-11.4
Machinery and metal products	-2.0	7.0	3.3	5.4	7.9	11.2	-9.6	-6.3	-9.2
Transport equipment	-10.2	-1.8	2.4	4.6	8.0	-3.8	-23.3	2.3	-21.4
Construction	-8.6	-2.0	-1.8	-4.6	-0.4	-4.6	-11.2	-5.7	-12.0
Other	-0.8	2.9	-2.9	1.6	5.9	2.9	-1.6	-1.0	-2.9
Change in inventories[b]	-0.2	0.8	-0.1	0.2	-0.1	0.0	-0.6	-0.1	-0.2
Domestic demand	-1.9	2.9	1.4	0.8	2.0	0.8	-2.9	0.7	-5.2
Exports	3.6	4.1	0.2	11.6	7.6	-0.1	-11.6	8.8	6.7
Imports	-0.5	7.6	2.3	7.2	5.5	2.3	-10.6	5.1	-4.1
Contribution of domestic demand to GDP[b]	-2.1	3.1	1.5	0.9	2.2	0.9	-3.2	0.8	-5.6
Contribution of net external demand to GDP[b]	1.1	-1.5	-0.8	0.6	0.2	-1.0	0.7	0.6	3.7
Current and capital account balance (% of GDP)	-4.6	-6.9	-9.2	-10.0	-8.9	-11.1	-10.1	-8.9	-6.9

Sources: *INE* and Banco de Portugal.

Notes: (a) Banco de Portugal estimates from INE's National Accounts for the 2007-2009 period (ESA 95). **(b)** Contribution to the real rate of change in GDP in percentage points.

Chart 6.1

GDP GROWTH RATE IN PORTUGAL AND THE EURO AREA AND DIFFERENTIAL | RATE OF CHANGE, PER CENT



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

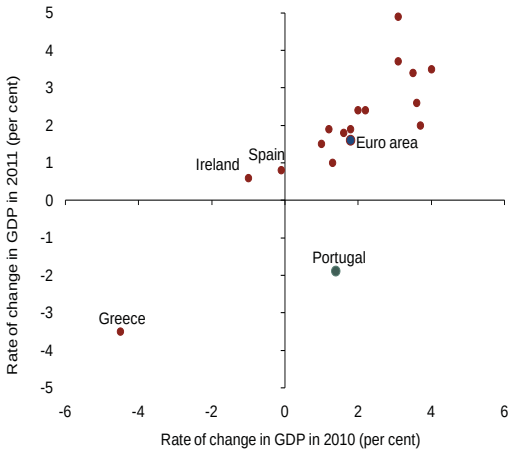
quarters of the year respectively. In particular, the difference between the dynamics of domestic demand and net external demand is expected to become more marked. After the decline seen in the first half of the year, domestic demand is projected to decrease further in the second half of the year. In particular, private consumption is expected to decline sharply (namely the durable consumer goods component) and gross fixed capital formation (GFCF) to continue decreasing markedly. In turn, exports will remain the most dynamic component of global demand, although decelerating significantly in the second half of the year, in line with the slowdown in external demand.

Contraction in economic activity in a framework of adjustment of structural imbalances

In 2011 the recovery in economic activity in the euro area was rather heterogeneous among different economies (Chart 6.2), justified, inter alia, by differences in the weight and structure of exports among countries, the degree of vulnerability of the financial systems or the existence of significant domestic

Chart 6.2

CHANGE IN GDP IN EURO AREA COUNTRIES IN 2010 AND PROJECTION FOR 2011 | RATE OF CHANGE, PER CENT



Sources: European Commission (Economic Forecasts - May 2011) and Banco de Portugal.

and/or external imbalances. Therefore, some countries, Germany in particular but also other highly export-oriented economies, posted stronger growth. By contrast, short-term economic recovery in other economies, in particular those directly affected by tensions related to the sovereign debt crisis, is expected to be conditioned by the need to correct main structural imbalances.

Contrary to other advanced economies, economic growth in Portugal in 2010 was not associated with any significant adjustment in structural imbalances that have characterised the Portuguese economy in the past decade. In effect, (actual and potential) GDP growth rates in Portugal have been rather low over the past ten years, widening the gap *vis-à-vis* the euro area average. These rates were accompanied by historically low savings rates and an increase in the indebtedness level of the economy. Against this background, the current recession period is marked by the need to correct the structural imbalances and vulnerabilities of the Portuguese economy, in particular to further strengthen the consolidation of public finances, and to gradually deleverage the private sector, including the financial system. Notwithstanding the short-term contractionary impact associated with this process, this effort cannot be postponed in the current economic and financial environment and is key to ensuring medium-term sustained growth in the Portuguese economy and the return to funding from international financial markets.

Very sharp decline in private consumption consistent with developments in disposable income

The current projections point to a decrease in private consumption of 3.8 per cent in 2011. While the GDP growth differential *vis-à-vis* the euro area remained negative, this differential was positive in private consumption in the past three years. However, this trend is expected to reverse in 2011. The rather sharp fall projected for private consumption in 2011 is in line with developments in real disposable income and is consistent with expectations of a decrease in household permanent income, which is likely to significantly condition intertemporal constraints.

The rather marked decrease in real disposable income reflects the decline in compensation per employee in the economy as a whole (in a context where the level of employment is expected to drop further), and the impact of fiscal consolidation measures, in particular a decrease of 5 per cent, on average, in compensation of civil servants, a worsening of both direct and indirect taxes, and an increase in the price of some goods and services subject to regulation. Taking into account the projection for the inflation rate (3.5 per cent) in this issue of the Economic Bulletin ("Section 7 *Prices*"), real wages are expected to decrease rather significantly in 2011. Labour compensation in the private sector is expected to grow more moderately than in 2010, in the context of a deterioration of the labour market situation. Worsening labour market conditions also interact with developments in private consumption by negatively affecting the expectations of economic agents regarding developments in their future income and wealth. Against this background, fixed-term contracts, which are associated with higher uncertainty about intertemporal income flows, have gained in importance in the employment structure in Portugal.

The sharp correction of private consumption over the coming years is expected to translate into a restructuring process of household balance sheets, in a context of tight credit conditions (see "Section 3.1 *Monetary policy of the ECB and monetary and financial conditions of the Portuguese economy*"). Bank loans to households recorded negative changes from mid-2011 (since the beginning of the year, as regards loans for consumption and other purposes). In addition to the negative effects on credit demand resulting from the deterioration of consumer expectations regarding the future financial situation, loans granted by Portuguese banking institutions are being negatively affected both by their difficulty in obtaining funding from international financial markets in the context of the sovereign debt crisis, and the need to deleverage their balance sheets. In the short run, Portuguese banks are expected to maintain tight credit conditions, reflecting an increase in credit risk, as well as continued gradual adjustment of their balance sheets. According to the Portuguese banks responding to the Bank Lending Survey published in July

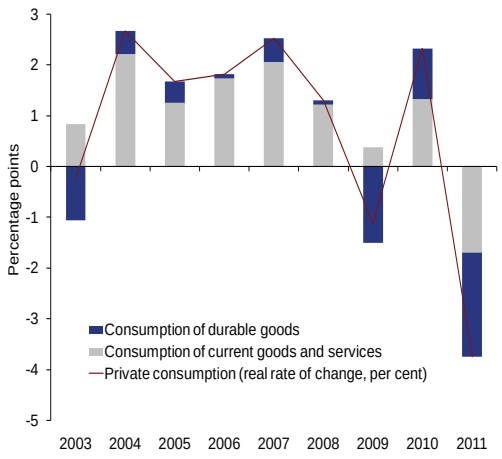
2011 this tightening has mainly translated into wider spreads, and also higher fees, shorter maturities and tighter conditions regarding collateral requirements. Banks tightening credit conditions is justified by the deterioration of expectations regarding economic activity and higher financing costs, as well as tighter balance-sheet constraints.

In terms of the composition of private consumption, current projections point to a fall both in the current goods and services component and in particular the durable goods component (Chart 6.3). In 2011, consumption of durable goods is projected to fall by close to 20 per cent, after an increase of 10.6 per cent in 2010. These developments partly reflect tighter financing conditions for households. In addition, expenditure decisions in durable goods tend to reflect most significantly the changes in consumer expectations, contributing to their typically more volatile behaviour. Hence, this consumption component is likely to more strongly reflect the impact of the measures of the economic and financial adjustment programme. Developments in consumption of durable goods in 2011 were also affected by the purchases of some durable goods (namely cars) brought forward to the end of 2010, in anticipation of changes in taxation which entered into force in early 2011, as well as changes introduced in the car scrappage program. During the first eight months of 2011, sales of new light passenger cars declined by 22.5 per cent year-on-year after growing by 38.8 per cent in 2010.[16] Albeit more moderate, the decrease projected for consumption of current goods and services is also expected to be significant in view of the historical developments in this component, which typically has a smoother intertemporal profile. In 2011, this component, accounting for around 90 per cent of total private consumption, is expected to drop by 1.9 per cent, after an increase of 1.4 per cent in 2010. In particular, consumption of current non-foods and services decreased very sharply since the beginning of the year (Chart 6.4).

Developments in several qualitative and quantitative indicators for the third quarter of the year point to a further decline in private consumption in the second half of the year, after a decrease in the first half, with year-on-year rates of change of -2.2 e -3.4 per cent in the first and second quarters respectively (Chart 6.5). The behaviour of the coincident indicator for the trend development of private consump-

Chart 6.3

BREAKDOWN OF REAL CHANGE IN PRIVATE CONSUMPTION | CONTRIBUTION TO THE RATE OF CHANGE, PERCENTAGE POINTS

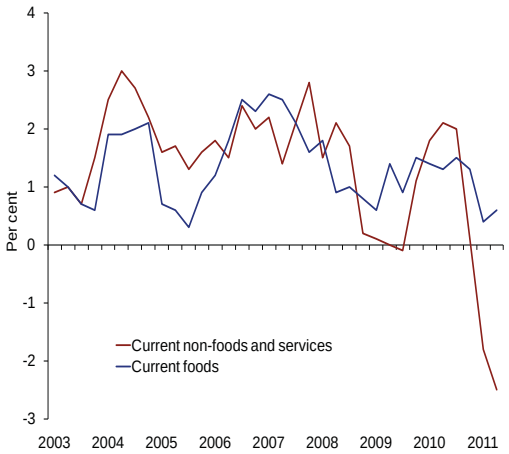


Sources: *INE* and Banco de Portugal.

16 Largely reflecting the increase in the standard VAT rate and, to a lesser extent, the rise in car tax rates at the start of 2011, motor vehicle prices reversed the downward trend seen since 2007. In the first eight months of 2011 as a whole, motor vehicle prices increased by 3.7 per cent year-on-year, compared with declines of 0.9 and 1.3 per cent in 2009 and 2010 respectively.

Chart 6.4

DEVELOPMENTS IN THE CONSUMPTION OF CURRENT GOODS AND SERVICES | RATE OF CHANGE, PER CENT

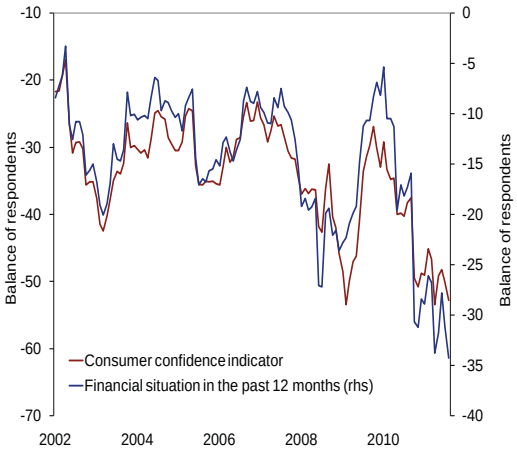


Source: *INE* (Quarterly National Accounts).

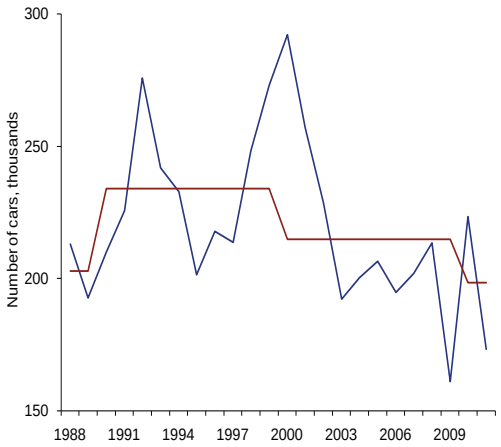
Chart 6.5

INDICATORS OF SHORT-TERM DEVELOPMENTS IN PRIVATE CONSUMPTION

Qualitative indicators



Sales of light passenger cars



Sources: *ACAP*, *INE* and Banco de Portugal estimates.

tion, calculated by Banco de Portugal, has shown a deceleration profile since May 2010 (Chart 6.5). This intra-annual profile likely reflects the limitations resulting from household solvency conditions due to budget restrictions. Such limitations reflect not only a tightening of financing conditions but also a worsening of taxation and the prospect of continued adverse labour market conditions, amid high uncertainty as to future income.

Public consumption is expected to decline by 3.3 per cent in real terms in 2011, after increasing by 1.3 per cent in 2010. These developments reflect a decrease in volume of compensation of employees, intermediate consumption and payments in kind.

Broadly based fall in investment across the institutional sectors

In 2011 GFCF is expected to decline very significantly. Current projections point to a drop of 11.4 per cent, considerably more marked than in 2010 and close to the levels in 2009 (4.9 and 11.3 per cent respectively). This contraction is shared by the public component, associated with the process of fiscal consolidation, and the private component. The private component reflects, inter alia, a deterioration of expectations about developments in demand, high uncertainty and tight financing conditions (namely reflecting banks' difficulties in obtaining funding from international financial markets, and the deleveraging process of the banking sector), in a context where the indebtedness level of Portuguese companies is among the highest in the euro area. In addition to the specificities which are likely conditioning public and housing investment, corporate investment is also expected to record a further negative change in 2011.

GFCF performance in 2011 continues the very unfavourable trend seen since the beginning of the past decade, notwithstanding strong credit growth and low financing costs during this period. From 2001 to 2010 GFCF fell by 31.9 per cent in cumulative terms in Portugal (21.5 per cent when only considering the corporate component). This was particularly noticeable in the case of household housing investment, which fell by 52.6 per cent in cumulative terms in the same period, after the strong vigour seen in the second half of the 1990s. Despite the unequivocal impact of the international crisis on recent developments in investment in Portugal, GFCF performance in the past decade is associated with structural, rather than cyclical factors. Against a background where investment decisions are assessed at the global level and a significant reallocation of resources is expected in the Portuguese economy, uncertainty may also result from doubts on how the imbalances in the economy will be corrected and how the structural reforms needed to increase productivity will be implemented. Among others, the main factors conditioning corporate investment decisions are the low level of labour qualification (given its complementarity with investment in physical capital), the prevailing institutional framework (in particular in terms of market flexibility) and the predictability of the tax system.

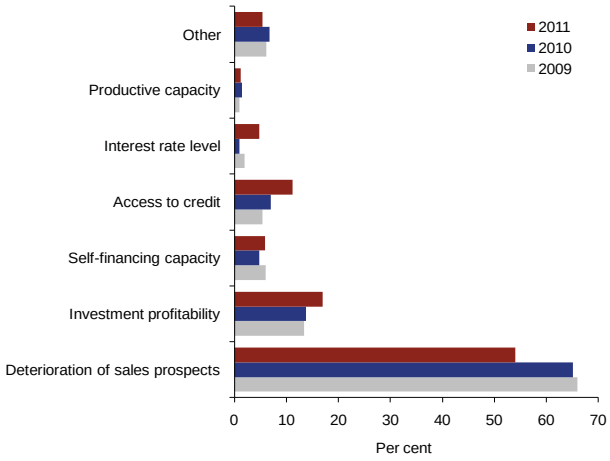
The deterioration of demand growth expectations and the need for corporate balance-sheet adjustments in view of their high indebtedness level will condition developments in investment over the coming years, not allowing for such a buoyant recovery as that typically observed in post-recession periods. Contrary to the past decade, corporate financing constraints have increased. Growth of bank loans to non-financial corporations has followed a downward trend, reaching values close to zero since early 2011. These developments are likely to reflect both a decline in credit demand and tighter credit standards on the supply side, as shown in the Bank Lending Survey published in July 2011. According to this survey, tighter credit standards have resulted in wider spreads, in particular riskier loans, shorter maturities, and an increase in collateral requirements and fees and other charges in addition to interest rates.

In turn, data for 2011 from the Investment Survey released in July confirm the importance for developments in corporate investment of the deterioration in demand expectations. From among companies of different sectors that responded to the survey, 55.2 per cent claimed to have their investment limited in 2011, a higher percentage than in the July 2010 survey (50.2 per cent). Albeit less than in previous surveys, a high percentage of these companies continues to point to the deterioration of sales expectations as the main limiting factor (Chart 6.6). Though playing a significantly less important role, there was a marked increase in the share of companies that point out difficulties in obtaining credit and, to a lesser extent, the level of interest rates as the main limiting factor.

The decline in GFCF is expected to be broadly based across all its components in 2011 (Chart 6.7), particularly GFCF in "Construction", against a background where the confidence indicator in construction has recorded the lowest levels since the start of the survey in January 1989 and the rate of change of bank loans to companies in the construction and real estate sectors has stood in negative territory since the start of 2010. GFCF in "Machinery and equipment" is also projected to decrease significantly in 2011, with a magnitude similar to 2009, in line with developments in the confidence indicator in

Chart 6.6

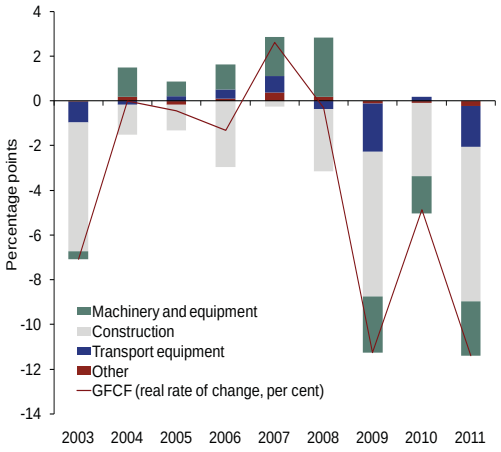
MAIN FACTOR LIMITING INVESTMENT | AS A PERCENTAGE OF THE TOTAL NUMBER OF COMPANIES WITH INVESTMENT RESTRICTIONS



Source: *INE* (Investment Survey).
Note: The results shown for each year are based on the Investment Survey published in July.

Chart 6.7

BREAKDOWN OF REAL CHANGE IN GFCF | CONTRIBUTION TO THE RATE OF CHANGE, PERCENTAGE POINTS



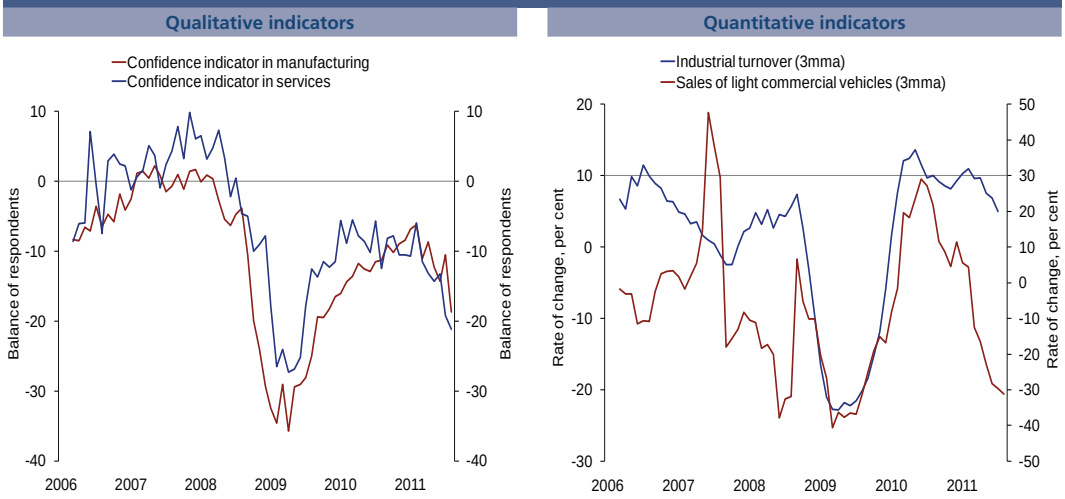
Sources: *INE* and Banco de Portugal.

manufacturing and services. Finally, the decrease projected for GFCF in "Transport equipment" in 2011 largely reflects a significant fall in sales of light commercial vehicles and, to a lesser extent, a substantial decrease in the purchase of cars by rent-a-car companies.

The evolution of some qualitative and quantitative indicators for the third quarter of the year anticipates a further decline in GFCF in the second half of the year, after a drop in the first half, with year-on-year rates of change of -7.0 and -10.3 per cent in the first and second quarters respectively (Chart 6.8).

Chart 6.8

INDICATORS OF SHORT-TERM DEVELOPMENTS IN GFCF



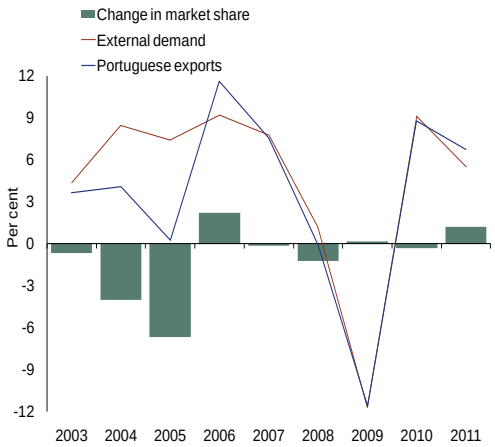
Sources: *ACAP* and *INE*.

Continued significant export growth in the year as a whole, although a deceleration is anticipated for the second half of the year

Exports of goods and services are likely to continue to grow significantly in 2011 as a whole, although a slowdown is projected for the second half of the year, reflecting developments in external demand. The current projection points to a 6.7 per cent growth in the volume of exports of goods and services, after an increase of 8.8 per cent in the previous year (Chart 6.9). Contrary to 2010, the increase in 2011 is expected to be less marked in exports of goods, which are expected to grow by 6.3 per cent in real terms, after an increase of around 10 per cent in 2010, while exports of services are projected to grow by 7.8 per cent (6.3 per cent in 2010).

Chart 6.9

DEVELOPMENTS IN THE MARKET SHARE OF PORTUGUESE EXPORTS OF GOODS AND SERVICES
| REAL RATE OF CHANGE, PER CENT



Sources: ECB, UK Office for National Statistics and Banco de Portugal.

Nominal goods exports grew by 16.3 per cent year-on-year in the first seven months of 2011 (16.0 per cent in 2010 as a whole).[17] During this period, the buoyancy of goods exports was particularly marked in medium-high-tech products, in particular chemicals and motor vehicles and other transport equipment (Table 6.2).[18] With regard to the latter, stress should be laid on exports to the German market, associated with a significant increase in the sales of a major company in this sector in Portugal. Although less marked, exports of machinery and equipment recorded a higher cumulative increase in the first seven months of 2011 than in the previous year as a whole. Medium-low-tech products have been gaining in importance in the structure of Portuguese exports (Chart 6.10), in particular the components "Basic metals" and "Cellulose pulp and paper", which have remained very dynamic. By contrast, fuel exports (namely to the United States and Spain) decelerated strongly in the first seven months of 2011, after marked growth in 2010. Nevertheless, the weight of fuel exports has grown over recent years, from 2.2 per cent of total

Table 6.2

NOMINAL EXPORTS OF GOODS BY GROUPS OF PRODUCTS, MAIN ECONOMIC CATEGORIES AND TECHNOLOGICAL INTENSITY | RATES OF CHANGE AND RESPECTIVE CONTRIBUTION

	Weights 2010	Year-on-year rate of change (per cent)				Contribution to the year-on-year rate of change (p.p.)			
		2010	2011 up to July	2011 Q1	2011 Q2	2010	2011 up to July	2011 Q1	2011 Q2
Total	100.0	16.0	16.3	17.9	17.5	16.0	16.3	17.9	17.5
Classification by groups of products									
Agriculture	5.3	14.1	14.2	20.3	14.3	0.8	0.7	1.0	0.7
Food	5.3	2.8	9.0	10.4	8.9	0.2	0.5	0.5	0.5
Mineral fuels	6.7	59.5	8.9	-21.2	42.9	2.9	0.6	-1.7	2.7
Chemicals	5.0	17.1	33.9	47.0	29.1	0.9	1.7	2.3	1.5
Rubber and plastic products	6.9	27.7	16.9	23.9	11.6	1.7	1.2	1.6	0.9
Leather, leather products	0.3	23.1	39.1	54.9	24.0	0.1	0.1	0.1	0.1
Wood, cork	3.5	7.6	12.4	13.3	13.8	0.3	0.4	0.5	0.5
Cellulose pulp, paper	5.7	40.7	14.0	17.9	13.3	1.9	0.8	1.0	0.8
Textile products	4.1	13.0	17.6	20.6	18.1	0.6	0.7	0.8	0.8
Clothing	6.0	3.0	7.8	7.9	11.8	0.2	0.5	0.5	0.7
Footwear	3.7	5.1	15.9	19.7	19.4	0.2	0.6	0.8	0.6
Minerals, ores	5.5	13.0	9.2	25.7	-2.0	0.7	0.5	1.3	-0.1
Basic metals	7.9	17.3	20.6	34.1	13.6	1.4	1.7	2.6	1.2
Machinery, equipment	14.9	6.3	12.2	9.9	15.5	1.0	1.8	1.5	2.3
Motor vehicles, other transport equipment	12.4	22.2	30.3	35.0	30.4	2.6	3.7	4.2	3.7
Optical and precision instruments	1.1	18.3	7.0	15.6	5.0	0.2	0.1	0.2	0.1
Other products	5.6	6.8	13.0	11.4	14.2	0.4	0.7	0.7	0.8
Classification by main economic categories									
Intermediate goods	35.0	25.7	25.9	34.9	22.0	8.1	9.1	11.7	8.2
Capital goods	24.2	9.7	13.2	12.7	15.3	2.4	3.2	3.2	3.7
Consumer goods[a]	34.4	8.0	16.4	18.4	17.7	2.9	5.5	6.2	5.7
Fuels	6.4	57.0	7.5	-23.4	41.2	2.6	0.5	-1.7	2.5
Other	0.1	-95.5	-8.9	11.0	-12.4	-2.7	0.0	0.0	0.0
Classification by technological intensity[b]									
High-tech	8.8	0.2	10.9	8.4	15.3	0.0	1.0	0.8	1.3
Medium-high-tech	27.8	17.4	24.0	28.1	23.8	4.8	6.6	7.8	6.5
Medium-low-tech	27.7	28.5	16.5	16.2	18.3	7.1	4.7	4.5	5.3
Low-tech	35.6	10.9	11.5	13.8	12.4	4.1	4.0	4.9	4.3
Memo item: Total excluding fuels	93.6	11.3	19.1	22.8	18.7	13.4	15.8	19.7	15.0

Sources: *INE* (International Trade Statistics) and Banco de Portugal.

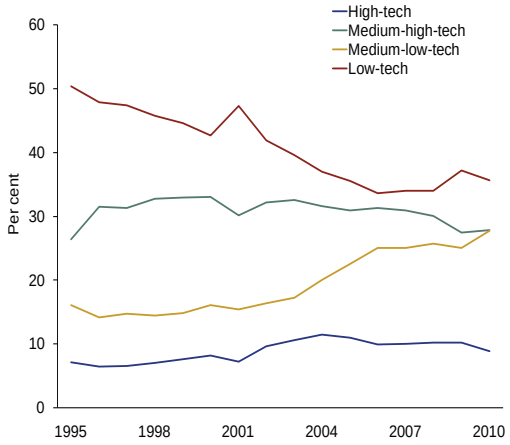
Notes: (a) Including passenger vehicles. **(b)** Breakdown of exports by technological intensity of the following correspondence with the two-digit Combined Nomenclature: High-tech (30; 84; 88; 90 and 91); Medium-high-tech (28; 29; 31-38; 85-87; 89 and 92-95); Medium-low-tech (25-27; 39-40; 68-83); Low-tech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

17 Excluding fuels, nominal exports grew by 19.1 per cent in the first seven months of 2011 (11.3 per cent in 2010 as a whole).

18 The publication Monthly Economic Indicators of Banco de Portugal provides more detailed monthly data on nominal exports and imports of goods and services.

Chart 6.10

STRUCTURE OF NOMINAL EXPORTS OF GOODS BY TECHNOLOGICAL INTENSITY | PER CENT OF TOTAL EXPORTS OF GOODS



Sources: *INE* and Banco de Portugal calculations.

goods exports in 2003 to 6.4 per cent in 2010. In addition, exports of some low-tech products, such as footwear, leather and leather products, were very buoyant in the first seven months of 2011.

The analysis of nominal exports of goods by geographical area also shows more marked growth in exports to European Union (EU) countries in the first seven months of 2011, as well as continued buoyant exports to extra-EU markets (Table 6.3). In relation to the main markets of destination, exports to Spain, accounting for more than a quarter of national exports, decelerated, while exports to Germany, Italy and France grew markedly. As for extra-EU markets, the dynamics of exports to Portuguese speaking African countries (PALOP), in particular to Angola, the main extra-EU market for Portuguese exports, recovered, after declining in 2009 and 2010. Although broadly based across several types of products,

Table 6.3

NOMINAL EXPORTS OF GOODS BY GEOGRAPHICAL AREAS | RATES OF CHANGE AND RESPECTIVE CONTRIBUTIONS

	Weights 2010	Year-on-year rate of change (per cent)				Contribution to the year-on-year rate of change (p.p.)			
		2010	2011 up to July	2011 Q1	2011 Q2	2010	2011 up to July	2011 Q1	2011 Q2
TOTAL	100.0	16.0	16.3	17.9	17.5	16.0	16.3	17.9	17.5
Intra-EU	75.0	15.4	16.5	19.6	16.5	11.6	12.4	14.8	12.4
of which:									
Spain	26.6	13.2	10.9	13.8	10.3	3.6	2.9	3.7	2.8
Germany	13.0	16.5	25.1	30.0	23.8	2.1	3.2	3.8	3.1
France	11.8	10.3	20.2	23.0	23.9	1.3	2.5	2.9	2.8
United Kingdom	5.5	12.6	4.7	7.9	5.5	0.7	0.3	0.4	0.3
Italy	3.8	17.4	21.3	15.1	35.0	0.7	0.8	0.6	1.2
Extra-EU	25.0	17.7	15.7	12.9	20.7	4.4	3.9	3.1	5.1
of which:									
PALOP	6.6	-9.1	13.7	9.8	15.2	-0.8	0.8	0.6	0.9
United States	3.6	31.1	5.9	-4.7	24.9	1.0	0.2	-0.2	0.8
Brazil	1.2	49.5	35.6	59.3	21.9	0.5	0.4	0.6	0.3
Memo item:									
Asia	3.1	17.0	28.6	36.7	26.9	0.5	0.9	1.1	0.8
America (excl. United States and Brazil)	2.8	52.6	17.3	3.4	9.0	1.1	0.4	0.3	0.8
EFTA	1.1	11.5	10.4	14.0	5.6	0.1	0.2	0.2	0.1

Sources: *INE* (International Trade Statistics) and Banco de Portugal.

the recovery of exports to Angola was particularly marked in sales of machinery and equipment. In the first seven months of 2011, exports to some Asian markets also grew very significantly, in particular to China and Japan, which have gained in importance in the past few years, despite their small weight in total goods exports.

As in 2010, nominal exports of services were less buoyant than goods exports, with growth of 9.5 per cent year-on-year in the first seven months of 2011, after an increase of 7.7 per cent in 2010 as a whole (Table 6.4 and Chart 6.11). In an environment of rebounding international demand, nominal tourism revenue grew by 8.6 per cent up to July, decreasing by 1.4 percentage points (p.p.) compared to average growth in 2010.[19] As in previous years, extra-EU tourism revenue was more buoyant than EU tourism

Table 6.4

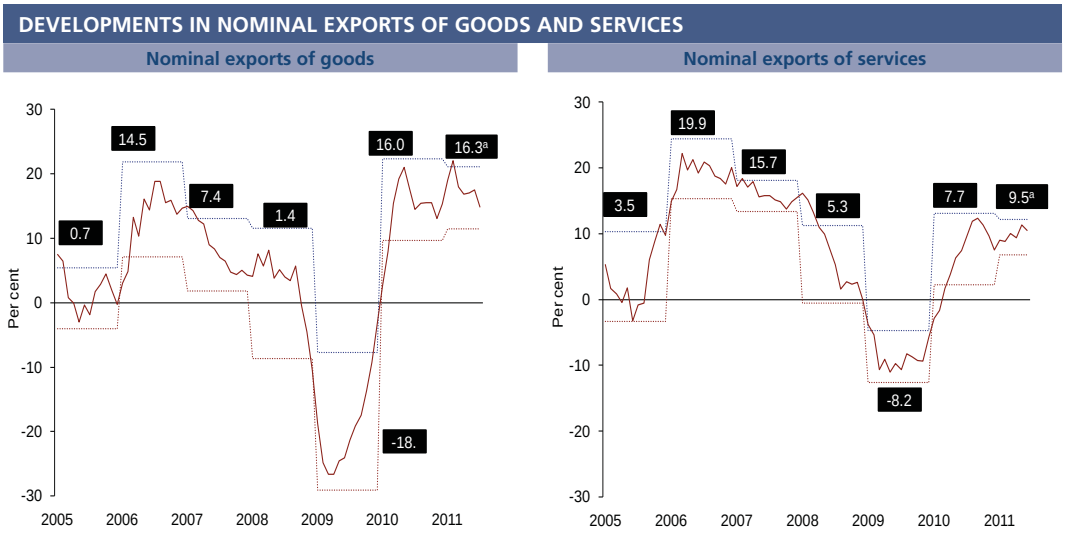
PORTUGUESE EXPORTS OF SERVICES | RATES OF CHANGE AND RESPECTIVE CONTRIBUTIONS

	Weights 2010	Rate of change		Contribution to the rate of change (p.p.)	
		2010	2011 (up to July)	2010	2011 (up to July)
Total	100.0	7.7	9.5	7.7	9.5
Tourism	43.3	10.0	8.6	4.2	3.5
Transportation	26.6	13.0	12.9	3.3	3.5
Other business services	18.7	1.5	3.6	0.3	0.7
Communications	2.9	-1.9	20.1	-0.1	0.6
Construction	2.7	-2.9	3.5	-0.1	0.1
Financial services	1.6	1.1	27.2	0.0	0.4
Government operations	1.5	20.7	-4.6	0.3	-0.1
IT and information services	1.1	17.6	9.1	0.2	0.1
Personal, cultural and recreational services	0.9	4.4	53.2	0.0	0.5
Insurance	0.5	-9.1	19.0	-0.1	0.1
Royalties and license fees	0.2	-71.7	15.9	-0.5	0.0

Source: Banco de Portugal (Balance of Payments).

Chart 6.11

DEVELOPMENTS IN NOMINAL EXPORTS OF GOODS AND SERVICES



Source: *INE* (International Trade Statistics).

Source: Banco de Portugal

Notes: (a) Changes up to July. The dashed lines circumscribe the range centred on the mean in which the width corresponds to twice the standard deviation in year-on-year rates of change in each year. Highlighted figures correspond to the year-on-year rate of change.

19 It is important to note that part of the revenue from travel by foreign tourists is not recorded as tourism revenue. This is the case, for example, of amounts paid on air tickets which are recorded as transport service revenue.

revenue as a whole. Taking into account the main national services markets, services exports to Brazil continued to increase sharply, associated, in particular, with developments in tourism revenue from this country, which saw a 22 per cent year-on-year growth in the first seven months of 2011 (Tables 6.5 and 6.6). In relation to the main markets for national tourism, mention should be made to the high pace of tourism exports to France, which may reflect the sharp decrease in the flow of tourists to some Middle Eastern and North African countries affected by socio-political tensions. In turn, tourism exports to the United Kingdom accelerated from the previous year, contrasting with exports to the Spanish market, which grew less than in 2010 (Table 6.6). The trend of tourism revenue is consistent with an increase in the number of overnight stays by foreign tourists in Portuguese hotels and data on the number of passengers disembarked in Portuguese airports (Chart 6.12).[20] In contrast with the past few years, growth in the number of overnight stays of foreign tourists in the first half of 2011 was not accompanied by an increase in accommodation services prices, which, in fact, declined by 9.6 per cent up to August (Chart 6.13; "Section 7 *Prices*").

Table 6.5

NOMINAL EXPORTS OF SERVICES BY GEOGRAPHICAL AREAS | RATES OF CHANGE AND RESPECTIVE CONTRIBUTIONS

	Weights 2010	Year-on-year rate of change (per cent)		Contribution to the year-on-year rate of change (p.p.)	
		2010	2011 (up to July)	2010	2011 (up to July)
TOTAL	100.0	7.7	9.5	7.7	9.5
Intra-EU	72.2	5.8	9.5	4.2	6.8
of which:					
United Kingdom	14.3	4.0	11.8	0.6	1.7
Spain	14.3	2.9	4.1	0.4	0.6
France	13.8	6.9	11.0	1.0	1.4
Germany	10.2	9.0	8.1	0.9	0.8
Netherlands	4.3	11.1	8.1	0.5	0.3
Italy	3.5	1.0	6.9	0.0	0.3
Extra-EU	27.8	13.0	9.5	3.4	2.7
of which:					
United States	4.9	5.5	-4.7	0.3	-0.2
Brazil	4.9	47.1	18.7	1.7	0.9
Switzerland	4.3	-3.0	-4.7	-0.1	-0.2

Source: Banco de Portugal (Balance of Payments).

Table 6.6

NOMINAL EXPORTS OF TOURISM BY GEOGRAPHICAL AREAS | RATES OF CHANGE AND RESPECTIVE CONTRIBUTIONS

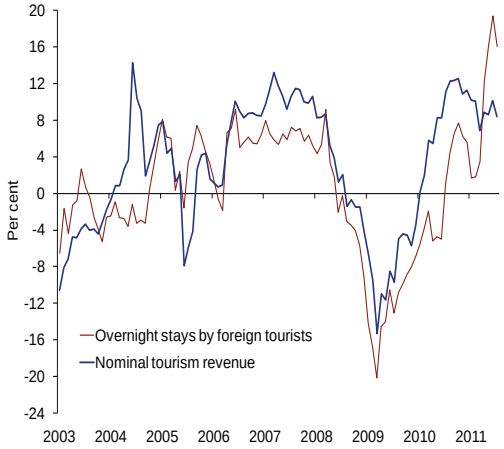
	Weights 2010	Year-on-year rate of change (per cent)		Contribution to the year-on-year rate of change (p.p.)	
		2010	2011 (up to July)	2010	2011 (up to July)
TOTAL	100.0	10.0	8.6	10.0	8.6
Intra-EU	78.6	6.6	6.4	5.4	5.0
of which:					
United Kingdom	18.2	6.1	8.0	1.2	1.5
Spain	17.4	5.4	3.4	0.8	0.5
France	14.6	9.0	10.3	1.6	1.6
Germany	10.4	4.4	4.6	0.5	0.5
Netherlands	4.2	12.6	5.0	0.5	0.2
Italy	2.3	11.8	2.5	0.3	0.1
Extra-EU	21.4	24.7	16.2	4.7	3.6
of which:					
United States	4.1	57.5	22.0	1.6	1.0
Brazil	3.9	24.2	20.4	0.8	0.8
Switzerland	2.3	-8.5	8.3	-0.2	0.2

Source: Banco de Portugal (Balance of Payments).

20 In the first seven months of 2011, the number of overnight stays by foreign tourists in Portugal grew by 13.8 per cent (1.7 per cent in 2010 as a whole). In turn, the number of passengers disembarked in Portuguese airports increased by 10.2 per cent in cumulative terms up to July (7.8 per cent in 2010).

Chart 6.12

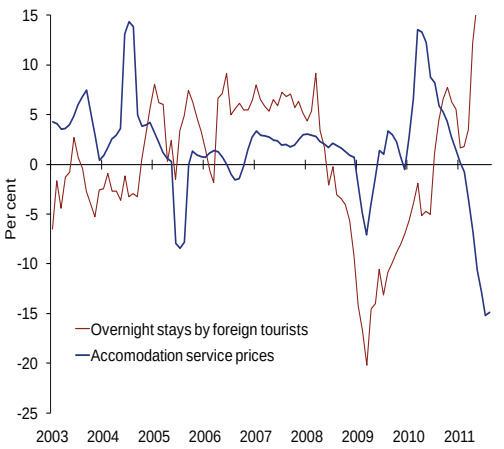
DEVELOPMENTS IN TOURISM REVENUE AND OVERNIGHT STAYS BY FOREIGN TOURISTS | 3-MONTH MOVING AVERAGE OF YEAR-ON-YEAR RATES OF CHANGE, PER CENT



Sources: *INE* and Banco de Portugal.

Chart 6.13

EVOLUÇÃO DAS DORMIDAS DE TURISTAS ESTRANGEIROS E PREÇOS DOS ALOJAMENTOS | MÉDIA MÓVEL DE TRÊS MESES DAS VARIAÇÕES HOMÓLOGAS, EM PERCENTAGEM



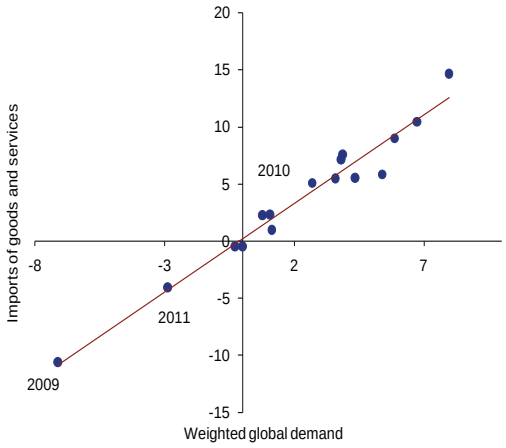
Source: *INE*.

Decline in imports in line with developments in weighted global demand

In 2011 the volume of imports of goods and services is expected to decline by 4.1 per cent, after an increase of 5.1 per cent in 2010, in line with developments in weighted global demand, particularly in some demand components with high import content, such as consumption of durable goods and GFCF in machinery and transport equipment (Chart 6.14). Given the strong sensitivity of imports to the business cycle, the rate of import penetration in demand will likely decrease in 2011, after increasing in 2010, in line with usual developments in periods of contraction in economic activity (Chart 6.15).

Chart 6.14

IMPORTS OF GOODS AND SERVICES AND WEIGHTED GLOBAL DEMAND | RATE OF CHANGE, PER CENT



Sources: *INE* and Banco de Portugal.

Chart 6.15

RATE OF IMPORT PENETRATION IN GLOBAL DEMAND | PER CENT

Sources: *INE* and Banco de Portugal.

Note: The penetration of imports assesses goods and services import growth vis-à-vis global demand growth. An increase denotes a gain in market share by foreign producers.

Nominal imports of goods rose by 5.7 per cent in the first seven months of 2011, decelerating by 5.3 p.p. compared with average growth in 2010. The loss of buoyancy in imports of goods during this period was particular marked in medium-high-tech products. In particular, purchases of motor vehicles and other transport equipment declined significantly, reflecting to a large extent a decrease in the consumption of motor vehicles since the start of the year and the considerable impact on changes in this component in the second quarter of 2011, resulting from the purchase of military equipment by the general government in the same quarter of 2010 (Table 6.7). In turn, fuel imports continued to grow substantially in the first seven months of 2011.[21] Imports of some low-tech products were also more buoyant up to July, in particular agricultural products and food. The analysis of the behaviour of imports by geographical area shows a significant deceleration of imports from most intra-EU markets in the first seven months

Table 6.7

PORTUGUESE IMPORTS OF GOODS BY GROUPS OF PRODUCTS, MAIN ECONOMIC CATEGORIES AND TECHNOLOGICAL INTENSITY | RATES OF CHANGE AND RESPECTIVE CONTRIBUTIONS

	Weights 2010	Year-on-year rate of change (per cent)				Contribution to the year-on-year rate of change (p.p.)			
		2010	2011 (up to July)	2011		2010	2011 (up to July)	2011	
				Q1	Q2			Q1	Q2
Total	100.0	11.0	5.7	9.7	1.9	11.0	5.7	9.7	1.9
Classification by groups of products									
Agriculture	9.5	5.1	15.0	22.3	9.0	0.5	1.4	2.1	0.9
Food	4.1	-2.1	7.4	6.1	8.3	-0.1	0.3	0.2	0.3
Mineral fuels	14.6	28.8	27.4	18.0	26.1	3.6	3.9	2.6	4.0
Chemicals	10.0	9.4	7.3	10.9	3.9	1.0	0.7	1.1	0.4
Rubber and plastic products	5.1	16.4	17.7	24.6	14.9	0.8	0.9	1.3	0.7
Leather, leather products	1.0	14.2	11.5	21.1	6.6	0.1	0.1	0.2	0.1
Wood, cork	1.2	15.8	13.2	16.2	11.1	0.2	0.2	0.2	0.1
Cellulose pulp, paper	2.3	5.0	3.2	6.2	1.2	0.1	0.1	0.1	0.0
Textile products	2.8	14.6	9.4	15.9	11.5	0.4	0.3	0.4	0.3
Clothing	3.0	3.4	3.8	2.5	4.7	0.1	0.1	0.1	0.1
Footwear	0.9	4.2	10.4	14.4	8.3	0.0	0.1	0.2	0.1
Minerals, ores	1.4	0.8	-1.8	3.6	-3.8	0.0	0.0	0.1	-0.1
Basic metals	7.9	15.1	12.9	21.9	6.5	1.2	1.0	1.7	0.5
Machinery, equipment	16.4	-4.7	-4.0	1.0	-5.4	-0.9	-0.6	0.2	-0.8
Motor vehicles, other transport equipment	14.1	29.2	-15.9	0.1	-27.9	3.5	-2.3	0.0	-4.4
Optical and precision instruments	2.2	6.8	-7.0	-2.6	-8.5	0.2	-0.2	-0.1	-0.2
Other products	3.3	8.8	-9.6	-16.8	-4.5	0.3	-0.3	-0.6	-0.1
Classification by main economic categories									
Intermediate goods	29.6	14.7	18.6	26.1	13.3	4.2	5.5	7.6	3.9
Capital goods	22.8	-3.0	-3.9	-2.0	-3.0	-0.8	-0.9	-0.5	-0.6
Consumer goods[(a)]	31.6	8.0	-2.6	4.1	-6.7	2.6	-0.8	1.3	-2.1
Fuels	14.1	27.6	27.5	16.9	27.4	3.4	3.8	2.3	4.1
Other	1.9	134.8	-97.5	-95.5	-98.7	1.2	-1.8	-0.9	-3.2
Classification by technological intensity[(b)]									
High-tech	14.8	-8.6	-6.6	-3.3	-7.4	-1.5	-1.0	-0.5	-1.0
Medium-high-tech	30.1	18.4	-4.9	6.2	-13.4	5.2	-1.5	1.8	-4.3
Medium-low-tech	29.4	20.9	20.1	19.6	17.3	5.7	5.9	5.7	5.2
Low-tech	25.7	6.4	9.0	10.5	8.3	1.7	2.3	2.8	2.0
Memo item: Total excluding fuels	85.9	8.2	2.3	8.7	-2.4	7.7	1.8	7.4	-2.2

Sources: *INE* (International Trade Statistics) and Banco de Portugal.

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

21 Excluding fuels, nominal imports grew by 2.3 per cent in the first seven months of 2011 (8.2 per cent in 2010 as a whole).

of 2011, with the exception of imports from the Spanish market, which grew more than in 2010 as a whole. During this period, the loss of buoyancy in imports was particularly marked in some reference markets, such as the United Kingdom, Italy, France and Germany. The acquisition of goods from these countries declined from 2010. Despite decelerating from the previous year, extra-EU imports remained very buoyant in the first seven months of the year, in particular from the Nigerian and Algerian markets, associated with the continued high level of fuel imports.

Nominal imports of services grew by 5.7 per cent year-on-year in the first seven months of 2011, after an increase of 5.2 per cent in 2010 (Table 6.8). The acceleration of imports of services largely reflects strong growth in the financial services component, associated with the payment of commissions and fees for services after Portugal received the first disbursement of the financial assistance programme.[22] By contrast, components with a larger weight in the services import structure were less buoyant, in particular tourism services, which decelerated significantly.

Table 6.8

NOMINAL IMPORTS OF SERVICES BY TYPE OF SERVICE | RATE OF CHANGE AND RESPECTIVE CONTRIBUTIONS

	Weights 2010	Rate of change (per cent)		Contribution to the rate of change (p.p.)	
		2010	2011 (up to July)	2010	2011((up to July)
Total	100.0	5.2	5.7	5.2	5.7
Transportation	29.6	6.0	4.5	1.8	1.3
Tourism	27.2	8.9	1.1	2.3	0.3
Other business services	21.2	-0.3	-2.2	-0.1	-0.5
Personal, cultural and recreational services	4.5	1.1	-1.6	0.1	-0.1
Communications	4.0	-2.4	-0.4	-0.1	0.0
Royalties and license fees	3.8	11.7	-3.1	0.4	-0.1
IT and information services	3.4	0.6	20.6	0.0	0.7
Financial services	2.2	34.0	197.4	0.6	4.1
Insurance	2.2	23.3	0.4	0.4	0.0
Government operations	1.1	-2.0	-30.0	0.0	-0.4
Construction	0.9	-21.5	32.1	-0.3	0.3

Source: Banco de Portugal (Balance of Payments).

7. Prices

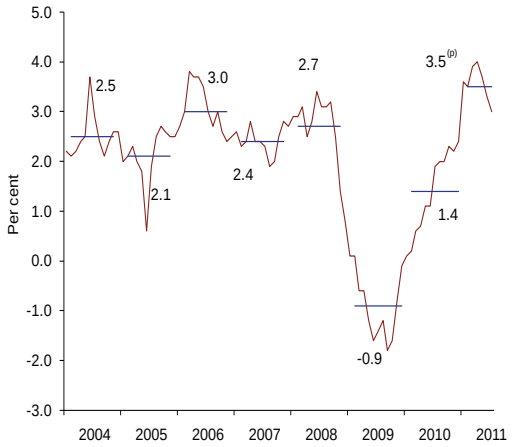
In 2011 the inflation rate in Portugal, as measured by the average change in the Harmonised Index of Consumer Prices (HICP), is likely to stand at 3.5 per cent, which represent an increase of 2.1 percentage points (p.p.) from 2010 (Chart 7.1). Underlying the projection for the inflation rate in 2011 is a marked acceleration in the non-energy component of consumer prices (from 0.3 per cent in 2010 to 2.2 per cent) and the continued robust pace of energy price growth (12.4 per cent, following 9.5 per cent in 2010).

The marked acceleration in consumer prices in 2011, particularly in the non-energy component, reflects the acceleration in both unit labour costs in the private sector and non-energy import prices, as well as the entry into force of several measures associated with the fiscal consolidation process, in particular the increase in the value added tax (VAT) in mid-2010 and the beginning of 2011 and in the price of a number of goods and services subject to regulation. The projection for the inflation rate in 2011 also takes into account the increase in the VAT rate on electricity and natural gas in October. As regards energy prices, the continued robust pace of growth in 2011 is consistent with developments in world market oil prices.

22 For more details, see the statistical press release "Impact on the statistics disseminated by the Banco de Portugal of the first operations in the context of the Financial Assistance Programme to Portugal", published with the Statistical Bulletin of July 2011.

Chart 7.1

HARMONISED INDEX OF CONSUMER PRICES | YEAR-ON-YEAR RATE OF CHANGE



Source: Eurostat and Banco de Portugal.
Note: (p) - Projection.

Comparing the current projection for Portugal with the mid-point value of the projection range for the inflation rate in the euro area released in the September 2011 issue of the ECB Monthly Bulletin, the inflation differential *vis-à-vis* the euro area will return to positive ground (0.9 p.p.), following a slightly negative value in 2010 (-0.2 p.p.) and the historical low of -1.3 p.p. in 2009.

Acceleration in prices in 2011 largely conditioned by measures associated with the fiscal consolidation process

Following a period of marked price deceleration in Portugal, beginning at the end of 2008 and extending into the following year, which translated into a negative average annual inflation rate in 2009 – a unique case in the past three decades –, the inflation rate returned to positive territory in 2010, standing above 3 per cent as of January 2011.[23] Although prices have decelerated somewhat since April, the year-on-year change in the HICP has remained above its 2010 average, standing at 2.8 per cent in August. Underlying the current estimate for inflation in 2011 is an acceleration in prices over the last months of the year, largely reflecting the impact of a sharp increase in transport prices in August and the rise in the VAT rate on electricity and natural gas from 6 to 23 per cent in October.

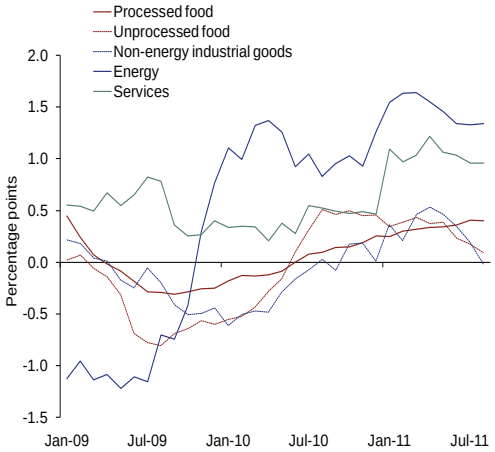
Price developments over the first eight months of 2011 largely reflect the behaviour of energy and services prices, although the acceleration observed since late 2010 was broadly based across HICP components, excluding unprocessed food prices, with lower year-on-year rates of change in the first eight months of 2011 compared with the end of 2010 (Chart 7.2). The acceleration in consumer prices was largely conditioned by the entry into force of several measures associated with the fiscal consolidation process, particularly the increases in VAT in mid-2010 and the beginning of 2011 and in the price of a number of goods and services subject to regulation. Under the assumption that these measures will be fully reflected in final consumer prices, their impact on the inflation rate in 2011 is likely to reach 1.7 p.p., according to Banco de Portugal estimates.

In line with inflation developments, the weight of HICP components with positive year-on-year changes increased gradually. Following a low in June 2009 (49 per cent), the weight of these components has

23 The year-on-year change in the HICP reached a trough in September 2009 (-1.8 per cent), moving into positive territory as of January 2010.

Gráfico 7.2

DEVELOPMENTS IN CONTRIBUTIONS TO THE YEAR-ON-YEAR RATE OF CHANGE IN HICP | IN PERCENTAGE POINTS

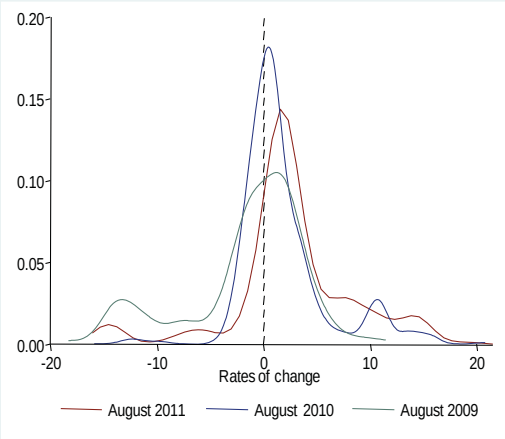


Source: Eurostat.

gradually grown, reaching 85 per cent in August 2011. Reflecting the upward path followed by the HICP year-on-year rate of change, rates of change in prices rose in August 2011 compared with the same month in 2010 (Chart 7.3). After falling into negative territory in 2009, the degree of skewness in the distribution of rates of change in prices has moved closer to the levels of previous years, standing at positive values since early 2010 (Chart 7.4).[24]

Chart 7.3

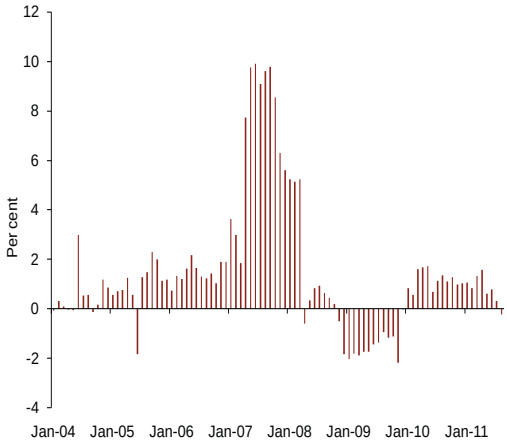
EMPIRICAL DISTRIBUTION OF YEAR-ON-YEAR RATES OF CHANGE IN HICP COMPONENTS



Sources: Eurostat and Banco de Portugal.

Chart 7.4

SKEWNESS OF THE DISTRIBUTION OF YEAR-ON-YEAR CHANGES IN HICP COMPONENTS



Sources: Eurostat and Banco de Portugal.

24 A positive (negative) degree of skewness is associated with a higher frequency of major positive (negative) price changes in relation to major negative (positive) changes.

Maintenance of the upward trend in import prices, particularly commodity prices

Energy and non-energy commodity prices in international markets remained on an upward path in the first half of 2011, following the trend observed since mid-2010 (Table 7.1). The reversal of the downward trend in commodity prices as of 2010 reflects improvements in the Portuguese economy's external environment, with an increase in the outlook for growth in major world economies and a gradual recovery in international trade flows, following a sharp contraction in 2009. Structural factors have also contributed to the increase in commodity prices, namely significant activity growth in several emerging and developing economies, which increased and changed the commodity consumption pattern, with particular implications on oil prices.[25] The increase in commodity prices also translated into relatively broad-based growth of goods and services import prices.

Table 7.1

PORTUGAL - MAIN INTERNATIONAL PRICE INDICATORS | RATE OF CHANGE, PER CENT

	2006	2007	2008	2009	2010	2011	
						Q1	Q2
Goods import prices							
Total	4.8	1.2	4.7	-9.8	5.3	11.5	11.5
Total excluding fuels	2.1	1.4	0.4	-5.2	1.5	10.9	10.0
Consumer goods	1.6	-0.1	-0.2	-3.8	-1.8	7.9	5.5
Food consumer goods	1.0	-1.9	-3.0	-3.4	-2.5	17.8	16.9
Non-food consumer goods	1.0	-1.9	-3.0	-3.4	-2.5	1.6	-1.9
International commodity prices							
Oil prices (Brent Blend), EUR	19.0	0.4	26.6	-33.2	35.4	37.7	29.8
Non-energy commodity prices, EUR	25.5	8.5	4.8	-18.8	34.0	38.7	17.2
Food commodity prices, EUR	6.3	21.3	24.3	-10.4	15.0	48.7	29.7
Nominal effective exchange rate index for Portugal	0.0	0.9	1.2	0.4	-1.7	-1.2	0.8

Sources: Eurostat, HWWI, *INE*, Thomson Reuters and Banco de Portugal.

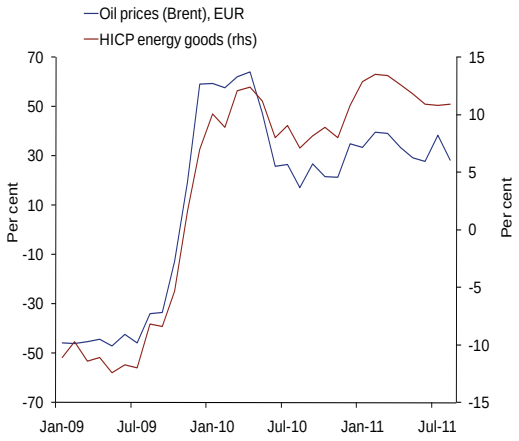
In the first eight months of 2011, oil prices rose sharply, maintaining the robust pace of growth observed in 2010. In addition to the abovementioned factors, oil prices also reflected supply-side factors, such as geopolitical tensions in the Middle East and North Africa as of January 2011 and insufficient production by OPEC countries. Between January and August 2011, changes in the price of oil in euro stood at 33.5 per cent, after a 35.4 per cent increase in 2010 and a 33.2 per cent decline in 2009 (Chart 7.5 and Table 7.1). The marked acceleration in energy prices (12.1 per cent change in the first eight months of 2011), typically with relatively less elastic demand in the short run, reflected the price of products more directly influenced by price oil developments, such as fuels and lubricants (15.6 per cent increase up to August, after a 12.8 per cent growth in 2010 as a whole). With regard to prices subject to regulation, the price of gas, which usually follows oil price developments, rose by 12.3 per cent up to August (10.3 per cent in 2010), while the price of electricity grew more moderately, by 4.5 per cent (3.1 per cent in 2010).

Food commodity prices also increased significantly in the first half of 2011, with an impact on food import prices. In line with these developments, there was an increase in food prices (Chart 7.6 and Table 7.2). Unprocessed food prices, which are typically more volatile, have decelerated since May compared with

25 In 2010 world oil demand rose by 3.4 per cent – the highest increase since 2004. Although the International Monetary Fund projections point to a deceleration in demand in 2011 (1.7 per cent), growth is likely to remain robust in emerging and developing economies, where a 3.8 per cent increase is expected (5.2 per cent in 2010). In addition, oil demand by China will continue to be very buoyant, and is projected to grow by 6.4 per cent in 2011 (11.9 per cent in 2010), reflecting the trend to replace electricity for oil as the main energy source in many sectors of activity.

Chart 7.5

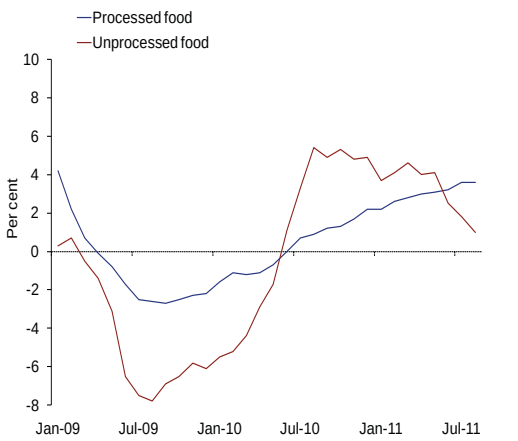
ENERGY PRICES | YEAR-ON-YEAR RATE OF CHANGE



Sources: Eurostat and Tomsom Reuters.

Chart 7.6

FOOD PRICES | YEAR-ON-YEAR CHANGE, PER CENT



Source: Eurostat

the end of 2010 and the first months of 2011, particularly in the case of fruit and vegetable prices.[26] As regards processed food, the upward profile of prices largely reflected changes in indirect taxes, impacting on the price of tobacco, although the acceleration of this aggregate was broadly based across components, excluding the prices of milk, cheese and eggs, which have recorded negative year-on-year changes since early 2011.[27] After the falls seen since 2007, largely associated with the growing integra-

Table 7.2

HICP - MAIN CATEGORIES AND AGGREGATES | AVERAGE ANNUAL AND YEAR-ON-YEAR RATES OF CHANGE, PER CENT

	Weights 2010	2007	2008	2009	2010	2011	Year-on-year rate of change 2010		2011	
		Dec	Dec	Dec	Dec	Aug	Dec	Mar	Jun	Aug
Total	100.0	2.4	2.7	-0.9	1.4	3.1	2.4	3.9	3.3	2.8
Total excluding energy	88.3	2.3	2.2	-0.2	0.3	2.0	1.3	2.5	2.2	1.6
Total excluding unprocessed food and energy	79.0	2.2	2.5	0.3	0.3	1.8	0.9	2.3	2.2	1.7
Goods	57.9	2.2	2.4	-2.4	1.7	3.8	3.4	4.9	3.9	3.1
Food	20.6	2.8	4.2	-2.5	0.4	3.1	3.4	3.6	2.8	2.4
Unprocessed	9.3	3.0	0.6	-4.3	0.7	3.8	4.9	4.6	2.5	1.0
Processed	11.3	2.6	8.1	-0.9	0.2	2.5	2.2	2.8	3.2	3.6
Industrial	37.3	1.9	1.4	-2.3	2.4	4.2	3.4	5.6	4.5	3.6
Non-energy	25.6	1.4	-0.2	-0.8	-0.7	0.9	0.0	1.8	1.4	-0.1
Energy	11.7	3.5	6.6	-8.0	9.5	11.1	10.8	13.4	10.9	10.9
Services	42.1	2.8	3.1	1.3	1.0	2.0	1.1	2.5	2.5	2.3
Memo:										
CPI	-	2.5	2.6	-0.8	1.4	3.1	2.5	4.0	3.4	2.9
HICP - Euro area	-	2.1	3.3	0.3	1.6	2.4	2.2	2.7	2.7	2.5

Sources: Eurostat and *INE*.

26 Since the second half of 2010, unprocessed food prices have accelerated sharply. This trend continued over the first months of 2011 and is likely associated with the break in the production of various crops that were particularly affected by adverse weather conditions. However, the prices of these goods have decelerated since May and, according to the current projections, this trend is likely to continue up to the end of the year. Over the first eight months of 2011, changes in unprocessed food prices stood at 3.2 per cent (0.7 per cent in 2010 as a whole).

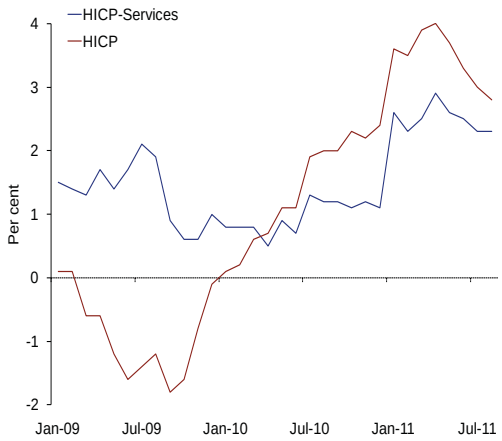
27 Processed food prices rose by 3.0 per cent up to August, compared with a 0.2 per cent increase in 2010. As regards processed food, stress should be laid on the sharp increase in the price of tobacco, which accounts for around 20 per cent of this aggregate, with an 11.0 per cent change in the first eight months of 2011 (5.1 per cent in 2010).

tion in world trade of countries with low unit labour costs, import prices of non-food consumer goods recorded changes close to zero in the first half of 2011.

The current estimates point to an acceleration in services prices in 2011. Over the first eight months of 2011, services price changes stood at 2.0 per cent, after a 1 per cent increase in 2010 as a whole (Chart 7.7). This largely reflects the impact of increases in VAT and in the price of a number of services subject to regulation, in a context where positive changes are expected in unit labour costs, following a decrease in 2010. Underlying the current projection for 2011 is an acceleration in services prices in the second half of the year largely conditioned by the significant increase in transport services prices in August. The prices of some services will also tend to directly or indirectly reflect rises in other goods prices through transmission mechanisms whose magnitude and speed vary depending on market structure, such as supply and demand elasticity, regulation levels and competition. In particular, the acceleration in fuel and lubricant prices will gradually tend to be transmitted to transport services prices, despite the strong administered component in this type of services, particularly as regards the significant increase in air transport services prices over the first eight months of 2011, following a decrease in 2010.[28] In turn, developments in the price of some tourism sector-related services will also tend to reflect the slowdown in external demand and, most crucially, the marked drop in domestic demand in 2011. Stress should be laid, in particular, on the significant decline in accommodation services prices, after an increase in 2010.[29]

Chart 7.7

SERVICES PRICES | YEAR-ON-YEAR CHANGE, PER CENT



Source: Eurostat.

Higher unit labour costs, amid a significant drop in productivity per employee

According to Banco de Portugal estimates, unit labour costs in Portugal are likely to rise by 0.9 per cent in 2011, after a decline in 2010. This largely reflects a drop in productivity per employee, amidst a significant contraction in economic activity and a further decline in total employment. In turn, compensation per employee in total economy is likely to decline somewhat in 2011, following an average increase by 1.4 per cent in 2010, mirroring adverse labour market conditions.

28 Over the first eight months of 2011, air transport services prices rose by 9.8 per cent, after a 1.3 per cent decrease in 2010 as a whole.

29 Over the first eight months of 2011, accommodation services prices dropped by 10.2 per cent, after a 7.1 per cent increase in 2010.

Developments in compensation per employee in total economy reflect a 5 per cent decrease, on average, in civil servant wages, in the context of the fiscal consolidation process, and a lower increase in the national minimum wage in 2011 (2.1 per cent, compared with 5.6 per cent in 2010). In turn, amid deterioration in labour market conditions, with the unemployment rate reaching historical highs, compensation growth in the private sector as a whole is also estimated to decelerate significantly (1.2 per cent, after 2.2 per cent in 2010). However, some positive bias in aggregate compensation is expected, associated with a composition effect stemming from a change in the employment structure, which typically occurs in a cyclical downturn and results from a decline in the weight of low-paid and, possibly, less-skilled workers.

In the euro area, there should also be an increase in unit labour costs in 2011, similar to that projected for Portugal, according to European Commission projections.[30] Hence, the differential between unit labour cost growth in Portugal and in the euro area, which has been negative over the past few years, is likely to stand close to zero in 2011 (Chart 7.8). Underlying the projection for unit labour cost growth in the euro area is an acceleration in compensation per employee compared with 2010. In turn, productivity per employee in the euro area is likely to show further positive changes in 2011, although below those of 2010, amidst a slight recovery in total employment.

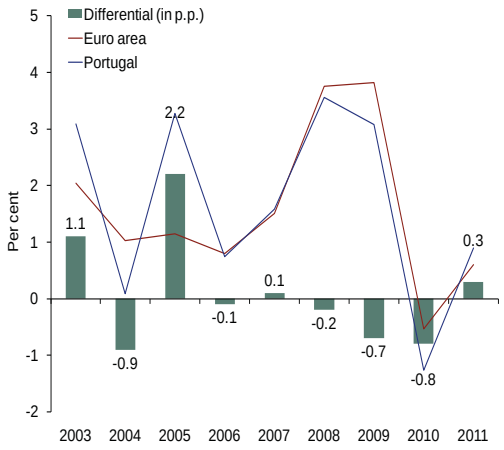
In an environment of weak demand, companies may initially face some compression in their profit margins in response to higher import prices, increases in direct and indirect taxes or a rise in credit costs. Moreover, companies may opt for cutting other costs, including wage costs, to mitigate the impact on profit margins. According to available data, in 2011 corporate profit margins are expected to contract, following an increase in 2010.

Acceleration in prices perceived correctly by consumers

The acceleration in prices in the course of 2011 seems to be duly perceived by consumers, with economic agents' inflation expectations for a 12-month horizon following an equally upward path (Chart 7.9). In the euro area, there was also an increase in inflation expectations for a 12-month horizon, with values similar to those for Portugal (Chart 7.10).

Chart 7.8

UNIT LABOUR COSTS IN TOTAL ECONOMY - PORTUGAL AND THE EURO AREA | RATE OF CHANGE

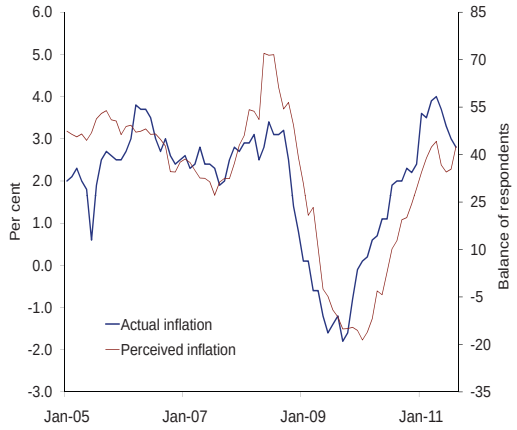


Sources: European Commission, *INE* and Banco de Portugal.

30 European Commission, "European Economic Forecast – Spring 2011", May 2011.

Chart 7.9

CONSUMERS' PERCEPTION OF PRICE DEVELOPMENTS | YEAR-ON-YEAR CHANGE, PER CENT

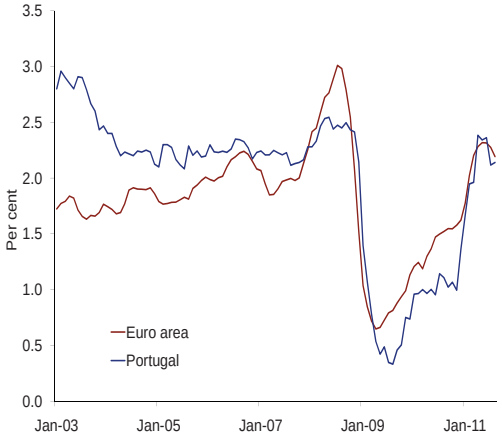


Sources: Eurostat and European Commission.

Note: The balance of respondents taken from the question on the assessment by consumers of price developments in the past 12 months within the consumer survey published by the European Commission was used as a measure of perceived inflation.

Gráfico 7.10

INFLATION EXPECTATIONS IN PORTUGAL AND THE EURO AREA | EXPECTATIONS FOR A 12-MONTH HORIZON



Sources: Consensus Forecasts and Banco de Portugal calculations.

Gradual narrowing of the positive inflation differential vis-à-vis the euro area

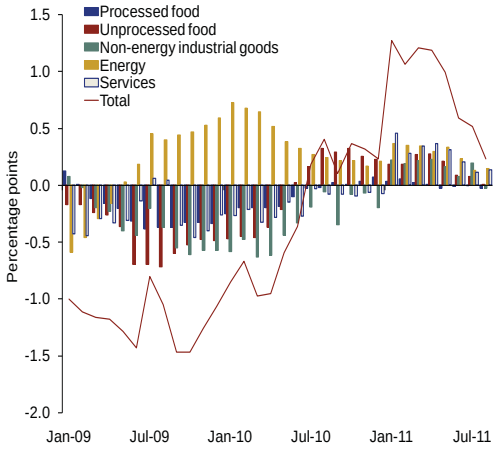
After negative values in 2008 and 2009, the inflation differential between Portugal and the euro area, measured on the basis of the year-on-year change in the HICP, widened gradually as of end-2009, entering into positive territory in the second half of 2010 (Chart 7.11). However, after an increase in early 2011, this differential has been progressively lower.[31] This behaviour was observed across all major HICP components, particularly tourism sector-related services (accommodation services and package holidays) and some unprocessed food, such as fruit and vegetables. Turning to administered goods prices, the respective growth differential *vis-à-vis* the euro area also widened significantly in January, from -0.5 p.p. to 0.8 p.p., largely reflecting the increase in the price of hospital services and pharmaceutical products. Following an increase at the beginning of the year, the differential remained stable up to July. However, in August, it widened again, from 0.6 p.p. in July to 1.5 p.p., reflecting the significant increase in administered goods prices in Portugal.[32]

31 The inflation differential *vis-à-vis* the euro area dropped to historical lows in September and October 2009 (-1.5 p.p.), starting on an upward path from then onwards, up to January 2011 (1.3 p.p.). Since February, the inflation differential has narrowed progressively, to stand at 0.3 p.p. in August.

32 These results are based on the new series of administered prices, published by Eurostat since February 2010 (see http://epp.eurostat.ec.europa.eu/portal/page/portal/hicp/methodology/administered_prices).

Chart 7.11

BREAKDOWN OF THE DIFFERENTIAL BETWEEN THE YEAR-ON-YEAR CHANGE IN HICP FOR PORTUGAL AND THE EURO AREA | DIFFERENTIAL IN PERCENTAGE POINTS



Source: Eurostat.

8. Balance of payments

8.1. External borrowing requirements in 2011

External borrowing requirements expected to decline in 2011

In 2011 net external borrowing of the Portuguese economy as a percentage of GDP, which generally corresponds to the combined current and capital account deficit, is expected to decline further (Table 8.1.1 and Chart 8.1.1). According to the current projections, the improvement in the external deficit is likely to result mainly from a further reduction in investment, given that domestic savings are expected to be relatively stable.

Table 8.1.1

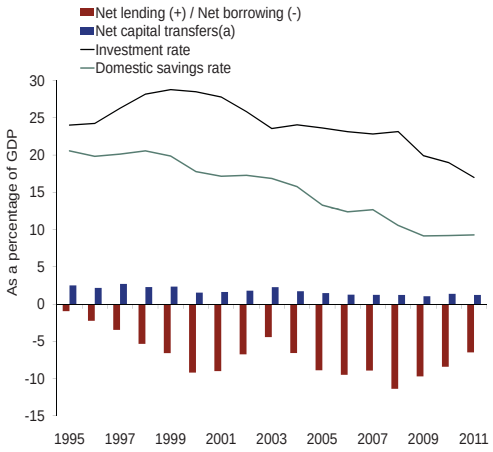
CURRENT AND CAPITAL ACCOUNTS | BALANCES AS A PERCENTAGE OF GDP

				1st half of the year		
	2009	2010	2011(a)	2009	2010	2011
Current and capital account	-10.1	-8.9	-6.9	-10.3	-10.8	-8.5
Current account	-10.9	-10.0	-	-11.3	-11.4	-9.3
Goods and services account	-7.0	-6.6	-4.2	-7.4	-7.7	-5.3
Goods	-10.6	-10.5	-	-10.1	-10.6	-8.7
Services	3.6	3.9	-	2.7	2.8	3.4
of which:						
Travel and tourism	2.5	2.7	-	1.7	1.8	2.0
Income account	-5.2	-4.6	-	-4.9	-4.6	-6.0
Current transfers	1.3	1.3	-	1.0	1.0	2.0
of which:						
Emigrants/immigrants remittances	1.0	1.1	-	0.9	1.0	0.9
Capital account	0.8	1.1	-	1.0	0.6	0.8

Sources : *INE* and Banco de Portugal.
Note: (a) Banco de Portugal projections.

Chart 8.1.1

ECONOMY FINANCING



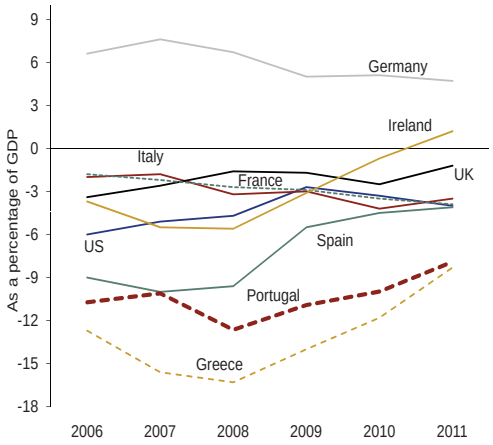
Sources: *INE* and Banco de Portugal.
Note: (a) Includes acquisitions less disposals of non-financial non-produced assets.

The economic and financial adjustment programme associated with the request for financial assistance agreed with the European Union, euro area countries and the IMF, translated in the need for both fiscal consolidation and a non-postponable correction of macroeconomic imbalances, is propitious in the near future to an increase in domestic savings and a decrease in external borrowing requirements. Despite recent improvements, the current account deficit remains high (as a percentage of GDP) compared with other economies (Chart 8.1.2).

The decline in the balance of payments deficit in 2011, from 8.9 to 6.9 per cent of GDP (Table 8.1.1), is likely to have mainly resulted from both a significant improvement in the goods and services account (by 2.4 percentage points of GDP) and an increase in the current transfers balance. In turn, the income account deficit is expected to deteriorate. The capital account balance is expected to present slight changes from the previous year. The lower goods and services deficit is projected to mainly result from

Chart 8.1.2

CURRENT ACCOUNT BALANCE | AS A PERCENTAGE OF GDP



Sources: European Commission and Banco de Portugal.

a positive volume effect associated with a much wider growth differential between exports and imports compared with the previous year, as a result of a further marked increase in Portuguese exports (albeit decelerating from the previous year), in contrast to the fall in imports (see "Section 6. Demand"). In turn, the energy component is expected to further contribute negatively to developments in the goods and services account, associated with the marked increase in fuel prices estimated for 2011 (as in 2010).

8.2. The balance of payments in the first half of 2011

External deficit declined as a result of improvements in the goods and services, current transfers and capital account balance, although the income account deficit increased

In the first half of 2011, the combined current and capital account deficit stood at 8.5 per cent of GDP, accounting for a 2.3 percentage point declined from the same period in 2010 (Table 8.1.1). This improvement was mainly due to the behaviour of the goods and services account, reflecting both a decline in the goods account deficit and an increase in the services account surplus. Moreover, the combined current transfers and capital account balances improved in the first half of 2011, when compared with the same period in 2010, mainly due to an increase in public transfers from the European Union (Chart 8.2.1). Conversely, the income account deficit increased in the first half of the year.

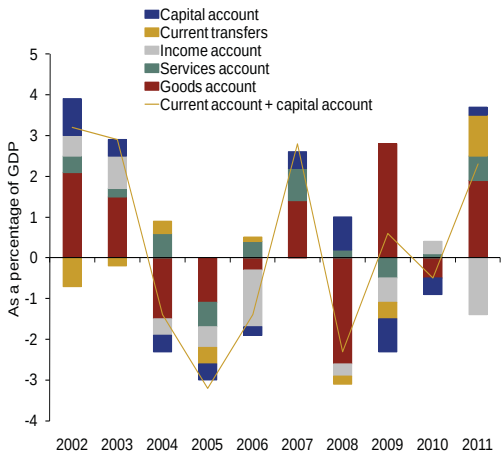
Over this period, the balance of payments deficit was largely funded by capital inflows resulting from the loan obtain under the international financial assistance programme, as well as sizeable sales of foreign assets, particularly by banks.

Lower goods and services account deficit reflecting, in particular, dynamic export growth together with a slowdown in imports

Turning to the goods and services account, it was registered a significant improvement in the first half of 2011 compared with the same period of the previous year, with the deficit falling from 7.7 to 5.3 per cent of GDP. This decline in the goods and services deficit was mainly due to the non-energy goods component but also to services component (Chart 8.2.2). In contrast, the energy component contributed negatively to changes in the goods and services account balance, reflecting a negative price effect.

Chart 8.2.1

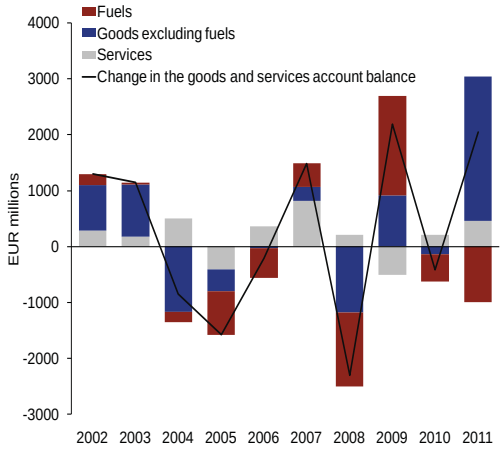
BREAKDOWN OF CHANGES IN THE CURRENT AND CAPITAL ACCOUNT BALANCE | 1ST HALF OF THE YEAR



Sources: *INE* and Banco de Portugal.

Chart 8.2.2

CHANGE IN THE GOODS AND SERVICES ACCOUNT BALANCE | 1ST HALF OF THE YEAR; BREAKDOWN INTO SERVICES, FUELS AND GOODS EXCLUDING FUELS

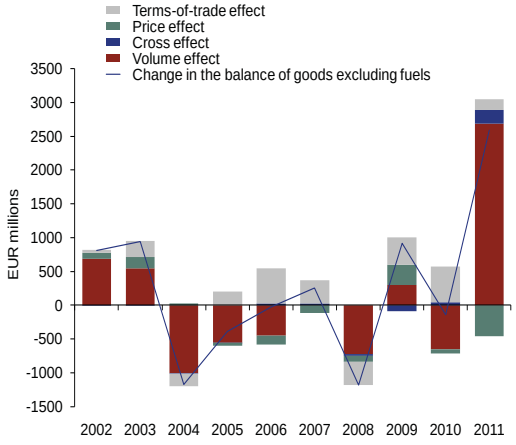


Sources: *INE* and Banco de Portugal.

Indeed, fuel prices grew strongly again in the first half of 2011 (more than 30 per cent, in year-on-year terms), which had a negative impact on the energy account balance. With regard to the goods account balance excluding fuels, the lower deficit mirrors a positive, substantial volume effect (Chart 8.2.3), associated with the robust pace of export growth and the lower import volume. The services account

Chart 8.2.3

CHANGES IN THE BALANCE OF GOODS EXCLUDING FUELS | 1ST HALF OF THE YEAR; BREAKDOWN INTO VOLUME, PRICE AND TERMS-OF-TRADE EFFECTS



Sources: *INE* and Banco de Portugal.

Note: A positive (negative) change means an increase (decrease) in the balance of goods excluding fuels. The change in the balance of goods excluding fuels 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 and import prices in t; p_t is the average rate of change in external trade prices in year t ($(px_t + pm_t)/2$).

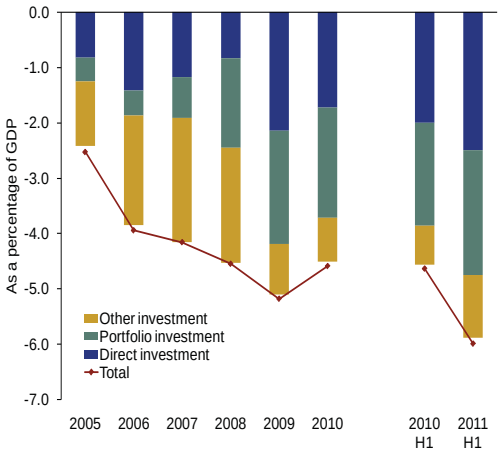
surplus increased in the first half of 2011, compared with the same period in 2010. This also resulted from a volume effect associated with a positive differential between export and import growth, particularly in the tourism component.

Income account deficit increased as a result of a broad-based deterioration across all components

In the first half of the year, the income account deficit was higher than in the same period in 2010, picking up the worsening trend seen over the past few years, which was interrupted in 2010. To this deterioration in the balance contributed the three main income account components (direct, portfolio and other investment income), particularly the first two components (Chart 8.2.4). Direct and portfolio investment income balances decreased, as a percentage of GDP, compared with the same period in the previous year, reflecting an increase in income payments to abroad, mainly dividends (which are typically paid in the first half of the year) to non-resident enterprises, in virtue of their participation in the equity of resident enterprises in the form of direct investment and other capital contributions. In the case of income from other investment, the deterioration in the deficit was due to the increase in payments to abroad linked to payment of loans interests, due to higher interest rates and a rise in risk premia.

Chart 8.2.4

INCOME ACCOUNT BALANCE AND MAIN COMPONENTS



Sources: *INE* and Banco de Portugal.

8.3 Financial account and international investment position in the first half of 2011

Strong net inflows of external funds into general government associated with the loan made under the international financial assistance programme

In the first half of 2011, general government financing flows with non-residents reversed markedly, *i.e.* with net inflows of 12.3 per cent of GDP, contrasting with net outflows of 5.5 per cent of GDP in the first half of 2010. This was mainly due to the first disbursements of the loan made under the international financial assistance programme (Table 8.3.1).[33] In terms of registration in the financial account, these disbursements translated into an increase in other investment liabilities in this sector. Conversely, there was a significant reduction of general government portfolio investment liabilities. This resulted from a marked increase in the risk premium demanded by international investors for holding Portuguese debt securities, against a background of growing risk differentiation in euro area sovereign debt markets, which strongly conditioned the capacity to place Portuguese government debt securities with non-resident entities.

Sharp reduction of banks' liabilities to non-residents, partly offset by the substantial decline in assets on non-residents

As regards banks (other monetary financial institutions), portfolio investment liabilities and, in particular, other investment abroad declined significantly. This reflected the difficulties faced by Portuguese banks in access to international wholesale debt securities markets, particularly over the medium and long maturities, and the sharp reduction of deposits of non-residents held with the resident banks. Over this period, there was also a substantial decline in Portuguese banks' assets on non-residents, namely bonds and other medium and long-term debt securities and loans and deposits. Developments in flows of Portuguese banks' liabilities to and assets on non-residents are consistent with the expected reaction against a background of significant limitation on access to international wholesale debt markets, *i.e.* it can be expected that resident sectors will seek to compensate the decline in financing from non-residents with a reduction of assets on non-residents.[34] Mention should also be made to the slight decrease in the TARGET[35] position of monetary authorities mirroring the virtual stabilisation of the recourse by banks to Eurosystem financing, which contrasts with the strong increase seen in the first half of 2010 (Chart 8.3.1). This reflects the balance sheet adjustment by banks, on the one hand, by reducing assets on non-residents and, on the other hand, by narrowing the loan-to-deposits ratio, despite the marked decline in deposits by non-residents.

Reversal of financing flows of non-monetary financial institutions with non-residents, particularly due to a substantial decline in assets on non-residents

In the first half of 2011, non-monetary financial institutions financing flows with non-residents reversed, with net inflows of 2.4 per cent of GDP, compared with net outflows of 3.8 per cent of GDP in the first half of the previous year. To this reversal contributed the disinvestment in long-term debt securities by insurance companies and pension funds and, to a lesser extent, by mutual funds. These outflows were partly offset by the early redemption of securitisation units.

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33 See "Box *The economic and financial adjustment programme under the request for financial assistance to the European Union, the member countries of the euro area and the International Monetary Fund*", Banco de Portugal, Annual Report 2010.

34 For more details on the financing conditions of the Portuguese economy, see "Section 3.2 *Monetary and financial conditions of the Portuguese economy*", of this Bulletin.

35 Trans-European Automated Real-time Gross settlement Express Transfer system for the euro, i.e. a system for payments and receipts by Banco de Portugal to/from central banks belonging to the ESCB.

Table 8.3.1

FINANCIAL ACCOUNT | AS A PERCENTAGE OF GDP

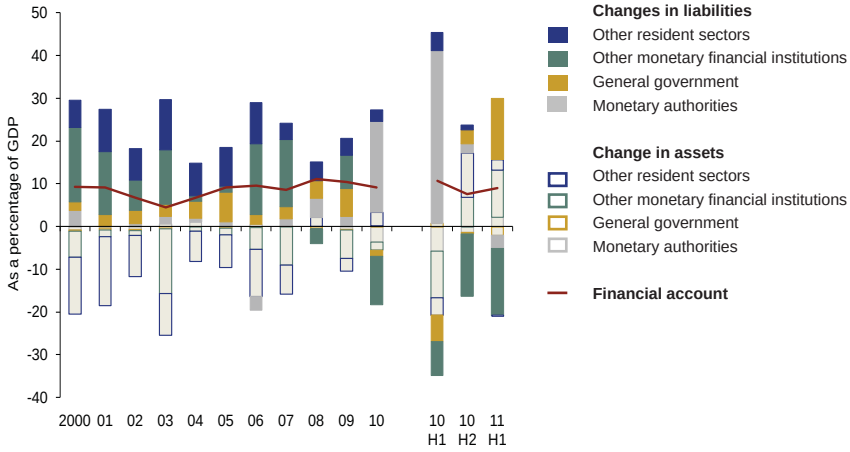
	Jan-Jun 2010 Changes			Jan-Jun 2011 Changes		
	Liabilities	Assets	Net	Liabilities	Assets	Net
Current plus capital accounts			**-10.8**			**-8.5**
Financial account	**12.3**	**-1.6**	**10.7**	**-15.8**	**24.7**	**8.9**
Direct investment	1.9	-1.5	0.4	1.8	-4.5	-2.7
excluding Madeira and St. Maria (Azores) offshores	*1.6*	*-1.1*	*0.5*	*2.2*	*-4.8*	*-2.6*
Portfolio investment	-8.5	-11.9	-20.3	-15.8	17.5	1.6
Financial derivatives	-18.2	18.6	0.4	-11.0	11.8	0.8
Other investment	37.1	-6.0	31.0	9.2	-0.5	8.7
Reserve assets		-0.8	-0.8		0.4	0.4
By institutional sector of resident investor:						
Monetary authorities	**40.3**	**-5.6**	**34.6**	**-3.1**	**2.3**	**-0.8**
Portfolio investment	0.0	-5.7	-5.7	0.0	1.8	1.8
Financial derivatives	-0.1	0.0	0.0	-0.1	0.0	0.0
Other investment	40.3	0.8	41.2	-3.1	0.0	-3.1
Reserve assets		-0.8	-0.8		0.4	0.4
General government	**-14.9**	**9.4**	**-5.5**	**10.3**	**2.0**	**12.3**
Direct investment	0.0	0.0	0.0	0.0	0.0	0.0
excluding Madeira and St. Maria (Azores) offshores	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Portfolio investment	-6.3	0.1	-6.1	-9.3	0.5	-8.8
Financial derivatives	-8.6	9.3	0.7	-4.0	4.2	0.2
Other investment	0.0	0.0	0.0	23.6	-2.7	20.8
Other monetary financial institutions	**-15.5**	**-3.3**	**-18.8**	**-20.9**	**16.2**	**-4.7**
Direct investment	0.0	-0.3	-0.3	0.1	-0.1	-0.1
excluding Madeira and St. Maria (Azores) offshores	*0.0*	*-0.3*	*-0.3*	*0.1*	*-0.1*	*-0.1*
Portfolio investment	-2.3	-4.6	-6.9	-5.2	6.5	1.3
Financial derivatives	-7.6	7.5	-0.2	-5.3	5.8	0.5
Other investment	-5.6	-5.8	-11.4	-10.5	4.1	-6.4
Non-monetary financial institutions	**-3.3**	**-0.5**	**-3.8**	**-4.4**	**6.9**	**2.4**
Direct investment	-0.2	0.0	-0.1	0.0	-0.6	-0.5
excluding Madeira and St. Maria (Azores) offshores	*-0.2*	*0.0*	*-0.2*	*0.0*	*-0.6*	*-0.6*
Portfolio investment	-2.7	-0.5	-3.2	-4.2	7.5	3.3
Financial derivatives	-0.5	0.3	-0.2	-0.3	0.3	0.1
Other investment	0.0	-0.4	-0.4	0.1	-0.4	-0.4
Non-financial corporations	**6.0**	**-0.2**	**5.8**	**2.7**	**-2.8**	**-0.1**
Direct investment	2.0	-1.2	0.8	1.7	-3.8	-2.1
excluding Madeira and St. Maria (Azores) offshores	*1.7*	*-0.8*	*1.0*	*2.1*	*-4.1*	*-1.9*
Portfolio investment	2.8	-0.5	2.2	2.9	1.1	4.0
Financial derivatives	-1.1	1.2	0.1	-1.1	1.2	0.1
Other investment	2.3	0.3	2.7	-0.8	-1.4	-2.2
Households	**-0.3**	**-1.3**	**-1.7**	**-0.3**	**0.2**	**-0.1**
Direct investment	0.0	0.0	0.0	0.0	0.0	0.0
excluding Madeira and St. Maria (Azores) offshores	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*	*0.0*
Portfolio investment	0.0	-0.7	-0.7	0.0	0.0	0.0
Financial derivatives	-0.3	0.3	0.0	-0.3	0.3	0.0
Other investment	0.0	-0.9	-1.0	0.0	-0.1	-0.1
Errors and omissions			**0.1**			**-0.5**

Sources: *INE* and Banco de Portugal.

Note: 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.

Chart 8.3.1

FINANCIAL ACCOUNT | BALANCE AND CHANGES IN ASSETS AND LIABILITIES BY INSTITUTIONAL SECTO



Sources: *INE* and Banco de Portugal.

Note: 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. Figures for "Other investment of monetary authorities and other monetary financial institutions" are adjusted for temporary end-year operations between these two sectors, which were reversed in the first days of the following year. The change in assets includes financial derivatives net of liabilities.

Virtual stabilisation of external flows of funds through non-financial corporations

In the first half of 2011, the external financing of non-financial corporations was associated with portfolio investment inflows. Indeed, liabilities in this financial instrument increased, largely due the purchase by non-residents of commercial paper of a major energy company in Portugal. In turn, the decline in portfolio investment assets also contributed to inflows into this sector and was mostly associated with disinvestment in equity capital by one company belonging to a major banking financial group. Conversely, net outflows within the non-financial corporate sector were mainly due to the increase in direct investment net assets, which reflected the acquisition of capital holdings from a large non-resident company. This operation involved two telecommunication companies.

Decrease in the international debt position of the Portuguese economy in the first half of 2011 as a result of strong fluctuations in the value of financial instruments in international financial markets, notwithstanding the high combined current and capital account deficit

The (net) debtor position of the Portuguese economy *vis-à-vis* the rest of the world decreased, standing at 104.5 per cent of GDP at the end of the first half of 2011 (Table 8.3.2 and Chart 8.3.2).[36] This fall resulted from sharp negative changes in the value of portfolio investment liabilities, in particular the decline in the value of Portuguese public debt securities, mainly Treasury bonds, reflecting their price in the secondary market. Similarly to the previous year, improvements in the international investment position of the Portuguese economy coexisted with the maintenance of a substantial combined current and capital account deficit.

36 Using the GDP for the year ending in the first half of 2011.

Table 8.3.2

INTERNATIONAL INVESTMENT POSITION

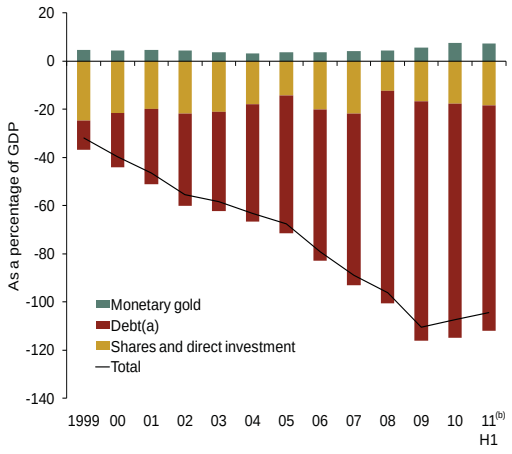
	EUR millions							As a percentage of GDP		
	2009	2010	June 2011					2009	2010	June 2011[c]
	End-of-period positions		Transactions	Price changes	Exchange rate changes	Other adjustments	End-of-period positions	End-of-period positions		
International investment position	**-186 315**	**-185 572**	**-7 715**	**13 487**	**-917**	**-220**	**-180 936**	**-110.5**	**-107.4**	**-104.5**
Direct investment[a]	-32 097	-34 152	2 298	-949	-627	-25	-33 455	-19.0	-19.8	-19.3
Portfolio investment	-70 050	-50 865	-1 392	14 231	-484	-1	-38 511	-41.6	-29.4	-22.2
Financial derivatives	-444	-1 131	-728	357	0	0	-1 502	-0.3	-0.7	-0.9
Other investment[b]	-94 822	-115 141	-7 539	0	326	-193	-122 548	-56.2	-66.6	-70.7
Reserve assets	11 096	15 717	-355	-151	-132	0	15 079	6.6	9.1	8.7
By institutional sector of resident investor:										
Monetary authorities	**3 822**	**-22 945**	**719**	**-227**	**-165**	**-9**	**-22 627**	**2.3**	**-13.3**	**-13.1**
Portfolio investment	13 589	18 438	-1 590	-66	-17	0	16 765	8.1	10.7	9.7
Financial derivatives	3	1	9	-10	0	0	0	0.0	0.0	0.0
Other investment[b]	-20 867	-57 101	2 656	0	-17	-9	-54 471	-12.4	-33.0	-31.4
Reserve assets	11 096	15 717	-355	-151	-132	0	15 079	6.6	9.1	8.7
General government	**-100 931**	**-88 208**	**-10 606**	**14 560**	**-66**	**-1**	**-84 320**	**-59.9**	**-51.0**	**-48.7**
Direct investment[a]	-173	-173	0	0	0	0	-173	-0.1	-0.1	-0.1
Portfolio investment	-96 403	-84 181	7 586	14 525	-35	-1	-62 107	-57.2	-48.7	-35.9
Financial derivatives	-47	112	-199	36	0	0	-52	0.0	0.1	0.0
Other investment[b]	-4 308	-3 966	-17 993	0	-31	0	-21 989	-2.6	-2.3	-12.7
Other monetary financial institutions	**-77 893**	**-56 223**	**4 050**	**-224**	**434**	**415**	**-51 549**	**-46.2**	**-32.5**	**-29.8**
Direct investment[a]	3 001	4 564	50	26	42	0	4 683	1.8	2.6	2.7
Portfolio investment	-1 328	6 186	-1 106	-448	-181	325	4 775	-0.8	3.6	2.8
Financial derivatives	-382	-1 146	-437	198	0	0	-1 386	-0.2	-0.7	-0.8
Other investment[b]	-79 184	-65 827	5 544	0	572	90	-59 621	-47.0	-38.1	-34.4
Non-monetary financial institutions	**6 053**	**3 800**	**-2 104**	**-285**	**-204**	**-325**	**881**	**3.6**	**2.2**	**0.5**
Direct investment[a]	-11 435	-11 366	462	0	-10	0	-10 914	-6.8	-6.6	-6.3
Portfolio investment	18 271	14 765	-2 823	-374	-116	-325	11 127	10.8	8.5	6.4
Financial derivatives	-1	-103	-57	89	0	0	-71	0.0	-0.1	0.0
Other investment[b]	-782	505	314	0	-79	0	740	-0.5	0.3	0.4
Non-financial corporations	**-35 855**	**-42 202**	**129**	**-260**	**-835**	**-299**	**-43 468**	**-21.3**	**-24.4**	**-25.1**
Direct investment[a]	-23 508	-27 182	1 779	-976	-693	-25	-27 096	-13.9	-15.7	-15.6
Portfolio investment	-15 798	-18 712	-3 462	666	-43	0	-21 551	-9.4	-10.8	-12.4
Financial derivatives	3	4	-48	50	0	0	6	0.0	0.0	0.0
Other investment[b]	3 448	3 687	1 860	0	-99	-274	5 174	2.0	2.1	3.0
Households	**18 488**	**20 206**	**97**	**-76**	**-80**	**0**	**20 146**	**11.0**	**11.7**	**11.6**
Direct investment[a]	18	5	7	0	33	0	45	0.0	0.0	0.0
Portfolio investment	11 620	12 640	3	-70	-93	0	12 480	6.9	7.3	7.2
Financial derivatives	-21	1	5	-6	0	0	0	0.0	0.0	0.0
Other investment[b]	6 871	7 560	81	0	-20	0	7 621	4.1	4.4	4.4

Sources: *INE* and Banco de Portugal.

Notes: (a) Includes quarterly estimates by Banco de Portugal based on the accumulation of monthly flows and the latest annual data obtained from Direct Investment Surveys. **(b)** Includes, in some components, quarterly estimates by Banco de Portugal based on the accumulation of monthly flows. **(c)** Using the GDP for the year ending in the first half of 2011.

Chart 8.3.2

INTERNATIONAL INVESTMENT POSITION



Sources: *INE* and Banco de Portugal.

Notes: (a) Includes debt securities, other investment, financial derivatives, participation units in mutual fund, securitisation units and other. This debt concept is different from the one published in Table A.3.2 in the *Statistical Bulletin* of Banco de Portugal, since participation units in mutual funds, securitisation units and other participation securities are recorded as debt. Additionally, the debt concept used here does not include the difference between direct investment assets and liabilities, presented as other capital, regarding available funds and liabilities over subsidiaries and direct investors. In this chart,these elements are included in "Shares and direct investment". As such, this different treatment does not change the total value of the international investment position. **(b)** The GDP for the year ending in the first half of 2011 was used.

9. Conclusion

The Portuguese economy is on the brink of the most far-reaching process of reforms over the last 30 years, with the purpose of adjusting the macroeconomic structural imbalances and creating conditions to resume sustained growth. The improvement in the external deficit in the course of 2011 is expected to extend into forthcoming years. The associated correction of domestic demand, with a fall in private and public consumption, is expected to occur simultaneously with an increase in exports. This reorientation of national production is to take place in the context of the deleveraging process of the private sector, which will certainly allow for a more stable financing structure, with savings rates more in line with the permanent income level expected for the Portuguese economy. Likewise, public finance fragilities require a sustained fiscal consolidation strategy, involving a reassessment of the role of the State in the economy. It is particularly important to gauge the efficiency and the social and economic return of every programme financed by the State Budget, in order to make them compatible with the economic development of the country.

The implementation of growth-promoting structural reforms is essential for the success of the adjustment dynamics. This process may lead to a new institutional framework, where the incentives provided to the agents in different markets will promote the appropriate allocation of the scarce economic and financial resources available. The fact that important sectors have very low competition levels, in tandem with the protection from international competition, has fostered the inefficient growth of non-tradable sectors. These dynamics have translated into less investment in tradable sectors and a still relatively low share of exports.

The recent implementation of structural measures is insufficient. The overriding need for reforms to be implemented in the justice system, the labour and other markets and some key sectors of the domestic economy (for instance, energy and communications) has been faced with lack of understanding by the economic and social agents who reap the benefits of the distortions or lower competition in the markets in question, thus stressing their urgency. These reforms are of the essence to boost the reliance on the endogenous development factors of the economy. Against this background, it is imperative to make use of the increasing qualification of human resources, by stopping the emigration flows of younger generations with very high education levels, while promoting investment in highly innovative and high-growth potential sectors.

In the context of the sovereign debt crisis in the euro area, and from the perspective of a further deceleration in economic activity overall, the pursuance of the economic and financial assistance programme, in its different segments, is crucial to safeguard the external credibility of the Portuguese economy and resume sustained growth rates in the medium term.

OUTLOOK FOR THE PORTUGUESE ECONOMY: 2011-2012[1]

The current projections for the Portuguese economy envisage a contraction of economic activity in 2012 of a larger magnitude than that anticipated for the current year (Table 1), in a context where the continuation of the adjustment of macroeconomic imbalances, namely of fiscal imbalances, will remain a major conditioning factor in the development in domestic demand. Furthermore, the outlook for the international environment incorporated in the current projection considers a slowdown in the world economy as from the second half of 2011, implying a deceleration in exports in 2012. The adjustment of the Portuguese economy is framed by the Economic and Financial Assistance Programme, which will be crucial to ensure sustainable economic growth over the medium to long term and the return to financing in international financial markets. The Programme includes, among other measures, a range of structural reforms to promote the competitiveness of the Portuguese economy, amid a reduction of the indebtedness level of the private sector and a gradual and orderly deleveraging of the banking sector.

These projections are an update of the summer 2011 issue of the *Economic Bulletin*, reflecting information in the meantime released, as regards both recent developments in the Portuguese economy and fiscal measures, and in the international environment. In comparison with the projections published in the summer 2011 issue of the Economic Bulletin, the current projection points to a reduction in economic activity in 2011 close to that previously anticipated, followed by a larger than expected contraction in 2012. The revisions reflect mainly the combination of a less dynamic world economic growth over the projection horizon, a smaller fall in public consumption in 2011 and a larger contraction of private consumption in 2012.

Overall risks to this projection are tilted on the downside for economic activity and are balanced for inflation. This assessment of risks flows from factors that are associated both with the developments in the international environment, and with the fiscal consolidation process, namely as regards the specification

Table 1

PROJECTIONS OF BANCO DE PORTUGAL: 2011-2012 | ANNUAL RATE OF CHANGE, PER CENT

	Weights 2010	EB Winter 2011			EB Summer 2011		
		2010	2011(p)	2012(p)	2010	2011(p)	2012(p)
Gross Domestic Product	100.0	1.4	-1.9	-2.2	1.3	-2.0	-1.8
Private consumption	66.7	2.3	-3.8	-3.6	2.3	-3.8	-2.9
Public consumption	21.4	1.3	-3.3	-4.1	1.2	-6.3	-4.4
Gross fixed capital formation	19.0	-4.9	-11.4	-10.8	-4.9	-10.8	-10.0
Domestic demand	107.2	0.7	-5.2	-4.8	0.6	-5.6	-4.4
Exports	30.9	8.8	6.7	4.8	8.8	7.7	6.6
Imports	38.1	5.1	-4.1	-2.8	5.1	-4.0	-1.2
Contribution to GDP growth (in p.p.)							
Net exports		0.6	3.8	2.7	0.6	4.0	2.8
Domestic demand		0.8	-5.6	-5.0	0.7	-6.0	-4.6
of which: change in inventories		-0.1	-0.2	0.2	-0.1	0.0	0.0
Current plus capital account (% of GDP)		-8.9	-6.9	-3.1	-8.8	-6.4	-4.4
Trade Balance (% of GDP)		-6.6	-4.2	-1.0	-6.5	-3.8	-0.6
Harmonised Index of Consumer Prices		1.4	3.5	2.4	1.4	3.4	2.2

Source: Banco de Portugal.

Notes: (p) – projected. For each aggregate, this table shows the projection corresponding to be the most likely value, conditional on the set of assumptions considered.

1 The outlook for the Portuguese economy is based on information available up to mid-September 2011.

of additional measures required for the full compliance with the fiscal targets to which the authorities are committed. It should be recalled that these projections follow the general rule used in the Eurosystem projection exercises, considering only the fiscal policy measures that have already been approved or those with a high probability of approval, and specified with sufficient detail. In the absence of detailed information for the public expenditure items that are essentially determined by discretionary decisions, but not necessarily defined through a legislative process, their most likely developments are assumed in this projection. The uncertainty surrounding the projection is high, owing to the current international environment marked by the sovereign debt crisis in the euro area.

Sharp deceleration of external demand and maintenance of tight financing conditions

The current projection is based on a set of assumptions on future developments of the variables conditioning the evolution of the Portuguese economy (Table 2).

For the development in worldwide economic activity and international trade, the current assumptions are based on data recently published in the September 2011 issue of the Monthly Bulletin by the European Central Bank and by the International Monetary Fund in the September 2011 issue of the *World Economic Outlook*. Based on these assumptions, the slowdown in the world economy that started in 2011 is projected to continue in 2012. This means weaker external demand over the projection horizon, which notwithstanding is likely to record a significant growth pace.

The technical assumptions for the exchange rates, which consider that they will remain unchanged at the mid-September levels until the end of the projection horizon, imply for 2012 a slight depreciation of the euro, both against the US dollar and in effective terms. According to information available in futures markets, the oil price is expected to fall from around USD 112 per barrel in 2011 to around USD 108 in 2012, in annual average terms, reflecting the prospects of a slowdown in the world economy.

Whereas to financing conditions, the assumptions for the short-term interest rates are based on expectations implicit in the 3-month EURIBOR futures contracts, which imply a stabilisation at a level slightly greater than 1 per cent over the course of 2012. The continuation of tight restrictions referring to bank access to wholesale international financial markets and the gradual and orderly deleveraging process of the domestic banking sector, initiated in mid-2010 and which will last beyond the end of the projection

Table 2

PROJECTION ASSUMPTIONS

		EB Autumn 2011			EB Summer 2011		
		2010	2011	2012	2010	2011	2012
External demand	yoy	9.1	5.4	4.8	8.9	6.3	6.6
Interest rate							
Short-term (3-month EURIBOR)	%	0.8	1.4	1.2	0.8	1.5	2.1
Long-term[(a)]	%	5.4	4.9	3.3	5.4	5.6	5.6
EUR exchange rate							
EUR effective exchange rate	yoy	-6.3	0.0	-0.7	-6.3	0.9	0.4
EUR-USD	aav	1.33	1.40	1.39	1.33	1.42	1.43
Oil price							
in USD	aav	79.6	111.7	108.6	79.6	110.7	109.5
in EUR	aav	60.1	79.5	78.0	60.1	78.1	76.5

Sources: Bloomberg, ECB, Thomson Reuters and Banco de Portugal calculations.

Notes: yoy – year-on-year rate of change, % - per cent, aav - annual average value. An increase in the exchange rate represents an appreciation. **(a)** The assumption for the long-term interest rate in 2010 and in the first quarter of 2011 corresponds to market interest rates. Over the projection horizon, these assumptions are an estimate of the interest rate for the sovereign debt of the Economic and Financial Assistance Programme.

horizon, will imply the maintenance of tight credit standards. Against this background, the spreads between lending rates and the relevant market benchmarks are projected to stabilise over the projection horizon, at levels clearly above those recorded prior to the onset of the international financial crisis in mid-2007.

The assumptions for the long-term interest rates on the sovereign debt consider, as from the second quarter of 2011, an estimate of the average rate of the cost of external financing settled by the European Union, by the euro area countries and by the IMF under the financial assistance programme. This is currently the most relevant interest rate for Portuguese public finances.[2] This estimate incorporates both the updated costs of international financing by the lending institutions, and the revised financing conditions as to the European component of financing resulting from the Extraordinary Summit of Heads of State or Government of the euro area and the European Union institutions held on 21 July 2011.

The current assumptions correspond to a downward revision of external demand and interest rates in comparison to those published in the summer 2011 issue of the *Economic Bulletin*. Furthermore, these assumptions incorporate a slight reduction in the price of oil in 2012 to levels below those considered in the previous *Economic Bulletin*, as well as a slight depreciation of the euro in 2012, in opposition to the previous forecasts.

Projections for public finances follow the general rule used in the Eurosystem projection exercises. The current exercise took on board the measures included in the Programme, as well as the additional measures, subsequently specified in detail, particularly in terms of taxation. As a reflection of the measures included on the expenditure side, the volume of public consumption and public investment is projected to decrease significantly in 2012. Moreover, projections for inflation include the measures relating to the rise in indirect taxes on electricity and natural gas.

Projected decrease of 1.9 per cent in GDP in 2011

The current projections point to a contraction of the Portuguese economy by 1.9 per cent in 2011, reflecting a strong reduction in domestic demand and an increase in exports. Private consumption is expected to recede strongly in the fourth quarter, reflecting inter alia the expected impact of the extraordinary income taxation. Exports are projected to slowdown significant throughout the second half of 2011, in line with the outlook for developments in international demand.

GDP growth for 2011 in the current projection is virtually the same at in the summer 2011 issue of the *Economic Bulletin*. However, in comparison with the previous projection, the current one foresees weaker export growth, in particular in the second half of the year and a smaller reduction in public consumption. The substantial upward revision of public consumption entails from deviations in the budget implementation, in particular as regards staff costs and intermediate consumption. As to the current and capital account, the current projection points to a mildly larger deficit in comparison with the previous issue of the Economic Bulletin.

Larger contraction of economic activity in 2012 versus 2011

The current projection envisages a contraction of economic activity of 2.2 per cent in 2012, following the 1.9 per cent decline in 2011 (Chart 1). This evolution will be accompanied by a strong contraction of domestic demand, similar to that projected for 2011, and a slowdown in exports. The reduction in domestic demand in 2012 will be broadly based across all components and of a similar magnitude to that recorded in 2011, translating, in particular, the impact of the macroeconomic adjustment measures.

2 For a detailed description of financing sources and costs associated with the Financial Assistance Programme, see: //www.bportugal.pt/pt-PT/OBancoeoEurosistema/ProgramaApoioEconomicoFinanceiro/Paginas/default.aspx.

Moreover, the negative outlook for income and demand, along with the maintenance of tight financing conditions, will contribute to a significant contraction of private consumption and investment expenditure.

As has been mentioned, the adoption of the urgently required macroeconomic adjustment measures will certainly have recessive effects in the short run. However, these measures are critical to restore a set of macroeconomic balances, which are essential to ensure the sustained growth for the Portuguese economy over the medium to long-term and the access to funding in international financial markets. At the same time, the reduction process of the indebtedness of the private sector, against the background of a gradual and orderly deleveraging of the banking system, will render the adjustment more demanding, limiting the potential smoothing of household and corporate expenditure.

Private consumption is projected to recede 3.6 per cent in 2012, following a 3.8 per cent decrease in 2011 (Chart 2). The contraction of private consumption stems from the immediate impact of the fiscal consolidation measures on the outlook of household permanent income, as well as the uncertainty on the nature of any additional measures that may prove to be necessary. Moreover, the maintenance of adverse conditions in the labour market will imply strong wage moderation over the projection horizon, which along with developments in productivity, is an important element of the adjustment process of the external imbalances. The contraction of private consumption in 2011 is certainly reflecting, *inter alia*, a substantial decrease in households' real disposable income, in a context of tighter financing conditions, which are likely to persist in 2012. The fiscal consolidation measures to be adopted in 2012 will imply a further reduction in real disposable income, which will inevitably have a significant effect on private consumption.

Gross fixed capital formation (GFCF) is foreseen to record a 10.8 per cent contraction in 2012, which is similar to the projected reduction for 2011. These developments portray the impact of the outlook for demand and income prospects on investment decisions of both firms and households. Moreover, the maintenance of tight financing conditions in the context of the deleveraging process will also contribute to such developments. Furthermore, the fiscal consolidation process will imply a sharp reduction in public investment in 2012, following the projected fall for the current year.

Changes in inventories is expected to post a positive contribution of around 0.2 p.p. to GDP growth in 2012 (-0.2 p.p. in 2011), which assumes a virtual stabilisation in the volume of inventories, following the significant reduction in stocks observed in the recent years.

Chart 1

BREAKDOWN OF GDP GROWTH | CONTRIBUTION TO THE ANNUAL RATE OF CHANGE

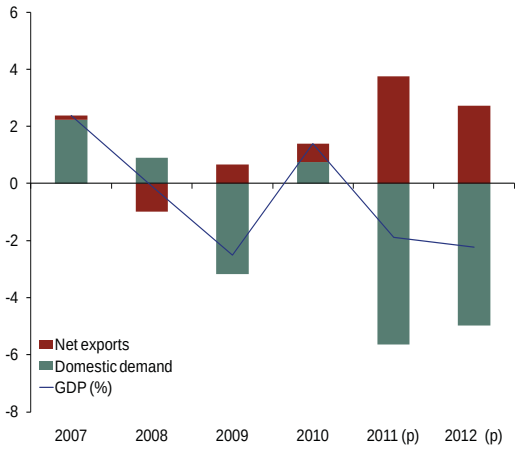
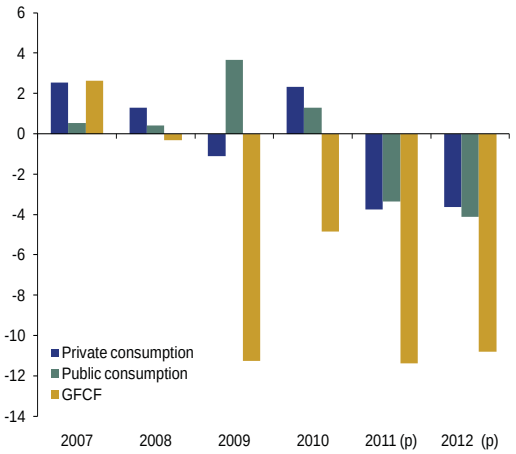


Chart 2

DEVELOPMENTS IN DOMESTIC DEMAND | ANNUAL RATE OF CHANGE



Sources: *INE* and Banco de Portugal.

Exports are the only demand component with a positive projected change in 2012, slowing down, however, to 4.8 per cent (after 6.7 per cent in 2011), in line with external demand growth prospects. Imports are projected to shrink by 2.8 per cent in 2012, after a drop of 4.1 per cent in 2011. Developments in domestic demand and the shift in its composition towards lower import content goods contribute to the contraction of imports. Against this background, the degree of import penetration is foreseen to decline further in 2012, as in previous recessionary episodes.

The current projection does not incorporate the impact of the large range of structural reforms on competitiveness the implementation of which is due to be intensified in the course of 2012 and whose effect is expected to be particularly felt beyond the projection horizon.

In comparison with the summer 2011 issue of the *Economic Bulletin*, GDP growth for 2012 is revised downwards by 0.4 p.p. This revision is mainly the result of smaller growth of both the world economy and external demand as from the second quarter of the current year, as well as of the contractionary effects on private consumption of the incorporation of fiscal policy measures.

The financing requirements of the economy, as measured by the combined current and capital account, are projected to record a further significant reduction in 2012 (Chart 3). These developments portray a substantial narrowing of the trade deficit, which will benefit from the growth of external demand and from the contraction of domestic demand, in a context of a slight improvement in the terms of trade. The current projection includes a 2 per cent growth in the export deflator in 2012 and 1.3 per cent in the import deflator, in line with the growth in prices of the major trading partners and a slight fall in commodity prices. The income deficit is projected to decrease moderately in 2012, as the deterioration in the international investment position will be offset by the reduction in financing costs implicit in the Programme's interest rate.

In the labour market, the significant contraction of overall economic activity will imply a reduction of employment by around 1 per cent in 2011 and 2012, translating into a further rise in the unemployment rate. This employment outlook will be common to both the private and public sector, being however more pronounced in the latter, in line with the assumed reduction in the number of civil servants.

Projected reduction of inflation in a context of unwinding effects of temporary factors

The current projection envisages a reduction in inflation, as measured by the Harmonised Index of Consumer Prices (HICP), from 3.5 per cent in 2011 to 2.4 per cent in 2012 (Chart 4). This projection reflects a deceleration of both the energy and non-energy components.

The non-energy component is projected to slow down from 2.2 per cent in 2011 to 1.9 per cent in 2012. This profile reflect, on the one hand, the unwinding of base effects resulting from the rise in the standard value-added tax (VAT) rate in the beginning of 2011 and, on the other, the slowdown in the non-energy goods import prices, while the growth of wage costs will be quite moderate.

The energy component is projected to increase 5.2 per cent in 2012 (13 per cent in 2011), essentially reflecting the rise in indirect taxes on electricity and natural gas as of October this year, which will also impact on inflation in 2012. However, the major contribution to the drop in inflation stems from the energy component, largely mirroring the reduction in the price of oil after the significant growth considered for 2011.

In comparison with the summer 2011 issue of the *Economic Bulletin*, this projection includes slight upward revisions of HICP growth for 2011 and 2012. These revisions reflect both the impact on inflation of the rise in indirect taxes on electricity and gas, and the impact on inflation in 2012 of the larger-than--anticipated rise in import prices of non-energy goods in 2011.

Chart 3

DEVELOPMENTS IN BORROWING REQUIREMENTS | AS A PERCENTAGE OF GDP

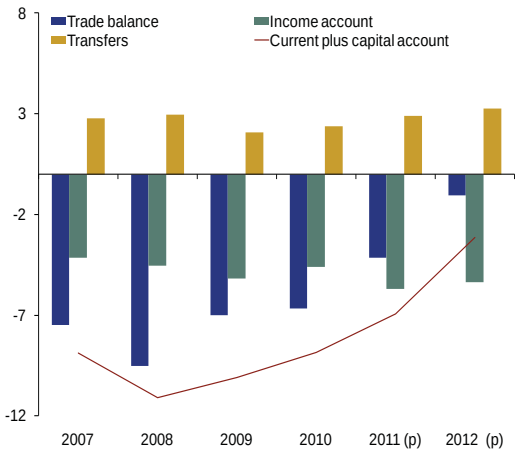
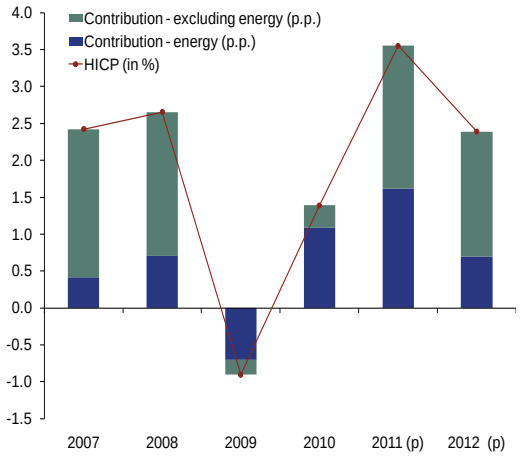


Chart 4

INFLATION | CONTRIBUTION TO THE ANNUAL RATE OF CHANGE IN THE HICP



Sources: *INE* and Banco de Portugal.

Downside risks for economic activity, especially in 2012, and balanced risks for inflation

This projection is subject to downside risks for economic activity and balanced risks for inflation, being surrounded by a high degree of uncertainty. This assessment is conditioned by the institutional resolution of the ongoing sovereign debt crisis in the euro area.

The deterioration of growth prospects for the world economic activity, amid the intensification of economic and financial tensions worldwide, may lead to a larger slowdown than expected in this projection and, as a consequence, also of the external demand for Portuguese exports, and economic activity. Furthermore, the need to specify budgetary policy measures of a permanent nature, necessary for the sustainable compliance of the budgetary targets, may trigger lower economic activity growth in the short run, either through the direct impact resulting from the materialisation of more marked drops in the volume of general government expenditure, or to their impact on real disposable income of households and thereby on private expenditure.

Risks for consumer prices in 2012 are balanced. The impact on consumer prices of the various budgetary measures, such as those relating to adjustments in VAT tax rates and to increases in the administered prices of several goods and services, as well as to the need to specify additional measures in this area, may lead to larger-than-projected price increases. In opposition, the slowdown in the world economy and the resulting downward effects on demand and on international commodity and manufacturing prices may pave the way for lower growth of import prices and, hence of consumer prices.

ARTICLES

II

STABILIZATION POLICY AND BOOM-BUST CYCLES*

MONETARY AND MACRO-PRUDENTIAL RULES

*Caterina Mendicino*** | *Maria Teresa Punzi****

ABSTRACT

The recent financial crisis has posed a challenge to the conduct of financial stability and monetary policy. The international debate mainly focused on the potential benefits of reducing pro-cyclicality in financial intermediation in order to avoid boom and bust cycles in the supply of credit. We study the stabilization benefits of macro-prudential and monetary policy rules that react to an indicator of financial imbalances. In particular, we investigate the benefits of dampening credit cycles and explore the effectiveness of alternative policy instruments, such as the interest rate and the loan to value for macroeconomic and financial stabilization. We find that indeed it is appropriate to react to financial imbalances indicators, but such reaction should preferably be undertaken by macro-prudential instruments.

Should monetary policy lean against booms in asset prices and financial variables? Or should financial stability goals be pursued by other instruments, such as LTV ratio (LTV henceforth) ratios? The literature on asset-price movements and monetary policy mainly relies on models of exogenous bubbles, as in Bernanke and Gertler (2001) and Gilchrist and Leahy (2002). In this kind of models, the conduct of monetary policy cannot affect either the occurrence or the magnitude of boom-bust cycles in asset prices. Thus, the policy implication of these models is that the monetary authority does not need to pay attention to financial developments unless financial stability issues affect the outlook for inflation. Despite the limited effect of interest-rate policies on asset price bubbles, the conduct of monetary policy might have effects on agents' financing decisions. Thus, monetary policy could have important implications for excessive leverage and, in turn, financial stability.[1]

In this article we evaluate if monetary policy should neglect the issue of financial stability and promote the development of other tools to deal with it. To this purpose, we rely on a model of credit-financed real estate booms. Lambertini, Mendicino and Punzi (2010) show that boom-bust cycles in housing and credit can be generated in a model of the housing market by introducing expectations about future macroeconomic developments.[2] For instance, housing-market cycles driven by expectations of future developments in the demand and supply of houses are characterized by boom-bust dynamics in both

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* The opinions expressed are those of the authors and not necessarily those of Banco de Portugal or the Eurosystem. Any errors and omissions are the sole responsibility of the authors.

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1 See Woodford (2011) for a review of the recent literature.

2 A recent strand of the business cycle literature investigates the importance of expectation-driven cycles in generating economic fluctuations. See, for instance, Beautry and Portier (2004, 2006, 2007), Jaimovich and Rebelo (2009), and Schmitt-Grohe and Uribe (2008). In particular, Christiano, Ilut, Motto, and Rostagno (2008) show that macroeconomic boom-bust cycle coupled with similar dynamics in asset prices can be generated by expectations of future development in productivity.

housing prices and housing investment. However, only expectations of a future reduction in the supply of houses can generate boom-bust cycles in all aggregate quantities such as output, consumption and investment as observed in the data.[3]

In this article, we draw some policy implications relying on a model that allows for macroeconomic booms and busts driven by expectations on the supply of houses. In particular, we evaluate the performance of macro-prudential and monetary policy in terms of macroeconomic stabilization. We postulate that, apart from inflation and output stabilization, the policy maker also aims at dampening credit cycles. Our findings highlight a role for LTV ratios that respond in a countercyclical manner to indicators of financial imbalances. LTV ratio rules that actively respond to credit growth reduce the volatility of Credit-to-GDP and other macroeconomic variables. In the presence of an active LTV ratio policy we find no gains from an interest-rate response to credit aggregates. Pursuing financial stability goals with policy instruments other than the interest rate delivers a better outcome in terms of both macroeconomic and financial stabilization.

The goal of this article is to provide insight into the role of monetary and macro-prudential policy in leaning against boom-bust cycles. This article relies on recent research by Lambertini, Mendicino and Punzi (2011) that evaluates monetary and macro-prudential policy in terms of both macroeconomic stabilization and welfare. Differently from Lambertini, Mendicino and Punzi (2011) we document the importance of an active LTV ratio policy based on a simplified analysis that relies on a loss function approach. The rest of the paper is organized as follows. Section 2 presents the model. Section 3 illustrates boom-bust cycles as generated by expectations on housing market developments. Section 4 explores the effectiveness of stabilization policy in the presence of boom-bust cycles.

1. Model

In this section we briefly describe the model economy. The framework follows Iacoviello and Neri (2010). The economy is populated by two types of households: Savers and Borrowers. They both consume, c_t accumulate housing, h_t and work in the production of consumption goods, $n_{c,t}$ and housing, $n_{h,t}$. They differ in their discount factor. Borrowers (denoted by ′) feature a relatively lower subjective discount factor that in equilibrium generates an incentive to anticipate future consumption to the current period through borrowing. Hence, the ex-ante heterogeneity induces credit flows between the two types of agents. This modelling feature has been introduced in macro models by Kiyotaki and Moore (1997).

Borrowers maximize the utility function:

$$U_t = E_t \sum_{t=0}^{\infty} \beta'^{t} \left[\mathrm{T}_c' \ln\left(c_t' - \varepsilon' c_{t-1}'\right) + j \ln h_t' - \frac{\tau'}{1+\eta'} \left(\left(n_{c,t}'\right)^{1+\xi'} + \left(n_{h,t}'\right)^{1+\xi'} \right)^{\frac{1+\eta'}{1+\xi'}} \right]$$

subject to the budget constraint:

$$c_t' + q_t \left[h_t' - \left(1-\delta_h\right) h_{t-1}' \right] - b_t' \leq \frac{w_{c,t}' n_{c,t}'}{X_{wc,t}'} + \frac{w_{h,t}' n_{h,t}'}{X_{wh,t}'} - \frac{R_{t-1} b_{t-1}'}{\pi_t}.$$

Except for the gross nominal interest rate, R, all the variables are expressed in real terms; π_t is gross

3 For stylized facts during periods of booms in house prices see Lambertini, Mendicino and Punzi (2010), Kannan, Rabanal and Scott (2009), Ahearne, A.G., J. Ammer, B.M. Doyle, L.S. Kole and R.F. Martin, (2005) and Borio and Lowe (2002).

inflation $\left(P_t/P_{t-1}\right), W^{'}_{c,t}$ and $W^{'}_{h,t}$ are the wages paid in the two sectors of production, and q_t is the price of housing in real terms. Houses depreciate at rate δ_h .The parameter j_t is an AR(1) shock that represents a shift in the preference for housing with respect to consumption and leisure. The degree of habit persistence in consumption is measured by $\varepsilon^{'}$. Borrowers are allowed to collateralize the value of their homes:

$$b_t^{'} \leq mE_t \frac{q_{t+1}\pi_{t+1}h_t^{'}}{R_t}$$

Limits on borrowing are introduced through the assumption that households cannot borrow more than a fraction m of the next-period value of the housing stock.

The Savers face a similar problem. However, they also invest in capital and receive the profits of the firms. As in Smets and Wouters (2007), households supply labour to unions that differentiate labour services and sell them to wholesale labour packers in a monopolistic market. Wages can be adjusted subject to a Calvo scheme with a given probability every period. The wholesale labour packers transform the services into homogeneous labour composites, $n_{c,t}, n^{'}_{c,t}, n_{h,t}, n^{'}_{h,t}$, to be sold to final producing firms in a competitive market.

Final good producing firms produce non-durable goods (Y) and new houses (IH) facing Cobb-Douglas production functions and use capital, k , and labour supplied by the savers, n , and the borrowers, $n^{'}$ as inputs of production

$$Y_t = \left(n_{c,t}^{\alpha} + n_{c,t}^{'1-\alpha}\right)^{1-\mu_c} \left(z_{c,t}k_{c,t-1}\right)^{\mu_c}.$$

$$IH_t = \left(n_{h,t}^{\alpha} + n_{h,t}^{'1-\alpha}\right)^{1-\mu_{h-\mu_b-\mu_l}} \left(z_{h,t}k_{h,t-1}\right)^{\mu_h} k_b^{\mu_b} l_{t-1}^{\mu_l},$$

The housing sector also uses land, l and an intermediate input, k_b , to produce new houses.

$A_{h,t}$ measures productivity in the housing sector and is assumed to follow an AR(1) process. Firms pay the wages to households and repay back the rented capital\ to the Savers. Retailers, owned by the Savers, differentiate final goods and act in a competitive monopolistic market. Prices can be adjusted with probability $1-\theta_{\pi}$ every period, by following a Calvo-setting. In contrast, housing prices are assumed to be flexible.

We assume that the central bank follows a Taylor-type rule as estimated by Iacoviello and Neri (2010)

$$R_t = R_{t-1}^{r_R} \pi_t^{\left(1-r_R\right)r_{\pi}} \left(\frac{GDP_t}{GDP_{t-1}}\right)^{\left(1-r_R\right)r_Y} rr^{\left(1-r_R\right)},$$

where rr is the steady state real interest rate and GDP is defined as the sum of consumption and investment at steady state prices.

2. Introducing Boom-Bust Cycle into the Model

Fluctuations in the housing market are mainly generated by shocks to the demand and supply of houses. According to Iacoviello and Neri (2010) half of the volatility of housing investment and housing prices is explained by housing demand and housing supply shocks, with equal importance. However,

housing market shocks lead to an increase in housing prices, but, cannot generate neither hump-shaped dynamics, nor the co-movement in consumption, investment and GDP observed during periods of booms in housing prices.

Lambertini, Mendicino and Punzi (2010) show that expectations of future macroeconomic developments can generate boom-bust cycles in housing and credit. In the following we report the dynamics of the model in response to expectations of future shocks to housing demand and supply.[4] Chart 1 shows the model response to expectations of a negative supply shock, *i.e.* lower productivity in the housing sector. In particular, agents expect that at time T=4 a negative shock to housing productivity hits the economy. We illustrate the case in which the expectations turns out be wrong and at time T=4 there are no changes in productivity.[5]

Expectations of lower future in housing supply generate expectations of rising house prices. As a result, borrowers increase their current housing demand for speculative purposes. Household indebtedness increases, reinforcing the increase in current expenditures in both housing and consumption goods. Due to an increased housing demand, current housing prices and housing investment rise. Moreover, agents increase their current labor supply in order to smooth the negative future effect of the shock on future labor income. When news about changes in future housing supply spread, firms start adjusting the stock of capital in order to reduce the future cost of adjusting capital as an input of production, induced by the presence of adjustment cost in capital. The stock of capital used as in input of production in the housing sector decreases over time. In contrast, firms in the consumption-good sector start increasing their stock of capital. Despite the decline of capital used in the housing sector, current business investment slightly increases. As a result, GDP rises. As shown in chart 1 4-period anticipated negative housing supply shock generates a boom in housing prices, housing investment, consumption, GDP, hours and indebtedness. The peak response of all aggregate variables corresponds to the time in which expectations realizes. If expectations do not realize there is a dramatic drop in both quantities and prices. Thus, expectations of a negative housing supply shock that do not realize generate a housing market boom-bust cycle.

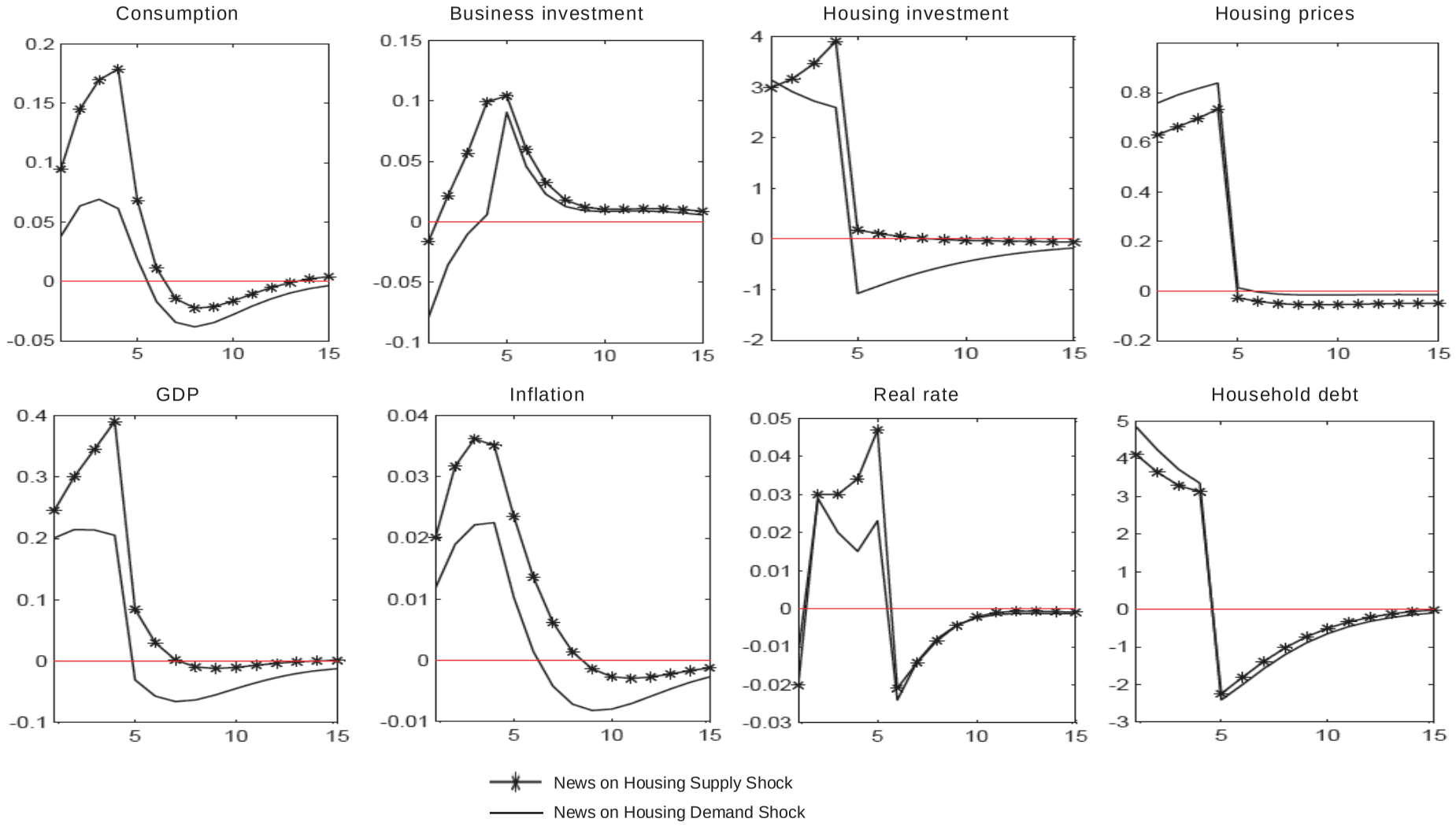
Expectations of future increases in housing demand generate booming dynamics in housing prices and investment but fail in accounting for co-movement between residential and non-residential investment. Due to an expected shift in preference for housing relative to consumption, firms in the consumption sector reduce their stock of capital. As a result, business investment falls. Because of the reduction in business investment during the boom phase, news about a future increase in housing demand fail to generate boom-bust dynamics consistent with the data. In the data business investment starts increasing on average six periods before the peak in housing prices. Expectations related to future housing demand make business investment decline throughout the boom phase. The behavior of business investment is independent of the time horizon of the expected increase in housing demand. See Lambertini, Mendicino and Punzi (2010) for further discussion on the sources of booms and busts in the housing market.

4 Housing demand and supply shocks follow an AR(1) process $z_t = \rho_z z_{t-1} + u_{z,t}$, where $z = \{j_t, A_{h,t}\}$. We set the persistence and standard deviation of the shocks as in Iacoviello and Neri (2009), such that, j_t and $A_{h,t}$ equal 0.0416 and 0.0193, respectively.

5 We introduce expectations of future macroeconomic developments to as in Christiano et al. (2008) and assume that the error term of the AR(1) shock consists of an unanticipated component, $\varepsilon_{z,t}$, and an anticipated change n quarters in advance, $\varepsilon_{z,t-n}$. So that, $u_{z,t} = \varepsilon_{z,t-n}$ where $\varepsilon_{z,t}$ is i.i.d and $z = \{h, j\}$. Thus, at time t agents receive a signal about future macroeconomic conditions at time $t+n$ If the expected movement doesn't occur, then $\varepsilon_{z,t} = -\varepsilon_{z,t-n}$ and $u_{z,t} = 0$.

Chart 1

BOOM-BUST



3. Macroeconomic and Financial Stabilization

In the following, we assume that fluctuations in the model are driven by housing demand and supply shocks. In order to allow for booms and busts in house prices and credit we also introduce expectations related to housing supply. The model's parameters are set according to the estimated mean values presented by Iacoviello and Neri (2010) for the US economy.

Macroeconomic and financial stability goals are summarized by the following loss function

$$L = k_b \sigma_{\Delta_b^2} + k_\pi \sigma_{\Delta_\pi^2} + k_y \sigma_{\Delta_y^2},$$

where σ^2 is the variance of credit growth, inflation and GDP growth.

First, we investigate the effectiveness of macro-prudential policy in providing a stable provision of credit over the cycle. In particular, we explore the role of the Loan to Value Ratio that responds counter-cyclically to the indicator of financial imbalances. Thus,

$$m_t = \nu_m m_{t-1} + \left(1-\nu_m\right)m + \left(1-\nu_m\right)\nu_x\left(b_t - b_{t-1},\right)$$

Table 1

OPTIMAL STABILIZATION POLICY | LOSS FUNCTIONS

Loan-to-Value rule (LTV)	k_b=1, k_π =k_y=0	k_b=0, k_π =k_y=1	k_b=k_π =k_y=1
v_b = -136.865	1.21371e-007		
Interest rate rule (R)			
r_π = 37.6331, r_y = 38.2875		1.5121e-006	
r_π = 16.9345, r_y = 12.7969 (r_R = 0)		1.42644e-006	
r_π = 10.7144, r_y = 1.73584			0.00580687
r_π = 1.85184, r_y = -0.333143, r_b = 2.71008			0.00022085
Using both rules (R & LTV)			
v_b = -165.406, r_y = 969.023, r_y = 971.556			1.50494e-006
v_b = -10.2081, r_y = 4.02385, r_y = 2.36347, r_b = -0.932216			2.47229e-005

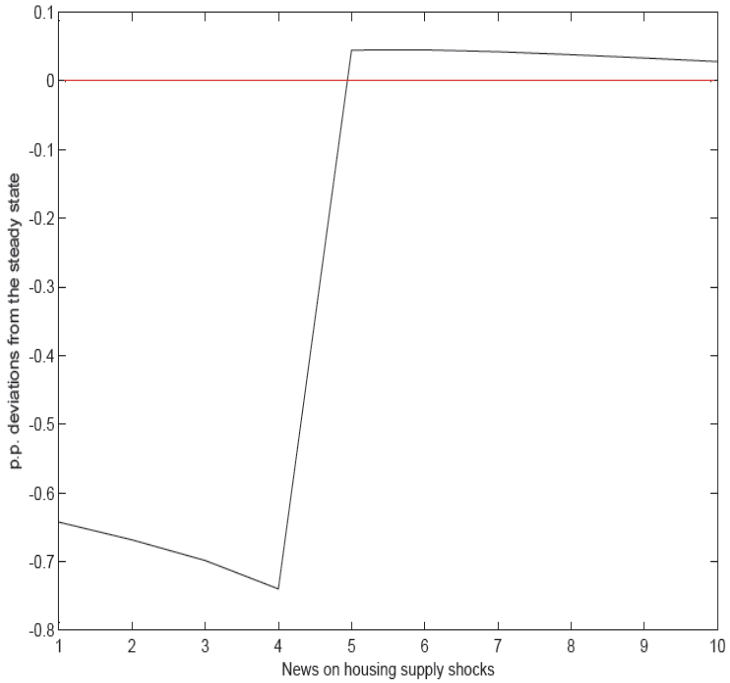
Table 2

OPTIMAL STABILIZATION POLICY | VOLATILITY

Benchmark (estimates interest-rate rule)	b/GDP	q	π	GDP
r_π = 1.40444, r_y = 0.51261, r_R = 0.59913	0.1471	0.2346	0.0010	0.0208
Loan-to-Value (LTV)				
v_b = -136.865	0.0361	0.2349	0.0007	0.0207
Interest rate rule (R)				
r_π = 37.6331, r_y =38.2875 (r_R = 0.59913)	0.1323	0.2344	0.0009	0.0185
r_π =1.85184, r_y = -0.333143, r_b =2.71008	0.0518	0.2342	0.0038	0.0253
Using both rules (R & LTV)				
v_b = -165.406, r_π = 969.023, r_y = 971.556	0.0320	0.2348	0.0008	0.0187
v_b = -10.2081, r_π = 4.02385, r_y = 2.36347, r_b = -0.932216	0.0715	0.2346	0.0014	0.0190

Chart 2

LOAN TO VALUE (m)



where m is the steady state value for the LTV ratio, ν_m is an autoregressive parameter that we set equal to 0.5, and ν_x is the response to credit growth. We choose the parameters of the LTV rule that minimize the volatility of credit aggregates $\left(k_b = 0, k_y = k_\pi = 0\right)$ assuming that the monetary authority follows the estimated Taylor-type rule. Table 1 compares the alternative rules.

Responding to credit growth is successful in dampening credit cycles. A strong countercyclical response to credit growth directly counters the boom in credit driven by expectations of rising house prices and the subsequent bust. Thus, compared to the benchmark case it better stabilizes credit aggregates without increasing the volatility of inflation and GDP. Table 2 shows the unconditional standard deviation of few key variables in the model. Chart 2 shows the behaviour of the LTV ratio and the debt to GDP ratio in response to an expected housing supply shock, under the counter-cyclical LTV policy. As a result the LTV ratio declines during the boom and increases during the bust. The optimal countercyclical LTV policy implies that under a 1.9 per cent expected housing supply shock, the LTV ratio (m in terms of our model) drops by 0.75 per cent. See chart 2.

Second, we investigate how, in the absence of an active macro-prudential policy $\left(m_t = m\right)$, monetary policy can reduce macroeconomic fluctuations and affect the magnitude of boom-bust cycles driven by expectations of a future reduction in the housing supply. Regarding, monetary policy, we consider alternative interest rate rules in which the central bank also reacts to changes in household debt

$$R_t = R_{t-1}^{r_R} \pi_t^{\left(1-r_R\right)r_\pi} \left(\frac{GDP_t}{GDP_{t-1}}\right)^{\left(1-r_R\right)r_Y} \left(\frac{b_t}{b_{t-1}}\right)^{\left(1-r_R\right)r_b}.$$

Under a passive macro-prudential policy, an interest-rate response to credit growth yields sizable gains in terms of financial stabilization. However, interest-rate rules that aim at financial stability goals $\left(k_b \neq 0\right)$ do not deliver the best outcome in terms of macroeconomic and financial stabilization. The

optimal countercyclical LTV rule that responds to credit growth is more successful than an interest-rate response to credit growth in reducing the volatility of the credit-to-GDP ratio. It also reduces fluctuations in GDP and inflation.

The use of countercyclical LTV ratio policies improves macroeconomic and financial stabilization. There are no gains from an interest-rate response to credit aggregates. In the interaction between macro-prudential and monetary policy, we find that pursuing financial stability goals with LTV ratios delivers the lowest volatility of the credit-to-GDP ratio. Moreover, it is also more successful in lowering the volatility of inflation and GDP. However, none of these policies significantly affects the volatility of house prices.

4. Conclusion

Housing market fluctuations characterized by booms and busts in housing prices and credit are a central issue in policy discussions. In the aftermath of the recent financial crisis high importance has been given to the implementation of a policy that could reduce the severity of boom-bust cycles in the provision of credit and their spillovers to the macroeconomy.

In macroeconomic models it is particularly difficult to generate booms and busts in house prices and other macroeconomic variables. Expectations of future productivity shocks in the housing production sector can lead to rising dynamics in house prices followed by a sharp reversal. We show that in the presence of expectation driven boom-bust cycles, the use of the LTV ratio as a macro-prudential tool improves upon interest-rate rules that respond to financial variables in terms of both macroeconomic and financial stabilization.

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THE IMPACT OF THE MINIMUM WAGE ON LOW-WAGE EARNERS*

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"Advantages and disadvantages tend to equality where there is perfect liberty"
Adam Smith, The Wealth of Nations, Chapter X
Of wages and profit in the different employments of labour and stock

ABSTRACT

This paper estimates the impact of increases in the minimum wage on employment stability, wages and inequality in Portugal. We use data from 2002 to 2010; from 2002 to 2006 the real minimum wage was stable, but it increased quite substantially afterwards. Lower-tail wage inequality widen up to 2006 and declined strongly afterwards. The results point towards a negative employment elasticity for workers whose initial wage is between the old and the new minimum wages. This elasticity is similar to the one obtained in the US, a country with a low minimum wage when compared to the average wage, and smaller than the one obtained for France, a country with a high minimum wage. The wage elasticity to the minimum wage is naturally higher for workers earning exactly the old minimum wage. The wages of all other workers remain unaffected. These results point to a detrimental effect of minimum wage increases for employment stability of low-wage workers, with only minor gains in terms of wages.

1. Introduction

Policy makers and economists often lead long debates on relevant issues for people's life. The minimum wage is one of the most debated topics in labor economics. The arguments on the minimum wage policy consider its impact on employment, wages and the distribution of income.

Economists know since the seminal work of Stigler (1946) that the minimum wage can have a positive impact on employment. They also know, but for a longer period, that the minimum wage can have a negative impact on employment. While the latter is probably the most expected result – after all nobody contests that we typically reduce the consumption of apples when its price goes up – the former is also a plausible outcome. Indeed, in markets where an employer (demand) has a significant market power and is able to control the wage that he pays, a legal imposition of a minimum wage may increase the level of employment. The employer has "monopsony power", which allows him to pay wages below the workers' marginal productivity. Thus, in a situation where the government increases the wage paid (but not above productivity), the employer still has the incentive to keep the worker. What is more, the higher wage attracts to the labor supply workers otherwise idle. Overall, the minimum wage may increase employment. But in a market where the minimum wage increase eats away the profit margin,

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the impact on employment is perverse. Ultimately, the sign of the impact of the minimum wage on employment is an empirical question.

The main political goal of the minimum wage is to redistribute income to low-paid workers. To achieve this goal most policies incur in several risks. First, the minimum wage increase takes money away from some citizens and pays it to others. In doing this, national output does not increase (except for monopsony markets). Does the money reach its target? Probably not, since rises in the minimum wage may reduce low-wage employment. Second, the minimum wage policy is an exogenous interference with the firm's human resources management. It changes the relative price of workers inside the firm, making those relatively better paid relatively less expensive. This may drive employment away from minimum-wage earners, but may also result in a significant compression of the wage distribution – lower wage increases for wages just above the minimum. As a result, internal labor market characteristics of the firm that deliver positive economic outcomes in terms of productivity, such as returns to tenure, long spells of employment and ports-of-entry may be negatively impacted.

The motivation to change the minimum wage can also rest on other types of arguments. We can use efficiency wage arguments. The level of the minimum wage is interpreted as the lowest level of wages compatible with a given living standard and a fair level of payment in exchange for the services of labor. This can also be supplied with a Keynesian flavor, if we believe that higher wages provide the economy with stronger demand and thus increase the overall output level. Additionally, there may be some general equilibrium effects coming from higher levels of the minimum wage, which may lead firms to create more productive jobs, therefore better paid and workers to demand these types of jobs.

In this study, we analyze the impact of minimum wage policy on low wage earners between 2002 and 2010. This is a quite interesting period in Portugal because a period of no real gains in the minimum wage up to 2006 is followed by a period of quite substantial increase in the minimum wage. In this context, it is interesting to analyze the impact of the minimum wage on low-wage workers and not only on the minimum-wage earners. We will address the following questions: Does the minimum wage help to reduce lower tail wage inequality? Are there employment losses associated with increases in the minimum wage above the average wage increase? Is there a spillover effect from minimum wage increases?

To answer these questions, we estimate a set of models to establish the relationship between minimum wages increases and employment, conditional on a set of characteristics prevailing in the economy at that time. In particular, we study how the interaction of the real minimum wage variation and the worker position in the distribution of wages affects the probability that (s)he remains employed.

Research consensus for other countries seems to evolve around the following conclusion: the impact on employment is a debate around zero (Freeman, 1996). The minimum wage seems to have some impact on the wage distribution, but a much smaller impact (if any) on the income distribution (for a detailed discussion see Brown, 1999, Card and Krueger, 1995 and Neumark and Wascher, 2007). In any case, the initial level and the dimension of the increase in the minimum wage seem to be relevant to set the case. Low increases in the minimum wage are certainly much more employment friendly. What would be difficult after that is to define what a "low increase" is.

Our results confirm this general appraisal. The later and larger updates of the minimum wage lead to significant reductions in lower-tail wage inequality. This compression of wages was both explained by significant wage increases in the lower percentiles and below average increases at median wages. However, they are also associated with significant decreases in employment. A less intrusive minimum wage policy is thus advisable. Adding to this conclusion, it is widely known that workers and job turnover are higher for low-wage workers. The resulting excess worker turnover coming from increased employment instability as a result of minimum wage increases is widely detrimental for productivity, training and progression within the firms' internal labor markets.

2. Data

In this article we use a longitudinal database matching workers and firms made available by *Instituto de Informática da Segurança Social* (Portuguese social security data processing office), which includes all workers who paid contributions to the social security general regime, covering the period from 2002 to 2010. Workers and firms have a unique identification code that allows tracking both over time. One of the advantages of using this information is the administrative nature of the database – registers of mandatory contributions to the Portuguese social security system. Usually, the information in administrative databases is seen as more reliable, being less prone to measurement errors, such as reporting or rounding errors, particularly in wages.

The information on wages refers to gross monthly values, reported in October of each year. The database includes different types of compensation, namely permanent, variable, vacation and Christmas bonuses, and other pay. To increase comparability, we used the permanent wage adjusted for a fixed work period of 30 days, *i.e.* we divided the permanent compensation by the actual number of days worked in the month and multiplied by 30.

In addition to wages and the number of days worked in October, this database also includes other variables, such as job tenure and variables related to workers (for example, gender, age and worker status – employees, self-employed or other) and firms' characteristics (for instance, region and size), covering all activity sectors. The coverage in public administration, health and education has been increasing over time, as new civil servants are enrolled in the social security general regime, instead of the specific civil servant social security scheme.

The original database was restricted to salaried workers, whose wage was at least 80 per cent of the minimum wage established by law (taking into account the legal possibility of a 20 per cent reduction in minimum wages earned by apprentices and trainees). Furthermore, inconsistent and missing reports on gender, age and job tenure were dropped. So, our sample has almost 25 million year/worker/firm observations, an average of 2.7 million workers in each year.

3. The evolution of minimum wage in Portugal: 2002-2010

The Portuguese minimum wage legislation was introduced in 1974, defining the legal minimum wage for employees with at least 20 years of age, excluding agriculture, domestic work and firms with up to 5 workers. Since then, this legislation has undergone several adjustments and currently there are no exceptions by age, activity sector or firm size. The minimum wage is the same for all employees except apprentices and trainees (whose minimum wage can be reduced by 20 per cent) and disabled workers (reductions between 10 and 50 per cent).

In 2002 the minimum wage was 348 euros, representing 50.3 per cent of the mean wage and 70 per cent of the median wage. In 2010 the minimum wage had increased to 475 euros, which represent 52.2 per cent of the mean wage and 73.1 per cent of the median wage.[1] Developments in the minimum wages have been discretionary, not following a formal rule or indexation – each year the government, after consulting representatives of workers and employers, proposes a new figure for the minimum wage. Nevertheless, the rate of change of the minimum wage has typically tracked the expected inflation, resulting in changes of the real minimum wage close to zero. In Chart 1, we can see that this was the case in the period from 2002 to 2006.

This situation changed from 2007 onwards, a period during which the minimum wage increased markedly in real terms (Chart 1). These recent increases reflected the agreement signed by the government

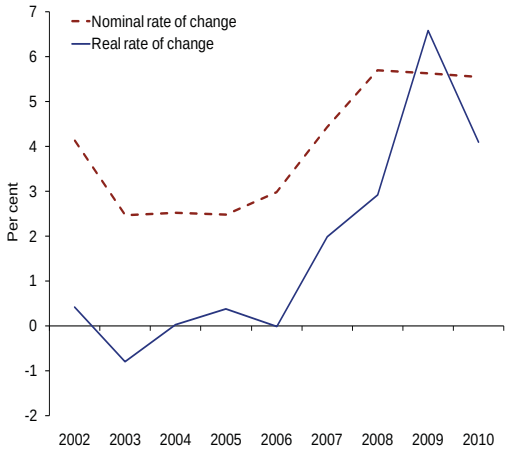
1 The median of a distribution represents the value for which 50 per cent of the observations are below (and, likewise, 50 per cent of the observations are above).

and the representatives of workers and employers, in December 2006. The main goal of this agreement was to have a minimum wage of 500 euros by 2011. The agreed roadmap, put in place up to 2010, set the minimum wage at 403 euros in 2007, 426 euros in 2008, 450 euros in 2009 and 475 euros in 2010.

As shown in Chart 2, up to 2006 the growth of the minimum wage in real terms was quite similar to the median wage, for all employees who stayed for at least two consecutive years in the database (in the same firm or not), being, on average, about 1.8 percentage points below the growth rate of the mean wage. In real terms, since 2007 the minimum wage increased more sharply than the median wage, outpacing the mean wage in the period from 2008 to 2010.[2]

Chart 1

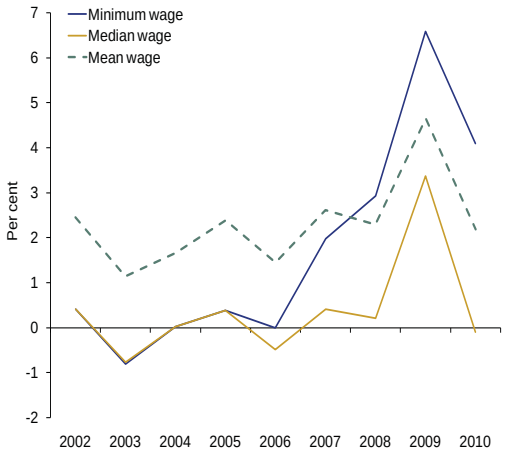
DEVELOPMENTS IN THE MINIMUM WAGE



Note: Real wage rates were obtained by deflating the nominal rates of change using consumer prices.

Chart 2

REAL WAGE RATES



Note: Mean and median wages obtained from Social Security data and authors' calculations.

The evolution of the share of minimum wage earners (Chart 3) can be split in two distinct periods: (i) from 2002 to 2006 this share remained fairly stable, around 8 per cent; (ii) since 2007 the share of minimum wage earners increased markedly, from 8.9 per cent in 2007 to 12.4 per cent in 2010. This evolution was common to most activity sectors, being more striking in manufacturing and construction.[3]

The impact of the minimum wage growth can also be seen through the distributions of wages and wage changes. A simple visual inspection reveals that the minimum wage is a key factor in the wage distribution, being the mode of the distribution (Chart 4).[4]

Moreover, the percentile up to which the minimum wage is binding increased. While, on average, from 2002 to 2006, the minimum wage was binding up to the 10th percentile, in 2010 it was binding up to the 15th percentile. This means that in 2010 15 per cent of the employees had a wage lower than or equal to the minimum wage.

Looking at the distributions of nominal wage changes over time, the impact of the minimum wage is also noticeable (Chart 5). Up to 2006, these distributions showed a high concentration on zero and values close to the observed/expected inflation rates (used as a reference for bargaining and minimum

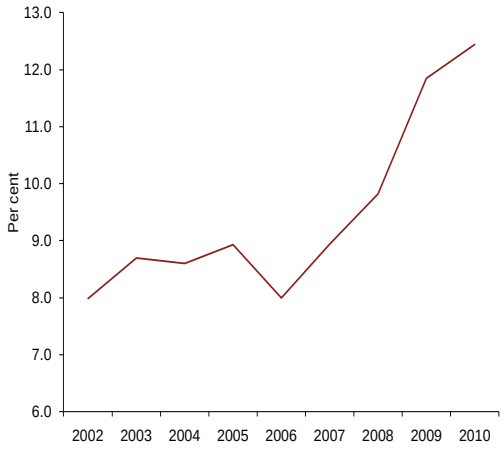
2 Real wage rates were obtained by deflating the nominal rates of change using consumer prices.

3 To avoid slight differences due to rounding, we considered that an employee earned the minimum wage if its wage falls in a 2-euro interval centered on the legal minimum wage (minimum wage +/- 1 euro).

4 The mode of a distribution is the value that occurs most frequently among the sample.

Chart 3

SHARE OF MINIMUM-WAGE EARNERS

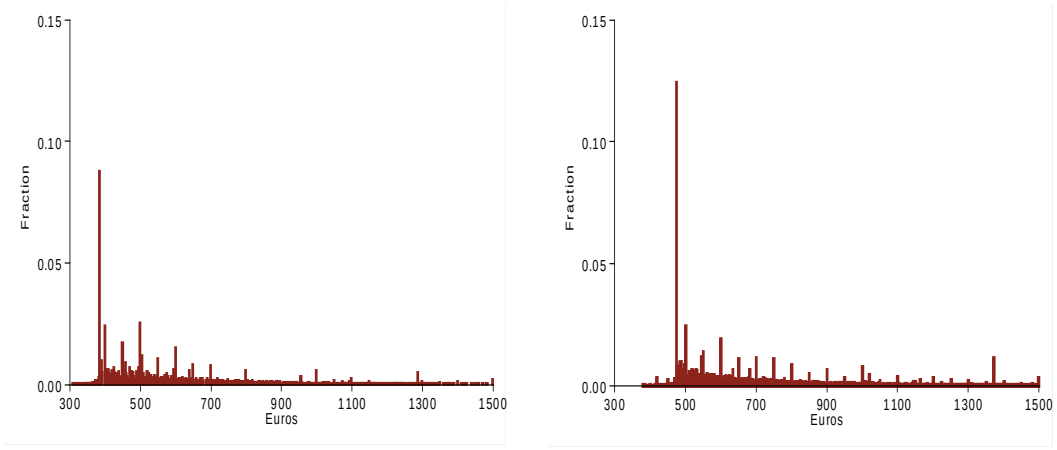


Sources: Social Security data and authors' calculations.

Note: We considered that an employee earned the minimum wage if its wage falls in a 2-euro interval centered on the legal minimum wage (minimum wage +/- 1 euro).

Chart 4

WAGE DISTRIBUTIONS



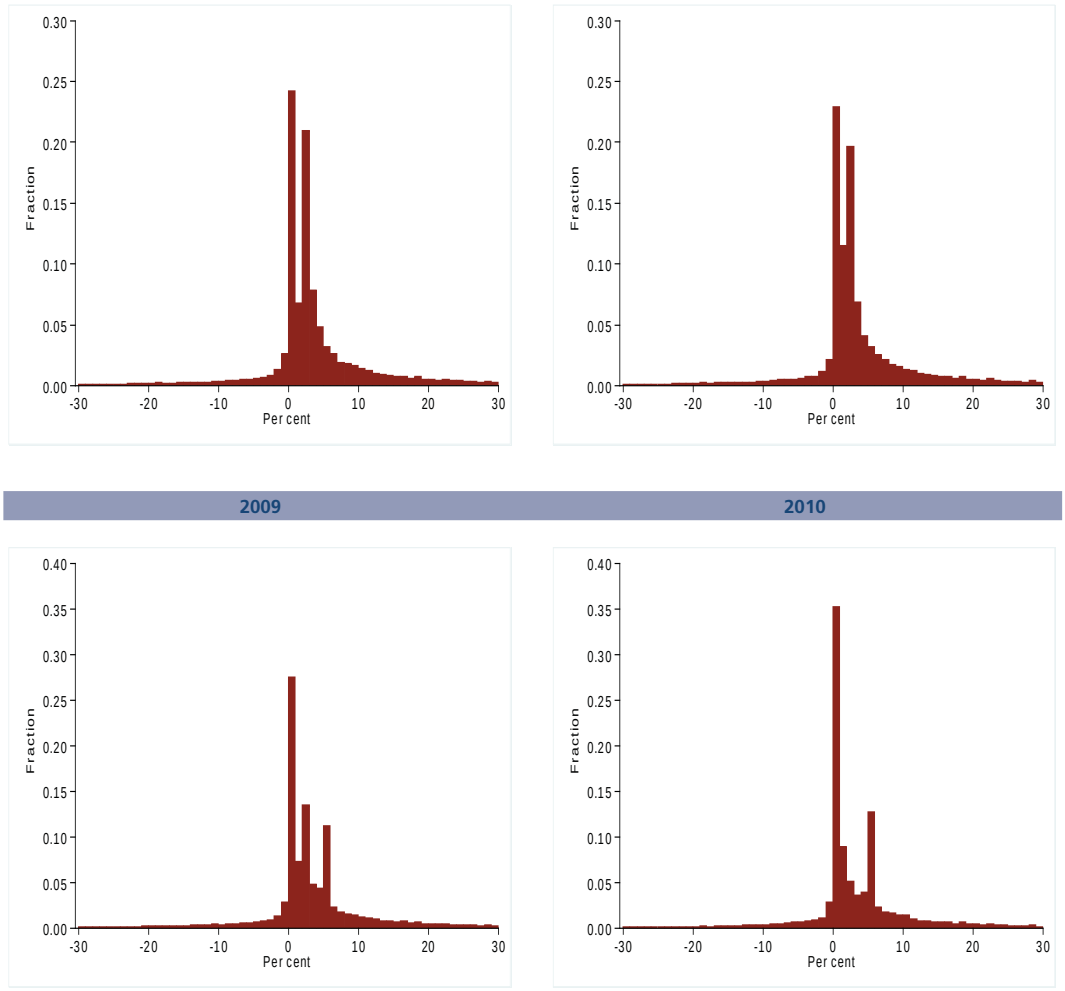
Sources: Social Security data and authors' calculations.

wages). From 2007 onwards, the distribution of wage changes had three spikes - at zero, at the observed/expected inflation rate value and at the rate of change of the minimum wage (in 2010, the first two spikes collapsed into a single spike, reflecting the low positive inflation observed in that year).

Since the minimum wage strongly influences the dispersion on the left tail of the wage distribution, it plays a significant role in the evolution of wage inequality, as measured by the ratio between the wages in the 50th and 10th percentiles. This ratio decreased by 12.9 per cent between 2002 and 2010 (Chart 6). After a period of increasing inequality (7.4 per cent up to 2006), the 50/10 ratio decreased by 18.9 per cent between 2006 and 2010. This significant reduction highlights the fact that wages in the 10th percentile (where the minimum wage was binding) grew more markedly than in the 50th percentile (*i.e.* the median). Although common to most activity sectors, this evolution was clearer in manufacturing and construction.

Chart 5

WAGE CHANGE DISTRIBUTIONS



Sources: Social Security data and authors' calculations.

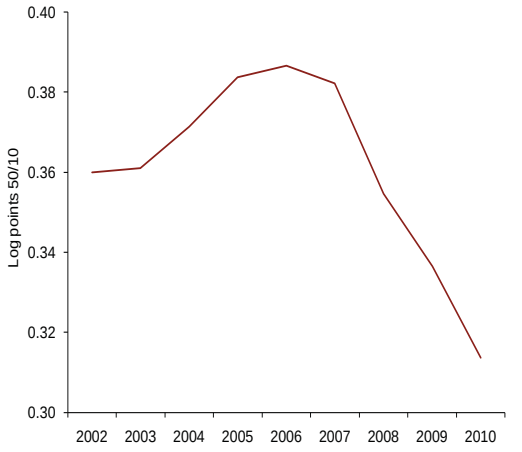
Therefore, this evidence suggests that the stronger increases in minimum wages in recent years contributed to reducing wage inequality. Previous studies on the role played by the minimum wage in the evolution of the 50/10 inequality ratio in Portugal include Cardoso (1998) and, more recently, Centeno and Novo (2009). For the period after 1995, the results in the latter work also suggest that the minimum wage (mildly) contributed to the reduction of the 50/10 ratio, especially in the case of female workers.

Answering to the question on the impact of minimum wages on wage inequality is not clear cut. This issue has been extensively discussed in the literature. For example, DiNardo *et al.* (1996) proposed a semiparametric procedure to analyze the effect of several factors (including changes in the minimum wage) over the entire wage distribution. Using data for the US, the authors found that the increase in the real minimum wage between 1973 and 1979 contributed to the decrease in wage inequality. Also for the US, Autor *et al*. (2010) found a small impact of the minimum wage on the lower tail inequality, but highlighted that this impact could go beyond the direct effect on low-wage workers, through spillover effects.

Does the evolution of minimum wages only affect low-wage workers? Chart 7 shows the rate of change of wages up to the 75th percentile in 2004 (nil real change of the minimum wage) and in 2009 (highest

Chart 6

WAGE INEQUALITY: 50/10 RATIO

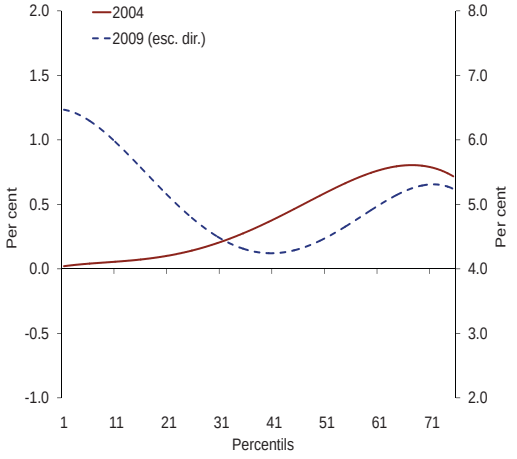


Sources: Social Security data and authors' calculations.

Note: The chart presents the logarithm of the ratio between the 50th and the 10th percentiles of the wage distribution.

Chart 7

WAVE EFFECT – REAL RATE OF CHANGE OF WAGES UP TO THE 75TH PERCENTILE OF WAGE DISTRIBUTION



Sources: Social Security data and authors' calculations.

real change of the minimum wage in the period analyzed).[5] In 2004 the trend in wage rates over the wage distribution was positive. In contrast, in 2009, low-wage workers received the highest pay rises. This is true not only for minimum wage earners, but also for workers with wages slightly above the minimum wage. In turn, medium-wage workers received the lowest pay rises.

4. Results

The debate on the impact of the minimum wage on employment and, in general, in the economy and society, is one that will be ultimately settled by the empirical evidence. Theoretically, there are models in which the minimum wage may lead to a decrease in employment, but there are also models that imply an increase. The last decade in Portugal has been characterized by both rather meager increases in the minimum wage, but also by rather generous ones. It bears asking, what has been the impact of such political choices? To address this question, we follow a line of research developed, among other, by Abowd *et al*. (2000) and Neumark *et al*. (2004). We estimate a set of models that analyze how the interaction between the real minimum wage increases and the worker position in the distribution of wages determines the probability that (s)he remains employed.

It is easy to imagine that those most affected by a minimum wage increase scheduled for next year are the current year's minimum wage earners themselves. However, all other individuals whose current wage is below next year's minimum wage will also be directly affected, although to smaller and varying degrees than the minimum wage earners. All other workers will not be directly affected by the new minimum wage. In our model, we will consider six levels of wage earners, hypothesizing that the further away a worker is from the new minimum wage, the less the probability of remaining employed is affected by the change in the minimum wage. The six groups are: (i) the current minimum-wage earners; (ii) those earning more than today's minimum wage, but below the new minimum wage; (iii) those with wages in the first quartile, but not in the first two groups; (iv)-(vi) the 2nd, 3rd, and 4th quartiles of the wage distribution.

5 We are implicitly assuming that the evolution of the wages in the top-25 per cent of the distribution are not influenced by changes in the minimum wage.

Since we consider the impact of a variation in next year's minimum wage conditional on being employed in the current year, our estimate of the impact is a lower bound of the overall impact on the economy because it ignores the impact on the transition from unemployment and inactivity to employment.

Year-by-year

We start our study by considering 8 cross-sections of workers for the years of 2003 to 2010. The estimation sample excludes agriculture, wages below the legal minimum wage and missing observations for nationality, activity sector, job tenure and firm size. The results of cross-section estimation are interpretable as long-term relationships, in that each individual represents a cohort in different stages in the life cycle of the labor market. Additionally, over the years the minimum wage changes were dramatically different, with real wage losses and large real wage gains (see Section 3). This variability, apart from year specific effects, shall reflect itself on the different years' impact estimates.

We consider the following simple model specification:

$$Y_i = \sum_k \beta_k D_{k,i} + X\lambda + u_i$$

where Y_i assumes value 1 if individual i remains employed from year t to $t+1$ and 0 if (s)he is no longer employed in $t+1$; $D_{k,i}$, for $k = 1,2,...,6$ is a dummy variable that assumes value 1 if the wage in year t is in one of the 6 wage categories defined above. The matrix X includes variables with worker, firm and match characteristics, namely: a quadratic term in the age of the worker; gender indicator; foreigner indicator; sector dummies (extractive; manufacturing; construction); firm size dummies (small: 1-25 workers; medium: 26-100; large: 101 or more workers); and tenure dummies (up to 6 months; 7-12 months; 13-36 months; 37-72 months; and more than 72 months). And u_i is a conventional error term. We estimated this model using both a linear probability model and a probit model. As it can be seen in Table 1, the results do not depend on the choice of the method, but for computational reasons in the remaining of the paper, we report only the results of the linear probability model.[6]

A Portuguese forty-year-old male, working in a large services firm, in 2002, with more than 6 years of tenure and a wage falling in the top quartile had a 95 per cent probability of remaining employed in 2003. Relatively to such individuals in the top quartile, the group of minimum wage earners in 2002 was 8.3 p.p. less likely to hold a job in 2003 (Table 1, column 1). In other words, the probability of non-employment for the minimum wage earner is 13.3 per cent, *i.e.*, 166 per cent higher than that of the top quartile worker. This result is not surprising in view of the evidence that low-wage workers have higher on-the-job rotation rates (Centeno *et al*, 2008).

The following group, composed of those who earn at least the new minimum wage, was 6.5 p.p. less likely to be among salaried workers than top earners. The next group, which is the first one not directly affected by the new minimum wage, is 1 p.p. more likely to remain employed than the previous group but almost 3 p.p. more likely than the group of minimum wage earners. The difference relative to the top quartile falls monotonically for the other groups.

The remaining columns of Table 1 repeat the exercise for the 2004-2010 period. The estimates are remarkably stable across the years, with slightly lower probabilities of being employed in years of economic downturn. There is also a tenuous increase in the probability of losing employment in years where the real (or nominal) minimum wage increases were more significant, particularly among the group of individuals earning more than the current minimum wage but less than next year's.

6 See Angrist and Pishke (2009) for a full discussion of linear probability models vs. probit models.

Table 1

YEAR-BY-YEAR LINEAR PROBABILITY AND PROBIT MODEL, 2003-2010

Employment	Linear probability model							
	2003	2004	2005	2006	2007	2008	2009	2010
Wage group:								
Current minimum wage	-8.32	-7.81	-9.00	-8.40	-7.96	-8.98	-8.61	-7.24
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Less than next year's minimum wage	-6.53	-7.08	-7.72	-7.56	-7.47	-7.71	-7.78	-6.72
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
More than next year's minimum wage but less than 1st quartile	-5.46	-5.33	-6.16	-5.58	-5.87	-5.97	-5.53	-4.85
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
2nd quartile	-4.10	-3.55	-3.84	-3.32	-3.82	-4.45	-4.65	-3.51
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
3rd quartile	-2.43	-1.95	-2.18	-1.68	-2.38	-2.45	-2.55	-1.90
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
	Probit model							
	2003	2004	2005	2006	2007	2008	2009	2010
Wage group:								
Current minimum wage	-8.92	-8.31	-9.70	-8.90	-8.81	-9.99	-9.48	-7.77
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Less than next year's minimum wage	-7.30	-7.90	-8.72	-8.61	-8.40	-9.08	-9.11	-7.77
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
More than next year's minimum wage but less than 1st quartile	-6.20	-6.06	-7.08	-6.28	-6.85	-7.30	-6.73	-5.71
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
2nd quartile	-4.74	-4.23	-4.63	-3.99	-4.62	-5.54	-5.66	-4.32
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
3rd quartile	-2.92	-2.45	-2.78	-2.23	-3.08	-3.37	-3.38	-2.51
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Number of observations	2 063 683	2 100 410	2 118 697	2 137 751	2 176 748	2 250 426	2 293 273	2 236 537

Sources: Social Security data and authors' calculations.

Notes: p-values in parentheses. The remaining control variables included in the model are omitted from the Table; see text for the full set of variables included. Coefficients were multiplied by 100 to be interpretable as the percentage change in the probability of remaining employed between two consecutive years for each level of the initial wage relatively to those with wages in the top quartile. For instance, an individual earning the minimum wage in 2002 will be 8.3 p.p. less likely to remain employed in 2003 than an individual with a wage in the top quartile, but otherwise equal (age, gender, industry, etc).

Over time

Note that our cross-section analysis does not account specifically for the variations in the real minimum wage; rather, it shows how the conditional probability of employment varies among the different wage groups. Therefore, we cannot yet attribute to those policy options the variability in employment. To address this issue in a more satisfying way, we extend our analysis to panel data models. We take advantage of our panel with 17.4 million observations of about 2.2 million individuals per year, over the 2003-2010 period and estimate the following model using a firm (j) fixed-effects estimator:

$$Y_{ijt} = \sum_k \left(\beta_k D_{k,ijt} + \varphi_k D_{k,ijt} * MW_t\right) + X\lambda + u_{ijt}$$

where all variables are defined as before and MW_t represents the variation in the real minimum wage in year t. The interaction term between the level of wage in year t $\left(D_{k,ijt}\right)$ and the minimum wage variation in year $t+1$ captures the impact on the probability of remaining employed in year $t+1$ at the different wage levels due to the minimum wage variation. Note that the specification imposes the mild hypothesis that individuals in the top wage quartile are not affected by variations in the real minimum wage. Additionally, the regression model includes year fixed-effects.

The cross-section results gave us a first rough measure of how the probability of employment varies across the wage distribution. With panel data, we will be able to breakdown this probability in two factors: one factor associated with a level effect for each wage-group; and another corresponding to the group specific marginal effect, associated with to the variation in the minimum wage, which also captures the change in the minimum wage level (interaction $D_{k.ijt} \times MW_t$). The results of the estimation are presented in Table 2, column (1).

Interpreting the results is not straightforward, given the existence of interaction variables in the model. The impact of changes in the minimum wage is captured through the β_k and φ_k parameters. The first parameter captures the level effect, while the second is associated with the marginal effect. In order to allow a direct interpretation of the first impact, the variable that measures the change in the minimum wage was re-centered to the sample average (2 per cent). Thus, the level impact, β_k, should be seen as the one that corresponds to a change in the minimum wage equal to the sample average. The marginal impact, φ_k, is not affected by this transformation and has always a direct interpretation.

For workers earning less than next year minimum wage (the two first groups) the probability of remaining employed decreases by about 0.5 p.p. for each percentage point of increase in the minimum wage. For instance, in 2009, where the real minimum wage increased 6.6 per cent, the probability of remaining employed for a minimum wage earner decrease by (an additional) 2.6 p.p.. Overall, in 2009, minimum-wage earners had a probability of remaining employed of 9.8 p.p. lower than a top quartile worker. This is decomposed in 7.2 p.p. associated with the level impact evaluated at the average increase for the real minimum wage, and 2.6 p.p. due to the marginal impact because the real minimum wage increased above the average rate. The cross-section estimation indicated a difference of 8.6 p.p.. The remaining wage groups, despite not being directly affected by the new minimum wage, still have slightly lower probabilities, around 0.2 p.p. less for each percentage point increase in the real minimum wage.

We conclude that all groups of workers are to some extent affected by the minimum wage. But, are there differences between them? In other words, are the coefficient estimates statistically different from each other? We run hypothesis testing for the equality of the impact on the first group of individuals earning more than next year's minimum wage to the two groups below next year's minimum wage. In both cases, we reject the hypothesis of equality, suggesting that the minimum wage is naturally more binding for low-wage earners.

Our results are closer to those obtained for the US and the UK than for France. In particular, Currie and Fallick (1996) obtain an elasticity to changes in the minimum wage of -0.4, which is close to our estimate

Table 2

PANEL DATA FIRM FIXED-EFFECTS LINEAR PROBABILITY MODEL			
	Employment (1)	Wages (2)	Elasticity (3)=(1)/(2)
Wage group (β):			
Current minimum wage	-7.21	15.80	
	(0.000)	(0.000)	
Less than next year's minimum wage	-5.88	14.69	
	(0.000)	(0.000)	
More than next year's minimum wage but less than 1st quartile	-4.42	12.05	
	(0.000)	(0.000)	
2nd quartile	-2.56	9.22	
	(0.000)	(0.000)	
3rd quartile	-1.11	5.35	
	(0.000)	(0.000)	
Percentage change in the real minimum wage times group indicators (φ):			
Current minimum wage	-0.56	0.52	-1.08
	(0.000)	(0.000)	
Less than next year's minimum wage	-0.45	0.09	-5.26
	(0.000)	(0.000)	
More than next year's minimum wage but less than 1st quartile	-0.26	-0.16	1.64
	(0.000)	(0.000)	
2nd quartile	-0.31	-0.06	5.23
	(0.000)	(0.000)	
3rd quartile	-0.17	-0.22	0.76
	(0.000)	(0.000)	
Number of observations	17 377 525	14 721 929	

Sources: Social Security data and authors' calculations.

Notes: p-values in parentheses. The remaining control variables included in the model are omitted from the Table; see text for the full set of variables included. Conditional on a 2 percent increase in the real minimum wage, the coefficients were multiplied by 100 to be interpretable as the percentage change in the probability of remaining employed between two consecutive years for each level of the initial wage relatively to those with wages in the top quartile. For instance, with an increase of 2 per cent in the minimum wage, in relation to an individual with a wage in the top quartile, but otherwise equal (age, gender, industry, etc), a minimum-wage earner will be 7.2 p.p. less likely to remain employed in the following year. Additionally, for each percentage point of increase in the minimum wage above 2 per cent the probability of staying employed decreases by 0.56 p.p..

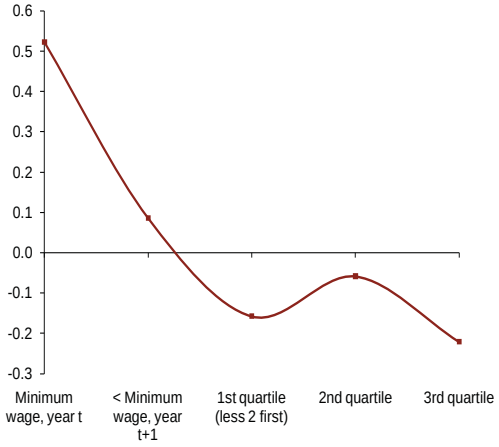
of -0.6. The elasticities estimated by Abowd *et al*. (2000) are slightly larger for the US, but clearly larger for France (their estimates are close to -0.6 and -2.1, respectively). Machin *et al*. (2003) study the impact of the introduction of the minimum wage in the UK and find also a small impact on employment. The evidence gathered for Portugal is ambiguous. Using a legislative reform that raised the minimum wage for workers aged 15 to 19 years, Portugal and Cardoso (2006) show that it resulted in a larger reduction of separations than in hirings. Using the same reform, Pereira (2003) reports a reduction in employment among such workers. The estimated employment-minimum wage elasticities of Pereira (2003) are in the interval -0.2 to -0.4, slightly smaller than our estimates.

The new minimum wage imposes an exogenous constraint on firms. Firms must adjust their production process to accommodate this raise in labor costs. In doing so, they can opt for adjusting their wage bill, they can opt for adjusting the quantity of labor (number of workers and hours worked) or a combination of these. We have seen that firms adjust downwards the amount of labor. Now, we explore how the wages of the different workers are adjusted. We use the same specification (equation (2)), changing only the dependent variable to the log difference between the real wage in year $t+1$ and in year t. Table 2, column (2), reports the estimates of the percent impact on the wage growth for the same group of workers relatively to the top quartile.

The first noticeable fact is that the marginal impact of a percentage point increase in the real minimum wage is positive for those below next year's minimum wage and negative for those above it. This pattern resembles the wave effect discussed earlier in Section 3. Indeed, Chart 8 plots these marginal effects and, apart from a rescaling, the shape of the curve is generally equivalent to Chart 7. This implies that

Chart 8

WAGE REGRESSIONS: MARGINAL IMPACT OF A PERCENTAGE POINT INCREASE IN THE REAL MINIMUM WAGE



Sources: Social Security data and authors' calculations, based on the results in Table 2, column 2.

increases in the real minimum wage are not innocuous for non-minimum-wage earners. The spillover on the other individuals' wages is negative, suggesting that firms adjust the other wage gains downwards to accommodate exogenous increases in the minimum wage. For those concerned with wage inequality, this outcome contributes towards a more uniform wage distribution. But as always, there might be too much of a good thing and the negative impact on employment must be also considered. Indeed, the negative outcome in employment may deliver a smaller (if any) decrease of income inequality. Furthermore, given the higher incidence of long-term unemployment among low-wage workers, this impact may even be increasing overt time.

Having studied the impact on employment and wages, we are now in conditions of computing wage demand elasticities. Table 2, column (3), reports the wage demand elasticities of each group (the ratio of the employment to wage coefficients). The elasticity of minimum-wage earners is -1.1, indicating that for each percentage point increase in wages, employment decrease by slightly more than 1 p.p.. The elasticity among the group earning below next year's minimum wage is strong, -5.3, resulting primarily from having a small wage variation due to the minimum wage and a negative impact on employment similar to the minimum-wage earners.

Heterogeneity: Young workers and sector of activity

It is a well-established fact in the literature that the minimum wage is more binding among low-skilled and young workers, those more prone to earn low wages due to lower productivity. Column (1) of Table 3 reports the results of an identical exercise to those reported above, but considering a sub-sample of workers aged less than 25 years.[7] Overall, the results indicate that young workers employment is more sensitive to variations in the real minimum wage. This is particularly true for the group earning exactly the current year's minimum wage; for each percentage point increase in the minimum wage, the probability of remaining employed falls 0.74 p.p.. This is almost a third higher than the effect estimated for the population of workers considered (0.56). In column (2), we see that the impact on real wages of the minimum wage variation is similar in magnitude to the previous estimates, but it is typically statistically non-significant for the group of individuals earning already above next year's minimum wage. Together,

7 The wage quartiles are re-defined for each of the sub-samples used.

Table 3

PANEL DATA FIRM FIXED-EFFECTS LINEAR PROBABILITY MODEL BY AGE LEVEL AND INDUSTRY

	Young workers (less than 25 years)			Manufacturing			Construction			Services		
	Employment (1)	Wages (2)	Elasticity (3)	Employment (4)	Wages (5)	Elasticity (6)	Employment (7)	Wages (8)	Elasticity (9)	Employment (10)	Wages (11)	Elasticity (12)
Wage group (β):												
Current minimum wage	-6.72			-5.70			-6.48			-8.03		
	(0.000)			(0.000)			(0.000)			(0.000)		
Less than next year's minimum wage	-7.36			-5.43			-6.82			-5.85		
	(0.000)			(0.000)			(0.000)			-(4.090)		
More than next year's minimum wage but less than 1st quartile	-10.35			-4.32			-5.91			-4.09		
	(0.000)			(0.000)			(0.000)			(0.000)		
2nd quartile	-5.28			-3.26			-3.90			-1.85		
	(0.000)			(0.000)			(0.000)			(0.000)		
3rd quartile	-2.41			-1.71			-2.42			-0.56		
	(0.000)			(0.000)			(0.000)			(0.000)		
Percentage change in the real minimum wage times wage group indicator (φ):												
Current minimum wage	-0.74	0.55	-1.35	-0.71	0.70	-1.02	-0.61	0.64	-0.95	-0.46	0.46	-1.01
	(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)	
Less than next year's minimum wage	-0.38	0.09	-4.04	-0.45	0.37	-1.20	-0.51	0.35	-1.43	-0.27	-0.09	3.04
	(0.000)	(0.001)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)	
More than next year's minimum wage but less than 1st quartile	-2.25	-0.36	-	-0.54	0.23	-2.35	-0.27	0.15	-1.83	-0.15	-0.32	0.47
	(0.000)	(0.318)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)	
2nd quartile	-0.27	-0.08	3.47	-0.28	0.12	-2.33	-0.45	0.30	-1.50	-0.26	-0.16	1.64
	(0.000)	(0.001)		(0.000)	(0.000)		(0.000)	(0.000)		(0.000)	(0.000)	
3rd quartile	-0.24	-0.01	-	-0.12	-0.06	1.93	-0.33	-0.04	-	-0.14	-0.24	0.61
	(0.000)	(0.630)		(0.000)	(0.000)		(0.000)	(0.043)		(0.000)	(0.000)	
Number of observations	2 184 150	1 720 885		4 456 811	3 878 574		2 120 848	1 698 736		10 799 866	9 144 619	

Sources: Social Security data and authors' calculations.

Notes: p-values in parentheses. See notes to Table 2, to the list of variables included and an interpretation of the results.

these results imply a larger (in absolute value) elasticity among young minimum wage earners (-1.3) and slightly lower elasticity in the contiguous group (-4.0).

Different industries have different human capital requirements. This in turn implies that workers with different skills allocate to each industry accordingly. In industries with lower human capital requirements, the prevalence of minimum-wage earners is stronger. For such firms, an exogenous increase in the minimum wage may have far stronger impacts than in an industry where there are few such workers. To study this possibility, we consider three sub-samples by industry type: manufacturing, construction, and services. Columns (4)-(12) present the estimates for the impact of the minimum wage increases on employment and wages.

There are three noteworthy facts to take away from this exercise. First, the larger impacts on employment occur in manufacturing and the smaller in the services sector. Second, in the case of manufacturing, the larger magnitudes, which were typically observed for the two groups below next year's minimum wage, are extended to the third wage group. In other words, in manufacturing, those that stand to lose with a minimum wage increase are not only those that will have to be legally raised, but also those earning already slightly above that new legal threshold. Third, in contrast with manufacturing, in the services sector the larger magnitude is only observed for current minimum-wage earners.

5. Conclusion

This article discusses the impact of increases in the minimum wage on three key labor market outcomes: employment, wages and inequality. Our results point to negative and small elasticities of employment to increases in the minimum wage. The disincentives that increases in the minimum wage generate are small but they are economically significant, especially in a period of protracted economic and productivity growth. Economic theory is used as a guide to interpret these results. The impact of increases in the minimum wage depends on the structure of the market, but also on the relevance of the level and increase in the minimum wage.

The recent experience of the Portuguese economy provides an interesting setting to study the consequences of large minimum wage increases. Indeed, this is a challenge to naïve results that extrapolate the results from increases of the minimum wage in specific groups of workers to a more general conclusion regarding the overall impact of minimum wage increases. In Portugal, lower-tail wage inequality fell sharply since 2007. We see this as a direct positive impact on the wages of low-paid individuals and an indirect (or spillover) negative effect on the wages of median wages, an effect that deserves attention in future research. However, individuals paid the minimum wage experienced a decrease in employment stability. The reduced probability of employment is a negative outcome, which may result from both falling demand and contained supply. The latter effect can be seen as the interaction of the minimum wage policy with the unemployment insurance system that grants minimum-wage earners an unemployment benefit close to their previous wage. In this context, the potential positive impact of the minimum wage increase on labor supply may be much more limited. The smaller probabilities of employment would translate into a wider income distribution. However, inequality may be reduced by the unemployment insurance system, even if at the cost of lower incentives to work.

These results highlight the need for a comprehensive policy, in which minimum wage increases take into account the evolution of productivity gains. A set of policies that increases the cost of labor and at the same time increases the protection of workers in unemployment is bounded to generate lower employment and higher unemployment.

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AN ANALYSIS OF PORTUGUESE STUDENTS' PERFORMANCE IN THE OECD PROGRAMME FOR INTERNATIONAL STUDENT ASSESSMENT (PISA)*

*Manuel Coutinho Pereira***

ABSTRACT

This study focuses on the evolution of the scores of Portuguese students in *PISA* cycles from 2003 to 2009. It may be concluded that the variation in scores is strongly influenced by changes in the family background of students and other variables, such as the distribution of students by degrees. The sampling methods used for data collection under the programme tend to amplify these changes. When such factors are taken into account for the analysis, holding constant the score determinants, there has been a continued improvement in student performance over the cycles considered.

1. Introduction

International programmes of educational achievement, such as the OECD *PISA*, provide comparable data over time and between countries which are highly valuable for the evaluation of educational systems and, implicitly, the return on education spending. *PISA* 2009 results, corresponding to the fourth time this programme was administered, were released in December last year and yielded an improvement in the scores of Portuguese students compared to previous editions (which took place in 2000, 2003 and 2006, *i.e*. in cycles of three years). Further analysis of trends in scores, however, requires a confrontation with the evolution of the characteristics of the student population and schools. Firstly, students' socio-economic status has an influence on performance, and any change in status over the editions of the programme should be taken into account. As can be seen, there are other aspects to consider in this context, such as the distribution by grade of the children covered by the programme. *PISA* is a sample survey in which inference is drawn by extrapolation to the population. This appears to magnify the differences between cycles for some student and school variables, and makes an analysis such as this all the more necessary. In contrast, in the presentation of trends in *PISA* results, as in OECD (2010), an unconditional analysis has been favoured (see Gebhardt and Adams, 2007).

This study investigates the change in the scores of Portuguese students throughout the *PISA* surveys, at various points of score distribution, taking into account the changes in the observable determinants. The outcomes for two of the subjects in the programme, mathematics and reading, are examined. This work follows on from Pereira (2010) who analysed the explanatory factors behind Portuguese students' performance in *PISA* 2006 in the European context – assessed from the estimation of education production functions – along with a set of results concerning its variability. This analysis was intended to establish a number of facts of a structural nature, for which no substantial change is expected over the time

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frame covered by the *PISA* cycles, making a comparison with other countries.[1] In contrast, this study focuses on the changes in performance of Portuguese students over the editions of the programme.

When the aim is to compare the outcomes of evaluation tests conducted at different times, as in the research carried out herein, it is essential that the measurement of performance be comparable. If the difficulty of tests varies and the scores are not correspondingly adjusted, the assessment of the change in performance – which is the objective of the analysis – may be jeopardized. In *PISA* care has been taken to ensure the comparability of results by reporting scores in different surveys according to the same scale. This is achieved through the linkage of the assessments for each subject by a set of common items. The degree of difficulty measured for those items is evaluated in each cycle *vis-à-vis* a reference cycle,[2] and any inequality found is used in the construction of a transformation of scores to the scale of the reference cycle (see OECD 2009a, Chapter 12, and Gebhardt and Adams, 2007, for a critical discussion).

This procedure has been followed since *PISA* 2000 and *PISA* 2003 (taken as reference cycles), respectively, for reading and mathematics. The non-comparability of scores in mathematics in the 2000 edition implies their exclusion from this study. It was decided not to consider any data from this cycle at all, including the ones for reading, because the presentation of information about students and schools differs for certain variables relative to the subsequent cycles. Given that, for conditional inference, variables must be available (or constructed according to a common methodology) for each year, the exclusion of *PISA* 2000 also makes it possible to keep a greater number of explanatory variables.

The study begins with a descriptive analysis of how Portuguese students' performance and student and school variables have evolved from *PISA* 2003 to 2009 (Sections 2 and 3). Section 4 sets out a decomposition of scores between the part explained by the change in pupil and school characteristics, and the inequality in scores that would have prevailed, had such characteristics remained identical from one edition to the other. This last component gives a measure of the variation in performance that may be attributed to the educational system. Finally, in Section 5, a detailed analysis is provided for outcomes in public and private schools. The main conclusions are summarized in Section 6.

2. Performance of Portuguese students from *PISA* 2003 to 2009

The population of students in *PISA* consists of 15-year-old students who attend schools in one country and are at least in the 7th grade. In the Portuguese case, most of the students are in the 9th or the 10th grade. The tests are taken by a representative sample from this population. In the sampling process schools are randomly selected in a first stage, and eligible students in each of these, up to a maximum of 40, in a second stage. In Portugal participated in the program 4608 pupils belonging to 153 schools in 2003, 5109 pupils belonging to 173 schools in 2006, and 6298 pupils belonging to 214 schools in 2009. The sample size represented about 5 per cent of the relevant student population. The *PISA* databases include final student weights, reflecting, *inter alia*, sampling probabilities. In addition, scores are reported in the form of values extracted from the estimated distribution of scores assigned to each student (see OECD, 2009b, Chapters 6 and 8).

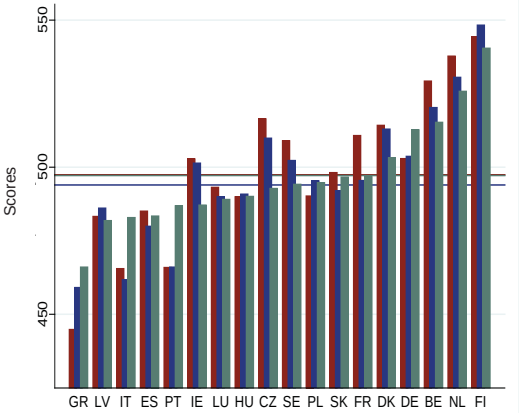
Charts 1A and 1B show the average scores in Portugal and the European Union countries participating in the three editions of the programme and whose data in each of these meet certain quality requirements defined by the OECD (for example, regarding the response rate – see OECD, 2010, Chapter

1 See also Pereira (2010) for a discussion on how empirical studies such as the one presented herein fit in the framework of economics of education literature.

2 Note that *PISA* uses the Rasch model, in which a question's difficulty is measured by the proportion of students who answer it correctly; each question is then associated with a point on the scale according to its degree of difficulty. Finally, the student is placed on the point of the scale corresponding to the question to which he/she has a 50 per cent probability of responding correctly.

Chart 1A

PERFORMANCE IN MATHEMATICS | SCORES BY COUNTRY AND OVERALL MEAN, IN 2003 (IN RED), IN 2006 (IN BLUE) AND IN 2009 (IN GREEN)

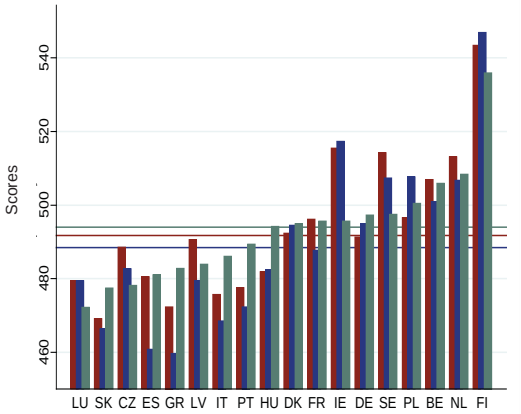


Source: Author's calculations.

Note: Average of the weighted averages for each plausible value.

Chart 1B

PERFORMANCE IN READING | SCORES BY COUNTRY AND OVERALL MEAN, IN 2003 (IN RED), IN 2006 (IN BLUE) AND IN 2009 (IN GREEN)



Source: Author's calculations.

Note: Average of the weighted averages for each plausible value.

1).[3] It also presents the mean for all countries (horizontal lines). It should be remembered that scores are measured by reference to the results for 2000, in the case of reading, and for 2003, in the case of mathematics (with the value 500 corresponding to the respective OECD mean). The countries are ordered according to the *PISA* 2009 results.

The main conclusion to be drawn from charts 1A and 1B is that the mean score for Portugal in the most recent *PISA* was higher than in the two previous editions, in which the results had been fairly close. This trend is particularly visible in reading, placing Portuguese students in an intermediate position in the ranking of EU countries considered. More importantly, the average score does not differ significantly, in statistical terms, from the average in that group of countries.[4] There was a noticeable improvement in performance in mathematics as well. While Portugal continues poorly positioned in terms of the ranking shown in chart 1A, the country clearly caught up with the countries occupying intermediate positions.

In order to complement the picture of score evolution between 2003 and 2009, charts 2A and 2B present the proportion of students in lower and upper score cohorts, respectively, at proficiency level 1 and below and at proficiency level 5 and above. These levels of proficiency, defined under the programme, correspond to increasing levels of difficulty in the questions students must answer (see footnote 2). In particular, students in the lower cohort are deemed to have acquired skills below the minimum level making productive participation in society possible.

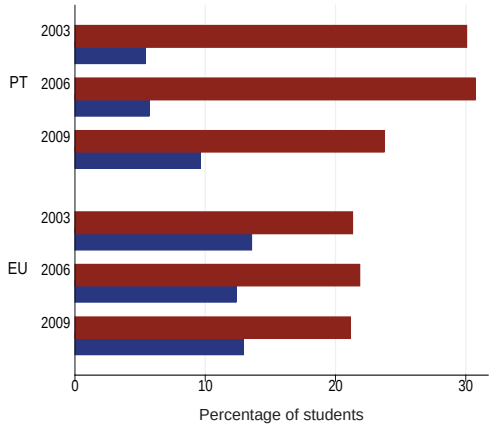
With regard to the proportion of Portuguese students in the lower cohort, a certain increase between 2003 and 2006 was followed by significant declines in 2009, both in reading (a subject for which that proportion became lower than the EU average) and mathematics. In the latter subject there was, at the same time, a significant rise in the proportion of students with very high scores, causing a shift to the right of the score distribution as a whole. In contrast, in reading, the average increase was due to

3 This latter criterion leads to the exclusion of Austria and the United Kingdom from this study. The countries considered are Belgium, Czech Republic, Denmark, Germany, Finland, France, Greece, Hungary, Ireland, Italy, Latvia, Luxembourg, Netherlands, Poland, Portugal, Slovakia, Spain, and Sweden.

4 That is, the 95 per cent confidence intervals (not shown) around the mean score for the population in Portugal and in EU countries intersect.

Chart 2A

PROFICIENCY IN MATHEMATICS IN PORTUGAL AND EUROPEAN UNION COUNTRIES | STUDENTS AT LEVEL 1 AND BELOW (IN RED) AND AT LEVEL 5 AND ABOVE (IN BLUE)

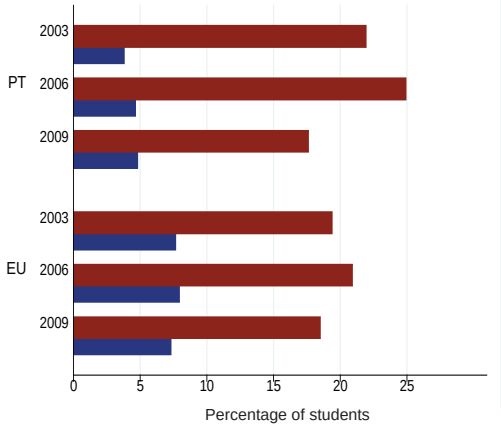


Source: Author's calculations.

Note: Average of percentages for each plausible value.

Chart 2B

PROFICIENCY IN READING IN PORTUGAL AND EUROPEAN UNION COUNTRIES | STUDENTS AT LEVEL 1 AND BELOW (IN RED) AND AT LEVEL 5 AND ABOVE (IN BLUE)



Source: Author's calculations.

Note: Average of percentages for each plausible value.

the better marks of students featuring lower performance levels. The evolution in the quartiles of score distribution for Portugal from 2006 to 2009 (not shown) confirms these findings. Whereas in mathematics there was a similar shift (of around 20 to 21 points) to the right of all quartiles, in reading such displacement was equal to about 26 points in the first quartile and less than 10 points in the third. The dispersion of scores in mathematics remained thus unchanged, while that of scores in reading decreased.

3. Student and school data

In order to put together a group of explanatory variables of the greatest possible extent and common to all the three cycles, the available information about students and schools in the databases was carefully examined. The questionnaires from which this information comes have a similar – although not identical – content over the years. Most of the variables used were directly taken from the databases. However, in some cases these variables were constructed from basic information, namely, the amplitude in the grades offered by school, and the indices of educational resources at home, autonomy in resource allocation and autonomy of curriculum and assessment[5] (see Appendix 1). The set of explanatory variables available – presented in table 1 – covers most of those considered in Pereira (2010). The exceptions are the wealth index (which is largely redundant in that the family background is well captured by other variables) and the variables related to availability of computers, parental pressure on schools to improve standards, the existence of other schools competing for the same students, and students' familiarity with information technologies.[6]

5 The original indices, available in the databases, were not used since it was found that they had not been constructed in a uniform way over time.

6 In addition, the binary variables for the shortage of mathematics and test language teachers were not considered, because, in *PISA* 2006 and 2009, very few Portuguese schools reported the existence of such a shortage.

The most significant changes in the characteristics of the student population, their families and schools for Portugal in the 2003, 2006 and 2009 editions of *PISA* (Table 1)[7] are now considered. As mentioned, students are mainly distributed between the 9th and the 10th grades, reflecting primarily the month of birth (for those who have never repeated a grade). However, there has been a considerable fluctuation in the distribution between these two grades, with a particularly low number of students in the 10th in *PISA* 2006. As discussed in the next section, the allocation of students to grades greatly influences scores and is therefore of relevance. The sampling process may contribute to it to the extent that there have been departures from representativeness for certain types of schools in the sample, namely those that provide only lower secondary education – courses up to the 9th grade – or upper secondary education – courses from the 10th grade onwards (recall that the sampling process begins with a selection of schools). The fact that the proportion of schools of the first type was higher in *PISA* 2006 than in other cycles indicates that this may have been the case. It is known that such a problem can be mitigated by including the type of school as a sample stratification criterion; this was only the case in *PISA* 2006 (see Table 4.1, Chapter 4 – OECD, 2005, 2009a, 2011). However, even for the schools that offer both lower and upper secondary education courses, there has been some variation over time in the distribution of students by the two grades.[8]

The figures for the variables measuring family context have fluctuated as well. The situation in terms of the educational attainment of parents is more favourable in *PISA* 2009 than in the 2006 cycle, featuring a larger proportion of students whose parents have secondary education as their highest educational level. In particular, there was a large increase in the lower secondary education (9th grade) cohort, probably mostly related to qualifications obtained under the *Processos de Reconhecimento, Validação e Certificação de Competências*. In the 2009 cycle, the proportion of students with at least one parent having a tertiary degree also increased. The situation in *PISA* 2006 *vis-à-vis* 2003 in terms of educational attainment of parents was similarly unfavourable, this time with regard to the distribution between tertiary and upper secondary education cohorts. Associated with the variation in qualifications, there has been a fluctuation in the breakdown of parental occupations. For example, the proportion of students with at least one parent in a white collar/highly skilled occupation fell from about 34 to 26 per cent between *PISA* 2003 and 2006, increasing to 36 per cent in *PISA* 2009. Such differences between cycles of the programme with regard to family background variables may be linked to a sample bias towards the selection of schools in rural areas (towns with less than 15 000 inhabitants) in *PISA* 2006 to the detriment of schools located in medium-sized urban areas (towns with between 15 000 and 100 000 inhabitants). In general, one would expect an improvement in parental educational attainment during the period under review, featuring a gradual increase in the number of parents with at least a secondary rather than a primary degree. However, such a trend may, in practice, be obscured by the "noise" introduced by the sampling process.

With regard to school variables, there was a decrease in the proportion of repeaters (in the school as a whole) over the three considered *PISA* cycles. This development is in line with the observed decrease in repetition rates at various educational levels during the last decade (GEPE, 2010). The trend in the indicators of autonomy, compiled from a set of questions answered by schools (see Appendix 1), indicates a decrease in the autonomy of the latter in the choice of curricula and assessment methods. The proportion of the student population attending private schools has increased over time, from just

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7 Most variables in the table have a few missing observations for each year. Such observations were imputed by running a regression (for the countries listed in footnote 3) of the variables in question on a set of "key regressors" including the degree, age, gender, school location and country (in the same way as described in detail in Pereira, 2010, Appendix 2). All of the observations for normal hours of the test language in *PISA* 2003 were imputed. In this case the imputation was based on normal hours of mathematics and binary variables for the school location and country.

8 Notwithstanding the school type, it is possible that, given the unequal proportions of students attending the 9th and 10th grades, the sample size does not permit greater accuracy (more so in the case of the 7th and 8th grades). The effective sample size per school is, on average, 32 students (maximum 40).

Table 1

STUDENT AND SCHOOL VARIABLES, AVERAGES FOR PORTUGAL[a]

	2003	2006	2009
Student characteristics			
7th grade	4.2	6.6	2.3
8th grade	10.6	13.1	9.0
9th grade	20.3	29.5	27.9
10th grade	64.9	50.9	60.8
Age (years)	15.9	15.7	15.7
Female	52.4	51.7	51.1
Family background			
Educational resourc. home (index) ⊂ [0,6][b]	4.7	5.3	5.0
Books at home < 25	35.1	38.7	36.4
Books at home 25-200	49.1	46.0	48.1
Books at home > 200	15.8	15.4	15.5
Native	95.0	94.1	94.6
Immigrant (1st or 2nd generation)	5.0	5.9	5.4
Test language at home	98.6	97.8	98.4
Foreign language at home	1.4	2.2	1.6
Parents' highest occuppat. level			
Blue collar/low skilled	12.9	12.9	8.9
Blue collar/high skilled	27.9	24.0	21.9
White collar/low skilled	25.3	35.2	33.0
White collar/high skilled	33.9	27.8	36.2
Parents' highest education level			
Primary or less	38.5	38.1	27.0
Lower secondary	16.8	16.2	23.0
Upper secondary	19.4	23.5	24.3
Tertiary	25.3	22.2	25.8
School characteristics			
School size (1000 students)	1.000	0.958	0.937
Proportion of girls	51.5	50.8	50.5
Located in town with less 15 000 people	37.6	42.5	36.2
Located in town with 15 000-100 000 people	42.9	35.9	42.2
Located in city with more 100 000 people	19.5	21.6	21.6
Grade amplitude (max - min grade)	4.7	5.1	5.7
Proportion of repeaters	17.0	14.6	9.8
Autonomy resources (index) ⊂ [0,6]	1.9	1.7	2.2
Autonomy curric./assessm. ⊂ [0,4]	2.4	2.0	1.5
Public school	93.8	91.2	86.2
Private school	6.2	8.8	13.8
School resources			
Class size (students)	22.0	24.0	22.3
Student/teacher ratio	11.0	8.9	8.5
Regular lessons math (hours)	3.2	3.5	4.4
Regular lessons language (hours)[c]	3.1	3.2	3.8

Source:

Notes: (a) Weighted averages; figures as a percentage of totals unless otherwise stated (more details about the construction of variables are given in Appendix 1). **(b)** For indices, intervals show the minimum and maximum. **(c)** Figures for 2003 were fully imputed (see footnote 7).

over 6 per cent, in *PISA* 2003, to almost 14 per cent, in *PISA* 2009 (the public/private nature of school has been used as a stratification criterion throughout the various editions). This profile is, however, not corroborated by the figures from other sources (GIASE, 2006 and GEPE, 2011).[9] Also in this case, it may not be possible to achieve greater accuracy given the sample size and the fact that private schools represent a small proportion of the universe of students.

In conclusion, the characteristics inferred for the student population and schools have varied throughout the *PISA* cycles, and the extrapolation from the sample to the population tends to amplify the magnitude of such variation. In this context it is very important to determine their impact on the evolution of student performance.

4. Decomposition of change in performance

4.1. Computation and interpretation of the decomposition

In general, the evolution of a variable explained by a linear regression model can be decomposed into a component relating to the explanatory variables, on the one hand, and to the coefficients associated with them, on the other (see Fortin *et al*., 2011, for a description of the methods used in this context). The linear model that underpins the decompositions performed in this study is the education production function that relates test scores to explanatory variables such as student, socioeconomic and school variables. The change in the dependent variable at its average is traditionally analysed through the Oaxaca-Blinder decomposition, which is based on the estimation of the underlying model by least squares regression. This method makes it possible to differentiate between the contribution of coefficients and that of explanatory variables while, at the same time, directly providing a detailed breakdown of the latter contribution by variable (or sets of variables). This aspect is important in our context, as the regressors are naturally divided up into groups whose contribution should be considered jointly. Three groups of variables are considered in the presentation of results, namely, student characteristics, measures of family context and school characteristics/resources (see Table 1 for the listing). Based on unconditional quantile regressions, developed by Fortin *et al*. (2009), it is possible to perform a similar decomposition at other points of the dependent variable distribution.[10]

The decomposition divides the differential in performance between *PISA* cycles into two terms. The first term is the part that can be attributed to changes in the variables included in the education production function, *i.e*. the characteristics of students, families and schools in each cycle. The second term reflects the changes in the return on the variables, *i.e*. the differential in performance that would prevail, if these variables had remained unchanged from one cycle to the other. The differential in conditional performance, which this second term captures, can be interpreted as originating in the educational system. Note that for the first term, the part concerning the school-related regressors[11] admits a similar interpretation (see also the discussion in the following paragraph about omitted variables). The objec-

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9 Which indicate (considering all the students who attend regular courses in the third basic education cycle) that the proportion of students in private schools rose marginally from 12 to 13 per cent over the concerned period.

10 The expressions used to calculate the decompositions are given in the note to table 2 below. The Oaxaca-Blinder decomposition is based on the fact that the least squares estimator of a linear model $y = x\beta + u$ yields the impact (equal to β) on the unconditional expected value of y, $E(y)$, of the variation of $E(x)$, as given by $E(y) = E(E(y \mid x)) = E(x)\beta$. Similarly, the unconditional quantile regression estimates the impact (say, γ) on the unconditional quantile of y, $Q(y)$, of the variation of $E(x)$, *i.e.* $Q(y) = E(x)\gamma$. Note that this property is not shared by the conventional conditional quantile regression of Koenker and Bassett (1978) since, in general, $Q(y) \neq E(Q(y \mid x))$. Hence the decompositions based on these latter regressions require the simulation of counterfactual distributions which, in particular, makes it difficult to obtain a detailed breakdown of the contribution of regressors (see Fortin *et al*., 2011).

11 Except for the indicator of school location.

tive is to eliminate the influence of factors related to family background and data collection, notably the distribution of students by grade, included in student characteristics. While such distribution may be endogenous to the educational system, as it relates to grade repetition, in the data used here such an effect is unlikely to predominate.

One important aspect to take into account when interpreting the coefficient-related component of the decomposition is that the variation in the constant term coefficient will, *inter alia*, pick up the effects of changes in the level of omitted variables.[12] Regressions explaining student assessment outcomes include several statistically significant regressors, but typically fail to explain all of their variability (see, for example, Woessmann *et al*., 2009, Chapter 2, using the *PISA* dataset for a wide range of countries). The coefficient of determination indicates that in the least squares regressions for Portugal – on which the Oaxaca-Blinder decomposition is based – about half of the variance of scores remains unexplained. This should reflect, firstly, the variability in student capabilities, but such factor is expected to remain constant over time and therefore not to greatly affect the decomposition results. The same does not hold, however, for the other unobservable factors that relate to the quality and effectiveness of teaching, such as the role of teachers in the organization of classes and choice of teaching methods. This is probably the worst covered area in the *PISA* database, where there are not, for example, measures of teacher experience.[13] But even if the change in the coefficients is also capturing changes in this type of variable throughout the *PISA* cycles, this is still is consistent with the interpretation of the component at issue as referring to variations in performance attributable to the educational system.

4.2. Results

The decompositions of the variation in mathematics and reading scores at the mean and first and third quartiles are presented in tables 2 and 3, respectively, for 2003-2006 and 2006-2009. It is possible to calculate a detailed decomposition of the coefficient-related contribution corresponding to that of explanatory variables. However, in the presence of binary variables such as for the categories of parental occupations and qualifications, the results are not invariant to the category omitted in the regression (see, for example, Oaxaca and Ransom, 1999). In practice, this invalidates the interpretation of these results, which are therefore not shown.

The approximate stabilization of the average performance of Portuguese students between *PISA* 2003 and 2006 in mathematics and reading, presented in charts 1A and 1B at the beginning of this study,[14] stems from contributions of opposite signs of the coefficients (positive) and regressors (negative), which approximately cancelled each other out. This was also the case at the quartiles, except for the first one in reading, where the increase in return on variables was small and there was a clear reduction in the level of scores. Such a reduction is consistent with the higher percentage of students at lower proficiency levels for this subject, shown in chart 2B. In the contribution of regressors, the most important part is played by student variables, in line with the rise in the proportion of students attending the 9th grade in *PISA* 2006, as well as lower grades – as indicated by the even more negative contribution of student characteristics in the first quartile of score distribution.

The contribution of family variables is almost nil at the mean, and turns into negative at the third quartile, which may have to do with the decline in the proportion of parents with a tertiary degree and

12 The coefficients of the other regressors included in the model will also change to the extent that there is correlation with omitted variables. However, this poses no difficulties in our context, because in the decomposition the coefficients are considered as a whole.

13 The databases include teacher qualification variables, which, however, given their small variability, are of little interest to the analysis.

14 The values in the tables (for the total) differ slightly from those underlying the charts since in the calculation of the latter all observations are used, unlike for the regressions. Indeed, even after the imputation procedure, some missing observations for the explanatory variables remain.

Table 2

DECOMPOSITION OF CHANGE IN SCORES 2003-06 IN THE MEAN AND QUARTILES

	1st Quartile		Mean		3rd Quartile	
	Mathematics	Reading	Mathematics	Reading	Mathematics	Reading
Covariates (1)	-7.1	-7.3	-5.9	-6.1	-5.5	-7.5
	(-11.5,-2.5)	(-12.5,-1.6)	(-9.2,-2.5)	(-9.7,-2.4)	(-10.1,-1.7)	(-12.3,-3.8)
Student	-11.2	-12.6	-10.1	-10.2	-9.7	-9.7
	(-13.7,-8.9)	(-15.4,-9.7)	(-12.0,-8.2)	(-12.3,-8.1)	(-11.9,-7.5)	(-11.9,-7.8)
Family	2.2	3.1	-0.1	0.8	-3.5	-2.9
	(0.4,4.1)	(0.8,5.4)	(-1.4,1.1)	(-0.7,2.2)	(-5.1,-1.9)	(-4.8,-1.3)
School	2.0	2.2	4.3	3.3	7.7	5.1
	(-0.9,5.2)	(-1.5,6.0)	(2.3,6.3)	(1.2,5.7)	(4.2,10.5)	(1.9,8.0)
Coefficients (2)	8.0	1.0	8.1	3.3	10.5	8.0
	(3.1,12.4)	(-4.9,6.3)	(4.8,11.2)	(-0.4,6.6)	(6.3,15.8)	(3.8,12.9)
Total (1+2)	0.9	-6.3	2.2	-2.8	5.0	0.5
	(-3.6,5.2)	(-11.4,-1.9)	(-1.1,5.6)	(-6.3,0.7)	(1.3,9.3)	(-3.1,4.1)

Source: Author's calculations.

Notes: The decompositions are computed as $S(y_{t1})-S(y_{t0})=(X_{t1}-X_{t0})b_{t1}+X_{t0}(b_{t1}-b_{t0})$, where $t1$ and $t0$ index the year, $S(y_t)$ are the relevant statistics of test scores, X_t. are the averages of the covariates (see Table 1) and b_t. are the coefficients obtained by ordinary least squares regressions, for the mean, and unconditional quantile regressions (Fortin *et al.*, 2009), for the quartiles. The regressions are weighted, using the final student weights, and run separately for each plausible value. Bootstrap 95% confidence intervals, on the basis of 1000 replications, in parenthesis.

Table 3

DECOMPOSITION OF CHANGE IN SCORES 2006-09 IN THE MEAN AND QUARTILES

	1st Quartile		Mean		3rd Quartile	
	Mathematics	Reading	Mathematics	Reading	Mathematics	Reading
Covariates (1)	16.9	13.9	15.2	11.7	14.2	6.9
	(12.4,21.2)	(9.3,18.7)	(11.8,18.6)	(8.3,15.0)	(9.4,18.0)	(2.9,10.5)
Student	16.7	16.3	12.0	11.3	7.3	6.4
	(14.0,19.2)	(13.8,19.0)	(10.1,13.7)	(9.5,13.0)	(6.0,8.6)	(5.2,7.5)
Family	2.0	2.6	2.3	2.8	3.0	3.0
	(0.8,3.4)	(1.4,3.9)	(1.1,3.4)	(1.8,3.8)	(1.6,4.7)	(1.7,4.4)
School	-1.9	-4.9	0.9	-2.4	3.8	-2.5
	(-5.2,1.3)	(-8.1,-1.4)	(-1.6,3.4)	(-4.6,-0.2)	(0.1,6.8)	(-5.8,0.7)
Coefficients (2)	12.0	19.3	12.2	11.7	10.9	4.9
	(7.2,16.9)	(13.9,24.4)	(8.8,15.3)	(8.4,15.0)	(6.4,16.3)	(0.3,9.5)
Total (1+2)	28.9	33.2	27.4	23.4	25.1	11.8
	(24.7,32.7)	(28.5,37.8)	(24.3,30.4)	(20.2,26.2)	(21.1,29.0)	(8.1,15.5)

Source: Author's calculations.

Note: See note to Table 2.

a white collar/highly skilled occupation. The variation in performance attributable to school variables is positive, particularly in intermediate and upper score levels, reflecting the changes in various regressors, notably, the increase in the number of hours of regular classes, the reduction in autonomy in the choice of curricula and assessment methods and, for mathematics, the higher proportion of private schools. Table 2 shows a more favourable picture regarding the comparison of results in *PISA* 2003 and 2006 than charts 1A and 1B. Indeed, there is an improvement in the return on variables, i.e. in conditional performance, at most points of score distribution (to which a positive contribution of the school variables adds).

In the evolution of scores between *PISA* 2006 and 2009 (Table 3), both the coefficients and regressors make positive contributions, which thus reinforced each other. Therefore, the improvement in marks associated with the coefficients falls short of the overall figure. As expected, the part of the variation in performance attributable to student characteristics is now positive, its magnitude being particularly

large in the lower half of score distribution. The part of that variation relating to the coefficients has a similar profile, and thus the combined effect is a more pronounced improvement in performance in that segment of the distribution – which is in line with the decrease in the percentage of students at lower proficiency levels (Charts 2A and 2B). The contribution of socio-economic variables was consistently positive throughout the score distribution – as a result of the more favourable situation in *PISA* 2009 regarding these variables – but its magnitude is less important than that of student characteristics. The impact of school regressors on the score variation is relatively small in absolute terms. The sign of this impact is not uniform along the distribution of scores in the case of mathematics, while in the case of reading it is negative. In particular, the increase in the proportion of private schools (by 5 p.p.) inferred for the population in 2009, which, as noted, may have to do with the sampling process, has little influence on the variation of performance. Indeed, the coefficient of the indicator of private school for 2009, used in the decomposition, is very small – especially at the mean (see the next section).

With the caveat that the period of time under consideration is not too long, evidence indicates an improvement in conditional performance of students in the last two editions of *PISA*, which can be attributed to the educational system. Among the factors that may, tentatively, be put forward to explain such an evolution, the gradual introduction of national examinations[15] is likely to have played an important role. Economics of education literature advocates that central exams, external to schools, are a very effective way of setting the right incentives for academic success for the various agents. On the one hand, they enhance accountability of schools, teachers and pupils and, at the same time, allow informed decision-making. Empirical multi-country studies that have addressed this topic have found a higher performance level in school systems with central exams, common to the various points of its distribution and family contexts (see, for example, Woessmann, 2002).

5. Performance in public and private schools in PISA

PISA outcomes can be used to make a comparison of scores between public and private schools and, indirectly, assess teaching quality in these institutions. In this context, the programme data have the advantage of being accompanied by information on the socioeconomic status of students, which can be taken into account in the analysis. At the same time, the availability of data for the three cycles makes it possible to examine the issue on a sounder basis.

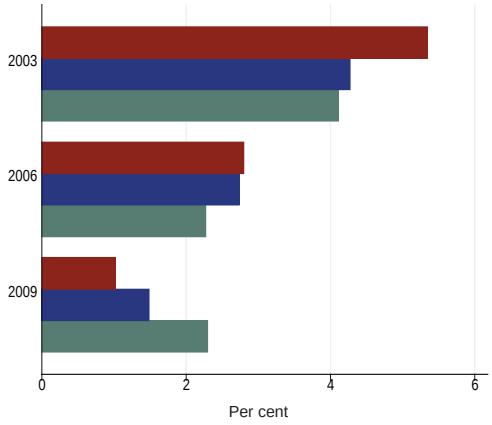
In this analysis attention is restricted to students in the 10th grade (which is the largest group) as a way of ensuring that the conclusions are not affected by a different distribution by grades of students in public and private schools. As a starting point, charts 3A and 3B present the difference for some descriptive statistics of scores between the two types of institutions.

With regard to scores in mathematics, private schools have outperformed their public counterparts throughout the *PISA* cycles, both at the mean and the quartiles. However, the marks in both types of schools have drawn closer over time, primarily owing to the improvement in attainment in public schools. In *PISA* 2009 the differential was already relatively small (around 2 per cent), and on the threshold of statistical significance. This trend has been more marked for lower score levels, and reversed the profile of inequality across the distribution from 2003 to 2009: while the difference in *PISA* 2003 was highest at the bottom of the distribution, this happens at the top in *PISA* 2009. For reading, the differential between private and public schools in the 2006 cycle was negative (but clearly non-significant in statistical terms) and atypical relative to the 2003 and 2009 cycles. One possibility would be a particularly unfavourable sample of private schools in that year (the average score inferred for the population falls *vis-à-vis* 2003), but such a conjecture is not corroborated by the results in mathematics. Since in 2009 the difference is positive but relatively small, it may be concluded that there has been little disparity in reading performance between public and private schools in the two most recent editions of *PISA*.

15 At the end of upper secondary education, in the nineties, and of lower secondary education, since 2005. There have been national exams at the end of the 4th and 6th grades as well, but which have no consequences in terms of student assessment.

Chart 3A

PERFORMANCE IN MATHEMATICS IN PUBLIC AND PRIVATE SCHOOLS (STUDENTS IN THE 10TH GRADE) | SCORES IN PRIVATE SCHOOLS RELATIVE TO PUBLIC, PERCENTAGE DIFFERENCE AT THE 1ST QUARTILE (IN RED), THE MEAN (IN BLUE) AND THE 3RD QUARTILE (IN GREEN)

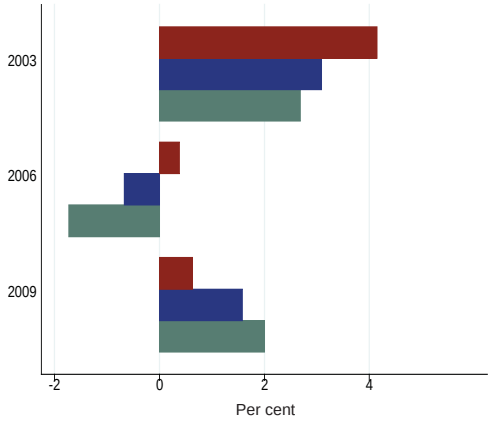


Source: Author's calculations.

Note: Coefficient of the indicator variable for private school in (weighted) least squares and conditional quantile (Koenker e Bassett, 1978) regressions, also including the constant as a regressor.

Chart 3B

PERFORMANCE IN READING IN PUBLIC AND PRIVATE SCHOOLS (STUDENTS IN THE 10TH GRADE) | SCORES IN PRIVATE SCHOOLS RELATIVE TO PUBLIC, PERCENTAGE DIFFERENCE AT THE 1ST QUARTILE (IN RED), THE MEAN (IN BLUE) AND THE 3RD QUARTILE (IN GREEN)



Source: Author's calculations.

Note: Coefficient of the indicator variable for private school in (weighted) least squares and conditional quantile (Koenker e Bassett, 1978) regressions, also including the constant as a regressor.

The differential between private and public schools considering the same statistics for scores, but conditional on family context, is now presented. Charts 4A and 4B show the coefficients of the binary variable for private school in least squares and quantile regressions,[16] also including family background variables and the school location indicator. As expected, the differentials controlling for the socioeconomic composition, more favourable in private schools, are smaller compared to those shown in charts 3A and 3B. Such a reduction is, however, not uniform over the three *PISA* cycles considered, being more substantial in 2003 and 2009 than in 2006. Indeed, the aforementioned composition is more homogeneous between the two groups of schools in this latest edition.

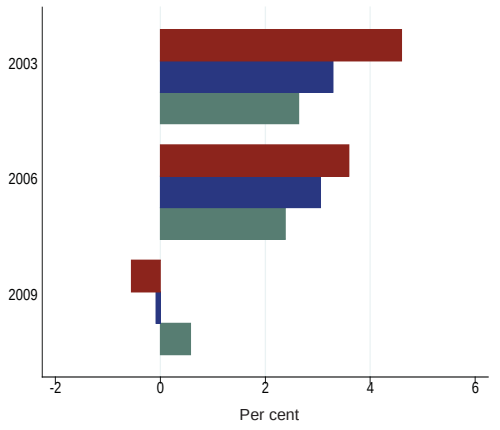
With regard to mathematics scores (Chart 4A), the gap between private and public institutions, after controlling for family background, is similar in the 2003 and 2006 cycles, because the "correction" of that background's influence was more important in 2003. On the other hand, in 2009, the gap virtually disappeared (and became, in addition, statistically not significant). The outcomes in reading (Chart 4B) reinforce the interpretation that the classifications in public and private schools differed little in the last two editions of the programme: the differences are, except for the third quartile in 2006, of a small magnitude and statistically not significant.

In conclusion, some indication of a better performance of private schools in the older editions of *PISA* has been fading. In the 2009 cycle, in particular, there was no relevant difference between scores in public and private schools, whether in mathematics or reading, controlling for the socio-economic status of students. A qualification applying to the whole analysis relates to the fact that the sample contains a small number of private schools, and the findings may be disturbed by non-representativeness of those selected. It may thus be problematic to extrapolate to the universe of students on this matter. In addition, the outcome of national 9th grade exams indicates, even in recent years, larger differences between the performance of students in the two types of schools than those presented in charts 3A

16 In this exercise quantile regressions of Koenker and Basset (1978) were used, as the aim is now to investigate the effect of changes in regressors on the quantiles of the conditional distribution of scores.

Chart 4A

PERFORMANCE IN MATHEMATICS IN PUBLIC AND PRIVATE SCHOOLS (STUDENTS IN THE 10TH GRADE) – CONSTANT FAMILY BACKGROUND |
SCORES IN PRIVATE SCHOOLS RELATIVE TO PUBLIC, PERCENTAGE DIFFERENCE AT THE 1ST QUARTILE (IN RED), THE MEAN (IN BLUE) AND THE 3RD QUARTILE (IN GREEN)

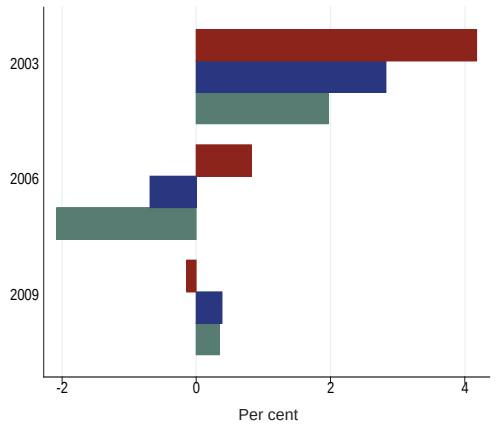


Source: Author's calculations.

Note: Coefficient of the indicator variable for private schools in (weighted) least squares and conditional quantile (Koenker e Bassett, 1978) regressions, also including the socioeconomic variables, the school location indicators and the constant as regressors.

Chart 4B

PERFORMANCE IN READING IN PUBLIC AND PRIVATE SCHOOLS (STUDENTS IN THE 10TH GRADE) – CONSTANT FAMILY BACKGROUND |
SCORES IN PRIVATE SCHOOLS RELATIVE TO PUBLIC, PERCENTAGE DIFFERENCE AT THE 1ST QUARTILE (IN RED), THE MEAN (IN BLUE) AND THE 3RD QUARTILE (IN GREEN)



Source: Author's calculations.

Note: Coefficient of the indicator variable for private schools in (weighted) least squares and conditional quantile (Koenker e Bassett, 1978) regressions, also including the socioeconomic variables, the school location indicators and the constant as regressors.

and 3B. In the 2009 national exams, private schools outperformed public schools on average by about 9 and 16 per cent, respectively, in Portuguese and mathematics (*Público*, 2009).

6. Conclusions

This study presents an analysis of the evolution of Portuguese students' scores in the OECD *PISA* cycles of 2003, 2006 and 2009. The main conclusions are as follows.

- After a relative stabilization between the 2003 and 2006 editions, Portuguese students' marks improved considerably in the 2009 edition, both in mathematics and reading. This allowed a progression towards intermediate positions in the ranking of EU countries, especially in the latter subject.

- The variation in scores between *PISA* cycles has been substantially influenced by the changes in determinants, particularly with regard to the family background of children and, more importantly, the distribution of students by grades.[17] Such changes in determinants have been partly caused by the use of sampling methods for data collection.

- Keeping the student characteristics and family background constant, there has been a steady improvement in scores over the considered *PISA* cycles, which can be attributed to the educational system. The positive impact of the return on the variables was, in the cycle of 2006 compared to 2003, offset by unfavourable changes in the distribution of students by grades and family context. On the contrary, between 2006 and PISA 2009, the two components reinforced each other, resulting in a sharp increase in marks.

- An analysis of scores in public and private schools in *PISA* indicates a tendency for a fading of the differences between both types of educational institutions. However, given the small number of private schools in the sample, the extrapolation of these findings to the universe of students appears to be problematic.

17 This suggests that a comparison between *PISA* results over various editions, even in descriptive terms, should be made according to the student grade, as a simple way of controlling for such changes.

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Appendix 1: Definition of the explanatory variables calculated by the author

Educational resources at home. Index calculated from students' answers to six questions about household possession of the following items: a desk to study, a quiet place to study, a computer for schoolwork, educational software, books to help with schoolwork and a dictionary.

Grade amplitude. Calculated as the difference between the minimum and maximum grades taught at schools.

Autonomy of resources. Index computed from schools' answers to six questions about who has the responsibility for: teacher hiring, teacher firing, setting initial salaries, setting salary increases, formulation of the overall school budget, and changing allocations inside the budget.

Autonomy of curriculum and assessment. Index computed from schools' answers to four questions about who has responsibility for: defining student assessment policies, choosing the textbooks used, defining curricula, and choosing the courses offered.

THE QUARTERLY NATIONAL ACCOUNTS IN REAL-TIME: AN ANALYSIS OF THE REVISIONS OVER THE LAST DECADE*

*Fátima Cardoso** | António Rua***

ABSTRACT

In this article, the revisions of the Portuguese Quarterly National Accounts over the last decade are analyzed. We assess the real-time behaviour of GDP estimates and corresponding expenditure and supply side components. In particular, we focus on the revisions up to one year after the release of the first estimate as well as on the revisions resulting from the inclusion of the Annual National Accounts. In the case of GDP, the reliability of the flash estimate, more recently made available by *INE*, is also assessed. The results for GDP suggest that the revisions up to one year are not significant although the revisions can be larger when the Annual National Accounts are included. The expenditure components related with external trade present the largest revisions while the supply side estimates are more fragile than those from the expenditure side.

1. Introduction

The Quarterly National Accounts (QNA) constitutes one of the most important pieces of information regarding the economic developments of a given country. It includes estimates for the major macroeconomic variables and represents the most updated overall picture concerning the economic situation, which serves as basis for macroeconomic projections as well as for policy-making. However, the national accounts are subject to revisions throughout time which reflect the arrival of new information as well as methodological changes so as to improve its quality. The importance of the national accounts and the need to be as timely as possible, lead inevitably to revisions as the first estimates will always have a preliminary nature. Given its relevance in the economic short-term analysis, the evaluation of its real-time reliability becomes crucial.

The assessment of reliability relates to the issue of measuring how close an initial estimate is to subsequent estimates and not to discuss the degree of approximation of this estimate to the reality that intends to measure. The analysis of the revisions consists in comparing an estimate available at a given point in time with the one which will be available afterwards for the same reference period. Note that the revisions make part of the statistical production process and reflect not only the arrival of new information as well as the revisions policy of the statistical authorities. Hence, one should not conclude that an estimate subject to smaller revisions is necessarily better than other more revised. However, as the presence of significant revisions may harm the economic situation assessment and the corresponding forecasting exercise, it is important to quantify the revisions magnitude. According to Aruoba (2008), a good initial estimate ("well-behaved" revisions) results in revisions that are not very significant (both in size and volatility) and unpredictable, that is, the revisions should not present a systematic behaviour.

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

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The analysis of revisions of macroeconomic data, in particular the main aggregates of QNA, has been widely discussed in literature. In fact, there is a wide range of studies that look at various countries the issue of revisions to GDP and its components. See, for example, Aruoba (2008) for the U.S., Meader (2007) for the United Kingdom or Kholodim and Silivesstivs (2009) for Germany. In turn, Faust (2005) analyzes the revisions to the first estimates of GDP for the G-7 countries. It should be noted that this topic has also received attention from international institutions such as the OECD and the ECB. See for example, Ahmad *et al*. (2004) and McKenzie (2006) for comparative analysis of GDP revisions for several OECD countries and ECB (2009) for the euro area.

The existence of such revisions resulted in a growing interest in evaluating its impact on various areas of macroeconomic analysis. For example, Orphanides (2001, 2003) discusses the importance of revisions in the implementation and interpretation of monetary policy rules, in particular, the Taylor rule. In turn, Orphanides and van Norden (2002) analyze the impact on estimating the output gap and Stark and Croushore (2002) evaluate their relevance in the context of forecasting.[1] A recent overview of this strand of literature can be found in Croushore (2011).

In the Portuguese case, the methodology used to compile the QNA, at least for part of the aggregates, is indirect, that is, it is based on the relationship between the values of the Annual National Accounts (ANA) already released and associated indicators, available quarterly. Whenever ANA are released, the QNA are revised so as to be coherent with these annual values. Discarding substantial methodological changes, revisions to the QNA are essentially of two types: revisions to the associated indicators that underlie the estimation of the QNA and changes to the annual reference values (with the release of new ANA). The inclusion of ANA (which are estimated with a greater degree of detail and information) may lead to more substantial revisions in the quarterly values of a given year. Moreover, the arrival of annual reference values may have an impact not only in the estimates of that year but in the whole series due to potential adjustments in the estimated coefficients. Besides these two types of revisions, there may be minor revisions due to seasonal adjustment.

In particular, José (2004) evaluated the revisions of the Portuguese QNA for the period between the 4th quarter of 1991 and the 1st quarter of 2004. However, the analysis of the revisions in that sample period faces several problems including: the change of the European system of accounts from ESA79 to ESA95 in the 2nd quarter of 2000, implying a series break due to methodological and conceptual changes; periods of interruption in the release of the QNA; the change in the release calendar with the first estimate being released 70 days after the reference period instead of 120 days starting from the 4th quarter of 2002. Therefore, this article intends to revisit the real-time reliability of the QNA by considering a homogeneous sample period, *i.e.*, unaffected by the above mentioned problems. Thus, the period examined runs from the 4th quarter of 2002 up to the 1st quarter of 2011, corresponding to the period of regular dissemination of the QNA with the current framework, that is, estimates according to ESA 95 with the first estimate (*i.e.*, detailed QNA) being released 70 days after the reference period. Moreover, since the 1st quarter of 2007, the *INE* releases a flash estimate for GDP 45 days after the end of the reference quarter, which justifies an assessment of this advance estimate for GDP. The flash estimate will be analyzed separately. The analysis of revisions to the QNA will be performed resorting to a set of descriptive statistics commonly used in such studies.

The article is organized as follows. In section 2, the data and methodology are described, that is, the type of revisions and the measures used are discussed. In section 3, we analyze the revisions to the main economic aggregate, that is, GDP. This section provides a more comprehensive analysis, including also the analysis of the flash estimate revisions, as well as the revisions to the quarterly estimates due to the

1 For example, in the case of the UK, the fact that GDP is subject to revisions led the Bank of England, under the release of its macroeconomic projections, to incorporate such information in the construction of the so-called fan chart for GDP in order to reflect the uncertainty about the past (see Bank of England (2007)).

inclusion of the ANA. In addition, we analyze the revisions to the rates of change in volume of the main aggregates of QNA, including the various components on the expenditure and supply sides, as well as the deflators. Section 4 presents the main conclusions.

2. Data and methodology

The first estimate of the QNA for a given quarter (including expenditure and supply side disaggregation) is currently released 70 days after the end of the reference period. This estimate may be revised in the following publications which are released with a quarterly periodicity. Hence, simultaneously with the release of the first estimate of quarter t, a second estimate for the quarter t-1, a third estimate for the quarter t-2 and so on, are also released. In the current format, each publication includes a collection of quarterly data[2] for the period from the 1st quarter of 1995 to the reference quarter.

The data to be analysed include GDP and its main expenditure components as well as Gross Value Added (GVA) and corresponding breakdown by main branches of activity, available in 34 vintages for the period between the 4th quarter of 2002 (released in March 2003) and the 1st quarter of 2011 (disclosed in June 2011).

With such database it is possible to analyze several types of revisions. The first revision for a given quarter is the difference between the second and the first estimates. For subsequent quarters, we can analyze revisions *vis-à-vis* the previous quarter estimate or *vis-à-vis* the first estimate.

Since estimates are likely to be revised in each QNA release, the values for the most remote quarters are subject to a longer period of revision. When considering the most recently published data (that is, the latest estimate), it includes different revision horizons for each quarter *vis-à-vis* the first estimate. Moreover, the last quarterly figures are not yet subject to any annual restriction imposed by the ANA while the more remote quarterly figures already incorporate the corresponding ANA. Hence, only revisions with the same horizon for all quarters will be analyzed and therefore the revision to the first estimate *vis-à-vis* the currently available estimate will not be considered. In particular, we focus on the revisions up to one year after the release of the first estimate. On one hand, within this time frame of revision, the estimates have not yet been subject to the potentially more substantial revisions due to the inclusion of the respective ANA. In fact, the ANA are usually released with a lag of more than one year after the disclosure of the first estimate for the fourth quarter of the corresponding year. On the other hand, by considering a limited time interval of revision (which also allows not to lose many observations in the analysis), it minimizes the inclusion of revisions due to more significant methodological changes (as, for example, base changes, which affect the whole series) and that do not reflect the regular revision process.

Concerning the flash estimate (which is released 45 days after the end of the respective quarter), since it is only available for GDP and for a shorter sample period (from the 1st quarter of 2007 onwards) it is analyzed separately. In this case, we evaluate the revisions to the flash estimate *vis-à-vis* the first estimate (which is disclosed 70 days after the end of the quarter).

We also assess, for GDP, the impact of the inclusion of the ANA on the quarterly values of the corresponding year. Although in this case, the revisions are less comparable, as annual figures have been released with different time lags, it is important to have an idea of how much the quarterly figures may change after the inclusion of the respective ANA. Therefore, the revisions to the GDP quarterly figures of a given year, after the inclusion of the respective ANA, are presented. The analysis of the revisions due to the inclusion of the ANA is also done, although more briefly, for the GDP main components as well as for GVA and its breakdown by activity branches.

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2 In real-time data analysis, the data collections corresponding to each publication are usually called vintages.

The analysis of the revisions is conducted using a wide range of statistical measures commonly used in this kind of studies. For ease of exposition, let us consider the revision as being the difference between the rates of change (on year-on-year terms or on quarter-on-quarter terms) of the initial and final estimates (here understood as the estimates before and after revision, respectively).

As a sign indicator, the mean revision is computed. The closer to zero is the mean, the less biased is the initial estimate. To assess this, a test on the significance of the mean is performed, that is, we test whether or not the mean is statistically different from zero. A statistically significant and positive (negative) mean revision indicates that the variable was under(over)estimated in the initial estimate, suggesting a systematic behaviour of the revisions. The proportion of positive revisions can also be seen as an indicator of the sign of the revision of the initial estimate (a high percentage of positive or negative revisions suggests a bias of the initial estimate).

Since revisions of opposite sign tend to cancel out, the main indicator used to measure the size of revisions is the mean absolute revision, *i.e.* the average of the absolute value of the revisions. Alternatively, in order to take into account the scale of the variable, we also calculate the relative mean absolute revision, that is, the ratio between the absolute average of the revisions and the absolute average of the variable (in this case, in terms of the rates of change) corresponding to the final estimate. This measure can be interpreted as the average proportion of the estimate that is revised. Other measures are also calculated, as the sign concordance for the rates of change (when comparing the initial and final estimates) as well as the direction (acceleration/deceleration) concordance.

Besides a small mean, it is also desirable that the revisions have a low volatility. Thus, we calculate some measures of volatility such as the standard deviation of the revisions and the noise-to-signal ratio, *i.e.*, the ratio between the standard deviation of the revisions and the standard deviation of the final estimate, which takes into account the volatility of the variable itself. In addition, we present the decomposition of the mean squared revision (MSR), which is the average of the squared revisions (for a description of a set of measures including this decomposition, see, for example, Di Fonzo (2005) and McKenzie (2006)). This measure is decomposed into 3 components (UM, UR, and UD) such that UM+UR+UD=100. UM is the proportion of MSR due to mean revision not being equal to zero, UR is the proportion that results from the correlation between the initial and final estimates being different from 1 (in particular, UR is higher the lower the correlation between the initial and final estimates) and UD is the residual component. Reliable estimates imply small values for UM and UR and a high value for UD, that is, the proportion not caused by systematic differences between the estimates before and after revision.

In the next section, revisions to both the year-on-year (yoy) and quarter-on-quarter (qoq) rates of change, in volume terms as well as deflators, are analysed. It should be noted that, as the yoy relates to the qoq rates of change, there is a relationship between the revisions to the yoy and qoq rates of change for a given release. A revision to the yoy rate of change roughly corresponds to a weighted sum of the revisions to the four qoq rates of change (between quarter t and quarter t-4) implicit in the vintage of quarter t. Most of the analysis conducted in section 3 focuses on the rates of change in volume terms but revisions to the deflators are also briefly discussed in subsection 3.4.

3. Revisions

3.1 GDP

3.1.1 First estimate and following estimates up to one year

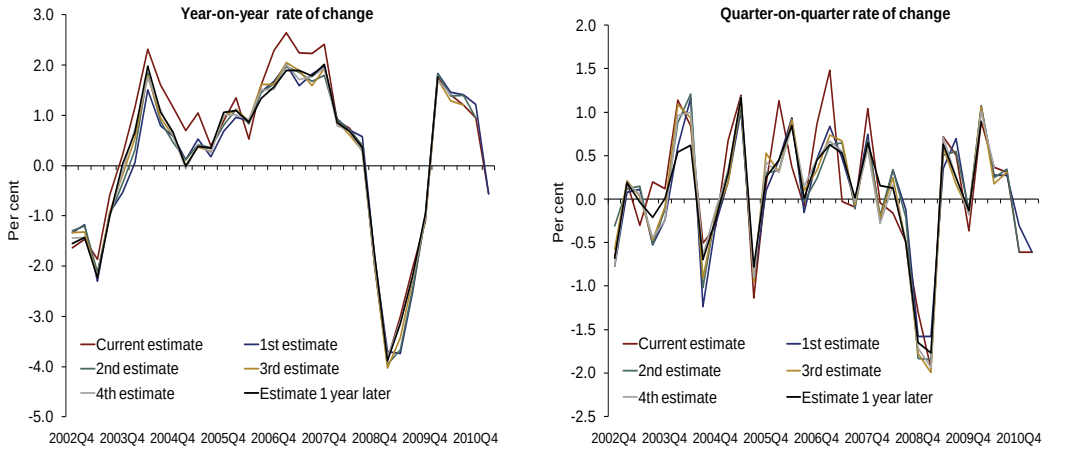
Chart 1 shows the yoy and qoq rates of change of GDP, in volume terms, implicit in the first estimate of each quarter as well as in the following estimates up to one year after the first estimate. The chart also includes the rates of change according to the latest release, that is, the last vintage used in this study. One can see that the various estimates show a very similar evolution, which translates into a high correlation coefficient between them. When comparing the latest version (current estimate) with the estimates released up to one year after the first estimate, there are some noteworthy differences, particularly for the period prior to 2007. However, it should be remembered that, as mentioned above, the differences between the latest version and the first estimate reflect a revision time frame which is not comparable across different quarters. In particular, the *INE* has conducted base changes[3] accompanied by revisions of the entire series which may have had greater impact in more remote quarters, whereas the quarterly estimates for the period after 2008 are still not subject to any annual constraint, as the latest year for which there are ANA is 2008. Given the different nature of the revisions and in order to analyze relatively comparable revisions, we have chosen to focus the analysis on the revisions up to one year. However, GDP revisions due to the inclusion of the ANA will also be briefly discussed in subsection 3.1.3.

Table 1 presents the main measures concerning the revisions to the rates of change in volume (up to one year after the first estimate) *vis-à-vis* the estimate released in the previous quarter, as well as the accumulated revision after one year.

The mean revision to the first estimate of the yoy growth rate is zero and only marginally positive (0.02 p.p.) in the case of the qoq growth rate. In the remaining revisions, the averages are also close to zero, being after one year 0.08 p.p. in the case of the yoy rate of change and 0.01 p.p. in the case of the qoq rate of change. None of the values obtained for the mean revision is statistically different from zero,

Chart 1

ESTIMATES OF QUARTERLY GDP, IN VOLUME



Source: *INE*.

3 The change to the 2000 base occurred with the release of the 2nd quarter of 2005 and the change to the 2006 base took place with the release of 1st quarter of 2010.

Table 1

DESCRIPTIVE STATISTICS OF REVISIONS TO QUARTELY GDP, IN VOLUME

	Year-on-year rates of change					Quarter-on-quarter rates of change				
	Revisions to 1st estimate	Revisions to 2nd estimate	Revisions to 3rd estimate	Revisions to 4th estimate	Revisions one year later	Revisions to 1st estimate	Revisions to 2nd estimate	Revisions to 3rd estimate	Revisions to 4th estimate	Revisions one year later
Mean	0.00	0.01	0.02	0.02	0.08	0.02	-0.02	0.01	0.00	0.01
Mean absolute revision	0.11	0.10	0.08	0.07	0.20	0.13	0.11	0.08	0.11	0.18
Relative mean absolute revision	0.09	0.07	0.06	0.05	0.15	0.23	0.19	0.14	0.22	0.36
Minimum	-0.26	-0.19	-0.18	-0.17	-0.25	-0.30	-0.37	-0.19	-0.42	-0.55
1st quartile	-0.08	-0.09	-0.07	-0.04	-0.12	-0.08	-0.09	-0.07	-0.07	-0.14
Median	-0.01	-0.01	0.01	0.05	0.00	0.03	-0.01	0.02	-0.01	0.04
3rd quartile	0.08	0.10	0.07	0.07	0.24	0.13	0.09	0.06	0.07	0.15
Maximum	0.33	0.24	0.32	0.23	0.61	0.46	0.22	0.26	0.44	0.54
Standard deviation	0.15	0.12	0.11	0.09	0.25	0.17	0.14	0.10	0.17	0.24
Noise-to-signal ratio	0.09	0.07	0.06	0.05	0.15	0.22	0.18	0.13	0.21	0.30
1st order autocorrelation coefficient	0.28*	0.17	0.17	-0.31*	0.41***	0.11	-0.31*	0.22	0.10	-0.24
Proportion of positive revisions	0.39	0.44	0.55	0.57	0.50	0.61	0.47	0.52	0.43	0.53
Sign concordance	1.00	1.00	0.97	0.97	0.93	1.00	0.97	1.00	0.87	0.83
Direction concordance	1.00	0.97	0.97	0.93	0.97	0.91	0.91	0.87	0.90	0.87
Mean squared revision	0.02	0.01	0.01	0.01	0.07	0.03	0.02	0.01	0.03	0.06
UM	0.05	1.21	2.48	6.79	8.38	1.10	2.43	0.41	0.00	0.12
UR	0.02	1.90	14.94	2.78	1.56	0.01	0.14	7.61	26.64	16.10
UD	99.93	96.88	82.57	90.43	90.06	98.89	97.43	91.98	73.36	83.78
Root mean squared revision	0.15	0.12	0.11	0.09	0.26	0.17	0.14	0.10	0.16	0.24

Notes: Revisions to 1st estimate correspond to the revisions between the 1st estimate and the 2nd estimate, revisions to the 2nd are the revisions from the 2nd estimate to the 3rd estimate and so on. Revisions 1 year later correspond to the revisions from the 1st estimate to the 5th estimate (that is, after 1 year). ***, **, * correspond to a value statistically different from zero with a significance level of 1%, 5% and 10%, respectively.

which indicates that there is no bias in the different estimates. In absolute terms, the mean revision is higher in the first revision than in the following revisions, being about 0.2 p.p. after one year for both the yoy and qoq rates of change. The percentage of positive revisions after one year is around 50 percent for both rates, so there is no predominance in terms of the sign of the revisions. Both in terms of sign and acceleration/deceleration, the concordance between the various estimates is quite high, indicating that the evolution is not significantly changed after each revision. From the results obtained for both the standard deviation and the noise-to-signal ratio, one can conclude that the volatility of GDP revisions is relatively low. Furthermore, the various revisions are, in general, weakly autocorrelated. The mean squared revision is low in both cases and the revisions are "well behaved" given the high weight of the UD component, indicating no systematic pattern. In summary, the revisions to the GDP quarterly growth rates are not significant and do not present any undesirable properties based on the results obtained with the measures commonly used in this type of analysis.

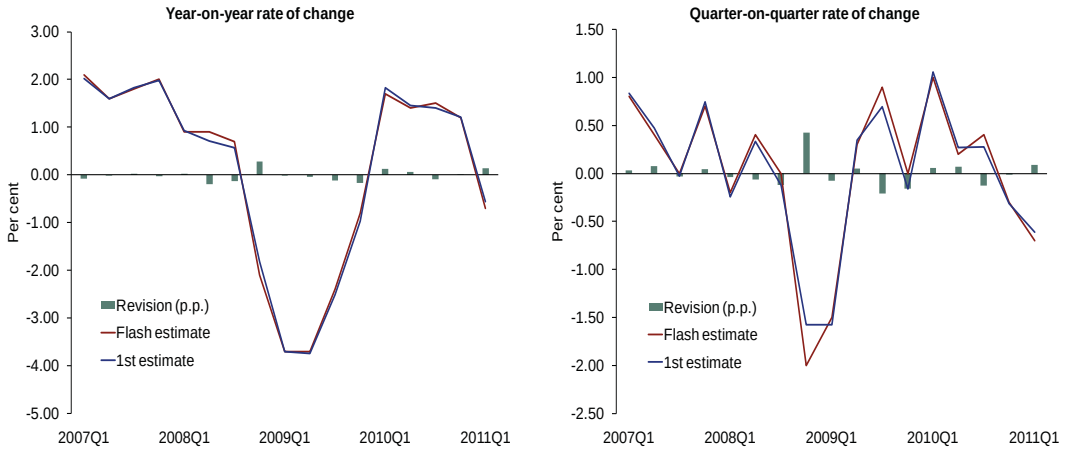
3.1.2 Flash estimate

In this section, we analyze the revisions to the flash estimate after the release of the first estimate of the QNA. Note that the results presented for the flash estimate revisions are not strictly comparable with those presented in the previous section, given the lower number of observations available for evaluation. Moreover, since the sample period is relatively short, these results should be interpreted with additional caution.

Chart 2 shows the GDP yoy and qoq rates of change, in volume, implicit in the flash estimate for each quarter, and the subsequent estimate, *i.e.*, the first estimate. There is a high correlation between the two estimates, recording a correlation coefficient close to 1 both for the yoy and qoq rates of change. The largest revision in both cases occurred in the 4th quarter of 2008 (around 0.3 and 0.4 p.p. for the yoy and qoq rates of change, respectively) at the time of the revision of several short-term indicators as result of a base change and the adoption of the new classification of economic activities (NACE rev. 3). The mean revision is approximately zero in both cases and the absolute mean is about 0.1 p.p. (Table 2). The revisions to the flash estimate present a standard deviation and a noise-to-signal ratio relatively low. Overall, the results point to a high information content of the flash estimate concerning the first estimate.

Chart 2

FLASH ESTIMATE OF QUARTELY GDP, IN VOLUME



Source: *INE*.

Table 2

DESCRIPTIVE STATISTICS OF REVISIONS TO THE FLASH ESTIMATE		
	Year-on-year rate of change	Quarter-on-quarter rate of change
Mean	-0.01	0.00
Mean absolute revision	0.09	0.10
Relative mean absolute revision	0.05	0.17
Minimum	-0.19	-0.21
1st quartile	-0.09	-0.08
Median	-0.01	-0.01
3rd quartile	0.03	0.06
Maximum	0.28	0.42
Standard deviation	0.12	0.14
Noise-to-signal	0.06	0.16
1st order autocorrelation coefficient	-0.07	-0.22
Proportion of positive revisions	0.41	0.47
Sign concordance	1.00	0.82
Direction concordance	0.82	1.00
Mean squared revision	0.01	0.02
UM	0.87	0.00
UR	0.77	22.75
UD	98.36	77.25
Root mean squared revision	0.12	0.14

3.1.3 Revisions due to the inclusion of the ANA

When *INE* releases the first estimate for the last quarter of each year, it is implicitly provided the first estimate for the annual GDP of the corresponding year (the annual preliminary estimate which results from the aggregation of the quarterly values). With the publication of the ANA, the QNA are revised so as to reflect these annual values. These revisions have a different nature from those resulting from the mere update of the associated indicators because they reflect an information set substantially wider, resorting to statistical sources only available on an annual frequency. We analyze the impact of the inclusion of the ANA on the QNA estimates. The ANA for the period from 2002 up to 2008, which is the latest year available at the time this article was done, were released with a lag of 4 to 10 quarters (Table 3) after the release of the fourth quarter of the respective year (and corresponding annual preliminary estimate).

In Chart 3, we present the revisions to the yoy rate of change of the 4 quarters of each year due to the inclusion of the ANA.[4] We analyze two types of revisions: i) *vis-à-vis* the immediately preceding publication and ii) *vis-à-vis* the first estimate of the last quarter of the respective year (and corresponding annual preliminary estimate).

In general, the inclusion of the ANA implies larger revisions than those observed up to one year after the first estimate. In the case of GDP, the years 2004, 2005 and 2007 were characterized by a substantial revision of the rates of change of the QNA after the release of the respective annual accounts. It should be noted that 2004 and 2007 correspond to years of base change, with several methodological changes in the annual accounts, which may explain the larger impact in terms of revisions. For the average of the quarters of 2007, the GDP growth rate was revised by around 0.5 p.p. with the inclusion of the ANA, *vis-à-vis* both the previous release and the release by the first time of the fourth quarter of that year. For 2004 and 2005, the average revisions were about 0.5 and 0.6 p.p. respectively, when compared with the yoy rates of change implicit in the annual preliminary estimate of the respective year and 0.2 p.p. in both years *vis-à-vis* the release of the QNA immediately preceding the disclosure of the ANA. In general, the revisions *vis-à-vis* the immediately preceding release are smaller than those recorded *vis-à-vis* the annual preliminary estimate, which suggests a convergence of the QNA over time to the annual values to be released under the ANA.

4 For the years 2002 and 2003, the ANA were published with a provisional nature due to the expected change to the 2000 base.

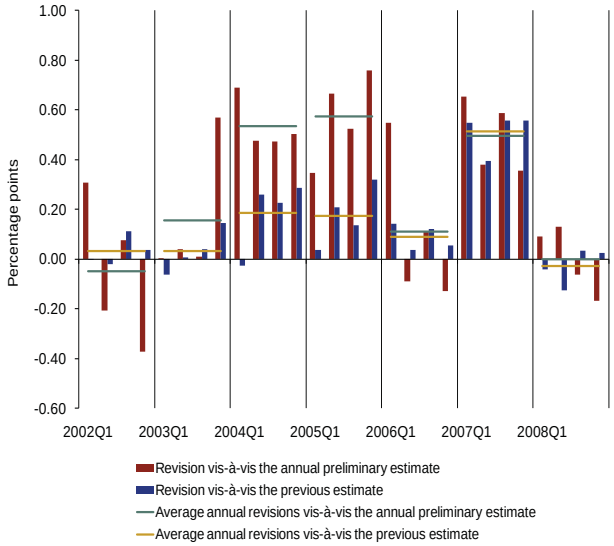
Table 3

RELEASE CALENDAR OF ANNUAL NATIONAL ACCOUNTS (ANA)

Reference year	First release of QNA after ANA release	Lag *vis-à-vis* the release of the 4th quarter of the corresponding year (in quarters)
2002	Q3 2004	7
2003	Q4 2004	4
2004	Q2 2007	10
2005	Q4 2007	8
2006	Q2 2008	6
2007	Q1 2010	9
2008	Q1 2011	9

Chart 3

REVISIONS DUE TO THE INCLUSION OF ANNUAL NATIONAL ACCOUNTS



3.2 Expenditure components

For the sake of the exposition that follows and because the findings are qualitatively similar for the qoq rates of change, the discussion of the results concerning revisions will focus on the yoy rates of change, most commonly used in the short-term economic analysis in Portugal. The results for the yoy and qoq rates of change, in volume, are shown in Tables 4 and 5, respectively. In these tables, we report the statistical measures for the revisions to the first estimate, *i.e.*, the first revision which the values of GDP components are subject to and for the revisions accumulated after one year. It should be noted that the findings are also similar for these two types of revision so no distinction will be done when analyzing the results.

In general, GDP components present a positive mean revision although not statistically different from zero.[5] However, the mean revision after one year is higher than that observed in the case of the first revision indicating that the revisions do not cancel out over time. In terms of mean absolute revision, most components record a higher value than that of GDP. Only private consumption and the contribution of changes in inventories to GDP growth have a slightly lower value. Among the components which

5 The case of the revisions accumulated after one year regarding imports is an exception, with a significance level of 5 per cent.

Table 4

REVISIONS TO THE YEAR-ON-YEAR RATES OF CHANGE, IN VOLUME

	Mean	Mean absolute revision	Relative mean absolute revision	Standard deviation	Noise-to-signal ratio	Proportion of positive revisions	Sign concordance	Direction concordance	Mean squared revision	UM	UR	UD	Root mean squared revision
Revisions to the 1st estimate													
GDP	0.00	0.11	0.09	0.15	0.09	0.39	1.00	1.00	0.02	0.05	0.02	99.93	0.15
Private consumption	0.03	0.09	0.06	0.11	0.08	0.61	1.00	1.00	0.01	6.25	1.53	92.23	0.11
Public consumption	0.06	0.56	0.45	0.92	0.51	0.64	0.94	0.94	0.83	0.43	15.96	83.60	0.91
GFCF	0.15	0.61	0.12	0.98	0.20	0.52	0.94	0.94	0.95	2.28	3.22	94.50	0.97
GFCF machinery	0.25	1.13	0.20	1.40	0.17	0.52	0.94	0.94	1.95	3.24	0.00	96.76	1.40
GFCF transport equipment	1.07	2.17	0.16	6.36	0.48	0.55	0.94	0.91	40.41	2.81	0.63	96.56	6.36
GFCF construction	-0.02	0.44	0.07	0.70	0.17	0.39	1.00	0.94	0.47	0.07	14.78	85.15	0.69
GFCF other	0.04	0.85	0.23	1.10	0.32	0.58	0.91	0.85	1.17	0.11	6.14	93.74	1.08
Change in inventories[a]	-0.01	0.08	0.22	0.14	0.29	0.55	0.91	0.91	0.02	0.28	10.66	89.06	0.14
Exports	0.18	0.67	0.11	0.88	0.12	0.67	0.91	0.97	0.79	3.91	7.19	88.91	0.89
Imports	0.37	1.00	0.20	1.38	0.22	0.61	0.94	1.00	1.99	6.94	29.85	63.22	1.41
GVA	0.05*	0.14	0.12	0.18	0.10	0.55	0.94	0.91	0.03	8.91	7.08	84.01	0.18
Agriculture, forestry and fishing	-0.09	1.39	0.37	1.73	0.44	0.48	0.94	0.97	2.90	0.26	3.62	96.13	1.70
Industry	0.01	0.26	0.10	0.43	0.11	0.58	1.00	0.94	0.18	0.03	4.54	95.43	0.43
Energy, water supply and sewerage	0.13	0.54	0.16	0.95	0.22	0.52	1.00	0.97	0.90	1.81	1.61	96.58	0.95
Construction	0.00	0.41	0.07	0.65	0.15	0.36	1.00	0.91	0.41	0.01	12.90	87.09	0.64
Trade, hotels and restaurants	-0.04	0.12	0.07	0.18	0.08	0.30	1.00	0.94	0.03	5.60	13.83	80.57	0.18
Transportations and communications	-0.03	0.41	0.17	0.66	0.17	0.52	1.00	0.91	0.42	0.21	7.51	92.28	0.65
Financial, insurance and real estate	0.10	0.85	0.31	1.29	0.76	0.58	0.91	0.88	1.63	0.61	27.37	72.02	1.28
Other services	0.08	0.31	0.33	0.49	0.43	0.61	0.88	0.88	0.24	2.64	10.00	87.36	0.49
Revisions one year later													
GDP	0.08	0.20	0.15	0.25	0.15	0.50	0.93	0.97	0.07	8.38	1.56	90.06	0.26
Private consumption	0.07	0.19	0.12	0.23	0.15	0.57	1.00	0.93	0.06	8.99	0.56	90.45	0.24
Public consumption	0.49*	0.91	0.63	1.01	0.61	0.70	0.90	0.87	1.24	19.72	3.25	77.03	1.11
GFCF	0.22	0.94	0.19	1.36	0.27	0.47	1.00	0.93	1.83	2.70	5.31	91.99	1.35
GFCF machinery	0.47	1.61	0.31	1.87	0.25	0.53	0.97	0.80	3.60	6.01	0.76	93.23	1.90
GFCF transport material	0.85	3.51	0.25	7.94	0.59	0.53	0.93	0.97	61.62	1.18	0.34	98.48	7.85
GFCF construction	0.07	0.64	0.10	0.97	0.23	0.43	1.00	0.93	0.91	0.49	11.80	87.71	0.95
GFCF other	0.74	1.87	0.53	2.93	0.83	0.57	0.83	0.87	8.83	6.27	10.29	83.44	2.97
Change in inventories[a]	0.01	0.17	0.43	0.27	0.54	0.53	0.90	0.90	0.07	0.15	15.03	84.82	0.27
Exports	0.41	0.94	0.16	1.16	0.15	0.83	0.90	1.00	1.47	11.38	2.23	86.40	1.21
Imports	0.72**	1.28	0.25	1.49	0.23	0.67	0.97	0.97	2.66	19.69	15.61	64.70	1.63
GVA	0.17**	0.27	0.20	0.33	0.19	0.70	0.87	0.97	0.14	21.28	5.09	73.62	0.37
Agriculture, forestry and fishing	-0.13	2.71	0.61	3.24	0.79	0.53	0.80	0.90	10.16	0.15	1.51	98.34	3.19
Industry	-0.36	0.68	0.22	1.08	0.26	0.37	0.97	0.97	1.25	10.38	53.83	35.79	1.12
Energy, water supply and sewerage	1.25**	1.78	0.46	2.04	0.45	0.77	0.97	0.77	5.61	28.08	15.79	56.13	2.37
Construction	0.25	0.79	0.13	1.20	0.26	0.50	1.00	0.90	1.45	4.21	8.26	87.53	1.21
Trade, hotels and restaurants	-0.10	0.37	0.25	0.55	0.26	0.37	0.93	0.93	0.31	3.55	12.43	84.01	0.56
Transportations and communications	0.11	0.63	0.25	0.87	0.21	0.60	0.97	0.80	0.74	1.67	0.00	98.33	0.86
Financial, insurance and real estate	-0.15	1.66	0.60	2.41	1.39	0.53	0.80	0.63	5.64	0.39	36.67	62.94	2.37
Other services	0.41*	0.61	0.61	0.90	0.80	0.73	0.77	0.67	0.96	17.52	30.63	51.85	0.98

Notes: (a) Contribution to GDP rate of change. ***, **, * correspond to a value statistically different from zero with a significance level of 1%, 5% and 10%, respectively.

Table 5

REVISIONS TO THE QUARTER-ON-QUARTER RATES OF CHANGE, IN VOLUME

	Mean	Mean absolute revision	Relative mean absolute revision	Standard deviation	Noise-to-signal ratio	Proportion of positive revisions	Sign concordance	Direction concordance	Mean squared revision	UM	UR	UD	Root mean squared revision
Revisions to the 1st estimate													
GDP	0.02	0.13	0.23	0.17	0.22	0.61	1.00	0.91	0.03	1.10	0.01	98.89	0.17
Private consumption	-0.03	0.13	0.23	0.18	0.25	0.48	0.85	0.85	0.03	2.35	13.06	84.59	0.18
Public consumption	0.05	0.28	0.37	0.49	0.35	0.64	0.82	0.91	0.23	0.94	8.24	90.81	0.48
GFCF	0.20	0.61	0.26	0.93	0.38	0.52	0.94	0.91	0.88	4.46	14.87	80.67	0.94
GFCF machinery	0.09	1.22	0.36	1.80	0.37	0.52	0.88	0.94	3.13	0.25	0.70	99.06	1.77
GFCF transport equipment	1.23	3.37	0.37	6.87	0.80	0.67	0.88	0.94	47.24	3.20	2.99	93.80	6.87
GFCF construction	0.07	0.45	0.16	0.69	0.27	0.52	0.94	0.97	0.46	1.16	18.41	80.42	0.68
GFCF other	0.07	0.62	0.38	0.81	0.84	0.55	0.82	0.91	0.65	0.79	6.81	92.39	0.80
Change in inventories[a]	0.05	0.13	0.36	0.21	0.55	0.67	0.97	0.88	0.05	4.83	16.32	78.85	0.21
Exports	0.21*	0.57	0.25	0.72	0.21	0.64	0.91	0.94	0.55	7.81	8.53	83.66	0.74
Imports	0.30	0.74	0.29	1.15	0.33	0.67	0.94	0.94	1.38	6.63	36.73	56.64	1.17
GVA	-0.04	0.16	0.33	0.21	0.29	0.42	0.88	0.91	0.04	3.22	1.91	94.87	0.21
Agriculture, forestry and fishing	-0.01	0.59	0.48	0.81	0.57	0.45	0.85	0.94	0.64	0.01	9.25	90.74	0.80
Industry	-0.10	0.38	0.30	0.49	0.25	0.45	0.94	0.91	0.24	4.28	3.89	91.83	0.49
Energy, water supply and sewerage	0.00	0.25	0.23	0.44	0.28	0.45	0.85	0.91	0.18	0.00	0.21	99.78	0.43
Construction	-0.05	0.54	0.20	0.82	0.31	0.48	0.94	0.91	0.66	0.44	15.17	84.39	0.81
Trade, hotels and restaurants	-0.07	0.20	0.26	0.26	0.26	0.45	0.88	0.91	0.07	6.09	18.84	75.08	0.27
Transportations and communications	-0.07	0.42	0.32	0.55	0.37	0.48	0.88	0.85	0.30	1.67	2.52	95.81	0.55
Financial, insurance and real estate	-0.25*	0.73	0.61	1.02	1.05	0.52	0.82	0.88	1.08	5.75	21.40	72.85	1.04
Other services	0.01	0.23	0.85	0.32	0.68	0.58	0.79	0.76	0.10	0.09	25.35	74.55	0.32
Revisions one year later													
GDP	0.01	0.18	0.36	0.24	0.30	0.53	0.83	0.87	0.06	0.12	16.10	83.78	0.24
Private consumption	0.04	0.21	0.31	0.24	0.32	0.57	1.00	0.83	0.06	2.09	17.60	80.31	0.24
Public consumption	0.18	0.39	0.98	0.50	0.74	0.67	0.70	0.63	0.27	11.59	29.95	58.46	0.52
GFCF	0.11	0.84	0.38	1.17	0.47	0.53	0.93	0.97	1.35	0.91	39.19	59.90	1.16
GFCF machinery	0.18	1.76	0.55	2.23	0.47	0.47	0.80	0.83	4.86	0.65	6.13	93.22	2.20
GFCF transport material	0.53	4.65	0.51	8.03	0.92	0.57	0.83	0.90	62.59	0.44	12.90	86.66	7.91
GFCF construction	0.00	0.79	0.29	1.07	0.43	0.43	0.90	0.87	1.11	0.00	39.11	60.89	1.05
GFCF other	0.06	0.99	0.63	1.31	1.31	0.43	0.90	0.83	1.67	0.25	24.09	75.66	1.29
Change in inventories[a]	0.04	0.18	0.56	0.28	0.71	0.47	0.90	0.87	0.08	2.59	27.42	69.99	0.27
Exports	0.25	0.62	0.27	0.75	0.22	0.70	0.80	0.93	0.60	10.17	0.00	89.83	0.77
Imports	0.48*	0.92	0.38	1.15	0.32	0.70	0.90	0.93	1.51	15.02	27.71	57.27	1.23
GVA	0.07	0.24	0.46	0.29	0.40	0.67	0.97	0.90	0.09	4.98	11.04	83.98	0.29
Agriculture, forestry and fishing	-0.09	1.16	0.85	1.45	0.97	0.47	0.77	0.83	2.03	0.41	9.29	90.30	1.43
Industry	-0.08	0.54	0.42	0.66	0.33	0.33	0.87	0.83	0.43	1.60	7.79	90.61	0.66
Energy, water supply and sewerage	0.06	0.68	0.67	0.94	0.59	0.47	0.73	0.77	0.86	0.48	35.91	63.61	0.93
Construction	-0.07	0.96	0.35	1.28	0.48	0.43	0.93	0.80	1.60	0.28	16.05	83.67	1.26
Trade, hotels and restaurants	-0.04	0.37	0.48	0.48	0.46	0.47	0.87	0.83	0.22	0.89	28.68	70.43	0.47
Transportations and communications	0.05	0.98	0.74	1.17	0.76	0.53	0.73	0.77	1.33	0.18	12.80	87.02	1.15
Financial, insurance and real estate	0.10	1.42	1.12	1.88	1.92	0.50	0.73	0.63	3.43	0.31	58.29	41.40	1.85
Other services	0.14*	0.32	1.00	0.42	0.97	0.67	0.67	0.60	0.19	9.91	42.64	47.45	0.43

Notes: (a) Contribution to GDP rate of change. ***, **, * correspond to a value statistically different from zero with a significance level of 1%, 5% and 10%, respectively.

have a higher mean absolute revision, one should highlight the items related to external trade, with imports being more revised than exports.[6] It should be noted that in terms of GFCF, the most revised item is GFCF in transport equipment, probably reflecting the difficulty in estimating the GFCF non-auto transport equipment (*i.e.*, ships, railways and aircrafts), with the external trade statistics as the main source of information.

In terms of the proportion of positive revisions, it should be mentioned the cases of both private and public consumption as well as exports and imports with values clearly above 50 percent. For example, the percentage of times that exports is revised upwards after a quarter is 67 per cent and rises to 83 per cent after one year. All expenditure components present a rather high concordance (usually above 90 per cent) both in sign and direction (acceleration/deceleration).

Regarding the volatility of the revisions, the components that register the highest values in terms of standard deviation are GFCF (especially transport equipment), exports and imports. However, considering the noise-to-signal ratio, which takes into account the variability of the variables, these components register relatively low values. It should be noted that in terms of the main aggregates, public consumption is the variable that has a higher noise-to-signal ratio.

Concerning the decomposition of the MSR, this indicator suggests that revisions have a "good" behaviour, in terms of mean and correlation between the estimates, in most GDP components. The residual component UD is clearly predominant, suggesting that the revisions do not present a systematic pattern. In particular, imports have the lowest UD, that is, the "worst" performance.

Given that GDP is generally less revised than its components, it becomes interesting to analyze whether the revisions between the various components are correlated or not. In fact, the existence of a significant correlation between revisions may indicate common sources of revision. Table 6 presents the correlations between the revisions to the first estimate of the main expenditure components, for both the yoy and qoq rates of change. We find the presence of significant and positive correlations (with a significance level of 5 per cent) between the revisions of imports and those of the other expenditure components. In fact, it is natural that a revision of imports is also reflected in other variables of the expenditure particularly in those whose estimation is done using imports based indicators. For example, in the case of the revi-

Table 6

CORRELATION MATRIX BETWEEN REVISIONS TO FIRST ESTIMATES OF GDP COMPONENTS

YEAR-ON-YEAR RATES OF CHANGE, IN VOLUME	Private consumption	Public consumption	GFCF	Change in inventories	Exports	Imports
Private consumption	1.00					
Public consumption	0.03	1.00				
GFCF	0.20	0.27	1.00			
Change in inventories[(a)]	0.17	0.33*	0.36*	1.00		
Exports	0.32*	0.33*	0.22	0.13	1.00	
Imports	0.45**	0.56***	0.71***	0.34*	0.66***	1.00
QUARTER-ON-QUARTER RATES OF CHANGE, IN VOLUME	**Private consumption**	**Public consumption**	**GFCF**	**Change in inventories**	**Exports**	**Imports**
Private consumption	1.00					
Public consumption	0.30	1.00				
GFCF	-0.09	0.28	1.00			
Change in inventories[(a)]	0.04	0.09	-0.22	1.00		
Exports	0.11	0.40**	0.00	0.30	1.00	
Imports	0.37**	0.69***	0.48	0.42**	0.62***	1.00

Notes: (a) Contribution to GDP rate of change. ***, **, * correspond to a value statistically different from zero with a significance level of 1%, 5% and 10%, respectively.

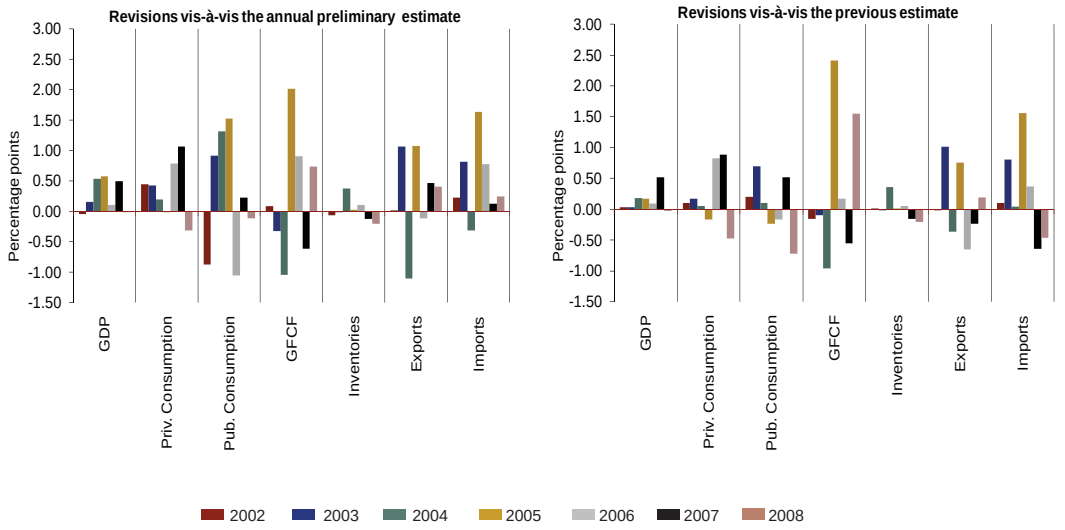
6 Cardoso and Duarte (2009) studied the revisions to nominal exports and imports of goods on a monthly basis, concluding that imports are more revised than exports, being positive and statistically significant in both cases.

sions to the yoy rate of change, the GFCF is the component most highly correlated with imports (0.71). Thus, in spite of imports being significantly revised this does not translate into substantial revisions of GDP since part of these revisions is accommodated by revising the remaining expenditure components.

With regard to revisions arising from the inclusion of the ANA, one can conclude that the mean revision for each expenditure component is positive, similar to what happens to GDP, *vis-à-vis* both the annual preliminary estimate and the immediately preceding released estimate (Chart 4). In general, the mean revision *vis-à-vis* the annual preliminary estimate is higher than that recorded over the preceding estimate. In absolute average terms, the component that has the highest value *vis-à-vis* the annual preliminary estimate is public consumption while GFCF is the most revised item *vis-à-vis* the immediately preceding estimate.

Chart 4

REVISIONS TO GDP COMPONENTS DUE TO THE INCLUSION OF ANNUAL NATIONAL ACCOUNTS | IN ANNUAL TERMS AND IN VOLUME



3.3. GVA by branches of activity

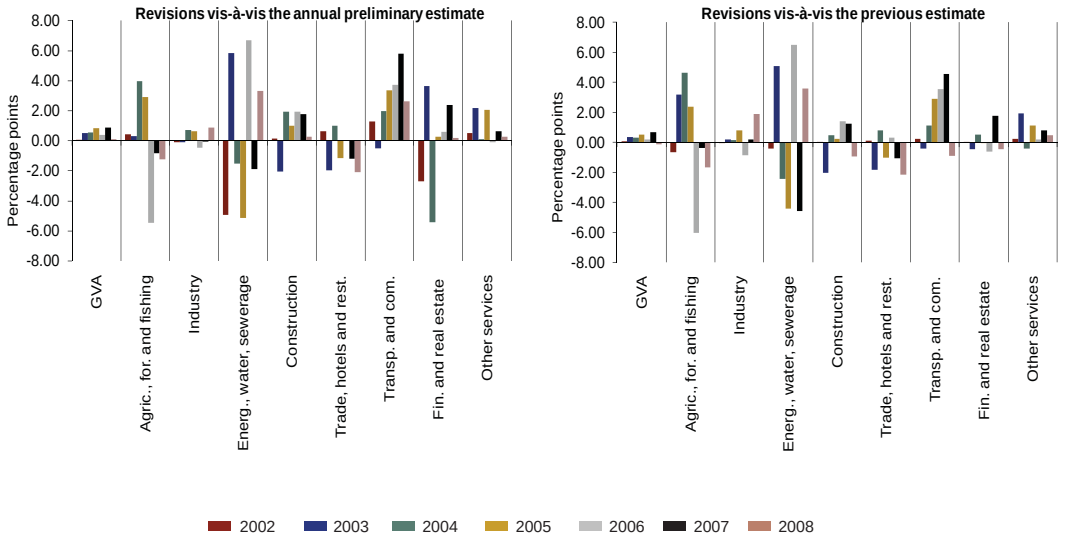
In what concerns the GVA and its breakdown, the analysis of revisions is affected by some additional problems. On the one hand, from the release of the 4th quarter of 2005 onwards, intermediate consumption of FISIM is broken down by the different branches of activity, rather than being imputed to a single fictitious branch (and being deducted from the sum of the value added of all sectors of activity). Naturally, this change may have resulted in larger revisions in the quarter of the methodological change, potentially affecting the results. However, it should be noted that this only influences one observation in each series of revisions. On the other hand, the change to the 2006 base occurred simultaneously with the adoption of the new classification of economic activities (CAE Rev. 3) which led to a reformulation of the breakdown of the GVA by branch of activity in the QNA from the 1st quarter of 2010 onwards. Although the designations do not always coincide exactly with those of previous series (the designations herein presented refer to the current ones), we tried to ensure intertemporal comparability. As in the previous case, this change only affects the value of the revisions for one quarter so the impact should be relatively limited.

Regarding GVA as a whole, it is more revised than GDP, both in terms of mean and absolute mean revisions (Table 4). In addition, the GVA also presents a worse behaviour according to most of the other measures. In terms of breakdown of GVA, the components subject to larger revisions include the branches "agriculture, forestry and fishing," "energy, water supply and sewerage" and "financial and

real estate activities". Concerning the inclusion of the ANA, in terms of mean absolute revisions, the magnitude of the revisions *vis-à-vis* the annual preliminary estimate is similar to that recorded *vis-à-vis* the immediately preceding estimate which indicates that there is not a convergence to the ANA over time, unlike the observed for the expenditure components (Chart 5). It should also be noted that the size of the revisions is substantially larger for the supply side components than for expenditure items. Overall, the results suggest that the statistics for the supply side are more fragile, in terms of revisions, than those for the expenditure side.

Chart 5

REVISIONS TO GVA BY BRANCHES OF ACTIVITY DUE TO INCLUSION OF ANNUAL NATIONAL ACCOUNTS | IN ANNUAL TERMS AND IN VOLUME



3.4. Deflators

Tables 7 and 8 present the main statistical measures concerning revisions to the yoy and qoq rates of change of the QNA implicit deflators, respectively. In general, the mean revisions for GDP and expenditure components are relatively small and not statistically different from zero. For GDP, the average of the first revision to the yoy rate of change of the deflator is nil and the average revision after one year is 0.07 p.p. In terms of absolute revisions, the less revised component is private consumption, which is related to the fact that CPI (which is the main source of information for calculating the private consumption deflator) is not revised. The most revised components are public consumption and gross fixed capital formation. In terms of GFCF components, the deflators of GFCF in machinery and transport equipment are substantially more revised than that of GFCF in construction. One should note that the rates of change of exports and imports deflators are less revised than the corresponding rates of change in volume, suggesting that revisions to nominal values of external trade are reflected more in volume than in prices. Concerning volatility, public consumption is the variable that has a larger noise-to-signal ratio. GFCF also presents a relatively high volatility, particularly in the components of machinery and transport equipment. In turn, the noise-to-signal ratio of exports and imports is very small (and even below the one for GDP), *i.e.*, taking into account the volatility of external trade deflators, the respective volatility of the revisions is relatively low. Considering the decomposition of the mean squared revision, the percentage of the residual component of the revisions is, in general, high, suggesting there is no systematic pattern of revisions. The high percentage of concordance in terms of sign and direction of rates of change suggest that the first estimate is informative about the evolution of the deflators.

By components of the GVA, "agriculture, forestry and fishing" is the one with the most significant revisions both in terms of size and volatility. In contrast, the branch of activity less subject to revisions is "trade, hotels and restaurants", which probably relates to the fact of the calculation of the deflator being very dependent on information associated to CPI.

4. Conclusions

In this article, we evaluated the real-time behavior of the QNA in Portugal over the last decade. In particular, we analyzed the different estimates for the rate of change in volume of GDP, including the flash estimate, as well as the impact of the inclusion of the ANA. It is possible to conclude that both the flash and the first estimates of GDP are not subject to significant revisions in subsequent estimates, although they may be subject to larger revisions when the ANA are released.

The analysis of the revisions to the rates of change in volume also comprises the main components of GDP as well as the GVA and the corresponding breakdown by branches of activity. In terms of expenditure components, we find that the items associated to external trade present larger revisions, with imports being more revised than exports. However, the existence of significant and positive correlations between imports and the remaining expenditure components mitigates the impact on GDP in terms of revisions. Regarding the supply side, the GVA is more revised than GDP and the data by branches of activity presents a more fragile nature than that of the expenditure side.

Table 7

REVISIONS TO THE YEAR-ON-YEAR RATES OF CHANGE OF DEFLATORS

	Mean	Mean absolute revision	Relative mean absolute revision	Standard deviation	Noise-to-signal ratio	Proportion of positive revisions	Sign concordance	Direction concordance	Mean squared revision	UM	UR	UD	Root mean squared revision
Revisions to the 1st estimate													
GDP	0.00	0.18	0.08	0.26	0.26	0.58	1.00	0.82	0.07	0.00	2.09	97.91	0.26
Private consumption	0.00	0.07	0.03	0.10	0.05	0.52	1.00	1.00	0.01	0.09	20.46	79.44	0.10
Public consumption	-0.10	0.58	0.24	0.88	0.60	0.45	0.97	0.88	0.76	1.44	7.72	90.84	0.87
GFCF	-0.01	0.49	0.23	0.62	0.32	0.42	0.97	0.85	0.37	0.04	0.43	99.53	0.61
GFCF machinery	0.07	1.17	0.37	1.57	0.57	0.55	0.94	0.79	2.41	0.23	1.87	97.90	1.55
GFCF transport equipment	0.01	0.96	0.50	1.29	0.79	0.52	0.88	0.91	1.62	0.00	11.94	88.06	1.27
GFCF construction	-0.03	0.27	0.07	0.42	0.18	0.42	1.00	0.94	0.17	0.60	0.75	98.65	0.42
GFCF other	0.22	0.33	0.11	1.00	1.13	0.64	1.00	0.88	1.02	4.73	0.36	94.92	1.01
Exports	0.06	0.29	0.09	0.39	0.13	0.52	0.97	0.94	0.15	2.44	0.69	96.87	0.39
Imports	0.06	0.44	0.11	0.56	0.12	0.55	0.97	0.91	0.31	1.05	9.78	89.17	0.56
GVA	-0.09	0.26	0.11	0.43	0.51	0.39	1.00	0.94	0.19	4.81	3.45	91.73	0.43
Agriculture, forestry and fishing	-0.53	2.08	0.63	2.84	1.08	0.48	0.73	0.82	8.11	3.44	3.45	93.11	2.85
Industry	-0.17*	0.40	0.15	0.48	0.30	0.39	0.97	0.85	0.25	11.57	11.30	77.12	0.50
Energy, water supply and sewerage	-0.21	0.52	0.19	1.23	0.23	0.45	0.94	0.82	1.50	2.93	1.28	95.79	1.22
Construction	-0.02	0.29	0.07	0.45	0.15	0.45	1.00	0.85	0.19	0.32	4.10	95.58	0.44
Trade, hotels and restaurants	0.03	0.13	0.05	0.21	0.19	0.64	1.00	0.88	0.04	2.43	25.88	71.69	0.21
Transportations and communications	-0.02	0.21	0.20	0.40	0.17	0.61	0.97	1.00	0.16	0.16	6.81	93.03	0.39
Financial, insurance and real estate	-0.03	0.64	0.29	0.98	0.38	0.61	0.88	0.88	0.93	0.08	3.39	96.52	0.97
Other services	-0.04	0.45	0.16	0.76	0.49	0.61	0.97	0.85	0.57	0.34	4.59	95.07	0.75
Revisions one year later													
GDP	0.07	0.32	0.14	0.38	0.39	0.63	0.93	0.80	0.14	3.20	5.06	91.75	0.38
Private consumption	-0.05	0.17	0.06	0.28	0.15	0.57	1.00	0.97	0.08	3.60	60.17	36.23	0.28
Public consumption	0.09	0.74	0.28	0.84	0.93	0.60	1.00	0.70	0.69	1.13	29.29	69.58	0.83
GFCF	0.23	0.67	0.30	0.79	0.40	0.63	0.93	0.80	0.66	7.68	0.60	91.72	0.81
GFCF machinery	0.57	1.84	0.65	2.22	0.79	0.53	0.90	0.77	5.08	6.50	8.34	85.16	2.25
GFCF transport material	-0.27	1.09	0.52	1.36	0.80	0.37	0.83	0.83	1.85	4.03	14.16	81.81	1.36
GFCF construction	0.06	0.33	0.09	0.47	0.20	0.60	1.00	0.87	0.22	1.74	2.97	95.30	0.47
GFCF other	1.03**	1.09	0.27	1.65	2.05	0.73	1.00	0.73	3.70	28.87	0.29	70.85	1.92
Exports	0.03	0.38	0.12	0.48	0.17	0.60	0.97	0.93	0.22	0.33	3.70	95.97	0.47
Imports	0.08	0.45	0.11	0.59	0.13	0.50	0.97	0.93	0.34	2.04	5.94	92.03	0.59
GVA	-0.11	0.29	0.12	0.37	0.52	0.43	1.00	0.70	0.14	8.94	29.05	62.00	0.38
Agriculture, forestry and fishing	-1.46	3.14	0.81	3.80	1.61	0.40	0.70	0.60	16.10	13.21	9.35	77.44	4.01
Industry	-0.37	1.04	0.42	1.24	0.74	0.30	0.97	0.77	1.62	8.56	16.55	74.90	1.27
Energy, water supply and sewerage	0.12	2.21	0.66	2.84	0.52	0.50	0.73	0.67	7.81	0.18	0.02	99.80	2.79
Construction	-0.03	0.40	0.11	0.59	0.20	0.47	1.00	0.77	0.34	0.27	1.15	98.59	0.58
Trade, hotels and restaurants	0.10	0.33	0.12	0.42	0.36	0.50	1.00	0.80	0.18	5.73	52.73	41.54	0.43
Transportations and communications	0.01	0.51	0.52	0.71	0.30	0.63	0.90	0.83	0.49	0.02	48.64	51.33	0.70
Financial, insurance and real estate	0.06	1.25	0.52	1.64	0.62	0.43	0.80	0.80	2.59	0.13	5.14	94.73	1.61
Other services	0.25	0.79	0.25	0.99	0.91	0.70	1.00	0.73	1.01	6.34	49.78	43.88	1.00

Note: ***, **, * correspond to a value statistically different from zero with a significance level of 1%, 5% and 10%, respectively.

Table 8

REVISIONS TO THE QUARTER-ON-QUARTER RATES OF CHANGE OF DEFLATORS

	Mean	Mean absolute revision	Relative mean absolute revision	Standard deviation	Noise-to-signal ratio	Proportion of positive revisions	Sign concordance	Direction concordance	Mean squared revision	UM	UR	UD	Root mean squared revision
Revisions to the 1st estimate													
GDP	-0.04	0.20	0.27	0.29	0.63	0.48	0.91	0.97	0.08	1.84	20.56	77.60	0.29
Private consumption	0.02	0.09	0.14	0.15	0.26	0.61	0.94	0.88	0.02	1.84	3.18	94.97	0.15
Public consumption	-0.07	0.25	0.45	0.34	0.71	0.39	0.94	0.67	0.12	4.15	15.25	80.60	0.34
GFCF	-0.07	0.59	0.53	0.82	0.77	0.45	0.82	0.88	0.65	0.71	4.43	94.86	0.81
GFCF machinery	0.06	1.30	0.51	1.75	0.80	0.52	0.79	0.94	2.97	0.14	5.70	94.16	1.72
GFCF transport equipment	0.13	1.73	0.68	3.02	2.59	0.42	0.88	0.88	8.84	0.19	42.25	57.55	2.97
GFCF construction	-0.10	0.40	0.26	0.81	0.49	0.52	0.94	0.82	0.64	1.41	1.18	97.41	0.80
GFCF other	-0.05	0.31	0.28	0.55	1.80	0.64	0.91	0.85	0.30	0.85	21.44	77.71	0.55
Exports	-0.05	0.45	0.34	0.62	0.55	0.58	0.94	0.91	0.38	0.77	11.47	87.76	0.62
Imports	0.06	0.44	0.28	0.58	0.31	0.48	0.85	0.85	0.33	1.27	10.62	88.10	0.57
GVA	0.03	0.20	0.31	0.26	0.64	0.58	0.94	0.91	0.07	1.69	8.99	89.32	0.26
Agriculture, forestry and fishing	-0.25	0.84	0.88	1.32	1.51	0.45	0.67	0.70	1.74	3.54	50.30	46.16	1.32
Industry	0.21*	0.56	0.40	0.69	0.58	0.61	0.79	0.85	0.51	8.30	1.20	90.50	0.71
Energy, water supply and sewerage	-0.10	0.50	0.43	0.92	0.48	0.61	0.85	0.85	0.82	1.24	11.96	86.80	0.91
Construction	0.10	0.50	0.25	0.89	0.42	0.64	0.91	0.85	0.78	1.27	1.68	97.05	0.88
Trade, hotels and restaurants	0.01	0.23	0.29	0.44	0.65	0.58	0.85	0.97	0.19	0.04	27.36	72.59	0.43
Transportations and communications	0.09	0.27	0.31	0.40	0.28	0.61	0.91	0.97	0.16	5.04	4.15	90.80	0.41
Financial, insurance and real estate	0.15	0.68	0.55	1.06	1.32	0.67	0.79	0.85	1.12	2.06	14.53	83.41	1.06
Other services	-0.02	0.22	0.32	0.31	0.57	0.55	0.91	0.97	0.09	0.38	10.12	89.50	0.30
Revisions one year later													
GDP	0.05	0.34	0.44	0.42	0.99	0.50	0.83	0.90	0.17	1.72	27.15	71.13	0.41
Private consumption	0.00	0.22	0.31	0.32	0.52	0.47	0.93	0.73	0.10	0.00	1.64	98.36	0.31
Public consumption	-0.06	0.34	0.57	0.40	1.25	0.47	0.97	0.47	0.16	1.92	44.00	54.08	0.40
GFCF	0.15	0.75	0.67	1.04	0.94	0.50	0.83	0.77	1.06	2.25	15.34	82.41	1.03
GFCF machinery	0.14	2.06	0.91	2.62	1.20	0.47	0.67	0.93	6.66	0.28	36.34	63.38	2.58
GFCF transport material	0.30	2.88	1.09	4.16	3.64	0.47	0.70	0.77	16.81	0.54	48.06	51.40	4.10
GFCF construction	0.16	0.65	0.41	1.14	0.69	0.50	0.90	0.67	1.29	2.10	3.67	94.23	1.14
GFCF other	0.19	0.74	0.62	1.07	3.43	0.53	0.77	0.80	1.15	3.26	36.84	59.90	1.07
Exports	0.01	0.53	0.42	0.91	0.79	0.47	0.90	0.83	0.81	0.02	27.14	72.84	0.90
Imports	0.01	0.47	0.32	0.65	0.36	0.53	0.87	0.77	0.40	0.02	0.69	99.29	0.63
GVA	-0.01	0.19	0.33	0.25	0.59	0.43	0.93	0.83	0.06	0.31	27.41	72.27	0.24
Agriculture, forestry and fishing	-0.57*	1.30	1.10	1.69	1.94	0.27	0.50	0.47	3.10	10.55	39.38	50.08	1.76
Industry	-0.06	1.02	0.98	1.21	1.06	0.47	0.63	0.73	1.43	0.27	35.97	63.76	1.19
Energy, water supply and sewerage	0.04	1.23	1.02	1.63	0.83	0.57	0.60	0.60	2.57	0.08	43.74	56.18	1.60
Construction	0.11	0.90	0.49	1.39	0.64	0.67	0.77	0.73	1.88	0.62	3.10	96.28	1.37
Trade, hotels and restaurants	0.04	0.44	0.53	0.65	0.94	0.47	0.87	0.83	0.41	0.48	40.31	59.21	0.64
Transportations and communications	-0.07	0.57	0.74	0.68	0.48	0.50	0.73	0.67	0.45	1.13	17.83	81.04	0.67
Financial, insurance and real estate	0.19	0.87	0.77	1.10	1.35	0.60	0.70	0.67	1.21	2.92	18.78	78.30	1.10
Other services	0.02	0.33	0.46	0.43	0.96	0.53	0.87	0.83	0.18	0.31	43.90	55.78	0.42

Note: ***, **, * correspond to a value statistically different from zero with a significance level of 1%, 5% and 10%, respectively.

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