ECONOMIC BULLETIN

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THE PORTUGUESE ECONOMY IN THE FIRST HALF OF 2014

Overview

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Overview

In May 2014 Portugal concluded the Economic and Financial Assistance Programme. The Portuguese economy resumed the access to international financial markets, reflecting *inter alia* a sounder European institutional framework, a more favourable risk perception *vis-à-vis* European issuers, and the progress achieved in correcting some of the economy's structural weaknesses. In particular, over the past three years there was a remarkable fiscal consolidation effort, a marked improvement in external accounts, with a current and capital account surplus since 2012 and a gradual and orderly banking sector deleveraging, consistent with the deleveraging in the non-financial private sector.

The Portuguese economy started to recover gradually from mid-2013 onwards. This recovery path has been slower and less marked than the one observed in previous recessions. The Portuguese economy's structural imbalances, in particular the high indebtedness in the private and public sectors, as well as a strong fall in investment in the past few years, seem to be contributing to this trend. Also, this recovery profile is similar to that of the euro area, which may be related to the fact that the recession in the euro area was originated by a financial crisis followed by a sovereign debt crisis.

In the first half of 2014 the economic activity in Portugal was relatively stable compared with the previous half-year and grew moderately in year-on-year terms (0.9 per cent). This stems from a recovery in private domestic demand, especially consumption and investment in machinery, equipment and transport equipment, jointly with lower export growth. The latter was largely accounted for by a temporary interruption of business in a fuel sector company. At a sectoral level, resources continued to be reallocated from non-tradable to tradable sectors, which is key for correcting the macroeconomic imbalances accumulated in the past few decades. Within this framework, it is worth noting the positive dynamics of exporting companies – in both manufacturing and tourism services – while value added in construction remained on a downward structural trend. Hence, in the first half of 2014 the weight of exports in GDP amounted to almost 40 per cent, *i.e.* around 10 percentage points above the value recorded in 2010.

These developments in activity were accompanied by improved financing conditions for non-financial corporations. On the one hand, interest rates on new bank loans continued to decline gradually, notably with a narrowing of differentials *vis-à-vis* money market reference rates. However, these differentials remained high compared with their historical average, notwithstanding the monetary policy measures adopted by the ECB. On the other hand, credit granting conditions were eased in this half-year, particularly for companies with a better risk profile. Overall, the evolution of credit flows continued to be consistent with the process of transferring resources to the marketable goods sector, with credit flows noticeably more oriented towards companies with higher productivity, a better risk profile and more oriented to external markets.

The set of labour market indicators is also consistent with the pace of economic recovery and the respective sectoral composition. These indicators point to continuing growth of employees in the private sector – also with a contribution from active employment policies – and a fall in employment in the general government sector. In this context, employment still stands at levels close to those observed in the mid-1990s. The unemployment rate has been following a downward trend since mid-2013, reaching 14.5 per cent in the first half of the year. However, long-term unemployment still stood at a very high level, notwithstanding a moderate decline in the first half of 2014. The decline in the Portuguese economy's high level of structural unemployment remains an important policy challenge.

Within a framework of recovery of domestic demand components with high import content and

deceleration of goods and services exports, the economy's external net lending in the first half of the year, as measured by the combined current and capital account balance, was still relatively stable compared with the same period a year earlier. The international investment debt position increased further as a percentage of GDP, chiefly reflecting a negative effect of price changes. This effect was partly accounted for by an increase in the price of the long-term debt issued by general government and by non-financial corporations, associated with a reduction of the long-term interest rates of the Portuguese debt in international markets.

In the first half of 2014 consumer prices in Portugal decreased by 0.2 per cent year-on-year, with the differential *vis-à-vis* the euro area average remaining at -0.8 percentage points. The decline in inflation chiefly resulted from the trend of unprocessed food prices and, over the first quarter, also from the behaviour of energy prices. Price changes excluding these more volatile components remained positive. Inflationary pressures, however, remained quite limited, notably given the high unemployment level, jointly with a downward trend of the import prices of goods excluding energy.

According to the projections presented in this Bulletin, activity is expected to increase in the second half of 2014, supported by a recovery in domestic demand and exports of goods and services *vis-à-vis* the first half of the year. For 2014 as a whole GDP is projected to grow by 0.9 per cent, which corresponds to a downward revision of 0.2 percentage points *vis-à-vis* the projection in the previous Economic Bulletin. This revision is mainly explained by a downward revision of public consumption, as well as the incorporation of the latest data on external trade. In turn, inflation is expected to increase in the second half of the year, with no change projected in the harmonised index of consumer prices (HICP) for the year as a whole. These projections for 2014 maintain some features of the ongoing macroeconomic adjustment, including a considerable current and capital account surplus (2.2 per cent of GDP) and the continuing fiscal consolidation process.

The challenges faced by the Portuguese economy must be underlined. The economy's structural rebalancing process and macroeconomic adjustment have to be deepened, so as to ensure a sustainable correction of the imbalances accumulated since the mid-1990s, notably in regard to external indebtedness. In this context, in the medium term the public and private sectors' deleveraging process will continue to be a feature of the Portuguese economy. In the near future, this process will be particularly demanding, namely given low nominal growth in the Portuguese economy's main trading partners, especially in the euro area. In addition, it will be important to minimise the impact on the real economy of the recent developments in the Portuguese financial system, particularly as regards the continuity of the financial intermediation process. The preservation of financial stability, also a key condition for a sustainable economic growth, requires the maintenance of high capital ratios – which, at this stage, might result from the ongoing process of non-strategic asset sales and from the continuing effort to improve banking sector profitability – as well as from a further strengthening of institutions' internal governance models. With regard to the reduction of general government debt and deficit, it is crucial to fulfil the European requirements, so as to ensure the sustainability of public finances. In turn, an important challenge to the non-financial private sector is to change the corporate financing structure, by privileging the reinforcement of equity to render deleveraging compatible with the private investment recovery. Finally, in structural terms, the establishment of appropriate incentives to innovation, factor mobility and investment in physical and human capital will be fundamental for a sustained resumption of the real convergence process towards the euro area average.

1. International environment

Continuing gradual recovery in global economic activity with marked differences between countries

In the first half of 2014, the global economy continued to show a moderate recovery, with marked differences between economies. According to the information available, world GDP grew around 3.2 per cent on average in the first half compared with the corresponding period of 2013. That amount was similar to the full-year result for 2013 and reflects growth of 2.2 per cent in the United States, 1.3 per cent in Japan, 3.1 per cent in the United Kingdom, 0.8 per cent in the euro area and 7.4 per cent in China.

In general, this growth rate in the global economy is lower than previously forecasted. This recovery in economic activity should continue in the second half of the year, with fiscal consolidation policies expected to taper off and monetary policy to remain accommodative in most advanced economies. The IMF projections presented in the July 2014 edition of the World Economic Outlook revise global economic growth downwards for 2014, while for 2015 the revisions are generally smaller (Table 1.1).

The international environment of the Portuguese economy is strongly influenced by developments in the euro area activity. The euro area economies are recovering at a slower pace than in previous recessive episodes, with real GDP also reaching a level below that of before the start of the economic and financial crisis (Chart 1.1 and Box "The recovery of economic activity in the euro area since the Great Recession").

The moderate economic growth in the euro area also reflects high heterogeneity across Member States

Countries such as Germany or France, which in 2011 had recovered to the levels they had reached before the crisis, present moderate growth rates, with Germany recording an unexpected contraction in the second quarter of 2014. In turn, the main economies of southern Europe are also significantly below the levels of before the start of the crisis.

Table 1.1 • Gross Domestic Product forecasts | Real growth rate, in percentage

	WEO Update July 2014			Revisions from April 2014 WEO (p.p.)	
	2013	2014	2015	2014	2015
World	3.2	3.4	4.0	-0.3	0.0
Advanced economies	1.3	1.8	2.4	-0.4	0.1
USA	1.9	1.7	3.0	-1.1	0.1
Japan	1.5	1.6	1.1	0.3	0.1
United Kingdom	1.7	3.2	2.7	0.4	0.2
Euro area	-0.4	1.1	1.5	0.0	0.1
Germany	0.5	1.9	1.7	0.2	0.1
France	0.3	0.7	1.4	-0.3	-0.1
Italy	-1.9	0.3	1.1	-0.3	0.0
Spain	-1.2	1.2	1.6	0.3	0.6
Emerging and developing economies	4.7	4.6	5.2	-0.2	-0.1

Source: IMF, World Economic Outlook (WEO).

The behaviour of the euro area economies reflects the prevalence of fragmentation in the financial markets, as well as the ongoing restructuring of the private and public sectors' balance sheets and the high levels of unemployment in certain Member States. After an adjustment period to correct the main macroeconomic imbalances affecting certain economies in the euro area, the structural reforms enabling greater productivity and growth are progressing at different paces from country to country, as typically they are not homogeneous processes and do not produce immediate results. The structural transformation process must also be continued to consolidate the macroeconomic adjustment already made.

External demand for the Portuguese economy continues its recovery trend

Despite the moderate growth of the euro area as a whole, external demand for Portuguese goods and services accelerated to 4.3 per cent year-on-year in the first half of 2014 (1.6 per cent in 2013) (Table 1.2). A key driver of this acceleration in external demand was Spain's continued economic recovery from the third quarter of 2013, as well as the greater dynamism of Germany in the first quarter of 2014. In turn, imports from extra-euro area trading partners maintained strong growth, the US in particular.

Looking ahead, external demand for 2014 as a whole is projected to grow at 3.9 per cent, in line with the growth forecast for intra-euro area demand and the IMF projection for world trade growth, which is still at moderate levels. In terms of the long-term average, from the 1970s to 2007, world trade has grown at an annual rate of over 6 per cent.

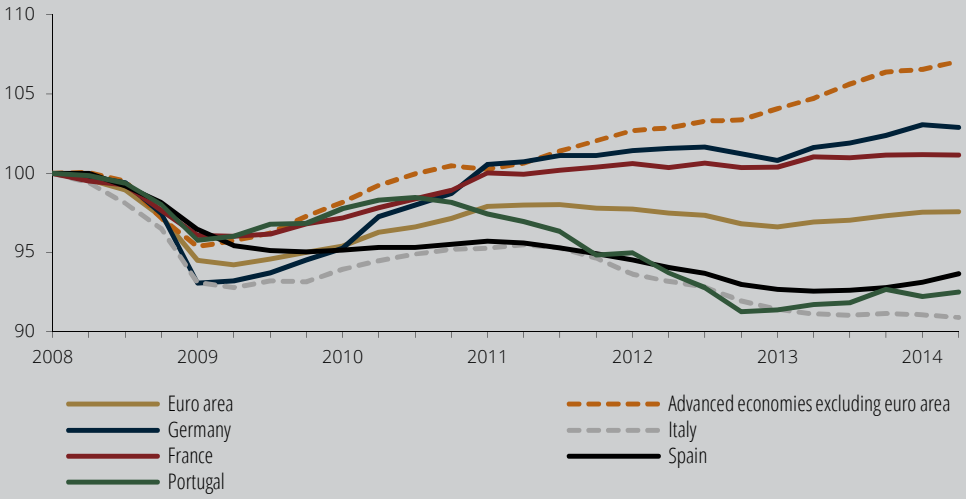
Further decline in the euro area inflation in 2014, reaching very low levels

Following the falling inflation during 2012, essentially due to the energy component, there was a sharper fall in inflation in 2013, now across all components. In the first eight months of 2014, the inflation rate followed a downward path, falling 0.4 per cent year-on-year for the month of August. Recent developments in inflation chiefly reflect the behaviour of food and energy goods. Inflation excluding these items remained at around 0.8 per cent since the start of the year.

A long-term analysis shows that current inflation levels are unusually low compared to the average both before and after the crisis. This holds for inflation evaluated in terms of change both in the total HICP and the HICP excluding food and energy, and is observed in countries with a

Chart 1.1 • Gross Domestic Product

| Index 2008QI=100



Sources: Eurostat, IMF, Thomson Reuters and Banco de Portugal's calculations.

high credit rating, and above all in the countries undergoing adjustment (Chart 1.2). There are several factors behind this: on the one hand, the appreciation of the euro and the fall in international commodity prices; on the other hand, aggregate demand in the euro area, which has not reached its full potential, contributing to moderate growth in wage costs and profit margins in companies. Inflation expectations for the short and medium term have shown a sustained downward trend from the start of 2013, which has been transmitted to the longer-term expectations (Chart 1.3). In the context of monetary union, these long-term expectations have a significant impact on current inflation, contributing decisively to the price and wage formation dynamics. Thus, it is vital that inflation expectations remain anchored to the goal of price stability, and it is therefore noteworthy that in the most recent period, since the end of August, short and medium-term expectations have resumed their convergence towards that goal.

Table 1.2 • External demand of goods and services | Real yearly growth rate, in percentage

	Shares[b]	2011	2012	2013	2013		2014
					H1	H2	H1
External demand (ECB)[a]	100.0	4.2	-0.2	1.6	0.7	2.5	4.3
Intra euro area external demand	66.3	3.2	-2.4	0.7	-0.5	1.9	4.7
of which:							
Spain	27.1	-0.1	-5.7	0.4	-0.9	1.6	6.2
Germany	13.7	7.3	0.4	3.2	1.8	4.7	4.4
France	12.5	6.5	-1.2	1.9	0.6	3.2	3.0
Italy	3.9	1.4	-7.1	-2.9	-4.7	-1.0	1.5
Extra euro area external demand	33.7	6.3	4.4	3.5	3.2	3.7	3.6
of which:							
United Kingdom	5.6	1.0	3.1	0.5	-0.1	1.2	
USA	3.5	5.5	2.3	1.1	0.4	1.9	3.4
Memo:							
World trade on goods and services (IMF)		6.2	2.8	3.1			
World merchandise imports (CPB)		6.2	2.1	2.6	1.7	3.5	3.2

Sources: ECB, Netherlands Bureau for Economic Policy Analysis (CPB) and IMF.

Notes: (a) External demand is computed as weighted average of the imports volume of Portugal's main trading partners. Each country / region is weighted by its share in Portuguese exports. (b) Shares computed using 2011 data.

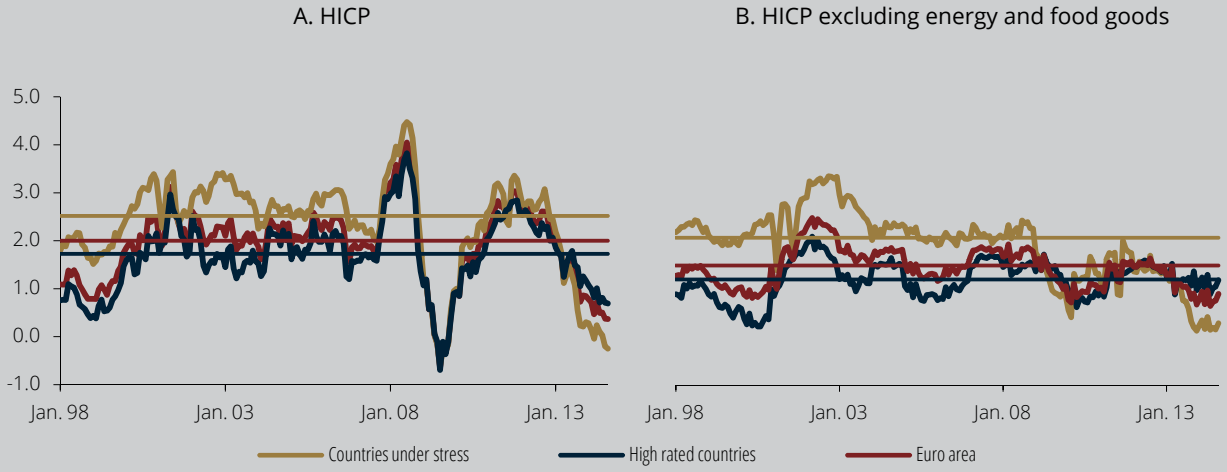
ECB adopts new measures in monetary policy and credit stimulus to the real economy

In the advanced economies, monetary policy has remained accommodative, but with some differences between the euro area and the other countries. The decisions taken by the ECB during 2014 have aimed to make the policy more accommodative. In turn, there are some signs in the US and the UK that monetary policy is returning to normal, with the Federal Reserve reducing the monthly pace of asset purchases, and with prospects of raising reference interest rates among these central banks in 2015.

In a context of unusually low inflation, weak economic growth and falling loans to non-financial corporations, in June 2014 the ECB announced a set of measures designed to make monetary policy more accommodative and to support lending to the real economy. Essentially, the decision included reductions in the key interest rates with immediate effect, and turning the deposit facility rate negative, prolongation of full allotment fixed rate tender procedures and suspension of the programme sterilising the liquidity inject-

ed under the Securities Markets Programme. In June, the ECB also decided to conduct targeted longer-term refinancing operations aimed at the provision of bank lending to non-financial corporations and households (excluding loans for house purchase) and the intensification of preparatory work for the outright purchases of asset-backed securities. In September, the ECB reduced its key interest rates again (by 10 basis points) and announced the start of the purchase of non-financial private sector assets under the programme of outright purchases of asset-backed securities. Key ECB interest rates are now at historic lows: the rate on the main refinancing operations at 0.05 per cent, the deposit facility rate at -0.2 per cent and the rate on the marginal lending facility at 0.3 per cent. Furthermore, the ECB announced a new covered bond purchase programme issued by euro area monetary financial institutions. Regarding the future stance of monetary policy, the ECB stated that the key interest rates are currently

Chart 1.2 • Year on year rate of change of consumer prices in the euro area – Countries under stress versus high rated countries | Per cent



Sources: Eurostat and Banco de Portugal's calculations.

Notes: High rated countries include Austria, Belgium, Finland, France, Germany and Netherlands. Countries under stress include Cyprus, Greece, Ireland, Italy, Spain and Portugal. Horizontal lines correspond to the period averages.

Chart 1.3 • Expected inflation based on swaps | Per cent

Sources: Bloomberg and Banco de Portugal's calculations.

at their lower bound and strengthened its commitment to using additional non-standard monetary policy measures in order to address risks of a too prolonged period of low inflation. Following the announcement of these measures, medium and long-term inflation expectations interrupted the falling trend that they had been showing (Chart 1.3).

Greater appetite for risk and low volatility in the international financial markets

In the first half of 2014, the general climate of low inflation and low growth in the euro area is likely to have contributed to falling yields on sovereign bonds and corporate bonds, including those of banks, in various Member States (Chart 1.4). These developments contrast with those of the other advanced economies like the US and the UK, where these rates have stabilised since the start of the year.

In parallel, a greater appetite for risk among investors and the improvement in confidence also contributed to the narrowing of spreads between the yield on euro area government bonds and that on corresponding German bonds, especially for economies under adjustment, including Portugal. In this respect, the global financial markets have shown low volatility across the various segments since around the middle of 2013. The stock markets, particularly those of the US and the euro area, have made a recovery that was sharper in the second half of 2013. Furthermore, in a context of abundant liquidity at global level, certain asset markets have grown in value significantly since 2013, especially the housing markets in some countries, including the US, the UK and Germany.

Persistence of financial fragmentation in the euro area, despite the improvement of monetary and financial conditions

In the first seven months of 2014, the pace of contraction of loans to non-financial corporations in the euro area continued to slow down and loans to households stabilised in relative terms. However, a marked differentiation persists between countries in terms of developments in interest rates applied and amounts of credit granted (Charts 1.5 and 1.6).

The results of the Bank Lending Survey for the euro area published in July indicated certain positive signs in the second quarter of 2014. Indeed, for the first time since the second quarter of 2007, the banks revealed a slight easing of credit standards for loans to both large firms and small enterprises (Chart 1.7).[1] In the case of

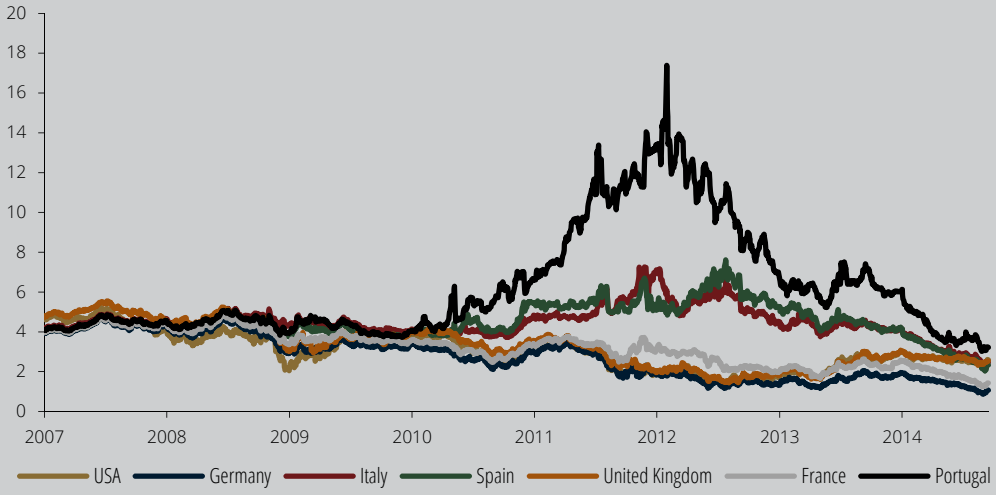


Chart 1.4 • 10-year government bond yield rates
| Per cent

Source: Bloomberg.

households, the banks continued to moderately ease the credit standards (for loans for house purchase and consumer credit loans). Also notable is the increased demand for credit for the second quarter running, both among households and firms that seem to have increased the financing needs for investment for the first time since the second quarter of 2011.

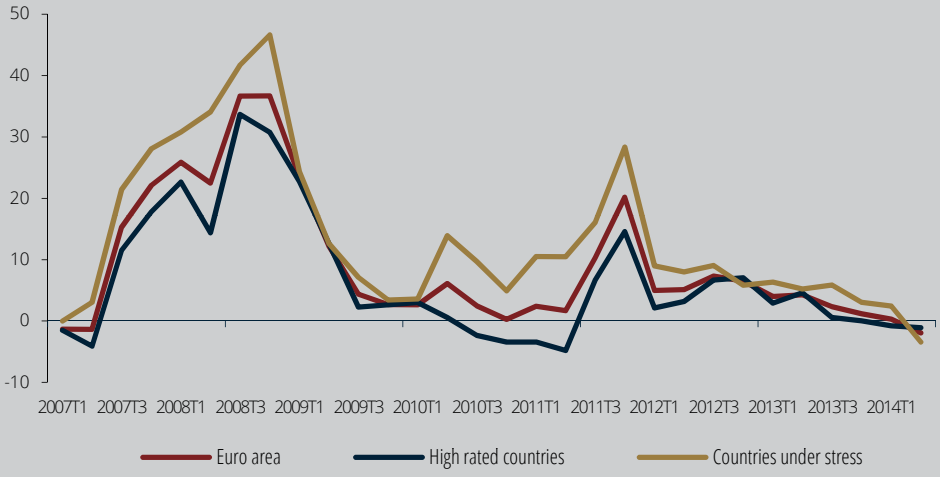
Chart 1.5 • Interest rates on new business loans in the euro area | Per cent

Chart 1.6 • Euro area – Loans adjusted for sales and securitization | Annual rate of change, per cent

Sources: ECB and Banco de Portugal's calculations.

Note: High rated countries include Austria, Belgium, Finland, France, Germany and Netherlands. Countries under stress include Cyprus, Greece, Ireland, Italy, Spain and Portugal.

Chart 1.7 • Euro area – Credit standards for loans to non financial corporations | Diffusion index, per cent



Sources: ECB and Banco de Portugal's calculations.

Note: Positive (negative) values indicate tighteness (easeness) in the credit standards.

Box: The recovery of economic activity in the euro area since the Great Recession

The global financial crisis of 2008 resulted in the strongest economic recession in the euro area and the weakest recovery in the last few decades (Chart 1). Between the first quarter of 2008 and the second quarter of 2009, GDP in the euro area fell around 5 per cent, which compares to around 1 per cent on average for comparable periods in previous recessions. The recession was particularly synchronised between the larger euro area economies. In the next five years, economic activity in the euro area grew only 3.5 per cent, and in a very heterogeneous way, which contrasts with growth of 15 per cent in previous economic recoveries. These developments concur with empirical evidence that recessions preceded by financial crises with high synchronisation between countries tend to be deeper and with a weaker and more protracted recovery pattern.

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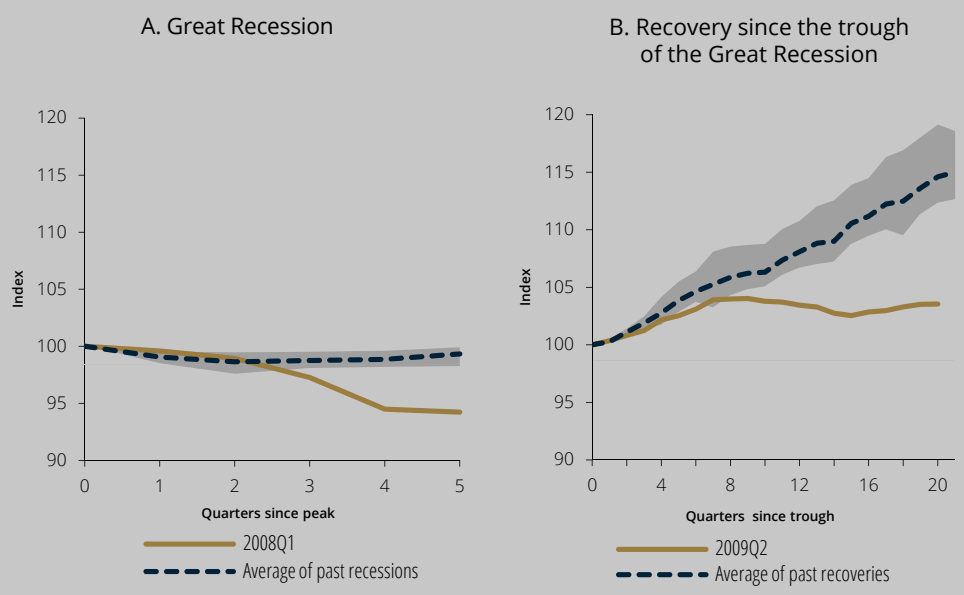
In contrast with the recessive period of 2008/2009, the economic recovery cycle in the euro area was typified by a high heterogeneity between countries (Chart 2). Analysis of the four largest economies shows that in the case of Germany, the recovery pattern was the most dynamic, and was consistent overall with previous recoveries. In the other three economies, GDP growth was weaker than in previous episodes, which reflects the structural weaknesses of these economies. Developments in France were similar to those of the euro area average, while in Italy and Spain the economic contraction was clearly sharper, due in particular to the sovereign debt crisis. In the second quarter of 2014, GDP in France and Germany was 5 and 10 per cent above the level of the second quarter of 2009, while in Italy and Spain it was below that level by around 2 per cent.

Based on a sample of advanced economies since 1960, Terrones, Scott and Kannan (2009) conclude that recessions associated with financial crises with high synchronisation last around seven quarters on average, with GDP falling around 5 per cent.[2] The euro area's economic recession of 2008/09 has not deviated much from this pattern. The same research suggests that the number of quarters required to recover to the pre-recession peak is also around seven. The economic recovery period in the euro area after the Great Recession does not bear out that evidence, since, as has been mentioned, the peak from before the crisis has not yet been reached.

Reinhart and Rogoff (2014) offer evidence showing that the developments observed in this financial crisis nevertheless have historical precedents. These authors analyse the period between 1857 and 2013, both for advanced economies and emerging market economies. The results for 63 episodes of financial crises in the advanced economies, despite being more moderate than in the emerging market economies, suggest that on average real GDP per capita falls around 10 per cent, the recessions last around three years and GDP per capita takes around four years to recover to the pre-crisis level. Thus, on average seven years are needed to return to the income level recorded before the recession (Chart 3). In the case of the Great Recession, for several economies in the euro area, in particular those under pressure, GDP per capita in 2018 is estimated to still stand

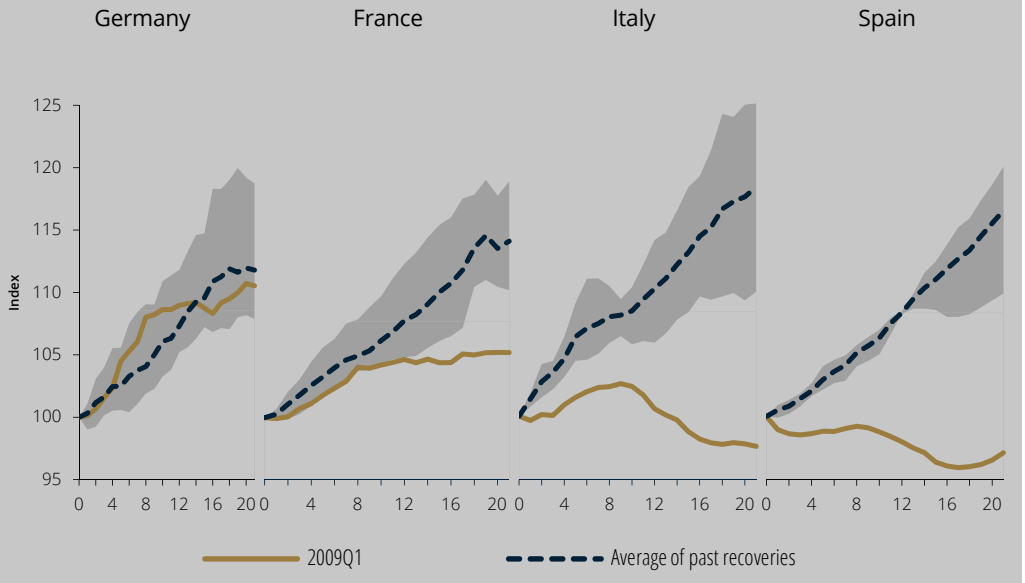
Chart 1 • GDP in the euro area



Sources: Eurostat, Centre for Economic Policy Research (CEPR) and Banco de Portugal's calculations.

Note: The moment 0 corresponds to the business cycle peak and trough before and after economic recession of 2008/09 according to the CEPR dating.

Chart 2 • GDP growth since the Great Recession trough



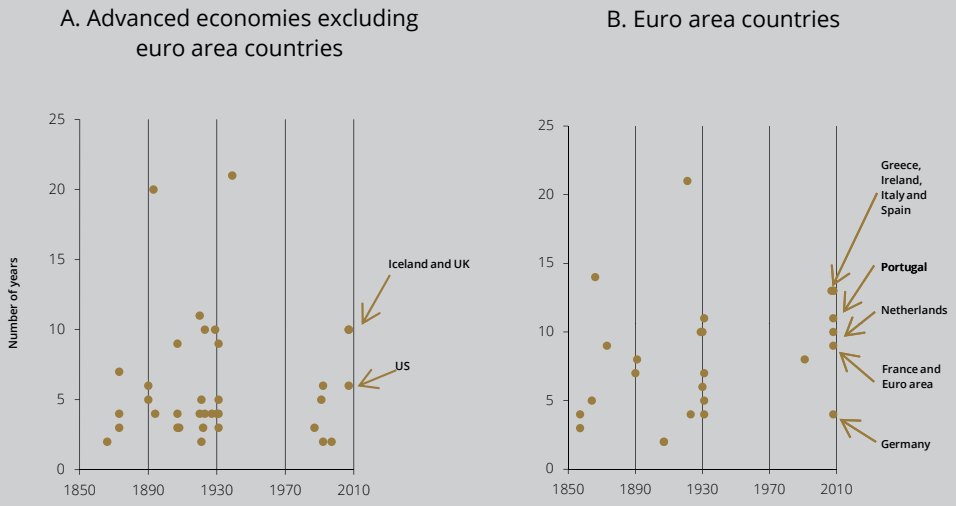
Sources: Eurostat, Economic Cycle Research Institute (ECRI) and Banco de Portugal's calculations.

Notes: The moment 0 corresponds to the business cycle trough. Recoveries refer to GDP growth since the trough date determined by the ECRI for each economy in the period 1975-2013. In the case of France a new trough has been identified for 2012Q4. For the sake of comparison, in the case of Spain it was included a trough in 1975Q1 corresponding to the business cycle trough in the euro area. The shaded area corresponds to maximum and minimum growth of past recoveries.

below the pre-crisis level (in 2007).[3] For the euro area as a whole in 2016 GDP per capita should return to the level recorded before the Great Recession.

Thus, one can conclude that the current recovery in the euro area is particularly weak, even when compared to historic episodes involving financial crises.

Chart 3 • Number of years to reach the peak before the recession



Sources: Reinhart and Rogoff (2014) and Banco de Portugal's calculations.

Notes: Some points on the Chart correspond to recessions in several countries. The reference variable in Reinhart and Rogoff (2014) is the real GDP per capita. In the most recent recession the study result are based on the IMF forecasts. These forecasts have been updated with the WEO April 2014, whose the forecast horizon ends in 2019. In the 2008 crisis the pre-crisis peak it is not reached by that date in Greece, Ireland, Italy and in Spain. Thus, like the authors of the study, it was assumed that this will happen in the years immediately following, that is, in 2020. Additionally, it was also included an estimate for the euro area.

References: Reinhart, Carmen M. and Kenneth S. Rogoff, 2014, "Recovery From Financial Crises: Evidence From 100 Episodes", *Working Paper 19823*, NBER.

Terrones, Marco E., Alasdair Scott and Prakash Kannan, 2009, "From Recession to Recovery: How Soon and How Strong?", *World Economic Outlook*, April 2009, International Monetary Fund.

2. Fiscal policy and situation

The change in the methodological benchmark relevant for the excessive deficit procedure does not significantly affect the fulfilment of the deficit target in 2014

National Accounts data published by Statistics Portugal (*Instituto Nacional de Estatística – INE*) on 30 September is based on the new version of the European System of National and Regional Accounts (ESA 2010), which became the relevant benchmark for the purpose of the excessive deficit procedure. The new figures for the main public finance aggregates regarding the period from 2010 to 2013 are presented in Table 2.1. Compared with the previous reporting to *Eurostat*, the fiscal deficit for 2013 as a percentage of GDP remained unchanged at 4.9 per cent and the estimate for the public debt ratio at the end of 2013 stands currently at 128.0 per cent of GDP (1.0 per cent below the previous estimate). For an analysis of the main changes resulting from the implementation of ESA 2010, see the Box "Revisions of national accounts and balance of payments series".

In the framework of the excessive deficit procedure notification, the Ministry of Finance revised its estimate for the general government deficit in 2014 to 4.8 per cent of GDP. However, adjusted for one-off effects, this figure is consistent with the 4.0 per cent deficit target, confirmed in the second amendment to the State Budget for 2014,[4] approved in early September. The one-off effects considered are related with the financing of public transport enterprises (*Carris* and *STCP*) by the general government, with an impact of 0.7 per cent of GDP, and with the write-off of nonperforming loans from *BPN Crédito*, which amounted to 0.1 per cent of GDP. Regarding the debt ratio as a percentage of GDP, the Ministry of Finance currently forecasts a marginal reduction in this indicator to 127.8 per cent in 2014, which has implicit negative deficit-debt adjustments of a non-negligible amount.

Table 2.1 • Main Fiscal Indicators | As a percentage of GDP

	2010	2011	2012	2013
Overall balance	-11.2	-7.4	-5.5	-4.9
Temporary measures	-1.1	0.1	0.0	0.3
Special factors	1.5	0.3	0.0	0.0
Overall balance excluding temporary measures and special factors	-8.6	-7.2	-5.5	-5.2
Cyclical component	1.4	0.4	-1.5	-2.1
Structural balance	-9.9	-7.5	-4.0	-3.1
Interest expenditure	2.9	4.3	4.9	5.0
Structural primary balance	-7.0	-3.2	0.9	1.8
Public debt	96.2	111.1	124.8	128.0

Sources: *INE* and Banco de Portugal.

Notes: (a) Special factors are operations that transitorily increase the general government deficit, but cannot be treated as temporary measures according to the definition adopted in the Eurosystem. (b) Structural figures are adjusted for the impacts of the cycle, temporary measures and special factors. The cyclical components and temporary measures are computed by Banco de Portugal according to the methodologies adopted in the Eurosystem.

The budgetary execution in the first half of the year was characterised by an increase in tax revenue and a near stabilisation of total expenditure

According to the Quarterly National Accounts, the general government deficit on a National Accounts basis stood at 6.5 per cent of GDP in the first half of 2014 (Table 2.2), which compares to 6.6 per cent in the same period of 2013. These developments are nevertheless affected by the reclassification of the capital injection in *Banif* as a non-financial transaction in 2013, and the abovementioned one-off operations with an impact on the 2014 fiscal balance. Excluding these effects, the deficit posted a more noticeable correction from 5.8 to 5.0 per cent of GDP, between the first half of 2013 and 2014.

It should be noted that the deficit of the third quarter of the year is usually affected downwards by seasonal effects, which is an important qualification to put the difference between the deficit observed in the first half of the year and the objective for the year as a whole into perspective. It is also necessary to take into account that the successive modifications to the consolidation measures in force in the course of 2014 and the change in the moment of the payment of holiday bonuses to civil servants and pensioners affected the intra-annual pattern of budgetary execution, increasing the uncertainty about the developments in the main fiscal items in the second half of the year. Finally, it should be noted that the comparison between the developments observed in the first half of the year and those estimated for 2014 as a whole may be affected by the fact that the latter is still based on information not adjusted to the recent methodological revisions.

As regards the main measures with an impact on the 2014 budgetary execution, it should be mentioned, on the revenue side, the increases of several taxes on production and imports in the initial budget and the rise in the contributions of beneficiaries to the health sub-system of civil servants (ADSE), in the first supplementary budget in March. Also regarding tax revenue, it has been affected by the introduction of a 3.5 per cent surcharge in the context of the Personal Income Tax in 2013. Turning to expenditure, it is important to highlight the intensification of the wage cut introduced in 2011, which was in force from January to May 2014. This was followed by the payment of wages without cuts up to 13 September, when the cuts enforced in 2011 were reintroduced.[5] In addition, the sustainability factor was revised in the initial budget, leading to a rise in the retirement age, and the solidarity surcharge on pensions was increased in the first supplementary budget.

Year-on-year growth of 1.7 per cent in total revenue in the first half of 2014 was mainly explained by the developments in revenue from taxes and social contributions, which is broadly in line with the prospects assumed in the second supplementary budget for the year as a whole, excluding the base effects from the tax amnesty. Revenue from taxes on production and imports increased by 7.7 per cent, driven by VAT collection, in a context of private consumption growth and a sizable fall in refunds. In turn, revenue from taxes on income and wealth rose by 3.0 per cent in the same period, as a result of the sharp rise in the receipts from personal income taxation. Conversely, social contributions fell by 1.5 per cent, due to the behaviour of imputed contributions. Other current revenue declined 3.1 per cent in the first half of 2014 *vis-à-vis* the same period of the previous year, partly as a result of the fall in dividends.

Table 2.2 • General government accounts: execution in the first half of the year
| As a percentage of GDP

	First half 2013	First half 2014	yoy (%)	memo item – yoy (%): 2014, excluding the special scheme for the payment of tax arrears
Total revenue	**42.5**	**42.0**	**1.7**	**3.3**
Current revenue	41.7	41.3	2.1	3.3
Taxes on income and wealth	9.8	9.8	3.0	0.2
Taxes on production and imports	12.8	13.4	7.7	5.7
Social contributions	11.9	11.3	-1.5	2.9
Other current revenue	7.2	6.8	-3.1	4.4
Capital revenue	0.8	0.7	-16.7	3.3
Total expenditure	**49.1**	**48.5**	**1.6**	**-0.3**
Current expenditure	46.1	44.8	-0.1	-0.1
Social benefits	19.6	18.9	-0.6	-0.5
Compensation of employees	12.3	12.0	0.1	-4.0
Intermediate consumption	5.6	5.4	0.2	7.2
Subsidies	0.4	0.5	27.8	4.9
Interests	5.1	5.1	3.6	4.2
Other current expenditure	3.1	2.8	-7.3	-1.1
Capital expenditure	3.0	3.7	28.2	-4.9
Gross fixed capital formation	1.8	1.9	14.0	41.2
Other capital expenditure	1.2	1.8	48.2	-71.4
Overall balance (EDP)	**-6.6**	**-6.5**	**-**	**-**
Memo: Current primary expenditure	41.1	39.7	-0.5	-0.5

Sources: *INE* and Banco de Portugal.

Note: a) Year-on-year growth rates for the year as a whole were calculated following the previous version of the European System of National and Regional Accounts (ESA 1995) and the second amendment to the State Budget for 2014.

Total expenditure increased by 1.6 per cent in the first half of 2014, *vis-à-vis* the same period of 2013. Nevertheless, part of this increase was explained by the rise in interest expenditure (3.6 per cent) and by the abovementioned one--off operations with an impact on capital expenditure. Adjusted for the effects of these operations, total expenditure grew by only 0.2 per cent in this period. Current primary expenditure declined by 0.5 per cent in the first half of the year, as a result of the quasi stabilisation of both compensation of employees and intermediate consumption and the decline in the expenditure on social benefits. It should also be mentioned that underlying the developments in compensation of employees was a significant decline in the number of civil servants. Indeed, data published by the Directorate General for Administration and Public Employment (*Direção Geral da Administração e do Emprego Público – DGAEP*) points to a 4.0 per cent decline in the number of general government employees, compared to the end of the first half of 2013.[6] Expenditure on social benefits is affected by a significant fall of social benefits in cash other than pensions, in particular unemployment benefits, partially mitigated by an increase of social benefits in kind, largely associated with health care expenditure.

Available information points to a slowdown in the fiscal consolidation pace in 2014

As regards the structural analysis of fiscal developments in 2014, based on Eurosystem methodologies, the materialisation of a deficit excluding temporary measures and special factors of 4.0 per cent (compared with 5.2 per cent in 2013), in a context of stabilisation of the ratio of interest to GDP and a positive impact of economic activity – particularly taking into account developments in demand components – will lead to an increase, albeit negligible, in the structural primary balance. This scenario, however, may be consistent with the minimum effort to improve the structural balance by 0.5 percentage points, given that the change in the cyclical component calculated with the European Commission methodology, relevant for the assessment of the fulfilment of this criterion, does not consider the composition effects of economic growth. The slowdown in the pace of consolidation in 2014 makes budgetary execution in the coming years more demanding, having in mind the need to reduce the debt ratio and to maintain the convergence of the structural balance towards the medium-term objective.

3. Supply

Moderate economic recovery in the first half of 2014

In the first half of 2014, Gross Value Added (GVA) at basic prices grew by 0.9 per cent year-on-year (compared with a contraction of 1.0 per cent in 2013), continuing the moderate intra-annual recovery that began in 2013. These developments are broadly in line with developments in the coincident indicator of Banco de Portugal and the economic sentiment indicator of the European Commission up to the second quarter of 2014 (Chart 3.1). Nevertheless, the coincident indicator has shown a decelerating trend throughout 2014 and the economic sentiment indicator has stabilised according to more recent data for the third quarter.

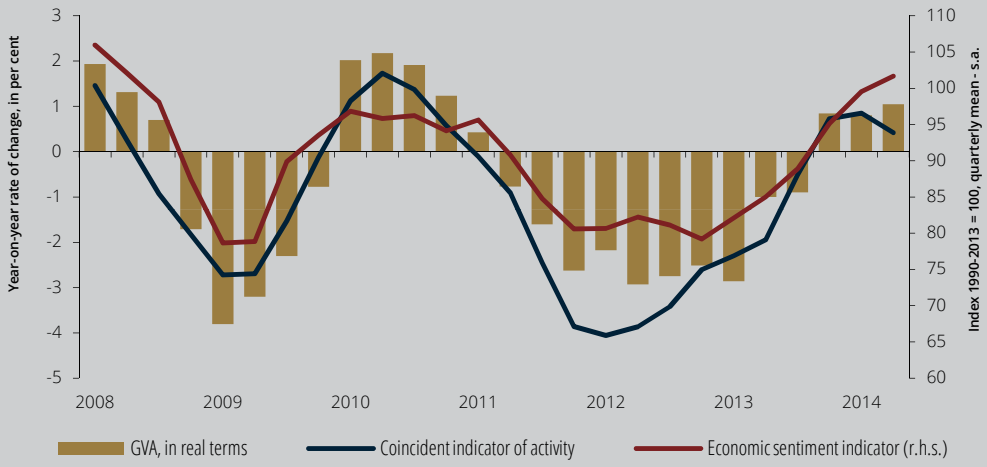
Confidence indicators for the main sectors of activity have also indicated a generalised increase in the first half of the year (Chart 3.2). However, more recent information points to a relative stabilisation in confidence throughout the third quarter of 2014, although these sectors post levels above the average of the past decade, with the exception of construction.

Developments in sectoral activity continue to reflect the correction's process of a growing trend towards the non-tradable sector that has been observed since the mid-1990s (Chart 3.3).

GVA in construction continued to decrease in the first half of 2014 (-5.7 per cent year-on-year), although less than in previous years. During this period, GVA in construction accounted for around half of the 2008 level. The downward trend in activity in this sector in the past few years is expected to continue to reflect the structural adjustment in the level of the housing stock, after a considerable investment in construction during the 1990s.

GVA in manufacturing improved year-on-year 1.8 per cent in the first half of 2014, remaining relatively stable compared with the second half of 2013. Economic developments in this sector accompanied, to a large extent, the recovery in domestic demand, against a background of a slight deceleration in exports. The relatively stable levels of aggregate GVA in manufacturing over the past three years result, on average, from the combination of a contraction in GVA in firms that are more oriented towards the domestic market and an expansion in exporting firms, but are still below those seen before the start of the international financial crisis.

Chart 3.1 • GVA, coincident indicator of activity and economic sentiment indicator – (2008 Q1-2014 Q2)



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

GVA in services grew by 0.9 per cent year-on-year in the first half of the year, after a relatively moderate contraction in the past three years. This increase mainly reflected growth of 2.3 per cent in economic activity in the subsectors trade and repair of motor vehicles and hotels and restaurants. The recovery in activity in this sector is both the result of developments in tourism exports and more dynamic domestic demand.

Credit granted has been consistent with economic developments in the recent period

Overall, developments in the credit market have accompanied developments in economic activity and show an improvement in credit standards applied by banks on loans to non-financial corporations.

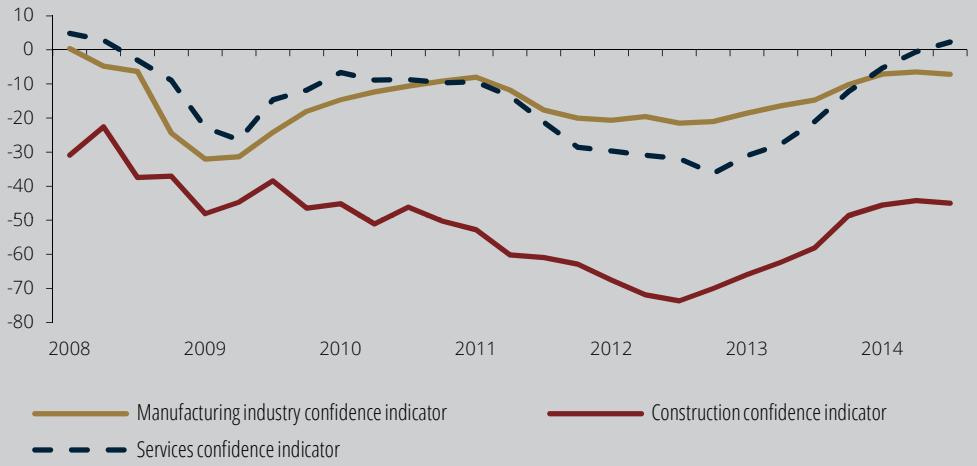


Chart 3.2 • Confidence Indicators (2008 Q1-2014 Q3)

| Balances (quarterly mean) – s.a.

Source: European Commission.

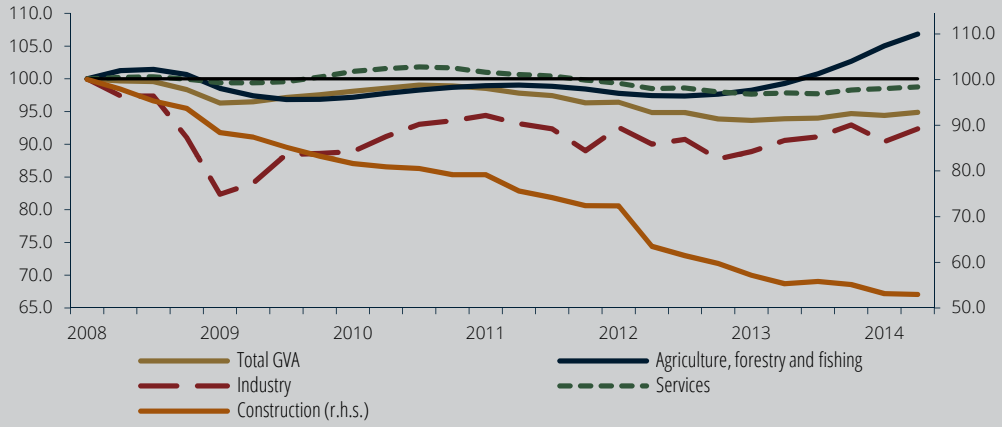


Chart 3.3 • Change in real GVA by main sectors of activity (2008Q1-2014Q2)

| Index 2008 Q1 = 100

Source: *INE* – Quarterly National Accounts.

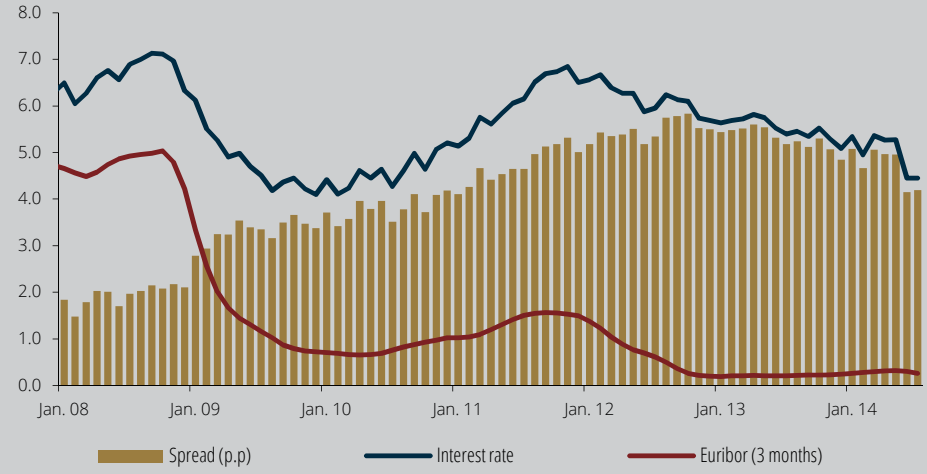
As for the conditions for the price of credit, in the first half of the year the interest rates on new loans to private non-financial corporations decreased further, reflecting in particular a marked decrease in spreads on loans granted by banks in the first half of the year (Chart 3.4A). Therefore, although still incomplete, the process of a gradual normalisation in the monetary transmission mechanism applied to the Portuguese economy has continued. The distribution of interest rates on new loans shows that the decrease in interest rates was broadly based across the distribution (Chart 3.4B). In addition, the left-hand side of the distribution corroborates the idea that firms with a better risk profile and more profitable investment projects are obtaining bank loans at relatively low rates.

Total credit to non-financial corporations in the private sector showed positive developments in the first half of 2014, although bank loans continued to decrease compared with the same period a year earlier. Private firms, especially larger firms, have found alternative sources of funding, specifically loans from non-residents (Chart 3.5). Exporting firms have also recorded systematic growth in loans obtained, including loans from

Chart 3.4 • Interest rates on new loans to non-financial private corporations

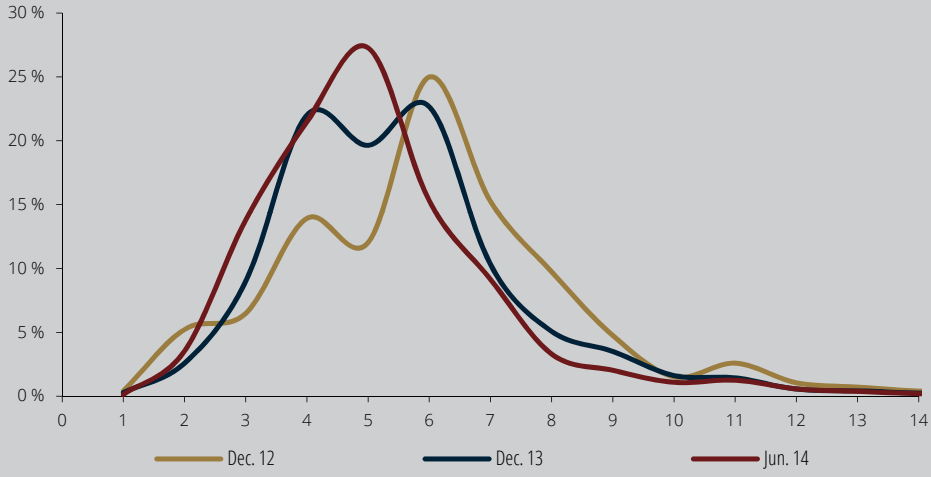
A. Interest rate evolution

| In percentage unless otherwise stated



B. Interest rate distribution

| In percentage



Source: Banco de Portugal.

Note: Histogram of interest rates calculated for the new loans to non-financial private corporations weighted by the operations amount. Non-parametric distribution obtained by the use of a gaussian kernel.

the resident financial sector, reflecting the fact that firms with a better risk profile find funding with more favourable conditions even during the period of economic recession.

According to the results of the Bank Lending Survey, demand for loans or credit lines increased in the more recent period, mostly due to demand from small and medium-sized enterprises (SMEs) as a result of increased inventory and working capital financing needs and debt restructuring.

Developments in credit by sector of activity show ongoing structural changes in the economy, to the extent that total loans to more export-oriented firms have increased in the past few years (specifically in manufacturing and mining and quarrying), while loans to firms that are more oriented towards the domestic market (in trade, construction and real estate) are expected to have decreased (Charts 3.6A and B).

Nevertheless, there have been some changes in this trend over the past year. In fact, total loans to manufacturing and mining and quarrying have grown less markedly, mostly reflecting less growth in non-bank lending. In turn, in 2014 the resident banking sector no longer made a negative contribution to the rate of change in total loans to manufacturing (Chart 3.6A).

The situation in this sector is in contrast with that in construction and real estate, which continued to reduce their total debt at a high pace, in particular debt resulting from loans granted by resident banking institutions (Chart 3.6B).

Continued improvement in labour market conditions, against a background of moderate economic growth in the first half of 2014

In the first half of 2014, the labour market was characterised by a decrease in the unemployment rate and an increase in employment, against a background of moderate economic growth. These developments show that the gradual improvement observed since the second quarter of 2013 has continued. The unemployment rate therefore averaged 14.5 per cent in the first half of the year (17.0 and 15.4 per cent in the first and second halves of 2013 respectively). Employment is on a growth path year-on-year, remaining nevertheless at historically low levels.

In the first half of the year, the resident population and labour force continued to decrease (Table 3.1). This contraction was particularly marked in younger age groups (aged 15-34). This decrease in the population is expected to continue to be associated with recent dynamics in migration flows. There is still no information available for 2014, but, according to statistics from Statistics Portugal (*INE*), in 2013 the decrease in the resident population continued to stem mainly from a negative migratory balance of around 3.5 per 1,000 inhabitants (*i.e.* more than 36,000 individuals), similarly to the previous year.[7]

Continued decrease in the unemployment rate, including also the long-term unemployment albeit only moderately

According to the Labour Force Survey of *INE*, total unemployment decreased by 15.4 per cent in the first half of 2014 year-on-year (compared with growth of 2.3 per cent in 2013). The unemployment rate stood at 14.5 per cent in the first half of 2014, below that of 2013. The largest contributions to this reduction were made by individuals aged 25-34 and 35-44 (around 35 and 30 per cent respectively). In addition, the number of discouraged in the first half of 2014 (*i.e.*, individuals who are not actively seeking employment but who are available to work) was similar to that of 2013. These inactives on the margin continue to account for around 5 per cent of the labour force (approximately 260,000 individuals).

The number of unemployed seeking work for 12 months or more decreased in the first half of 2014, contrasting with strong growth seen in the past decade, but nevertheless remained high (Chart 3.7). One of the more negative aspects of recent developments in the Portuguese labour market has been very high long-term unemployment, which tends to lead to a marked depreciation in human capital, with adverse effects

on economic growth. In addition, this group's share stood at 65.4 per cent of unemployed, *i.e.* the highest figure since the start of the 1990s. This increase is solely due to very long-term unemployment (for 25 months or more). By contrast, in the first half of the year, the number of individuals seeking work for less than 12 months decreased by 26.3 per cent, after the sharp drop already seen in the previous year (15.3 per cent).

Given the stronger decrease in the number of unemployed than in the labour force, and the stabilisation in the number of discouraged, the decrease in the unemployment rate indicates that these developments were accompanied by net job creation.

Employment records positive developments but remains at historically low levels

According to the Labour Force Survey, total employment increased by 1.8 per cent in the first half of 2014, after decreasing by 2.6 per cent in the previous year as a whole. These developments reflect an increase in the number of employees (3.8 per cent), as the drop in self-employment increased in the first six months of the year (-4.6 per cent). According to data from the National Accounts, adjusted for seasonal and calendar effects, employment grew by 1.6 per cent during this period.

An analysis of developments in employment underlying the Labour Force Survey should take into account that *INE* began a process of updating the sample basis from the third quarter of 2013, gradually switching to data from the 2011 census. This change provides a better coverage of the sample basis. Nevertheless, up to the last quarter of 2014, Labour Force Survey will use data both from the 2001 and 2011 censuses as their surveying basis.[8] Given that this is a sample survey (aimed at residents in family dwellings) and given the variability that is intrinsic to sample surveys, it is possible that this volatility may increase during the transition period, especially as regards developments in the employed population.

Throughout 2014, the recovery in employees in the private sector is corroborated by a joint analysis of the other indicators available on the Portuguese labour market situation, specifically from the Employment and Vocational Training Institute (*IEFP – Instituto do Emprego e Formação Profissional*) , the Directorate General for Administration and Public Employment (*DGAEP – Direção Geral da*

Table 3.1 • Population , employment and unemployment | Year-on-year rate of change, in per cent, unless otherwise stated

	2012	2013	2013 H1	2013 H2	2014 H1
Population	-0.4	-0.6	-0.5	-0.6	-0.6
Population 15-34 years	-2.9	-3.1	-3.1	-3.1	-2.6
Labour force	-0.8	-1.8	-2.0	-1.7	-1.1
Labour force 15-34 years	-4.3	-5.5	-6.1	-5.0	-3.5
Participation rate 15-64 years (in % of population)	73.4	73.0	72.8	73.2	73.1
Total employment	-4.1	-2.6	-4.4	-0.7	1.8
Employees	-4.7	-2.4	-4.4	-0.3	3.8
Self-employment	-1.8	-3.3	-4.4	-2.2	-4.6
Total unemployment	21.4	2.3	12.1	-6.6	-15.4
Unemployment rate (in % of labour force)	15.5	16.2	17.0	15.4	14.5
Unemployment rate 15-34 years (in % of labour force)	23.2	23.8	24.9	22.7	21.5
Long-term unemployment (in % of total unemployment)	54.2	62.1	60.3	64.0	65.4
Discouraged inactives (in % of labour force)	4.3	5.2	5.0	5.5	5.1

Source: *INE* – Labour Force Survey.

Note: Long-term unemployment includes the unemployed individuals that have been actively seeking employment for 12 months or more. The discouraged inactives include the inactive individuals who were available for work but had not looked for a job during the period.

Administração e Emprego Público) and *INE*, although this recovery is more subdued than that implicit in the Labour Force Survey. Likewise, alternative sources available generally point to sectoral developments in employees that, although more mitigated, are identical to those seen in the Labour Force Survey. In parallel, employment in the general government continued to decrease.

In the recent past, developments in employment are likely to have been affected by dynamics in occupied individuals, who have been increasing according to *IEFP* data, particularly from the

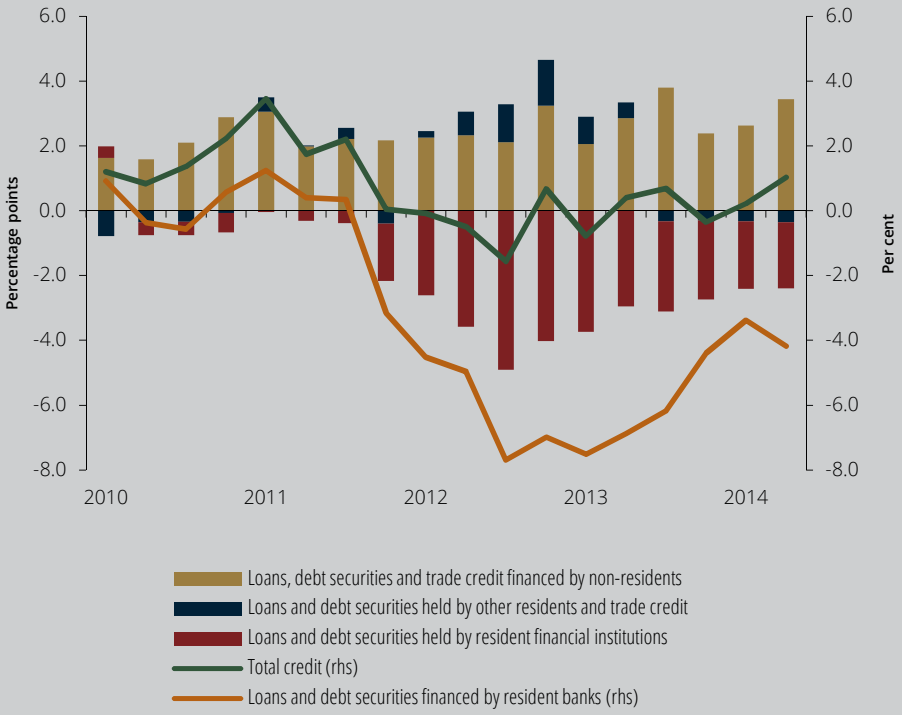
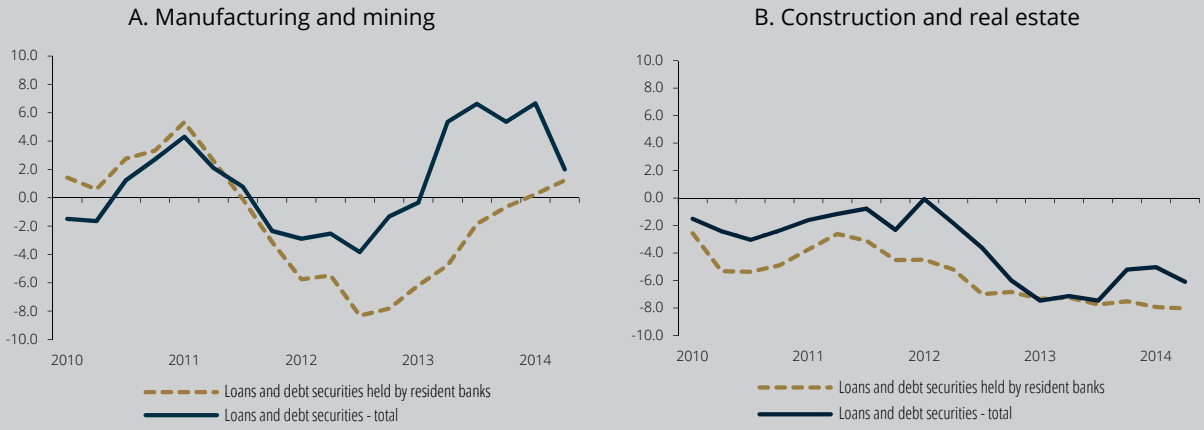


Chart 3.5 • Credit granted to non-financial private corportations | Contributions to the annual growth rate (2010Q1-2014Q2)

Source: Banco de Portugal.

Chart 3.6 • Total credit and credit granted by resident banks (2010Q1-2014Q2)
| Annual growth rate, in percentage



Source: Banco de Portugal.

Source: Banco de Portugal.

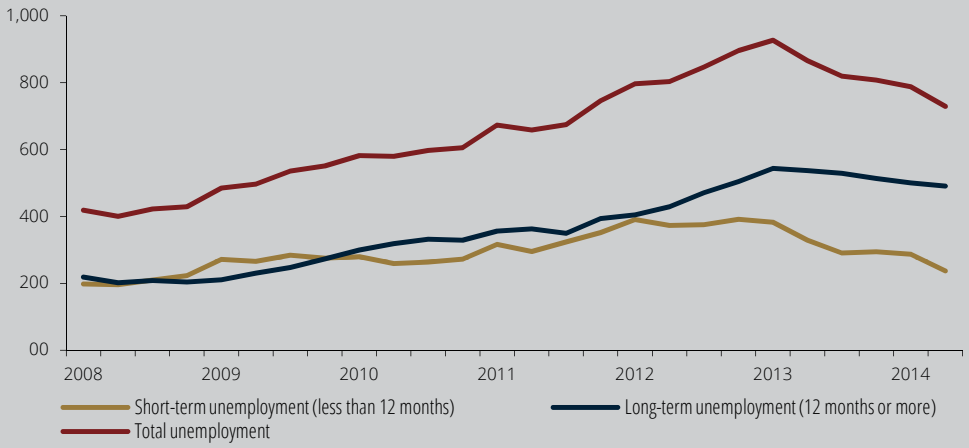
last quarter of 2013.[9] In particular, the considerable increase in professional internships in the past year is estimated to have contributed to increase growth year-on-year in employees in private employment.

Taking into account the set of available indicators, developments in employment by sector of activity generally accompanied the sectoral economic behaviour in the first half of 2014. In effect, with the exception of construction, private employment has recorded positive developments during this period, in particular in the second quarter of 2014.

According to Labour Force Survey, the positive change in employment in services that started in the second half of 2013 intensified (in particular, in the wholesale and retail trade subsectors). In manufacturing, employment grew in the first half of 2014, in contrast with the negative developments seen in the previous years. In turn, employment in construction decreased further in the first half of 2014, accounting for around half of employed workers in 2008 in this sector, which is consistent with the ongoing structural adjustment in the construction sector (Chart 3.8).

Chart 3.7 • Number of unemployed individuals seeking employment by duration (2008 Q1-2014 Q2)

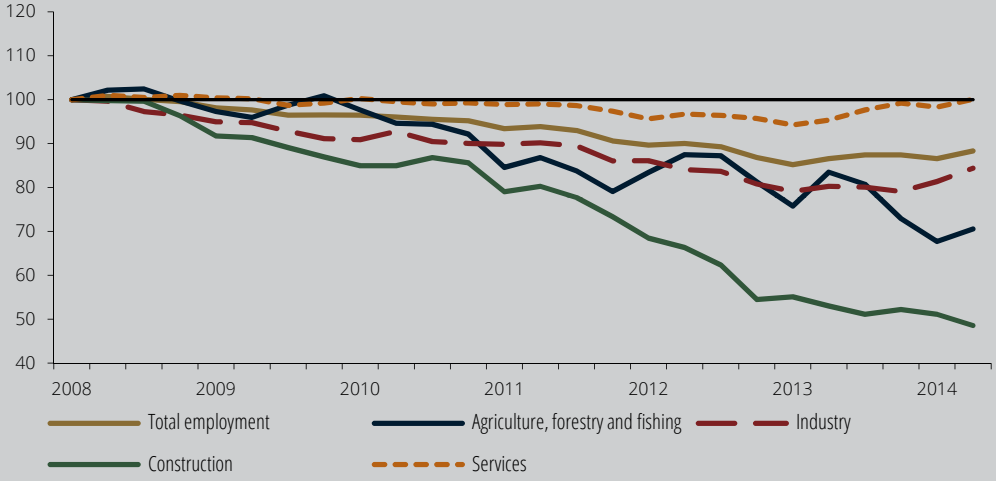
| In thousands



Source: *INE* (Labour Force Survey).

Chart 3.8 • Change in employment by main sectors of activity (2008 Q1-2014 Q2)

| Index 2008Q1=100



Source: *INE* (Labour Force Survey).

4. Demand

In the first half of 2014, GDP continued to grow moderately, with a recovery in domestic demand and a slowdown in exports

In the first half of 2014, GDP grew by 0.9 per cent in real terms compared with the same period one year earlier, and remained relatively stable compared with the second half of 2013 (Table 4.1 and Chart 4.1). These developments were close to those for the euro area average (Chart 4.2). As such, after three years of substantial contraction in activity, the Portuguese economy has recovered gradually, but moderately.The pace of recovery has been conditioned by the high degree of indebtedness in the economy as a whole, together with a moderate growth amongst its main trade partners. In the second quarter of 2014, GDP in terms of volume was still approximately 5 per cent below its value in early 2011 (around 7.5 per cent compared with the first quarter of 2008).

The decline in GDP over the past few years has reflected a substantial contribution from a reduction in domestic demand, namely private consumption and investment, accompanied by a significant export growth. This resulted in a swift correction in the Portuguese economy's external borrowing requirements. As is often the case in these adjustment processes, domestic demand has recovered more recently, particularly in typically business-cycle sensitive components. Indeed, as of the second half of 2013, private consumption of durable goods and investment has accelerated, amid an upturn in private agents' confidence. Given the high import content of these components, imports have accelerated in the course of this period, which, associated with a slowdown in exports, led to deterioration in the goods and services account balance (Section 6. Balance of payments).

The adjustment of the Portuguese economy in the course of the Economic and Financial Assistance Programme led to a reduction in the weight of domestic demand in overall economic

Quadro 4.1 • GDP and main expenditure components | Year-on-year rates of change, percentage

	% of GDP 2013	2011	2012	2013	2013		2014	2013				2014	
					H1	H2	H1	Q1	Q2	Q3	Q4	Q1	Q2
GDP	100.0	-1.8	-3.3	-1.4	**-2.9**	**0.3**	**0.9**	-3.8	-2.1	-1.0	1.6	1.0	0.9
Domestic demand	99.0	-5.7	-6.6	-2.3	**-4.3**	**-0.3**	**2.6**	-6.0	-2.6	-1.2	0.5	3.3	1.9
Private consumption	64.7	-3.6	-5.2	-1.4	**-3.0**	**0.2**	**1.9**	-4.0	-2.0	-0.8	1.3	2.1	1.7
Public consumption	19.0	-3.8	-4.3	-1.9	**-2.9**	**-1.0**	**0.1**	-3.0	-2.8	-1.9	0.0	0.0	0.2
Investment	15.4	-14.0	-14.2	-6.5	**-10.8**	**-1.9**	**8.6**	-16.4	-4.6	-1.8	-1.9	12.6	4.6
GFCF	15.1	-12.5	-15.0	-6.3	**-10.8**	**-1.5**	**1.6**	-14.5	-6.8	-3.5	0.6	0.5	2.6
Change in inventories[a]		-0.4	0.1	0.0	**0.0**	**-0.1**	**1.1**	-0.4	0.3	0.3	-0.4	1.8	0.3
Exports	39.3	7.0	3.1	6.4	**4.8**	**8.1**	**2.7**	2.5	7.1	7.4	8.8	3.1	2.3
Imports	38.3	-5.8	-6.6	3.6	**1.0**	**6.3**	**7.0**	-3.6	5.7	6.7	6.0	9.3	4.8
Domestic demand contribution[a]		-6.2	-6.9	-2.4	**-4.3**	**-0.3**	**2.6**	-6.1	-2.6	-1.2	0.5	3.3	1.9
Net exports contribution[a]		4.6	3.6	1.0	**1.4**	**0.6**	**-1.6**	2.2	0.5	0.2	1.0	-2.3	-1.0
memo													
GDP – rates of change over the previous period					**-0.4**	**0.7**	**0.2**	0.2	0.4	0.1	1.0	-0.4	0.3

Sources: *INE* and Banco de Portugal's calculations.

Note: (a) Contributions to growth rates of real GDP, percentage points.

activity, as opposed to an increase in the weight of exports. In 2013 exports of goods and services accounted for nearly 40 per cent of GDP, remaining relatively stable in 2014 and contrasting with around 30 per cent in 2010.

GDP growth was similar to the euro area average during this half of the year

In Portugal, as in other euro area economies, this economic and financial crisis has been markedly more protracted and recovered more slowly than in previous recessions (see Box "The recovery of economic activity in the euro area since the Great Recession"). Furthermore, the magnitude of structural imbalances of the Portuguese economy and the corresponding adjustment resulted in a systematically negative growth differential compared with the euro area average, which was only interrupted towards the end of 2013 (Chart 4.2).

The recovery in private consumption in parallel with a gradual improvement in labour market conditions and a reduction in household indebtedness

In the first half of 2014 private consumption grew by 1.9 per cent in terms of volume from the same period in 2013. Such developments were broadly in line with increased consumer confidence, which continued to follow the upward path that started in early 2013 (Chart 4.3). The latest information for the third quarter of 2014 points to a relative stabilisation of confidence over this period, standing at high levels compared with the average for the past ten years.

The recovery in private consumption largely reflects an acceleration in non-durable goods and services, after three years of severe contraction (Chart 4.4). Furthermore, developments in durable goods, particularly motor vehicles, which grew markedly in the first months of the year, followed the path that had started in mid-2013. Nevertheless, in real terms, total consumption remains below the levels recorded in early 2011 and close to those of 2003.

The recovery in consumption is in line with an improvement, albeit moderate, in labour market conditions. Indeed, since mid-2013 the unemployment rate has declined while employment has increased, albeit amid a marked wage moderation.[10] Furthermore, mention should be made of a reduction in the household debt service burden over the most recent period, stemming from interest rate stabilisation – both for the purchase of housing and consumption – at low levels together with a reduction in households indebtedness. Indeed, household debt, as a percentage of disposable income, has followed a downward path over the past three years, dropping by around 12 percentage points between the first quarter of 2011 and the second quarter of 2014 (Chart 4.5).

In this context, loans for consumption and other purposes recorded gradually less negative growth rates throughout 2013 and the first half of 2014 (Chart 4.6). According to the Bank Lending Survey, a number of banks considered that the improvement in consumer confidence and developments in consumption expenditure in durable goods were positive factors in terms of demand for credit. However, private consumption developments will remain restrained by the need to reduce indebtedness, credit access constraints (against a background of ongoing bank deleveraging) and disposable income developments. In fact, banks have indicated that these factors constrain growth in credit to households.

Recovery of investment, but differentiated by components

In the first half of the year, investment in terms of volume grew year-on-year, with positive contributions from both GFCF and changes in inventories. Changes in inventories contributed 1.1 p.p. to year-on-year growth of GDP, mainly reflecting a build-up in stocks associated with international trade flows in fuels. Over the same period, GFCF rose by 1.6 per cent. In aggregate terms, total GFCF at constant prices is approximately 24 per cent below pre-recession levels.

GFCF developments varied widely across its main components (Chart 4.7). On the one hand, changes in construction remained negative,

in line with the trend shown over the past few years. The fall in investment in construction should be more permanent, associated with a structural decline in public investment in infrastructure and the size of the housing stock, as well as a scenario of tight financing conditions. This tightness is particularly relevant in the case of construction firms and households applying for housing loans, associated inter alia with the high indebtedness levels of these agents.

On the other hand, 'machinery and equipment' grew markedly, similarly to its growth since the second half of 2013. Nevertheless, this component's buoyancy remained constrained by the unused installed production capacity (with the utilisation rate still standing below the past decade's average), high corporate indebtedness, the remaining uncertainty about the characteristics of the ongoing adjustment process and the relatively weak outlook for domestic demand. Indeed, according to the Investment Survey released in July 2014, amongst the firms that claim investment constraints the main limiting factor continued to be the deterioration in

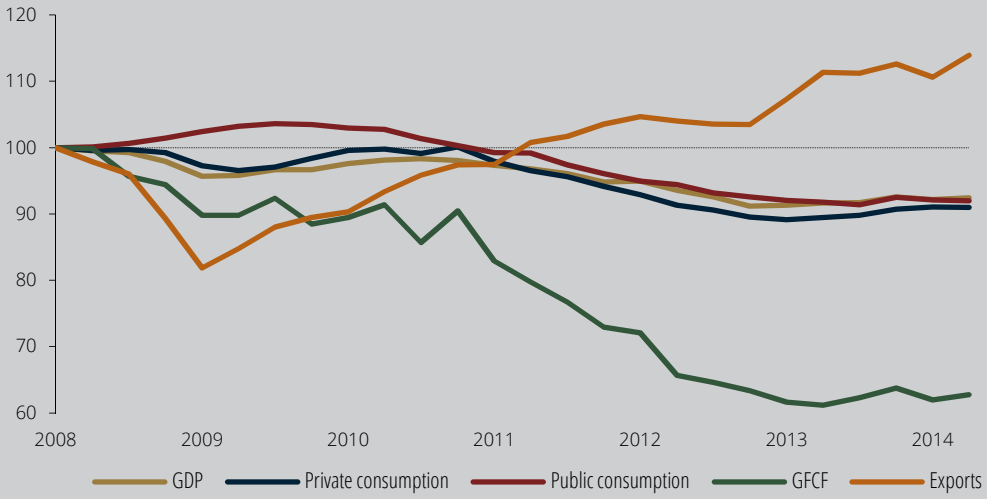


Chart 4.1 • GDP and its main components
| Index 2008Q1=100 (in volume)

Sources: *INE* and Banco de Portugal's calculations.

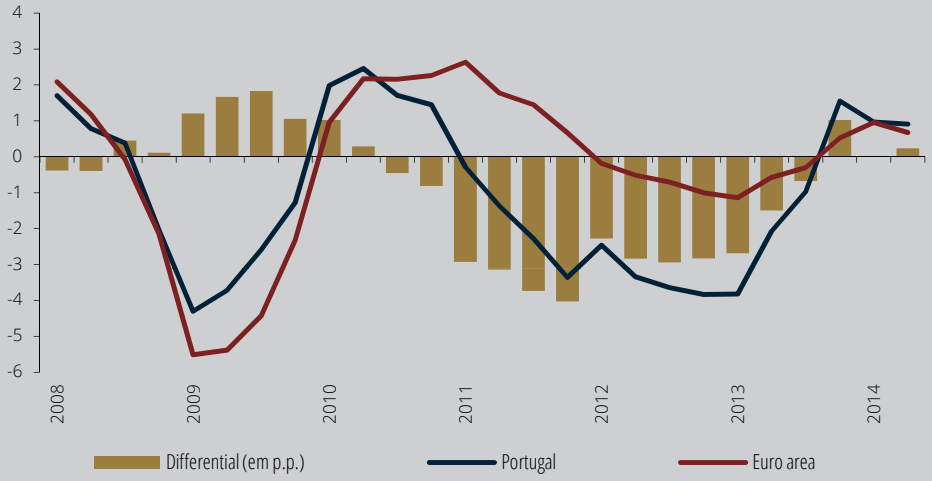


Chart 4.2 • GDP growth in Portugal and in the Euro Area
| Year-on-year real growth rate, in percentage

Sources: Eurostat and *INE*.

sales prospects (52.6 per cent), followed by the return on investment (18.4 per cent).

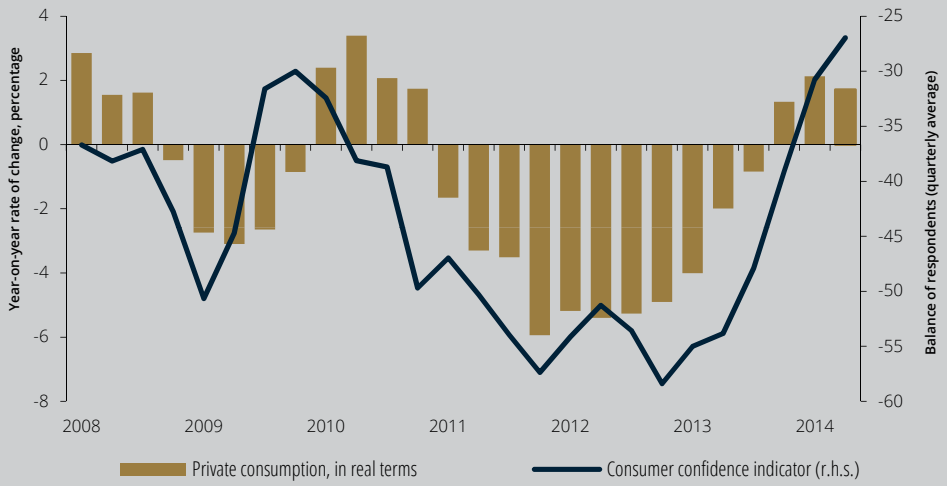
Investment developments should remain constrained by credit market conditions. Indeed, high indebtedness in the non-financial corpo- has resulted in broadly tight financing conditions for firms, although conditions have eased in the course of 2014. Moreover, interest rates on new corporate loans are below the average recorded since the launch of the euro area, with the spreads *vis-à-vis* the reference rate gradually declining but remaining high compared with the historical average.[10]

Slowdown in exports of goods – reflecting *inter alia* some temporary factors – and in exports of services

Exports of goods and services presented a more moderate grow in the first half of 2014, albeit at a faster pace than economic activity in general.

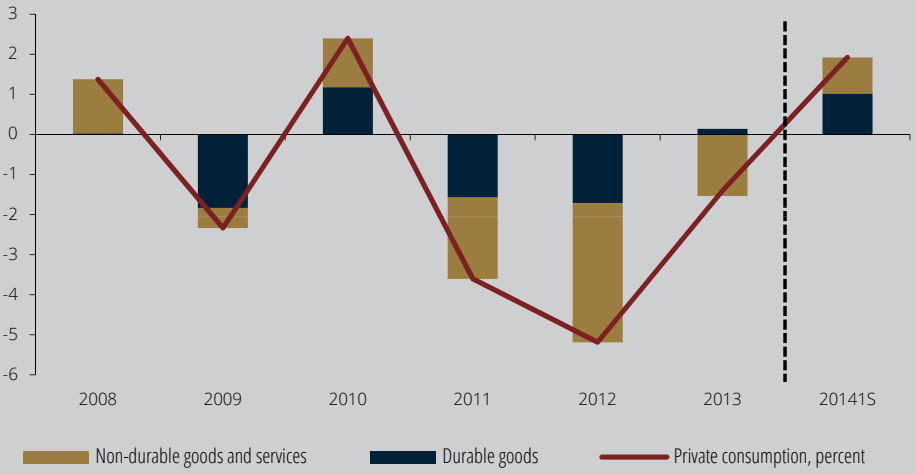
Turning to goods, volume growth in exports dropped to 2.0 per cent (5.7 per cent in 2013), mostly due to contributions from developments in fuel exports. The marked deceleration in this component in the first months of the year (a fall

Chart 4.3 • Private consumption and consumer confidence indicator



Sources: European Commission and *INE*.

Chart 4.4 • Private consumption | Contributions to the annual real growth rate, in percentage points



Sources: *INE* and Banco de Portugal's calculations.

of around 30 per cent in the first half of the year from the same period one year earlier) is associated with a temporary suspension of activity of a major firm within this sector. Indeed, nominal exports of goods excluding fuels grew faster in the first half of 2014 than in 2013 (4.5 per cent year-on-year, compared with 2.1 per cent for 2013 as a whole).

In this context, several groups of products have posted positive developments (Chart 4.8), more specifically textiles, clothing and footwear (with 11.3 per cent nominal year-on-year growth in the first half of 2014), rubber and plastics (7.4 per cent) and animal and vegetable products (8.5 per cent). Transport equipment, which had fallen in 2013, also grew in the first half of the year (5.5 per cent).

Given distinct developments in fuel exports and their high import content, it is particularly relevant to look at the indicator weighting nominal exports of each type of product by their non-import content, to reflect the domestic value added component implied in exports (Chart 4.9). This indicator shows that the year-on-year growth rate differential between weighted and non-weighted exports according to their non-import content in

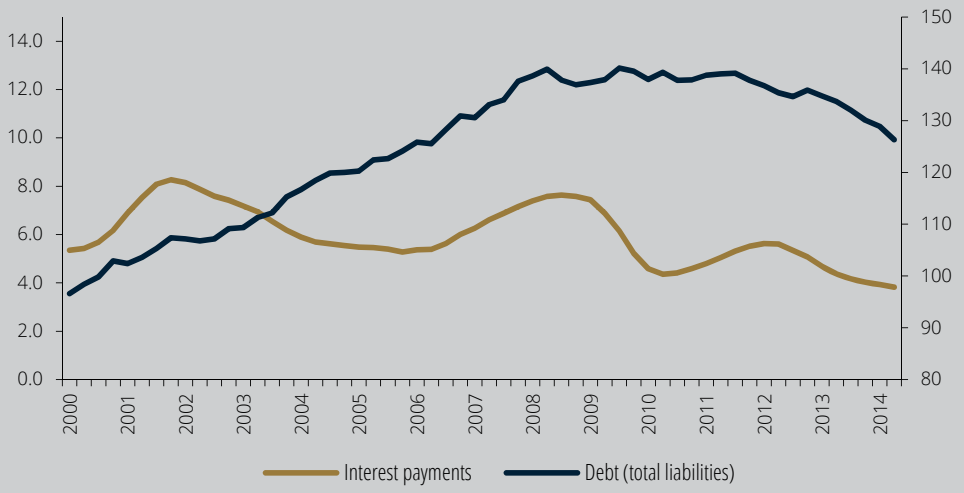


Chart 4.5 • Households' interest costs and debt

| As a percentage of households' disposable income

Sources: *INE* and Banco de Portugal.

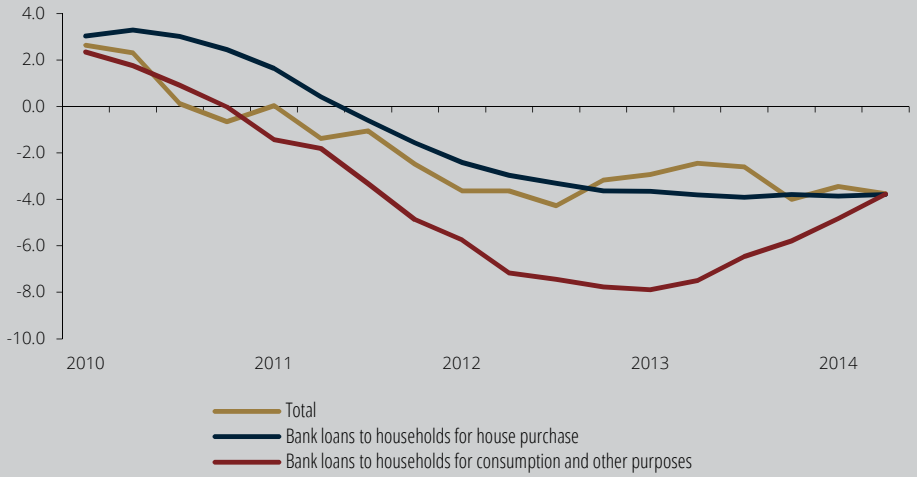


Chart 4.6 • Credit granted to households

| Year-on-year growth rate, in percentage

Source: Banco de Portugal.

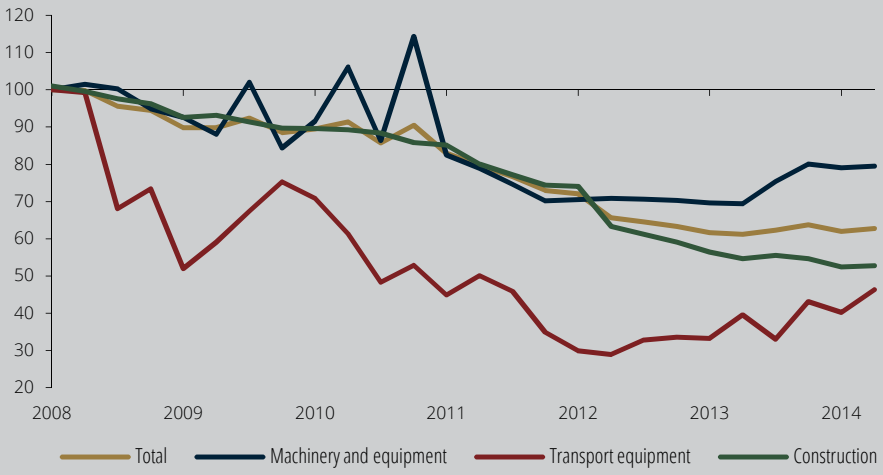
the first half of the year is approximately 3 p.p. (positive) (on average, in 2013 this differential stood at around 1 p.p. (negative)). This means that exports of goods with a greater impact on GDP have been more buoyant throughout 2014.

In turn, exports of services decelerated in the first half of 2014 (to 4.4 per cent in terms of volume, compared with 8.2 per cent growth in 2013). These developments reflected a slowdown in several components, particularly construction services (which fell during the first half of the year) and other services provided to firms (which slowed down markedly). By contrast, exports of tourism remained buoyant and accelerated compared with 2013 as a whole, growing by approximately 10 per cent in the first half of the year in nominal terms.

In the first semester, exports of goods and services grew slightly less than external demand for Portuguese goods and services. This contrasts

Chart 4.7 • GFCF by type of investment

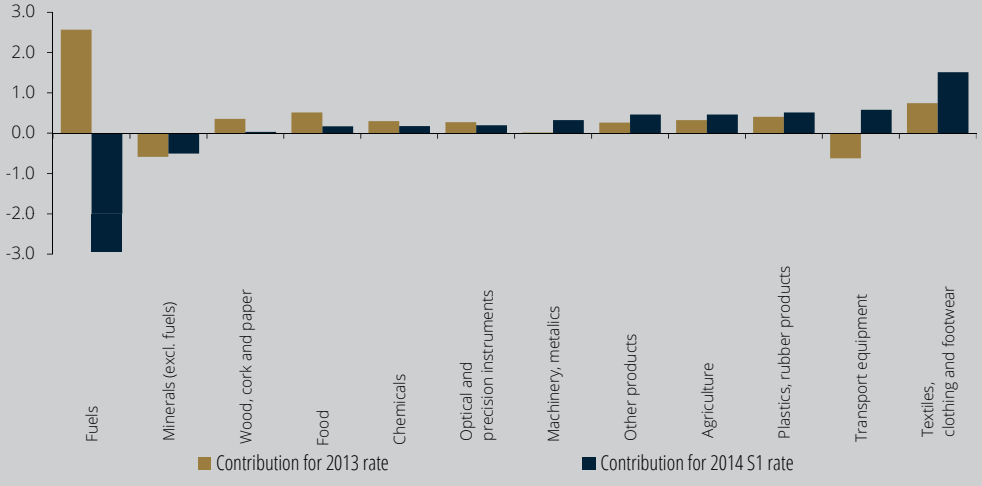
| Index 2008Q1=100 (in volume)



Sources: *INE* and Banco de Portugal's calculations.

Chart 4.8 • Nominal exports of goods, by groups of products

| Contributions to the annual change (in percentage points)



Sources: *INE* and Banco de Portugal.

with the substantial market share gains seen since 2011, but is influenced by temporary factors that have affected fuel exports (Chart 4.10).

Acceleration in imports reflecting a recovery in domestic demand

Imports accelerated in the first months of the year, reflecting greater overall demand associated with the recovery in domestic demand. Demand components with high import content (motor vehicles, machinery and other capital goods) were the most buoyant. Furthermore, part of these imported goods stemmed from the need to build up stocks, after a protracted destocking period. These developments in external trade flows were also reflected in a decline in the net lending position during the first half of the year compared with 2013 as a whole, albeit partially influenced by temporary factors (Section 6. *Balance of payments*).

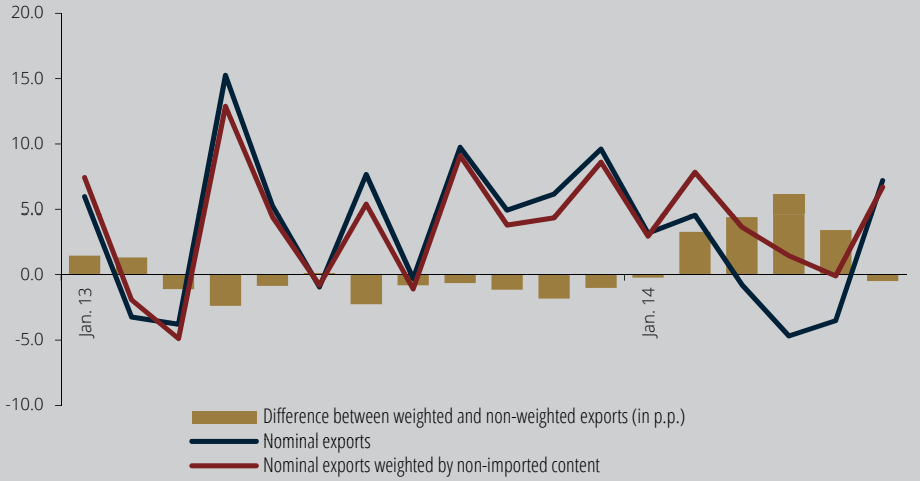


Chart 4.9 • Nominal exports of goods weighted and non-weighted by non-import content

| Yar-on-year growth rates

Sources: *INE* and Banco de Portugal.

Note: For a description of methodology see Box 4.1 "Development in nominal exports of goods weighted by non-imported content" in *Economic Bulletin*, April 2014.

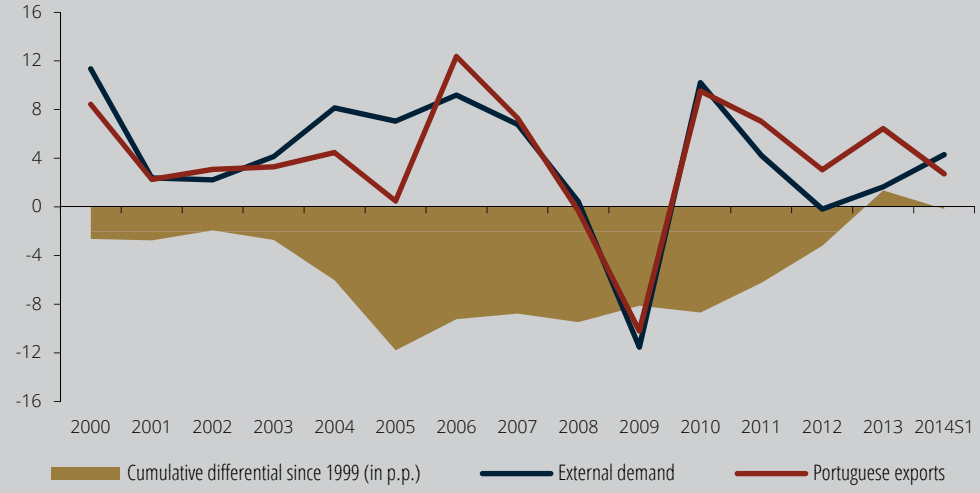


Chart 4.10 • Portuguese exports and external demand, volume

| Annual rate of change

Sources: ECB, *INE* and Banco de Portugal's calculations.

Box: Revisions of the national accounts and balance of payments series

National Accounts data and estimates presented in this *Economic Bulletin* incorporate the new series of Portuguese National Accounts using 2011 as the reference year for the period 1995 to 2014 (final annual accounts up to 2011 and quarterly accounts up to the second quarter of 2014), released by Statistics Portugal (*INE*) in September 2014. Data provided in this Economic Bulletin also reflect a revision of Balance of Payments and International Investment Position statistics. This box briefly describes the main methodological changes underlying such revisions, as well as their impact on statistics for the Portuguese economy.

Methodological and conceptual changes and update of sources

The revision of National Accounts that according to the Community regulations occurs periodically aims at the incorporation of new statistical sources and the update of methodological procedures. Together with a change in the reference year, from 2006 to 2011, these new National Accounts series incorporate a set of methodological and conceptual changes stemming from the entry into force of the new European System of National and Regional Accounts (ESA 2010), which has replaced the previous regulation (ESA 1995). ESA 2010 also revises the programme and schedule for data transmission to the European Commission (Eurostat),[11] with the expansion of reported data, namely as regards general government and balance sheets, and a reduction in the time lag of the quarterly statistics release.[12] The new system also ensures international comparability given its consistency and nearly simultaneous implementation with the System of National Accounts (SNA 2008) by the UN, which was implemented in the United States in 2013 and is being implemented at an international level.

The information underlying this Bulletin also reflects statistical changes stemming from the update of the Balance of Payments and International Investment Position Manual to the 6th edition (BPM6), as well as the implementation of a new data collection system. The revision of this Manual largely arises from the need to reflect structural economic changes, such as globalisation and financial innovation. The implementation of an updated methodology is also reflected in a more detailed approach and / or reclassification of a number of transactions and greater consistency with the System of National Accounts.[13]

At European level, particularly for the euro area countries, the simultaneous implementation of methodological changes was decided upon in terms of National Accounts, balance of payments and public finance statistics, aiming at a coordinated dissemination of the new series as of September 2014.[14] These methodological changes have a substantial impact on some of the main macroeconomic aggregates, such as GDP, investment, exports and imports of goods and services, international investment position, general government deficit and debt.

The main methodological and conceptual changes stemming from the implementation of ESA 2010 are as follows:

- Widening of the scope of the 'assets' and 'investment' concepts. The methodological change with the greatest impact on GDP is associated with the recording of R&D expenditure as investment expenditure, which was previously treated as intermediate consumption. Military procurement expenditure is now recorded as investment, which impacts on the level and particularly on the quarterly profile of this aggregate. This change does not have a significant impact on GDP, given that military procurement was formerly recorded mainly as public consumption.
- New rules for the sector classification of institutional units. In particular, the classification of public sector entities largely relies on qualitative criteria, such as the actual control by general government and the existence of economically significant prices, and changes to the so-called 'market/non-market ratio', which now includes in costs the net interest charges. These new guidelines were reflected in the reclassification of a number of firms or institutions in the general govern-

ment sector that were previously classified in the non-financial corporate sector (e.g. *Parpública – Participações Públicas SGPS, S.A.,* corporate hospitals and CP – *Comboios de Portugal EPE*). The ensuing changes to the perimeter have an impact on the general government deficit and debt. Note that, although as a whole entities now included in the general government sector have a deficit, in some cases their inclusion entails the consolidation of specific transactions (namely capital injections classified as capital transfers), thereby cancelling their impact on the deficit.

- New rules for the recording of Special Purpose Entities (SPEs), whereby only flows with resident agents are included in their production. In Portugal, these entities are in large majority located in the Madeira offshore, and this change has a negative impact on GDP.
- Changes in the recording of pension fund transfers, which are now classified as financial transactions, instead of capital transfers on the revenue side. As such, they no longer affect the fiscal balance. Likewise, pensions paid over the following years to the beneficiaries of the transferred funds do not have any impact on the balance. This methodological change alters the time profile of the general government deficit.
- New rules for the recording of processing, *i.e.* movements of goods that across national borders to be processed are now registered under import / export of goods only where ownership changes. The value of processing services is registered as export / import of services. This methodological change has resulted in revisions to import and export flows, but with no impact on GDP or the goods and services account balance.
- In national accounts, in addition to these methodological changes, changes associated with the incorporation of new structural information were also implemented. This includes the incorporation of census data (2011 census and 2009 agricultural census), the household expenditure survey (2010-11) and new Balance of Payments statistical data. The incorporation of 2011 census data impacted, in particular, on the value of housing rents and the level of employment as a total and by economic activity.

Impact of revisions

A comparison of recently released annual series with the previous series shows that, in general, in terms of both GDP and the main domestic demand aggregates (particularly, GFCF), the series levels have been revised upwards (Charts 1 and 2). Overall, the GDP level (in nominal terms) was revised by 2.3 per cent for the 1995-2013 period, on average, with more marked revisions for the most recent years (2.9 per cent in the reference year – 2011 – and 3.0 per cent, on average, during the 2012-13 period). The GFCF level (in nominal terms) was revised by 5.4 per cent in the reference year (5.0 per cent in 2012-13). According to *INE*, and taking into account methodological changes and the incorporation of new sources, the components with the greatest impact on the GDP level were housing rents (with a revision of 1.8 per cent of GDP in 2011) and the classification of R&D expenditure under investment (with an impact of 1.3 per cent on GDP in 2011). Despite their revised level, the series' time profile and, particularly, annual rates of change in volume have not changed markedly.

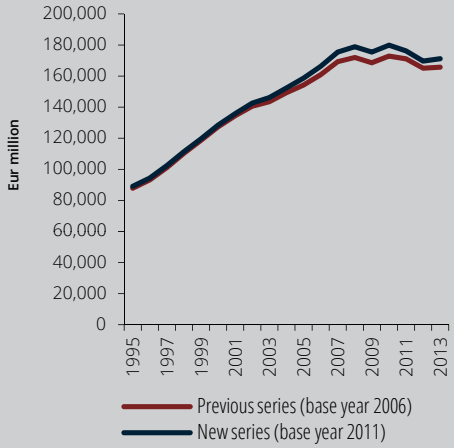
Furthermore, the new quarterly profile of national accounts also reflects the fact that *INE* now disseminates series adjusted for seasonal and calendar effects (previously, they were only adjusted for seasonal effects). This change has a substantial impact on quarter-on-quarter rates of change in the various expenditure aggregates.

The implied revision in the combined current and capital accounts balance as a percentage of GDP is approximately nil, on average, for the 1996-2013 period (-0.3 per cent of GDP in 2012-2013), which is close to the corresponding financial account revision. In the case of the ratio of the international investment position to GDP, revisions stood at -0.3 percentage points of GDP, on average, in the 1996-2013 period and are positive over more recent years (-1.9 percentage points, on average, in 1996-2006 and 2.2 percentage points in 2007-2013) (Chart 3).

With regard to general government statistics, the abovementioned methodological changes resulted in sizeable revisions to the fiscal deficit and the public debt stock, but do not entail a substantial change in the structural analysis of fiscal developments over the past decades. The most significant upward revisions to the deficit stem from changes in the recording of pension fund transfers, which reached high levels, namely in 2003, 2004, 2010 and 2011. By contrast, 2012 was marked by a significant downward revision of the general government deficit, namely due to the

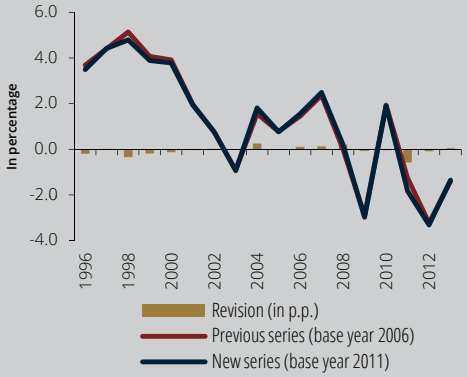
Chart 1 • GDP base year 2011 *vs.* base year 2006

A. GDP – Current prices



Source: *INE*.

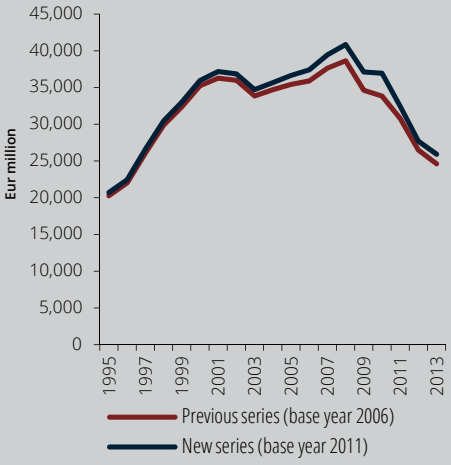
B. GDP – Real growth rate



Source: *INE*.

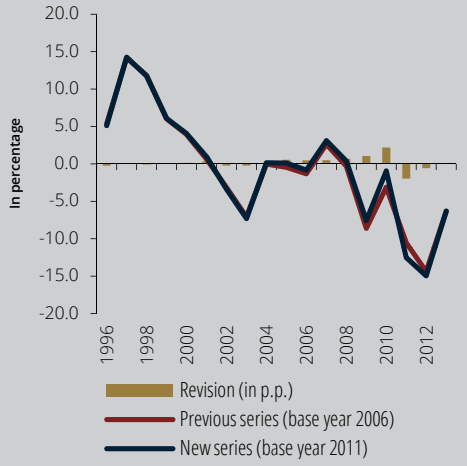
Chart 2 • GFCF base year 2011 *vs.* base year 2006

A. GFCF – Current prices



Source: *INE*.

B. GFCF – Real growth rate

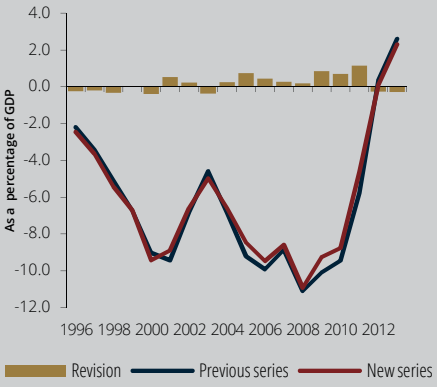


Source: *INE*.

cancelation of the sizeable effect of the capital transfer received by *Sagestamo, SGPS, S.A.*, on the deficit , which consolidated following the inclusion of this entity in the general government sector (Chart 4A).[15] Turning to the public debt ratio, changes were negligible, given that revisions to the debt level, mainly stemming from changes in the perimeter, were offset by the denominator effect arising from the upward revision of nominal GDP (Chart 4B).

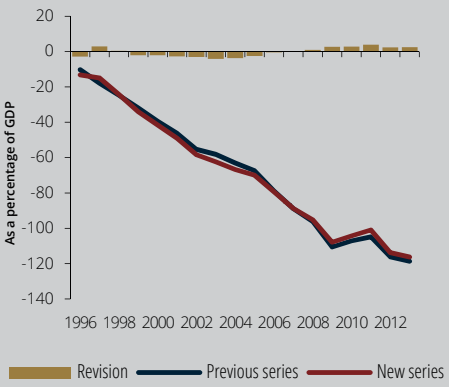
Chart 3 • Balance of payments and international investment position

A. Current and capital accounts balance



Sources: *INE* and Banco de Portugal.

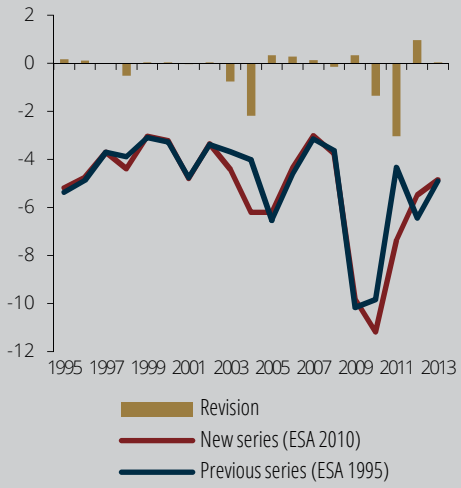
B. International investment position



Sources: *INE* and Banco de Portugal.

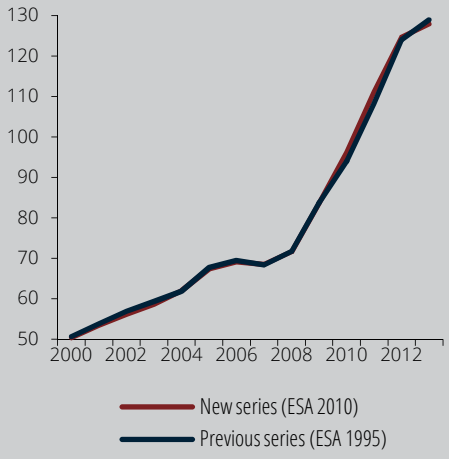
Chart 4 • Relevant fiscal balance and public debt for excessive deficit procedure purposes | As a percentage of GDP

A. Fiscal balance



Source: *INE*.

B. General governement debt



Source: Banco de Portugal.

5. Prices

Decline in the inflation rate to negative values in the first half of 2014, in a context of low inflation in the euro area

The inflation rate, as measured by the year-on-year rate of change of the Harmonised Index of Consumer Prices (HICP), stood on average at -0.2 per cent in the first half of 2014, compared with 0.2 and 0.6 per cent in the previous semester and in the same period of 2013 respectively (Table 5.1). This downward trend of inflation was also observed in the euro area, and to a similar magnitude. Hence, the spread of the HICP year-on-year rates of change between Portugal and the euro area remained at around -0.8 p.p. (Chart 5.1). The components that made the highest contribution to this spread were non-energy industrial goods and services.

Slightly positive rate of change in the HICP excluding unprocessed food and energy

In the first half of 2014 the rates of change in the HICP excluding unprocessed food and energy remained relatively stable, at positive levels although close to zero (Table 5.1). Among the HICP components included in this aggregate, reference should be made to developments in non-energy industrial goods and services. Non-energy industrial goods prices declined significantly, with a negative contribution from pharmaceutical products, conditioned by

Quadro 5.1 • IHPC – Main components | Per cent

	Weights	Annual rate of change			Year-on-year rate of change						
					2013		2014	2013		2014	
	2013	2011	2012	2013	H1	H2	H1	Q3	Q4	Q1	Q2
Total	100.0	3.6	2.8	0.4	0.6	0.2	-0.2	0.4	0.1	-0.1	-0.2
Total excluding energy	92.1	2.3	1.7	0.6	0.8	0.5	-0.1	0.7	0.3	0.0	-0.2
Total excluding unprocessed food and energy	81.5	2.2	1.6	0.4	0.5	0.3	0.1	0.4	0.3	0.0	0.2
Goods	57.6	4.4	2.5	0.0	0.1	-0.1	-0.9	0.0	-0.3	-0.7	-1.1
Food	24.2	3.0	3.4	2.3	2.7	1.8	-0.4	2.5	1.1	0.4	-1.3
Unprocessed food	10.6	2.9	2.8	2.6	3.2	2.1	-1.7	3.6	0.5	0.0	-3.3
Processed food	13.5	3.1	4.0	2.0	2.4	1.7	0.6	1.7	1.6	0.8	0.4
Industrial	33.5	5.2	2.0	-1.5	-1.5	-1.4	-1.3	-1.7	-1.1	-1.6	-1.0
Non-energy	25.6	1.4	-2.1	-1.5	-2.0	-0.9	-1.4	-1.1	-0.8	-1.5	-1.3
Energy	7.9	12.8	9.5	-0.7	0.2	-1.6	-0.7	-1.4	-1.9	-1.5	0.1
Services	42.4	2.4	3.2	1.1	1.5	0.8	0.8	0.9	0.6	0.6	1.0
Memo items:											
Contribution of administered prices (in p.p.)	–	0.7	0.3	0.3	0.2	0.4	0.3	0.4	0.4	0.3	0.3
Contribution of taxes (in p.p.)	–	1.3	1.9	0.1	0.1	0.0	0.1	0.0	0.0	0.1	0.1
Consumer Price Index (CPI)	–	3.7	2.8	0.3	0.4	0.1	-0.2	0.3	-0.1	-0.1	-0.3
HICP – Euro area	–	2.7	2.5	1.4	1.6	1.1	0.6	1.3	0.8	0.7	0.6

Sources: Eurostat, *INE* and Banco de Portugal's calculations.

base effects, after an average increase of 4.6 per cent in 2013. Services continued to record moderate price growth, on average close to 1.0 per cent in the first half of 2014, similarly to the previous semester. The rate of change in services prices *vis-à-vis* the euro area continued to record a negative differential (-0.4 p.p.), in contrast to a nil differential in the first half of 2013.

In fact, the downward trend of inflation over the past year was strongly influenced by the dynamics of the most volatile components (unprocessed food and energy). In the first half of 2014 the key component for the reduction of inflation was unprocessed food, whose contribution to the total change in the HICP declined by 0.7 p.p. between the second quarter of 2013 and the second quarter of 2014 (Chart 5.2). These developments, which are common to the euro area, are likely to be partly related to a decline in current consumption input prices in agriculture,[16] while in the first half of 2014 they were also conditioned by base effects related to the 'fruit' and 'vegetables' sub-components.

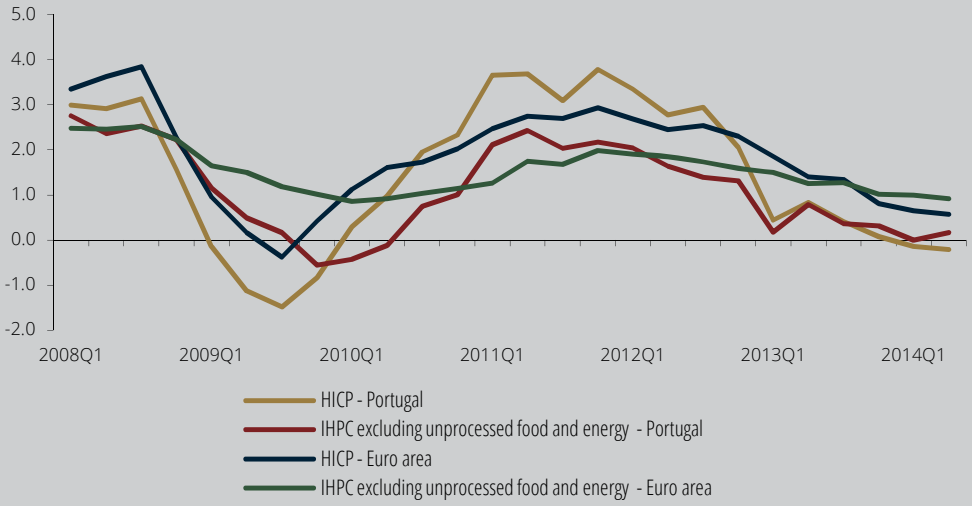


Chart 5.1 • HICP – Portugal and euro area
| Year-on-year rate of change, in percentage

Source: Eurostat.

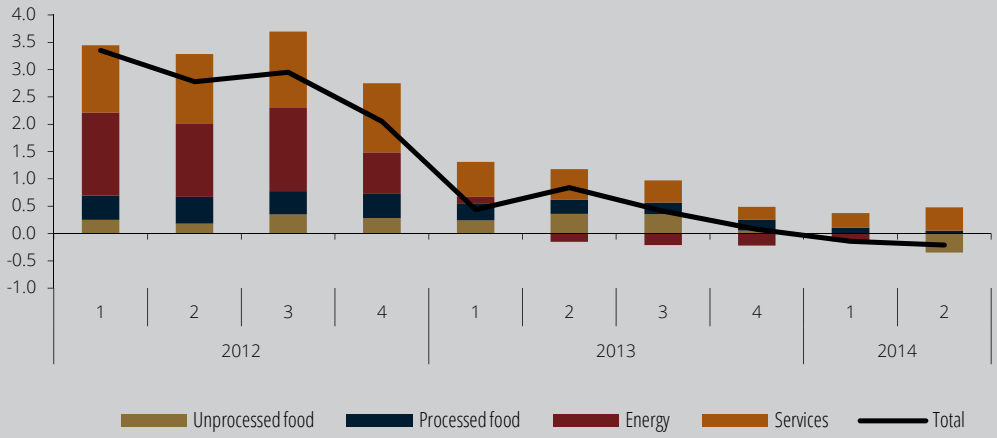


Chart 5.2 • Contributions to the HICP
| In percentage points

Sources: Eurostat and Banco de Portugal.

With regard to the energy component, prices have been following a downward trend year-on-year since the second quarter of 2013, interrupted in the second quarter of 2014. Developments in the prices of fuels and lubricants largely reflected the behaviour of the oil price in euro, as well as some recovery in petrol refining and distribution margins over the first half of 2014.[17]

These developments in the main HICP components reflected a rise in the weight of the number of sub-components with a negative rate of change in the first half of 2014 to maximum levels, higher than those observed in 2009.

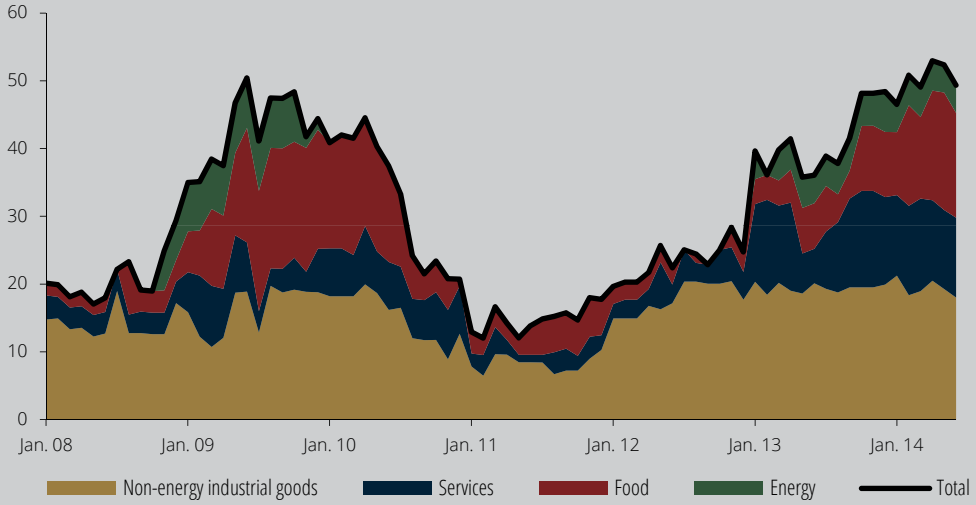
In comparison with the second half of 2013, this rise chiefly results from developments in the food component (Chart 5.3).

Relative stability of inflation expectations for the next 12 months

Notwithstanding a significant decline in inflation since early 2013, inflation expectations for

Chart 5.3 • HICP – Item weights with negative year-on-year rate of change

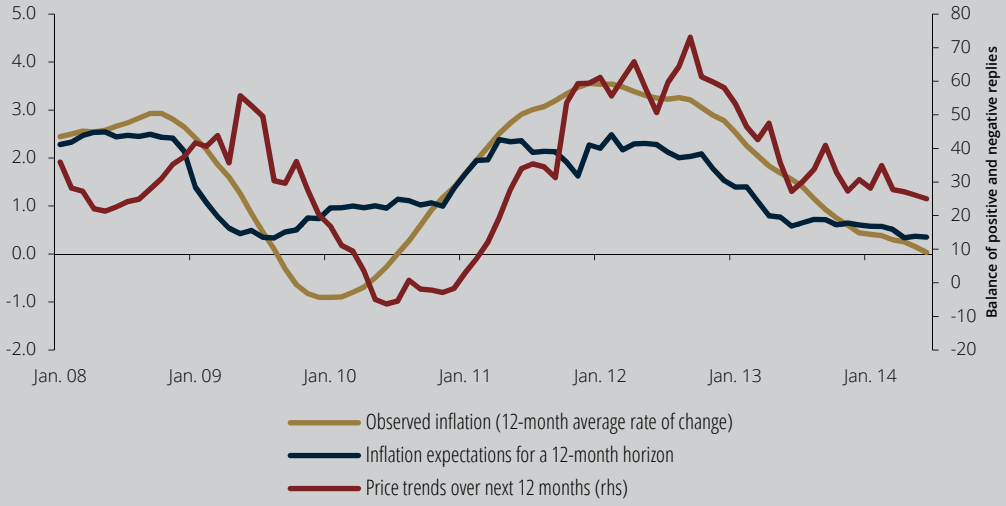
| In percentage



Sources: *INE* and Banco de Portugal's calculations.

Chart 5.4 • Inflation expectations

| In percentage



Sources: Consensus Economics, European Commission and Eurostat.

the next 12 months in Portugal, as measured by both Consensus Economics forecasts and the European Commission consumer confidence survey, stand at positive values, albeit close to zero (Chart 5.4).

These expectations are defined amid domestic and external pressures on prices that remain very limited. The import prices of goods excluding energy continued to follow a downward trend year on year in the first half of 2014 (around -3 per cent, from -2.1 per cent in the second half of 2013), in line with developments in the export prices of Portugal's trade partners and a very sharp fall in international non-energy commodity prices. At domestic level, data on basic salaries reported to Social Security point to a 0.5 per cent year-on-year decline in the first half of 2014, close to the average decrease observed in 2013. Aggregate demand, still at levels below potential, is expected to continue to exert downward pressure on wage growth per employee and corporate profits. Wage dynamics are also strongly conditioned by a still high unemployment rate.

The breakdown of inflation into its main determinants based on the projection model usually used illustrates these developments (Chart 5.5).[18] However, in a context of a rebound in activity, the recent reduction of profit margins is likely to be of a temporary nature, and inflation is projected to resume positive levels at the end of 2014 ('Projections for the Portuguese economy for 2014').

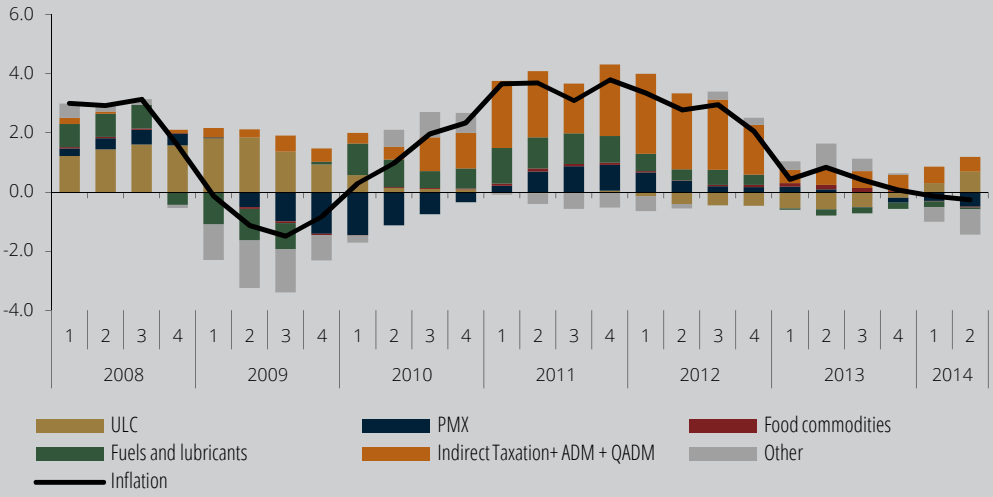


Chart 5.5 • Inflation rate disaggregation using the projection model

Sources: Eurostat and Banco de Portugal.

Notes: ULC – Unit labour costs in the private sector. PMX - Import deflator of non-energy goods. ADM+QADM: Administered prices or behaving as such.

6. Balance of payments

Portuguese economy's net lending relatively stable in the first half of 2014

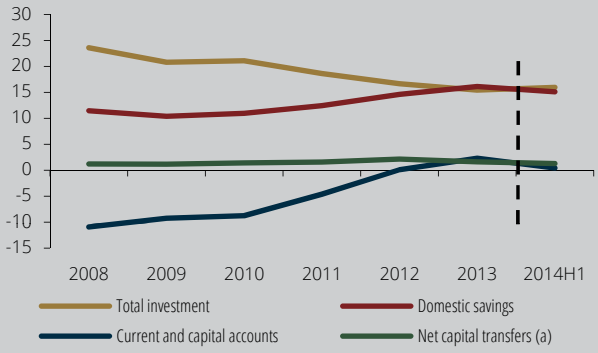
In the first half of 2014 the Portuguese economy's net lending was relatively stable, as measured by the combined current and capital accounts balance, which stood at 0.4 per cent of GDP, from 0.6 per cent in the first half of 2013 (2.3 per cent in 2013 as a whole) (Table 6.1).

Table 6.1 • Current and capital accounts | As a percentage of GDP

	2010	2011	2012	2013	1st Half	
					2013	2014
Current and capital accounts	-8.8	-4.6	0.1	2.3	0.6	0.4
Current account	-10.1	-6.2	-2.0	0.7	-0.7	-0.9
Goods and services account	-7.1	-3.5	0.1	2.1	1.6	0.7
Goods	-10.7	-8.1	-5.3	-4.4	-3.7	-4.6
Services	3.6	4.6	5.5	6.5	5.3	5.3
of which:						
Travel and tourism	2.6	2.9	3.3	3.6	2.6	2.8
Primary income account	-3.2	-3.0	-2.8	-2.2	-2.6	-1.9
Secondary income account	0.2	0.3	0.6	0.7	0.4	0.3
of which:						
Emigrants / immigrants remittances	1.0	1.0	1.3	1.4	1.3	1.3
Capital account	1.4	1.6	2.1	1.6	1.3	1.3

Sources: *INE* and Banco de Portugal.

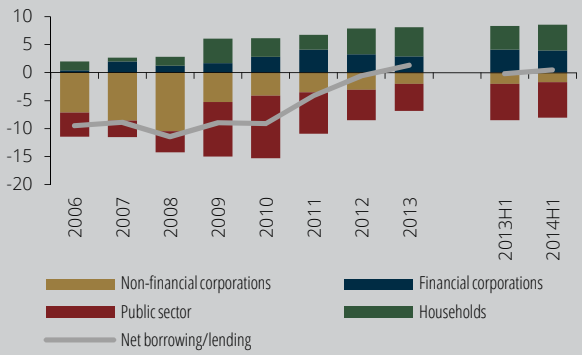
Chart 6.1 • Net borrowing / lending, whole economy | As a percentage of GDP



Sources: *INE* and Banco de Portugal.

Note: (a) Includes acquisitions less disposals of non-financial non-produced assets.

Chart 6.2 • Net borrowing / lending, by institutional sector | As a percentage of GDP



Source: *INE*.

In 2012 and 2013 the Portuguese economy recorded a net lending balance, in contrast to more than a decade of considerable current and capital account deficits, which is one of the key features of the current adjustment process. This reflected a decline in investment, but especially an increase in saving (Chart 6.1). In the first half of 2014, the economy's net lending was relatively stable compared with the same period a year earlier, reflecting a slight increase in both investment and domestic saving.

In the first half of 2014 general government and non-financial corporations continued to record net borrowing needs, while financial corporations and households recorded a net lending balance (Chart 6.2).[19] The private sector's deleveraging process was reflected in a rise in household net lending capacity and a decline in non-financial corporations' financing needs. These trends continued in the first half of 2014, compared with the same six-month period a year earlier. From the first half of 2011 to the first half of 2014 the private sector contributed around 6.5 p.p. of GDP to a rise in the net balance of the Portuguese economy's financing *vis-à-vis* the rest of the world (which stood at around 8 p.p. of GDP).

Although part of the adjustment process of the current and capital accounts, particularly of the goods and services account, is of a cyclical nature, a considerable part of this adjustment is likely to be structural. On the one hand, external market share gains in the past few years are expected to be permanent, in line with a reallocation of resources to the tradable sector and a diversification of the Portuguese exports' destination markets. On the other hand, the rise in the household saving rate in the past few years, which contributed to a decline in imports in the recent past, is also expected to partly reflect a structural adjustment in agents' decision-making. Also, the share of the trade balance adjustment resulting from an increase in exports was higher in Portugal than in the other countries under adjustment processes, as well as in the euro area as a whole (Chart 6.3).

Although there was a current and capital account surplus as a percentage of GDP in the first half of 2014, the current account recorded a deficit in the same period (-0.9 per cent of GDP, compared with -0.7 per cent of GDP in the first half of 2013 and a 0.7 per cent surplus in 2013 as a whole) (Chart 6.4).

This essentially reflects a narrowing of the goods and services account surplus, whose balance

Chart 6.3 • Contributions to the change in the trade balance between 2007 and 2013

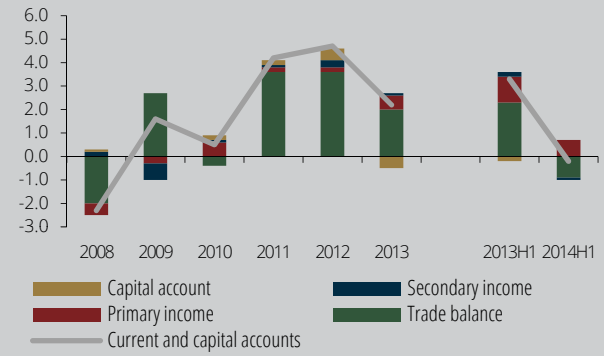
| As a percentage of GDP

Sources: Eurostat and *INE*.

Notes: National accounts data. In the case of Ireland the contributions refer to the change in 2007-2012.

Chart 6.4 • Breakdown of change in the current and capital accout

| As a percentage of GDP



Sources: *INE* and Banco de Portugal.

dropped to 0.7 per cent of GDP in the first half of 2014 (1.6 per cent of GDP in the same six-month period a year earlier), jointly with a lower deficit of the primary income account (-1.9 per cent of GDP, from -2.6 per cent in the first half of 2013).

Vis-à-vis the same semester in 2013, the decline in the trade balance surplus largely reflects developments in the goods component. In particular, the deficit of the non-energy component of the goods balance worsened, as a result of a rise in imports excluding fuel. The balance of the energy component also showed a negative change in the first half of 2014, reflecting the decline in fuel exports, associated with temporary interruptions in the operation of a refining company (Chart 6.5).

The trend of these components compared with the same six-month period a year earlier largely reflected volume effects, partly offset by a positive effect of terms of trade. The latter reflects developments in goods prices excluding energy – characterised by a year-on-year decline of around 0.5 per cent in export prices and a decline of around 3 per cent in import prices – as well as the protracted decrease in oil prices.

The services account surplus remained stable compared with the same semester a year earlier, at 5.3 per cent of GDP. The travel and tourism component surplus increased slightly year-on-year, in line with the strong buoyancy of exports. The dynamics of this item offset slightly less positive developments in other components, such as construction services or other maintenance and repair services not included elsewhere.

The evolution of the trade balance was partly offset by a narrowing of the primary income account deficit *vis-à-vis* the first semester of 2013, largely reflecting a rise in income received from abroad, albeit also to a lesser extent a decline in payments abroad. This chiefly reflects the property income component, associated in particular with portfolio investment in bonds and long-term debt securities. In comparison with the same six-month period in 2013, this item recorded more income received from abroad, which resumed levels close to those observed on average in 2011, as well as lower payments, which may be related to the downward trend of long-term interest rates, particularly as regards Portuguese Treasury bond rates.[20]

The combined secondary income and capital account balance was virtually unchanged from the same semester of 2013, in line with a relative stability of the European Union transfers relating to structural funds as a percentage of GDP. However, there was a decline in the balance of transfers relating to the European Social Fund, in line with the reduction envisaged in the second amendment to the State Budget for 2014, as well as in those of the European Regional Development Fund (ERDF), whose execution rate in the first half-year was slightly lower than that recorded in the same period a year earlier.

The financial account was characterised by a considerable increase in capital inflows and outflows in the first half of 2014

In the first half of 2014 net external outflows amounted to 0.8 per cent of GDP, compared with a financial account balance of -0.2 per cent of GDP in the same period a year earlier.[21]

Financial account developments in the first half of 2014, which were characterised by a considerable increase in both net aquisitions of financial assets and net liabilities incurred to non-residents, reflect a gradual resumption to the regular Portuguese economy's financing pattern, associated with a steady improvement of access by resident economic agents to international wholesale debt markets (Chart 6.6). This occurred in the context of the Portuguese economy's ongoing adjustment process and an easing of tensions in international financial markets.

The increase in assets and liabilities as a percentage of GDP was observed in portfolio investment and other investment items (Chart 6.7). The evolution of portfolio investment largely reflected an increase in short and long-term debt securities. This reflected in particular developments in the other financial intermediaries sector, mainly due to a large-value transaction

resulting from mutual investment between a holding company residing in Portugal, associated with a corporate telecommunications group, and a non-resident company.

It is also important to stress a rise in portfolio net liabilities of deposit taking corporations except the central bank, associated with the placement of long-term debt securities of Portuguese banks with non-resident entities, resulting in particular from capital increases by a number of banks taking place in this period. In turn, there was a lower increase in net portfolio liabilities

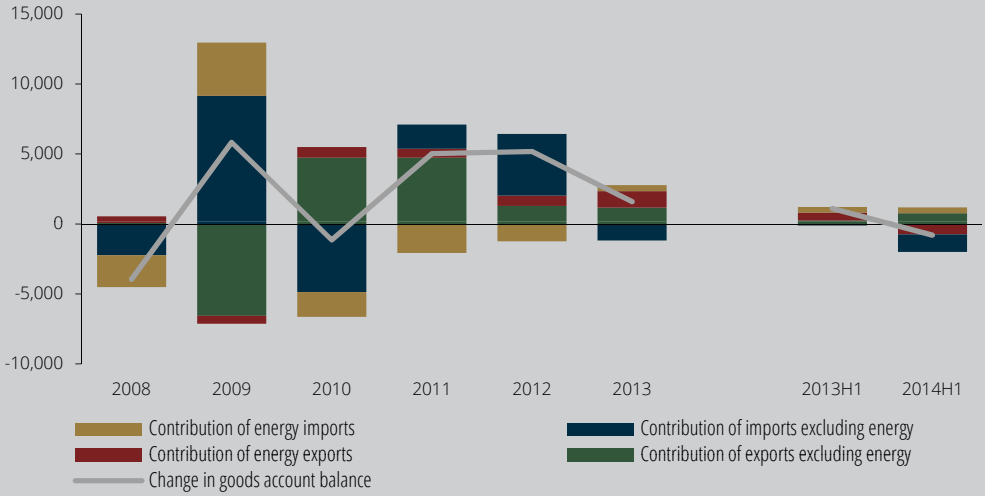


Chart 6.5 • Breakdown of the change in the goods account balance

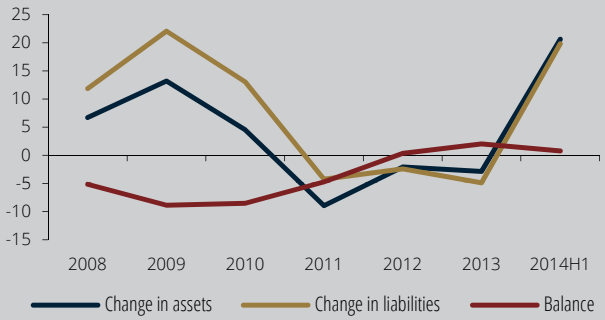
| In millions of euros

Sources: *INE* and Banco de Portugal.

Note: The contribution of imports corresponds to the symmetrical of its variation.

Chart 6.6 • Financial account – Balance and changes in assets and liabilities

| As a percentage of GDP

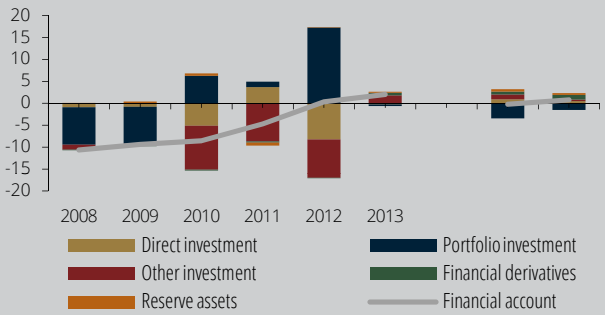


Sources: *INE* and Banco de Portugal.

Notes: an increase in net liabilities to non-residents corresponds to a financial inflow and an increase in net assets corresponds to a financial outflow. Figures for "other investment" of monetary authorities and financial institutions are adjusted for temporary end-of-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.

Chart 6.7 • Financial Account – Balance and net change by instrument

| As a percentage of GDP



Sources: *INE* and Banco de Portugal.

vis-à-vis the same semester a year earlier by the non-financial corporations plus households sector and by the general government, in the latter case reflecting the redemption of long-term debt securities.[22]

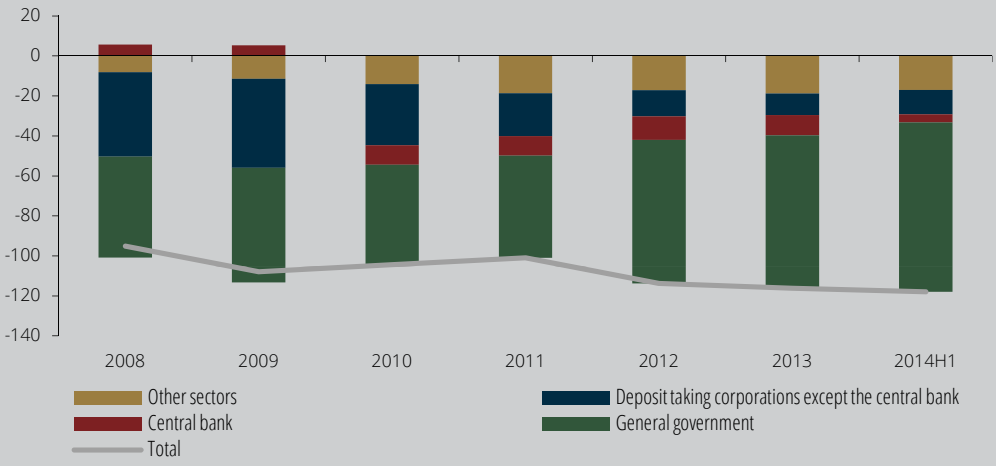
As regards the other investment item, which chiefly reflects loans and deposits between residents and non-residents, net capital outflows in the first half of 2014 were of a lower magnitude than recorded in the same six-month period a year earlier. This trend of the other investment component largely reflects the behaviour of net loans granted by residents to non-residents and non-residents' deposits with Portuguese entities.

Slight deterioration of the international investment position in the first half of 2014

In the first half of 2014 the Portuguese economy's (net) debt position *vis-à-vis* the rest of the world worsened, standing at 117.9 per cent of GDP (118.3 at the end of the first half of 2013 and 116.2 per cent at the end of 2013 as a whole) (Chart 6.8). This largely resulted from developments in the general government international investment position, which partly reflects price changes with a negative impact associated with the valuation of portfolio investment liabilities, in the context of a decline in long-term interest rates. These negative price effects also affected the valuation of non-financial corporations' securities.

Chart 6.8 • International investment position – By institutional sector

| As a percentage of GDP



Sources: *INE* and Banco de Portugal.

Notes

1. These criteria take into account the cost of capital, banks' balance sheet constraints, pressure from competition and risk perception.

2. These authors classify the various recession episodes, identifying 15 recession episodes triggered by financial crises and 37 episodes with high synchronisation among the 21 countries in the sample. Considering all recessions of the sample (122 episodes), the average duration of the recession is 3.6 quarters, the drop in GDP is of 2.7 per cent and the recovery lasts 3.2 quarters.

3. In the case of Portugal, the updating of the research findings with the April 2014 IMF forecasts suggests that the GDP pre-crisis level is likely to be reached in 2018.

4. Note that this estimate seems to implicitly assume a negligible impact from the introduction of the new system of National Accounts on the State Budget for 2014, as a percentage of GDP, similarly to what occurred in 2013.

5. The interruption of the application of this measure was triggered by a Constitutional Court ruling published in Decision 413 of 30 May, which ruled this measure unconstitutional but without retrospective effects. Law 75/2014 of 12 September reintroduced the wage cuts enforced in 2011.

6. However, it should be highlighted that the set of entities included in general government for this estimate was less comprehensive than the currently relevant, given that it considers the consolidation perimeter resulting from ESA 1995.

7. In 2013 the total number of emigrants was close to 54,000 individuals (slightly more than in the previous year), while the number of immigrants also increased moderately.

8. As mentioned by *INE* in the publication of the Employment Statistics for the first quarter of 2014, the sample rotation is now selected from a sample basis extracted from the *Ficheiro Nacional de Alojamento* (National Dwelling File), built from data from the 2011 census. From the third quarter of 2013 to the third quarter of 2014, the sample of the Labour Force Survey is therefore made up of rotations selected from the master sample and the National Dwelling File. From the fourth quarter of 2014 onwards, all sample rotations from the Labour Force Survey will be made up of dwellings selected from the National Dwelling File.

9. According to the *IEFP*'s definition, occupied individuals correspond to persons aged 16 or older (subject to the safeguards provided for by the law), registered in employment offices in order to become employees and enrolled in employment or vocational training programmes, with the exception of programmes for direct admission to the labour market.

10. See Section 3.

11. Regulation (EU) No 549/2013 of the European Parliament and of the Council of 21 May 2013.

12. Estimates for quarterly national accounts will be released 60 days after the end of the reference quarter, instead of 70 days as before. According to the release calendar of *INE*, estimates for national accounts in the third quarter will be released up to the end of November.

13. For more information on this matter, see Banco de Portugal's dedicated website on this topic: http://www.bportugal.pt/en-US/Estatisticas/MetodologiaseNomenclaturasEstatisticas/AlteracoesMetodológicasSEC2010BPM6/Pages/AlteracoesMetodológicasSEC2010BPM6.aspx.

14. For more details on the implementation of new methodological manuals, see "New International Standards in Statistics – Enhancements to methodology and data availability", ECB, *Monthly Bulletin*, August 2014.

15. These effects fall under the concept of temporary measures and special factors, and are thereby excluded from the structural analysis of fiscal developments.

16. Index released by Statistics Portugal (*INE*), available at http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_publicacoes&PUBLICACOESpub_boui=217619419&PUBLICACOEStema=5414331&PUBLICACOESmodo=2, covering inputs such as fertilisers, energy and animal feed, among others.

17. Calculated as the difference between the retail price and the oil price in euro.

18. See Box 5.1 of the April 2014 issue of the *Economic Bulletin* 'Analysis of inflation determinants between 2008 and 2013'.

19. The net lending computed on a national accounts basis may differ from the combined current and capital account balance computed in balance of payments statistics due to methodological differences between the two systems. This is the case in particular of the different statistical treatment of transactions between non-residents and a number of special purpose entities located in the Madeira offshore.

20. Although the interest rate on new operations involving Treasury bonds has been following a downward trend, the average interest rate implied in the total public debt stock is likely to remain stable in 2014 (see 'Projections for the Portuguese economy in 2014').

21. In the BPM6's financial account concept, contrary to the previous definition, a negative (positive) balance corresponds to net capital inflows (outflows). Hence, the current and capital account balance should equal the financial account balance, should the balance of the errors and omissions item be nil.

22. As regards general government, net liabilities rose further, although less than in the same semester a year earlier, as a result of the placement of long-term debt securities with non-resident entities. In the first half of 2014 Treasury bond issues tot7alled around €8 billion, jointly with Treasury bond repurchases in the primary and secondary markets totalling around €3 billion.

PROJECTIONS FOR THE PORTUGUESE ECONOMY FOR 2014

Projections for the Portuguese economy for 2014

The projections for the Portuguese economy point to a GDP growth of 0.9 per cent in 2014 (Table 1), which is similar to that projected for the euro area[1] (Chart 1). These projections imply a gradual recovery of economic activity over the second half of the year.

Gradual recovery of the Portuguese economy in the second half of the year

Current projections for 2014 consider information available up to the end of September and are based on a set of assumptions on future developments of the framework for the Portuguese economy that is similar to the Eurosystem's projections exercises (see Box 'Projection assumptions'). It should be mentioned that historical data for the Portuguese economy are based on the new European System of National and Regional Accounts (ESA 2010) (see Box 'Revisions of the national accounts and balance of payments series', in this Bulletin).

From the second quarter of 2013 onwards the level of activity of the Portuguese economy increased, discontinuing the downward trend observed since late 2010 (Chart 2). The first half of 2014 was characterised by relative stability of economic activity. Current projections point to a moderate recovery in the second half of the year, reflecting growth of private consumption and investment and exports.

Private consumption is expected to grow by 1.9 per cent in 2014, which is based on continued gradual growth of this component over the second half of the year. In terms of composition, a gradual increase is anticipated in consumption of non-durable goods, reflecting growth expected for real disposable income. As regards durable goods consumption, the expenditure level, after rising sharply in the first half of the year, is projected to increase in the second half, albeit more moderately. Household consumption expenditure over 2014 may continue to be conditional on the high indebtedness level of the private sector and the need to carry on the deleveraging process.

Table 1 • Projections of Banco de Portugal: 2014 | Annual rate of change, per cent

	Weights	EB October 2014		EB June 2014	
	2013	2013	2014(p)	2013	2014(p)
Gross Domestic Product	100.0	-1.4	0.9	-1.4	1.1
Private consumption	64.7	-1.4	1.9	-1.7	1.4
Public consumption	19.0	-1.9	-0.7	-1.8	-0.2
Gross fixed capital formation	15.1	-6.3	1.6	-6.6	0.8
Domestic demand	99.0	-2.3	1.9	-2.6	1.4
Exports	39.3	6.4	3.7	6.1	3.8
Imports	38.3	3.6	6.4	2.8	4.6
Contribution to GDP growth (in p.p.):					
Domestic demand		-2.4	1.9	-2.6	1.4
Exports		2.4	1.5	2.3	1.5
Imports		-1.3	-2.5	-1.1	-1.8
Current plus capital account (% of GDP)		2.3	2.2	2.6	2.8
Trade balance (% of GDP)		2.1	1.6	1.7	2.0
Harmonized Index of Consumer Prices (HICP)		0.4	0.0	0.4	0.2

Source: Banco de Portugal.

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

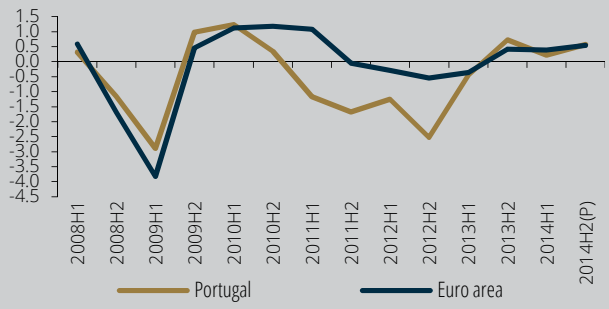
Gross fixed capital formation is expected to grow by 1.6 per cent in 2014, after a fall in the first half of the year from the previous half-year, partly associated with temporary factors. These included the adverse weather conditions in the first quarter, which affected investment in construction. In the second half of the year, investment is expected to pick up, particularly in the machinery and equipment component. Corporate investment developments may benefit from more favourable demand prospects, at both the domestic and external level, combined with the need for renewal of capital stock in the most dynamic sectors of the economy. In addition, the improvements in financing conditions, as well as the rising confidence of economic agents, are likely to also contribute to that pick-up. Developments in this aggregate, however, may continue to be contingent on the need to reduce the indebtedness level of non-financial corporations that, when compared with other euro area countries, continues to be very high. In turn, residential investment may decline again significantly in 2014, although less than in the recent past.

Exports of goods and services in 2014 are projected to record annual average growth of 3.7 per cent, after low growth in the first half of the year, partly associated with temporary factors. Exports of energy goods fell sharply due to the technical outage of a refining plant. In the second half of the year, exports of goods and services are projected to pick up, with growth exceeding that of external demand for Portuguese goods and services. Services in 2014 grew sharply, particularly as regards exports of tourism services. In annual average terms, relative stability is expected in the market share of exports of goods and services in 2014, after the significant gains observed in recent years.

Developments projected for imports reflect the usual elasticity of this component versus developments in overall demand weighted by imported contents. This means that the slight increase in import penetration is likely to continue throughout the second half of the year.

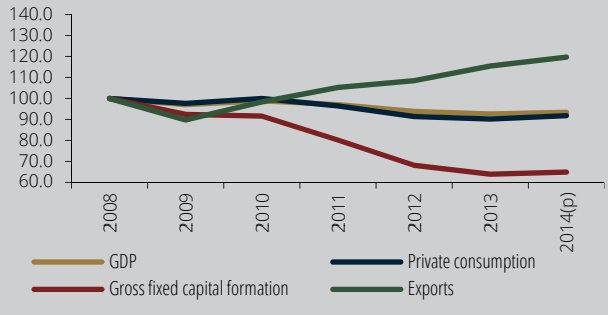
Projections for the second half-year imply an increase in the gross contribution of domestic demand to GDP growth in 2014, which is expected to stand at 1.9 p.p. (net contribution of the imported content of 0.3 p.p.). The gross contribution of exports to GDP growth is likely to decline to 1.5 p.p. (net contribution of the imported content of 0.6 p.p.). GDP's recomposition in the most recent period is likely to be maintained in 2014, while productive resources will continue to be transferred from non-tradable to tradable sectors.

Chart 1 • GDP – Half-yearly rate of change
| In percentage



Sources: *INE*, European Central Bank and Banco de Portugal.
Note: (p) – projected.

Chart 2 • Evolution of GDP composition
| Index 2008=100



Sources: *INE* and Banco de Portugal.
Note: (p) – projected.

Stabilisation of the economy's financing capacity

The current projections are consistent with an ongoing process of adjustment of the Portuguese economy's external imbalance. In effect, the combined current and capital account balance is projected to be positive in 2014, standing at 2.2 per cent of GDP. Underlying the projection is an improvement in external accounts over the second half of the year, largely reflecting developments in the goods and services account, in particular the recovery of exports.

Price stabilisation in 2014

Consumer prices are expected to stabilise in 2014, after 0.4 per cent growth in 2013. The maintenance of very low internal and external inflationary pressures, against the background of a moderate recovery in the world economy and an ongoing adjustment process of the Portuguese economy, may determine marginal growth of prices of non-energy goods and services in 2014. The energy component of the HICP may show a 0.7 per cent fall in annual average terms, chiefly reflecting developments in euro-denominated oil prices.

After a negative differential of 0.9 p.p. versus the euro area in 2013, inflation projections for Portugal imply a slight narrowing of this differential in 2014. Within a monetary union, it is expected that countries under a structural adjustment programme will record inflation rates below the average of the other members. This implies gains in terms of price-competitiveness in these countries.

Downward revision of the projection for economic activity and inflation compared to the June 2014 issue of the *Economic Bulletin*

Projections for 2014 point to a downward revision of economic activity of 0.2 p.p., compared to that published in the June 2014 issue of the Economic Bulletin. This revision is explained by the developments expected in the second half of the year, given that, in average terms, economic activity in the first half of the year was in line with projections in the previous Economic Bulletin.

In the second half of the year, import penetration is expected to be slightly higher, partly reflecting most recent data on external trade, and lower growth of public consumption following the incorporation of most recent available information. Private domestic demand was revised slightly upwards, reflecting the revision of disposable income resulting from the reversal of some fiscal consolidation measures, in line with a decision by the Constitutional Court (see Box "Projection assumptions"). In turn, inflation projections were revised by -0,2 p.p., reflecting the incorporation of the most recent HICP figures, which turned out to be lower than anticipated in the June issue of the Economic Bulletin.

Downward risks to economic activity and inflation

This projection includes downward risks to economic activity, in terms of both external and internal risks. At the external level, there is a risk associated with a possible more moderate recovery of economic activity in the euro area, reflecting a larger impact of current geopolitical tensions and less buoyant than previously estimated activity in the largest euro area economies. The materialisation of a downward risk to activity in the euro area would result on lower growth of external demand for Portuguese goods and services in the second quarter of 2014, with negative effects at export and investment level. At the domestic level, downward risks to the real economy are associated with the possible impact of recent developments in the financial system on economic agents' decisions. Conversely, it is important to mention the possible positive impact of structural reforms on economic activity. Overall, such risks on economic activity simultaneously translate into downward risks to inflation.

Box: Projection assumptions

With regard to the external environment, current assumptions reflect information underlying the latest ECB projections released in the September 2014 *Monthly Bulletin*, and mirror an acceleration in global trade in 2014, albeit growing less than before the crisis. In this context, external demand for Portuguese goods and services is expected to pick up in the course of 2014, posting an estimated annual average growth of 3.9 per cent (Table 1).

Projected developments for the 3-month EURIBOR rate are based on the implied rate on futures contracts. These contracts point to a maintenance of the short-term interest rate at historically low levels of around 0.2 per cent throughout the year. Assumptions for long-term interest rates on Portuguese debt are based on an estimate for the implied rate on public debt.

Assumptions for exchange rates presuppose that average levels are maintained for the two weeks prior to the cut-off date. In the case of oil prices, implicit information on futures markets points to a slight decline in US dollar prices during the second half of the year.

Assumptions for the external environment were not significantly revised compared with the previous projection exercise published in the June 2014 Economic Bulletin.

Assumptions for developments in public finance variables in 2014 reflect the Constitutional Court's decisions,[2] information on the budgetary outturn and the report of the second supplementary budget for 2014.

The current estimate for public consumption in real terms points to a 0.7 per cent decline in 2014. These developments are, however, influenced by an extension of the normal working schedule of civil servants, which came into force in late 2013. Turning to public investment, the assumption of subdued growth in this component in 2014 is maintained.

Compared with the previous projection, public consumption in real terms was revised downwards, as a result of a more substantial decrease in the number of civil servants and savings associated with the renegotiation of public-private partnership contracts. Conversely, the current projection incorporates higher-than-expected expenditure in the public health sector. The public consumption deflator was revised upwards mostly due to a far less marked decrease in civil servants' wages, in the wake of a Constitutional Court decision on the wage cuts in force in 2014. Finally, transfers to households were revised upwards, particularly as a result of the cancellation of cuts to survivors' pensions planned in the initial budget.

Table 1 • Projection assumptions

		EB October 2014		EB June 2014
		2013	2014	2014
External demand	yoy	1.6	3.9	3.5
Interest rate				
Short-term (3 month EURIBOR)	%	0.2	0.2	0.3
Implicit in public debt	%	4.0	4.0	3.5
Euro exchange rate				
Effective exchange rate index (1999Q1=100)	aav	101.6	103.0	104.2
Euro-dollar	aav	1.3	1.4	1.4
Oil prices				
in dollars	aav	108.8	107.4	107.2
in euros	aav	82.0	79.2	77.7

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

Notes: yoy – year-on-year rate of change, aav – annual average value. An increase in the exchange rate corresponds to an appreciation. The implicit interest rate on public debt is computed as the ratio between interest expenditure for the year and the simple average of the stock of debt at the end of the same year and at the end of the preceding year.

Notes

1. See the September 2014 ECB *Monthly Bulletin*.
2. In this case, the relevant Constitutional Court decisions are those stemming from Ruling No 413, of 30 May, and Ruling No 574, of 14 August.

ARTICLES

Resource allocation, productivity and growth in Portugal

The cyclicality of the Portuguese labour market: a macroeconomic perspective in the OECD context

A review of the pharmaceutical market in Portugal

Structural reforms in the euro area

Resource allocation, productivity and growth in Portugal[1]

Daniel A. Dias[2] | Carlos Robalo Marques[3] | Christine Richmond[4]

ABSTRACT

Allocative efficiency in the Portuguese economy strongly deteriorated during the 1996-2011 period. According to our estimates, such deterioration may have shaved, on average, around 1.3 percentage points off the annual GDP growth during that period, contributing significantly to the decrease in productivity and the economic stagnation witnessed by the Portuguese economy after 2001. Allocative efficiency deterioration is a widespread phenomenon but the relative contributions differ significantly across industries being higher in the service sector than in manufacturing sector. Capital distortions emerge as more important than labor and output distortions in explaining potential value-added efficiency gains, especially in the service sector. Furthermore, their relative contribution to total efficiency gains increased over time.

Introduction

Financial integration of the Eurozone was supposed to improve resource allocation efficiency, facilitate risk sharing, and boost economic growth. However, this financial integration does not appear to have translated into higher growth or productivity at least for some southern and peripheral European countries, which have experienced stagnant or declining productivity and a loss of competitiveness, despite large capital inflows in the decade preceding the onset of the Eurozone crisis in 2009. In fact, as shown in Chart 1, total factor productivity (TFP) stagnated or decreased in countries like Spain, Greece, Italy, Ireland and Portugal during the period starting roughly in the year 2000 and spanning at least until 2009.[5] The time profile of TFP in these countries in this period stands in stark contrast to other Eurozone countries like Germany, France, Finland and the Netherlands where productivity increased.

In this article, we investigate if, over time, there were changes in the degree of allocative efficiency of resources, which could have led to a significant decline in TFP and therefore to a poorer economic performance of the Portuguese economy. This is an interesting issue because substantial resources were channeled to the country beginning in the mid-1990s, by both official and private sources, and it raises the question of whether these resources were properly allocated. To answer this question, we study the evolution of resource misallocation in the Portuguese economy during the period 1996 to 2011 using firm-level data.

Recently, Reis (2013) in searching for the causes of the Portuguese economic slump of the 2000's argued that certain characteristics of Portugal's financial sector caused the capital inflows to be largely misallocated, leading to an expansion in the country's relatively unproductive nontradables sector, and thus to a fall in measured productivity. This explains why, in his view, the case of Portugal is unique in the sense that it was the only country where GDP stagnated, while Greece, Ireland and Spain enjoyed a boom.

This article also looks at resource misallocation but departs from Reis (2013) in some important dimensions. While Reis (2013) looks at between-sector misallocation, we use firm-level data to investigate the evolution of within-industry resource misallocation and its implications for potential

Portuguese TFP and GDP growth. Additionally, our methodological approach allows us to identify the relative importance of the distortions prevailing in the economy and their negative implications for TFP growth, including not only capital distortions, but also labor and output distortions.

Theoretical framework

In order to identify the linkage between aggregate productivity and resource misallocation, we adopt the framework developed in Hsieh and Klenow (2009, 2011), but extend their model to consider a production function with intermediate inputs, as a third factor of production. This three-factor production function extension allows us to investigate resource misallocation by looking not only at firms' gross output, but also at firms' value added, with the important advantage that identified value-added efficiency gains are consistent with the efficient allocation of intermediate inputs, something that is not guaranteed by the two-factor model approach used so far in the literature.

A first assumption of the model is that within each industry there is monopolistic competition and the production function is the same for all firms. In particular, the gross output of a generic firm i in industry S is given by the following Cobb-Douglas production function with constant returns to scale:

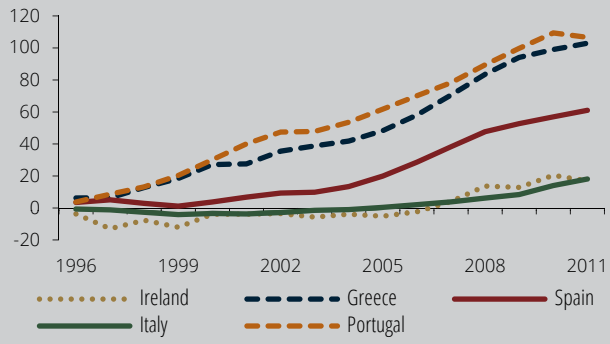
(1) $$Y_{si} = A_{si} K_{si}^{\alpha_s} H_{si}^{\beta_s} Q_{si}^{1-\alpha_s-\beta_s}$$

where Y_{si}, A_{si}, K_{si}, H_{si} and Q_{si} stand for the firm's gross output, TFP, capital stock, labor and intermediate inputs, respectively. Parameters α_s and β_s stand for the output elasticities of capital and labor, respectively.

A second assumption is the existence of distortions or wedges in the economy, the importance of which may vary from firm to firm, and can impact the prices of the inputs or directly affect the output of the firm. In particular, it is assumed that there are three distortions that we designate by the output distortion, the capital distortion and the labor distortion. Such distortions take the form of a tax on revenues, a tax on capital services and a tax on labor costs, respectively.

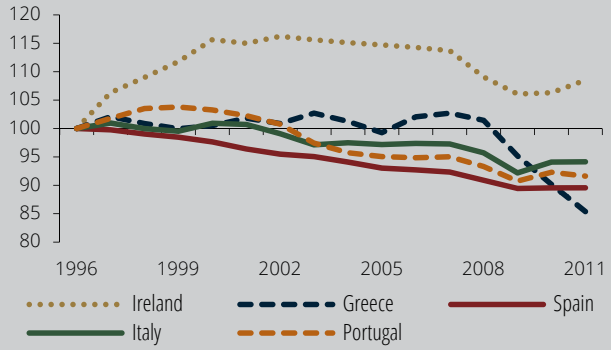
Chart 1 • Net capital inflows and total factor productivity

Accumulated net capital inflows
| Percent of GDP



Source: IMF, *Working Paper 13/183.*

Total factor productivity
| 1996 = 100



Source: Conference Board Total Economy Database.

The list of potential distortions that may affect firms in the economy is long and varied. For instance, non-competitive banking systems may offer favorable interest rates on loans to some producers based on non-economic factors, leading to a misallocation of credit across firms. Or, financial institutions may be unable or unwilling to provide credit to firms that are highly productive but have no credit history or insufficient guarantees, preventing these firms from expanding their activities. In contrast, some small or medium-sized firms may have access to cheaper capital through special lines of credit. Governments may offer subsidies, special tax deals or lucrative contracts to specific producers. Enforcement activity of tax collection may focus on large and more productive firms implying a subsidy to small potentially less productive ones. Some labor-market regulations, such as the one that compels larger firms to have an internal worker health protection system, may drive up the cost of labor in those firms. Whereas, subsidies for hiring workers in smaller firms may drive down the cost of labor in these firms.

From the profit maximization conditions, given the model assumptions described above, it is possible to obtain the expression of the so-called total factor revenue productivity for firm i in industry s $(PTFR_{si})$:

$$PTFR_{si} = B_s \frac{(1+\tau_{k_{si}})^{\alpha_s}(1+\tau_{h_{si}})^{\beta_s}}{(1-\tau_{y_{si}})} \quad (2)$$

where $\tau_{y_{si}}$, $\tau_{k_{si}}$ and $\tau_{h_{si}}$ for the output, capital and labor distortions, respectively, and B_s is a constant, which is common to all firms of industry S (and is a function of the prices of inputs, as well as of other parameters of the model).

The output, capital and labor distortions are identified in the model by comparing the ratio of factor costs in the firm with the average ratio of these costs in the corresponding industry. For example, we infer the presence of a capital distortion in a firm when the ratio of intermediate consumption to the capital costs is high relative to what one would expect from the output elasticities with respect to capital and intermediate inputs.

Equation (2) is very important because it shows that in the context of the model, TFPR, which by definition corresponds to the product of the price of output and TFP, does not vary across firms within the same industry, unless they face some kind of distortion. Intuitively, this equation tells us that, in the absence of distortions, more capital, labor and intermediate inputs will be allocated to the most productive firms (with higher TFP) to the point where their higher output results in a lower price, implying the same TFPR for all firms. In contrast, in the presence of distortions, a high (low) TFPR is a sign that the firm confronts barriers (benefits from subsidies) that make it produce below (above) the optimal level.

Let us then assume a hypothetical exercise in which the distortions in a given industry are eliminated so that TFPR is equalized across firms. According to equation (2), however, there are several alternative solutions for this TFPR, which vary according to the assumptions we make to the distortions $\tau_{y_{si}}$, $\tau_{k_{si}}$ and $\tau_{h_{si}}$. One possibility would be to use the TFPR that would result if all distortions or wedges were equal to zero ($\tau_{y_{si}} = \tau_{k_{si}} = \tau_{h_{si}} = 0$). However, this definition does not guarantee that in equilibrium the demand for factors of production at the industry level will be the same before and after the reallocation of resources. This would have general equilibrium effects which would lead to changes in the prices of the factors of production. An alternative solution, that we will adopt here, is the one that is obtained when all firms face the same average wedges $\overline{\tau}_{k_s}$, $\overline{\tau}_{h_s}$ and $\overline{\tau}_{y_s}$, and these are such that the demand for factors of production at the industry level is the same before

and after the reallocation of resources. Thus, our hypothetical exercise will involve a reallocation of the available resources away from low productivity firms that were benefitting from subsidies towards high productive firms that were facing distortions. The new TFPR, common to all firms in the industry, which is obtained under these conditions, will be called the efficient TFPR of industry S, and will be represented by $PTFR_s^*$.

Given the expression for $PTFR_s^*$ it is possible to compute the output of the industry S that would be obtained in the absence of distortions, *i.e.*, the level of efficient output. Comparing the efficient output with the actual output, we can compute the industry, as well as the economy aggregate gross-output reallocation gains.

As the exercise fixes the total amount of inputs and calculates the additional output stemming simply from the reallocation of inputs among the firms in the industry, it follows that the potential gains in terms of gross output coincide with the potential gains in terms of productivity (TFP).

Once we have the gross-output reallocation gains at the industry level, obtaining the gains in terms of value added is straightforward. Value added is, by definition, the difference between gross output and intermediate consumption, and the latter, as we have seen, is constant at the industry level. The value-added gains for the whole economy are obtained by aggregating the value-added gains at the industry level.

The exercise assumes that eliminating all the distortions identified in the context of the model is a good thing to do. It may, however, be argued that there are distortions that cannot or should not be completely eliminated. For example, we can think of an optimum situation in which the cost of capital (interest rate) differs across firms according to some risk criteria. Further, it should be kept in mind that the distortions identified in the exercise also capture the effects of any friction whose impacts differ across firms. In particular, they may capture the presence of adjustment costs to varying factors or the effect of rationing due to quantity restrictions. All in all, it can be argued that the hypothesis of complete elimination of distortions at the industry level, as assumed in this exercise, may lead to efficiency gains higher than those that would result from the elimination of distortions caused by discretionary policies alone.

Main results

Let us now take a look at the efficiency gains both in terms of gross output and value added, which are obtained when we assume that distortions are eliminated from the economy. It is important to bear in mind that the efficiency gains are identified at a highly disaggregated level, industries being defined at the 3-digit level of the Classification of Economic Activities (NACE). Overall, this classification implies 212 distinct industries (115 for manufacturing, 9 for agriculture (including mining and quarrying) and 88 for services (including construction, production and distribution of electricity and water supply)).[6]

The results for the 1996-2011 period are shown in Table 1 and allow us to draw some important conclusions. First, the potential gains from eliminating distortions in the Portuguese economy appear to be modest in terms of gross output, but are quite significant when evaluated in terms of value added. For instance, if we look at the gross-output gains for the whole economy, we conclude that in 2011 actual output would increase by around 28 percent if the identified distortions were eliminated from the economy. However, these gross-output gains would imply value-added gains of around 79 percent. The difference stems from the fact that gross-output gains at the industry level are computed under the assumption of constant intermediate inputs, so that even

small gains in terms of gross output may imply very large value-added gains. This will especially be the case in the industries where intermediate inputs are a large proportion of gross output. It is important to note that the reallocation gains for Portugal regarding the manufacturing sector are not significantly different from the ones obtained for countries like the U.S. and France.[7]

Table 1 • Efficiency gains from equalizing TFPR within industries

Gross-output gains

Years	Total economy	Agriculture	Manufacturing	Services
1996	16.91	24.84	11.21	24.42
1999	17.41	17.78	10.70	24.95
2004	23.69	19.26	12.37	32.27
2008	28.86	17.02	13.24	39.26
2011	28.03	31.29	13.66	38.44

Value-added gains

Years	Total economy	Agriculture	Manufacturing	Services
1996	48.00	57.11	37.49	58.17
1999	48.15	38.62	35.34	58.63
2004	63.25	45.47	40.49	76.49
2008	78.94	40.61	47.86	93.93
2011	79.01	81.82	53.53	91.51

Note: Entries in the Table are the percentage increase in gross output or value added that would take place if distortions were eliminated from the economy, as discussed in the previous section.

Chart 2 • Value-added efficiency gains

A second important conclusion is that the largest gains take place in the service sector. In terms of value added, the potential efficiency gains in this sector are 92 per cent in 2011, almost twice as much as the gains in manufacturing. In other words, these results show that allocation of resources is significantly less efficient in the service sector than in manufacturing. A lower degree of competition in the service sector may help explain this result. Services are generally non tradable and often protected by specific regulations. Moreover, variables like location play a much more important role in services than in manufacturing. Extensive misallocation is a symptom of a lack of competition for the available resources, as policies, market failures or location advantages favor some firms relative to others, for reasons other than their relative efficiency.

A third important point to note from Table 1 and Chart 2, is that the efficiency gains for the overall economy increased significantly over time. This is a reflection of increasing misallocation over the sample period. Between 1996 and 2011 the hypothetical efficient levels of gross output increased from 17 percent to 28 percent above actual gross output levels, while efficient levels of value added increased from 48 percent to 79 percent above actual value added or gross domestic product (GDP) levels, respectively. Thus, the decline in allocative efficiency during the sample period implied cumulative losses of 9.5 percent of gross output (1.28/1.17-1) and 21 percent of GDP. Correspondingly, deteriorating allocative efficiency in the Portuguese economy may have shaved, on average, 0.6 pp off annual gross output growth or 1.3 pp off annual GDP growth in the 1996-2011 period. These are very large numbers because during the same time period, Portuguese real GDP increased only 25.2 percent (1.5 percent per year, on average).

Table 1 and Chart 2 also show that the service sector is the main driver of this result. In fact, not only has the importance of reallocation gains increased faster in this sector than in manufacturing or agriculture, underscoring the idea of increasing misallocation of resources in services, but also the importance of services in the economy has increased significantly during this period.

A more detailed analysis at the industry level shows that the deterioration of allocative efficiency over time is a widespread phenomenon. However, its importance is highly concentrated in a limited number of industries of the service sector. The top five most important industries account for 72 percent of the total variation of misallocation. “Construction” (buildings and roads) is the most important industry followed by “ground transportation”, “transportation support activities” (e.g., road and toll-road management and maintenance), “general support services” (accounting and auditing, law, fiscal consulting, market research, etc.) and “wholesale of food, beverage and tobacco”. In turn, the industries with the best performance, in the sense that they helped reduce the allocative efficiency deterioration, include, in descending order of importance, the “production, transportation and distribution of electricity”, “rental car”, “advertising”, “alcoholic and non-alcoholic drinks” and “wholesale of intermediate goods.”

The results presented in Table 1 are conditioned by the assumptions regarding some parameters of the model, by the way the labor input is measured and by the fact that the data sample does not include firms with less than 20 employees. However, some robustness tests showed that charts in that Table can be seen as conservative estimates for the levels of efficiency gains, as well as for the negative consequences for productivity and GDP growth in Portugal. In particular, when firms with less than 20 employees (which play a very important role in the Portuguese economy) are included in the sample, the efficiency gains become significantly higher than the ones presented in Table 1. This increase is mainly driven by the service sector, where gains in terms of value added in 2011 are about twice as large as those presented in Table 1. Overall, these results show that a very significant part of the misallocation problems is concentrated in the small firms of the service sector and that misallocation increased over time, implying significant productivity and value added losses.

The importance of distortions

The way the distortions vary across firms, as well as the relative importance of each distortion are two important aspects that help to characterize the sources of resource misallocation.

There are reasons to believe that the relative importance of distortions may vary with the size of the firms. For instance, if distortions are due to firm-size contingent policies that favor smaller firms by reducing the cost of capital (through special lines of credit) or the cost of labor (through especial labor regulations), then returns to additional capital and labor would be expected to be lower in smaller firms. In contrast, if misallocation is due to financial market failures that favor larger firms, we would expect the presence of many small firms that did not grow because they could not secure access to credit. Enforcement activity of tax collection may focus more on large and more productive firms implying a subsidy to small potentially less productive ones. Therefore, in order to identify the sources of distortions we start by investigating the relationship between misallocation and firm size.

Chart 3 shows the relationship between firms' size in terms of gross output and their scaled TFPR.[8] From the chart, we see that for the whole economy (upper panel) TFPR increases with size (in a non monotonic way) suggesting that, on average, small and medium-sized firms are benefiting from relatively smaller distortions (firms for which scaled TFPR is negative). This pattern for the whole economy closely reproduces what happens in the service sector (bottom panel).

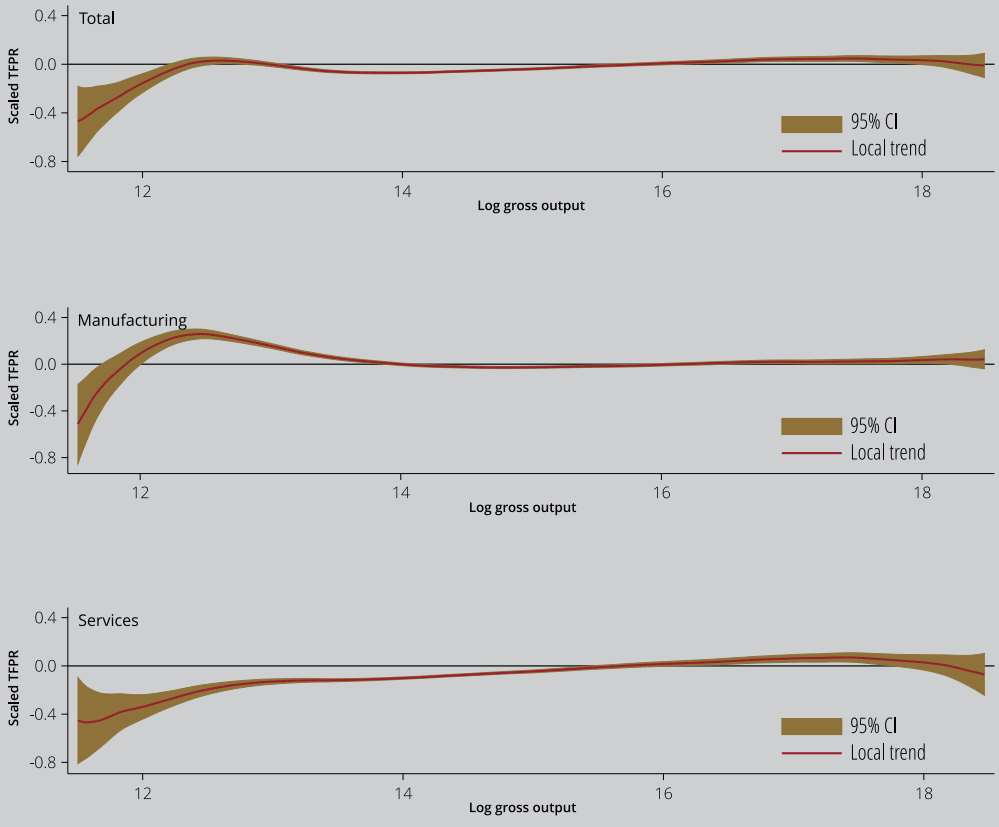


Chart 3 • TFPR and firm's size (2011)

The situation is distinct regarding the manufacturing sector: while TFPR increases with size for small firms, it is essentially uncorrelated with gross output for large and very large firms.

With the aim of identifying the most important type of distortion in each case, we may exploit the relationship between scaled TFPR and the wedges. It can be shown that the scaled TFPR for firms in a given industry S, can be decomposed as:

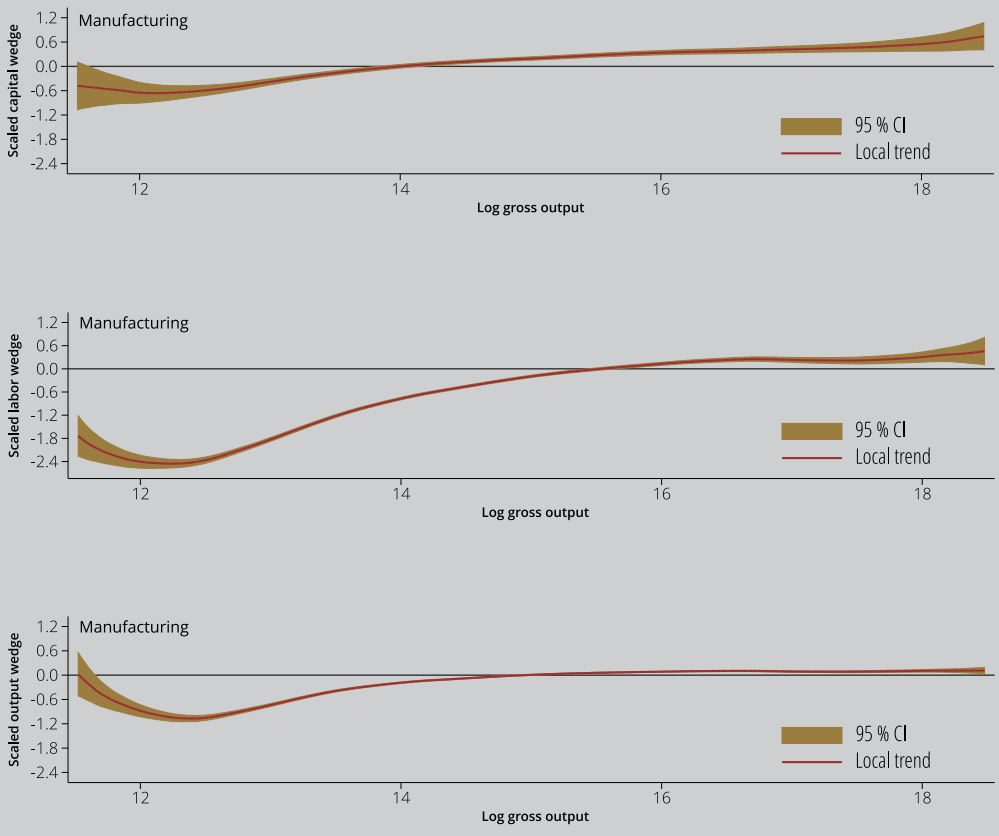
$$\ln\left(\frac{PTFR_{si}}{PTFR_{s}^{*}}\right)=\alpha_{s}\ln\left(\frac{1+\tau_{k_{si}}}{1+\bar{\tau}_{k_{s}}}\right)+\beta_{s}\ln\left(\frac{1+\tau_{h_{si}}}{1+\bar{\tau}_{h_{s}}}\right)-\ln\left(\frac{1-\tau_{y_{si}}}{1-\bar{\tau}_{y_{s}}}\right) \quad (3)$$

where $\bar{\tau}_{k_s}$, $\bar{\tau}_{h_s}$ and $\bar{\tau}_{y_s}$ stand for the average wedges in industry S that would prevail in an efficient allocation of resources. Thus, equation (3) allows us to decompose the scaled TFPR for each firm as a weighted sum of the scaled capital, labor and output wedges.

From Charts 4 and 5, which depict the relationships between each individual scaled wedge and gross output for the manufacturing and service sectors in 2011, we see that the three wedges increase with size, suggesting that, on average, small and medium-sized firms benefit from lower capital and labor costs, but tend to face higher output distortions.[9]

In the Portuguese economy, capital distortions do not appear to affect small or medium-sized firms more heavily than they do to large firms, in contrast to what might be expected. Moreover, not only small but also medium-sized firms emerge as benefitting from lower labor costs.The fact that such

Chart 4 • Manufacturing: relationship between wedges and firms' size (2011)



firms, both in the manufacturing and service sectors, emerge as benefitting from lower capital and lower labor costs is in line with the idea that smaller and medium-sized firms in Portugal benefit from firm's size-contingent laws passed by the Portuguese Government that directly or indirectly reduce the costs of capital, as well as the costs of labor.[10]

We now evaluate the relative importance of the three types of distortions. Table 2 reports the value-added efficiency gains obtained by eliminating variation in one wedge at a time and fixing the quantity of the other two inputs. Capital distortions emerge as the most important type of distortions, with increasing importance over the sample period. Eliminating variation in the capital wedge implies value-added gains for the whole economy of 18 percent in 1996, 25 percent in 2004 and 32 percent in 2011. The corresponding charts for the labor wedge, which emerges as the second most important distortion, are 12, 15 and 17 percent, respectively. Interestingly, when we look at sectoral disaggregation we notice that the general picture changes somewhat. In the manufacturing sector, capital and labor distortions have about the same importance, while in the service sector, capital distortions have an impact about twice as large as labor distortions.

Table 2 • Relative importance of distortions (in terms of value added)

	1996			2004			2011		
	Total	**Manuf.**	Serv.	Total	Manuf.	Serv.	Total	Manuf.	Serv.
Capital distortion	18.35	13.77	22.62	25.31	13.47	31.70	32.08	19.27	37.64
Labor distortion	12.43	12.10	12.60	15.01	13.40	15.94	16.81	17.11	16.78
Output distortion	8.68	7.84	9.42	8.58	10.50	7.65	9.39	11.50	8.56
Total	48.00	37.49	58.17	63.25	40.49	76.49	79.01	53.53	91.51

Note: Entries for each distortion are the gains obtained by eliminating variation in that distortion individually and fixing the quantity of the two other inputs. Entries for the total correspond to the gains of eliminating variation in the three distortions simultaneously and are reproduced from Table 1 above.

Conclusions

This article uses Portuguese firm-level data to investigate whether misallocation may have contributed to the poor performance of productivity and GDP growth of the Portuguese economy in the most recent years.

We find that the potential efficiency gains obtained from eliminating distortions in the economy and reallocating resources to the most efficient firms within industries are significant and have increased over time. Equalizing TFPR across firms within an industry could have boosted valued-added 48 and 79 percent above actual levels in 1996 and 2011, respectively. These charts imply that deteriorating allocative efficiency may have shaved around 1.3 pp off annual GDP growth during the 1996-2011 period. This is significant given that the Portuguese GDP grew only 1.5 percent, on average, per year during this period. The main driver of the deteriorating allocative efficiency in the Portuguese economy is the service sector, where the importance of misallocation is significantly higher and increased much faster than in the manufacturing sector.

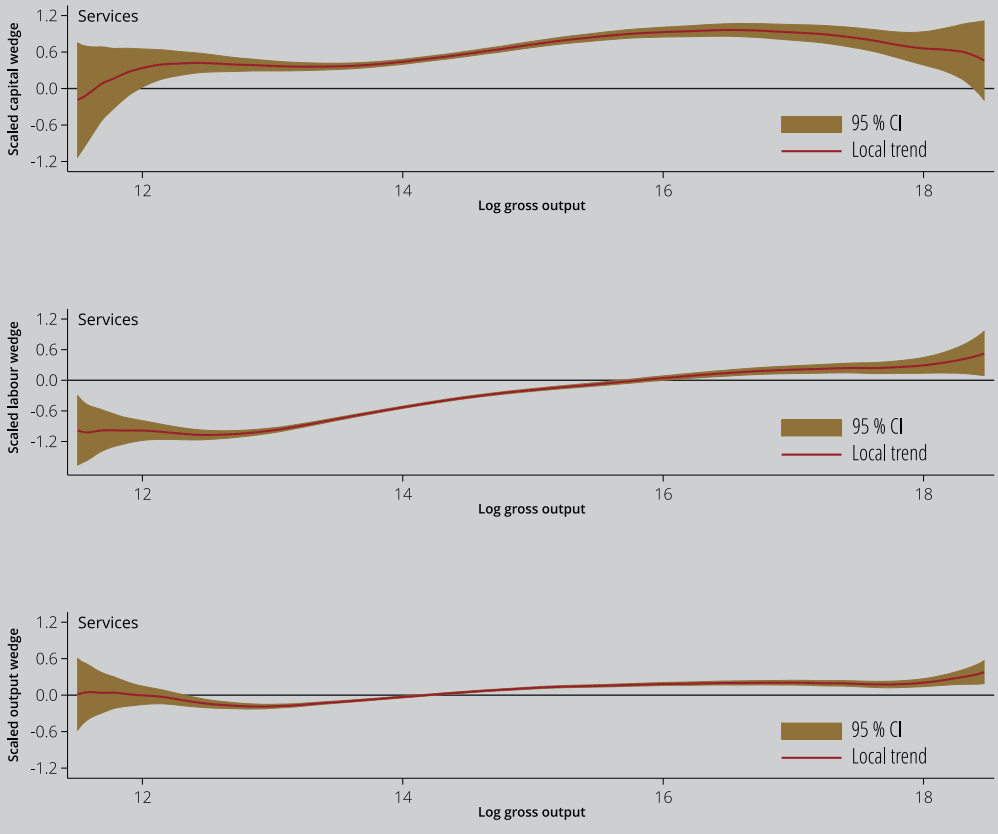
Allocative efficiency deterioration during the sample period is a widespread phenomenon, but the relative contributions differ significantly across industries. We observe a high concentration in just a few industries of the service sector, with 5 industries accounting for 72 percent of the total increase in resource misallocation.

Capital distortions emerge as more important than labor and output distortions in explaining potential value-added efficiency gains, especially in the service sector. Furthermore, their relative contribution to total efficiency gains increased over time, from 46 percent in 1996 to 55 percent in 2011.

Smaller firms appear as having, on average, benefitted from capital and labor subsidies. This suggests that a large proportion of firms may have survived because they had access to cheap credit and labor, either because of firm size-contingent laws passed by the Portuguese Government, that directly or indirectly reduced the costs of inputs for these firms, or because they managed to evade taxes or circumvent some general labor and/or capital regulations. At the same time, these smaller firms also face larger output distortions, but in combination the distortions suggest that most of these firms should shrink in size.

The reasons that might explain why within-industry misallocation has increased overtime in the Portuguese economy are not easily identifiable. The fact that an important part of the misallocation problems appears to be concentrated in the micro or small firms especially of the service sector, and that the importance of such firms has increased over time (Braguinsky *et al.* (2011)), probably because they benefitted from lower capital and labor costs, might help explain the observed time pattern of misallocation. Furthermore, the increasing importance of capital distortions suggests that the financial sector might have contributed to the survival of many small and relatively inefficient firms. This result is consistent with the message in Reis (2013), who argues that misallocation across sectors stemming from inefficiencies in the financial sector is the main responsible for the

Chart 5 • Services: relationship between wedges and firms' size (2011)



Portuguese economic slump during the 2000's. Still, we believe that further investigation is required in order to fully understand why misallocation increased in Portugal during that period.

The fact that productivity has stagnated or decreased in several southern and peripheral Eurozone economies in the 2000's, as it did in Portugal, raises the question of whether these countries also witnessed a deterioration in allocative efficiency. This is certainly an issue deserving further investigation. It will also be important to study how the global financial crisis affected misallocation, in particular if it had a cleansing or scarring effect and whether there were asymmetric sectoral effects. We leave these important questions for future work.

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Notes

1. This article reproduces the main results presented in Dias *et al.* (2014). The reader interested in the full set of results including the models used and the analytical derivations is referred to this publication. The opinions expressed in the article are those of the authors and do not necessarily coincide with those of the Banco de Portugal, the Eurosystem, the International Monetary Fund, its Executive Board, or its management. Any errors and omissions are the sole responsibility of the authors.

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5. Total factor productivity (TFP) may be defined as the quantity of output (or value added) that a firm can obtain from using one unit of mix of factors of production. This implies that TFP growth explains output (or value added) growth not explained by changes in the quantities of factors of production. The specific formula used to compute PTF in Chart 1 can be seen in https://www.conference-board.org.

6. The original data are balance sheet data for the 1996-2011 period and come from the *Instituto Nacional de Estatística* (*INE*), the Portuguese Statistics Institute. The source of information for the 1996-2004 subperiod is the *Inquérito à Empresa Harmonizado* (IEH), while for the 2004-2011 subperiod the information comes from the *Sistema de Contas Integradas das Empresas* (SCIE). In order to make the data from the two sources comparable, firms with less than 20 employees in the first year they are observed in the SCIE were excluded, because such firms are not included in the IEH. Therefore, it is important to bear in mind that the empirical results presented below for the 1996-2011 period are obtained from a sample that does not include firms with less than 20 employees.

7. The empirical evidence on efficiency gains, available in the literature for other countries, regards only the manufacturing sector and was mainly obtained using a two-factor model on value-added. Using this approach for Portugal we conclude that the value-added efficiency gains in the manufacturing sector are not significantly different from the ones obtained for the U.S. and France. Hsieh e Klenow (2009) get value-added efficiency gains of 43 percent for the U.S. in 1999, and Bellone e Mallen-Pisano (2013) get efficiency gains of 31 percent for France both in 1998 and 2005. For Portugal, we get efficiency gains of 29 percent in 1996 and of 38 percent in 2011.

8. Scaled TFPR is defined as the ratio $\ln(PTFR_{si} / PTFR_s^*)$ where $PTFR_s^*$ stands for the efficient TFPR, as defined above. It can be shown that in an efficient allocation of resources the output of the firm will increase if its scaled TFPR is positive, *i.e.*, if $PTFR_{si} > PTFR_s^*$, and decreases if its scaled TFPR is negative.

9. Note that firms for which the scaled capital or labor wedges are negative may be thought of as being subsidized, *i.e.*, facing lower capital and labor costs than firms for which those wedges are positive. In contrast, firms for which the scaled output wedge is negative are facing higher output distortions, than firms for which it is positive.

10. Laws requiring large firms to maintain an internal worker health protection system, or that allow small firms to receive support to hire workers or to have access to special lines of credit, are examples of policies that give rise to labor and capital distortions that may help explain the results just described.

The cyclicality of the Portuguese labour market: a macroeconomic perspective in the OECD context[1]

Pedro Amaral[2]

ABSTRACT

The portuguese labour market's cyclical fluctuations show little correlation with the aggregate business cycle as given by fluctuations in GDP per worker. Even though there are other OECD countries whose labour markets exhibit an equally tenuous relation with the business cycle as Portugal, the norm is a higher correlation. On the other hand, the Portuguese business cycle shows a degree of persistency, or temporal correlation, that ranks among the lowest in the OECD.This article argues that such facts have important implications for macroeconomics models of the labour market.

Introduction

The consequences of the last recession for labour markets in advanced economies around the world were astounding: in Portugal, the unemployment rate hit an unprecedented seventeen percent; in Spain it was almost ten percentage points higher than in Portugal; and even in countries traditionally thought of as having very flexible labour markets, like the U.S., unemployment rates reached ten percent, a value not seen since the 1980s.

These events have put modern quantitative analysis of the effects of business-cycles on labour markets in the spotlight once again. The first generation of real business cycle (RBC) models that became popular in the 1980s were, for the most part, full-employment models as far as the labour market was concerned: wages clear the market so that the aggregate hours firms want to hire correspond exactly to those that households are willing to offer at the market-clearing wage rate. In such a setting the only two labour market variables the model has implications for are the real wage rate and total hours worked. Not only did these early models found it difficult to match the business-cycle properties of total hors worked, but importantly, they were necessarily silent about such crucial concepts as unemployment and vacancies, as they were not part of the model.

While RBC models, for parsimony's sake, ignored unemployment, early work on labour market models that emphasized search and matching frictions between workers and firms had already begun with the seminal contributions of Mortensen (1970), Diamond (1982), and Pissarides (1985). These early models generated equilibrium unemployment, but they were not business cycle models. It was not until the work of Merz (1995) and Andolfatto (1996) that these two strands of literature were put together and the implications of economy-wide fluctuations for the labour market could be better understood.

I will refer to this framework, where productivity fluctuations are the main driver of the labour market where workers search for jobs and firms search for workers (and are eventually matched, or not) as the Diamond-Mortensen-Pissarides (DMP) model. The goal of this article is to provide a macroeconomic analysis of the Portuguese labour market in the context of other advanced economies in the Organization for Economic Co-operation and Development (OECD) through the lens of this framework.

Starting in the late 1990s the DMP framework has become the workhorse of macro-labour research. And search and matching models of the labour market have been embedded in much more complicated underlying models with numerous frictions and a role for the monetary authority. One issue that has become particularly salient in this line of research is this framework's lack of ability to generate enough volatility in labour market variables. Shimer (2005) documents how the model, when calibrated to deliver the kind of economic cycles one observes in U.S. data generates fluctuations in unemployment and vacancies that are below the ones observed by an order of magnitude. This result became known as the "volatility puzzle" and spurred on a whole literature that attempts to reconcile the model and data. This article shows that this puzzle applies not only to U.S. data but also to OECD, and in particular to Portuguese data also.

There are three dimensions that make the Portuguese labour market stand out from the OECD crowd. The first one concerns worker flows in and out of unemployment. By worker flows I mean the probability that an unemployed worker finds a job in given period of time (the job-finding rate) and the probability that an employed worker loses a job and transits to unemployment (the separation rate). Up until 2011, estimates of these flows obtained through the Instituto Nacional de Estatística's (*INE*) Inquérito ao Emprego (IE) were among the lowest in the OECD. In the sample used here, Portugal has the lowest separation rate and the second lowest job-finding rate, as Table 1 shows (where f represents the job-finding rate and s the separation rate). These rates are estimated by Hobijn and Sahin (2009) and Elsby *et al.* (2011) using data on the number of people unemployed, employed, as well as on unemployment duration for various OECD countries.

In 2011, the *INE* changed the methodology surrounding the survey associated with the IE and these transition rates roughly doubled.[3] Because the sample in Elsby *et al.* (2011) ends in 2007, the flows' estimates found there for Portugal are substantially smaller than the ones found with the new methodology.

Table 1 • Monthly job-finding and separation rates | Percent

	f	s
Australia	20.4	1.7
Austria	15.6	0.8
Canada	23.0	2.4
Czech. Rep	8.1	0.9
Finland	13.4	1.4
Germany	5.8	0.5
Japan	17.2	0.6
Norway	32.0	1.6
Poland	7.2	1.0
Portugal	6.1	0.4
Spain	6.1	1.1
U.K.	13.0	1.0
U.S.	43.2	3.5

Sources: Hobijn and Sahin (2009) and Elsby *et al.* (2012).

The second dimension where Portugal stands out from the OECD norm is in how the economic cycle (measured by output per worker) moves with the labour market. While the statistical correlation between productivity and unemployment (vacancies) is significantly negative (positive) in most countries, it is very close to zero in Portugal (along with a few other countries). It is as if, by virtue of idiosyncratic institutions, the labour market is insulated from the business-cycle at large. What these exact institutions are is a matter for future research to find out, but unions, alternative contractual arrangements, the prevalence of internships, to name just a few, come to mind as possible candidates.

Finally, the third dimension, and one that does not pertain directly to the labour market but exerts on it direct influence, is that the persistency of output per worker is small relatively to other OECD countries. While this finding may seem inconsequential, it does have important implications in the context of the large literature that spawned in response to the volatility puzzle as we will see in section "Using cross-country data to evaluate solutions to the volatility puzzle". Out of all the attempts to reconcile the DMP model with the observed volatility in U.S. labour markets, Hagedorn and Manovskii (2008), henceforth HM, has probably received most of the attention. It proposes a modified version of Shimer (2005) and a different way of calibrating, of disciplining the model using the data, which delivers the kind of volatility we see in U.S data. The present paper shows this strategy does not work when countries (like Portugal) are characterized by productivity processes that have sufficiently low persistency.

In the next sections, I will first review the OECD data in more detail and in particular try to position Portugal's macroeconomic labour market variables in the context of its peer OECD countries. I will then briefly present the class of DMP models I alluded to before in a simple way, and discuss the volatility puzzle. I will finish by showing how the HM solution does not quite work for countries like Portugal that lack sufficiently high persistence in their productivity per worker.

Some cyclical properties of OECD labour markets

The data underlying all results in this article come from unbalanced data panels at a quarterly frequency on vacancies, unemployment, employment, labour force, and real GDP (all in levels) for a set of 16 OECD countries. The proximate sources are the OECD's Economic Outlook Database, the IMF's International Finance Statistics, Ohanian and Raffo (2012), as well as some direct national sources.[4]

While the data collection process for most of these variables is fairly standard across OECD countries, the same cannot be said for the vacancy data. The OECD compiles its vacancy data from a variety of national sources with no harmonized reporting procedures.[5] Nonetheless, to the extent that the majority of data collection differences manifest themselves at low frequencies, the fact that I remove a trend component from the data, keeping only its cyclical part, should help make the vacancy data more comparable across countries.[6]

A number of facts emerge, some new to the literature, some already known, that should provide useful benchmarks for business-cycle models of the labour market. The first finding is that there is substantial variation in the degree of correlation between productivity and unemployment and between productivity and vacancies as shown in Chart 1. Economists use statistical correlations between variables to understand and measure co-movements between them. Correlations can go

from minus one, if the two variables always move in a different direction proportionately, to zero, if the variables are independent from each other, to plus one, if they move in the same direction, proportionately.

Note that most of the correlations are of the expected sign: negative for unemployment, meaning that when the economy is doing well and output per worker is high, unemployment is low and vice-versa; and positive for vacancies, meaning that when output per worker is high vacancies are also peaking, reflecting an increase in the demand for labour on the part of firms. Nonetheless, there are exceptions lying outside the North-West quadrant of the chart. In Spain, for example, it seems like productivity and vacancies do not co-move at all, while productivity and unemployment exhibit a puzzling positive correlation. In countries like Portugal, Norway, Poland, and even Australia, the correlations are very close to zero, suggesting the labour markets there are largely insulated from business-cycle fluctuations. While it is hard to know, at this level of analysis, what is behind this phenomenon, a possibility is that institutions, particular to some countries, may be creating frictions that hinder the transmission mechanism from the business-cycle at-large to the labour market. While studying exactly what those institutions might be is beyond the scope of this piece, one can speculate on possible candidates. The idea here is that anything that impedes the incentives the product market is transmitting from reaching the labour market (and thus slows labour market churning down) may be a candidate. Institutions like unions may trade-off wage growth for employment stability, which would make vacancies and unemployment become less sensitive to changes in the business cycle. Alternative contractual arrangements, like shorter workweeks that allow for total hours to vary while employment is more stable, could produce the same result. Finally, professional internships (state-sponsored or not) can sometimes mask real unemployment (depending on how such internships are registered for unemployment purposes) and could also explain this result.

Table 2 details cross-correlations between variables across time. Taking Portugal and unemployment as an example, the way to read this table is the following: at (x) we read contemporaneous correlations, meaning the correlation between productivity and unemployment period-by-period is -0.082. This is also the value used in Chart 1. But suppose I want to find out the correlation between productivity this quarter and unemployment next quarter, then I read it off of the column labeled x(+1); conversely, if I want to find out the correlation between productivity this quarter and unemployment two quarters ago, I read it off of the column labeled x(-2).

Table 2 • Temporal cross-correlations

	x(-5)	x(-4)	x(-3)	x(-2)	x(-1)	x	x(+1)	x(+2)	x(+3)	x(+4)	x(+5)
Australia											
Unemployment	0.559	0.567	0.536	0.423	0.249	0.056	-0.153	-0.294	-0.378	-0.399	-0.364
Vacancies	-0.536	-0,.55	-0.287	-0.138	0.078	0.230	0.376	0.490	0.505	0.521	0.481
Austria											
Unemployment	0.244	0.228	0.189	-0.019	-0.123	-0.387	-0.480	-0.424	-0.414	-0.322	-0.148
Vacancies	-0.158	-0.079	0.029	0.169	0.333	0.480	0.539	0,538	0.471	0.369	0.248
Canada											
Unemployment	0.456	0.347	0.209	0.041	-0.102	-0.247	-0.358	-0.31	-0.446	-0.431	-0.383
Vacancies	-0.381	-0.267	-0.139	0.014	0.167	0.299	0.394	0.457	0.468	0.455	0.411
Czech. Rep											
Unemployment	0.500	0.402	0.204	0.019	-0.230	-0.435	-0.592	-0.671	-0.675	-0.612	-0.492
Vacancies	-0.381	-0.250	-0.001	0.219	0.457	0.631	0.714	0.717	0.672	0.581	0.449
Finland											
Unemployment	0.440	0.367	0.222	0.062	-0.101	-0.282	-0.435	-0.352	-0.560	-0.584	-0.558
Vacancies	-0.407	-0.299	-0.124	0.042	0.224	0.408	0.496	0.572	0.583	0.601	0.546
Germany											
Unemployment	0.179	0.097	-0.007	-0.125	-0.257	-0.376	-0.439	-0.434	-0.392	-0.297	-0.194
Vacancies	-0.093	0.021	0.147	0.258	0.359	0.445	0.482	0.441	0.342	0.244	0.140
Japan											
Unemployment	0.241	0.166	0.029	-0.106	-0.293	-0.461	-0.571	-0.630	-0.611	-0.508	-0.337
Vacancies	-0.169	-0.061	0.086	0.264	0.457	0.612	0.695	0.681	0.561	0.365	0.139
Norway											
Unemployment	0.433	0.378	0.303	0.237	0.075	-0.038	-0.176	-0.293	-0.342	-0.347	-0.388
Vacancies	-0.514	-0.477	-0.375	-0.205	-0.078	0.056	0.171	0.269	0.327	0.394	0.430
Poland											
Unemployment	0.197	0.279	0.350	0.352	0.312	0.244	0.125	0.049	-0.007	-0.032	-0.007
Vacancies	-0.368	-0.279	-0.141	-0.025	0.113	0.271	0.264	0.214	0.137	0.041	-0.060
Portugal											
Unemployment	0.205	0.170	0.148	0.080	-0.028	-0.082	-0.168	-0.213	-0.260	-0.246	-0.256
Vacancies	-0.135	-0.043	0.042	0.119	0.268	0.262	0.260	0.219	0.161	0.146	0.169
Spain											
Unemployment	0.313	0.399	0.433	0.477	0.477	0.472	0.420	0.369	0.323	0.261	0.203
Vacancies	-0.221	-0.214	-0.154	-0.143	-0.114	-0.076	-0.090	0.001	0.076	0.109	0.146
U.K.											
Unemployment	0.711	0.647	0.487	0.283	0.046	-0.185	-0.392	-0.521	-0.584	-0.567	-0.508
Vacancies	-0.412	-0.270	-0.060	0.181	0.418	0.625	0.741	0.747	0.661	0.551	0.406
U.S.											
Unemployment	0.569	0.550	0.460	0.284	0.041	-0.242	-0.425	-0.536	-0.544	-0.485	-0.393
Vacancies	-0.533	-0.465	-0.329	-0.107	0.157	0.408	0.555	0.608	0.576	0.497	0.404

Sources: OECD and author's calculations.

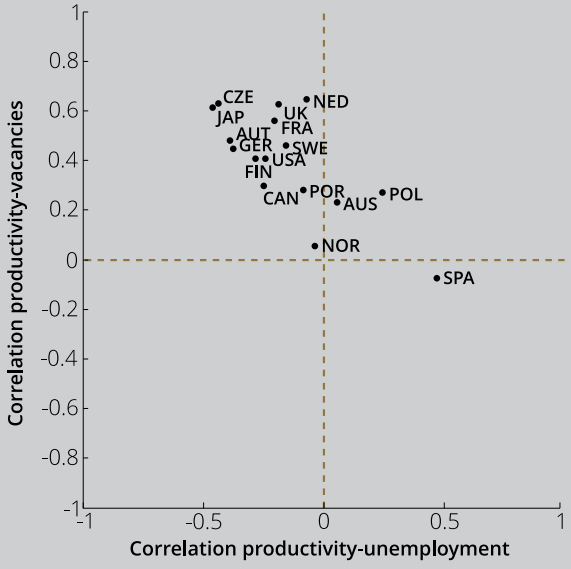
A quick look at the table shows that for the majority of countries, a picture arises where unemployment reaches its trough roughly three quarters after productivity peaks, which is what happens in Portugal. Vacancies peak roughly two quarters after productivity, unlike what happens in

Portugal where productivity and vacancies peak together. More importantly perhaps, the correlations between labour market variables and productivity remain very low in Portugal throughout the cycle, never exceeding 0.3, while they can reach at least double that value in some other countries like the U.S or the U.K., confirming the view that the business-cycle exerts relatively little influence in the Portuguese labour market.

On the light of this evidence it seems that a model of the labour market that is mainly driven by productivity shocks, where unemployment is low when productivity is high and vacancies move with productivity, may be a bad idea. After all, Chart 1 shows that some countries' labour markets are largely insulated from the business cycle, while others, like Spain, show the opposite behavior, suggesting other mechanisms or institutions may be at work. Yet, this is not the case for all countries. Note also that the close linear relationship between the two sets of correlations in Chart 1 suggests that whatever is driving a wedge between the behavior of productivity and labour market variables affects unemployment and vacancies equally. That is, countries that have a high (absolute) correlation between productivity and unemployment tend to exhibit a high correlation between productivity and vacancies. This suggests that a model where movements in productivity are the underlying force, but there may be some country-specific frictions that vary in strength, may be appropriate.

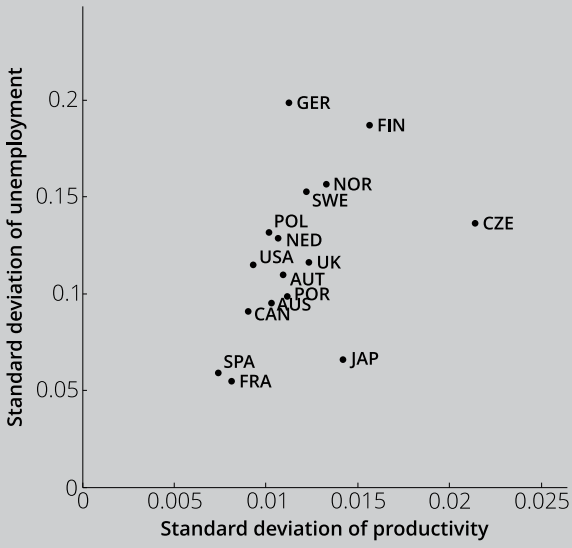
Charts 2 and 3 further suggest that productivity may be the right driver if one were to build a macroeconomic model of the labour market: there is a fairly strong positive cross-country correlation between the volatility of productivity and that of both unemployment and vacancies. This means that unemployment and vacancies tend to vary more in countries where output per worker varies more. In fact, both unemployment and vacancies are over ten times more volatile than productivity as measured by their standard deviations, and Portugal stands right in the middle of the crowd in this dimension.

Chart 1 • Correlations between productivity and unemployment and between productivity and vacancies



Sources: OECD and author's calculations.

Chart 2 • Volatility of unemployment and productivity | Standard deviation



Sources: OECD and author's calculations.

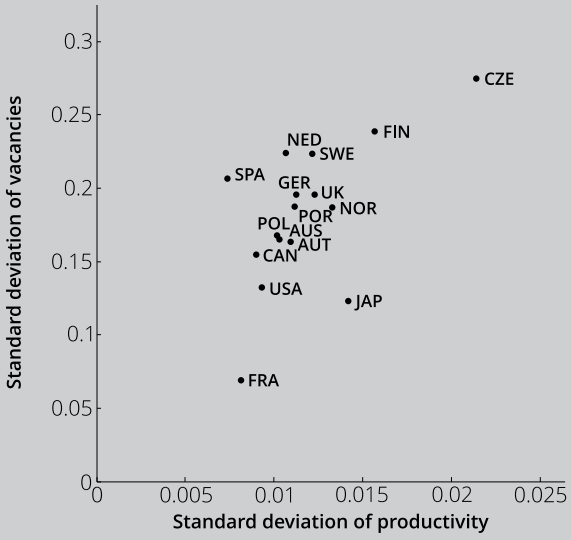
Another important feature of the data is that both vacancies and unemployment are fairly persistent, as given by the correlation between the current quarter and last quarter shown in Chart 4 In this dimension Portugal is very close to the OECD median country, where these labour market variables change substantially but do so slowly, in a persistent way, instead of jumping around. In terms of building a model that features this persistence it is either the case that the productivity that drives the business cycle is very persistent, or the model features some internal mechanism that makes the labour market variables sticky and does not allow them to adjust substantially when productivity changes.

It was with these sorts of relationships in mind that Merz (1995) and Andolfatto (1996) first developed a model connecting the business-cycle with a meaningful model of the labour market featuring equilibrium unemployment and merged the two literatures we referred in the introduction. In the next section I present a simplified version of this work, that I will call the DMP model, focusing more on the labour market than on other features of the economy, and where the main driving engine are productivity shocks, that is based on Shimer (2005).

A productivity-driven model of the labour market

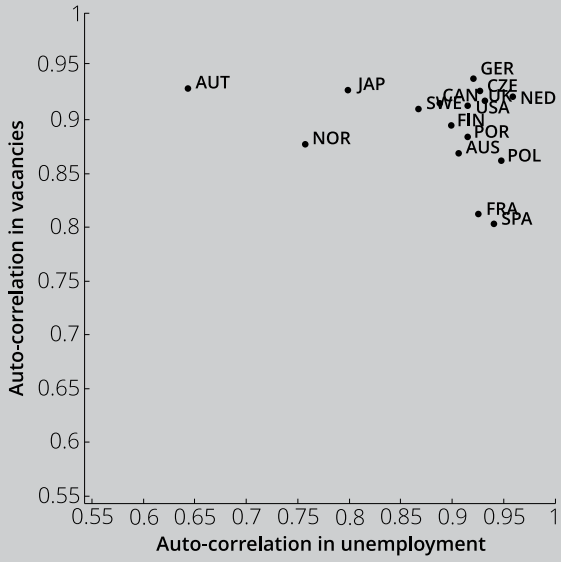
In this model economy there are workers and firms. They may form matches on a one-to-one basis.[7] Workers can thus be employed if they are matched with a firm or unemployed and searching for a job otherwise. Firms can be matched with a worker and producing output or searching for one. Unemployed workers receive a fixed unemployment subsidy and employed workers receive a wage. Firms that are looking for a worker do so by posting a vacancy, that costs them a fixed amount, while firms that are already matched with a worker pocket the profit: the difference between the output they produce and the wage they pay the worker.

Chart 3 • Volatility of unemployment and vacancies | Standard deviation



Sources: OECD and author's calculations.

Chart 4 • Auto-correlations for unemployment and vacancies



Sources: OECD and author's calculations.

Whether a match is formed or not depends on the aggregate conditions in the labour market. The more unemployed workers there are, the more likely it is that a match is formed; also, the more vacancies firms post, the more likely a match is to be formed. If no vacancies are posted, or there are no unemployed workers, no matches are formed. Once a match is formed it will continue to last until it breaks up which happens according to some fixed probability.

In this economy, the output a matched firm and worker produce is the model analogue of what we called productivity per worker in the last section when talking about the data. Output follows a stochastic process, meaning it is subject to random shocks. In fact, today's output is equal to a fraction of yesterday's output plus a random component that may be positive or negative. This means that output is persistent (because it's partly determined by what past output was), but varies because of the contemporaneous shock.

The wage the worker receives is bargained between the worker and the firm. The exact terms of the bargaining depend on the parties'bargaining power as well as their outside option (zero for the firm and the unemployment subsidy for the worker). Firms take this bargaining into account when trying to decide whether to put up a vacancy or not. In fact, they use all the information available: the probability with which they will find a worker, how much output they are expected to make, the probability that the match breaks up, etc., to compute the present expected gain from posting a vacancy. If the difference between that value and the cost of posting vacancy is positive they decide to post the vacancy.

A crucial variable in this economy is the vacancy-to-unemployment ratio, also known as market tightness. A low ratio means that the market is loose; there are a lot of unemployed workers who find it hard to find jobs, while firms fill their posted vacancies easily without the need to raise wages a lot. A high ratio means that there are a lot of vacancies out there that are not getting filled and unemployment is low. As firms post more vacancies, they need to increase wages to be able to attract workers. This eats into their expected profits, and eventually determines the equilibrium in this model: firms will post vacancies until their expected profit is driven to zero. After that point firms no longer have an incentive to post.

Underlying all this are the productivity shocks that determine how much a match produces. If the shock is good this quarter, firms know that the matches will produce a lot and recall that because productivity is persistent, it is likely that this state of affairs will continue in future quarters. As such, their expected profits will increase, so more vacancies will be posted and more matches will be formed, decreasing unemployment. This is the genesis of the correlations we talked about in the previous sections: as productivity goes up, vacancies go up and unemployment goes down. Productivity and vacancies exhibit a positive correlation, while productivity's correlation with unemployment is negative.

The model was, of course, built to deliver these kinds of relationships, but more than that, we are interested in understanding whether the model can deliver the same magnitudes as seen in the data. To do that properly, and to prevent us from getting whatever result we want, we need to discipline the model. We do that by setting the model's parameters (like the amount of the unemployment subsidy or the probability that a job ends) to match their data counterparts for the countries in our sample. Through this calibration we constrain the simulated data generated by the model to resemble actual data in particular dimensions, while leaving the data dimensions we are interested in, unconstrained.

Charts 5 and 6 show the model's performance in capturing how persistent labour market variables are. In the horizontal axis we have the persistency in the data while the model's persistency is in the vertical axis. The closer the dots are to the 45 degree line (where data and model coincide)

the better the model's performance. The model does a reasonable job capturing the persistence in unemployment, but largely fails in capturing the persistency in vacancies (all observations are below and quite distant from the 45 degree line). While in the data, the correlation between vacancies this quarter and the past quarter in Portugal is roughly 0.9, in the model it is only half that value. This shortcoming is well known in the literature and can be dealt with by introducing mechanisms that slow the adjustment of vacancies down, such as adjustment costs.

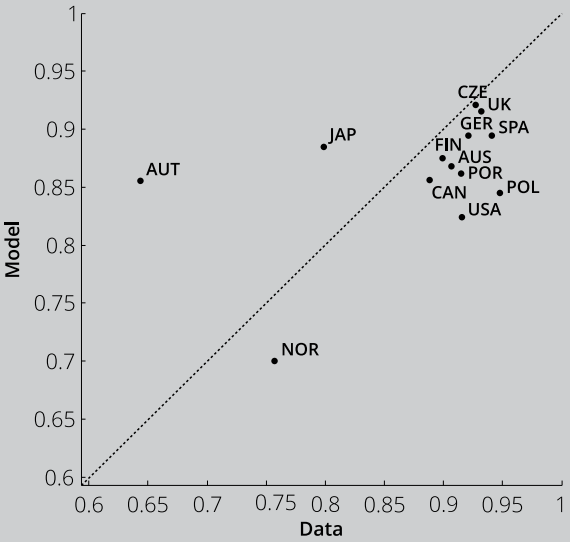
Chart 7 shows the model's performance in capturing how volatile labour market variables are relative to the volatility in productivity (which is fixed to be the same in the model and data). So while vacancies in Portugal are roughly 16 times more volatility than productivity, the model suggests they are roughly as volatile. The model's inability to replicate how volatile labour market variables are holds for all countries, that is, the volatility puzzle Shimer (2005) uncovered for the U.S is actually ubiquitous in the OECD.

Using cross-country data to evaluate solutions to the volatility puzzle

There is a voluminous literature dedicated to potential solutions to the volatility puzzle, therefore it is important to be able to evaluate and distinguish between different proposals. The sort of cross-country data this article presents is one possible dimension along which one can scrutinize these alternatives. Here we exemplify this procedure by looking at the solution proposed in HM.

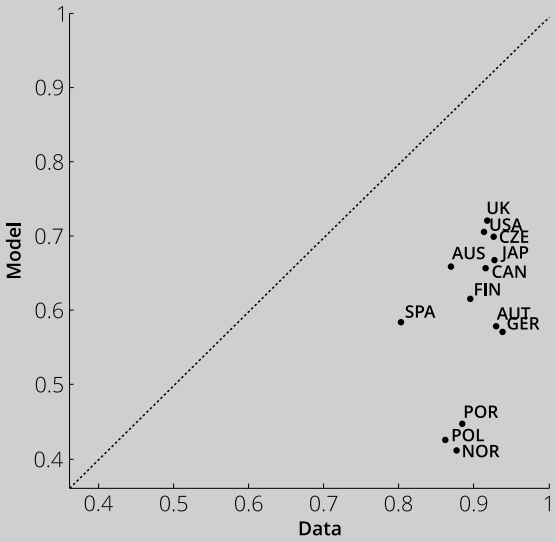
While mostly maintaining the structure of the model, HM proposes that one should target different moments of the data when setting the model's parameters. It notes that the reason standard

Chart 5 • Unemployment auto-correlations: model versus data



Sources: OECD and author's calculations.

Chart 6 • Vacancies auto-correlations: model versus data



Sources: OECD and author's calculations.

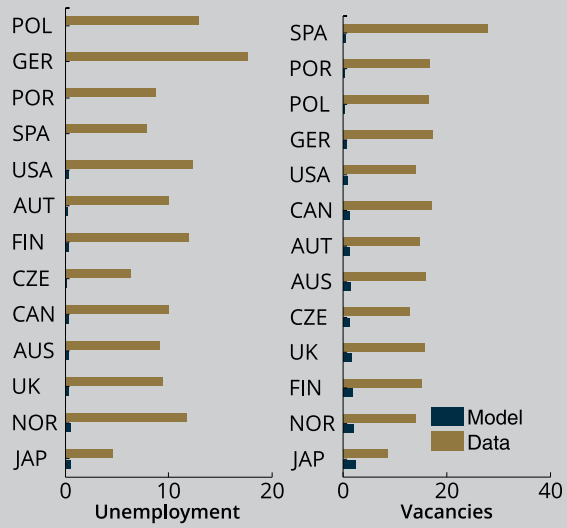
DMP models cannot match the volatility of labour market variables is that, in the model, as the total match surplus varies over the cycle, wages are absorbing much of that variation, while profits vary very little. Recall that it is based on changes in profits that firms set their vacancies, therefore, as profits vary little, so do vacancies, and as a consequence, unemployment.

In the data, by contrast, wages vary a lot less and therefore profits vary more. While part of the literature reacted to this by developing models that emphasized stickier wages, HM took another route and directly targeted the elasticity of wages to productivity. It sets model parameters so that the model replicates the amount of variation in wages one sees in the data. Note that this by itself does not guarantee that the vacancies and unemployment will vary as much as in the data. Even if you set the exact variation in profits that you see in the data, the transmission between profits and labour market variables is still endogenous to the model.

The HM proposal succeeds in bringing the model closer to the data in terms of volatility of labour market variables for most countries, as Chart 8 shows. Yet, for countries like Portugal (and Spain), this attempt is largely unsuccessful and the volatility in the model is still an order of magnitude smaller than in the data. Why is this the case? There are two reasons. The first has to do with how persistent productivity is. In Portugal this persistence is very small, which means that when a good shock occurs firms are less sure that it will last, and therefore they will not raise vacancies by as much as they otherwise would, which results in less volatility in vacancies and unemployment. The second reason has to do with the low job finding rates that characterize the Portuguese (and Spanish) labour markets and it is very straightforward. Conditional on a productivity shock and a given number of posted vacancies, unemployment will decrease by less in an economy where the job-finding rate is smaller, as fewer workers will be able to find jobs.

Chart 7 • Volatility in the labour market: model *versus* data

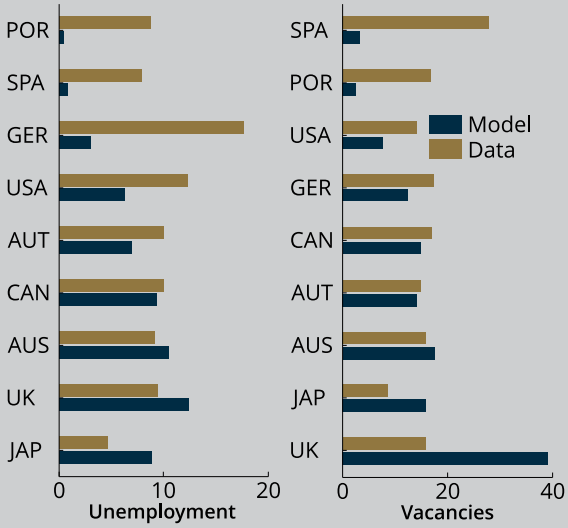
| Standard deviation of vacancies and unemployment divided by standard deviation of productivity



Sources: OECD and author's calculations.

Chart 8 • Volatility in the labour market: model (HM) *versus* data

| Standard deviation of vacancies and unemployment divided by standard deviation of productivity



Sources: OECD and author's calculations.

One should note that this last finding in Portugal is subject to revisions in the job-finding rate estimates that resulted from the sampling changes the *INE* introduced in the IE. Nonetheless, Amaral and Tasci (2012) show that as long as the persistency in productivity is small enough, the solution proposed in HM fails to work, even in economies where job-finding rates are relatively high.

Finally, I would like to stress the fact that this type of analysis shows how cross-country statistics can be used to distinguish between proposed solutions to the volatility puzzle.

Conclusions

In the OECD context, the Portuguese labour market shows relatively little connection to the economic cycle, as measured by fluctuations in output per worker. This might have to do with institutions, or other frictions, that blunt the incentives the economy-at-large sends to the labour market.

GDP per worker in Portugal shows relatively little persistency and this explains why a common solution proposed in the literature for the volatility puzzle fails to work for the Portuguese labour market.

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Notes

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

2. Banco de Portugal, Economics and Research Department.

3. For more details, please see Box 4.1 of the *Annual Report – The Portuguese Economy* in 2011 (2011) pp.135-138.

4. Please see Amaral and Tasci (2012) for a more technical report on this research and for a detailed description of all the sources.

5. In particular, for Portugal, the vacancies data are collected from the *Instituto do Emprego e da Formação Profissional* that in turn collects it, at a monthly frequency, from the jobs posted by firms at the various Employment Centers across the country.

6. All variables are in logs and are detrended using the Hodrick-Prescott filter with a smoothing parameter of 1600.

7. Please see Amaral and Tasci (2012) for a more detailed description of the model.

A review of the pharmaceutical market in Portugal[1]

Manuel Coutinho Pereira[2] | Hugo Vilares[2]

ABSTRACT

This article examines the main developments of the pharmaceutical market in Portugal over the last decade. There has been a growth in the quantities traded and a reduction in retail prices, resulting from an intense legislative intervention. This price reduction has stalled expenditure on outpatient medicines, making it even possible some reduction in the last years. Such an evolution reflects a cutback in the economic rents of market agents, benefiting the National Health Service. The enhanced competition in the market segments open to generic drugs has contributed importantly to this outcome.

The estimation of a demand function for pharmaceutical drugs indicates a relatively reduced price-sensitivity of quantities consumed, at the upper bound of the estimates in several studies for other countries. Furthermore, it is inferred that the resistance to the prescription of generics is waning as, holding constant other factors, prescribers already induce consumers to preferably acquire generics. In the future, a further increase in the penetration of generics is likely to take place by the extension of the range of active ingredients covered by them.

Introduction

A pharmaceutical drug is economically a merit good, and thus its availability to the population is a priority in most member states of the European Union, in which, on average, about two thirds of the expenditure is financed by government (Vogler *et al*. 2011). This leading role of government in medicine dispensing, jointly with the technological progress that diversified the treatments offered and increased their efficacy, have enhanced living standards and longevity. At the same time, such an achievement has meant that the nominal growth of public expenditure with pharmaceutical drugs has substantially surpassed that of the gross domestic product. According to Vogler *et al*. (2011), public expenditure in the member states of the European Union increased, on average, by 76 percent between 2000 and 2009, corresponding to a yearly growth rate of about 5.8 percent, while the average nominal GDP growth was about 2.8 percent.

The escalation of public expenditure in this field has exerted a growing pressure on public accounts. Therefore, since the beginning of the 1990s, the member states of the European Union have paid increasing attention to the pharmaceutical market and adopted measures designed to ensure drug availability, while controlling costs and limiting the economic rents of agents. In the recent context of sluggish economic growth, the regulation of the European markets became more intense (see, for example, Brandt, 2013, or Carone *et al.* 2012). The countries more squeezed from the fiscal viewpoint have been in the lead of this trend. Vogler *et al.* (2011) concluded that the legislative interventions of the 1990s allowed some public expenditure control, based fundamentally on passing costs on to patients. In contrast, the more recent cost-containment measures have mostly reduced the profits of pharmaceutical industry without placing an additional burden on patients.

The Portuguese system of pharmacological assistance is founded on the National Health Service (NHS) as a universal default insurer of the population, positively discriminating certain groups and patients affected by serious diseases (see below). In this context, supplementary healthcare subsystems and private insurance play a secondary role, benefiting workers of some sectors of activity and firms and only marginally complementing the NHS coverage.

Barros (2012) characterizes market regulation in Portugal over the last decade as very strong, and Vogler *et al.* (2011) places Portugal among the countries with the largest number of legislative actions, together with the Baltic states, Spain, Greece and Iceland. Unsurprisingly in the recent years pharmaceutical drugs policy in Portugal has been heavily conditioned by the Economic and Financial Assistance Program, which imposed a sharp expenditure reduction as an objective. Legislative actions have been focused on the entry of drugs into the market, rules of price formation, copayment formulas, prescription patterns, margins of participants in the supply chain, and monitoring agents' conduct.

In spite of an intensified and more sophisticated public intervention in several countries, Merino-Castelló *et al.* (2003), Fiorio *et al.* (2008) e Contoyannis *et al.* (2005) report a lack of empirical studies and an emphasis on behavioral analyses of decision-makers as relevant limitations to a systematic knowledge of the market. As regards the existing work, Cabrales *et al.* (2013) mention the reduced samples of products and the scarcity of studies involving a representative set of countries as prominent limitations. Kim (2009) mentions further that the United States market is most often studied, despite its significant differences to other countries and notably Europe. For Portugal, Barros (2013) points out the lack of knowledge about the sensitivity of demand as a limitation in the setting of policy objectives.

In this context, the present article characterizes the pharmaceutical market in Portugal over the last decade, with a special focus on the determinants of demand. For this purpose, the article uses a comprehensive database of NHS prescription drugs dispensed by pharmacies in an ambulatory care setting, on a monthly basis, between 2003 and 2013. The institutional framework and the database are presented in the next two sections. A descriptive analysis of the market is performed in the fourth section and, in the fifth section, a model for the demand for pharmaceutical drugs is discussed. The main conclusions are summarized the last section.

Institutional framework of the pharmaceutical market

Health assistance is constitutionally guaranteed in Portugal (as in about two-thirds of the countries in the world – see Clarke *et al.*, 2004) to ensure that all citizens, regardless of their socioeconomic conditions, have access to an extended range of healthcare services. As stated, the regulation of the pharmaceutical market seeks to reconcile this constitutional aim with the sustainability of public expenditure in medicines. However, a prominent public intervention is also justified from an economic point of view by several market failures, namely the fact that a drug is an experience and a merit good, there are legal monopolies that ensure the remuneration of research and development costs, and medicine consumption entails an interaction between the patient, the experts who advise, and government that, on average, mostly bears the costs.

In the Portuguese case, firstly, the *Infarmed* (national authority for pharmaceutical drugs) analyzes the value added of each drug against the preexisting range of treatments, both from a therapeutic and a relative price[3] standpoint. The retail price is set taking into account the international system of reference prices – a methodology that is implemented in 24 Member States of the European Union.[4] The retail price is calculated as the average price charged for that drug in the European countries that serve as a reference for the Portuguese system (in 2014, Spain, France and Slovenia). Subsequently the economic margins of the agents downstream in the supply chain, namely warehouses and pharmacies, are defined and regulated. Finally, the NHS copayment is defined.

In general the NHS co-pays the expenditure on medicines for diseases deemed relevant, assuming the function of a universal insurer that provides a base coverage to all citizens. If there is at

least one generic drug within the *homogeneous group* of drugs with the same therapeutic purposes (see section "The pharmaceutical drugs market database"), the NHS copayment comprises two distinct mechanisms, as it happens in other European Union countries. Firstly, drugs are stratified into five classes of indicative copayment (Chart 1A), ranging currently from zero to 90 percent of the retail price. Then, the actual copayment results from the combination of the indicative chart with an analysis of retail prices of the medicines within the same homogeneous group.[5] This measure – the internal system of price referencing – regulates the effective contribution of the NHS, which is higher (lower) than the indicative copayment for drugs with a lower (higher) relative price within the homogeneous group.[6] Chart 1B (lines in gold and blue) shows that the average actual copayment has always stood below the indicative one – the gap has increased in recent years, given the change in the calculation of the reference price[7] and the introduction of medicines, especially generics, which tend to be cheaper than the alternatives with the same therapeutic purposes.

In a complementary way the NHS ensures more beneficial copayments in two cases: vulnerable groups both from a medical or an economic standpoint. The first case covers patients who are affected by life-threatening diseases and for whom drugs are essential to sustain life. Medicines for these diseases benefit from a higher copayment and, in many cases, are freely dispensed at the hospital level. The second case includes pensioners who receive an annual pension lower than 14 minimum wages. They enjoy a higher contribution than the one in the standard scheme (by about 5 percent in the highest group and 15 percent in the other indicative copayment groups). Moreover, these patients benefit from an indicative copayment rate of 95 percent on the cheapest five drugs within a given homogeneous group (in the past, they benefited from free dispensing of all generic drugs). Such positive discrimination mechanisms justify the differential between the average copayment rate reported by the *Infarmed* (for the NHS), and the actual rate calculated resorting to our database (Chart 1B). The evolution of this differential indicates a significant reduction of special copayments in the ambulatory care setting under the Economic and Financial Assistance Program.

There are cohorts of the population benefiting from assistance arrangements which are more beneficial than the NHS. These encompass primarily the public subsystems for the civil servants in general (ADSE) or specific professional categories (ADNE and, in the past, Ministry of Justice), and private subsystems usually associated with certain sectors or companies (the subsystem for the banking sector – SAMS, CTT, CGD and Portugal Telecom). Such types of coverage correspond to a supplementary remuneration of employees. Private insurance does not universally guarantee an extension of the NHS copayments for outpatient drugs and, when this happens, the additional protection tends to be in line with the one in the public subsystems. Chart 1B shows that, as a whole, the additional coverage in the various subsystems has a limited size compared to the NHS coverage level.

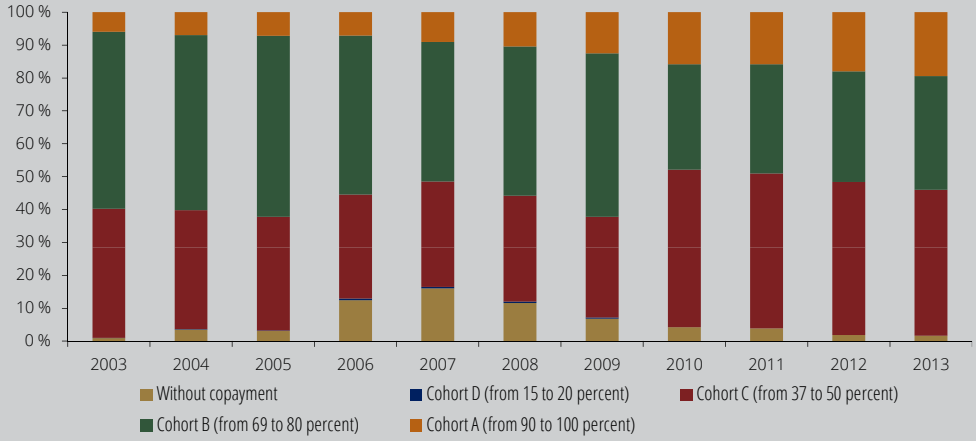
The pharmaceutical drugs market database

The empirical analysis of pharmaceutical markets in the economic literature is either based on samples of medicines intake at the patient level or databases of traded products. The first approach allows an analysis of the behavior of the involved agents, namely the doctor, the pharmacist and the patient. The second approach – used in this article – gives a broader perspective of the market, which despite the non-differentiation of each agent's behavior enables an analysis of final consumption decisions, and presents itself as a viable alternative, particularly for studying the demand for pharmaceutical drugs.

In this article a database at the product level is used, including extractions in different moments of the *National Database of Medicines* of *Infarmed*, and monthly information on the sales of each

medicine between January 2003 and December 2013. This allowed the construction of an unbalanced[8] panel including the characteristics and quantities of all pharmaceutical drugs sold in the Portuguese market. A first group of variables comprises name, pharmaceutical form, dosage, type of packaging, generic drug indicator, and the number of months since market entry. With regard to prices, it is included the retail price (*i.e.* before copayment), the reference price, and the indicative NHS copayment rate (standard scheme).[9] The database also includes information about the structure of the market, both at the International Nonproprietary Name (INN) level and the anatomical-therapeutic-chemical classification level (see below). The panel used is based on the information

Chart 1A • Weight of the indicative copayment classes

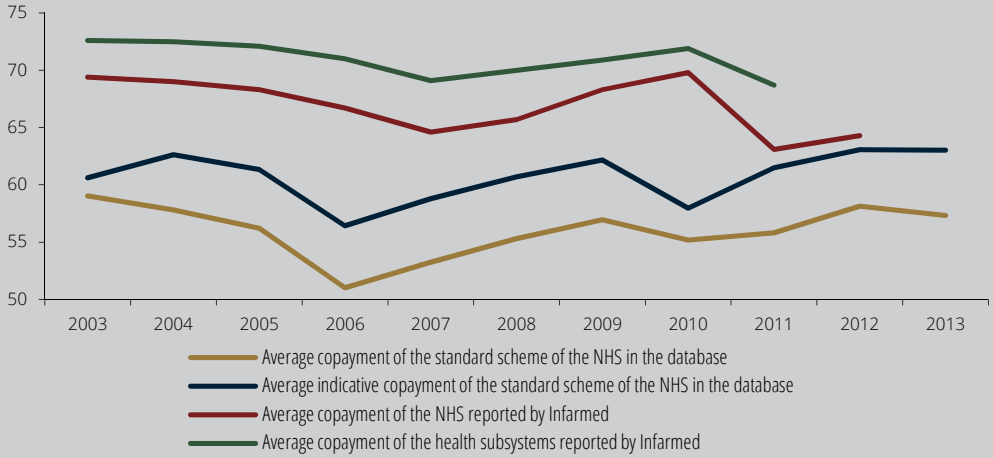


Source: Authors' computation.

Notes: (a) The weight of the classes is calculated on the basis of pharmaceutical labels (see section "The pharmaceutical drugs market database"). (b) Includes the unrestricted prescription drugs and those not subject to special copayments.

Chart 1B • Evolution of the average copayment rate in the database and charts reported by *Infarmed*

| Percentage



Source: Authors' computation and *Infarmed*.

Notes: (a) The indicative copayment within each class has been adjusted by successive legislative changes. (b) The calculation of the average copayment of the NHS standard scheme in the database assumes that all patients are covered by this scheme and takes the annual expenditure as weighting variable; the average indicative copayment excludes the effect of the internal system of price referencing. (c) The average copayment reported by *Infarmed* considers all patient groups and medicines, including those subject to special copayments. (d) Quantities sold, which are used as weights in the calculation of the average copayment in the database, include from April 2013 the public subsystems beyond the NHS.

that the competent authority uses to monitor the market and thus it should be fully consistent over time and virtually unaffected by measurement errors.

The universe considered in this article is the set of prescription medicines sold by pharmacies and not subject to restricted dispensing, capturing the relevant market portion in the sense that it emanates from general regulations. In detail, the over-the-counter medicines, also sold in the para-pharmacies (created in 2005), are excluded from the analysis, as are the medicines with dispensing circumscribed to the hospitals or restricted by any regulatory provision. In the calculation of average copayments, price, quantity and value indexes, and in the estimation of the demand function, drugs intended for chronic diseases requiring ongoing treatments were also excluded. Such drugs are usually covered by special copayment regulations. It becomes thus possible to focus the analysis on the distribution channels and the decision-making processes typical for the market (see Vilares and Pereira, 2014). Also note that the available information does not allow taking into account co-payments benefiting special cohorts of the population, including those benefiting the pensioners with an income below the minimum wage and, more generally, patients holding private health insurance or belonging to public health subsystems.

The database in its cross-sectional dimension is structured by labels of medicines. A label refers to the intersection of the name, the pharmaceutical form, and dosage of the pharmaceutical drug with the characteristics of its packaging. In this article, the term pharmaceutical drug (or medicine) is generally used in its economic meaning and refers mainly to the name, which is associated with an active ingredient and a pharmaceutical company. However, it is sometimes employed as a statistical concept that is slightly narrower and fixes beyond the name, the pharmaceutical form and dosage. In the database there is information about the INN or active ingredient[10] which is the main chemical compound of the medicine. On the supply side, the market can be seen as structured around groups of drugs that share a given active ingredient and, in that sense, are almost perfect substitutes (also called bioequivalent – a typical example is the generic drug and its reference brand-name medicine). One assumes in the analysis that the substitute labels compete among themselves, thus abstracting from possible differences in their secondary characteristics. In contrast, the homogeneous groups defined in the legislation take into account such differences.[11] The labels are further grouped in the database, on the demand side, in accordance with the anatomical-therapeutic-chemical classification (*i.e.* by therapeutic purposes), which however may group medicines with distinct active ingredients.

In this framework, the panel tracks, on average, approximately 6,200 labels over 132 months, totaling about 820,000 observations.

Description and evolution of the market

Table 1 presents some data on the pharmaceutical drugs market in Portugal between 2003 and 2013. The table distinguishes between brand-name drugs and generics and, for the former, between those that share their active ingredient (and therefore compete) with generics, and the remaining ones. The possibility of prescription by active ingredient, leaving to the pharmacist the presentation of detailed consumption alternatives to the patient has made competition dynamics more dependent from those groups of substitutes. This phenomenon is also becoming more relevant with the evolution of the regulatory framework, particularly with the generalization of homogeneous groups. The legislation restricts the introduction of pharmaceutical drugs into the market to an analysis of pre-existing substitute therapeutics, limits the retail price of non-innovative drugs, and makes the NHS copayment levels to depend on the retail price of other elements within homogeneous groups.

The number of medicines in the market as a whole has steadily increased as a result of the introduction of generic drugs, which represented about 2/3 of the total in 2013. The number of brand-

name drugs, in contrast, recorded some reduction. In terms of sales, the penetration of generics is less evident; these held about one fourth of the market in 2013. This is explained by the fact that these drugs tend to be cheaper and to sell, on average, smaller quantities. Even considering only the portion of the market where there are generics as substitutes, their market share is still less than 1/2. In contrast, the drugs that do not compete with generics are only 1/5 of the total but hold about half of the market in terms of sales. Considering drug sales as a whole, these have recorded a sustained growth until 2010, followed by a decline in recent years. Sales in 2013 stand at a level identical to the one at the beginning of the period. Such an evolution is broken down below between the variation of prices and quantities.

Table 1 • Medicines market (ambulatory care setting), 2003-2013

	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
Number of pharmaceutical drugs of which:	2,909	3,385	3,869	4,208	4,263	4,537	4,973	5,488	5,621	6,060	6,317
brand-name drugs	2,614	2,667	2,725	2,628	2,431	2,356	2,357	2,415	2,293	2,262	2,214
substitutes include generics	633	724	819	892	838	861	925	964	925	971	1,018
substitutes do not include generics	1,981	1,943	1,906	1,736	1,593	1,495	1,432	1,451	1,368	1,291	1,196
generics	295	718	1,144	1,580	1,832	2,181	2,616	3,073	3,328	3,798	4,103
Total sales (million €) of which:	1,770	1,961	2,052	2,087	2,081	2,168	2,208	2,264	1,986	1,659	1,710
brand-name drugs	1,652	1,755	1,742	1,733	1,664	1,720	1,764	1,721	1,558	1,340	1,324
substitutes include generics	400	521	551	612	580	577	614	582	472	402	458
substitutes do not include generics	1,252	1,234	1,191	1,121	1,084	1,143	1,149	1,139	1,086	938	866
generics	117	206	310	354	417	448	444	543	427	318	386

Source: Authors' computation.

Notes: (a) A statistical concept of medicine is used in this table (see section "The pharmaceutical drugs market database"). (b) Includes unrestricted prescription medicines. (c) A branded drug is classified in the category of drugs that have generics as substitutes from the year the first generic containing the respective active ingredient enters the market. (d) Quantities sold include from April 2013 the public health subsystems beyond the NHS.

The pharmaceutical market in Portugal is generally characterized by large entry and exit flows (Chart 2A). Indeed, only about 50 percent of the drugs which constituted the market in 2003 still remained there in 2013, making up by then only 1/4 of the sales. The importance of these flows reflects, besides the already mentioned strong expansion of generic drugs, other phenomena such as the appearance of new and relatively more effective molecules, and market positioning strategies by the pharmaceutical industry. Some flows can also stem from rearrangements with respect to the pharmaceutical form or dosage. In 2013 generics had a major role among drug entries (about 85 percent), but also exits (about 60 percent); about 25 percent of exits related to branded drugs that did not compete with generics.

Generic drugs still comprise a relatively small range of active ingredients in the Portuguese market (Chart 2B), in particular because many branded drugs are still protected by patents, as a compensation for the research costs incurred in the development of the drug and that usually prevent the release of generics for 20 to 25 years (EFPIA, 2013).[12] Notwithstanding some increase in the penetration of generics also with respect to active ingredients, this is much less evident than for the number of medicines. Therefore competition within groups of substitutes including generics has strengthened up from an average of about 15 drugs per group, in 2003, to 25 drugs in 2013 (for INNs exclusively covered by brand-name drugs this indicator remained stable between 2 and 3 over the period).

We present now a breakdown of the evolution of medicine sales (see Table 1) between the variation of quantities sold and prices. Given that there have been ongoing changes in the product composition of the market, one uses moving-base indexes taking the previous month as the base period. Chart 3A shows the value and quantity indexes; chart 3B shows the indexes for the retail price and price net of copayment *i.e.* paid by the patient (considering the standard NHS scheme only).

In the period 2003-2013 there has been an increase in the quantity of medicines sold, with some deceleration from 2011, coinciding with the implementation of the Economic and Financial Assistance Program. This rising trend in dispensed medicines is common to most countries, and it is consistent with the enlargement of the spectrum of outpatient treatments and the efforts to make them available to the population. Such a trend materializes simultaneously with the increase in life expectancy. In contrast, retail prices have steadily declined over the period, primarily reflecting various legislative interventions, such as price caps for a significant part of the period, the administrative price reductions of 2005 and 2007, and the introduction of the international system of price referencing. The pace and diversity of the measures imposed has strengthened up since 2010, as a response to more stringent fiscal consolidation needs. This has accentuated the drop in retail prices which, in turn, made the value of sales and quantities sold to drift apart.

Prices net of copayments had a different evolution than that of retail prices, fluctuating without a defined trend over the period under review. The trajectory of the indicator relates to the evolution of the average (actual) copayment rate in the standard NHS scheme (Chart 1B).[13] The latter recorded a progressive decrease until 2006, at a time when the fall of retail prices was still feeble, bringing about an increase in prices net of copayments. Between 2007 and 2009, there was a gradual rise in copayments, corresponding to a stabilization and subsequent fall in net prices. The year 2010 saw a significant drop in copayments and an increase in the costs borne by patients, but this was reversed from 2011 on, given a sizable reduction in retail prices and some recovery of copayment levels.

Chart 4 shows the quantity and price indexes corresponding to the partition of drugs in the three categories considered above, namely, branded drugs that compete and that do not compete with generics, and generics. Chart 4A indicates a substitution of branded drugs by the competing generic drugs. The remaining brand-name drugs recorded, however, an increase in the quantity sold, accompanying in particular the introduction of innovative therapeutics. Chart 4B shows that the drop in retail prices was generalized to the three categories of drugs considered. As one would expect, the prices of branded drugs not competing with generics were more resilient, in line with a stronger market power. At the same time, the very sharp reduction in the price of generic drugs suggests that their introduction in Portugal has been able to materialize significant gains resulting from economies of scale and scope. While at the beginning of this process, the tiny sales of generics gave rise to prices often not competitive (higher than the prices of branded drugs) and supported by larger NHS copayments, the efforts to raise agents' awareness and positively discriminate generics allowed a significant lowering of their price.

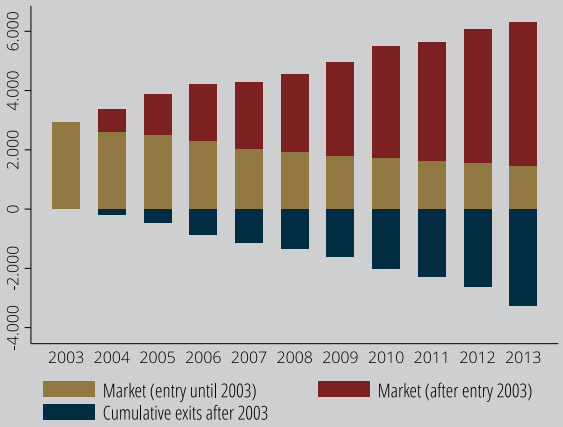
Modeling the demand for pharmaceutical drugs in Portugal

Impact of prices, market structure and prescription patterns

A pharmaceutical drug has a set of relevant specificities *vis-à-vis* a typical consumption good that must be considered when modeling its demand. Firstly, consumption choices are mediated by authorized specialists, especially the doctor and the pharmacist. Secondly, the valuation of the

good, which depends on the benefits the consumer is able to extract from it, is comparatively more uncertain, given the heterogeneity of possible drug-patient interactions. In this context, a medicine is intrinsically an experience good whose consumption depends particularly on the stock of knowledge accumulated by the physician and the pharmacist about its properties, and the

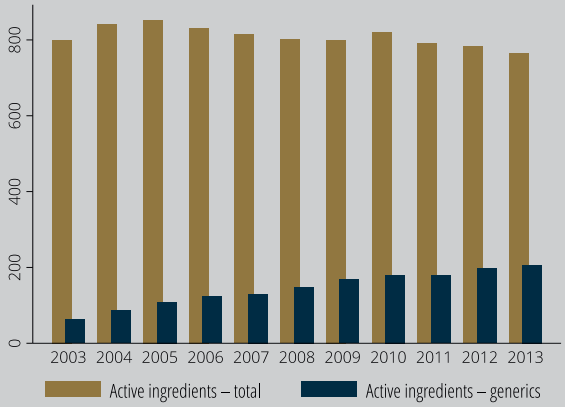
Chart 2A • Substitution of pharmaceutical drugs in the market since 2003



Source: Authors' computation.

Note: Includes unrestricted prescription medicines.

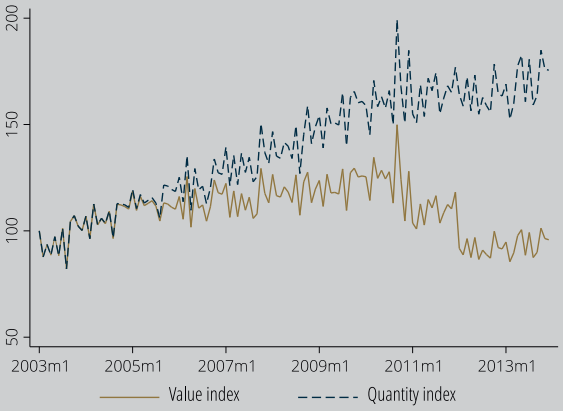
Chart 2B • Active ingredients in the market



Source: Authors' computation.

Note: Includes unrestricted prescription medicines.

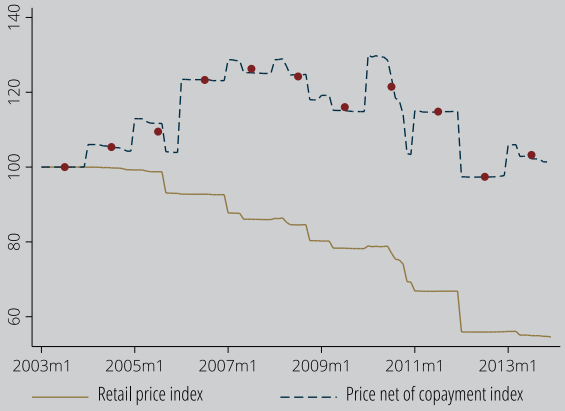
Chart 3A • Pharmaceutical drug sales | Value and quantity indexes (2003m1=100)



Source: Authors' computation.

Notes: (a) The value index is a chain index obtained from monthly Laspeyres indexes, calculated by reference to the retail price and taking the previous month as the base period (the corresponding Paasche index shows essentially the same evolution). (b) Quantities sold include from April 2013 the public subsystems beyond the NHS.

Chart 3B • Pharmaceutical drug sales | Retail price index and price net of copayment index (2003m1=100)



Source: Authors' computation.

Notes: (a) Chain indexes obtained from monthly Paasche indexes, taking the previous month as the base period. (b) Prices net of copayments consider the standard scheme of SNS only. (c) The red dots are annual averages of the index.

patient's medication experience. Thus, several characteristics of medicines that are perceived by the agents although not observed by the researcher are of importance.

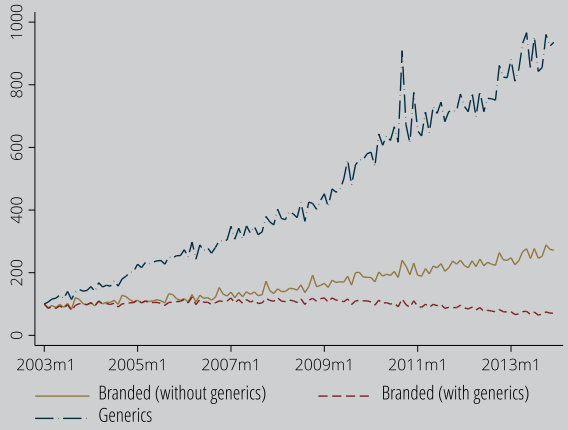
At the same time, one should consider the regulatory interventions that do not operate through the price system, for example, the introduction of mandatory electronic prescribing. Such interventions have a systemic character (insofar as they affect the market as a whole) and give rise to exogenous shocks to demand. Other shocks to medicine consumption may occur, such as a sporadic pronounced incidence of certain diseases; seasonal effects may also be present. It is assumed that population aging can be modeled as a systemic effect, although this phenomenon does not affect the market as a whole, because the pattern of incidence of elderly diseases does not match the pattern of incidence for the whole population. Anyway, given that the analysis covers eleven years, the effect of aging – a long-term process – on the demand should be limited. Another relevant dimension is the abovementioned substitution among medicines, which is taken into account in the model through the consideration of the respective submarkets.

The model of demand for medicines can be summarized in the following equation:

$$Quant_{i,t} = \lambda_t + \phi_i + \beta \mathrm{P}_{i,t} + \delta \mathrm{M}_{i,t} + \eta \mathrm{K}_{i,t} + \varepsilon_{i,t},$$

where $Quant$ is the logarithm of the monthly quantity sold (of drug label i, in month t). Price variables (P), include the logarithm of the price net of copayments and the logarithm of the average price of substitutes (labels within the same INN). Market structure variables (M), are the market share of generics and the number of labels within the INN. A fourth degree polynomial in the number of months since market entry is meant to capture the stock of knowledge (K). Finally, a time fixed-effect (λ) and a label fixed-effect (ϕ) were introduced, as a way to control, among others,

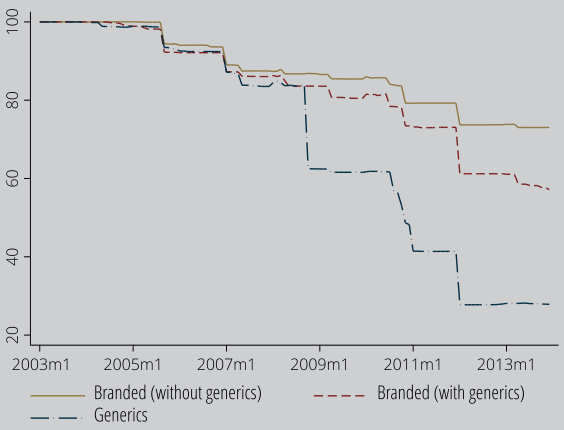
Chart 4A • Sales of pharmaceutical drugs by categories | Quantity indexes (2003m1=100)



Source: Authors' computation.

Notes: (a) Chain indexes obtained from monthly Laspeyres indexes, taking the previous month as the base period. (b) The categories of branded drugs have a stable composition from the beginning to end of the period, excepting entries and exits of the market (note the difference with respect to Table 1, in which these drugs are reclassified where applicable). (c) Quantities sold include from April 2013 the public health subsystems beyond the NHS.

Chart 4B • Sales of pharmaceutical drugs by categories | Retail price indexes (2003m1=100)



Source: Authors' computation.

Notes: (a) Chain indexes obtained from monthly Paasche indexes, taking the previous month as the base period. (b) The categories of branded drugs have a stable composition from beginning to end of the period, excepting entries and exits of the market (note the difference with respect to Table 1, in which these drugs are reclassified where applicable).

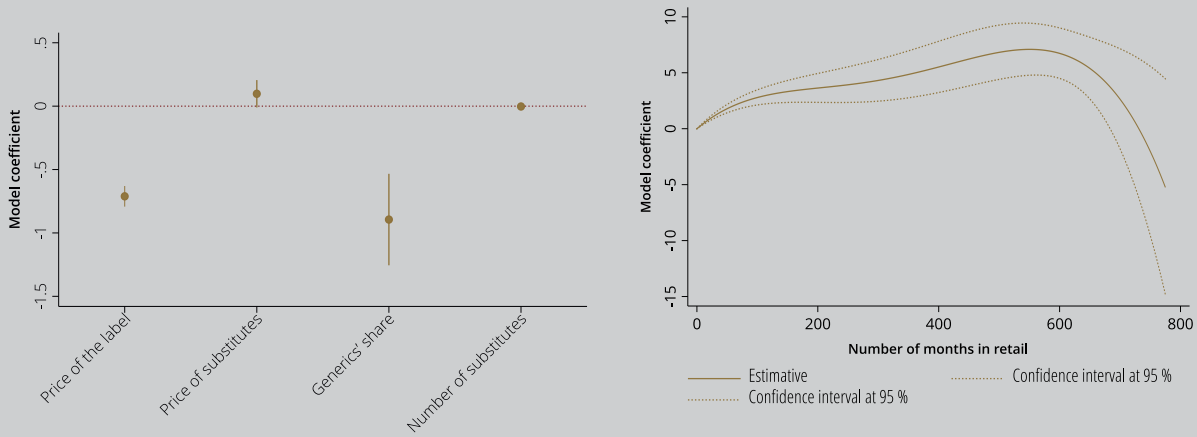
for abnormal movements of demand, seasonal effects, and the initial knowledge of the system about each drug and its unobserved characteristics.

Given the institutional and regulatory framework in place, it is possible to assume exogeneity of prices in modeling demand. In this context, a fixed-effect estimator is used (see Vilares and Pereira, 2014). Furthermore, in order to take into account the importance of each disease in the Portuguese market and its treatment options that may not be limited to a single active ingredient, the model was weighted using the anatomical-therapeutic-chemical classification. Hence one considers not only the importance of each prescription drug in the outpatient market, but also the typical pattern of diseases and the relative importance of each drug in their treatment.

The sample starts in January 2003 and ends in March 2013, in order to exclude the subsequent integration of some public health subsystems in the database. The results obtained in the main model regarding the impact of the explanatory variables on the quantity sold are summarized in Chart 5. Chart 5A shows the direct and cross price-elasticities of demand[14], and the impact of dissemination of generics and the number of labels within the INN, keeping constant all the other variables. Chart 5B shows the sales profile as the tenure of the pharmaceutical label increases.

The average estimate for the direct price-elasticity of demand (-0.71) is in the upper threshold of the estimates presented in previous studies for other countries, pointing to a market where consumers are relatively insensitive to changes in the price net of copayment.[15] Specifically, an increase in the label's price by one percent implies, on average, a fall in the traded quantity of 0.71 percent. This result is understandable given the essential nature of the good, its moderate weight in the patients' budget, in part due to the relevance of NHS copayments (Granlund, 2007), and the existence of persistence in prescription patterns (allowing a reduction in the uncertainty regarding the specific patient-drug interaction – Coscelli *et al.* 2004). It is also possible, in line with Ellison *et al.* (1997), that doctors lack knowledge about prices, and so this information is left out at this stage of the decision making process. Legislative intervention has attempted to mitigate such an aspect, namely by including the minimum price of medicines in the prescriptions.

Charts 5A and 5B • Impacts of the explanatory variables



Source: Authors' computations.

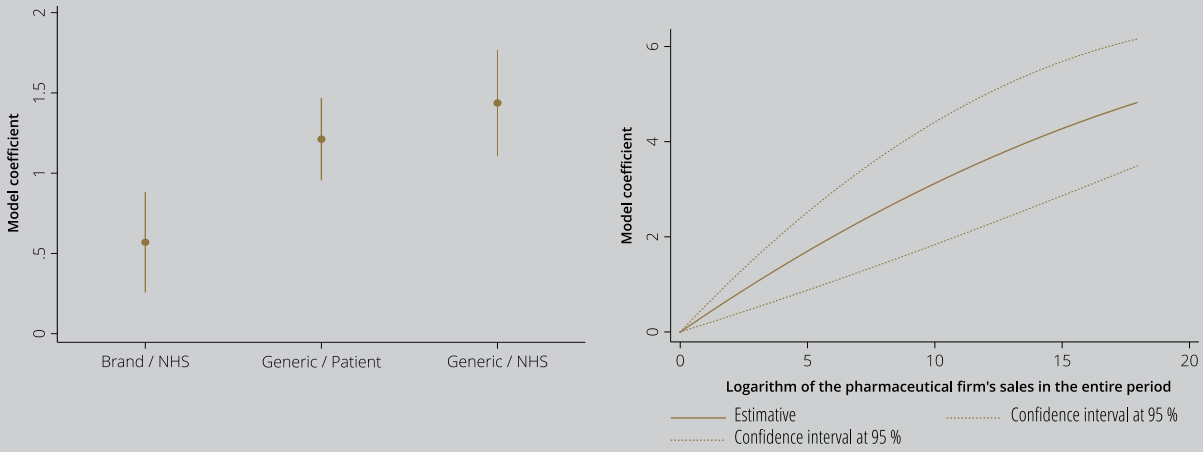
Notes: (a) In chart 5A, the coefficients for the price of the label, price of substitutes, and the market share of generics indicate, respectively, the percentage change in quantity demanded, if the first two variables increase by one percent, and the third one by one percentage point. In the case of the number of competitors, the coefficient multiplied by one hundred indicates the percentage change in quantity demanded, if an additional label is introduced within the INN. (b) Chart 5B shows the evolution of the quantity sold (in logarithms), as a function of the number of months it has been in the market.

The evidence indicates that in a context of reduction in retail prices, if the NHS does not internalize the inherent gains, a significant increase in demand is not expected. Similarly, increases in net prices, for example, originating in copayment reductions, as it happened in 2010, do not seem to call into question, on average, and significantly, the accessibility to pharmaceutical drugs. On the other hand, the cross-price elasticity of demand points to a tiny substitution effect due to changes in relative prices within the INN, reinforcing the evidence around a relatively inelastic consumption pattern. In interpreting these results one should bear in mind that the data have limitations with regard to the calculation of prices net of copayments (see section "The pharmaceutical drugs market database").

Regarding market structure, the penetration of generics in terms of sales at the INN level tends to lower, on average, consumption of each substitute label, keeping the other factors unchanged. This reflects the effect of generic drugs competition, as the existing legal monopolies become oligopolistic or monopolistic competition settings, something that is more evident as new drugs enter the market. This result may also reflect the dynamics of replacement of older drugs by innovators. In fact, drugs that have higher tenures, besides competing with generics, may contain molecules that no longer belong to the frontier of biomedical knowledge and, consequently, tend to be replaced by other with better therapeutic results.

The same idea emerges from the analysis of the impact of tenure. While, as theoretically expected, a drug requires an initial marketing period to become a reference in the prescription patterns, from a certain point onwards, it tends to lose market share in favor of its generics and other molecules capable of increasing the efficacy of treatments or mitigate side effects. In interpreting the estimated maturity peak of drug's sales – about 50 years – one should, however, take into account that a part of the sample period is not affected by the relatively recent generics' diffusion that tends to shorten such maturity. Finally, with regard to the number of labels within an INN, there is a non-significant effect. This result may stem from the persistence of prescription patterns, given that the mere administrative introduction of a label into the market, other factors remaining

Charts 6A and 6B • Impacts of the permanent characteristics of pharmaceutical labels



Source: Authors' computations.

Notes: (a) In chart 6A, the control group consists of branded medicines primarily paid by the patient. The coefficient multiplied by one hundred indicates the percentage change in quantity demanded relative to this group of drugs. (b) Chart 6B shows the evolution of quantity sold, as a function of the sales volume of the pharmaceutical company (both in logarithms).

constant (notably, the proportion of generics within the INN), does not guarantee *per se* significant changes in the quantity of substitute labels sold.

Impact of characteristics of pharmaceutical drugs

In a second modeling phase, using the estimated impact of the permanent characteristics of the label, that is, the label fixed-effect in the above equation ($\widehat{\phi}_i$), we undertook to determine the impact on the demand of some of these characteristics which are observable (O_i). We considered the market share of pharmaceutical companies, the entity that assumes the majority of the expenditure, the classification of the drug as generic or branded, and, as a control a variable, the pack size[16]. Fixed-effects for the INN (φ_m), the pharmaceutical form (η_f) and the dosage (ξ_d) were also included as controls. The following equation was thus estimated:

$$\widehat{\phi}_i = \varphi_m + \eta_f + \xi_d + \gamma \mathrm{O}_i + \upsilon_i .$$

Three results regarding the marginal impact of some permanent characteristics of medicines, obtained in this second stage, are noteworthy (Charts 6A and 6B).

Firstly, on average, holding constant all demand determinants included in the first and second modeling stages, the user tends to acquire more generics than branded drugs, pointing to the receding of a possible distrust of generics, regardless of who assumes the majority of expenditure. Secondly, patients have a higher propensity to consume medicines that are mostly paid by the NHS. This may be due to a copayment system in which the NHS finances a larger expenditure share for drugs administered in more serious cases, *i.e.* when drug intake is more fundamental and results in a higher utility for the patient.[17] Finally, there is an increase (at a decreasing rate) in the quantity sold with the size of pharmaceutical companies in terms of sales volume. Such an evidence indicates the possibility of positive returns to advertising expenditure, naturally higher in larger companies.

Final remarks

This article examines the main developments in the outpatient drug market in Portugal over the last decade, focusing on the study of demand determinants. Several conclusions result from the article. On the one hand, there has been a continuous increase in the quantities traded, despite some deceleration in the recent period. This trend is associated with the scientific progress, and the effort to secure a widespread medicine's provision to the population, and also emerges as a cause and consequence of increased longevity. Moreover, since 2005, there has been a continued decline in retail prices, achieved through an intensification of legislative intervention, which initially attenuated the progression of the value of sales and, in recent years, has led to its fall.

The pharmaceutical drug's policy implemented since the middle of last decade, and more markedly in recent years, seems to have achieved some degree of control of outpatient drug expenditure, without jeopardizing its level of provision. In this process, the spreading of generic drugs in the Portuguese market has assumed an important role, as the most significant price reductions were registered in the submarkets where generics are present. Legislative action over the last decade, which was mainly focused on retail prices, resulted in a decrease in the value of the rents earned by the various economic agents (primarily for the benefit of the NHS). Considering the sample period as a whole, there is no upward trend in the prices paid by the patients.[18]

In a behavioral analysis of consumers, the average estimates of demand elasticities indicate that patients are relatively nonreactive to changes in prices, in line with the upper limit of the estimates obtained in studies for other markets. Thus, price changes are not likely to bring about major varia-

tions in the quantity demanded. Consequently, measures to encourage consumption of certain drugs based merely on price differentials tend to have a limited impact given the rigid pattern of consumption estimated, and may be less effective than measures focusing on the behavior of prescribers (e.g. deepening the adoption of medical guidelines and monitoring of prescription patterns, as implemented at the European level).

In this field, distrust of generics has progressively faded away and *ceteris paribus* prescribers already induce consumers to buy generics. Furthermore, further penetration of this market segment is expected through a broadening of the INN submarkets where generics are present (still a minority), and not so much by additional substitution of branded drugs in submarkets where generics already entered. Of course, this whole process is conditioned, among other factors, by entry barriers originating in patents, which aim to reward the pharmaceutical industry for the investment in research and development.

In the future, in a scenario of continuous increase in the quantities consumed, there is uncertainty as to how long expenditure control can be based on combining the analysis of treatments offered with a periodic revision of their price and the profits of market participants. When this is no longer effective, the pressure on the public budget may force a larger pass-through of costs to patients by means of a fall in copayments.

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Notes

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2. Banco de Portugal, Economics and Research Department.

3. This type of evaluation (*Health-technology assessment*), used in most European countries, aims at ensuring that the price of each drug reflects its true marginal benefit to the population given the existing offer, and that only drugs with guaranteed therapeutic efficiency and a suitable relative price are available for administration (see Carone *et al.* 2012, for a thorough discussion).

4. The widespread external reference pricing systems in the European Union make the prices in most countries a function of the prices recorded in the few countries that do not follow this approach. However, the different calculation formulas and choices of anchor countries originate some heterogeneity in retail prices between member states.

5. In the absence of a generic drug in the homogeneous group, the actual copayment rate is the indicative one.

6. Since 2010 the NHS copayment is the indicative copayment applicable to the average of the five drugs with lowest price within the same homogeneous group. Thus, drugs priced below the reference price have an actual copayment that exceeds the indicative one, while the opposite occurs for drugs priced above. The patient assumes the differential between the price of the drug and the reference price in force for the homogeneous group. Prior to 2010 for drugs priced below the reference price, the NHS copayment was the indicative one.

7. The reference price was previously given by the price of the most expensive generic in the homogeneous group.

8. In this context, an unbalanced panel means that a label may stay in the database for less than the full extension of the panel, either due to its entry into the market later than January 2003 or/and its exit before December 2013. Therefore, it is not imposed that the labels be in the database throughout the period analyzed.

9. The initially available observations on retail prices concerned the moments of extraction of the database (end of year and several additional months over the period, coinciding with systemic price changes). Information about the last revision of retail prices was also available. Based on these elements, we performed the imputation of retail prices for the missing months.

10. The two terms are taken as synonyms, although they may differ from the technical point of view, due to issues related to patent regulations.

11. Homogeneous groups are formed by labels (including generic and branded pharmaceutical drugs) that share the INN, pharmaceutical form, way of administration, dosage and pack size.

12. It is also possible that the profile of demand, the behavior of market agents, the production process or the interaction between potential generic producers and incumbents lead the former not to enter into the submarkets of certain active ingredients, albeit not protected by patents.

13. Recall that the data used do not cover the special NHS copayments, which also does not allow a full assessment of the phenomenon in question.

14. It is understood by direct and cross price-elasticities the percentage impact on the quantity demanded of one-percent variations of, respectively, the price of the label and the average price of substitute labels.

15. See Vilares and Pereira (2014) for a more detailed discussion of the estimates of price-sensitivity of demand in other studies.

16. In this model, given the possibility of nonlinear relationships between the variables, we adopted a polynomial formulation of the second degree for the sales volume of the pharmaceutical company, and a polynomial formulation of the third degree for the pack size. For the sake of flexibility, we considered the cross effect between the entity which assumes most of the expenditure and the classification of the drug (more details in Vilares and Pereira, 2014).

17. Recall that the price net of copayment is one of the regressors in the first stage, and therefore drugs with the same price to the consumer are being compared. Thus, a drug for which the majority payer is the patient is cheaper at retail, while a drug for which the NHS assumes the majority of the expense is overall more expensive. The patient pays the same in both cases.

18. Limitations in the database prevent, however, a full assessment of this aspect.

Structural reforms in the euro area[1]

Sandra Gomes[2]

ABSTRACT

This article is about structural reforms, *i.e.* (policy) measures with the purpose of enhancing the supply side capacity of an economy. In particular, the article is focused on the euro area. The need for structural reforms in the euro area is not new but the financial crisis made it more urgent. The article overviews the main results regarding the macroeconomic impact of these reforms in the economic literature based on general equilibrium structural models. It also addresses the issue of the relationship between structural reforms and monetary policy, in particular when nominal interest rates are at the zero lower bound.

Introduction

This article is about structural reforms, *i.e.* (policy) measures with the purpose of enhancing the supply side capacity of an economy. These types of measures have been in the policy agenda for years, namely given the lacklustre economic performance of several euro area countries when compared to other advanced economies such as the US. Despite the fact that these measures usually face strong opposition from some parts of the society, progress has been made in recent years. Still, room for improvement exists.

The article overviews the main results in the literature regarding the macroeconomic effects of supply-side structural reforms. Even though it is reasonable to conjecture that these reforms may enhance the potential growth of an economy, in the models used in this strand of the literature long-run growth is exogenously determined. As such, this literature is not yet suited to help us understand how these reforms may help in achieving a higher growth potential. Instead, structural reforms increase the supply-side capacity of an economy and thus imply a permanent increase in the level of macroeconomic variables such as output, consumption and employment.

In the following, we first motivate the need for structural reforms in the euro area. Then we overview the main results regarding the potential effects of these measures in the economic literature based on structural models. Finally, we discuss the interplay between structural reforms and monetary policy and end with some final remarks.

The need for structural reforms in the euro area

Over the last decades, the euro area has presented a weaker economic performance compared to other developed economies. For example, in the period 1980-2013, the euro area recorded an average annual growth of 1.7 per cent which compares to 2.7 per cent in the US (Chart 1).[3] As stressed by the European Commission (2010), this has been due to different developments in productivity linked to difference s in business structures, levels of investment in R&D and innovation, insufficient use of information and communications technologies, barriers to market access and a overall less dynamic business environment (see also IMF (2010)). The more sluggish economic growth has implied a persistent gap between the levels of GDP *per capita* in the euro area as compared to other developed economies, namely the US (Chart 2). Lagging GDP *per capita* levels

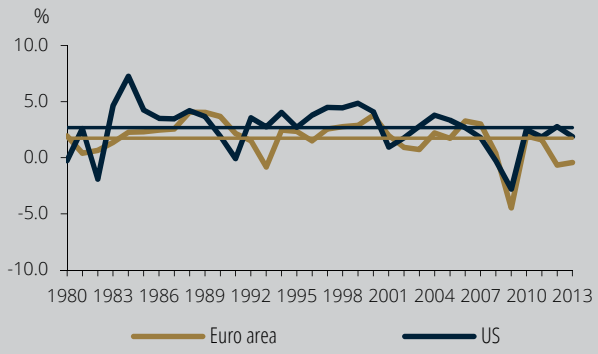
in the euro area result not only from lower productivity in the euro area but also from underutilization of labour (see IMF (2010) and Barkbu, Rahman and Valdés (2012)). For example, Mourre (2009) shows that lower labour utilization explained two-thirds of the differential in the GDP *per capita* level between the euro area and the US in 2006.[4]

While the need for action in the euro area is not new, it was made even more urgent with the recent global financial crisis (and the ensuing euro area sovereign debt crisis) which has implied permanent output losses. In fact, even though measuring (long-run) potential GDP is very difficult as this is an unobservable variable, taking European Commission estimates, potential GDP growth in the euro area as a whole declined from close to 2 per cent in the years prior to the crisis to around 0.5 per cent (Chart 3).

International organizations such as the European Commission, the International Monetary Fund (IMF) or the Organization for Economic Cooperation and Development (OECD) have frequently stressed the need to introduce structural reforms in European countries, *i.e.* policy measures with the purpose of changing the institutional framework and constraints on market functioning. By improving market functioning and increasing flexibility, these reforms enhance the supply-side capacity of an economy and consequently potential output and employment.[5] In fact, this was one of the main goals of the European Council's Lisbon Strategy for Growth and Jobs. It is also an important feature of the Europe 2020 strategy that followed it (see, for example, European Commission (2010, 2014)).

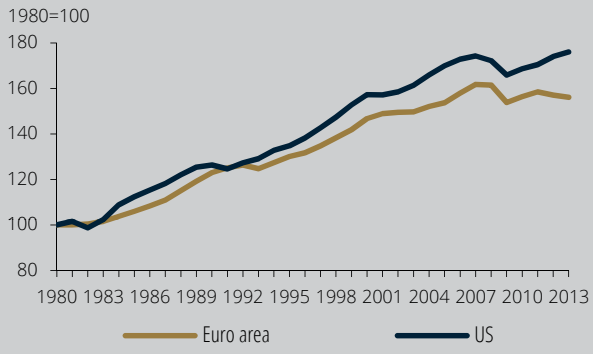
Quantifying the flexibility, or lack of, in product and labour markets is challenging. The OECD produces a set of qualitative indicators that mainly focus on the contents of legislation. Excessive regulation may be an impediment to market functioning by restricting entry, regulating price formation among other things, giving market power to firms. Regarding product markets, the indicators of Product Market Regulation (PMR) assess product market regulation through the State's intervention in markets, barriers to the establishing of companies and barriers to international trade and investment. As for the labour market, the Employment Protection Legislation (EPL)

Chart 1 • Real GDP growth



Sources: European Comission AMECO database and author's computations.
Note: Horizontal lines correspond to period averages.

Chart 2 • GDP *per capita*



Sources: European Comission AMECO database and author's computations.

indicator measures employment protection for the different types of contracts. Between 1998, 2003 and 2008, most European countries showed a favourable evolution regarding these indicators (Charts 4 to 6).[6] However, most of them also still regulate more strictly than the US. Within the euro area, sizeable country heterogeneity exists.

While structural reforms have been on the agenda for several years, its implementation often faces opposition in the society. This is mainly related to the fact that there is an uneven distribution of aggregate benefits and costs of structural reforms, both across economic sectors and across time. To enhance the probability of a successful implementation it seems crucial that reforms are compre-

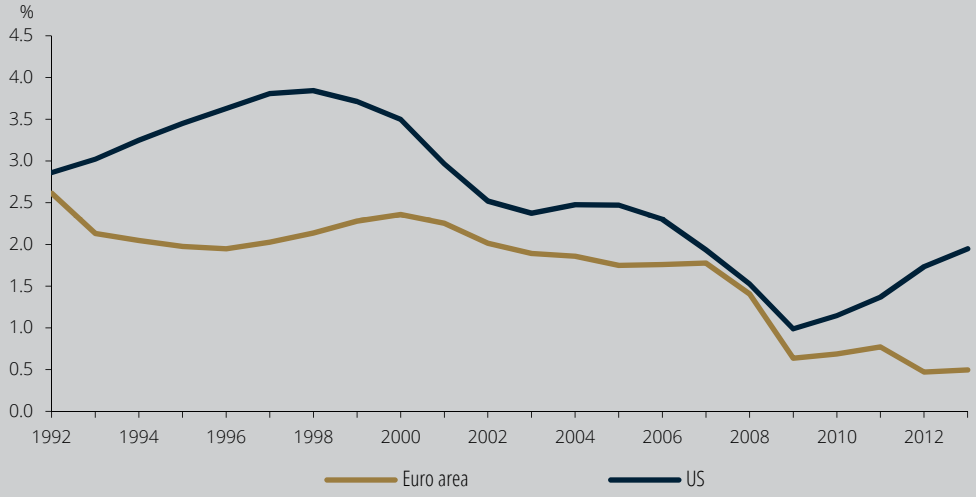


Chart 3 • Potencial GDP growth since the 1990´s

Sources: European Comission AMECO database and author's computations.

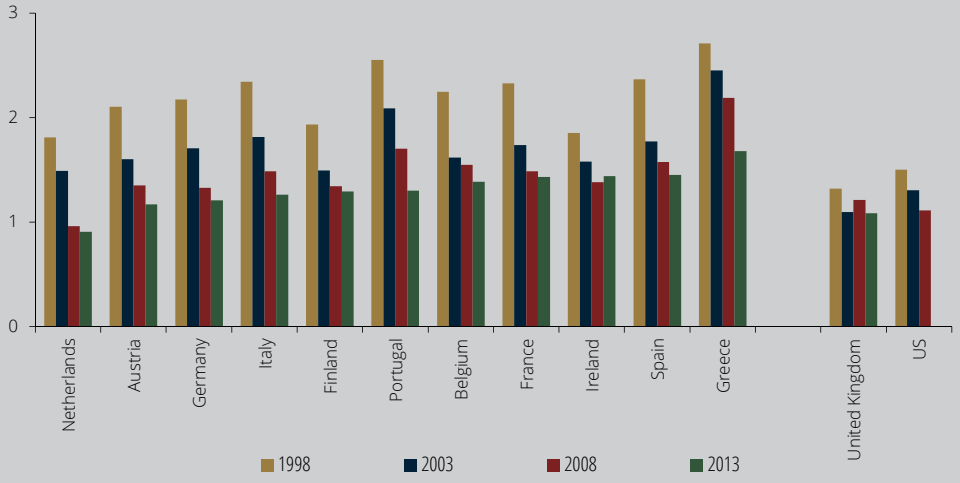


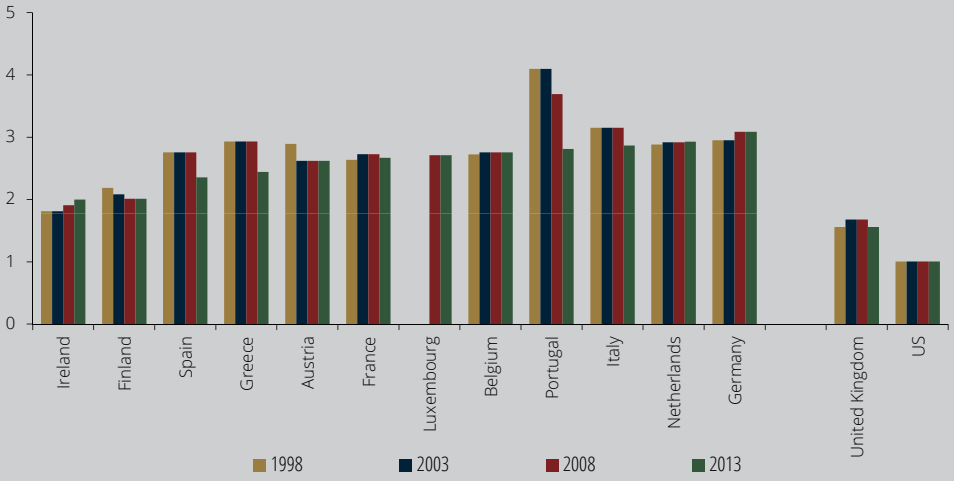
Chart 4 • Product Market Regulation Indicator

Source: OECD.

Note: The indicator ranges from 0 to 6. A higer value indicates stricter regulations.

hensive in order to increase the perception of a fair distribution of costs and benefits across society. There is also some evidence that difficult economic conditions, namely crisis periods or prolonged periods of negative or very low growth, can often foster support for the implementation of structural reform (see, for example, Drazen and Easterly (2001) or Høj, Galasso, Nicoletti and Dang (2006)). Indeed there has been a considerable effort to implement structural reforms following the recent financial (and sovereign) crisis (for a summary of reforms implemented between 2010 and 2012 in Southern European countries see Table 2 in Barkbu, Rahman and Valdés (2012)).

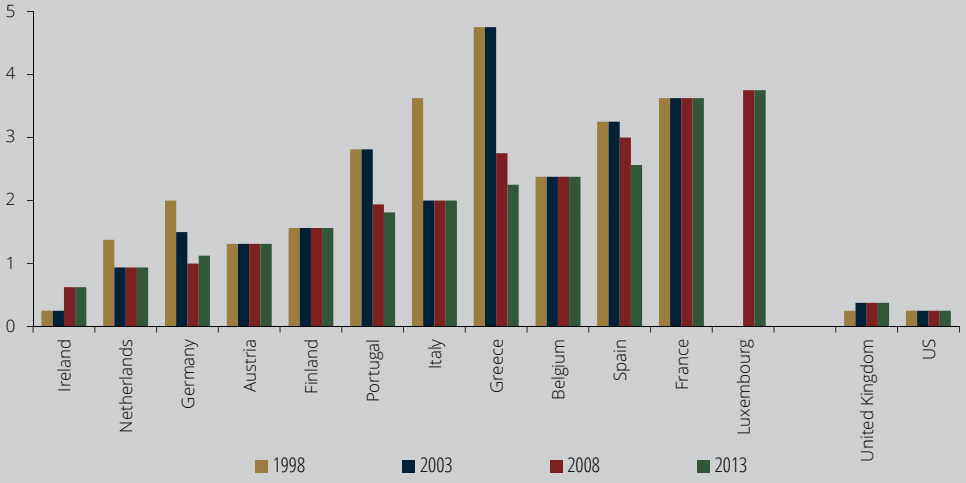
Chart 5 • Strictness of employment protection – individual and collective dismissals (regular contracts)



Source: OECD.

Note: The indicator ranges from 0 (least restrictions) to 6 (most restrictions).

Chart 6 • Strictness of employmnet protection – temporary employment



Source: OECD.

Note: The indicator ranges from 0 (least restrictions) to 6 (most restrictions).

The macroeconomic impact of structural reforms

In this section we review the evidence about the potential macroeconomic impact of structural reforms. To do so, we need to evaluate what is the effect of changing specific structural features of certain sectors of an economy, in particular changes in the degree of competition in the services and labour market. Then we need to understand how these changes transmit to the rest of the economy and how this depends on other structural characteristics of an economy. As such we have to resort to the evidence provided by structural models in general equilibrium, because partial equilibrium analysis does not allow drawing conclusions about aggregate macroeconomic effects. Thus, in this section we mostly review the results in the literature that relies on the so-called dynamic general equilibrium models.[7] Examples of these models that are used in policy and international institutions are the IMF's Global Economy Model (GEM) and Global Integrated Monetary and Fiscal Model (GIMF), the European Commission's QUEST model, the New Area Wide Model (NAWM) developed at the European Central Bank (ECB) and the Euro Area Global Economy Model (EAGLE) developed by a team of experts of the European System of Central Banks (ESCB).[8]

There is an extensive literature examining the benefits of reforms that increase price and wage setting competition in terms of key macroeconomic variables by relying in structural models with a monopolistic competitive setting both in product and labour markets. In this type of setting, there is a variety of products / types of labour which are not perfect substitutes. As a result, firms / households have some degree of market power that allows them to extract a rent in excess to what it would receive in perfectly competitive markets, *i.e.* they charge a markup over that, and restrict production / labour supplied compared to the perfectly competitive setting. Structural reforms are often framed in terms of an increase in competition in several markets, for example by reducing entry barriers. These studies thus analyse the impact of structural reforms by simulating reductions in price and wage markups (which in these models are inversely related to the elasticity of demand).[9] Although the way these reforms are implemented is quite stylized, they give us a structured framework to think about them. In the following we will highlight the main results that emerge from these studies.

The findings in the literature based on structural models typically support the idea of long-run benefits of reforms for the reforming countries, namely in the form of a higher level of GDP and employment. To illustrate the magnitude of the long run macroeconomic effects of structural reforms in the services and labour markets, we will mainly focus on the findings of Gomes, Jacquinot, Mohr and Pisani (2011, 2013).

Gomes *et al.* (2011, 2013) simulate competition-enhancing reforms in both the services and the labour markets in the EAGLE model. This is a model of the euro area within the global economy, where there are two blocs within the monetary union. In the model, the euro area is split into Germany and the rest of the euro area or alternatively to a smaller euro area economy, namely Portugal within the union. These two economies also differ in terms of the trade exposure *vis-à-vis* the rest of the euro area and the other blocs in the model (namely the US and rest of the world). We will mostly focus on the results for Germany but also report those for Portugal.

In line with what was described above, the EAGLE model relies on the monopolistic competitive setting in the services and the labour markets. Thus, these reforms are modelled as permanent changes in the markups in these markets. Before the structural reforms, markups in the euro area services and labour markets are higher than the corresponding values in the US and the markup

in the services sector is higher than that in the labour market.[10] Thus, in the euro area the degree of competition is particularly low in the services sector. In the simulations, markups are reduced gradually over a 5-year period by 15 p.p., to a permanently lower value. This change takes the degree of competition in the reforming economy close to that in the US.

A change of 15 p.p. of the markups in the German services market results in an increase of German GDP in the long run of 4.4 per cent (see Table 1). When the model is calibrated to Portugal, the same type of reform implies a 3.6 per cent increase in GDP in the long-run. The reduction in price markups in the services market leads to an expansion of supply of services. Consequently, firms then increase for inputs used in production, namely labour and capital. As such, hours worked and real wage and investment increase (see Table 1). Higher consumption is favoured by higher real wages and lower prices. Increased supply of services in the reforming country induces a depreciation of the multilateral real exchange rate and a deterioration of the multilateral terms of trade. Spillovers to the rest of the euro area (not shown in Table 1) are positive but small which is not surprising, given that services are nontradables and that the size of Germany in the world economy is relatively small. This is even more important for the case of Portugal. The simulations for Portugal also show the same kind of movement in relative prices, *i.e.* Portuguese terms of trade deteriorate and real exchange rate depreciates, though by a smaller extent. Thus exports increase by less than in Germany while imports increase by more. In the case of Portugal the exchange rate depreciation has a larger impact on households' consumption, because the latter is more biased toward imported goods. As such, consumption in Portugal increases to a lower extent than in the case of Germany.

Table 1 • Long-run macroeconomic impact in the reforming country

	Germany				Portugal			
	Services	Labour	Services and Labour	Euro area wide	Services	Labour	Services and Labour	Euro area wide
Real GDP	4.39	4.27	8.83	9.19	3.62	4.02	7.77	8.59
Consumption	1.76	3.74	5.56	6.28	1.47	3.52	5.04	6.39
Investment	7.14	3.55	10.92	11.87	4.81	2.79	7.71	9.97
Hours worked	3.07	4.63	7.83	7.91	2.55	4.59	7.26	7.40
Real wage	7.47	−0.79	6.60	7.25	6.20	-0.99	5.12	6.32
Exports	1.08	3.85	4.97	5.65	0.86	3.84	4.73	5.71
Imports	0.56	2.18	2.74	4.63	1.01	2.25	3.28	6.06
Real exchange rate	6.70	1.06	7.81	4.43	5.87	1.03	6.95	1.80
Terms of trade	0.45	1.60	2.06	1.02	0.35	1.52	1.87	0.26

Source: Gomes *et al.* (2011).

Note: The real exchange rate of a region is defined as the ratio of the foreign to the domestic CPI indices, both expressed in the domestic currency. An increase represents a depreciation. The terms of trade of a region is the ratio of import to export prices, both expressed in domestic currency. An increase corresponds to a deterioration.

The same type of reforms in the labour market implies an increase of German long-run output of 4.3 per cent (see Table 1) (4.0 per cent in Portugal). There is an increase in the labour supply which pushes down the real wage. Thus, in contrast to the services market reform of similar size, real wages decrease. Firms have a greater incentive to use labour which is now cheaper, and conse-

quently employment increases. The lower wage implies a decline in production costs to the whole economy, *i.e.* both in services and in goods markets, and favour a decline in prices thus inducing a gain in competitiveness. As such exports increase. German terms of trade deteriorate and the real exchange depreciates (though less than in the services market reform because the relative price of services which is a large share of the consumption bundle decreases to a lower extent). The increase in domestic demand, in particular consumption, together with lower real exchange rate implies an increase in imports as well.

These results are in line with other contributions in the literature that look at other euro area countries. Everaert and Schulle (2008) using the GEM find positive impact from product and labour market reforms in several macroeconomic variables when the reforming countries are either France or Belgium; Forni, Gerali and Pisani (2009), in a two-country euro area model, and Lusinyan and Muir (2013), with the GIMF model, show sizeable gains from product and labour market reforms in Italy. Similar results are documented for Greece in Maliszewski (2013) and for Portugal in Almeida, Castro and Félix (2010).

Most of these papers also show that cross-country coordination of reforms produce larger and more evenly distributed positive results from structural reforms. Results in Gomes *et al.* (2011, 2013) show an expansion of activity in each euro area region by more than 9 percent in the case of a simultaneous reduction of markups by 15 p.p. in services and labour markets (see Table 1).[11] When reforms are coordinated in the euro area, German multilateral international relative prices deteriorate to a lower extent than in the case of unilateral reforms because Germany benefits from cheaper imports as aggregate supply in the rest of the euro area increases.

While there is broad consensus that structural reforms bring benefits in the long run, the impact in the short-run the impact may be small or even negative. In fact, the full impact of these reforms only materializes over time and the actual implementation may also take time. Permanent reforms imply a permanent increase in output and thus a wealth effect that stimulates domestic demand also in the short run. However, these reforms may also imply deflationary pressures, namely in the case of (non-tradable) goods market reforms, leading to an increase in real interest rates offsets the wealth effect. The short run impact depends on the relative strength of these different effects. As argued by Andrés, Arce and Thomas (2014), in the presence of credit restrictions and long-term debt, structural reforms in the product and labour markets carried out in times of amid a deleveraging process may stimulate output and employment even in the short run, despite their deflationary effects. Product market reforms bring forward the end of deleveraging and the exit from recession by favouring a faster recovery of investment and collateral values. Also, the short run impact of reforms is also dependent on the specific design characteristics of the implemented reforms (see Gomes (2014)) and on the possibility of monetary authority to react as will be explained below.

Another idea that is well established in this literature is that coordinating reforms across sectors would not only imply greater long-run gains but could also reduce transitional costs and as such the implementation of a broad package of reforms, of course suited to the specific situation of each country, seems preferable to implementing isolated reforms in certain markets (for the macroeconomic impact of reforms coordinated in the services and labour markets see Table 1).[12] The important synergies from implementing product and labour market reforms simultaneously were highlighted by Blanchard and Giavazzi (2003) and confirmed by several other papers afterwards (see, for example, Forni, Gerali and Pisani (2009) or Gomes *et al.* (2013)). Service market deregulation, which increases the real wage, should precede labour market, as it mitigated the impact of lower real wages that are the result of the latter reforms.[13] In fact, taking once more the

results in Gomes *et al.* (2013), if services and labour market reforms are implemented simultaneously, real wages increase. The increase in labour demand more than counterbalances the increase in labour supply. The former is associated with the reform in services sector while the latter is associated with the reform in the labour market.

A large part of the models used in the papers cited above rely on a relatively stylized framework for the labour market, that only includes hours worked and can say nothing about unemployment, participation rate among other variables related to this market. There are a few contributions that rely on models with more intricate labour market blocs. The models in these papers introduce a different friction in the labour market, usually called search and matching, where usually firms and workers need to engage in costly search to find each other to fill a vacancy for a job. After matching, the worker and the firm engage in bilateral bargaining over the wage. The way reforms are modelled and transmitted to the rest of the economy is thus different. Still, in general these papers provide evidence of a beneficial impact of structural reforms, that include not only a strengthening of competition captured by a reduction in markups but also other measures like lowering hiring costs, facilitating workers re-entry in the labour market, encouraging job search, matching, and mobility, and reducing unemployment in the long-run (see IMF (2010) and Hozba and Moure (2010)).

The literature overviewed provides evidence of an increase in the level of GDP in the long-run in reforming countries. This implies that the economy will eventually grow towards a new equilibrium with a higher level of output. However, the possible link between the increase in competition and an economy's growth potential is generally not modelled. In fact, in most of the structural models used long-run growth is exogenously fixed instead of being dependent of other structural characteristics of an economy.[14]

Structural reforms and monetary policy

The supply capacity of an economy is determined by its structural characteristics. As such, monetary policy is not a substitute for structural reforms. Still, by ensuring price stability, a monetary authority is contributing to the well functioning of an economy and thus will be conducive to the smooth implementation of these reforms and the attainment of the maximum achievable (long-run) output. As long as price stability is not at stake, in the shorter-run supportive monetary policy may offset short-term headwinds from the implementation of structural reforms.

Another issue related to the interplay between monetary policy and structural reforms is that of the so-called zero lower bound on nominal interest rates. In the case interest rates reach their lower level (which may be zero or close to zero) the possibility of monetary policy accommodation is lost. On the other hand, if it is the case that structural reforms stimulate an economy and/or induce an increase in inflation, it may also happen that interest rates remain unchanged instead of raised, in this case contributing to enhance the impact of reforms.

The possibility of supply-side structural reforms help in addressing the problem at the heart of the zero lower bound, *i.e.* low demand, is well explained in a paper by Fernández-Villaverde, Guerrón-Quintana and Rubio-Ramírez (2011). The authors use a simple 2-period structural model to explain that a reduction of markups in the future generates a wealth effect that increases the desire to consume today and decreases the desire to save. This stimulates current demand. Since interest rates are at the zero lower bound, this wealth effect is not offset by monetary policy, which would have been the case in normal times, *i.e.* outside the zero lower bound.

Eggertsson, Ferrero and Raffo (2014) based on a structural model with two equally-sized countries argue that unexpected structural reforms that reduce product and labour market markups can

have short-run contractionary effects if implemented during a crisis when the zero lower bound binds because reforms have a deflationary impact that results in higher real interest rates that depress demand. Unlike Fernández-Villaverde, Guerrón-Quintana and Rubio-Ramírez (2011) they focus on an immediate reduction in markups, which seem highly unlikely as the implementation of structural reforms takes time. The short-run impact the authors find is short-lived and not very large. Gomes (2014) results show that structural reforms at the zero lower bound may have positive short run effects that are crucially dependent on the design of such reforms, namely if the reforms are implemented gradually or not and if the reforms are announced (or perceived) as temporary or permanent. In fact, the macroeconomic impact of structural reforms depend on the relative strength of the income effect associated with permanent changes in output as well as an intertemporal substitution effect whose relevance in turn is also associated with the possibility of reaction by the monetary authority.

Final remarks

Structural reforms have long been in the policy agenda. The financial crisis made the need for reforms even more urgent and since then several countries have tried to move forward. The result of these reforms is yet to be seen. Still, model based evidence show that the impact may be sizeably positive but gains accrue only gradually. The evidence surveyed that is based on structural models necessarily faces several caveats. Though allowing us to quantify the macroeconomic impact of these reforms, one should bear in mind that the results based on these models are dependent on the specific modelling choices and on the calibration of structural parameters. As all models, they are simplifications of how actual economies work and they are built to match just some of the characteristics of an economy. Thus this quantification of results is only indicative. Still, by being fully structural these models are extremely helpful to understand the mechanisms underlying the transmission of these reforms in an economy.

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Notes

1. The author thanks Isabel Horta Correia and Nuno Alves for helpful comments. All remaining errors are the author's responsibility. The opinions expressed in the article are those of the author and do not necessarily coincide with those of Banco de Portugal or the Eurosystem. Any errors and omissions are the sole responsibility of the author.

2. Banco de Portugal, Economics and Research Department.

3. If one considers the 1980-2007 period, to exclude the financial crisis period from the sample, the euro area recorded an average growth of 2.2 per cent compared with 3.0 per cent in the US.

4. Mourre (2009) considers the euro area with 12 Member-States.

5. Structural reforms may also include reforms to the public finances or the financial sector. These are however out of the scope of this article.

6. The PMR indicators are an overall measure of the institutional restrictions placed on companies in terms of setting prices or their ability to freely determine their strategy. They range from 0 to 6, with a higher value indicating stricter regulations. The EPL indicators are synthetic indicators of the strictness of regulation on dismissals and the use of temporary contracts. They range from 0 (least restrictions) to 6 (most restrictions).

7. These studies in general do not consider the budgetary costs of these reforms, as they are hard to quantify.

8. For a detailed description of the theoretical framework of the GEM see Bayoumi (2004), Laxton (2008) or Pesenti (2008); of the GIMF model, see Laxton, Mursula, Kumhof and Muir (2010); of the QUEST model see Ratto, Roeger and in't Veld (2008); of the NAWM, see Coenen *et al.* (2008a, 2008b); and of the EAGLE model see Gomes, Jacquinot and Pisani (2012).

9. Estimates of these markups in general find higher markups, thus a lower degree of competition in services markets compared to manufacturing (which is more exposed to international competition) as well as in labour markets. The estimates present a considerable heterogeneity across countries.

10. Specifically, the (net) markup in Germany and the rest of the euro area is set to 50, 30, 20 per cent in the services, labour and manufacturing sectors, respectively. In the US the corresponding markups are set to 28, 16 and 20 per cent. These values are in line with those used in other existing studies (see for example Bayoumi, Laxton and Pesenti (2004) and Everaert and Schule (2008)) and empirical evidence (see Jean and Nicoletti (2002), Oliveira Martins, Scarpetta and Pilat (1996) and Oliveira Martins and Scarpetta (1999)).

11. See also for example Everaert and Schulle (2008) or Forni, Gerali and Pisani (2009).

12. Note however that these models generally do not include an explicit interaction between the levels of competition in different markets.

13. Measures to stimulate aggregate demand may also be useful to offset short-term costs of supply-side reforms. However, several European countries may not have the necessary fiscal room for maneuver.

14. Using the European Commission QUEST model with semi-endogenous growth, Varga, Roeger and in't Veld (2013) provide evidence of significant long-run economic gains of competition enhancing structural reforms Southern European countries (Italy, Spain, Portugal and Greece). In this model used, R&D generates endogenous productivity growth by creating new varieties of products.