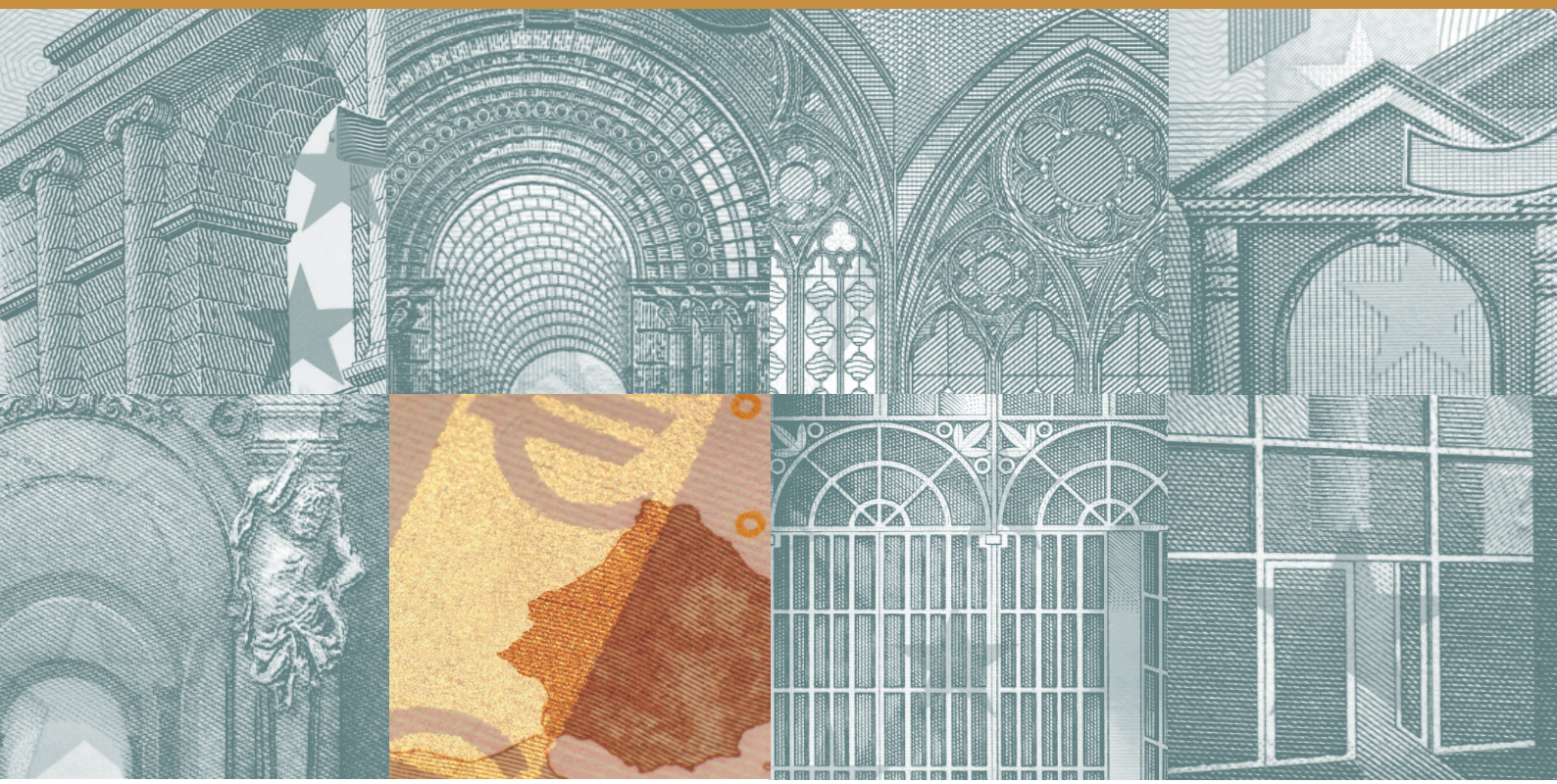

FINANCIAL STABILITY REPORT

May 2012

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EUROSYSTEM

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FINANCIAL SYSTEM STABILITY

I

OVERVIEW

The evolution of the Portuguese economy in 2011 was marked by the request for international economic and financial assistance at the beginning of April. This request was unavoidable following the progressive deterioration of access conditions to the international funding markets by resident public and private, financial and non-financial sectors, with sovereign risk prevailing over the assessment of individual risk on agents. It should be remembered that this deterioration occurred in the context of a resurgence of the sovereign debt crisis in the euro area, with an increase in international investors concerns over the sustainability of the public finances and the intertemporal dynamic of Portuguese external debt, two latent fragilities which had been building up for over a decade. The accumulation of external debt – enabled by Portugal's participation in the euro area – derived from the profoundly inadequate behaviour of private and public entities *vis-à-vis* the requirements of the regime resulting from the adoption of the single currency.

The Economic and Financial Assistance Programme (Programme) agreed with the European Union (EU), International Monetary Fund (IMF) and European Central Bank (ECB) has three fundamental elements. Firstly, the implementation of structural measures, enabling the gradual correction of the imbalances in the public finances and external accounts and guaranteeing the intertemporal solvency of various institutional sectors, particularly of the general government. Secondly, the implementation of structural reforms aiming at the promotion of the economy's growth potential, job creation and competitiveness. Finally and as regards the financial system and the banking system, in particular, the Programme establishes a set of principles and objectives which will, over the medium term, contribute towards a greater balance in terms of funding sources and, in general, a greater resilience to shocks[1]. The Programme contributes to ensure the financing of the Portuguese economy over the period required for the design, legislative enactment and effective implementation of such reforms. Accordingly, the Programme allowed avoiding a situation in which the inevitable economic adjustment would be abrupt and disorderly, with adverse and lasting implications on a financial, economic and social level.

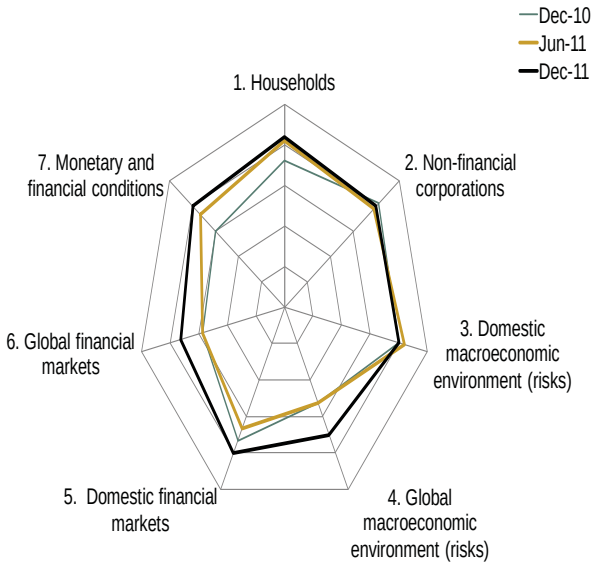
In 2011, the Portuguese banking system activity was performed in a particularly adverse and demanding environment, deriving from the scarcity of market funding, intensification of the sovereign debt crisis in the euro area and increased materialisation of credit risk in domestic activity (Chart 1.1). The evolution of Portuguese banks' activity, in this period, is also set against the ongoing deleveraging process and the reinforcement of solvency levels. The profitability of the banking system deteriorated significantly in 2011, reflecting higher levels of impairment on credit and the financial assets portfolio, in which several non-recurring events played an important role. In 2012, banking system profitability will depend on the resilience of the structural elements of gross income (net interest income and commissions), in a context of low level of interbank interest rates and of a decline in economic activity, as a new increase in provisions and impairments for credit is expected. In turn, the evolution in the financial assets portfolio will reflect the situation in the international financial markets, with liabilities management operations, namely the repurchase of own bonds in the secondary market, potentially allowing for a positive contribution to the profitability of the banking system.

Over the last quarters, there was a significant deterioration in the global macroeconomic and financial environment, reflecting both the economic slowdown in the euro area and deteriorating expectations of future growth, increased uncertainty and hikes in risk premia (Chart 1.2). The crisis in international

1 See "Box 1.1 *Implementation of the Economic and Financial Assistance Programme: the financial stability pillar*", of this Report.

Chart 1.1

GLOBAL EVOLUTION OF THE MACROECONOMIC AND FINANCIAL ENVIRONMENT OF THE PORTUGUESE BANKING SYSTEM

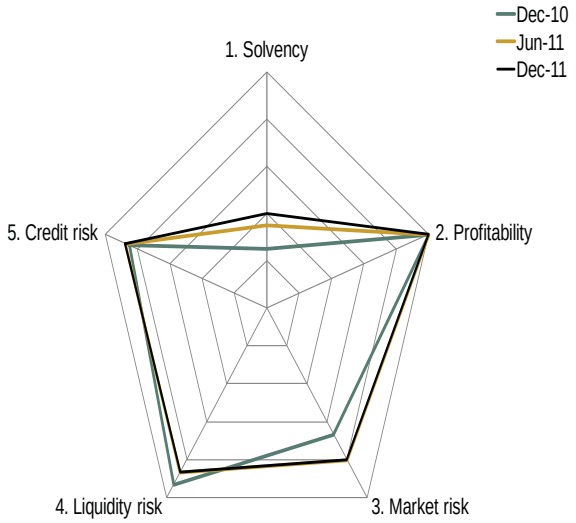


Sources: Barclays Capital, *Confidencial Imobiliário*, European Commission, Eurostat, IMF, iBoxx, *INE*, Thomson Reuters and Banco de Portugal.

Notes: A value away from the center implies higher risks or tighter monetary and financial conditions. For more details see "Box 1.1 *Financial Stability Map*", Banco de Portugal, *Financial Stability Report* - November 2011.

Chart 1.2

GLOBAL EVOLUTION OF RISKS IN THE PORTUGUESE BANKING SYSTEM



Source: Banco de Portugal.

Note: A value away from the center implies higher risks. For more details see "Box 1.1 *Financial Stability Map*", Banco de Portugal, *Financial Estability Report* - November 2011.

financial markets and particularly the sovereign debt crisis in the euro area exposed a series of pre-existing vulnerabilities and sources of risk in various European countries. Such vulnerabilities consisted of an overvalued property sector (which, notwithstanding some correction, is still the case in several markets), structural imbalances of the public finances, high levels of private sector indebtedness and/or low potential economic growth. The correction of such imbalances is a long and complex process, all the more so as it is taking place simultaneously in a significant number of countries and therefore negatively conditioning the Portuguese economy's external environment. The main risks, on an international level, are associated with the potential worsening of the sovereign debt crisis in the euro area and a worse than expected level of economic performance by Portugal's main trading partners. This could derive both from the fact that the need for fiscal consolidation affects a significant number of countries and the potential excessive deleveraging in the banking sector in several of these countries, owing to increased risk aversion and changes to the financial intermediation model. Such risks interact with each other and may also be reinforced if authorities' interventions are disjointed and do not enable the most deep-rooted causes of the current crisis situation to be corrected. The possibility of contagion still remains at high levels and exacerbates both liquidity and market risks. The ECB Governing Council has, accordingly, adopted a series of non-conventional monetary policy measures to facilitate the regular funding of the banking system in the euro area and eliminate the risk of a systemic liquidity crisis in the euro area. These developments have also affected domestic financial markets and particularly the banks. Together with the perception of an increase in credit risk in the economy and factors associated with their own funding difficulties, in addition to the need to achieve a stable medium term balance sheet structure, the banks have been more demanding in their loan criteria, either as regards the cost of loans or other access conditions thereto. The monetary and financial conditions of the Portuguese economy have, therefore, become more demanding, particularly affecting the private sector.

The recessionary environment which marked 2011 and the start of 2012 translated into a considerable deterioration of the financial situation of the non-financial private sector and consequent materialisation of credit risk. The evolution of the financial situation of households was marked by a reduction of their disposable income, associated with lower levels of compensation and social payments and a worsening fiscal burden together with a slight reduction of the savings rate. In the case of non-financial corporations, reference should be made to the reduction of savings and a drop in borrowing requirements for investment in the context of a major deterioration of economic activity. As a result, the default ratio and the annual flow of new loans in default reached their highest level since the inception of the euro area, with expectations that the situation will tend to intensify over the course of 2012. Reference should also be made to the fact that while the ratio of non-performing loans to households for house purchases has been growing relatively gradually, there were major increases in non-performing loans to households for consumption and other purposes and loans to non-financial corporations. As regards non-financial corporations, the deterioration of credit quality indicators was transversal to all sectors of activity, albeit particularly visible in the "construction", "real estate" and "wholesale and retail trade and repair of motor vehicles and motorcycles" sectors. There was also an across-the-board increase by corporate dimension and exposure level, with defaults continuing to be more frequent and significant in the case of loans for smaller amounts and in the case of smaller firms. The ongoing adjustment process in the Portuguese economy is likely to continue to entail a slowdown of economic activity over the course of 2012 and thus an increase in unemployment and in the number of companies with bankruptcy and insolvency proceedings. A greater level of materialisation of credit risk should, therefore, be expected. This suggests a need for banks to continue increasing impairment levels on their credit portfolios.

Together with the worsening of the materialisation of credit risk, a growing decline in bank lending was observed from the second half of 2011. An analysis of a broader aggregate such as total credit to the non-financial private sector indicates, however, that the decline of credit to the non-financial

private sector was less intense and occurred more gradually. This was due to a positive contribution of the financing from other sectors, in particular from non-residents, which maintained significant credit flows (loans and securities) to private sector non-financial corporations. Although the deceleration trajectory regarding bank lending was across-the-board to all segments, it was especially relevant in the case of loans to households for consumption and other purposes. In the case of loans to non-financial corporations, there is a duality between private and public companies, with the former recording progressively more negative growth rates, while the latter exhibited significantly positive growth rates. Likewise, there was a high level of heterogeneity in sectoral terms (with particularly marked falls in the "wholesale and retail trade and repair of motor vehicles and motorcycles" sector) and in terms of dimension (with smaller companies posting the most negative growth rates in the most recent period). Such a context reinforces the need for the financial restructuring of public companies and general government in general, to avoid a situation in which their financing represents an obstacle to the funding or more productive firms in the private sector, which are economically viable over the medium and long term. Such an obstacle could occur through the direct mobilisation of banking liquidity and/or by the accumulation of debt towards private sector entities which will, accordingly, be forced to obtain funding from external sources (which is currently more difficult and costly). The restructuring of the public sector will, therefore, not only facilitate the banking system's orderly deleveraging process but will also benefit economic competitiveness.

The significant increase in customer resources in the form of deposits has enabled the structural liquidity position of the Portuguese banking system to be improved. This was particularly the case of domestic institutions, in a context of virtual absence of access to the international wholesale debt markets. In parallel, the ECB Governing Council decisions of 8 December 2011, namely the two long-term refinancing operations (3 years) at a fixed-rate with full allotment, in addition to the widening of the set of assets eligible as collateral for monetary policy operations, also contributed favourably to mitigating liquidity risk in the Portuguese banking system. These measures translated into a significant improvement of liquidity gaps, particularly in maturities up to 1 year. There continues, however, to be substantial risks to Portuguese banks' liquidity management. On the one hand, in a context of persistent tensions in the international financial markets, any additional rating downgrades on domestic issuers could have a negative impact on the value of asset pools guaranteeing the lending operations in the sphere of monetary policy execution. In any event, the reinforcement of eligible assets pools through bank lending portfolios is a risk mitigating factor, given that such assets are not sensitive to rating changes. On the other hand, the persistence of doubts regarding the capacity to resolve the sovereign debt crisis in the euro area and, in particular, the possible intensification of contagion to other countries may translate into a reinforcement of capital outflows associated with non-residents' deposits. Lastly, it should be remembered that the adoption of more demanding liquidity management rules, in the sphere of future Community regulations on liquidity requirements, represents an additional medium term challenge for the banks in general, including Portuguese banks.

Portuguese banks made major efforts to reinforce their solvency levels in 2011, to ensure compliance with the minimum Core Tier 1 ratio of 9 per cent, defined by the Economic and Financial Assistance Programme for the end of the year. In December, the Portuguese banking system's average Core Tier 1 ratio was 9.6 per cent (8.7 per cent including the BPN bank), representing an increase of 0.9 and 1.5 p.p. over June 2011 and December 2010, respectively. This improvement is explained both by the decline of risk-weighted assets, a natural outcome in the context of the current deleveraging process, and by the increase in core own funds. The own bonds repurchase operations and the adoption of a conservative dividends distribution policy were the main forms found by the banks to reinforce their own funds. Reference should also be made to capital increases by two of the major Portuguese banking groups, in the form of a public exchange of subordinated debt securities for ordinary shares.

The reinforcement of solvency levels remains a priority for Portuguese banks, which will have to

comply with highly ambitious objectives, on a domestic and international level, in 2012. At the end of June, the four major Portuguese banking groups should ensure their compliance with the prudential requirements defined at the European Council meeting of 26 October, as proposed by the European Banking Authority (EBA). In addition to the EBA's assessment of the capital needs to establish the temporary capital buffer (sovereign buffer) and those deriving from the difference between the Portuguese and EBA definitions of the Core Tier 1 ratio, these banks must recognise in their regulatory capital the impact of the partial transfer of the banks' pension funds to the Portuguese Social Security System and the impact of the results of the special inspections on the quality of banks' assets (Special Inspections Programme - SIP). In the case of the capitalisation needs deriving from these four challenges[2], reference should be made to the major contribution of the sovereign buffer, estimated at EUR 3.7 billion. According to information available at the end of May, three of the four major banks will request public support to achieve this objective (one of which in the form of shareholder support). The reinforcement of Portuguese banks' capital ratios is of the essence, given the adverse prospects for the Portuguese economy in the near future, leading to a potential intensification of the materialisation of credit and market risk. It may also provide the banks with additional flexibility by reducing capital restrictions on the development of their activity. These restrictions shall have contributed to the marked deceleration of lending to non-financial corporations over the last few quarters. Lastly and in more general terms, it will add to the banks' capacity to ensure the stability of the financial system, given the foreseeable paradigm change in financial markets on an international level and the unprecedented risks and challenges to be faced in current times.

As already referred to, one of the Portuguese economy's adjustment vectors involves the need to achieve the intertemporal solvency conditions of the various institutional sectors, which will imply a reduction of high debt levels. This adjustment involves the adoption of macroeconomic policies designed to increase public entities' savings and eliminate the main impediments to the economy's potential growth (with reforms of the justice system, competition, regulation of non-tradables sectors, labour market and rental market). It will also be associated with a macroprudential policy designed to reduce bank leveraging, namely greater capitalisation, commensurate with a stable medium term funding position. In such a context, Portuguese banks started an orderly and gradual deleveraging process, designed to achieve medium term convergence with a more sustainable funding structure, less sensitive to changes in the risk perceptions of international investors. This process is continuously monitored by Banco de Portugal, inter alia through the analysis of banks' funding and capital plans. Underlying such plans is a set of principles, including an indicative credit to deposits ratio of 120 per cent at the end of 2014. The essential principle involves the need for a gradual and orderly deleveraging process of the banking system which does not compromise but rather redirects funding towards the economy's more competitive sectors and firms. The banks' deleveraging strategies should, therefore, concentrate on the sale of non-strategic assets, on increasing the recourse to stable funding (notably in the form of customer resources) and on capital increases.

Available information on the evolution of the activity of the main Portuguese banks shows that they have been globally successful in furthering the established objectives. Globally, the adjustment of the credit to deposits ratio has essentially been based on significant growth of customer deposits, with reference to the fact that, on this level, the Portuguese case is unparalleled vis-à-vis other countries with external financial assistance programmes. Notwithstanding the fact that an important part of recent deposits' growth has been based on reallocations of the financial assets portfolio of resident agents

2 It should be noted that the prudential impact of these operations will be reflected in institutions' ratios in June 2012, although the accounting effect was already visible in December 2011. This affected the banks' leverage ratios (between shareholders' equity and assets) on that date, which conditioned the global assessment of solvency. A more detailed analysis of these operations is set out in Boxes 4.2 "*Accounting and prudential impacts of the partial transfer of banking sector pension funds to the Social Security system*" and 4.3 "*The special inspection programme for the financial system (SIP)*", of this Report.

(notably households), which will, as such, tend to progressively dissipate, it nevertheless represents a proof of confidence in the Portuguese banking system, which, to a certain extent, also benefits from the significant growth of deposits from the international activities of the major Portuguese banking groups. Such developments have naturally had positive effects in terms of reducing liquidity risk. On the other hand, the adjustment of the credit portfolio has been relatively in line with the evolution of this variable's determinants for the various segments of domestic activity – albeit with a high level of heterogeneity on a sectoral level and by corporate dimension – with the adjustment of banks' balance sheets having also benefited from a significant volume of credit disposals. These operations, which do not affect the financing of the Portuguese economy, comprised sales of the domestic credit to companies portfolio (essentially sales of commercial paper) and, especially, the credit of external subsidiaries and branches. In prospective terms, reference should be made to the fact that the core adjustment will involve the segment of households for house purchase, whereas lending to private non-financial corporations should have reached its minimum levels already in 2012.

Notwithstanding the possibility that demand for credit may not be met in several situations, the most important aspect is that this should not affect the most productive firms and those with the highest growth potential, even if they are affected by occasional liquidity difficulties. In line with the dispositions of the Programme, it should be possible to balance the need for the gradual deleveraging of the economy and the funding of the most productive, dynamic companies, either for the purposes of working capital or to promote investment. Reference should also be made, in this context, to the need for the firms themselves to engage in adjustment processes in order to diversify their markets – notably in the case of external markets – and to reinforce their respective financial structure, with less recourse to debt financing.

Globally, the main macroeconomic and financial risks to be faced by the Portuguese economy in the near future are, on the one hand, related to its capacity to effectively implement the measures required to comply with the Programme and, on the other, the possibility that the external environment may be worse than assumed in the Programme, both in economic as in financial terms, including the possibility of contagion affects arising from adverse developments on an international level. Over the longer term, there is also the risk that even if the Programme's quantitative objectives are achieved, the structural reforms may not be effectively implemented, *i.e.*, failing to set an incentives framework for economic agents leading to higher sustainable growth.

Given the systemic nature of this financial crisis, risk assessment has necessarily increased in complexity. In addition to the idiosyncratic factors conditioning the banking sector and the Portuguese economy in general, there is also a very major risk of contagion of adverse developments on an international level, with highly significant potential effects on the materialisation of market and liquidity risk. These risks are still at very high levels and were exacerbated in the recent past by the reinforcement of the connections between the banking system and sovereign risk in a growing number of countries in the euro area. Given the prevailing uncertainty in the international environment and the scope of the necessary adjustments on a domestic level, there are significant risks surrounding the baseline scenario of the Portuguese economy in the near future. In such a context, euro area Member States have already declared they stand ready to support Portugal until market access is regained provided the authorities persevere with strict Programme implementation. Nevertheless, it will be crucial for resident economic agents to fully comprehend that the reforms, both those which have already been implemented and those expected to be implemented in the future, reflect, above all, an absolute need to restore various fundamental economic and financial balances, from an intertemporal perspective, and not just a mere external imposition. Together with the necessary effort to share the burden of adjustment in a socially equitable manner, this agreement on the objectives and measures adopted will help to overcome the expectable resistance of several economic agents, contributing finally to improve economic welfare over the long term.

MAIN INDICATORS | PER CENT, END-OF-PERIOD FIGURES — TO BE CONTINUED

	2005	2006	2007	2008	2009	2010	2011
Macroeconomic and financial indicators							
Oil price (USD brent; y-o-y rate of change)	46.0	1.2	58.9	-60.4	108.9	19.4	15.3
Key interest rates - Monetary policy							
US	4.25	5.25	4.25	0.25	0.25	0.25	0.25
Euro area	2.25	3.50	4.00	2.50	1.00	1.00	1.00
3-month Euribor	2.5	3.7	4.7	2.9	0.7	1.0	1.4
Yields on (10-year) Government bonds							
US	4.4	4.7	4.0	2.3	3.8	3.3	1.9
Euro area	3.3	3.9	4.3	2.9	3.4	2.9	1.8
Portugal	3.4	4.1	4.5	4.0	4.1	6.7	13.4
Stock markets (annual rate of change)							
S&P 500	3.0	13.6	3.5	-38.5	23.5	12.8	0.0
Dow Jones Euro Stoxx	23.0	20.3	4.9	-46.3	23.4	-0.1	-17.7
PSI Geral	17.2	33.3	18.3	-49.7	40.0	-6.2	-20.4
PSI Financial Services	24.4	34.8	4.9	-62.9	14.7	-29.9	-62.4
Financial situation of the non-financial private sector							
Households							
Indebtedness (financial debt)[a]							
As a percentage of GDP	82	86	89	92	95	94	92
As a percentage of disposable income	115	123	127	128	131	128	126
Loans granted by resident financial institutions[b]							
Annual rate of change	10.7	9.4	8.2	4.7	2.1	1.6	-2.7
of which:							
House purchase	11.1	9.9	8.5	4.2	2.6	2.4	-1.5
Consumption and other purposes	9.4	7.7	7.5	6.4	0.2	-1.1	-7.2
Net lending (+) / borrowing (-)[c]							
As a percentage of GDP	2.9	1.5	1.0	2.0	4.8	4.6	4.2
As a percentage of disposable income	4.0	2.1	1.5	2.8	6.6	6.3	5.7
Current saving[c]							
As a percentage of GDP	7.2	5.7	4.9	5.1	7.9	7.5	7.1
As a percentage of disposable income[d]	10.0	8.0	7.0	7.1	10.9	10.2	9.7
Investment in real assets[c]							
As a percentage of GDP	5.8	4.6	4.1	4.1	3.5	3.2	3.3
Non-financial corporations							
Total debt[e]							
As a percentage of GDP	111	114	122	132	138	138	139
Annual rate of change	5.7	6.9	12.7	10.5	3.5	2.1	0.2
Financial debt[f]							
As a percentage of GDP	103	106	114	124	130	129	130
Loans granted by resident financial institutions[b]							
Annual rate of change	4.6	5.9	13.1	11.1	2.9	0.0	-2.9
Net lending (+) / borrowing (-)[c]							
As a percentage of GDP	-5.6	-6.6	-8.3	-11.4	-6.8	-5.3	-4.8
Current saving[c]							
As a percentage of GDP	6.6	6.2	5.8	3.4	5.3	6.4	4.9
Investment in real assets[c]							
As a percentage of GDP	13.3	13.6	15.0	15.9	13.0	11.8	10.7

Notes: y-o-y - year-on-year; n.a. not available. **(a)** Financial debt is the sum of loans and debt securities issued by the sector. **(b)** Loans granted by monetary financial institutions and other financial intermediaries. The December 2010 values were adjusted regarding the sale of a loan portfolio by *BPN* to *Parvalorem*. **(c)** Net lending/borrowing, savings and investment ratios to GDP up to 2008 (inclusive) use Annual National Accounts; from 2009 onwards those ratios are based on *INE*'s Quarterly National Accounts by institutional sector. Investment in real assets corresponds to the sum of GFCF, acquisitions less disposals of non-produced non-financial assets (mainly land). **(d)** Disposable income adjusted by the change in net equity of households in pension funds. **(e)** It includes loans granted to non-financial corporations by other institutional sectors; commercial paper and bonds issued by non-financial corporations held by other sectors and trade credits received from other sectors. **(f)** Corresponds to total debt excluding trade credits received from other sectors.

MAIN INDICATORS | PER CENT, END-OF-PERIOD FIGURES — TO BE CONTINUED

	2005	2006	2007	2007*	2008*	2009*	2010*	2011*
Activity and profitability								
Annual rate of change of total assets	12.3	10.5	11.7	-	7.5	7.1	4.1	-3.5
ROE - Return on equity[g]	19.4	20.6	18.0	17.7	5.6	7.6	7.8	-6.3
ROE - Return on equity - adjusted[g],[h]		18.8			10.1	8.8	7.7	-5.7
ROA - Return on assets[g]	1.03	1.30	1.18	1.15	0.34	0.45	0.48	-0.37
ROA - Return on assets - adjusted[g],[h]		1.18			0.62	0.58	0.51	-0.35
Net interest income (as a percentage of average assets)	1.86	1.89	1.88	1.95	1.92	1.62	1.49	1.52
Income from services and commissions (net, as a percentage of average assets)	0.77	0.78	0.76	0.77	0.73	0.70	0.72	0.71
Cost to income ratio	58.3	53.4	53.7	54.5	55.6	56.8	57.6	61.5
International exposure (for domestic banks):								
Share of external assets in total assets[i]	27.6	30.0	26.8	27.1	28.9	29.3	27.8	25.3
of which:								
Local assets denominated in local currency	6.4	6.7	8.0	7.9	8.2	8.4	8.6	8.2
International assets by counterparty sector:								
Banking sector	12.7	14.0	8.2	8.2	6.3	5.4	4.0	3.1
Non-bank sector	8.5	9.3	10.7	10.9	14.4	15.5	15.2	14.0
Capital adequacy[j]								
Overall capital adequacy ratio	11.3	10.9	10.0	10.4	9.4	10.5	10.3	9.8
Overall capital adequacy ratio - adjusted[l]	-	-	-	-	10.4	11.6	11.1	10.6
Tier-1 ratio	7.1	7.7	6.5	7.0	6.6	7.8	8.3	8.6
Tier-1 ratio - adjusted[l]	-	-	-	-	7.5	8.9	9.1	9.4
Core Tier-1 ratio	-	-	-	-	-	6.9	7.4	8.7
Core Tier-1 ratio - adjusted[l]	-	-	-	-	-	7.9	8.1	9.6
Market risk								
Coverage ratio of the pension funds of bank employees (as a percentage of regulatory capital)	1.2	5.3	5.1	4.5	1.2	3.9	2.7	3.0
Liquidity risk								
Credit (including securitised and non derecognised credits) net of impairments – customer resources ratio	143.5	152.1	161.4	160.1	160.3	161.5	157.8	139.9
Liquidity gap[m]								
up to 3 months	-0.9	-1.5	-2.5	-1.5	-1.9			
up to 3 months - Instruction No. 13/2009					-7.6	-2.9	-3.9	-2.4
up to 1 year	-8.2	-8.9	-11.4	-9.9	-7.0			
up to 1 year - Instruction No. 13/2009					-15.0	-12.4	-11.5	-9.2
For domestic banks								
Credit (including securitised and non derecognised credits) net of impairments – customer resources ratio	134.8	142.6	152.7	147.1	145.7	147.9	143.2	128.0
Liquidity gap[m]								
up to 3 months	-0.7	-0.9	-2.1	-1.4	-2.6			
up to 3 months - Instruction No. 13/2009					-6.1	-3.0	-2.2	-2.5
up to 1 year	-7.4	-8.9	-10.1	-9.0	-7.5			
up to 1 year - Instruction No. 13/2009					-12.9	-12.0	-9.1	-8.2
Credit risk								
Loans granted by resident financial institutions to the non-financial private sector[b]								
Annual rate of change	8.0	7.8	10.3	10.3	7.2	2.2	1.5	-2.0
Overdue and doubtful loans of households[n]								
As a percentage of loans to households	1.7	1.6	1.6	1.6	2.0	2.5	2.6	3.1
Overdue and doubtful loans of non-financial corporations[n]								
As a percentage of loans to non-financial corporations	1.7	1.5	1.4	1.4	2.2	3.9	4.1	6.0
Annual flow of new loans overdue and doubtful loans[o]								
As a percentage of bank loans adjusted for securitisations								
Households	0.2	0.3	0.4	0.4	0.7	0.6	0.5	0.6
Adjusted for loan sales to the non-financial sector	0.3	0.4	0.4	0.4	0.7	0.6	0.5	0.6
Non-financial corporations	0.6	0.4	0.6	0.6	1.2	1.9	1.3	2.2
Adjusted for loan sales to the non-financial sector	0.6	0.5	0.6	0.6	1.3	2.1	1.6	2.3

MAIN INDICATORS | PER CENT, END-OF-PERIOD FIGURES — CONTINUED

	2005	2006	2007	2007*	2008*	2009*	2010*	2011*
Non-performing loans ratio[p],[q]					3.6	5.1	5.2	7.5
Resident non-financial private sector, *of which*					4.1	5.6	5.6	8.0
Resident households, *of which*					4.9	5.5	5.4	6.5
Housing					4.4	4.6	4.3	5.0
Consumption and other purposes					7.0	9.5	10.4	13.5
Non-financial corporations					3.4	5.6	5.9	9.7
Resident general government					1.0	0.7	0.8	2.4
Non-residents					2.0	3.8	4.4	6.7
Overdue and doubtful loans ratio[p],[r]					2.0	3.2	3.4	4.7
Resident non-financial private sector, *of which*					2.2	3.5	3.8	5.2
Resident households, of which					2.2	3.0	3.4	4.1
Housing					1.7	2.2	2.4	2.7
Consumption and other purposes					4.5	6.7	8.1	10.9
Non-financial corporations					2.2	4.0	4.2	6.3
Resident general government					1.0	0.5	0.7	1.6
Non-residents					1.3	2.3	2.7	3.4
Provisions for credit overdue and doubtful debts and/or impairments for credit								
As a percentage of total loans[p]					2.6	3.3	3.2	4.3
Resident non-financial private sector, *of which*					2.7	3.3	3.4	4.5
Resident households, *of which*					2.0	2.3	2.5	3.0
Housing					1.4	1.4	1.5	1.6
Consumption and other purposes					4.8	6.3	7.7	10.1
Non-financial corporations					3.5	4.2	4.2	6.2
Resident general government					0.1	0.1	0.3	0.3
Non-residents					1.5	3.2	3.2	2.5
As a percentage of non-performing loans[p],[q]					73.4	65.2	61.5	56.7
Resident non-financial private sector, *of which*					66.6	59.0	59.7	56.4
Resident households, *of which*					41.6	41.7	47.3	47.1
Housing					32.3	30.9	33.7	32.2
Consumption and other purposes					68.4	65.6	74.3	74.4
Non-financial corporations					102.8	75.5	70.6	63.3
Resident general government					13.3	19.1	36.6	13.7
Non-residents					133.1	102.1	69.8	58.2
As a percentage of overdue and doubtful loans[p],[r]					132.0	103.8	92.6	90.8
Resident non-financial private sector, *of which*					122.3	92.9	88.1	87.0
Resident households, *of which*					90.5	76.5	74.3	74.6
Housing					81.6	64.9	59.7	60.0
Consumption and other purposes					104.9	93.1	94.9	92.1
Non-financial corporations					157.9	106.3	100.3	97.0
Resident general government					14.0	25.0	42.8	21.0
Non-residents					207.6	169.2	115.4	114.8

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

Notes: * Series break related to the widening of the group of banking institutions under analysis. Breaks in the series do not apply to indicators based on Monetary and Financial Statistics, which consider resident banking institutions. **(g)** ROE and ROA indicators are based on Income before taxes and minority interests, considering average values for the period for the stocks variables. **(h)** The adjusted profitability indicators in 2006 are obtained after deducting from profit and loss account the impact of the restructuring of participating interests in companies (namely in the insurance sector) in one of the major banking groups considered in the analysis. In turn, the adjusted indicators from 2008 to 2010 are obtained excluding *BPN* and *BPP* banks from the set of institutions under analysis. **(i)** Comparable figures from 2004 to 2007 are based on estimates on total assets. **(j)** From 2008, all analysed institutions have computed the capital adequacy ratio in accordance with Basel II criteria, which mainly affected the determination of capital requirements. **(l)** From 2008 indicators are obtained after excluding *BPN* and *BPP*. **(m)** Up to 2008, this indicator is computed using information from Instruction No 1/2000 and from then on from Instruction No 13/2009, which are applicable only to financial institutions which collect deposits. **(n)** Amounts outstanding of credit overdue for at least 30 days and doubtful loans recorded in the balance sheet of resident MFIs as a percentage of the loans balance adjusted for securitisation. Values adjusted regarding the sale of a loan portfolio by *BPN* to *Parvalorem* as well as the reclassification of *Refer*, *Metro de Lisboa* and *Metro do Porto*, which became part of the general government sector. **(o)** Change in amounts outstanding of credit overdue for at least 30 days and doubtful loans recorded in the balance sheet of resident MFIs adjusted for write-offs/write-downs and reclassifications, as a percentage of the loans balance adjusted for securitisation. Sales outside the banking system included in the adjusted flow correspond to credit overdue and doubtful loans not written-off/written-down, in accordance with the quarterly report defined in Instruction No 17/2008. Values adjusted regarding the sale of a loan portfolio by *BPN* to *Parvalorem* as well as the reclassification of *Refer*, *Metro de Lisboa* and *Metro do Porto*, which became part of the general government sector. **(p)** Credit by the Portuguese banking system excluding branches of credit institutions having their head office in countries of the European Union reported on a consolidated basis in accordance with Banco de Portugal's Instruction No 22/2011. **(q)** Non-performing loans defined in accordance with Banco de Portugal's Instruction No 22/2011. Excludes *BPN* in order to avoid the distortion arising from the sale of a loans portfolio to Parvalorem in December 2010. Includes credit to residents and non-residents in addition to credit from foreign subsidiaries of Portuguese banks. Derecognised securitisations were not considered. It includes total outstanding credit with overdue installments of principal or interest for a period of more than 90 days, total value of outstanding restructured credits in which payments of principal or interest, having been overdue by a period equal to or greater than 90 days, have been capitalized, refinanced or rescheduled without adequate strengthening of collateral or full repayment of overdue interest and outstanding credit with overdue installments of principal or interest for a period of less than 90 days, but for which there is evidence that would justify its classification as non-performing loans. **(r)** Overdue and doubtful loans includes credit and interest overdue for more than 90 days and doubtful loans, referring to future payments of credit when there are any doubts over its collection, as established in Banco de Portugal's Official Notice No 3/95.

BOX 1.1 | IMPLEMENTATION OF THE ECONOMIC AND FINANCIAL ASSISTANCE PROGRAMME: THE FINANCIAL STABILITY PILLAR

1. GLOBAL FRAMEWORK

Financial stability is one of the fundamental pillars of the Economic and Financial Assistance Programme (Programme), agreed between the Portuguese authorities and the European Union, the International Monetary Fund and the European Central Bank, in May 2011.[1] In broad terms, the Programme aims to correct the Portuguese economy's fundamental macroeconomic imbalances – notably in terms of the sustainability of public accounts and external indebtedness – while simultaneously creating the structural bases for a higher level and growth of productivity over the medium term. This economic adjustment entails a simultaneous deleveraging of the public and private sectors. Preserving financial stability is a necessary condition to warrant a gradual and orderly adjustment, by ensuring an adequate flow of credit to the economy's most dynamic segments and by mitigating the risk of an adverse interaction between the banking system and macroeconomic developments.

The Programme's global strategy regarding financial stability is based on four fundamental dimensions which interact with and mutually reinforce each other: (i) reinforcing the solvency of the banking system; (ii) promoting a gradual and orderly deleveraging of the banking system and ensuring the stable funding of the banking system; (iii) reinforcing the supervision of the banking system; and (iv) strengthening the regulatory framework.

The set of measures included in the Programme reinforced the strategy being implemented by Banco de Portugal, aimed at preserving financial stability in a context of recurrent intensification of the sovereign debt crisis in the euro area. It should be pointed out that, over the course of the Programme's first year, implementation in terms of the financial stability pillar has been repeatedly assessed favourably by the European Commission, the European Central Bank and the International Monetary Fund. A brief analysis of the most relevant developments in each of the above four dimensions shall be provided in the following sections.

2. REINFORCING THE SOLVENCY OF THE BANKING SYSTEM

In order to reinforce the Portuguese banking system's credibility and resilience, Banco de Portugal, as set in the Programme, requested the banks to achieve a Core Tier 1 ratio of 9 per cent by the end of 2011 and of 10 per cent by the end of 2012.[2] In addition, until the end of the first semester, banks will have to fulfil the capital needs arising from the European Banking Authority's capital exercise conducted at a European level, from the partial transfer of pension funds to Social Security occurred by end-2011 and from the conclusions of the Special Inspections Programme (SIP).

In this context, there was a remarkable reinforcement of banks' solvency levels throughout 2011 and at the beginning of 2012. This was achieved through a decrease of risk-weighted assets – given the nature of the ongoing deleveraging process– and an increase in core own funds, notably with the adoption of a conservative policy of retained earnings, with the generation of proceeds through own bonds repurchases and with capital increases based on private market solutions.

In case banks are not able to reach the capital targets through market based solutions within the specified timeframe, a EUR 12 billion Bank Solvency Support Facility for private viable banks is avail-

1 For further details on the Programme, including all relevant and up-to-date documentation, see http://www.bportugal.pt/en-US/OBancoeoEurosistema/ProgramaApoioEconomicoFinanceiro/Pages/default.aspx.

2 Banco de Portugal Official Notice nº3/2011 of 10 May.

able under the Programme. The legal framework for this mechanism has already been defined.[3] The State's interests have been safeguarded by establishing requirements regarding the viability of the beneficiary institutions, the temporary nature of the public investment and its adequate remuneration. It also aimed at preserving the control of the management of the banks by their private owners and at minimising the State's intervention in the institutions' ongoing management.

According to information up to the end of May, only a limited set of banking institutions is expected to resort to the solvency support facility, given inter alia the requirements deriving from the capital exercise conducted by the European Banking Authority, which must be ensured by the end of June. In this context, the available information indicates that domestic banks will only apply for a minority fraction of the amounts available in the solvency support facility under the Programme.

3. Promoting a gradual and orderly deleveraging of the banking system and ensuring the stable funding of the banking system

Over the course of last year, the Portuguese banking system continued to display strong resilience and a high ability to adapt to a particularly adverse environment. The continuation of a gradual and balanced deleveraging process continues to be a central goal for banks over the medium term, contributing to regain their access to international financial markets. This process will also be consistent with the new Basel III international regulatory framework. Further, it should be underlined that the deleveraging process is also a consequence of the adjustment process of the Portuguese economy in a broader sense. The gradualism of such a process requires the banking system to have the liquidity needed to fully comply with its financial intermediation function.

3.1 Promoting a gradual and orderly deleveraging of the banking system

One of the Programme's fundamental objectives is to ensure that Portuguese banks have a more sustainable funding structure over the medium term, including less reliance on funding from international wholesale debt markets. Therefore, the Programme includes an indicative target for the credit to deposits ratio of the eight main banking groups of around 120 per cent by the end of 2014. This deleveraging process should be consistent with the adjustment dynamic of economic agents' balance sheets – including general government and state-owned enterprises – aiming at a gradual reduction of the respective indebtedness levels.

In such a context, banks continued to implement specific strategies under the framework of their Funding and Capital Plans over the course of last year. These plans are presented quarterly by the eight major banking groups – as well as by other banks which are relevant for prudential purposes and/or record high levels Eurosystem borrowing – and are regularly discussed with the European Commission, the International Monetary Fund and the European Central Bank. At the end of 2011, the credit to deposits ratio of the eight major Portuguese banks, on a consolidated basis, stood at around 135 per cent, 30 percentage points below the maximum recorded in June 2010. The strong dynamism of deposits accounted for around three quarters of that decline.

The current Funding and Capital Plans are based on the following premises: the continued robustness of households' deposits, the decline of new loans to households, the maintenance of significant impairment levels in loans to non-financial corporations, an aggregate increase in credit flows to non-financial corporations starting from the end of 2012 and a small volume of sales of domestic and external assets, in contrast to the significant sales recorded in the first half of 2011.

3 See Law nº4/2012 of 11 January changing Law nº63–A/2008 and Ministerial Order nº150–A/2012 of 17 May.

Globally, the Programme aims at ensuring that the individual strategies presented under the Funding and Capital Plans lead, in aggregate terms, to a funding level consistent with the gradual and orderly adjustment process of the economy. In such a process, bank credit may provide a vital cushion to enable viable companies to resolve their temporary liquidity problems and/or restructure their operations. The Programme thus urges that bank credit is channelled to the more productive and dynamic firms.[4] This implies that there will be strong heterogeneity in lending flows to the private sector, in particular given the necessary and unavoidable sectoral restructuring of the Portuguese economy. This strong heterogeneity has been particularly marked since the end of 2011.

In prospective terms, if banks protect insolvent companies from market forces through successive renewal of loans ("evergreening"), the poor allocation of credit will hinder the necessary restructuring of the economy and will have a negative impact on long-term growth prospects. The correct identification of credit restructuring operations is thus particularly important. In this context Banco de Portugal published an Instruction aimed at ensuring the identification in the banks' information systems of restructured credits due to financial difficulties of the borrower.[5] For these purposes, the Instruction (i) provides a precise definition of restructured credit situations, (ii) categorises the signs of financial difficulties, (iii) imposes the identification and marking, in banks' information systems, of the restructured credit based on signs of the customer's financial difficulties, (iv) foresees the contamination of these markings to other operations involving the same customer, (v) establishes the conditions required for ending the marking of the restructured credits based on a customer's financial difficulties and, finally, (vi) schedules implementation dates (up to the end of September 2012, the banks should identify and mark all restructured credits since 30 June 2011, giving priority to restructured credits relative to the 50 largest customers and to those in construction and real estate activities).

In this context, it is worth mentioning that that the deleveraging of the banks' balance sheets may also benefit from the sales of credits or other non-strategic assets. Such sales may actually contribute to promote new funding flows to the economy. This type of strategy has not, however, been viable, given the highly adverse market conditions facing all Portuguese issuers. It should be noted that such sales must not be confused with the recent strategies of several Portuguese banking groups, involving transfers of assets, notably credit, to third parties (funds/vehicles), against the direct or indirect subscriptions of positions in such funds/vehicles. In general these types of operations include the transfer of loans of corporations considered as having potentially viable business models and, to a lesser extent, real estate to funds/vehicles under dedicated management. The involvement of credit institutions is maintained through the subscription of representative positions in the funds'/vehicles' assets. By their nature, these types of operations have the characteristics of an investment in venture capital. Notwithstanding the rationale underlying the operations (*i.e.* concentration of exposures held by various credit institutions on a single corporation, for the purpose of eventually converting them into capital, thus enabling the financial and operational restructuring of the corporation, to ensure its viability), Banco de Portugal considered it necessary to request institutions under its supervision to supply information enabling a characterization of the main aspects of the operations in question, either those already performed or those at a preparatory stage. After analysing those operations, Banco de Portugal defined a prudential treatment aimed at ensuring that they would not involve

4 Reference should also herein be made to the fact that national authorities shall, by the end-July 2012, prepare a proposal on the diversification of financing alternatives to the corporate sector (which is a structural benchmark of the Programme).

5 See Instruction nº18/2012. Until the publication of this Instruction, the issue of the restructuring of credit was fundamentally associated in prudential regulations, in the case of the provisioning framework (Official Notice 3/95) and in the case of non-performing credit (Instruction nº22/2011), with situations of default for a period of 90 days or more, without an adequate reinforcement of the respective guarantees or settlement of the overdue interest. In other words, the restructuring of a credit operation occurring prior to the classification thereof as overdue credit was not subject to a systematic reporting of information for prudential purposes.

accounting or prudential arbitrage.[6] In addition, reporting requirements to Banco de Portugal were established, both with respect to the transfer operations and to subsequent supervisory stages, as well as requirements for credit institutions to maintain information on the transferred assets.

3.2 Ensuring the stable funding of the banking system

Over the course of the last year, the banks were able to maintain globally robust liquidity levels. This outcome was decisively due, on the one hand, to the ECB's unconventional monetary policy measures and, on the other, to the robustness and trust displayed by the depositor base in Portuguese banks.

The funding of the domestic banking system from the Eurosystem remained relatively stable over the course of 2011 – albeit at high levels – in contrast to the increase recorded in other European jurisdictions. In the context of the two three-year refinancing operations with full allotment conducted by the ECB at the end of 2011 and beginning of 2012, the Eurosystem financing recorded a significant increase – albeit substantially less than the amounts of short, medium and long-term debt repaid by the banks in the first quarter of 2012 – helping to mitigate the refinancing risk on banks' balance sheets over an extended period. In such a context, reference should be made to the importance of reinforcing collateral levels, in order to provide for any adverse developments in international financial markets. The Programme contains measures to provide the banking system with the necessary liquidity, including the strengthening of collateral buffers and the issuance of government guaranteed bank bonds in an amount of up to EUR 35 billion (of which around EUR 18 billion have already been authorised). The use of such bonds as collateral for Eurosystem credit operations must be previously approved by the ECB's Governing Council. Reference should also be made to the fact that the Governing Council decided, at its meeting of 8 December 2011, that domestic central banks may accept additional bank loans complying with specific eligibility criteria as collateral for Eurosystem credit operations. At its meeting of 9 February 2012 the Governing Council decided to authorise the set of temporary measures proposed by Banco de Portugal, designed to broaden the range of bank loans accepted as collateral for Eurosystem lending operations (such measures have already increased the collateral available to banks by around EUR 6 billion and the global capacity to generate collateral by such means has been estimated at around EUR 30 billion).

The second decisive element in terms of the evolution of banks' liquidity was the strong growth of deposits in the banking system over the course of 2011 – particularly households' deposits – which persisted, albeit at a slower pace, in the beginning of 2012. In a context of growing risk aversion, there was a recomposition of households' portfolios in favour of deposits and to the detriment of most other savings instruments. This shift translates, above all, the households' firm confidence in the robustness of the domestic banking system. Such confidence constitutes an invaluable asset in terms of preserving financial stability throughout the demanding adjustment process facing the Portuguese economy. It should also be underlined that banks significantly increased the relative remuneration of deposits over the course of 2011, in order to maximise this source of funding in a context of virtual absence of access to the international wholesale debt markets.

The increase in interest rates on deposits over the course of 2011 was deemed in some cases as excessive by Banco de Portugal. In light of the above, Banco de Portugal imposed a deduction from Core Tier 1 own funds, based on the amount of deposits contracted with interest rates more than 300 points higher than the relevant Euribor rate for the operation's reference period, effective from 1 November 2011.[7] This prudential measure had a significant impact on the maximum rates on deposits offered by the banks, as well as on the global volume of deposits with interest rates in excess of the

6 See Circular Letter nº13/2012/DSP.

7 See Instruction nº28/2011.

defined threshold. More recently, this regime was reinforced, *inter alia* by the doubling of the former regulatory capital requirements and a higher penalty on short term and less stable deposits.[8] These prudential changes, which were not foreseen in the Programme, aim to achieve the common goal of preserving the stability of the Portuguese financial system.

4. Reinforcing the supervision of the banking system

During last year, Banco de Portugal intensified the monitoring of the banking system and strengthened its regulation and supervision. In addition to the set of prudential interventions above mentioned, reference should be made to the following developments: (i) the reinforcement of the methodology used to assess the solvency and deleveraging process of the banking system, including the conduct of quarterly stress tests on the eight major banking groups, (ii) the disclosure of a new non-performing loans ratio[9], (iii) the development of additional indicators to monitor the indebtedness of households and corporations and (iv) the conclusion of the Special on-site Inspections Programme for the banking system (SIP).[10]

The SIP aimed to assess the robustness of the eight major Portuguese banking groups based on three workstreams: (i) analysis of banks' credit portfolios, with reference to 30 June 2011, in order to confirm the adequacy of the respective impairment levels as well as the impairment calculation models and associated policies and procedures; (ii) review of the credit risk capital requirements calculations (iii) assessment of methodologies and parameters used by the banks in their stress test exercises. The SIP was finalised in February 2012 and globally validated the adequacy of the credit risk data underlying the solvency assessment of the eight major banking groups, the management and risk control procedures underlying the calculation of risk-weighted assets, as well as the parameters and methodologies used by the banks in their stress test exercises. The Special on-site Inspections Programme has, therefore, played an important role in reinforcing the credibility of the banking system in the international community.

5. Strengthening the regulatory framework

The regulatory framework of the financial system was also strengthened, notably regarding the approval of legislation on the recapitalisation of the banks[11], on the early intervention and resolution of credit institutions and the deposit insurance framework[12], as well as on the Corporate Insolvency and Recovery Code.[13] These legislative items contribute, as a whole, to reinforce confidence in the stability of the financial system and to promote a more efficient restructuring of the corporate sector.

6. Final considerations

After one year from the beginning of the Programme, the banking sector has reinforced its robustness in terms of liquidity, solvency and degree of leveraging. The adjustment of the financial system foreseen in the Programme is still, however, far from complete. The strict implementation of the Programme, including in its financial dimension, represents an opportunity to achieve its objectives

8 See Instruction nº15/2012, which entered into force at the beginning of April 2012.

9 See "Box 4.2 *New non-performing loans ratio*", Financial Stability Report, November - 2011.

10 For further details, see "Box 4.3 *The special on-site inspections programme for the financial system (SIP)*", of this Report.

11 See Law nº4/2012 of 11 January and Ministerial Order nº150–A/2012 of 17 May.

12 See Decree Law nº31– A/2012 of 10 February.

13 See Law nº16/2012 of 20 April.

in a gradual and balanced manner. The maintenance of financial stability is instrumental in attaining this goal. In the Programme's horizon lies the demanding challenge of regaining regular access to the international funding markets. In the case of Portuguese banks, this challenge will crucially depend on the ability of the sovereign to previously re-establish the confidence of international investors, as well as on developments in the external environment of the Portuguese economy. In this context, it should be noted that the euro area Member States have declared they stand ready to support Portugal until market access is regained provided the authorities persevere with strict programme implementation.

2. Macroeconomic and financial risks

For more than a decade the Portuguese economy has suffered from a significant insufficiency of domestic savings, which has translated into a continuous deterioration of its international investment position, even in the context of a reduction of investment rates. This evolution reflected the performance of not only the private but also the public sector, which has systematically recorded deficits and growing levels of indebtedness. The magnitude and persistence of these imbalances have progressively reinforced the framework of structural fragilities and the economy's vulnerability, with potentially adverse consequences for the financial stability of resident sectors and their future well-being. External funding restrictions, resulting from a significant deterioration of the international liquidity context and greater risk discrimination in the financial markets made the interruption of such unsustainable trends unpostponable. External financial assistance, which enabled the adjustment to be processed in an orderly, gradual manner accordingly, became a necessity.

In such a framework, the evolution of the Portuguese economy, in 2011, was significantly affected by interruption of access to market funding and the inception of the Economic and Financial Assistance Programme, agreed with the European Union (EU), International Monetary Fund (IMF) and the European Central Bank (ECB), from the second quarter of the year. The Programme defined a stable financing framework for the period 2011-2014, based on three pillars: the sustained consolidation of the public accounts, stability of the financial system and structural transformation of the economy. In short, the furthering of the Programme is designed to adjust macroeconomic imbalances and increase the Portuguese economy's growth potential.

Persistence of risks associated with the capacity to implement the Programme and adverse developments in the external environment

In this context, the main macroeconomic and financial risks facing the Portuguese economy in the near future are related, on the one hand, with the capacity to effectively implement the measures necessary to comply with the Programme's objectives and, on the other hand, the possibility that the external environment may be more unfavourable than foreseen, both in economic and financial terms, including the possibility of contagion effects resulting from adverse developments in other countries.

It should be noted that, over the course of the last few months, macroeconomic and financial risks have remained high, notwithstanding the measures adopted on an international level. The crisis in the international financial markets and particularly the sovereign debt crisis in the euro area have exposed a series of pre-existing vulnerabilities and risk sources in various European countries. Such vulnerabilities have taken the form of an overvalued property sector (which, notwithstanding a certain adjustment, shall still be the case in several markets), structural imbalances in the public finances, high level of private sector indebtedness and/or low potential economic growth. Correcting such imbalances is a long, complex process and all the more so when carried out, at the same time, by a significant number of countries, thus negatively conditioning the Portuguese economy's external environment.

In terms of the external environment, the main risks to the Portuguese economy are therefore associated with the potential worsening of the sovereign debt crisis in the euro area and a worse than anticipated level of economic performance by Portugal's main trading partners. This could derive both from the fact that the need for fiscal consolidation affects a significant number of countries and the eventuality of over deleveraging of the banking sector in several of them, owing to an increase of risk aversion and changes to the financial intermediation model. Such risks interact with each other and may also be reinforced if authorities' interventions are disjointed and do not make it possible to correct the most

deep-rooted causes of the current crisis situation. The possibility of contagion therefore remains high and exacerbates liquidity and market risks.

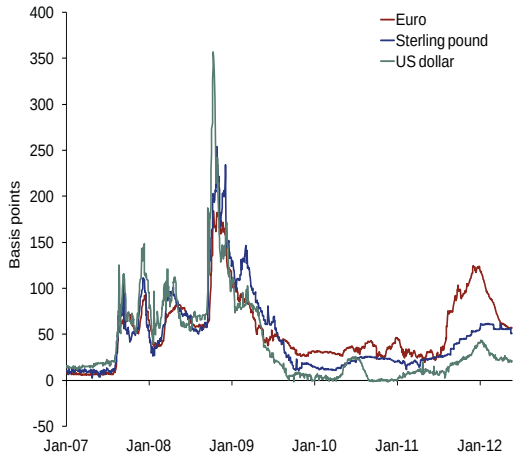
Notwithstanding the measures taken by the European authorities, tensions remain high and affect a large number of countries

The European authorities have been taken a significant number of measures since July 2011 to reinforce the European Union's financial stability mechanisms, regain the confidence of international financial markets and contain contagion risks. Such measures include the reinforcement of economic governance, improved efficiency and capacity of the European Financial Stability Facility/European Stability Mechanism, capital increases in European banks and agreements for the private sector's voluntary involvement in restructuring Greek public debt.

The ECB has, in turn, played a central role in mitigating the effects of contagion in the euro area. In addition to reacting to the deterioration of the economic situation in Europe by reducing key reference interest rates, the ECB Council has adopted a vast range of unconventional monetary policy measures, to ensure the necessary liquidity for the financial system and the full operation of the monetary policy transmission mechanism, translating into the stabilisation/reopening, albeit only in part, of dysfunctional market segments, including the sovereign debt markets (Chart 2.1). Such measures also provided the market with a display of its capacity and willingness to eliminate the systemic risks associated with the banking system liquidity crisis in the euro area. The instruments adopted included, *inter alia*, the extending of fixed rate lending operations with full allotment, the reduction of the minimum reserves ratio and the broadening of the list of assets eligible as a guarantee for monetary policy operations[1]. These ECB measures are temporary and will make it possible to create an adequate environment for orderly adjustments to situations which are unsustainable over the long term, and should not contribute to postponing this desirable and inevitable process.

Chart 2.1

SPREAD BETWEEN 3-MONTH MONEY MARKET INTEREST RATES FOR UNCOLLATERALIZED AND COLLATERALIZED OPERATIONS



Source: Thomson Reuters.

1 At the beginning of December 2011, the ECB Council decided to organise two long term financing operations (LTROs) for a maturity of 36 months with an early repayment option after a year, in the form of fixed-rate auction operations with full allotment. The interest rate on these operations will reflect the average rate on the Eurosystem's main refinancing operations over the lifetime of the operation. After one year, counterparties will have the option of repaying a part of the amounts received from the operations. The operations took place on 21 December 2011 and 29 February 2012.

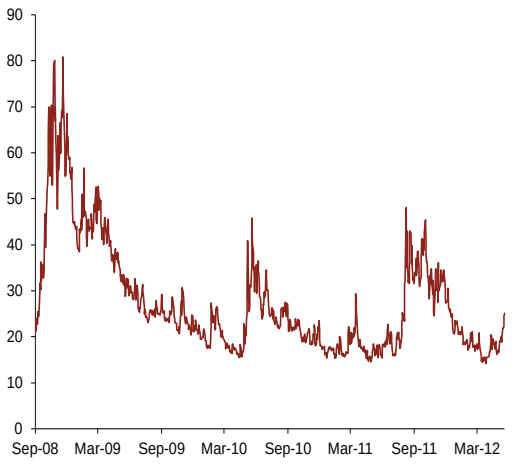
Notwithstanding the successive measures already adopted by the European authorities, doubts remain over the effectiveness of mechanisms to resolve the sovereign debt crisis in the euro area, which has been putting states and European banks under considerable pressure and increasing volatility in financial markets (Charts 2.2 and 2.3). Notwithstanding the fact that such measures have generated positive impacts, they have, in general, been visible in the periods immediately following their announcement/adoption. Uncertainty has remained relatively high, especially associated with doubts over the effectiveness of the measures announced and the political instability in several countries, particularly concerning recent developments in Greece. In this context, Italy's and Spain's financing costs have, once more, increased significantly. On the other hand, the more structural factors leading to investors' mistrust regarding the sustainability of the debt and potential contagion in the euro area remain. There have been rating downgrades on euro area countries, which have, in this context, in many cases, implied parallel downgrades on banking institutions. In the financial markets, interest rate spreads have remained at high levels continuing to reflect increased risk differentiation in comparison to Germany (Chart 2.4).

High levels of volatility and risk aversion continue to condition international financial markets. The crisis remains systemic and increases the difficulty in access to funding from the wholesale debt markets for a significant number of states and financial institutions. Notwithstanding some certain recovery of equity indices in first quarter 2012, such evolution was, in the meantime, reversed, with prices levels increasing the difficulty of issuing equity instruments, which situation particularly affects European financial institutions (Chart 2.5). The risk associated with banking systems remains highly correlated with the evolution of sovereign risk (Chart 2.6).

This difficulty in the issuance of equity instruments is particularly relevant at the current time, given additional own funds adequacy requirements for European banks. At the end of October 2011, the European Banking Authority announced a series of banking system capital reinforcement measures, designed to improve the banks' capacity to absorb negative shocks, following a prudent assessment, at market prices, of their exposures to sovereign debt at 30 September 2011. Although this measure aims to increase international investors' confidence in the strength of European banks, it assumes the character of an additional restriction on the development of their activities, over the short term, considering current difficulties in obtaining the necessary capital in the form of private market issues. Under the current context, this brings with it the risk that banking institutions may endeavour to satisfy their requirements through asset reductions, notably assets with the highest risk weighting factor. Therefore, notwithstanding the abundance of liquidity provided by the ECB, there is a short term risk that this measure could translate into a restriction on bank credit supply to the private sector, especially to companies, making the

Chart 2.2

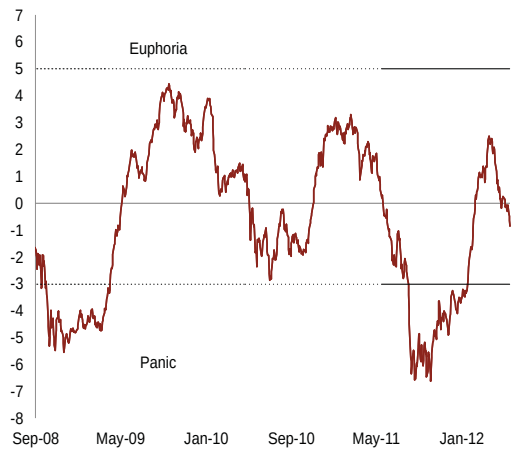
***VIX* VOLATILITY INDICATOR**



Source: Thomson Reuters.

Chart 2.3

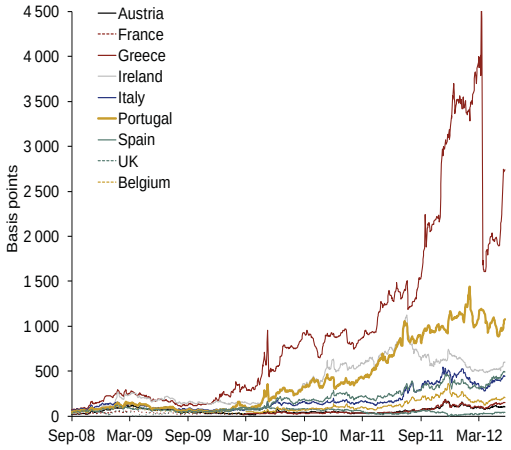
GLOBAL RISK APPETITE INDICATOR



Source: Credit Suisse.

Chart 2.4

SPREADS VIS-À-VIS GERMANY OF EUROPEAN GOVERNMENT BOND YIELDS | 10 YEARS



Source: Thomson Reuters.

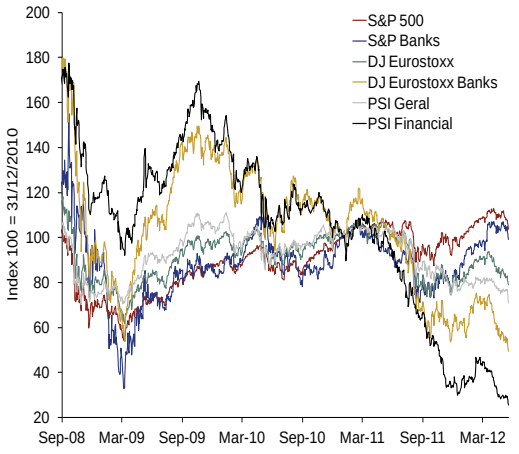
recovery of economic activity more difficult. The available liquidity may, therefore, be largely channelled to investments in public debt, which in general are not consumers of regulatory capital, reinforcing the connections between the banking system and sovereign risk.

The simultaneous adjustment of the public and banking sectors, in a large number of countries, negatively influences economic growth in Europe over the short term

A context of across-the-board efforts to adjust fiscal imbalances, financial sector deleveraging and a high level of uncertainty negatively affects growth prospects for economic activity over the short term (Charts 2.7 and 2.8). Further, the impacts of interaction effects between the tensions associated with sovereign debt and the adjustment of the banking system have different impacts on the economic activity of different countries and contribute to the difficulty of establishing a comprehensive solution, perceived to be effective and credible.

Chart 2.5

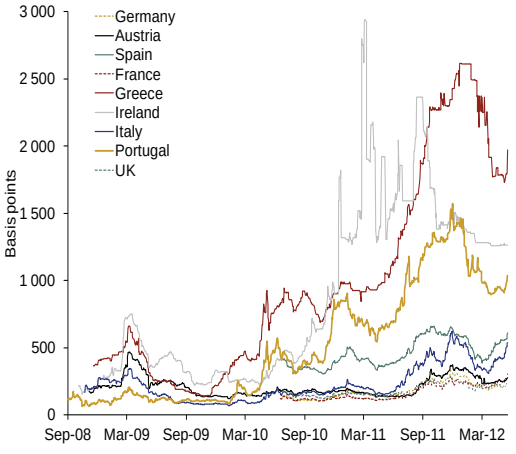
STOCK MARKET INDICES



Source: Thomson Reuters.

Chart 2.6

CREDIT DEFAULT SWAPS OF EUROPEAN BANKS | 5 YEARS *SENIOR*

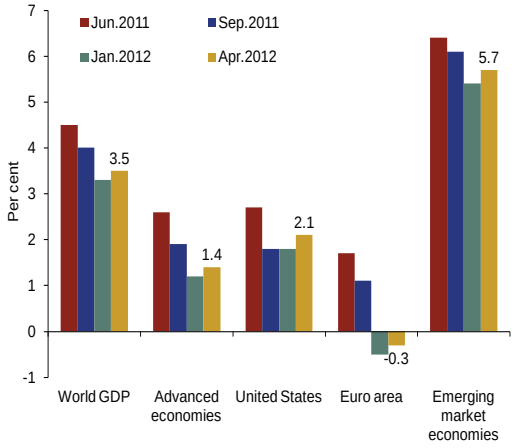


Sources: Thomson Reuters and Banco de Portugal calculations.

Note: The series for each country refer to unweighted averages of bank credit default swaps in euros.

Chart 2.7

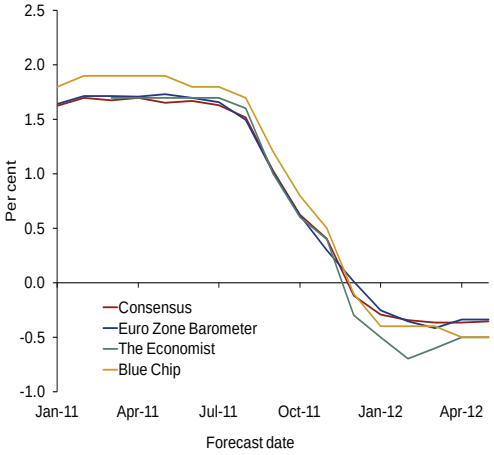
EVOLUTION OF GDP FORECASTS FOR 2012



Source: IMF.

Chart 2.8

EVOLUTION OF PRIVATE ANALYSTS' FORECASTS FOR EURO AREA GDP GROWTH IN 2012



Sources: Consensus Economics, MJEconomics, The Economist and Aspen Publishers.

Significant risks, associated with the situation in the euro area and fundamental imbalances between economic blocs and the evolution of oil prices, remain on a global level

In global terms and notwithstanding a certain recovery of growth prospects in the most recent period, the risks to the evolution of world economic activity continue to be clearly distorted downwards. In addition to the specific situation of euro area countries and high contagion potential, other factors stand out as potential sources of worldwide risk.

On the one hand, is the continuation of significant imbalances on a global level such as the budget deficit in the United States[2], in which insufficient levels of public savings coexist with a significant external deficit. The definition of policies making it possible to resolve this imbalance is not foreseeable within the near future. Given the current context of low interest rates on a global level and the sovereign debt crisis in the euro area, such imbalances have not translated into significant oscillations in long term interest rates and the dollar's exchange rate, which situation however is subject to change. An abrupt adjustment will have negative implications for financial stability in terms of market risk and the volatility of asset prices. The combination of such imbalances with reduced economic growth rates in some countries may favour the adoption of protectionist policies, either on an economic or financial level. This may translate into individual, uncoordinated solutions with potentially significant effects on trade and capital mobility on an international level.

On the other hand, there is also a global risk associated with the evolution of international oil prices. As noted on past occasions, heightening geopolitical tensions in several parts of the globe tend to produce hikes in oil prices with the potential of creating a global supply shock, with a significant impact on economic agents' real income.

Notwithstanding favourable developments in diverse domains, the Portuguese economy remains in a fragile position

The Portuguese economy's economic and financial fragility is, in essence, the result of the progressive slowdown of trend economic growth and excessive accumulation of public and private debt. In such

2 In turn, China is likely to maintain a significant trade surplus. The global situation on a euro area level is reasonably balanced albeit coexisting with highly disparate situations between participating countries.

an environment, the adversity of the external framework and eventual materialisation of risks, on an international level, will inevitably have significant implications on the financial stability of resident sectors and on well-being. The Portuguese economy and the Portuguese banking system have made significant progress as to what concerns the required structural adjustments. Such favourable results are particularly visible when the deficit on the public accounts, external deficit and banks' liquidity and solvency positions are assessed.

Reference should, nevertheless, also be made to the fact that the central scenario of the evolution of the Portuguese economy remains necessarily complex, given the magnitude of the adjustments which must still be embarked upon as well as the uncertainty prevailing in the worldwide economic and financial environment. Reference should, herein, be made to the fact that member states of the euro area have already expressed their willingness to assist Portugal until the country succeeds in returning to the international financial markets, provided that the national authorities continue to commit to rigorous compliance with the Programme's objectives.

The banks have continued to adjust, notwithstanding the fact that the context in which financial institutions must operate continues to be highly demanding

As regards the financial system and the banking system in particular, the Programme establishes a set of principles and objectives which, over the medium term, will contribute towards to achieve a better situation in terms of funding sources and resistance to shocks. The environment, however, is particularly demanding for financial institutions, to the extent that objectives must be achieved in the context of an adjustment to the macroeconomic situation, namely by correcting the Portuguese economy's fundamental imbalances.

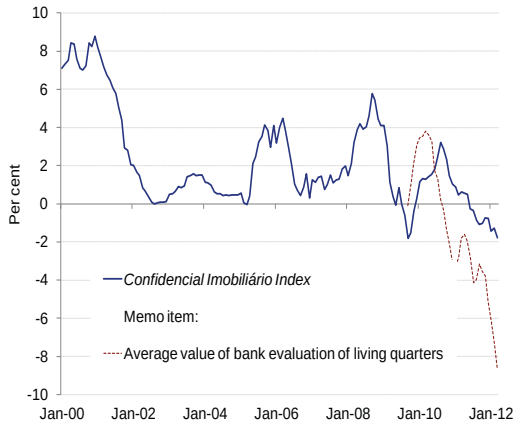
Such demands may be even harder to meet if recent trends towards falling asset prices, whether real or financial, continue. This evolution will tend to affect not only banks but also other resident sectors holding this kind of assets in their portfolios. They naturally include the insurance and pension funds sectors, whose profitability was already negatively affected in 2011, by the evolution of prices in public and financial institutions' debt securities. The financial performance of these sectors also tends to be affected by the maintenance of low interest rates, for an extended period, which could have an effect on the profitability of their assets and eventually stimulate a search for yield approach, which is potentially not consentaneous with prudent management, in light of the guaranteed nature of an important part of their liabilities.

In this context, reference should, herein, be made to the fact that although there is evidence that Portugal did not witness a speculative property bubble, the evolution of prices in this market is also a potential source of fragility for the Portuguese financial system. The market shall suffer from oversupply, given that demand for property will tend to remain depressed in the near future. In addition to the adverse evolution of economic activity, implementation of reforms in the rental market and the foreseeable increase of the fiscal burden associated with title to such assets, this situation will also be the result of the adoption of more restrictive criteria in loans for house purchases. The market adjustment is therefore likely to involve reductions to property prices, which could generate negative wealth effects and originate value losses for economic agents who hold such assets (Chart 2.9).

The performance context of financial institutions will continue to be strongly conditioned by their success in furthering the Programme's objectives and progressive improvement in the confidence of international investors, which will translate into a reduction of liquidity, market and credit risks. This will make it possible to restore confidence in the Portuguese banks, which has been highly influenced by the evolution of the Portuguese Republic's financing conditions and the outlook for the Portuguese economy's evolution.

Chart 2.9

HOUSE PRICES IN PORTUGAL



Sources: *Confidencial Imobiliário* and *INE*.

3. Financial situation of households and non-financial corporations

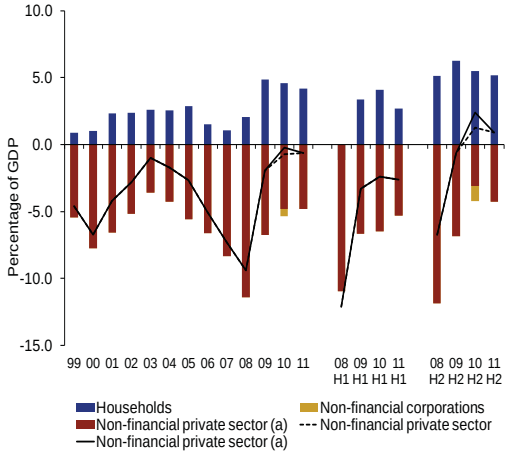
In 2011, the non-financial private sector's borrowing requirements increased slightly, in comparison to the preceding year, as the result of a reduction of households' net lending capacity and a stabilisation in non-financial corporations' borrowing requirements (Chart 3.1). The evolution of the financial situation of households was marked by a reduction of disposable income, associated with the fall of remunerations and social payments and a higher fiscal burden together with a slight reduction of the savings rate. In the case of non-financial corporations, reference should be made to the reduction of savings and lower borrowing requirements for investment in the context of a strong deterioration of economic activity. Households' net lending capacity, in Portugal, is usually higher than the euro area average, although non-financial corporations' borrowing requirements are also higher (Chart 3.2).

In the second half of the year, households' net lending capacity and the savings rate, measured as a percentage of disposable income, increased slightly in comparison to the same period of the preceding year, suggesting that households are adjusting their levels of consumption to the marked drop in disposable income, which is largely perceived to be permanent and the greater difficulty in access to bank financing. In the case of non-financial corporations, in second half 2011 the borrowing requirements, excluding the impact of the end of 2010 transfer of the PT pension funds, increased in comparison to the same period of the preceding year. This evolution derived from the marked fall in the sector's savings rate as there was a reduction of borrowing requirements for investment.

A more marked slowdown of loans both to households and non-financial corporations was witnessed, in 2011, particularly starting from the second half.[1] The evolution of lending to households and non--financial corporations has been reflecting demand and supply side factors. The negative outlook for the evolution of future income, in the case of households and lower investment financing requirements in the case of corporations have negatively affected the demand for credit, particularly long term. The banks, in turn, as a reflection of their perception of an increased credit risk in the economy and factors associated with their own funding difficulties and the need to achieve a stable balance sheet structure

Chart 3.1

NET LENDING/NET BORROWING OF NON-FINANCIAL PRIVATE SECTOR



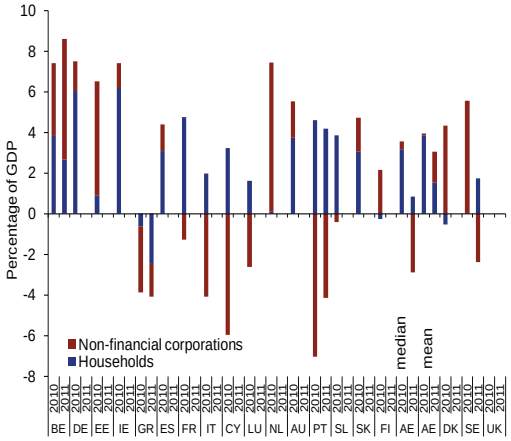
Source: *INE*.

Note: (a) These figures exclude the transfer of the pension funds of Portugal Telecom to the Caixa Geral de Aposentações.

1 See "Section 4.4 *Credit Risk*", of this Report.

Chart 3.2

NET LENDING/BORROWING OF THE NON-FINANCIAL PRIVATE SECTOR[a] | INTERNATIONAL COMPARISON



Source: Eurostat.

Note: (a) The value of net lending/net borrowing corresponds to financial saving (transactions of financial assets minus transactions of financial liabilities) from the National financial Accounts. The average and median were computed for the euro area countries that are presented in the chart.

over the medium term, have been applying more restrictive lending criteria, related with the cost of credit and other conditions. Such conditions include, in particular, a reduction of the amount of loans or lines of credit and the demand for more guarantees, in the case of corporations, and, in the case of loans to households, more restrictive requirements regarding the loan to value ratio.

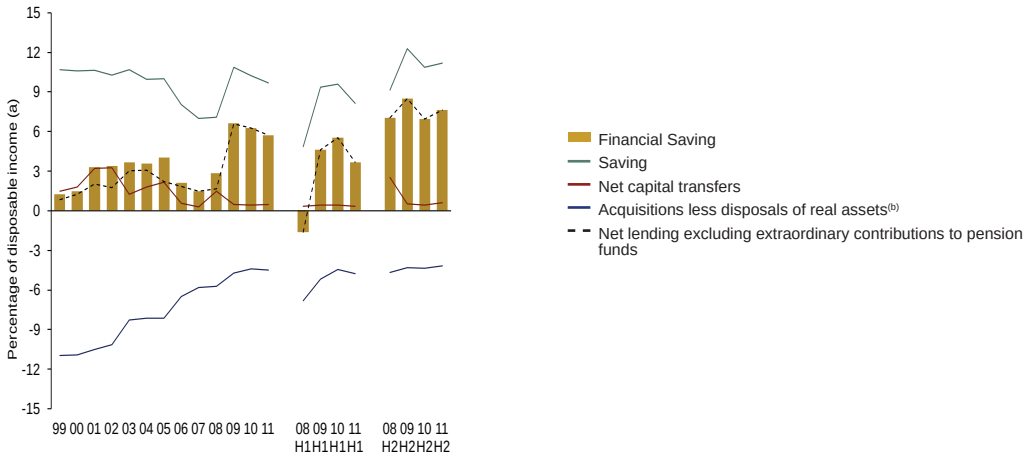
In terms of financial stability it is crucial to know how corporations and households with different characteristics behave. In the case of corporations, microeconomic data evidence the asymmetries between public and private corporations and across companies operating in different sectors of activity. Private companies and companies in sectors with a greater exposure to international competition have a more balanced financing structure and higher rates of return. For the adjustment process to be successful, it is important that the more dynamic and productive companies are able to obtain funding to enable them to resolve eventual, temporary liquidity problems. The results of a survey on the financial situation of the household sector, conducted in 2010, indicate that lower income households are in the most vulnerable situation, particularly if they are highly indebted. The reduction of disposable income, in an environment involving a marked increase in unemployment, may significantly increase the number of households in a highly vulnerable situation. Their participation in the debt market has, however, remained relatively small and the impact on banks' balance sheets of the eventual materialisation of credit risk in this segment will not, therefore, be very high.

Households

Households' net lending capacity and savings rate, in 2011, measured as a percentage of disposable income, were slightly lower than in 2010. However, the second half of the year witnessed a slight increase in households' net lending capacity in comparison to the same period of the preceding year (Chart 3.3). In the context of a very sharp fall in disposable income, largely perceived to be permanent and a greater difficulty in the access to bank loans, households appear to be adjusting their consumption levels. In addition, the major uncertainty over the evolution of future income which tends to encourage precautionary savings will have also contributed towards the slight increase in the savings rate in the second half, in comparison to the same period of the preceding year, as opposed to what was observed in the first half of the year. This evolution is in line with the fact that the fall in the household savings rate recorded in

Chart 3.3

HOUSEHOLDS' NET LENDING, SAVING AND INVESTMENT



Source: *INE*.

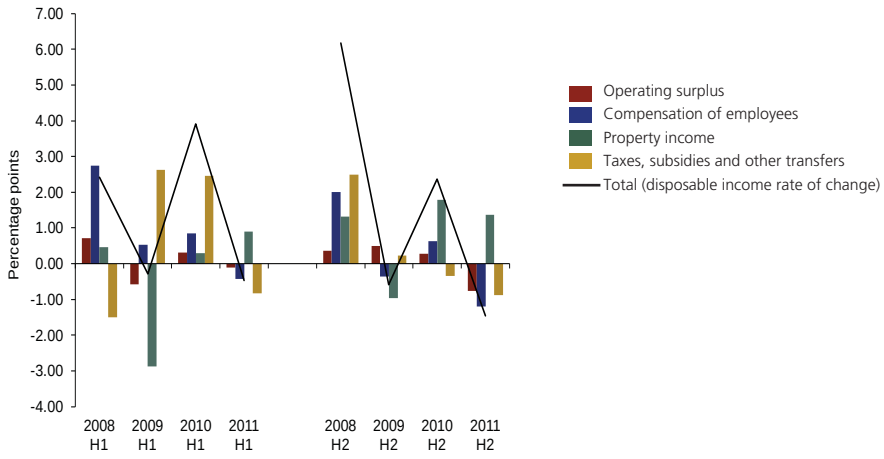
Notes: (a) Disposable income adjusted for the change in net equity of households on pension funds. **(b)** Corresponds to the sum of gross fixed capital formation, changes in inventories, acquisitions less disposals of valuables and acquisitions less disposals of non-produced non-financial assets.

2011 was significantly lower than the fall inferred by its main macroeconomic determinants, as shown by the results of the estimation of a time series model.[2]

The evolution of the financial situation of households, in 2011, was strongly marked by the deterioration of labour market conditions, with an increase in the rate of unemployment and a reduction in employment, particularly in the last quarter. There was also a fall of compensation per employee, essentially conditioned by the reduction of civil servants' wages and the deceleration of wages in the private sector. The evolution of remunerations from labour, accordingly, made a strongly negative contribution to the evolution of disposable income which was more marked in the second half of the year (Chart 3.4). In the context of a strong deterioration of economic activity in general, the contribution made by the gross

Chart 3.4

CONTRIBUTIONS TO THE RATE OF CHANGE OF DISPOSABLE INCOME



Source: *INE*.

2 See "Box 5.1: *Recent evolution of the household saving rate in Portugal*", Banco de Portugal, *Annual Report* 2011. For a detailed presentation of the model, see Alves and Cardoso (2010), "*Household saving in Portugal: micro and macroeconomic evidence*", Banco de Portugal, *Economic Bulletin* - Winter.

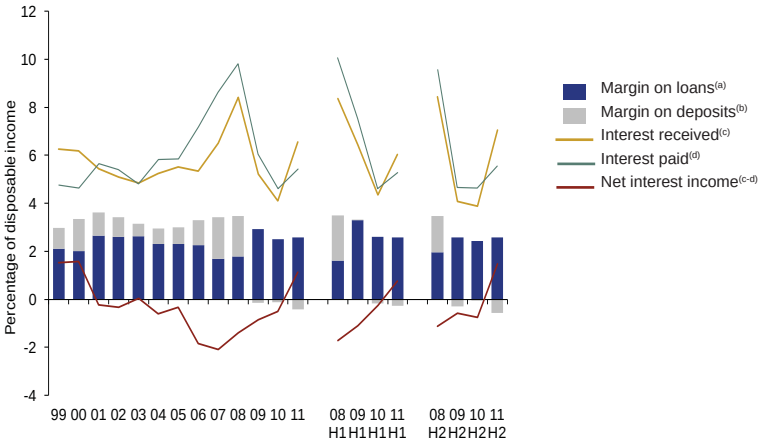
operating surplus and mixed income, reflecting self-employed activities of households, was also negative and more markedly so in the second half of the year. The increase of direct taxes and the reduction of net social transfers, in a context of the budget consolidation process also made a negative contribution to the evolution of household disposable income. In 2011, only property income, which mainly includes interest and profit distributed by companies, made a positive contribution to the change of disposable income. This evolution mainly reflects the evolution of net interest received by households. In 2011, the amount of interest received by households exceeded the amount of interest paid, which had not been the case since 2000 (Chart 3.5). It should also be noted that this difference was more marked in the second half of the year. In 2011 there was a reversal of the downwards trend on interest, both in the case of interest received as in interest paid by households. The evolution, in the case of interest received, reflects a price effect, resulting from the commercial practice followed by banks, and a quantity effect related to the shift of households investments towards deposits. In the case of interest paid, the evolution is likely to reflect higher spreads on new loans in a context of more restrictive lending criteria, with a faster propagation rate in the case of loans for consumption.

The recomposition of the households' financial assets portfolio is in line with a greater aversion to market risk and the banks' commercial policies

The reallocation of household portfolios in favour of deposits, mainly against investment and pension funds, derived from a greater market risk aversion in a context of major uncertainty and the banks' implementation of commercial policies geared to deposit-taking, given the need for adjustment in their balance sheets structure. The reduction of fiscal benefits associated with investments in pension funds is also likely to have contributed to a recomposition of household portfolios to deposits (Chart 3.6). In terms of outstanding amounts, a significant reduction of the proportion of investments in insurance and pension funds was registered. This reduction largely reflects the transfer of some of the banking sector pension funds to the Social Security, for the amount of EUR 5 600 million, because, in the national accounts, such responsibilities are no longer registered as households' assets (Chart 3.7).

Chart 3.5

NET INTEREST RECEIVED BY HOUSEHOLDS AND MARGIN OF FINANCIAL INTERMEDIATION

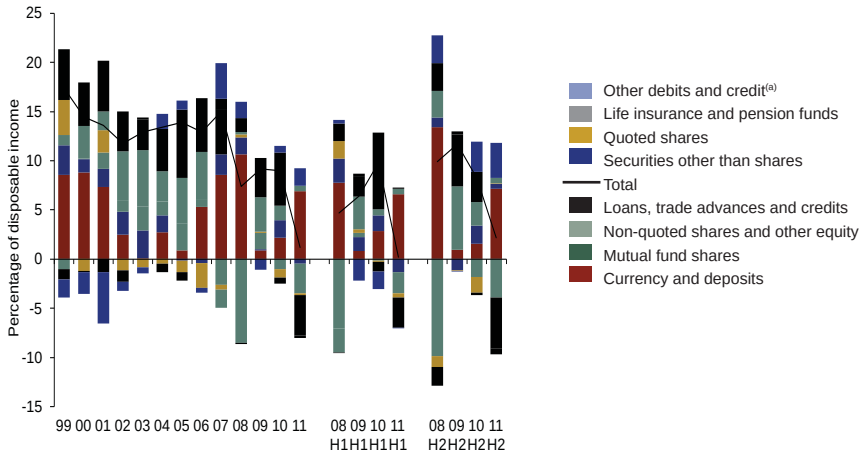


Sources: *INE* and Banco de Portugal.

Notes: The financial intermediation services indirectly measured (FISIM) is an indirect measure of the remuneration obtained by financial institutions in deposits and loans they hold with their customers. **(a)** FISIM estimated for loans to households. **(b)** FISIM estimated for household deposits. **(c)** Difference between interest income received by households included in the income account and the respective FISIM. **(d)** Corresponds to the sum of interest payable by households included in the income account with the respective FISIM.

Chart 3.6

FINANCIAL ASSETS OF HOUSEHOLDS | TRANSACTIONS



Sources: *INE* and Banco de Portugal.

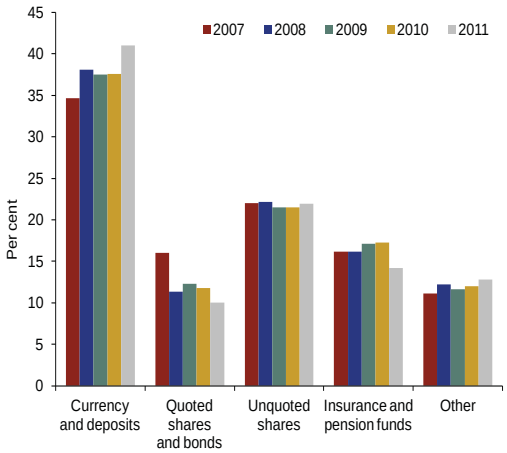
Notes: Consolidated figures. **(a)** Includes other technical insurance reserves and other receivables.

Evolution of credit to households reflects demand and supply side factors

Lending flows to households, in 2011, recorded negative amounts, in a framework of the sector's deleveraging process. Negative flows were registered across-the-board being observed in the case of bank loans for house purchases, consumption and other purposes and loans made by other financial intermediaries (Chart 3.8). This trend clearly accentuated in the second half of the year, particularly in the case of bank loans for consumption. Demand for credit therefore appears to be highly elastic as regards interest rates, not only in the case of loans for consumption but also in housing loans. There has been an upwards trend in interest rate spreads on new loans to households since the middle of 2010. The negative evolution of current income and particularly, the highly negative prospects regarding the evolution of future income, translating into a very sharp reduction of private consumption, particularly of durable consumer goods has also contributed to the contraction of demand for credit. The worsening of the financial situation of households is also likely to generate major uncertainty over their future capacity to pay for their long term debts, contributing towards the postponement of decisions over the purchase of houses and consequently demand for credit for this purpose. In turn, the banks, conditioned by the

Chart 3.7

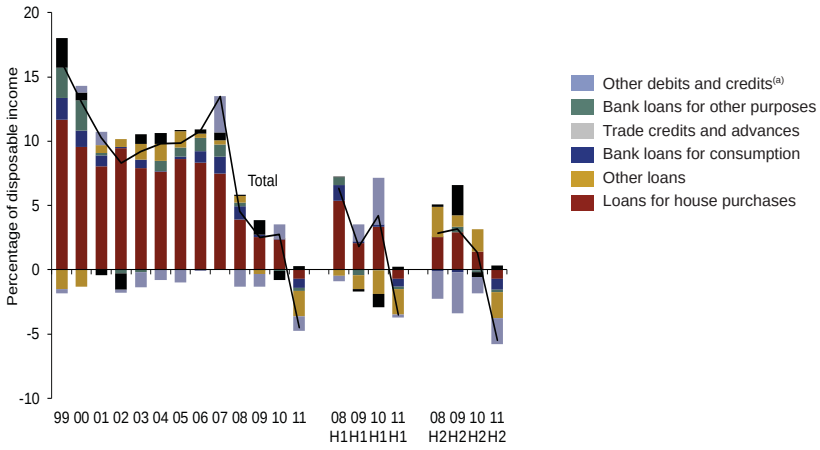
COMPOSITION OF HOUSEHOLDS FINANCIAL PORTFOLIO | AS A PERCENTAGE OF TOTAL



Source: Banco de Portugal.

Chart 3.8

FINANCIAL LIABILITIES OF HOUSEHOLDS | TRANSACTIONS



Sources: *INE* and Banco de Portugal.

Notes: Consolidated figures. **(a)** Includes other technical insurance reserves and other receivables.

increase in the materialisation of credit risk in the housing credit market, their own funding difficulties and the need to adjust their balance sheets, have been applying more restrictive lending criteria, both on credit for consumption and other purposes and on housing credit. According to the results of the Bank Lending Survey, the banks involved reported a more restrictive approach to lending to households, over the course of the year, translating into higher spreads, particularly on higher risk loans, lower loan-to--value ratios, shorter maturities and more demanding requirements in terms of guarantees.

As regards household debt levels, measured as a percentage of disposable income, an indicator highly affected by inertia as it results of the accumulation of past decisions, since 2010 there has been a gradual reduction which interrupted the sustained upwards trend observed over the course of more than two decades (Chart 3.9). Household debt levels therefore continue to be very high, both in historical terms as on an international level (Chart 3.10). In turn, the average housing credit instalment, dominated by payments relating to loans made in preceding periods has remained relatively stable, given the historically low level of market interest rates to which most rates of housing loans are indexed and the fact that the spreads are fixed for the lifetime of the loans (Chart 3.11).

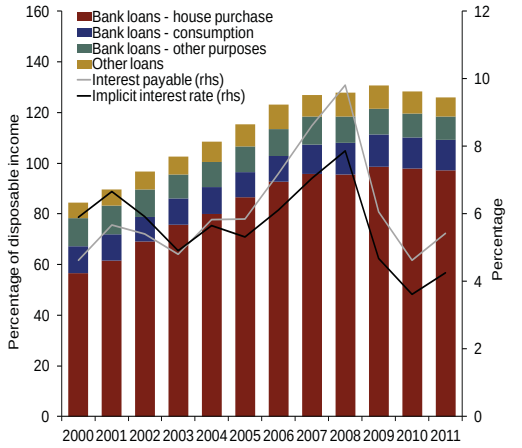
Microeconomic information is very useful for assessing situations of greater vulnerability

In terms of financial stability, it is very important to know what the percentage of indebted households is and to be able to analyse the distribution of such households' indebtedness according to different characteristics. Such an analysis can only be performed on the basis of microeconomic data. In particular, only data obtained from a direct survey on households makes it possible to combine information on their eventual levels of indebtedness with information on other relevant dimensions of households such as income, financial and real wealth, age bracket or labour market situation. The microeconomic data recently supplied by the ISFF (Household Finance and Consumption Survey) performed by Banco de Portugal and INE, were collected in second quarter of 2010 and do not, therefore, reflect developments in the financial situation of households from the second half of 2010.[3] However, given their essentially

3 For further details on methodological aspects and the results of the ISFF, see the article "*Household indebtedness: a microeconomic analysis based on the results of the ISFF*", of this Report and the article "*Survey on the Financial Situation of Households: methodological aspects and main results*", Banco de Portugal, *Occasional Paper* 1/2012.

Chart 3.9

FINANCIAL DEBT OF HOUSEHOLDS | END OF PERIOD POSITIONS

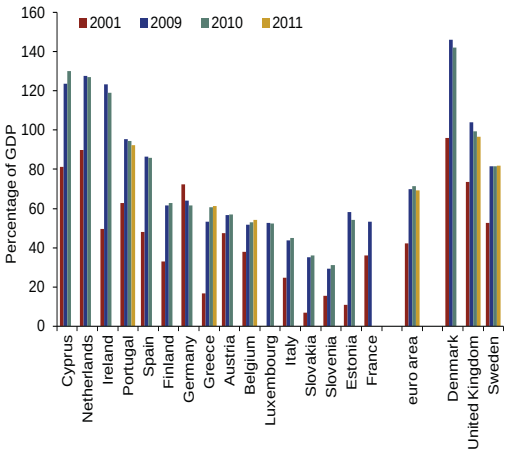


Sources: *INE* and Banco de Portugal.

Note: Implicit interest rate: estimates made by Bank of Portugal of the interest effectively paid on the financial debt of individuals.

Chart 3.10

FINANCIAL DEBT OF HOUSEHOLDS | INTERNATIONAL COMPARISON



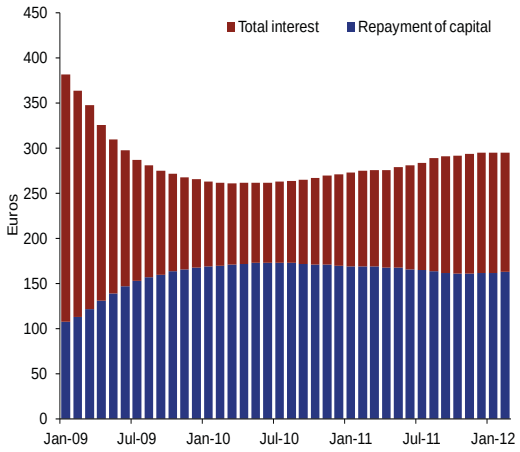
Sources: Eurostat and Banco de Portugal.

Note: Consolidated figures except for Ireland and the United Kingdom. The average for the euro area was computed for the euro area countries that are presented in the chart.

structural nature, they are very important for assessing households' debt market participation, characterising the distribution of indebtedness and identifying groups of households with a higher probability of materialisation of credit risk. The article entitled "Household indebtedness: a microeconomic analysis based on ISFF results", of this Report, assesses households' capacity to serve their debts on the basis of three indicators normally used in this type of analysis. These indicators are the ratio between debt service and income, the ratio between debt and income and the ratio between debt and total wealth (real and financial wealth). For analysis purposes, households are usually considered to be more vulnerable if their debt ratios exceed certain critical levels. The critical levels used, respectively 40 per cent, 3 and 75 per cent, for the debt service ratio, the debt to income ratio and debt to wealth ratio, are normally used in analyses for other countries and generally result from the criteria used by the banks in their lending

Chart 3.11

AVERAGE MORTGAGE INSTALMENT



Source: *INE*.

Note: Last figure – February 2012.

decisions. ISFF results indicate that, of the total of indebted households, 13 and 15 per cent, respectively, have exceeded the critical levels of debt servicing to income and debt to wealth ratios. In the case of the debt to income ratio, the proportion is 28 per cent. The debt service ratio continued to benefit from the fact that mortgages, in Portugal, are usually taken for very long maturities, their interest rates are indexed to money market rates, which have remained at reduced levels, and spreads on past operations are both fixed and small. In turn, the moderate levels of the debt to wealth ratio largely reflect the fact that Portugal has not had a property market bubble or a subsequently marked fall in property prices and reduction of the amount of real wealth. Households with reduced income levels have found themselves in a more vulnerable situation, especially if they have taken out mortgages. However, their participation in the debt market has continued to be very small and therefore the impact on banks of any materialisation of credit risk in this segment would not be very high.

Worsening outlook for the financial situation of households

In 2012, the financial situation of households will, to a large extent, reflect a continuation of the reduction of disposable income which will mainly be affected by the suspension of the holiday and Christmas subsidies of public sector workers and pensioners, by the higher fiscal burden and the evolution of wages which, in general, will be strongly conditioned by the worsening in labour market situation. This foreseeable evolution will certainly lead to the increase in default on debt servicing and in the number of insolvent households which has been increasing, although still remaining limited in number.[4] The consequences of this evolution on financial stability are, however, likely to continue to be mitigated by several aspects. Reference should particularly be made to the fact that housing loans, which account for a clearly dominant proportion of lending to households, mainly comprises loans for first home purchases, for which the probability of default has been relatively low in historical terms. The results of the estimation of household's default models show that the materialisation of credit risk is more sensitive to unemployment in the case of loans for consumption and other purposes than in the case of housing loans.[5]

Non-financial corporations

In 2011, the borrowing requirements of non-financial corporations, measured as a percentage of GDP were slightly down over the preceding year. This result derives, however, from divergent evolutions in the first and in the second halves of the year. In the second half of 2011, there was an increase in the borrowing requirements of non-financial corporations, excluding the impact of the transfer of the PT pension funds, in comparison to the same period of the preceding year, in contrast to the evolution recorded in the first half of the year (Chart 3.12). With significant reductions of investment in both halves, the difference between the evolution of borrowing requirements in the first and the second halves essentially resulted from the fact that the fall in savings was more intense in the second half. An essential contribution to the reduction of the savings of non-financial corporations, in the second half of 2011, as was the case in the first half of the year, was made by property income, comprising interest and profit distributed by corporations, as gross operating surplus remained stable when measured as a percentage of GDP (Chart 3.13).

Deterioration of corporate profitability levels, especially at the end of the year

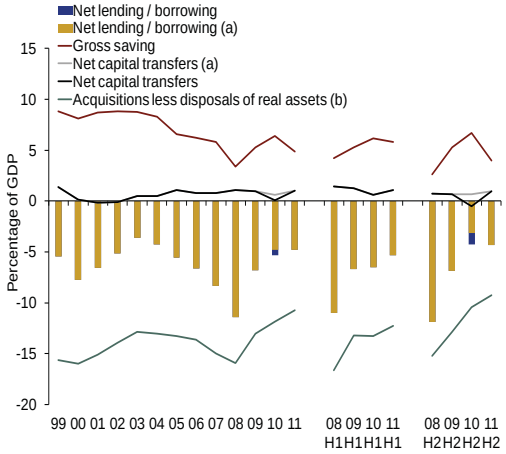
Recent data from the Balance Sheet Database for 2010 which practically encompass non-financial corporations as a whole, generally confirmed the evolution of corporations' financial situation given by the

4 About the evolution of default see "Section 4.4 *Credit Risk*", of this Report.

5 See the article "Modelling the evolution of households'defaults" in the *Financial Stability Report* – November 2011.

Chart 3.12

NET BORROWING, SAVING AND INVESTMENT OF NON-FINANCIAL CORPORATIONS



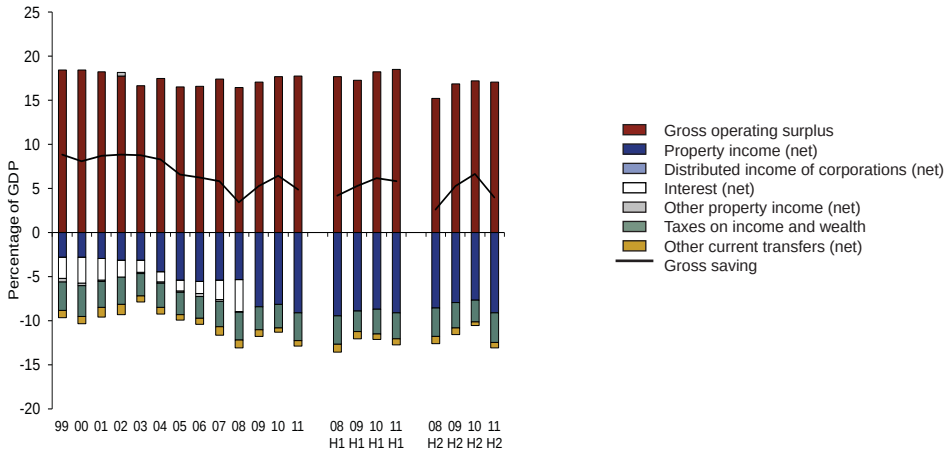
Source: *INE*.

Notes: (a) Values excluding the transfer of Portugal Telecom pension funds to Caixa Geral de Aposentações. **(b)** Corresponds to the sum of gross fixed capital formation, changes in inventories, acquisitions less disposals of valuables and acquisitions less disposals of non-produced non-financial assets.

quarterly indicators, which are obtained from a sample of companies in which the larger companies are over represented[6] (Table 3.1). There continue to be, however, structural differences between companies of different sizes. A comparison between the annual and quarterly indicators for 2010, for non-financial corporations as a whole shows that the larger companies have higher debt levels, lower debt costs, higher returns on equity but slightly lower operational profitability. Profits made by non-financial corporations grew significantly, in 2011. Notwithstanding the slightly negative change in margins, operating

Chart 3.13

CONTRIBUTIONS TO THE GROSS SAVING OF NON FINANCIAL CORPORATIONS



Source: *INE*.

Notes: Net refers to the difference between the values recorded under resources and uses. In national accounts from 2009 (inclusive) the information on the components of property income (distributed profits, interest and other income from property) is not yet available.

6 Data from the annual Balance Sheet Database have, since 2006, been collected from the Simplified Business Information System (IES) and practically cover the whole of the corporate "universe" of around 350 thousand companies. The quarterly information is collected on the basis of the Quarterly Survey on Non-financial Corporations which embraces a sample of around 3000 companies covering a significant proportion of added value in the non-financial corporations sector, but particularly reflects the situation of the larger corporations.

Table 3.1

CORPORATE SECTOR PERFORMANCE INDICATORS

	Annual Central Balance Sheet				Quarterly Central Balance Sheet							
	2007	2008	2009	2010	2010 I	2010 II	2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV
Year on year rates of change (%)												
Gross margin	10.4	1.9	-4.3	-0.1	5.0	5.2	3.6	2.2	-0.1	-2.1	-3.4	-4.8
EBITDA	14.5	-15.2	-6.3	12.3	11.5	12.0	8.9	7.0	2.9	1.5	-1.7	-12.9
Net profit	20.6	-60.5	9.5	142.5	120.2	66.6	41.2	48.3	-9.1	-8.2	-11.9	-40.6
Main ratios												
Cost of debt (%)	8.4	9.5	6.8	5.5	3.3	3.3	3.3	3.6	3.6	3.9	4.0	4.4
EBITDA/interest	5.1	3.5	4.5	6.0	5.8	6.1	6.2	6.0	5.1	5.0	4.8	4.1
Debt/capital	1.9	2.0	2.1	1.9	2.5	2.6	2.5	2.6	2.5	2.6	2.6	2.6
Debt/EBITDA	2.3	3.0	3.3	3.0	5.2	4.9	4.8	4.7	5.5	5.1	5.2	5.5
ROE (%)	9.6	3.9	4.2	9.8	10.3	12.0	11.5	12.4	9.3	11.0	10.2	7.4
ROI (%)	9.1	6.1	5.3	8.1	6.2	6.8	6.7	7.1	5.9	6.7	6.4	5.5
Debt at risk (%)	21.8	25.5	24.8	23.3	24.3	18.5	17.8	14.0	20.8	20.3	19.7	19.8

Source: Banco de Portugal (Central Balance Sheet).

Notes: Quarterly indicators correspond are obtained with a constant sample in all quarters. EBITDA: earnings before interest, taxes, depreciation and amortisation is a measure of operational profitability; Interest coverage ratio = EBITDA/ interest payments; ROE (return on equity) = Net profits / equity; ROI (Return on investment) = Net profits + interest payments/ Total assets; Debt at risk: debt of the corporations where interest costs are higher than EBITDA, as a percentage of total debt of corporations.

results increased substantially. Profits also benefited from a reduction of the level of indebtedness and a decrease of debt costs, in addition to the temporary recovery of economic activity. Profitability ratios therefore recovered from the low levels recorded in the 2008-2009 recessionary period. As in 2011, only quarterly information is available, indicating that the profits made by companies as a whole, were reduced at progressively more negative rates over the course of the year. This evolution is likely to have resulted from decreased margins and increased debt costs. The less unfavourable evolution of operating income, measured by earnings before interest, taxes, depreciation and amortisation (EBITDA), suggests that labour costs made a positive contribution to the evolution of corporate results, in line with the situation noted in the labour market. The debt ratio of companies, as a whole, remained high over the course of the year. It should be remembered that larger companies, usually with higher debt levels than the average for non-financial corporations and a greater possibility of obtaining alternative funding sources to bank credit from resident institutions are over represented in the sample. The coverage ratio (the ratio between operating income and interest) was lower than noted for the same periods in 2010 with the debt to operating income ratio always having been higher. Profitability ratios displayed a downwards trend which was especially marked at the end the year.

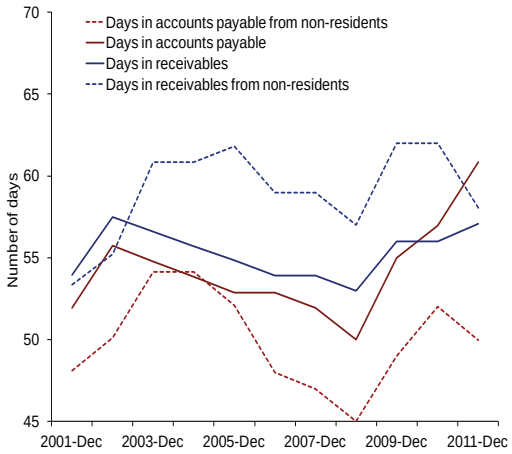
The upwards trend in average accounts payable and accounts receivable periods, particularly evident in the case of payments to third parties, translates a more intense use of financing through trade credit, given eventual funding difficulties from other sources, notably the resident banking sector (Chart 3.14). In the case of transactions with non-residents, the narrowing of average accounts receivable periods also comprised a funding alternative for Portuguese companies, albeit offset by a reduction of the average accounts payable period, suggesting a certain added pressure on Portuguese companies from non-resident suppliers to meet deadlines.

There was a deterioration of private companies' profitability indicators over the course of the year, especially in the second half, with reductions of margins, operating income and net profit (Tables 3.1A and 3.2B). Up to the third quarter, the evolution of the profits of public corporations was positive, i.e. they were less negative in comparison to the same quarters of the previous year. However, such companies' ROE remained strongly negative, owing to their high debt levels on which the trend remains upwards.

An analysis of the evolution of the profitability of private sector non-financial corporations by sector of

Chart 3.14

DAYS IN ACCOUNTS PAYABLE AND RECEIVABLE



Source: Banco de Portugal (Central Balance Sheet).

Note: The indicators, which is based on data from the ITENF, refer to December of each year. The indicator for a period is comparable to the indicator for the same period in the previous year. Days in accounts payable = (Total trade credits and advances received / (purchases of goods for resale, raw materials, secondary and consumables + supplies and external services)) x number of days in the period. Days in accounts receivable = (Total trade credits and advances granted/turnover) x number of days in the period.

activity, in 2011, is limited to a few sectors, such as manufacturing and retail and wholesale trade (Tables 3.3A, 3.3B).[7] The indicators suggest that the highest deterioration of profitability in 2011 occurred in the retail and wholesale sectors which are more dependent upon the evolution of domestic demand. This sector recorded marked falls in margins, operating income and net profit since the first quarter of the year and a fall in ROI and ROE to around half of the preceding year's figures. In the case of manufacturing, the decreasing trend in profitability ratios is more moderate with margins and net income only registering negative rates of change starting from the third quarter, largely reflecting the strong reduction of domestic demand, as exports continued to grow at a significant rate, notwithstanding the slowdown of external demand. It was also noted that this is the least indebted sector with a lower debt cost ratio. Exporting companies, in which manufacturing companies predominate, showed a higher level of performance, in 2011, than private non-financial corporations as a whole. However, such companies' profitability also deteriorated in the second half of the year, with a sharp drop in their net profit in the fourth quarter (Table 3.4).

Loans to private non-financial corporations continued to slow, with divergent evolutions between private and public companies

In second half of 2011, the financing flow to non-financial corporations decreased again but less expressively than recorded in the first half, given the highly significant amount of the flow of listed shares (Chart 3.15). This amount, however, essentially resulted from a foreign direct investment operation comprising the sale of a large distribution company's shares to a non-resident entity. There was a relatively gradual slowdown of lending to non-financial corporations as a whole, over the course of the year. The debt ratio, however, remained practically unchanged, partly on account of the fact that the indicator was also affected by the decrease of nominal GDP (Chart 3.16).

7 Special reference should be made to the absence of the construction and public works sector which has been one of the most affected by the economic and financial crisis. The non-disclosure of quarterly indicators for this sector, is justified.by the fact that the dimension of the quarterly sample is not sufficiently representative.

Table 3.2A

CORPORATE SECTOR PERFORMANCE INDICATORS: STATE-OWNED CORPORATIONS

	Annual Central Balance Sheet				Quarterly Central Balance Sheet							
	2007	2008	2009	2010	2010 I	2010 II	2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV
Year on year rates of change (%)												
Gross margin	22.1	7.0	12.6	-6.4	-1.1	-1.3	-0.4	-0.9	-0.8	-0.1	-1.6	-1.5
EBITDA	-7.4	-12.3	13.5	-23.4	-50.3	-18.7	-8.1	0.0	58.6	31.7	21.4	-3.5
Net profit	-149.5	-372.9	42.2	17.4	-42.9	-34.9	-26.2	3.6	12.3	10.7	0.6	-53.7
Main ratios												
Cost of debt (%)	6.0	8.1	5.6	5.3	2.8	2.8	2.8	3.1	3.7	3.9	4.0	4.4
EBITDA/interest	3.2	2.4	3.4	2.7	1.4	2.0	2.1	2.3	1.7	1.8	1.7	1.5
Debt/capital	5,4	6,2	7,0	6,4	8,9	10,2	9,9	12,5	12,1	15,4	17,2	20,0
Debt/EBITDA	5.3	5.2	5.3	6.9	24.8	17.7	16.9	13.9	16.5	13.9	14.4	14.8
ROE (%)	-2.3	-11.9	-7.1	-5.5	-36.3	-28.9	-27.0	-24.5	-40.3	-37.0	-44.2	-58.1
ROI (%)	3.2	1.1	1.6	1.8	-3.2	-1.6	-1.4	-0.1	-1.6	-0.1	-0.3	-0.4
Debt at risk (%)	25.1	33.9	33.8	37.9	51.3	49.6	50.0	52.9	48.2	56.1	55.7	56.6

Table 3.2B

CORPORATE SECTOR PERFORMANCE INDICATORS: PRIVATE CORPORATIONS

	Annual Central Balance Sheet				Quarterly Central Balance Sheet							
	2007	2008	2009	2010	2010 I	2010 II	2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV
Year on year rates of change (%)												
Gross margin	9.6	1.6	-5.7	0.5	6.4	6.6	4.5	2.9	0.0	-2.5	-3.7	-5.5
EBITDA	15.6	-15.4	-7.1	14.2	15.0	14.0	10.1	7.6	0.9	0.1	-2.8	-13.4
Net profit	23.3	-57.6	5.8	136.2	100.1	62.6	39.8	44.5	-9.5	-8.4	-10.9	-35.0
Main ratios												
Cost of debt (%)	8.6	9.6	7.0	5.5	3.4	3.4	3.4	3.7	3.6	3.9	4.0	4.3
EBITDA/interest	5.2	3.6	4.5	6.3	6.5	6.8	6.9	6.6	5.8	5.6	5.4	4.6
Debt/capital	1,8	1,9	1,9	1,8	2,2	2,3	2,2	2,2	2,2	2,2	2,2	2,2
Debt/EBITDA	2.2	2.9	3.2	2.9	4.5	4.3	4.2	4.2	4.9	4.5	4.7	5.0
ROE (%)	9.9	4.3	4.5	10.2	12.4	13.7	13.1	13.6	11.0	12.3	11.6	8.8
ROI (%)	9.5	6.3	5.5	8.4	7.4	7.9	7.7	7.9	6.8	7.5	7.3	6.2
Debt at risk (%)	21.5	24.8	24.0	22.1	19.4	12.8	11.7	6.7	15.6	13.3	12.5	12.7

Source: Banco de Portugal (Central Balance Sheet).

Notes: Quarterly indicators correspond are obtained with a constant sample in all quarters. *EBITDA*: earnings before interest, taxes, depreciation and amortisation is a measure of operational profitability; Interest coverage ratio = *EBITDA*/ interest payments; ROE (return on equity) = Net profits / equity; ROI (Return on investment) = Net profits + interest payments/ Total assets; Debt at risk: debt of the corporations where interest costs are higher than *EBITDA*, as a percentage of total debt of corporations.

Table 3.3A

CORPORATE SECTOR PERFORMANCE INDICATORS: MANUFACTURING CORPORATIONS

	Annual Central Balance Sheet				Quarterly Central Balance Sheet							
	2007	2008	2009	2010	2010 I	2010 II	2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV
Year on year rates of change (%)												
Gross margin	8.7	-2.3	-13.8	7.5	14.8	18.4	15.3	16.1	13.0	4.5	-0.6	-6.3
EBITDA	15.2	-8.6	-20.6	5.7	21.9	35.1	24.9	23.5	40.4	13.0	2.5	-3.6
Net profit	30.2	-50.3	-47.2	210.7	82.3	100.7	64.7	85.6	49.7	12.0	-1.3	-6.8
Main ratios												
Cost of debt (%)	9.1	9.4	6.7	5.2	2.2	2.3	2.5	3.1	2.9	3.2	3.2	3.7
EBITDA/interest	7.3	5.6	6.0	7.6	12.3	13.9	13.8	10.3	12.7	10.8	10.1	8.1
Debt/capital	1.6	1.7	1.8	1.8	1.5	1.6	1.6	1.7	1.6	1.6	1.5	1.5
Debt/EBITDA	1.5	1.9	2.5	2.5	3.6	3.1	2.9	3.1	2.7	2.9	3.1	3.4
ROE (%)	9.3	4.6	2.6	7.8	11.3	13.3	13.6	11.5	16.2	14.4	13.0	10.0
ROI (%)	9.2	6.2	4.1	6.8	7.2	8.4	8.7	7.6	10.1	9.2	8.6	7.1
Debt at risk (%)	14.6	18.5	19.4	15.6	14.6	11.2	9.9	9.1	12.7	12.4	10.5	8.8

Table 3.3B

CORPORATE SECTOR PERFORMANCE INDICATORS: WHOLESALE AND RETAIL TRADE CORPORATIONS

	Annual Central Balance Sheet				Quarterly Central Balance Sheet							
	2007	2008	2009	2010	2010 I	2010 II	2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV
Year on year rates of change (%)												
Gross margin	8.5	4.5	-4.4	6.7	15.4	15.5	10.9	4.2	-2.0	-11.9	-12.8	-10.4
EBITDA	20.7	-6.1	-4.9	-2.8	24.1	29.8	18.7	5.4	-12.0	-25.4	-23.1	-23.2
Net profit	28.9	-49.5	73.7	45.8	239.4	107.1	53.9	36.3	-10.9	-46.8	-43.9	-45.2
Main ratios												
Cost of debt (%)	13.3	16.2	9.0	6.1	4.3	3.6	3.7	4.1	4.6	5.0	5.1	5.3
EBITDA/interest	4.5	3.2	5.7	7.4	8.0	11.1	11.7	11.0	6.1	6.4	6.7	6.6
Debt/capital	1.9	1.9	1.8	1.7	2.2	2.3	2.2	2.2	2.0	2.1	2.1	2.1
Debt/EBITDA	1.7	1.9	2.0	2.2	2.9	2.5	2.3	2.2	3.6	3.1	2.9	2.8
ROE (%)	7.2	3.6	6.1	8.3	8.5	16.2	17.1	16.2	7.4	8.3	9.4	8.8
ROI (%)	8.9	7.3	6.9	7.7	6.9	10.8	11.5	11.3	6.2	7.0	7.7	7.4
Debt at risk (%)	17.7	18.2	19.6	18.7	34.3	18.5	11.6	4.7	38.2	19.0	12.9	11.3

Source: Banco de Portugal (Central Balance Sheet).

Notes: Quarterly indicators correspond are obtained with a constant sample in all quarters. *EBITDA*: earnings before interest, taxes, depreciation and amortisation is a measure of operational profitability; Interest coverage ratio = *EBITDA*/ interest payments; ROE (return on equity) = Net profits / equity; ROI (Return on investment) = Net profits + interest payments/ Total assets; Debt at risk: debt of the corporations where interest costs are higher than *EBITDA*, as a percentage of total debt of corporations.

Table 3.4

CORPORATE SECTOR PERFORMANCE INDICATORS: EXPORTING CORPORATIONS

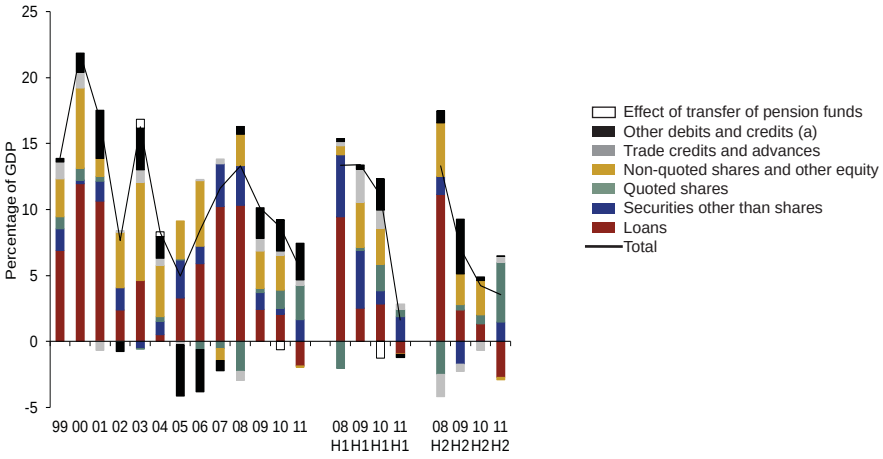
	Annual Central Balance Sheet				Quarterly Central Balance Sheet							
	2007	2008	2009	2010	2010 I	2010 II	2010 III	2010 IV	2011 I	2011 II	2011 III	2011 IV
Year on year rates of change (%)												
Gross margin	11.0	-2.3	-11.5	12.3	18.7	17.4	15.0	13.4	9.8	4.2	-1.4	-6.4
EBITDA	3.5	-9.3	-13.5	3.7	31.4	28.8	26.0	16.2	31.1	8.8	-1.3	-15.3
Net profit	-1.2	-42.3	-14.5	79.8	357.1	73.7	64.4	68.6	47.5	17.1	2.9	-25.3
Main ratios												
Cost of debt (%)	8.3	8.9	6.9	4.9	2.7	2.8	2.8	3.2	3.1	3.1	3.3	3.6
EBITDA/interest	6.4	4.6	5.0	6.4	5.0	6.6	6.7	6.3	5.5	6.2	5.4	4.6
Debt/capital	1.7	1.8	1.8	1.8	1.8	1.9	1.8	1.9	1.8	1.9	1.8	1.8
Debt/EBITDA	1.9	2.5	2.9	3.2	7.4	5.4	5.4	4.9	5.8	5.1	5.6	6.1
ROE (%)	12.2	7.1	6.1	10.4	7.2	11.8	11.3	12.3	10.4	13.8	11.4	8.8
ROI (%)	10.8	7.8	6.4	8.1	4.7	6.8	6.7	7.3	6.4	7.8	7.0	5.9
Debt at risk (%)	7.5	11.9	12.2	10.9	13.2	9.7	11.4	4.5	10.9	11.6	10.4	11.5

Source: Banco de Portugal (Central Balance Sheet).

Notes: Quarterly indicators correspond are obtained with a constant sample in all quarters. *EBITDA*: earnings before interest, taxes, depreciation and amortisation is a measure of operational profitability; Interest coverage ratio = *EBITDA*/ interest payments; ROE (return on equity) = Net profits / equity; ROI (Return on investment) = Net profits + interest payments/ Total assets; Debt at risk: debt of the corporations where interest costs are higher than *EBITDA*, as a percentage of total debt of corporations.

Chart 3.15

FINANCIAL LIABILITIES OF NON-FINANCIAL CORPORATIONS | TRANSACTIONS

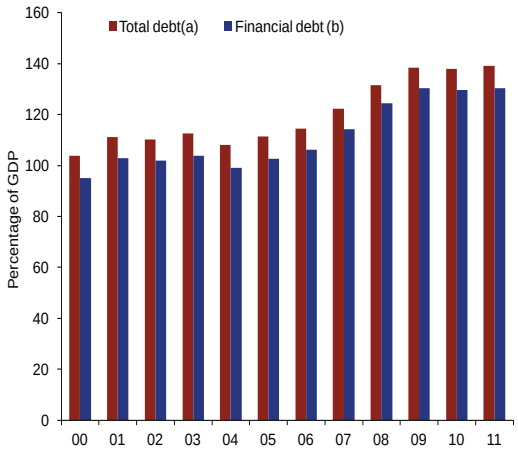


Sources: *INE* and Banco de Portugal.

Notes: Consolidated figures. **(a)** Includes insurance technical reserves and other accounts payable and excludes amounts related to the transfer of pension funds.

Chart 3.16

DEBT OF NON-FINANCIAL CORPORATIONS | END OF PERIOD FIGURES



Sources: *INE* and Banco de Portugal.

Notes: Consolidated figures. **(a)** Total debt comprises financial debt plus trade credits and advances received from other sectors. **(b)** Financial debt includes loans extended to and debt securities issued by non-financial corporations.

Although, in aggregate terms the deceleration of the financing of non-financial corporations in the form of debt is being made gradually, there are asymmetries in the distribution of this evolution and reference should be made to the discrepancy between the growth of loans made by resident banks to public corporations and private sector companies. This asymmetry is, however, mitigated by the evolution of financing obtained from sources other than the resident banks. In particular, the non-resident sector has contributed positively to the financing of private sector non-financial corporations in the form of loans, acquisition of securities and trade credit.[8] Micro and small and medium-sized companies are, in turn, facing highly active financing restrictions.

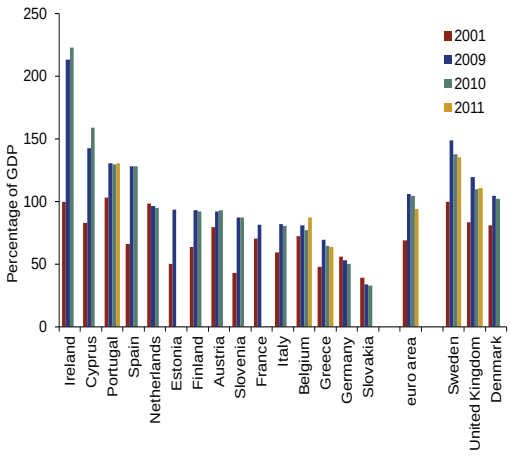
In the context of the international financial crisis which has particularly affected euro area countries, non--financial corporations' need of changing their financing structures with the aim of being less dependent on debt is an across-the-board trend in Europe. Portuguese companies have, therefore, maintained their relative position in the international context in terms of their debt ratios, both as a percentage of GDP and relative to capital (Charts 3.17 and 3.18).

Credit evolution has been reflecting demand and supply side factors. According to the results of the Bank Lending Survey, the contraction of investment and less need to finance M&As or corporate restructuring operations have had a negative effect on the demand for credit, particularly affecting demand for long term loans. Moving in the opposite direction, demand for credit from companies has been sustained by the increase in borrowing requirements for debt restructuring purposes and starting in the last quarter of the year, borrowing requirements for inventories and working capital. The banks, in turn, have been increasingly more demanding in terms of their criteria for the approval of loans or lines of credit to companies, particularly over the longer maturities. This has taken the form of a combination of higher spreads and/or commissions, lower loan amounts, shortening of maturities and increase in the level of guarantees required. The perception that the risks are increasing, in a context of deteriorating expectations regarding economic activity in general have contributed to the increase in the level of restrictiveness of banks' credit policies. The more demanding approach taken by banks in the approval of loans also reflected factors associated with their own funding difficulties and need to adjust the structure of their balance sheets.

8 See "Section 4.4 *Credit Risk*", of this Report.

Chart 3.17

FINANCIAL DEBT OF NON-FINANCIAL CORPORATIONS | INTERNATIONAL COMPARISON

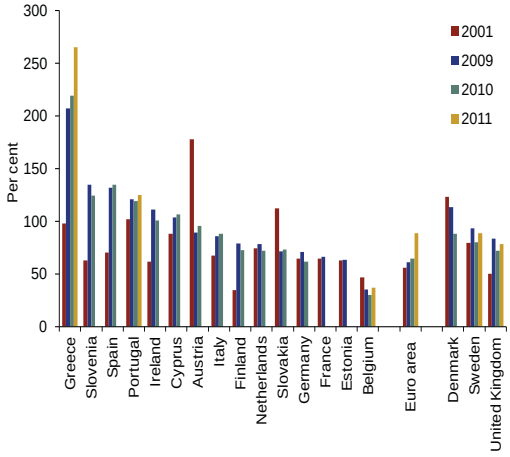


Sources: Eurostat, *INE* and Banco de Portugal.

Notes: Consolidated figures for all countries except Ireland and the United Kingdom. The value for the euro area corresponds to the average of the countries shown in the graph.

Chart 3.18

DEBT TO EQUITY - INTERNATIONAL COMPARISON



Sources: Eurostat and Banco de Portugal

Notes: Consolidated figures for all countries except Ireland and the United Kingdom. The value for the euro area corresponds to the average of the countries shown in the graph.

In turn, companies have been affected by difficulties in access to credit. The results of business surveys on companies in different sectors of activity shows a growing trend in the percentage of companies indicating that difficulty in access to credit is one of the main constraints on their activity (Charts 3.19A, 3.19B and 3.19C). This percentage is especially high in the case of the construction and public works sector whose companies are heavily indebted and face particularly negative prospects. However, for companies in this sector, there appears to have been an interruption to this indicator's upwards trend in the last quarter of 2011. In manufacturing and services sectors the percentage of companies specifying difficulties in access to credit as one of the most constraining factors on their activity is much lower but with a growth trend since the last quarter of 2010.

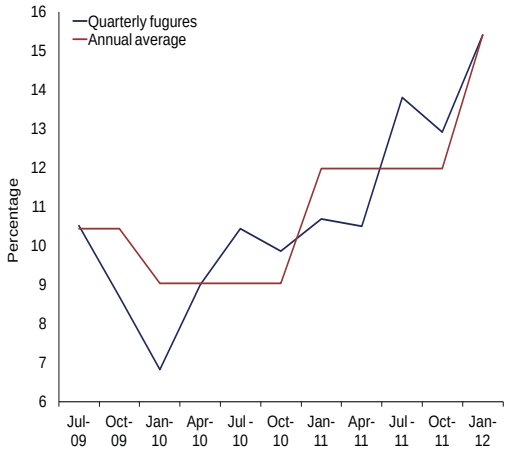
The financial situation of non-financial corporations will continue to reflect the contraction of domestic demand and slowdown of external demand

The financial situation of non-financial corporations will continue to reflect the very sharp fall in domestic demand. Exports should help to mitigate the impact of the contraction of domestic demand, although a slowdown is foreseen, in a context of moderation in world economic activity. Corporate profitability should, on the one hand, continue to be negatively affected by higher financing costs, particularly for companies which have fewer alternative funding sources, such as smaller companies and companies operating in higher risk sectors. On the other hand, profitability will be positively impacted by the declining trend of unit labour costs. Borrowing requirements for investment are expected to continue to contract and the gradual, orderly deleveraging process of non-financial corporations is expected to continue to proceed. The greatest challenge lies in allowing the more dynamic, productive companies to obtain the financing needed to resolve any temporary liquidity problems. To achieve this objective it will be necessary to develop the restructuring of public corporations to avoid a situation in which their financing requirements represent an obstacle to the financing of the more productive private sector companies.

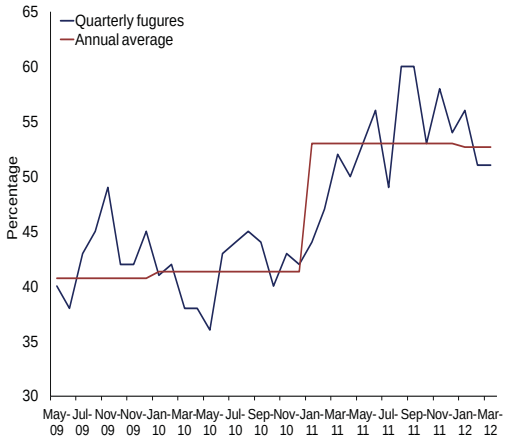
Chart 3.19

FIRMS WITH DIFFICULTIES IN THE ACESS TO CREDIT

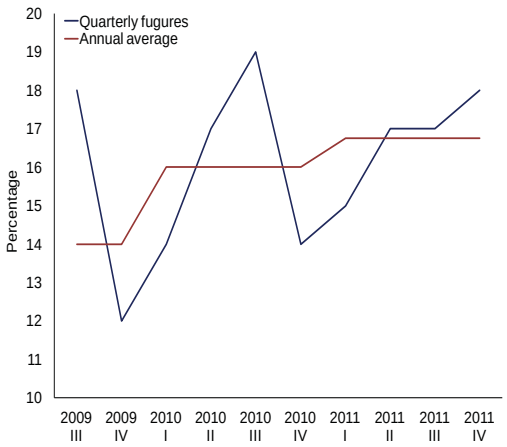
A - Manufacturing



B - Construction



C - Services



Source: *INE*.

4. Banking System[1]

4.1. Activity and profitability

In 2011, Portuguese banking system activity was performed in a particularly adverse and demanding context, deriving from the scarcity of market funding, intensification of the sovereign debt crisis in the euro area and increased materialisation of credit risk in domestic activity. The evolution of Portuguese banks' activity in this period is also set against a background of the deleveraging and solvency level reinforcement processes set out in the Economic and Financial Assistance Programme, embodied, respectively, in the convergence to a indicative ratio between credit and deposits of approximately 120 percent at the end of 2014 and in the compliance with a Core Tier 1 ratio of 9 per cent at the end of 2011 and 10 per cent at the end of 2012. Banking system profitability deteriorated significantly, in 2011, reflecting increased impairment on credit to constumers and on the financial assets portfolio, underpinned by several non-recurrent events. Excluding the effects of non-recurrent operations, net income was approximately nil. In 2012, the profitability of the banking system will depend on the resilience of structural components of gross income (net interest income and commissions), in a context of low interest rates in the inter-bank market and economic downturn, since a further increase in impairment associated with credit to costumers is expected. In turn, the evolution of the value of the financial assets portfolio will dependent on the situation in international financial markets. Nevertheless, liability management operations, namely repurchases of own bonds in the secondary market, may continue to make a positive contribution to profitability of the banking system.

Activity in the Portuguese banking system contracted significantly in 2011, reflecting, at a first stage, the significant volume of credit and other asset disposals latterly followed by a slowdown in lending.

Portuguese banking system activity, assessed on the basis of total assets, on a consolidated basis, contracted 3.5 per cent in 2011 (Table 4.1.1 and Chart 4.1.1). Although the assets' decreased was distributed identically between the first and second half of the year, their underlying factors were different. The first

1 In the analysis set out in this chapter, the aggregate defined as being the Portuguese banking system refers to the credit institutions and financial companies operating in Portugal under the supervision of Banco de Portugal, with the exception of institutions in the Madeira offshore zone. These include financial groups, on a consolidated basis, whose consolidation perimeter includes at least one credit institution or an investment company and credit institutions and investment companies, on an individual basis, which are not consolidated in Portugal (including the branches of credit institutions or investment companies. The analysis of this "universe" is important to the extent that it is this collection of credit institutes to which the new Capital Requirements Directive applies and is the reference "universe" in most European countries. It is not possible to provide data prior to 2007 for the aggregate under consideration as the adopting of the International Accounting Standards (IAS) was not transversal to all institutions with different accounting systems coexisting in 2005 and 2006. The data presented in this chapter are therefore based on different aggregates of institutions. In particular, up to 2004 the list of institutions refers to banks and savings banks, with the exception of banks headquartered or operating exclusively in the Madeira offshore zone and/or operating mainly with non-residents. Branches of credit institutions headquartered in another European Union member state - excluding those not classified as monetary financial institutions (MFIs) - in addition to the branches of credit institutions in third countries were classified as banks. A first set for the period December 2004 to December 2007, corresponding to thirteen banking groups which adopted the Adjusted Accounting Standards to prepare their respective financial statements in 2005 (representing, in December 2004, around 87 per cent of the total assets of the set of institutions analysed up to the said date). The second set was for the period March 2007 to 2010. The period of superimposition of the different sets of institutions makes it possible to achieve a consistent analysis of changes. To facilitate the reading of this document, whenever necessary, the charts and tables set out in this chapter have a straight line indicating breaks in the series.

Table 4.1.1 (to be continued)

BALANCE SHEET OF THE BANKING SYSTEM | ON A CONSOLIDATED BASIS

	EUR millions					Structure (as a percentage of total assets)					Year-on-year rates of change (per cent)			Half yearly rates of change (per cent)		Quarterly rates of change (per cent)			
	2009	2010		2011		2009	2010		2011		2010	2011		2011		2011			
	Dec.	Jun.	Dec.	Jun.	Dec.	Dec.	Jun.	Dec.	Jun.	Dec.	Dec.	Jun.	Dec.	H1	H2	Q1	Q2	Q3	Q4
Cash and claims on central banks	**10 889**	**9 134**	**7 264**	**7 220**	**9 573**	**2.1**	**1.7**	**1.4**	**1.4**	**1.9**	**-33.3**	**-21.0**	**31.8**	**-0.6**	**32.6**	**12.5**	**-11.6**	**13.0**	**17.4**
Claims on other credit institutions	**4 918**	**5 130**	**5 345**	**5 271**	**5 729**	**1.0**	**1.0**	**1.0**	**1.0**	**1.1**	**8.7**	**2.8**	**7.2**	**-1.4**	**8.7**	**-13.8**	**14.4**	**4.9**	**3.6**
Investments in credit institutions	**38 356**	**32 726**	**29 765**	**30 010**	**34 648**	**7.5**	**6.2**	**5.6**	**5.7**	**6.8**	**-22.4**	**-8.3**	**16.4**	**0.8**	**15.5**	**-5.1**	**6.3**	**-0.4**	**15.9**
of which: in central banks	4 377	1 940	3 222	2 297	2 816	0.9	0.4	0.6	0.4	0.5	-26.4	18.4	-12.6	-28.7	22.6	-70.9	144.7	-38.3	98.8
Financial assets at fair value through profit or loss	**20 805**	**22 583**	**19 437**	**14 855**	**15 123**	**4.1**	**4.3**	**3.7**	**2.8**	**2.9**	**-6.6**	**-34.2**	**-22.2**	**-23.6**	**1.8**	**-14.7**	**-10.4**	**8.8**	**-6.5**
Equity	2 052	1 958	1 915	1 459	1 403	0.4	0.4	0.4	0.3	0.3	-6.7	-25.5	-26.7	-23.8	-3.8	15.4	-34.0	8.1	-11.0
Debt instruments	9 772	9 637	8 778	6 324	3 517	1.9	1.8	1.7	1.2	0.7	-10.2	-34.4	-59.9	-28.0	-44.4	-23.6	-5.7	-22.1	-28.6
Other	8 982	10 988	8 745	7 073	10 202	1.8	2.1	1.6	1.4	2.0	-2.6	-35.6	16.7	-19.1	44.3	-12.3	-7.8	36.6	5.6
Available for sale financial assets	**43 131**	**47 769**	**56 550**	**55 187**	**52 638**	**8.4**	**9.0**	**10.6**	**10.6**	**10.3**	**31.1**	**15.5**	**-6.9**	**-2.4**	**-4.6**	**-7.2**	**5.1**	**-1.1**	**-3.6**
Equity	7 517	6 693	5 270	3 967	2 735	1.5	1.3	1.0	0.8	0.5	-29.9	-40.7	-48.1	-24.7	-31.0	-6.1	-19.8	-5.4	-27.1
Debt instruments	33 282	39 382	49 827	49 934	47 770	6.5	7.4	9.4	9.6	9.3	49.7	26.8	-4.1	0.2	-4.3	-7.3	8.1	-1.0	-3.4
Other	2 331	1 694	1 453	1 286	2 133	0.5	0.3	0.3	0.2	0.4	-37.6	-24.1	46.7	-11.5	65.8	-6.6	-5.2	7.1	54.8
Investments held to maturity	**7 641**	**12 973**	**14 659**	**14 551**	**12 596**	**1.5**	**2.4**	**2.8**	**2.8**	**2.5**	**91.8**	**12.2**	**-14.1**	**-0.7**	**-13.4**	**1.0**	**-1.7**	**-7.5**	**-6.4**
Hedge derivatives	**1 742**	**2 052**	**1 451**	**1 094**	**1 664**	**0.3**	**0.4**	**0.3**	**0.2**	**0.3**	**-16.7**	**-46.7**	**14.7**	**-24.6**	**52.1**	**-20.1**	**-5.6**	**39.3**	**9.2**
Investment in subsidiaries	**3 348**	**3 231**	**4 518**	**4 168**	**4 053**	**0.7**	**0.6**	**0.8**	**0.8**	**0.8**	**34.9**	**29.0**	**-10.3**	**-7.7**	**-2.7**	**-5.6**	**-2.3**	**-2.8**	**0.0**
Net credit to customers	**319 369**	**331 344**	**317 412**	**308 694**	**294 956**	**62.5**	**62.5**	**59.7**	**59.1**	**57.5**	**-0.6**	**-6.8**	**-7.1**	**-2.7**	**-4.5**	**-2.2**	**-0.5**	**-0.6**	**-3.9**
Gross credit	331 386	344 206	329 565	322 070	310 103	64.9	64.9	62.0	61.7	60.4	-0.5	-6.4	-5.9	-2.3	-3.7	-2.1	-0.2	-0.4	-3.4
of which: overdue credit to customers	10 917	12 869	12 031	13 749	14 964	2.1	2.4	2.3	2.6	2.9	10.2	6.8	24.4	14.3	8.8	9.1	4.7	10.1	-1.1
Impairment and value adjustments in credit to customers	-12 017	-12 862	-12 153	-13 375	-15 148	-2.4	-2.4	-2.3	-2.6	-3.0	1.1	4.0	24.6	10.1	13.2	2.6	7.2	5.0	7.8
Securitised non-derecognised assets	**34 063**	**34 444**	**47 221**	**50 717**	**48 922**	**6.7**	**6.5**	**8.9**	**9.7**	**9.5**	**38.6**	**47.2**	**3.6**	**7.4**	**-3.5**	**5.4**	**1.9**	**-1.8**	**-1.8**
of which: credit to customers	33 547	34 016	46 509	48 929	47 690	6.6	6.4	8.7	9.4	9.3	38.6	43.8	2.5	5.2	-2.5	2.9	2.2	-1.1	-1.4
Tangible and intangible assets	**5 930**	**6 046**	**5 912**	**6 239**	**6 217**	**1.2**	**1.1**	**1.1**	**1.2**	**1.2**	**-0.3**	**3.2**	**5.2**	**5.5**	**-0.4**	**0.9**	**4.6**	**4.5**	**-4.6**
Other assets	**20 396**	**22 791**	**22 187**	**24 286**	**27 007**	**4.0**	**4.3**	**4.2**	**4.6**	**5.3**	**8.8**	**6.6**	**21.7**	**9.5**	**11.2**	**0.4**	**9.1**	**6.4**	**4.5**

Table 4.1.1 (to be continued)

BALANCE SHEET OF THE BANKING SYSTEM | ON A CONSOLIDATED BASIS

	EUR millions					Structure (as a percentage of total assets)					Year-on-year rates of change (per cent)			Half yearly rates of change (per cent)		Quarterly rates of change (per cent)			
	2009	2010		2011		2009	2010		2011		2010	2011		2011		2011			
	Dec.	Jun.	Dec.	Jun.	Dec.	Dec.	Jun.	Dec.	Jun.	Dec.	Dec.	Jun.	Dec.	H1	H2	Q1	Q2	Q3	Q4
TOTAL ASSETS	**510 587**	**530 222**	**531 721**	**522 293**	**513 126**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**4.1**	**-1.5**	**-3.5**	**-1.8**	**-1.8**	**-2.5**	**0.7**	**0.0**	**-1.8**
Resources from central banks	**19 419**	**45 962**	**49 157**	**49 558**	**50 723**	**3.8**	**8.7**	**9.2**	**9.5**	**9.9**	**153.1**	**7.8**	**3.2**	**0.8**	**2.4**	**-6.5**	**7.8**	**3.3**	**-0.9**
Resources from other credit institutions	**74 316**	**79 043**	**81 125**	**78 104**	**74 584**	**14.6**	**14.9**	**15.3**	**15.0**	**14.5**	**9.2**	**-1.2**	**-8.1**	**-3.7**	**-4.5**	**2.1**	**-5.7**	**0.0**	**-4.5**
Resources from customers and other loans	**218 478**	**219 342**	**230 558**	**238 906**	**244 929**	**42.8**	**41.4**	**43.4**	**45.7**	**47.7**	**5.5**	**8.9**	**6.2**	**3.6**	**2.5**	**-0.9**	**4.5**	**1.7**	**0.8**
Liabilities represented by securities	**116 807**	**106 129**	**89 061**	**80 009**	**75 029**	**22.9**	**20.0**	**16.7**	**15.3**	**14.6**	**-23.8**	**-24.6**	**-15.8**	**-10.2**	**-6.2**	**-7.4**	**-3.0**	**-5.7**	**-0.5**
Subordinated liabilities	**11 463**	**10 606**	**10 038**	**8 087**	**6 164**	**2.2**	**2.0**	**1.9**	**1.5**	**1.2**	**-12.4**	**-23.8**	**-38.6**	**-19.4**	**-23.8**	**-7.8**	**-12.6**	**-14.1**	**-11.3**
Financial liabilities held for trading	**14 867**	**14 416**	**11 895**	**10 570**	**11 465**	**2.9**	**2.7**	**2.2**	**2.0**	**2.2**	**-20.0**	**-26.7**	**-3.6**	**-11.1**	**8.5**	**-7.6**	**-3.8**	**14.3**	**-5.1**
Hedge derivatives	**1 461**	**2 048**	**1 619**	**1 578**	**2 115**	**0.3**	**0.4**	**0.3**	**0.3**	**0.4**	**10.8**	**-23.0**	**30.6**	**-2.6**	**34.1**	**-11.4**	**10.0**	**24.4**	**7.7**
Liabilities for non-derecognised assets in securitisation operations	**6 971**	**4 135**	**9 224**	**8 877**	**8 648**	**1.4**	**0.8**	**1.7**	**1.7**	**1.7**	**32.3**	**114.7**	**-6.2**	**-3.8**	**-2.6**	**-2.0**	**-1.8**	**-1.5**	**-1.1**
Other liabilities	**15 040**	**16 451**	**16 219**	**16 218**	**13 525**	**2.9**	**3.1**	**3.05**	**3.1**	**2.6**	**7.8**	**-1.4**	**-16.6**	**0.0**	**-16.6**	**-3.6**	**3.8**	**-0.8**	**-15.9**
Total liabilities	**478 822**	**498 132**	**498 896**	**491 905**	**487 182**	**93.8**	**93.9**	**93.8**	**94.2**	**94.9**	**4.2**	**-1.2**	**-2.3**	**-1.4**	**-1.0**	**-2.5**	**1.2**	**0.3**	**-1.3**
Capital	**31 765**	**32 090**	**32 825**	**30 388**	**25 944**	**6.2**	**6.1**	**6.2**	**5.8**	**5.1**	**3.3**	**-5.3**	**-21.0**	**-7.4**	**-14.6**	**-1.2**	**-6.3**	**-5.2**	**-9.9**
TOTAL LIABILITIES AND CAPITAL	**510 587**	**530 222**	**531 721**	**522 293**	**513 126**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**4.1**	**-1.5**	**-3.5**	**-1.8**	**-1.8**	**-2.5**	**0.7**	**0.0**	**-1.8**
Memo:																			
Credit to customers including non-derecognised securitisation operations	364 933	378 222	376 074	370 999	357 793	71.5	71.3	70.7	71.0	69.7	3.1	-1.9	-4.9	-1.3	-3.6	-1.4	0.1	-0.4	-3.1
Credit to customers not represented by securities including non-derecognised securitisation operations	348 408	360 527	357 934	355 204	344 351	68.2	68.0	67.3	68.0	67.1	2.7	-1.5	-3.8	-0.8	-3.1	-1.1	0.3	-0.3	-2.8
Loan disposal operations (cumulative since the begining of the 2010)	n.a.	317	1 018	6 362	7 511	-	-	-	-	-	-	-	-	-	-	-	-	-	-

Table 4.1.1 (continued)

BALANCE SHEET OF THE BANKING SYSTEM | ON A CONSOLIDATED BASIS

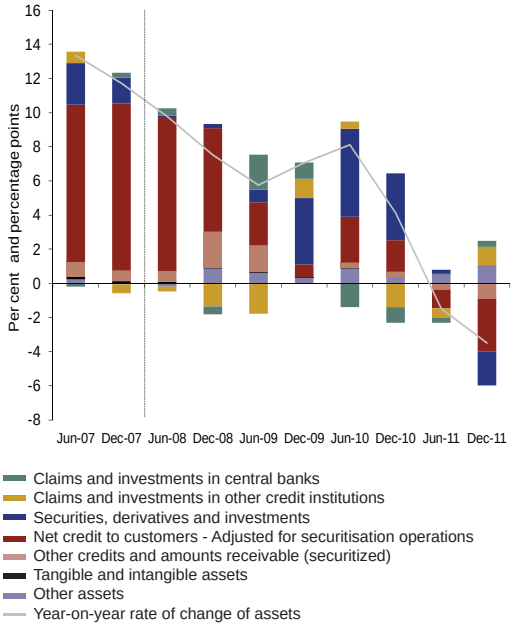
	EUR millions					Structure (as a percentage of total assets)					Year-on-year rates of change (per cent)			Half yearly rates of change (per cent)		Quarterly rates of change (per cent)			
	2009	2010		2011		2009	2010		2011		2010	2011		2011		2011			
	Dec.	Jun.	Dec.	Jun.	Dec.	Dec.	Jun.	Dec.	Jun.	Dec.	Dec.	Jun.	Dec.	H1	H2	Q1	Q2	Q3	Q4
Credit to customers including non-derecognised securitisation operations (adjusted for loan disposal operations)	364 933	378 539	377 092	377 361	365 304	-	-	-	-	-	-	-0.3	-3.1	0.1	-3.2	-0.4	0.5	-0.3	-2.9
Credit to costumers by foreign subsidiaries of domestic banking groups	247 073	242 218	245 102	254 538	258 457	48.4	45.7	46.1	48.7	50.4	-0.8	5.1	5.4	3.9	1.5	-0.4	4.3	1.4	0.1
Excluding BPN bank[a]																			
Available for sale financial assets	**42 177**	**46 851**	**56 487**	**55 118**	**52 558**	**6.3**	**8.4**	**9.0**	**10.7**	**10.6**	**33.9**	**17.6**	**-7.0**	**-2.4**	**-4.6**	**-7.2**	**5.1**	**-1.1**	**-3.6**
Equity	6 721	5 886	5 263	3 960	2 729	1.2	1.3	1.1	1.0	0.8	-21.7	-32.7	-48.2	-24.8	-31.1	-6.1	-19.8	-5.4	-27.2
Debt instruments	33 136	39 282	49 771	49 872	47 696	4.8	6.6	7.5	9.4	9.6	50.2	27.0	-4.2	0.2	-4.4	-7.3	8.1	-1.0	-3.4
Other	2 320	1 683	1 453	1 286	2 133	0.4	0.5	0.3	0.3	0.2	-37.4	-23.6	46.7	-11.5	65.8	-6.6	-5.2	7.1	54.8
Net credit to customers	**314 716**	**326 503**	**313 734**	**305 181**	**291 426**	**64.9**	**62.5**	**62.4**	**59.5**	**58.9**	**-0.3**	**-6.5**	**-7.1**	**-2.7**	**-4.5**	**-2.2**	**-0.5**	**-0.5**	**-4.0**
Gross credit	324 929	337 419	325 408	318 077	306 092	66.8	64.5	64.5	61.8	61.4	0.1	-5.7	-5.9	-2.3	-3.8	-2.1	-0.2	-0.3	-3.5
of which: overdue credit to customers	9 840	11 071	11 712	13 356	14 503	1.9	2.0	2.1	2.2	2.6	19.0	20.6	23.8	14.0	8.6	9.3	4.3	10.3	-1.5
Impairment and value adjustments in credit to customers	-10 212	-10 916	-11 674	-12 896	-14 666	-1.9	-2.0	-2.1	-2.2	-2.5	14.3	18.1	25.6	10.5	13.7	2.8	7.5	5.0	8.3
TOTAL ASSETS	**503 421**	**523 151**	**526 854**	**517 785**	**508 675**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**4.7**	**-1.0**	**-3.5**	**-1.7**	**-1.8**	**-2.5**	**0.8**	**0.1**	**-1.8**
Memo:																			
Credit to customers including non-derecognised securitisation operations	357 870	370 902	371 455	366 624	353 484	73.4	71.1	70.9	70.5	70.8	3.8	-1.2	-4.8	-1.3	-3.6	-1.4	0.1	-0.4	-3.2

Source: Banco de Portugal.

Note: (a) In December 2010, BPN sold a significant amount of assets to several financial-vehicles, which have a significant impact in some of the balance sheet of the banking system.

Chart 4.1.1

CONTRIBUTIONS TO CHANGE OF ASSETS | ON A CONSOLIDATED BASIS[a]



Source: Banco de Portugal.

Notes: The break in the series in 2007 comprises a widening of the group of institutions under analysis. Securities, derivatives and investments include financial assets at fair value through profit or loss, available for sale financial assets, investments held to maturity, investments in subsidiaries and hedge derivatives. Net credit to customers - adjusted for securitisation operations excludes the other credit and amounts receivable (securitized) component, classified in the credit portfolio. **(a)** Year-on-year rate of change

half was particularly characterised by the decline of the financial assets portfolio, in the context of an across-the-board depreciation of securities held by banks and the significant volume of credit disposals (domestic commercial paper portfolio and credit portfolios of the external subsidiaries and branches of the main domestic banking groups, namely project finance and syndicated loans). In the second half, the evolution of assets particularly reflected the reduction of the loans to customers portfolio,[2] which was down 3.2 per cent. As regards domestic credit portfolios (residents), the largest contraction was recorded in the case of lending to general government (notwithstanding an increase in loans to public corporations outside the general government consolidation perimeter), followed by loans to households (for housing and consumption) and loans to private non-financial corporations. As regards this latter case, a distinction should be made between the situation of large corporations which, in aggregate terms, increased their funding from non-residents, as opposed to small and medium sized enterprises which are more dependent on financing from domestic banks.[3] The banks, however, maintained a positive growth of credit to export enterprises. As regards international activity, following the significant volume of credit disposals observed in first half 2011, there was a relative stabilisation of lending.

In the second half of 2011, the financial assets portfolio continued to evidence the downwards path, albeit less pronounced than the observed in the previous half. This reflected an across-the-board depreciation of equity securities, from the available for sale financial assets portfolio, and a reduction of the held to maturity securities portfolio.[4] As regards the evolution of the remaining assets components reference should be made to the temporary increase of investments in other credit institutions and cash claims

2 Includes securitised and non-derecognised operations and adjusts for loan disposal operations.

3 For a detailed analysis of the evolution of the credit to customers portfolio, see "Section 4.4 *Credit risk*", of this Report.

4 A detailed analysis of the financial assets portfolio is given in "Section 4.2 *Market risk*", of this Report.

on central banks,[5] associated with the bank's liquidity position reinforcement strategy at the end of the year. Reference should also be made to the slight decrease of the securitised, non-derecognised assets account heading, which had increased strongly in 2010, which is likely to be associated with the maintenance of relatively unfavourable market conditions for the performance of securitisation operations and, especially, with the tightening of eligibility criteria on securitised assets (asset backed securities - ABS) as collateral for Eurosystem financing operations. Two AAA ratings started to be demanded at the time of issue, for ABS to be accepted as collateral for such operations.[6] Underlying the evolution of the other assets account was the significant growth of the banks' real estate portfolio in comparison to the end of 2010, reflecting an increase of payments in kind and mortgage foreclosures. In addition, several credit disposal operations to funds, at the end of the year, were temporarily recorded in this account heading.

Continuation of the significant change in banks' financing structure, in 2011, particularly the increase in the proportion of customer resources and decline in the proportion of debt securities

In 2011, the increase in deposits' taking was crucially important to the financing of the Portuguese banking system making it possible to mitigate the consequences of the decline in funding from the international wholesale debt and interbank markets. Customer resources on a consolidated basis accordingly recorded year-on-year growth of 6.3 per cent in December (3.6 per cent up to the end of June, 2.5 per cent from July to December). This evolution reflects the significant increase in customer resources in the domestic activity, particularly resident households, in addition to the robust growth of international activity deposits. Reference should, however, be made to the positive contribution made by general government deposits, related with the management of the disbursements of financial assistance, which is temporary in nature and without which the growth of customer resources on a consolidated basis, at the end of 2011, would have been around 4 per cent.

Notwithstanding the continuation of strong restrictions, in terms of quantity and price in banks' access to market funding, there was a virtual stabilisation albeit at high levels, of central banks' resources in 2011, namely Eurosystem funding.[7] As regards the other account headings, reference should be made to the maintenance of the trend towards a reduction of other credit institutions' resources, debt securities and subordinated liabilities. In short, 2011 witnessed a significant change in the banks' funding structure, with particular reference to the increase of approximately 4 percentage points in the proportion of customer resources, representing, at the end of the year, approximately 48 per cent of the balance sheet total. In turn, the banking system's accounting capital was strongly eroded over the course of 2011. The increase of potential losses on the available for sale assets portfolio, especially in the second and third quarters, and net losses recorded in the fourth quarter were the main determinants of this evolution. At the end of the year, the partial transfer of banking sector employees' pension funds to the Portuguese Social Security System[8] also had a negative impact on accounting capital,[9] deriving from the change in the accounting rule regarding the recognition of negative actuarial deviations of the funds.

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5 This increase was fully reversed in the first quarter of 2012, as referred to in "Box 4.1 *Financial situation of the six major banking groups of the Portuguese banking system in the first quarter of 2012*", of this Report.

6 The ECB Council's decision of 8 December 2011, reduced the minimum threshold of such ratings to A-, for ABS meeting certain conditions. In parallel and as a temporary solution, national central banks started to accept an additional collection of bank loans meeting specific eligibility criteria, as collateral for Eurosystem funding operations.

7 A detailed analysis of the financing of the banking system during the course of 2011, in addition to its respective liquidity position, is given in Section 4.3 *Liquidity risk*", of this Report.

8 For further details on this operation see "Box 4.2 *Accounting and prudential impact of the partial transfer of banking sector pension funds to the Social Security system*", of this Report.

9 See "Section 4.5 *Own funds adequacy*", of this Report.

In a context of the deleveraging of the banks' balance sheets, which concentrated on non-strategic external asset disposals in the first half of the year, the activity of the Portuguese banking system concentrated more on the domestic market, in 2011

In 2011, the external assets of the domestic banking system, on a consolidated basis, recorded a decline of 12 per cent[10] (Table 4.1.2). The most marked fall was recorded in the first six months of the year. In the second half, external assets accompanied the rate of deleveraging of domestic activity. As mentioned in the last issue of the Financial Stability Report, reference should be made to the increase in the proportion of short term assets (up to one year), as well as a decline of exposure to non-domestic banks and the public sector. On a geographical counterparty level, there was a reduction of the proportion of developed countries (particularly euro area economies) and an increase in the proportion of assets in offshore centres, in contrast to the reduction trend recorded since the end of 2008. The evolution of the external assets of Portuguese banks is similar to that of its European peers. According to BIS data, the activity of banks in the euro area also tended to concentrate on the domestic market, in 2011, based on a reduction of the assets over other developed euro area members and other developed countries. On an international level, excluding the euro area, the opposite was the case, with an increase in external banking assets over the US, emerging countries (Asia and Latin America) and offshore centres.

Table 4.1.2

CONSOLIDATED FOREIGN CLAIMS OF THE DOMESTIC BANKING SYSTEM ON AN IMMEDIATE RISK BASIS - STRUCTURE | PER CENT

	2008	2009		2010		2011	
	Dec.	Jun.	Dec.	Jun.	Dec.	Jun.	Dec.
Total (10^6 €)	108 913	113 005	117 727	120 299	114 903	103 497	100 732
As a percentage of total assets	28.9	29.0	29.3	29.2	27.8	25.4	25.3
International claims	71.7	72.1	71.2	70.7	69.2	67.5	67.7
Maturity							
Up to 1 year	23.6	21.8	19.0	18.0	17.4	19.1	20.2
From 1 up to 2 years	4.6	4.1	4.7	5.1	4.4	4.3	3.4
More than 2 years	36.5	38.7	39.1	41.1	41.3	37.6	38.1
Other	7.1	7.5	8.4	6.5	6.1	6.6	6.0
Institutional Borrower							
Banks	21.8	20.1	18.3	15.3	14.3	12.4	12.4
Public sector	2.2	2.8	4.5	5.3	4.9	4.4	4.3
Non-banking private sector	47.0	48.9	48.1	49.7	49.7	50.4	50.8
Other	0.7	0.3	0.2	0.5	0.2	0.2	0.2
Geographical Borrower							
Developed countries	49.6	53.3	51.6	48.4	48.8	48.4	46.4
Offshore centres	7.4	6.1	5.8	6.0	4.9	4.8	7.7
Developing countries in Europe	6.2	5.3	5.2	5.5	5.6	5.9	6.0
Other	8.5	7.4	8.5	10.8	9.8	8.4	7.6
Local assets in local currency	28.3	27.9	28.8	29.3	30.8	32.5	32.3
Geographical Borrower							
Developed countries	20.5	20.3	20.0	20.2	20.0	20.1	19.7
Offshore centres	0.4	0.4	0.5	0.5	0.6	0.4	0.5
Developing countries in Europe	4.7	4.3	5.1	4.8	5.1	5.9	5.3
Other	2.8	2.9	3.1	3.8	5.2	6.1	6.7
Memo:							
Local assets in local currency (10^6 €)	30 834	31 546	33 899	35 204	35 440	33 608	32 519
Local liabilities in local currency (10^6 €)	21 472	23 007	24 819	22 237	25 291	22 802	25 389

Source: Banco de Portugal.

10 International exposure is analysed in accordance with the methodological guidelines of the Bank for International Settlements for the reporting and publication of the "Consolidated banking statistics". In this analysis only the sub-collection of domestic institutions, on a consolidated basis is considered, as non-domestic institutions are part of the consolidation perimeter of the banking systems of the countries of their respective head offices.

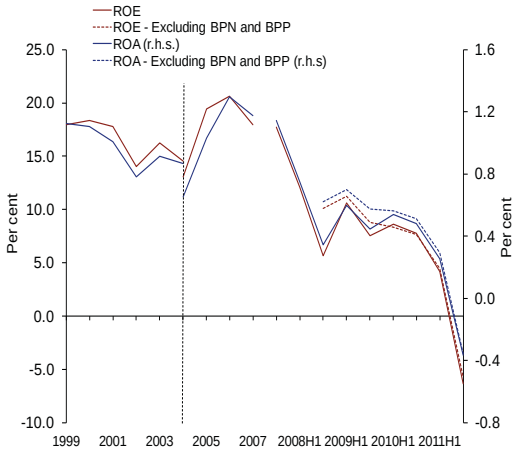
Profitability of the banking system deteriorated significantly, in 2011, reflecting the increase of impairment on credit and the financial assets portfolio, with several of these impacts being of a non-recurrent nature

In 2011, the evolution of the profitability of the Portuguese banking system presented an unfavourable evolution (Charts 4.1.2, 4.1.3 and Table 4.1.3). Indeed, income before tax and minority interests fell to negative values, reflecting, inter alia, the increase in provisions and impairments associated with credit to costumers (Charts 4.1.4a and 4.1.4b) and the decline in income from financial operations (including an increase of impairment on the financial assets portfolio), despite the positive contribution of the own bonds repurchases, realized by banks over 2011, that benefited from the discount at which they were traded in the secondary market.

As regards the increase in provisions and impairment on credit, of certain relevance was the first component part of the Special Inspections Programme (SIP[11]) on the credit portfolios of the eight major Portuguese banking groups, with an impact in the second half of 2011. With reference to 30 June 2011, the need for a EUR 838 million reinforcement of the impairment in the analysed credit portfolio was assessed. However, a part of such reinforcement needs was offset by the reallocation of the EUR 242 million impairment identified as being available. Regarding income from financial operations, reference should be made to the recognition of impairment on Greek public debt agreed in conformity with the plan for the private sector's involvement in financial support to Greece, namely recognition of the 53.5 per cent haircut and the loss arising from the swap of 31.5 per cent of the debt in new securities with longer maturities The partial transfer of banking sector employees' pension funds to the Portuguese Social Security System, based on different actuarial assumptions from those formerly used by most banks also contributed to the decline in income from financial operations. Moving in the opposite direction, reference should be made to the positive contribution of the banks' own bonds repurchase operations, during the course of 2011, which benefited from the discount at which they were traded in the secondary market. In short, excluding the effects of non-recurring operations, the banking system's net income, in 2011, was approximately nil (Chart 4.1.5).

Chart 4.1.2

RETURN ON ASSETS (ROA) AND RETURN ON EQUITY (ROE)



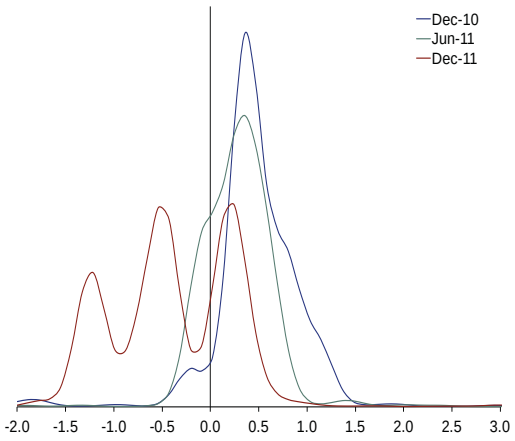
Source: Banco de Portugal.

Notes: The break in the series in 2004 corresponds to the implementation of the International Accounting Standards which also implied a redefinition of the group of banking institutions under analysis. The break in the series in 2007 comprises the widening of the group of institutions under analysis. The half-year data have been annualised.

11 For further details see "Box 4.3 *The Special Inspections Programme for the banking system (SIP)*", of this Report.

Chart 4.1.3

RETURN ON ASSETS | EMPIRICAL DISTRIBUTION



Source: Banco de Portugal.

Notes: Empirical distribution obtained by the use of a gaussian kernel in which institutions are weighted by assets; indicator calculated on income before taxes and minority interests.

The unfavourable evolution of banking system profitability can only be part attributed to special factors. Over the course of 2011, the increase in impairment losses and provisions for overdue credit and interest consumed almost all of the banks' operating income.[12] Excluding extraordinary events, the evolution of default levels and materialisation of credit risk pose the greatest risks to banks' income generating capacity. In 2011, the banking system's operating income totalled 0.95 per cent of average assets, whereas provisions and impairment on credit represented around 0.84 per cent (0.68 per cent excluding the impact of the SIP).

The information for the first quarter of 2012 shows an improvement of the net income of the six major banking groups, for positive values, compared with the negative figures observed in the third and fourth quarters of 2011 (even when excluding non-recurrent events in 2011).[13] In any case, this improvement is largely associated with an increase in income from financial operations, including liability management operations associated with the repurchase of own bonds. Excluding these operations, the net income of the six major banking groups should have been virtually nil in the first three months of the year. In 2012, the profitability of the banking system will depend on the resilience of structural components of net operating revenue (net interest income and commissions), in a context of low interest rates in the interbank market and economic downturn, since a further increase in impairment associated with credit to costumers is expected. In turn, the evolution of the value of the financial assets portfolio will dependent on the situation in international financial markets. Nevertheless, liability management operations, namely repurchases of own bonds in the secondary market may continue to make a positive contribution to profitability of the banking system.

12 Operating income corresponds to the sum of net interest income with income from services and commissions, subtracted of operating costs.

13 For further details see "Box 4.1 *Financial situation of the six major banking groups of the Portuguese banking system in the first quarter of 2012*", of this Report.

Table 4.1.3

PROFIT AND LOSS ACCOUNT OF THE BANKING SYSTEM | ON A CONSOLIDATED BASIS

	EUR millions							Structure (as a percentage of average assets)[a]						
	2009	2010			2011			2009	2010			2011		
	Year	H1	H2	Year	H1	H2	Year	Year	H1	H2	Year	H1	H2	Year
1.Interest income	23 024	10 044	10 426	20 470	11 048	12 248	23 296	4.70	3.86	3.93	3.89	4.23	4.71	4.47
2.Interest expenses	15 117	6 259	6 366	12 625	7 087	8 258	15 345	3.09	2.41	2.40	2.40	2.71	3.18	2.94
3.Net interest income (1-2)	7 908	3 785	4 061	7 845	3 961	3 990	7 951	1.62	1.46	1.53	1.49	1.52	1.53	1.52
4.Income from capital instruments	222	211	230	441	275	70	345	0.05	0.08	0.09	0.08	0.11	0.03	0.07
5.Income (net) from services and commissions	3 430	1 876	1 924	3 800	1 881	1 833	3 714	0.70	0.72	0.73	0.72	0.72	0.71	0.71
6.Income from financial assets and liabilities at fair value through profit or loss	526	221	-233	-12	-232	-261	-494	0.11	0.09	-0.09	0.00	-0.09	-0.10	-0.09
7.Income from available for sale financial assets	394	242	211	453	143	73	216	0.08	0.09	0.08	0.09	0.05	0.03	0.04
8.Income from foreign exchange revaluation	269	137	291	428	277	-70	207	0.05	0.05	0.11	0.08	0.11	-0.03	0.04
9.Income from the sale of other financial assets	506	121	298	419	151	420	571	0.10	0.05	0.11	0.08	0.06	0.16	0.11
10.Other operating profit and loss	406	162	371	533	147	264	411	0.08	0.06	0.14	0.10	0.06	0.10	0.08
11.Gross income (3+4+5+6+7+8+9+10)	13 660	6 756	7 153	13 909	6 602	6 319	12 921	2.79	2.60	2.70	2.65	2.53	2.43	2.48
12.Satff costs	4 218	2 103	2 243	4 347	2 142	2 227	4 368	0.86	0.81	0.85	0.83	0.82	0.86	0.84
13.General administrative costs	2 889	1 420	1 567	2 987	1 390	1 528	2 918	0.59	0.55	0.59	0.57	0.53	0.59	0.56
14.Depreciation and amortisation	658	335	340	675	319	344	662	0.13	0.13	0.13	0.13	0.12	0.13	0.13
15.Provisions net of refunds and write-offs	417	28	75	103	22	244	266	0.09	0.01	0.03	0.02	0.01	0.09	0.05
16.Impairment losses and other net value adjustments	3 522	1 601	1 965	3 566	2 132	4 477	6 610	0.72	0.62	0.74	0.68	0.82	1.72	1.27
17.Negative consolidation differences	-28	-1	1	0	-1	-3	-4	-0.01	0.00	0.00	0.00	0.00	0.00	0.00
18.Appropriation of income from associated companies and joint ventures (equity method)	204	129	147	276	70	-84	-14	0.04	0.05	0.06	0.05	0.03	-0.03	0.00
19. Income before tax and minority interests (11-12-13-14-15-16-17+18)	2 190	1 400	1 109	2 509	669	-2 583	-1 913	0.45	0.54	0.42	0.48	0.26	-0.99	-0.37
20.Income tax on profit	446	166	143	309	-44	-711	-756	0.09	0.06	0.05	0.06	-0.02	-0.27	-0.14
21.Income before minority interests (19-20)	1 744	1 234	966	2 200	714	-1 871	-1 158	0.36	0.47	0.36	0.42	0.27	-0.72	-0.22
22.Minority interests	646	361	406	767	307	-4	303	0.13	0.14	0.15	0.15	0.12	0.00	0.06
23.Net income (21-22)	1 098	873	560	1 433	407	-1 868	-1 461	0.22	0.34	0.21	0.27	0.16	-0.72	-0.28
Memo:														
Provisions and impairment associated with credit to customers	2 918	1 371	1 433	2 804	1 825	2 547	4 371	0.60	0.53	0.54	0.53	0.70	0.98	0.84
Impairment associated with financial assets	289	108	250	358	103	1 430	1 533	0.35	0.28	0.09	0.25	0.13	0.55	0.10
Income from financial operations	1 695	721	567	1 289	338	161	500	0.06	0.04	0.21	0.07	0.04	0.06	0.29

Source: Banco de Portugal.

Note: (a) Half year data have been annualised.

Chart 4.1.4a

YEAR-ON-YEAR CHANGE IN RETURN ON ASSETS – ROA | BREAKDOWN OF COMPONENTS

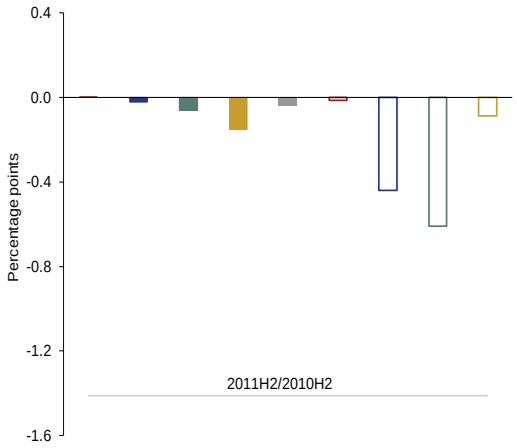
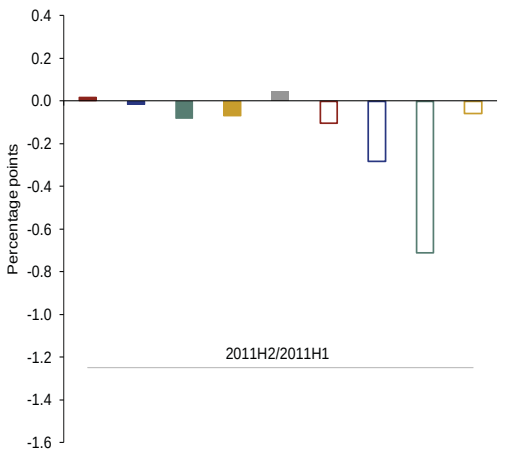
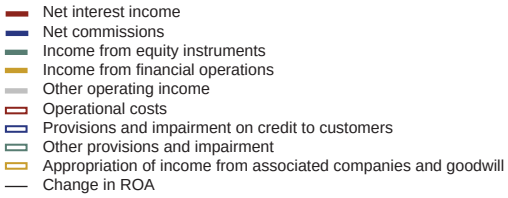


Chart 4.1.4b

YEAR-ON-YEAR CHANGE IN RETURN ON ASSETS – ROA | BREAKDOWN OF COMPONENTS



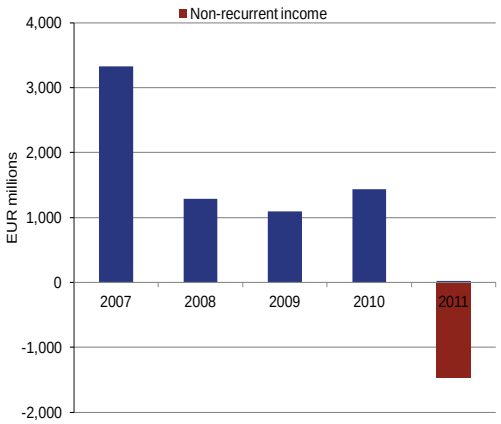


Source: Banco de Portugal.

Note: Return on assets calculated on income before tax and minority interests.

Chart 4.1.5

BANKING SYSTEM'S NET INCOME EXCLUDING NON-RECURRENT EVENTS IN 2011



Source: Banco de Portugal.

Notes: Non-recurrent income includes the impact of the Special Inspections Program, the partial transfer of banks' pension funds to the Portuguese Social Security System and the impairment recognition regarding Greek public debt.

Net interest income displayed a high level of resilience, in 2011, in the context of a slowdown in lending and increase in the cost of customer resources

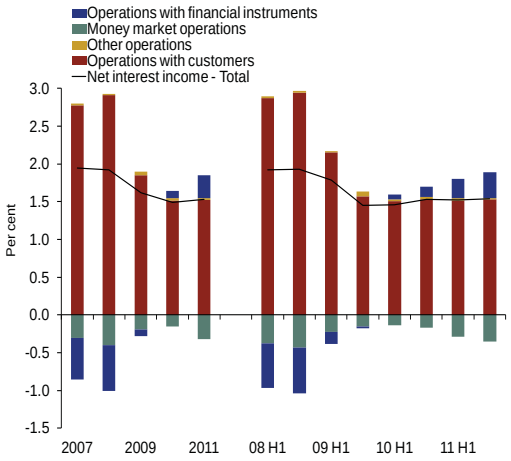
In the extremely adverse context in which Portuguese banks are operating, reference should be made to the favourable evolution of the structural components of the income statement. Net interest income, the main component of operating income (representing 61.5 per cent of the total), recorded slight year-on-year growth (1.3 per cent), with a reasonably stable intra-annual performance notwithstanding the decline of the average credit stock. A breakdown of net interest income by type of operation (Chart 4.1.6) evidences the relative stabilisation of the margin on operations with customers, noted since the second half of 2009 and an increase in margin on operations with financial instruments, virtually cancelled out by a decline of the margin on money market operations.

The evolution of the margin on operations with financial instruments and the evolution of the margin on money market operations are intrinsically associated. The growth of the former is related with the decline of funding from the international wholesale debt markets, notably the impossibility of renewing bond loans and increase in the banking system's financing of the public sector (volume effect). As regards money market operations, the decline reflects the increase in Eurosystem funding (volume effect)[14] and the increase in the average level of interbank interest rates over 2010. The fact that Portuguese banks' net positions in the interbank market remain highly negative decreases the relevance of the price effect, given that the increase in implicit interest on interbank liabilities dominates any increase in implicit interest on assets. Reference should also be made to the fact that Eurosystem funding, in addition to being crucial to meet the banks' financing needs, makes a highly important contribution to the stabilisation of global net interest income, as the interest paid on funding from the ECB is more than offset by the interest on the assets whose financing it enables. In 2011, the average central banks' resources stock earned interest at an average rate of 1.4 per cent, as opposed to the average interest of 2.6 per cent on other financing sources (debt securities, interbank loans and customer deposits) (Table 4.1.4).

In the case of operations with customers, the favourable evolution of net interest income is associated with the charging of higher spreads, both on new lending operations and on loans' renewals and with the stabilisation of the deposits margin. A contributory factor to such stabilisation was the prudential

Chart 4.1.6

BREAKDOWN OF NET INTEREST INCOME | AS A PERCENTAGE OF AVERAGE ASSETS



Source: Banco de Portugal

Note: Half-year data have been annualised.

14 As regards resources from other credit institutions, notwithstanding the decline noted during the course of 2011, the average stock of this account heading was reasonably similar to that of 2010, resulting in a nil volume effect.

Table 4.1.4

IMPLICIT AVERAGE INTEREST RATES OF THE MAIN BALANCE SHEET ITEMS[a] | PER CENT

	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2010		2011	
												H1	H2	H1	H2
Interest-bearing assets	**5.44**	**4.24**	**3.88**	**3.30**	**4.22**	**4.56**	**5.48**	**5.93**	**3.76**	**3.15**	**3.91**	**3.05**	**3.26**	**3.64**	**4.19**
of which:															
Interbank assets [b]	4.09	2.79	2.23	1.77	2.69	3.71	4.16	4.31	1.74	1.47	2.15	1.30	1.65	2.00	2.29
Non-interbank assets															
Credit	6.26	4.94	4.60	4.00	4.56	4.86	5.87	6.33	4.16	3.43	4.35	3.33	3.55	4.03	4.68
Securities	5.05	4.08	3.96	2.94	4.85	4.52	5.60	6.32	4.80	4.14	4.77	4.19	4.11	4.48	5.14
Interest-bearing liabilities	**3.59**	**2.61**	**2.28**	**1.87**	**2.32**	**2.71**	**3.49**	**3.92**	**2.25**	**1.77**	**2.47**	**1.71**	**1.83**	**2.25**	**2.70**
of which:															
interbank liabilities [c]	4.42	3.00	2.42	2.02	2.89	3.58	4.39	4.64	2.00	1.25	2.01	1.25	1.28	1.80	2.24
non-interbank liabilities															
Deposits	2.81	2.10	1.80	1.45	1.60	1.80	2.46	3.04	2.00	1.49	2.37	1.38	1.60	2.06	2.67
Securities	4.12	3.17	3.12	2.46	3.03	3.72	4.38	4.79	2.74	2.72	3.36	2.52	2.96	3.19	3.55
Subordinated liabilities	5.48	4.53	4.30	3.72	4.61	4.82	5.30	5.55	3.99	3.25	3.63	3.34	3.15	3.41	3.91
Spreads (percentage points)															
Interest bearing assets - Interest bearing liabilities	1.86	1.63	1.60	1.43	1.90	1.84	1.99	2.01	1.51	1.38	1.43	1.34	1.42	1.39	1.49
Credit - deposits	3.45	2.84	2.81	2.56	2.96	3.05	3.41	3.29	2.16	1.94	1.98	1.95	1.96	1.97	2.01

Source: Banco de Portugal.

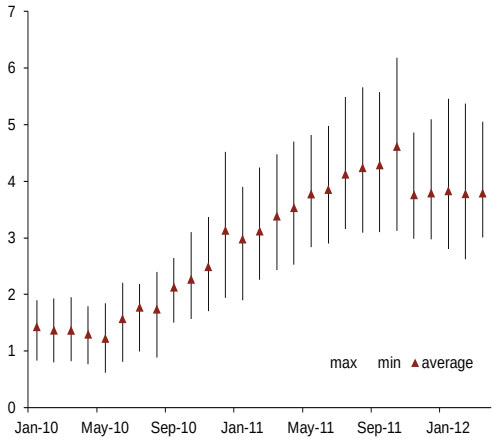
Notes: The break in the series in 2004 corresponds to the implementation of the International Accounting Standards, which also implied a redefinition of the group of banking institutions under analysis. In turn, the break in the series in 2007 corresponds to an increase in the number of institutions under analysis. **(a)** Implicit average interest rates are calculated as the ratio between interest flows in the period under consideration and the average stock of the corresponding balance sheet item. **(b)** Includes cash, deposits with central banks, claims and investments with credit institutions. **(c)** Includes resources from central banks and other credit institutions.

measure implemented by Banco de Portugal, starting November 2011, to contain the progressive rise in interest rates on deposits, in the form of new own funds requirements regarding deposits whose interest rates were considered to be excessive.[15] This measure had an immediate impact in the month in which it came into force, as can be observed by the evolution of interest rates on the new operations of the eight major resident banking groups (Chart 4.1.7). According to the data on banks' domestic activity, at the end of 2011 and beginning of 2012 there was a relative stabilisation of the margin between interest rates on customer loans and customer deposits, which had been gradually declining since the middle of 2010 (Chart 4.1.8).

The increase in average interest on credit portfolios should have been sufficient to offset the higher cost of customer resources, occurring on account of the rise in interest rates and in the form of the increase in the total volume of deposits.[16] As regards the repricing dynamic of banks' credit portfolios, of special relevance were loans to the non-financial corporations segment, characterised by short maturities and mainly responsible for the margin's positive performance. In the case of loans for house purchases, characterised by long maturities and fixed spreads on the older operations, the average portfolio spread remained relatively stable. Although there was a significant increase in spreads charged on new contracts, the fact that there has been a strong deceleration of housing loans means that the evolution of average interest rates on this portfolio is based more on contracts which are maturing rather than on new opera-

Chart 4.1.7

INTEREST RATES APPLIED ON NEW OPERATIONS OF DEPOSITS WITH AN AGREED MATURITY TO THE NON-FINANCIAL PRIVATE SECTOR BT THE EIGHT MAJOR RESIDENT BANKING GROUPS

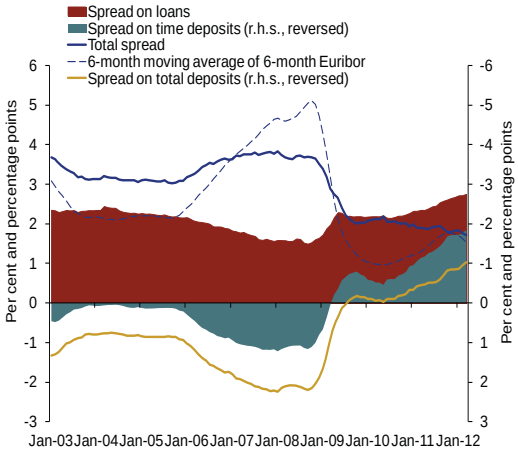


Source: Banco de Portugal.

Note: Last observation: March 2012.

Chart 4.1.8

INTEREST RATE SPREADS IN OPERATIONS WITH COSTUMERS



Source: Banco de Portugal.

Notes: The spread on lending operations was calculated as the difference between the interest rates on outstanding amount of loans (supplied in the Monetary and Financial Statistics) and the 6-month moving average of 6-months Euribor, whereas the spread on borrowing operations is the difference between the 6-months moving average of 6- months Euribor, and interest rates on outstanding amounts of deposits. The total spread comprises the difference between the interest rate on loans and deposits. Last observation: March 2012.

15 In April 2012, Banco de Portugal introduced a change to this measure, with the aim to penalise more short term deposits. For further details see the consolidated version of Banco de Portugal Instruction 28/2011 which includes changes made by Instruction 15/2012 at: http://www.bportugal.pt/sibap/application/app1/instman.asp?PVer=P&PNum=28/2011.

16 Reference should be made, in this respect to the decline in the proportion of sight to total deposits. These deposits earn interest at virtually nil rates, contributing to mitigate the increase in the banks' funding costs in a context of rising interbank interest rates. At the end of 2011, their weight in non-financial private sector total deposits was 37 per cent, down by approximately 6 p.p. over the value observed at the end of 2010.

tions. Accordingly, in 2011 the contribution made by the housing credit portfolio to the positive evolution of net interest income was diminutive and is not likely to be particularly relevant in the near future.

The slowdown of economic activity translated into an across-the-board decline of sales of banking services and, accordingly, a decline in income from services and commissions

Income from services and commissions (net) was down 2.3 per cent in 2011, in contrast to the strong growth observed in the preceding year. In a recessionary economic context involving the consequent reduction of the volume of financial transactions, a decline in commissions on the structuring of financial operations was noted, as well as a reduction in commissions on the collection, management and valuables transfers. This was accompanied by a decline in commissions on the management of mutual funds, translating both the dynamic of the recomposition of households' financial assets portfolios to assets not subject to market risk and banks' active management in incorporating resources, such as resources invested in financial group's mutual funds or insurance companies which are outside the consolidation perimeter, in their balance sheets, in the form of deposits. In the near future, the deleveraging process on banks' balance sheets and relatively unfavourable outlook for economic activity are expected to contribute towards an across-the-board decline in sales of banking services, bringing downwards pressure to bear on income from services.

Deterioration of Portuguese bank's operational efficiency, in 2011, in the context of a decline of gross income

A slight reduction of operating costs was witnessed, in 2011, following the banks' implementation of a restructuring strategy on branch office networks and central services. General administrative expenditure was down 2.5 per cent, year-on-year, having been part offset by an increase in staff costs. The evolution of personnel costs was affected by the partial transfer of the banks' pension funds to the Portuguese Social Security System and 2010 and 2011 values are, therefore, not directly comparable.[17] On the one hand, the banks involved in the operation recognised an extraordinary cost reflecting the difference between the discount rates on pension liabilities used by the banks and the 4 per cent rate established for the transfer. On the other hand, owing to a change in accounting policy, the banks ceased to register the cost of periodic depreciation on the negative actuarial deviations outside the corridor, which were posted directly to reserves (shareholders' equity). In any event, excluding extraordinary factors, reference should be made to the 3 and 8 per cent reductions to the compensation of employees and members of the statutory and inspection bodies, respectively.

Notwithstanding the containment of operating costs, there was a significant deterioration of banks' cost-to-income ratios,[18] reflecting the decline of gross income. This ratio was 61.5 per cent in 2011, representing an increase of approximately 4 p.p. over 2010. This indicator's empirical distribution chart shows a transversal deterioration in the case of most banks (movement of the curve to the right) as well as a relative convergence of its levels (Chart 4.1.9). In the current environment the idiosyncratic component of the cost-to-income ratio (*i.e.* the banks' capacity to differentiate between each other in terms of efficiency) loses relevance, with factors common to the sector prevailing, namely a reduced revenue generating capacity and short term rigidity of operating costs.

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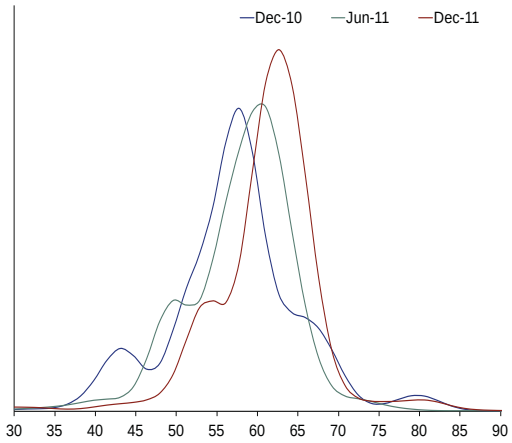
17 For further details on this operation see "Box 4.2 *Accounting and prudential impact of the partial transfer of banking sector pension funds to the Social Security system*", of this Report.

18 The cost-to-income ratio is defined as the quotient between operating costs (comprising the sum of general administrative expenditure, staff costs and depreciation) and gross income (comprising the sum of net interest income, income from capital instruments, income (net) from services and commissions, income from financial assets, income from foreign exchange revaluations and other operating income).

Gráfico 4.1.9

COST TO INCOME RATIO | EMPIRICAL DISTRIBUTION



Source: Banco de Portugal

Note: Empirical distribution obtained by the use of a Gaussian kernel, in which institutions are weighted by total assets; indicator calculated as the ratio between operating costs (defined as the sum of staff costs, general administrative costs and depreciation and amortisations) and gross income.

In 2011, international activity helped to mitigate the unfavourable evolution of results from domestic activity

Income from the external subsidiaries and branches of Portuguese banking groups grew significantly in 2011, helping to mitigate the negative results assessed on domestic activity (Table 4.1.5). Such growth is particularly explained by the favourable evolution of net interest income, in a context of a relative stabilisation in the credit stock, and by the increase in income from financial operations. In turn, an increase of impairment was noted, reflecting the increase of credit risk materialisation in international activity. Over the medium term, the favourable outlook for economic activity in countries in which Portuguese banking groups have important stakes should continue to support the growth of international activity and consequently, the increase of its weight in the Portuguese banking system's income.

Table 4.1.5

RELEVANCE OF INTERNATIONAL ACTIVITY FOR THE INCOME OF THE EIGHT MAJOR RESIDENT BANKING GROUPS | PER CENT

	Relative weight of foreign subsidiaries					International activity y.o.y. rate of change			Domestic activity y.o.y. rate of change		
	2009	2010		2011		2010	2011		2010	2011	
	Dec.	Jun.	Dec.	Jun.	Dec.	Dec.	Jun.	Dec.	Dec.	Jun.	Dec.
Net interest income	21.9	26.4	28.7	28.7	28.9	28.6	16.1	3.8	-10.3	3.4	2.8
Commissions	18.6	19.8	20.3	21.2	20.7	20.5	8.0	0.6	8.2	-1.2	-2.2
Gross income	22.4	22.4	24.2	25.6	28.9	9.9	11.5	10.3	-0.6	-6.4	-13.5
Administrative costs	21.4	22.6	23.3	24.7	24.7	12.4	10.2	6.7	0.7	-1.8	-1.2
of which: staff costs	19.5	21.1	21.4	22.7	22.5	12.3	10.6	6.7	0.1	0.7	0.1
Impairment	21.1	14.9	14.8	8.9	8.2	-26.1	-19.8	17.8	13.5	44.0	130.0
Income before tax and minority interests	25.0	28.7	34.8	77.0	-	36.8	32.7	13.8	-14.6	-84.0	-
Net income	14.3	13.8	16.9	38.4	-	14.6	52.0	34.6	-5.6	-61.1	-

Source: Banco de Portugal.

4.2 Market risk

The Portuguese banking system's securities and financial investments portfolio represents a significant proportion of its assets, exposing it to vulnerabilities associated with interest rate risk and, to a lesser extent, the evolution of the equities market.[19] This situation is especially relevant in the current context of disturbances in financial markets and particularly in sovereign debt markets which translate into a depreciation of securities and a decline in their liquidity. Additionally, in an environment of a resurgent sovereign debt crisis in the euro area, growth prospects for economic activity on a European level have been revised downwards, reflecting *inter alia* the synchronisation of banking systems' fiscal consolidation and deleveraging processes. The interaction between disturbances in financial markets and the real economy poses an added risk, to the extent that it also affects corporate profitability and solvency levels, with negative consequences in capital markets.

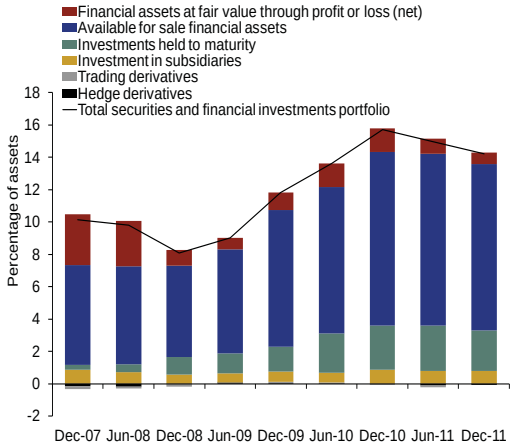
The securities and financial investments portfolio recorded a decline in 2011, reflecting the deterioration of conditions in the international financial markets and the Portuguese banks' deleveraging process

In 2011, the Portuguese banking system's securities and financial investments portfolio was down by around 13 per cent as compared to the end of 2010. This reduction, which contrasts with the trend noted since 2009, was much more significant than that registered by total banking system assets (Chart 4.2.1). The decrease in the portfolio reflects the unfavourable developments in international financial markets – in particular the euro area sovereign debt crisis – having a negative impact on the value of the securities held, in addition to the banking system's deleveraging process.

The reduction of the securities and financial investments portfolio, in 2011, was across-the-board to financial assets at fair value through profit or loss, available for sale financial assets and investments held to maturity (Chart 4.2.2).[20] In terms of risk sources, a decline in interest rate instruments was noted. These instruments comprise the main component of the securities and financial investments portfolio

Chart 4.2.1

SECURITIES AND FINANCIAL INVESTMENTS PORTFOLIO | IN ACCORDANCE WITH THE IAS CLASSIFICATION



Souce: Banco de Portugal

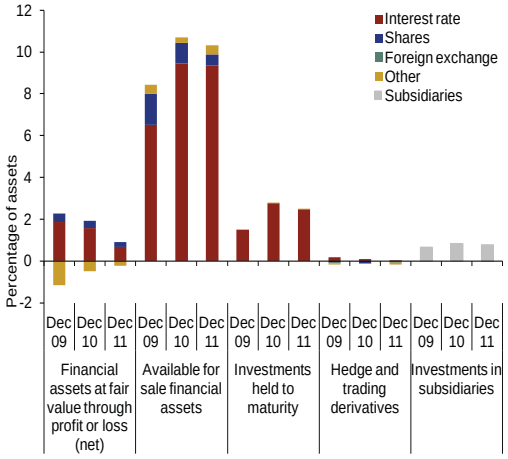
Note: The securities and financial investments portfolio comprises financial assets at fair value through profit or loss, including trading derivatives (net of liabilities held for trading), available for sale financial assets, investments held to maturity, investments in subsidiaries and the net value of hedge derivatives registered in the Portuguese banking system's balance sheet, on a consolidated basis..

19 The securities and financial investments portfolio comprises financial assets at fair value through profit or loss, including trading derivatives (net of liabilities held for trading), available for sale financial assets, investments held to maturity, investments in subsidiaries and the net value of hedge derivatives registered in the Portuguese banking system's balance sheet, on a consolidated basis.

20 The decrease in investments held to maturity was observed during the second half of the year.

Chart 4.2.2

BREAKDOWN OF SECURITIES AND FINANCIAL INVESTMENTS PORTFOLIO | IN ACCORDANCE WITH THE IAS CLASSIFICATION AND SOURCE OF RISK



Source: Banco de Portugal.

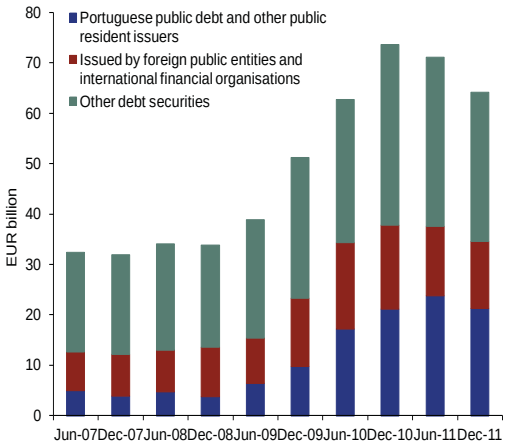
Note: The securities and financial investments portfolio comprises financial assets at fair value through profit or loss, including trading derivatives (net of liabilities held for trading), available for sale financial assets, investments held to maturity, investments in subsidiaries and the net value of hedge derivatives registered in the Portuguese banking system's balance sheet, on a consolidated basis.

and represented around 12.5 per cent of total banking system assets on a consolidated basis, at the end of 2011. A decline of the equity shares portfolio, which, at the same date, accounted for less than 1 per cent of assets, was also observed.

Around half of the debt securities portfolio is made up of sovereign debt securities which, in turn, mainly include domestic public debt securities. An increase in the Portuguese public debt securities and other resident public issuers portfolio was observed, in first half 2011. In the context of a significant decline in the market value of securities issued by the Portuguese public sector, this increase was associated with increased borrowing by the state and public corporations from the banking system, owing to the Portuguese public sector's funding difficulties with international investors (Chart 4.2.3). In the second half of the year, following the inception of the Economic and Financial Assistance Programme, a decline in the public debt securities and other resident public issuers portfolio was observed, in line with the evolution

Chart 4.2.3

BREAKDOWN OF DEBT SECURITIES PORTFOLIO



Source: Banco de Portugal.

Note: Debt securities portfolio in the balance sheet of the banking system, on a consolidated basis.

of other securities categories over the course of the year. At the end of 2011, the proportion of public debt securities registered in each of the different assets portfolios was of 74 per cent in available for sale financial assets, 18 per cent in investments held to maturity and 8 per cent in fair value assets. The decline of public debt securities was concentrated in this latter portfolio, in which assets are assessed at market value and changes in asset values reflect in income statements.[21]

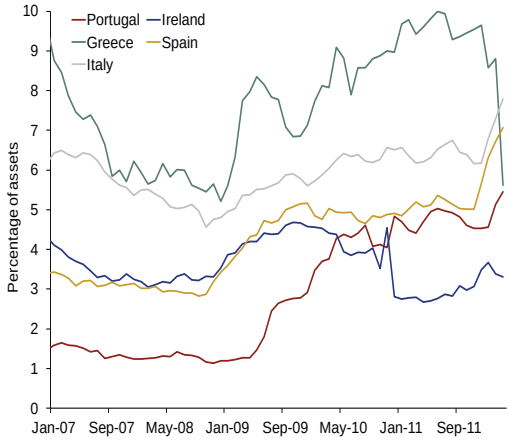
When compared to other monetary institutions in the euro area, particularly in other countries coming under strong pressure in sovereign debt markets, the balance sheets of Portuguese banks generally continued to be less exposed to public debt securities over the course of 2011 (Chart 4.2.4). In more recent months, an increase of this exposure in diverse countries has been noted, including Portugal, but most notably in Spain and Italy, which were particularly affected by the tensions in sovereign debt markets, at the end of 2011 and first months of 2012.[22]

In 2011 a significant decline in income from financial operations was observed, as well as a strong increase of impairment deriving from the financial securities and investments portfolio, was registered, in 2011

Income from financial operations, net of impairment, was significantly down in 2011, making a negative contribution to returns on assets (Chart 4.2.5). Notwithstanding the fact that income from financial operations was down by around 60 per cent, it still remained positive. It was, however, less than the amount of impairment on the securities and financial investments portfolio which registered a significant

Chart 4.2.4

GOVERNMENT BONDS HELD BY MONETARY FINANCIAL INSTITUTIONS IN SELECTED EURO AREA COUNTRIES



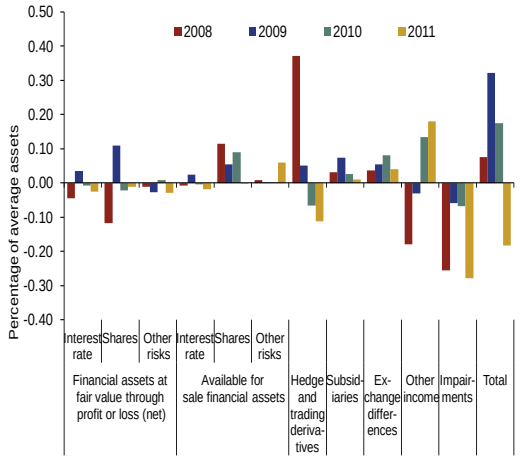
Source: ECB.
Note: Last observation - March 2012.

21 In accounting terms, changes in the financial assets assessed at fair value portfolio through profit or loss are fully reflected in income accounts, whereas changes in other components of the securities and financial investments portfolio only affect income for the year when related with the sale of instruments or when they are underpinned by value changes which imply the recognition of impairment. Value changes which do not require such recognition are processed in the revaluations reserves component in shareholders' equity. In addition, value changes of available for sale financial assets, also valued at mark-to-market, have an impact in prudential terms, i.e. on institutions' regulatory capital, albeit differentiated in accordance with the type of instrument. In particular, whereas potential capital gains and losses on equity securities are considered for the own funds assessment, the effect of changes in the value of debt securities is neutral.

22 The significant decline of public debt securities held by Greek banks, in March 2012, was associated with the private sector's involvement in the restructuring of Greek public debt.

Chart 4.2.5

CONTRIBUTIONS TO RETURN ON ASSETS OF INCOME FROM FINANCIAL OPERATIONS AND IMPAIRMENTS ON SECURITIES AND FINANCIAL INVESTMENTS | IN ACCORDANCE WITH THE IAS CLASSIFICATIONA AND THE SOURCE OF RISK



Source: Banco de Portugal.

increase in the context of the private sector's involvement in the restructuring of Greek public debt.[23] Available information for the major banking groups also points to a decline of the residual maturity of public debt securities in banks' portfolios, in 2011. This development appears in a context in which, following the Economic and Financial Assistance Programme, the Portuguese state has issued relatively small amounts of public debt, with short maturities. Also as regards results, the negative contribution of derivatives to returns on assets is essentially associated with interest rate derivatives. In comparison to 2010, reference should also be made to the decline of income from equity securities, particularly in the available for sale financial assets portfolio.

Although net commissions from financial operations were down in 2011, they still made a positive contribution to returns on assets. The main components underlying such evolution were commissions on investment funds management and, albeit to a lesser extent, on the structuring of operations. There was also an increase in commissions from securities operations on behalf of third parties and redemptions of investment units, in line with the recomposition of households' financial assets portfolios.[24]

The significant increase of unrealised losses had a negative effect on the evolution of accounting capital

The change in the value of available for sale assets, particularly debt securities, made a negative contribution to the evolution of accounting shareholders' equity in the form of an increase in unrealised capital losses. As regards regulatory capital, the impact was smaller, in line with the prudential neutrality of changes to the value of debt securities classified in this assets portfolio. In this respect reference should be made to the fact that, in conformity with European Council resolutions of October 2011, institutions

23 This initiative implied a 53.5 per cent haircut on the value of the securities, in addition to the conversion of 15 per cent into European Financial Stabilisation Fund debt securities and the remaining 31.5 per cent into new Greek sovereign debt securities with maturities of between 11 and 30 years.

24 For an analysis of developments in households' financial assets portfolios see "Chapter 3 *Financial situation of households and non-financial corporations*", of this Report.

taking part in the European Banking Authority's stress test exercises should recognise the depreciation assessed at 30 September 2011 in own funds by June 2012.[25]

The developments in the international financial markets continued to condition the financial position of pension funds, whose partial transfer to the Portuguese Social Security System resulted in a significant decline of respective assets and liabilities

In 2011 a significant decline in the pension funds portfolio and respective liabilities was observed, reflecting the partial transfer of the pension funds of thirteen banking groups to the Portuguese Social Security System (Table 4.2.1).[26] The decline in the value of the pension funds also reflected the negative returns on their portfolio of assets, in line with the disturbances in the international financial markets. Notwithstanding, the reduction of liabilities was reflected in an increase of their coverage rate by the value of the banking sector employees' pension funds.

The partial transfer of banks' pension funds to the Portuguese Social Security System had a negative effect on the banks' results owing to the adoption of different actuarial assumptions by financial institutions and the state on the assessment of the transferred liabilities. Although this effect was neutralised in December 2011 in prudential terms, it should be recognised in own funds by June 2012. Most institutions also opted to change the accounting policy adopted for the recognition of pension liabilities. Therefore, in contrast to the former method, in which only actuarial deviations in excess of a certain limit had an impact on shareholders' equity, these institutions now recognise the full amount of the actuarial deviations in reserves. However, the global effect on shareholders' equity was mitigated by the recognition of deferred tax assets associated with this change of accounting policy. Reference should also be made to the fact that, although the partial transfer of the pension funds to the Portuguese Social Security System reduces banks' future liabilities, the operation essentially involved highly liquid assets and therefore did not immediately contribute to a significant reduction of the exposure of the pension funds portfolio to developments in financial markets. Several institutions may also need to make adjustments to rebalance the composition of their pension funds portfolio in the case of situations of non-compliance with the limits established for the investment policy following the transfer. In this context, the Portuguese Insu-

Table 4.2.1

PENSION FUNDS - BANKING SYSTEM | ON AN INDIVIDUAL BASIS; EUR MILLION

	2009	2010	2011
Liabilities			
Total liabilities	13 991	14 018	7 510
Minimum level of liabilities be covered	13 410	13 506	7 190
Pension fund			
Value of pension fund at the beginning of the year	**13 268**	**14 388**	**14 037**
Net income of fund	1 190	-209	-652
Contribution made to fund	464	481	790
Contributions paid by beneficiaries	53	53	52
Retirement pensions paid by fund	633	648	655
Survivors' pensions paid by fund	36	32	36
Others	60	10	-5 843
Value of pension fund at the end of the year	**14 365**	**14 043**	**7 693**
Coverage of fund: Value of pension fund at the end of year (including other forms of coverage) - Minimum liabilities level to be covered	**1 336**	**911**	**878**

Source: Banco de Portugal.

25 For further details, see "Section 4.5 *Own funds adequacy*", of this Report.

26 For further details see "Box 4.2 *Accounting and prudential impact of the partial transfer of banking sector pension funds to the Social Security System*", of this Report.

rance Institute requested pension funds management bodies in this situation to submit, by 15 March 2012, adjustment plans setting out the measures the institutions propose to implement, in addition to defining an adequate period for resolving the situation, which period should not exceed three years.[27]

The main risks derive from the interaction between weak economic growth prospects on a European level and tensions in the sovereign debt markets of the euro area

The securities and financial investments portfolio exposes the banks to value losses on the securities they hold, which may be exacerbated in the case of asset disposals in financial markets with low levels of liquidity. Heightening tensions in the international financial markets, particularly in the sovereign debt markets, and their interaction with the real economy comprise the main sources of market risk for the Portuguese banking system. On the one hand, losses on the depreciation of securities translate into significant pressures on banks' profitability and capital. On the other hand, any disposals of debt and equity securities, including financial investments, will tend to translate into heavy losses and the banking system's deleveraging process may, therefore, have to be slower in order to avoid a greater adjustment of funding to the economy.

27 These adjustment plans, requested in the Portuguese Insurance Institute's Circular Letter 1/2012, consider the adjustment of imbalances following transfers which have already been made and those to be completed by June 2012.

4.3 Liquidity risk

The significant increase in customer resources, in the form of deposits, has enabled the structural position of Portuguese banking system liquidity to be improved, especially in the case of domestic institutions, in a context of the virtual absence of access to the international wholesale debt markets and mounting concerns over the sustainability of Portuguese issuers' debt. In parallel, the resolutions taken at the ECB Council meeting of 8 December 2011, namely, the organisation of two extended maturity refinancing operations (3 years) at a fixed-rate with full allotment, in addition to the broadening of the collection of assets available as collateral for monetary policy operations, also contributed favourably to mitigating liquidity risk in the Portuguese banking system. These measures translated into a significant improvement in liquidity gaps, particularly in the up to 1 year maturities. Substantial risks to the management of Portuguese bank's liquidity, however, remain. On the one hand, a context of persistent tensions in the international financial markets, brings with it the possibility of additional rating downgrades on domestic issuers which could have a negative effect on the value of the asset pools used to collateralise monetary policy lending operations. In any event, the reinforcement of the pool of eligible assets by banks' lending portfolios operates as a risk mitigator given that such assets are not sensitive to rating changes. On the other hand, the persistence of doubts over the capacity to resolve the sovereign debt crisis in the euro area and, in particular, the possible intensification of contagion to other countries, may translate into a reinforcement of capital outflows associated with non-residents' deposits. Lastly, it should be remembered that the adoption of more stringent liquidity management rules, under future Community regulation on liquidity requirements represents an additional challenge to the banks on an international level, including Portuguese banks.[28] In any event, adjustments to Portuguese banks' balance sheets in the context of the Economic and Financial Assistance Programme is consentaneous with the future application of the international liquidity regulation. In parallel, convergence to a more stable financing structure should, inter alia, contribute towards a situation in which banks regain access to the international wholesale debt markets, over the course of time and are less sensitive to the changes in international investors' risk perceptions.

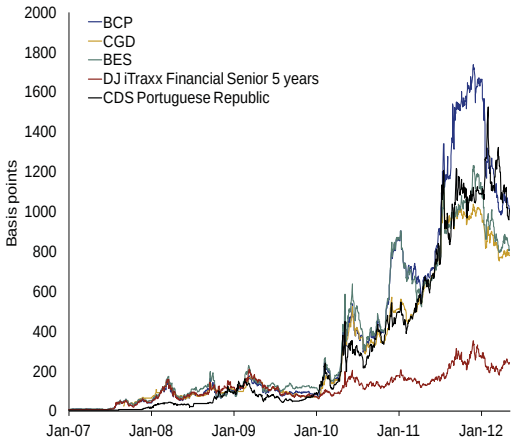
Portuguese banking system continues to be barred from access to the international wholesale debt markets over the medium to long term during the course of 2011 and beginning of 2012

During the course of 2011 the significant increase in the risk premium on Portuguese public debt – in the context of significant disturbances in sovereign debt markets in the euro area – was reflected in a strong increase of spreads on Portuguese Republic Credit Default Swaps (CDS) and those of the main Portuguese banking groups. It should be noted that following the strong increase recorded in 2010, the main Portuguese banking groups' spreads diminished considerably in the first of quarter 2011, drawing close to the CDS on treasury bonds with a comparable maturity (Chart 4.3.1). However, following the formalisation of the request for financial assistance, the risk associated with domestic banks' debts resumed its upwards trend. As a result, the average spread on domestic CDS against the index representing the euro area (Dow Jones iTraxx Financials) increased from around 20 basis points, at the beginning of 2010, to a maximum of 1,000 basis points in mid December 2011. The reduction of the spread, starting from the end of 2011, was probably associated with the extending of the maturities of the ECB's lending operations. However, following the recent worsening of the crisis in Greece, which has helped to fuel tensions in international financial markets, the CDS of Portuguese banks ceased to fall and stabilised at a level close to that of mid 2011. Similarly, yields on covered bonds issued by Portuguese banks in the secondary market, after maintaining an upwards path, increasing the spread against the benchmark

28 For further details on the new regulatory environment proposals, see "Box 2.1 *Main Basel III proposals*", Banco de Portugal, *Financial Stability Report* - November 2010.

Chart 4.3.1

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

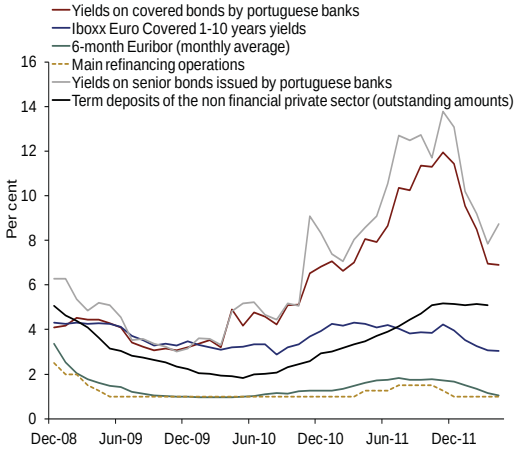


Sources: Bloomberg and Thomson Reuters.
Note: Last observation: 04/05/12.

IBoxx index which aggregates similar euro-denominated securities collateralised by investment grade mortgages, recorded a significant reduction from the end of 2011, having recently stabilised (Chart 4.3.2). This evolution comprises an indicator of international investors' risk perceptions of Portuguese banks, in a context of the sovereign debt crisis in the euro area, but did not translate into an effective financing cost for them in medium and long term wholesale debt markets, as they have been barred from access to these markets since the end of April 2010.

Chart 4.3.2

INTEREST RATES



Sources: Bloomberg, Thomson Reuters and Banco de Portugal.
Note: Last observation: April 2012.

During the course of 2011 and at the beginning of 2012 the financing of the Portuguese banking system was largely reliant on deposits taken from customers and, to a lesser extent, on Eurosystem lending operations

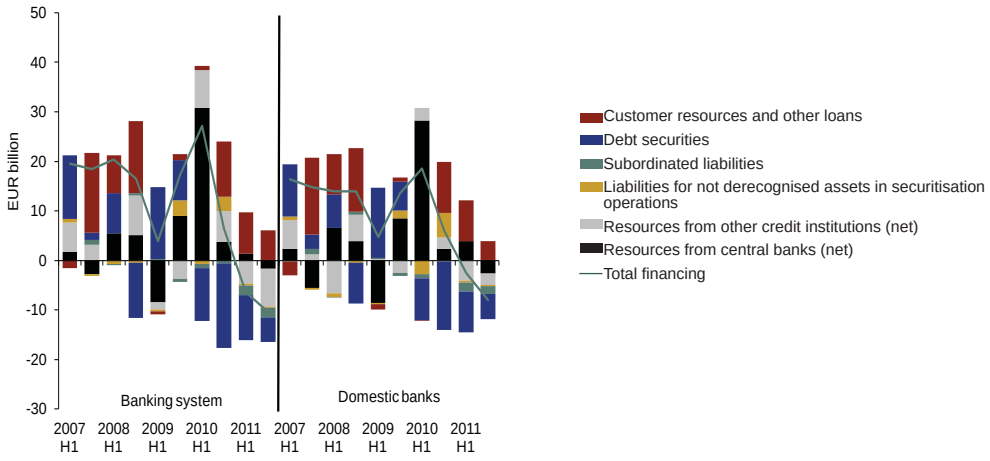
During the course of 2011 and at the beginning of 2012, Portuguese banking system activity was essentially funded by customer resources in the form of deposits (Chart 4.3.3). In addition, the maintenance of a high level of Eurosystem funding, following the strong increase recorded in first half 2010, also contributed to bank funding. Moving in the opposite direction were the declines in debt securities and other credit institutions' net resources as a consequence of the major restrictions on banks' access to the international wholesale debt markets. The decline in the level of debt securities also reflected banks' purchases of their own bonds in the secondary market.

Accordingly, customer resources in the form of deposits reinforced their importance, as the main source of funding for the banks, representing around 53 per cent of domestic institutions' assets on a consolidated basis, in December 2011, up 5 percentage points over the end of 2010 (Chart 4.3.4). Banks have developed and succeeded in significantly broadening their customer resources base, particularly in the case of resident households. This reflects depositors' confidence in institutions and the financial system in general. The recomposition dynamic of the household financial assets portfolio, translating into an increase in deposits and a decline in most other savings instruments, has, accordingly been witnessed.[29] This adjustment derived, on the one hand, from higher interest on deposits, in a context of households' preference for assets not subject to market risk and financial institutions' incentives to include resources outside the consolidation perimeter, such as amounts invested in the respective financial groups' investment funds or insurance companies, in their balance sheets.

Resources taken from the resident non-financial private sector, particularly households, increased over the course of 2011 and beginning of 2012, maintaining a trend which has been visible since second half 2010. There has been a growing trend in the year-on-year rate of change of households' deposits, with a certain stabilisation in the first few months of 2012 (Chart 4.3.5). The strong growth of households' deposits is especially relevant owing to their greater stability. However a slowdown of such deposits is likely to be witnessed as partly underlying their strong growth were portfolio adjustments. An analysis of

Chart 4.3.3

BANKING SYSTEM SIX-MONTH FINANCING FLOWS ON A CONSOLIDATED BASIS



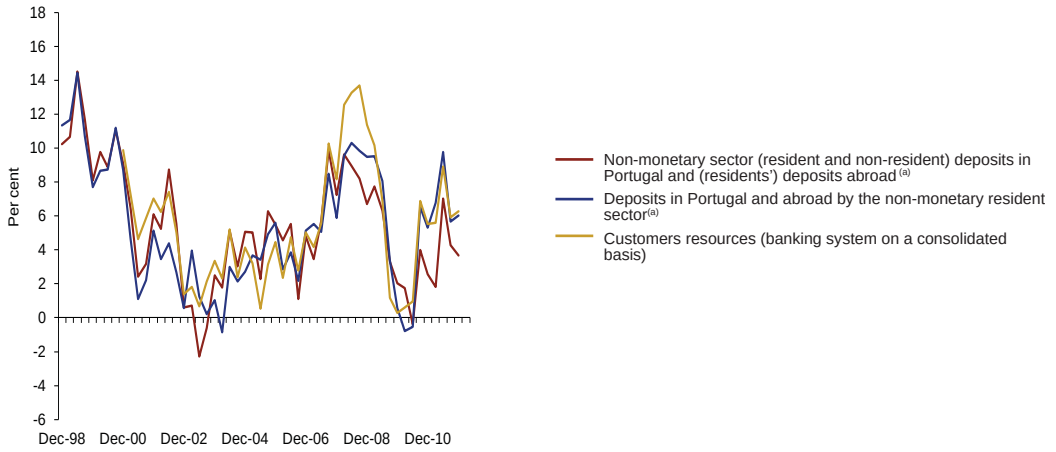
Source: Banco de Portugal.

Note: There is a series break in mid 2007 which corresponds to an enlargement in the number of institutions analysed.

29 For further details on the evolution of household's financial investments portfolios, see "Section 4.2 *Market risk*", of this Report.

Chart 4.3.4

YEAR-ON-YEAR DEPOSIT GROWTH RATES



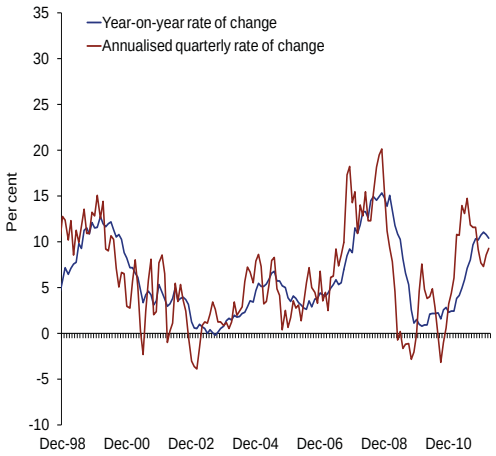
Source: Banco de Portugal.

Notes: (a) Excluding liabilities recorded as a counterpart for non-derecognised securitisation operations, recorded as deposits (and deposit-like instruments) of other financial intermediaries and auxiliaries. Last observation: March 2012.

the evolution of the bank deposits of the remaining institutional sectors in Portugal, shows a deceleration of deposits by non-financial corporations,[30] a significant decline in the deposits of non-residents and an increase in general government deposits (particularly related with the management of the disembursement of financial assistance), sectors in which the evolution of deposits is characteristically more volatile (Chart 4.3.6). Lastly, Reference should be made to the continuation of the significant increase in the deposits of non-residents by the external subsidiaries and branches of Portuguese banks.

Chart 4.3.5

DEPOSITS BY INDIVIDUALS | RATES OF CHANGE



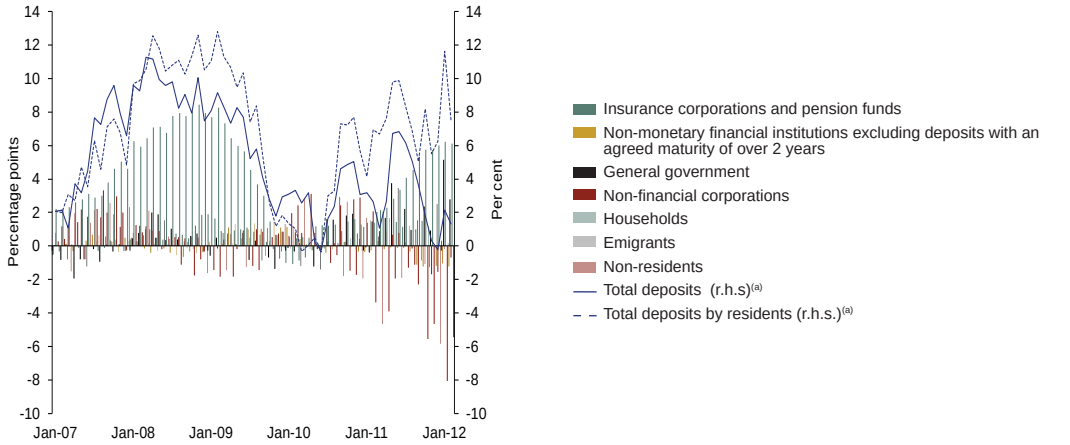
Source: Banco de Portugal.

Notes: The annualised quarterly rate of change is calculated on seasonally adjusted data. Last observation: March 2012.

30 Deposits made by non-financial corporations were abnormally high, in 2010, essentially on account of the extra-ordinary deposit made by a major telecommunications area company, following the sale of its equity investment in an external telecommunications company.

Chart 4.3.6

DEPOSITS OF THE NON-MONETARY SECTOR – DOMESTIC ACTIVITY | GROWTH RATES AND SECTOR CONTRIBUTIONS



Source: Banco de Portugal.

Notes: (a) Excludes term deposits by non-monetary financial institutions with a maturity over 2 years. Last observation: March 2012.

Strong growth in the deposits of resident households facilitated the adjustment of the banks' structural liquidity position, translating into a decline in the ratio of the credit to customer resources in the form of deposits

During the course of 2011, the credit to deposits ratio retained its downwards trend starting in the third quarter of the preceding year. This evolution is part of the orderly, gradual deleveraging process under the international Economic and Financial Assistance Programme. Both the banking system and domestic banks aggregate recorded significant declines of this ratio, albeit keeping the latter clearly lower ratios than noted for non-domestic banks (Charts 4.3.7 and 4.3.8). The decline noted in the credit to customer resources ratio in the form of deposits essentially reflected the increase in customer deposits as well as a certain decline in credit. As regards credit evolution, in the first half of the year a significant volume of credit disposals, especially project finance and syndicated loans sales, in the case of international activity, was particularly noted.[31] In turn, the second half of the year essentially witnessed a reduction of the net loans and advances to customers portfolio, particularly in the last quarter, partly reflecting credit transfers to funds.[32] The credit to deposits ratio for the international activity of the domestic banks started to decline from the last quarter of 2010, stabilising to a certain extent in the second and third quarters and diminishing once more in fourth quarter 2011. This ratio remained at relatively reduced levels in comparison to domestic activity.[33]

In the framework of the Economic and Financial Assistance Programme for Portugal, it was established that the eight major banking groups should achieve a credit to deposits ratio of 120 per cent at the

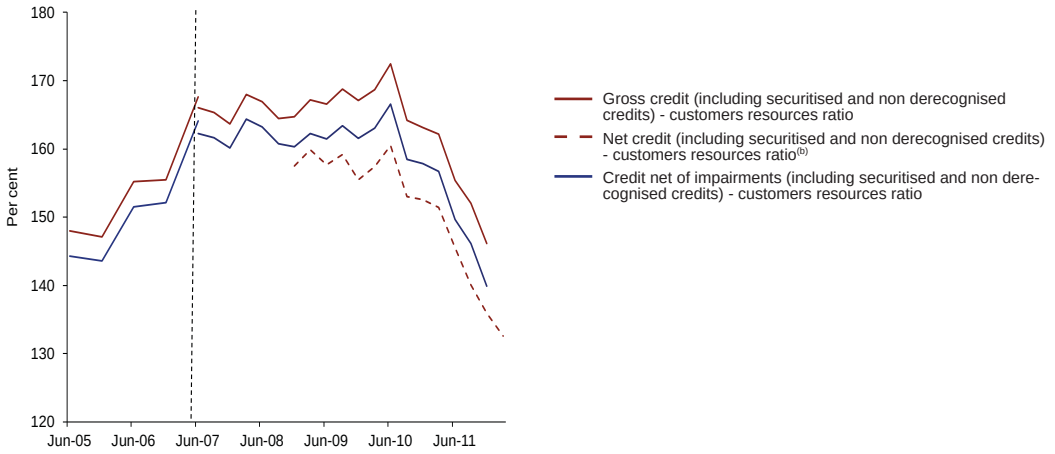
31 In particular, the domestic commercial paper portfolio and credit portfolios of external subsidiaries and branches of the main domestic banking groups. For further details see "Section 4.1 *Activity and Profitability*", of this Report.

32 For further details see "Box 1.1 *Implementation of the Economic and Financial Assistance Programme: the financial stability pillar*", of this Report.

33 The amount of securitised, non-derecognised credit which is not included in credit to deposits ratios for international activity is largely included in banks' domestic activity.

Chart 4.3.7

RATIO OF CREDIT TO CUSTOMER RESOURCES[a] | BANKING SYSTEM

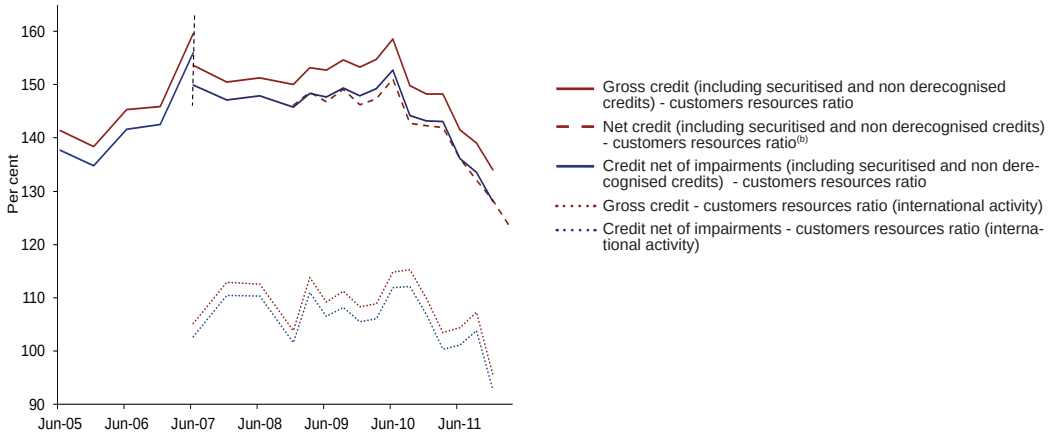


Source: Banco de Portugal.

Notes: (a) Data on a consolidated basis. The concept of customer resources includes mostly deposits and does not account for debt securities issued by the banks and placed with their customer base. The break in series in 2007 comprises an increase in the number of institutions under analysis. **(b)** Information obtained under the report set by Banco de Portugal Instruction No. 13/2009, which considers only the set of institutions which collect customer deposits.

Chart 4.3.8

RATIO OF CREDIT TO CUSTOMER RESOURCES[a] | DOMESTIC BANKS



Source: Banco de Portugal.

Notes: (a) Data on a consolidated basis. The concept of customer resources includes mostly deposits and does not account for debt securities issued by the banks and placed with their customer base. The break in series in 2007 comprises an increase in the number of institutions under analysis. **(b)** Information obtained under the report set by Banco de Portugal Instruction No. 13/2009, which considers only the set of institutions which collect customer deposits.

end of 2014.[34] This objective became an "indicative" measure in the context of the third Programme appraisal mission. At the end of 2011, the credit to deposits ratio of the eight major Portuguese banks on a consolidated basis was around 130 per cent, or around 30 percentage points lower than the maximum recorded in June 2010 (Chart 4.3.9). As referred to, the ratio's reduction process has particularly benefited from the growth of deposits, as their main adjustment component, representing around three quarters of the total adjustment and alleviating the gap adjustment effect based on a reduction of the credit flow which is usually more of a burden on the economy.

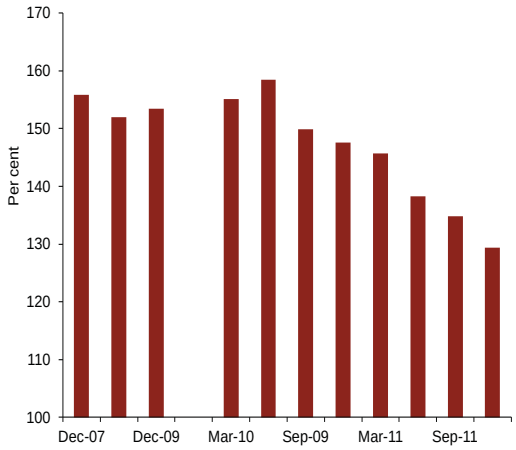
The decline in the credit to customer resources ratio, in the form of deposits, at the end of 2011 and first quarter 2012 was across-the-board to most domestic institutions. The empirical distribution curves regarding this ratio moved to the left in comparison to what was noted at the end of 2010 and 2011, respectively (Chart 4.3.10). Reference should be made to the fact that the bimodal distribution points to the existence of two important groups of banks with very different adjustment needs, one of which has ratios which are not in excess of the medium term reference value of 120 per cent. Narrowing of the distances between modes reflected a faster reduction of the ratio in the case of the group of banks with the highest ratio. A reduction of the ratio to values of less than 120 per cent for the group of banks with the lowest ratio values during 2011 appears to have stabilised in 2012.

Issue of bonds by Portuguese banks essentially to be used as collateral for Eurosystem lending operations

As regards the issue of bonds by the Portuguese banking system, reference should be made to the fact that the vast majority of these issues were included as part of the banks' strategy of issuing securities as collateral for Eurosystem lending operations. The global amount of these issues, in 2011, essentially at variable rates, was around EUR 19 billion (Table 4.3.1). In first half 2011, reference should be made to the issue of covered bonds, for an amount of around 75 per cent of total bond issues. In second half 2011, given the added difficulties of issuing debt in the primary markets (even in the covered bonds market), in

Chart 4.3.9

RATIO OF CREDIT TO CUSTOMER RESOURCES FOR THE EIGHT MAJOR RESIDENT BANKING GROUPS



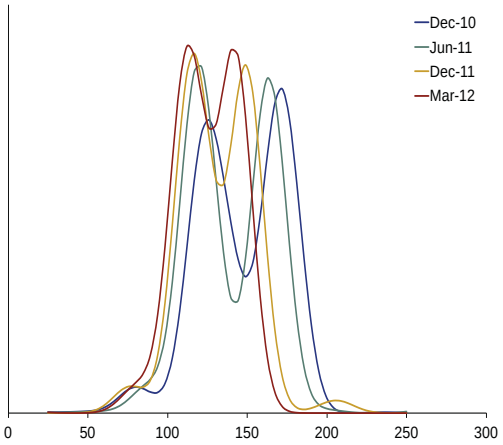
Source: Banco de Portugal.

Note: The concept of credit is net of impairment and includes securitised and non derecognised credits. The concept of customer resources includes mostly deposits, does not include debt securities issued by the banks and placed with their customer base and comprises stable funding lines (there are eligible when obtained from the parent company, qualified shareholders or multilateral institutions on the basis of adequate documentation concerning their stability).

34 The credit concept used is net of impairment, including securitised, non-derecognised credit and other exposures to third parties deriving from credit transfers. The deposits concept excludes securities issued by the banks and sold to their customers and considers stable lines of credit with parent companies, qualified shareholders or multilateral institutions.

Chart 4.3.10

RATIO OF CREDIT TO CUSTOMERS RESOURCES – DOMESTIC BANKS | EMPIRICAL DISTRIBUTION



Source: Banco de Portugal.

Notes: Data on a consolidated bases. The concept of customer resources includes mostly deposits and does not account for debt securities issued by the banks and placed with their customer base. Information obtained under the report set by Instruction No. 13/2009 of Banco de Portugal. Empirical distribution obtained through recourse to non-parametric methods, namely to a Gaussian Kernel that weights institutions by their assets.

Table 4.3.1

BONDS ISSUED BY PORTUGUESE BANKING GROUPS | STRUCTURE BY RATE TYPE (PERCENTAGE OF TOTAL)

	2004	2005	2006	2007	2008	2009	2010	2011	2012[a]	Postion in 31 March 2012
Variable rate	87.8	98.1	82.7	75.9	49.7	32.4	60.3	86.9	75.0	61.3
Fixed-rate and others	12.2	1.9	17.3	24.1	50.3	67.6	39.7	13.1	25.0	38.7

Sources: Bloomberg, Dealogic Bondware and Thomson Reuters.

Note: (a) Includes observations up to 31 March.

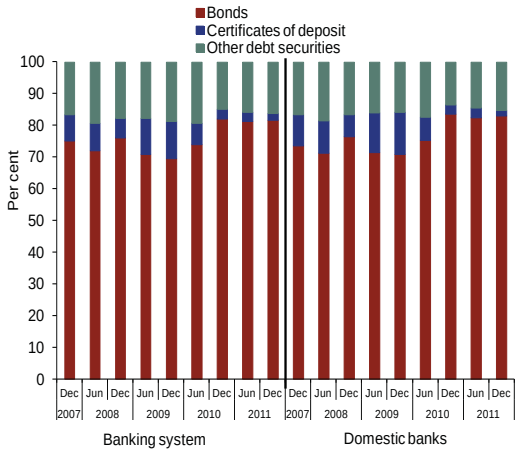
line with international investors' progressively more negative assessment of and rating agencies perceptions of the quality of the securities issued by domestic financial institutions, advantage was taken of the issue of state-backed bonds. In second half 2011, the issue of state-backed bonds represented around 67 per cent of total bonds issued by the banks. As regards the financing structure of the banks in the securities market, a significant decline of the stock of certificates of deposit in their liabilities continued to be noted over the course of 2011. At the end of 2011 their proportion of the debt securities total diminished to around half the amount noted at the end of the preceding year (Chart 4.3.11). Continuing difficulties in access to wholesale financing markets once again translated into a decline of the outstanding balance on bonds issued by Portuguese banks in first quarter 2012 (Chart 4.3.12).

In an environment of significant difficulties in access to wholesale debt markets, Eurosystem funding remained at a high but relatively stable level, in 2011, increasing significantly at the beginning of 2012.

Given the persistence of difficulties in access to the international wholesale debt markets, both in terms of price and quantity, although Portuguese banks' use of Eurosystem funding remained at high levels during the course of 2011, they remained virtually stable in comparison to the end of 2010 (Table 4.3.2 and Chart 4.3.13). In turn, funding from other credit institutions was down, as a reflection of the deterioration of international investors' risk perceptions regarding Portuguese banks. The involvement of resident banks in

Chart 4.3.11

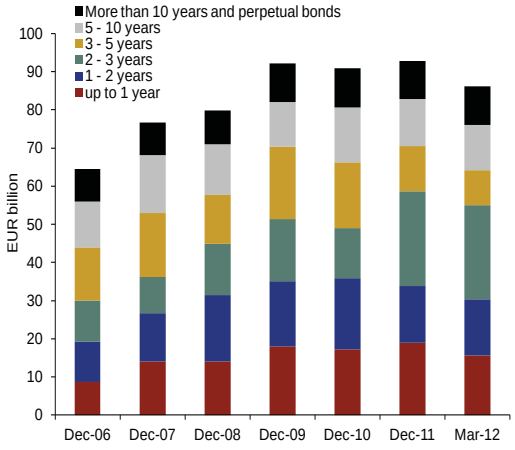
STRUCTURE OF LIABILITIES REPRESENTED BY SECURITIES | ON A CONSOLIDATED BASIS



Source: Banco de Portugal.

Chart 4.3.12

OUTSTANFING AMOUNTS OF BONDS ISSUED BY PORTUGUESE BANKS BY RESIDUAL MATURITY | IN PORTUGAL AND ABROAD



Sources: Bloomberg, Dealogic Bondware and Thomson Reuters.

Note: Includes issues of branches and subsidiaries of Portugal banks abroad.

Table 4.3.2

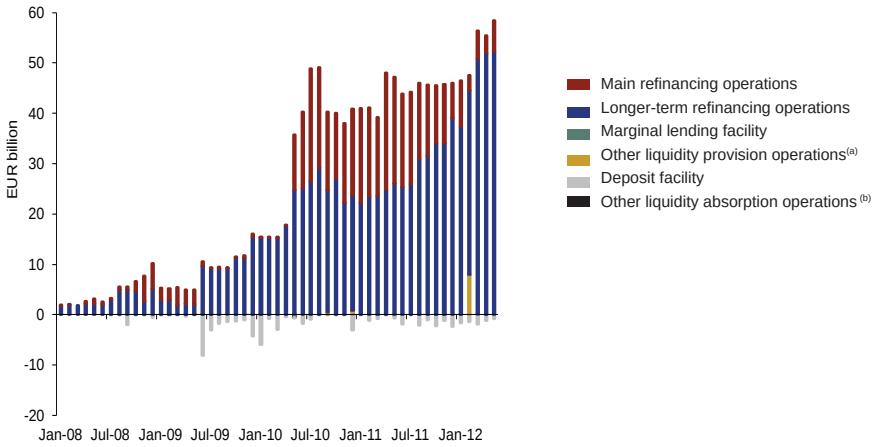
POSITION OF PORTUGUESE BANKS *VIS-À-VIS* OTHER CREDIT INSTITUTIONS AND CENTRAL BANKS | ON A CONSOLIDATED BASIS, EUR MILLION

Banking system	Dec-07	Dec-08	Dec-09	Jun-10	Dec-10	Mar-11	Jun-11	Sep-11	Dec-11
Net resources from Central banks	**-6.9**	**3.7**	**4.2**	**34.9**	**38.7**	**36.9**	**40.0**	**41.6**	**38.3**
Net resources from other credit institutions	**32.7**	**40.7**	**35.4**	**43.1**	**49.2**	**50.9**	**45.1**	**44.1**	**37.0**
Cash, claims and investments in Central banks	**12.7**	**10.7**	**15.3**	**11.1**	**10.5**	**9.1**	**9.5**	**9.6**	**12.4**
Claims and investments in other credit institutions	**39.7**	**33.6**	**38.9**	**35.9**	**31.9**	**31.9**	**33.0**	**34.0**	**37.6**
in the country	8.5	11.9	13.2	13.0	8.8	8.0	9.1	9.4	11.6
abroad	31.2	21.7	25.7	22.9	23.0	23.9	23.9	24.7	26.0
Resources from Central banks	**5.7**	**14.4**	**19.4**	**46.0**	**49.2**	**46.0**	**49.6**	**51.2**	**50.7**
Resources from other credit institutions	**72.4**	**74.3**	**74.3**	**79.0**	**81.1**	**82.8**	**78.1**	**78.1**	**74.6**
in the country	7.7	10.2	8.6	7.5	7.0	6.7	5.9	6.3	8.2
abroad	64.7	64.1	65.8	71.5	74.1	76.1	72.2	71.8	66.4
Domestic banks	**Dec-07**	**Dec-08**	**Dec-09**	**Jun-10**	**Dec-10**	**Mar-11**	**Jun-11**	**Sep-11**	**Dec-11**
Net resources from Central banks	**-8.1**	**2.4**	**2.2**	**30.5**	**32.9**	**33.0**	**36.8**	**39.1**	**34.2**
Net resources from other credit institutions	**9.8**	**8.4**	**6.0**	**8.5**	**10.7**	**14.0**	**6.6**	**6.5**	**4.4**
Cash, claims and investments in Central banks	**11.6**	**9.2**	**13.4**	**9.2**	**9.0**	**8.1**	**7.8**	**7.6**	**9.9**
Claims and investments in other credit institutions	**26.0**	**23.4**	**23.4**	**18.4**	**15.4**	**13.4**	**16.0**	**16.1**	**18.4**
in the country	6.1	9.3	10.8	9.3	6.2	5.4	7.0	6.9	9.0
abroad	19.9	14.2	12.6	9.1	9.2	7.9	9.1	9.2	9.4
Resources from Central banks	**3.5**	**11.5**	**15.7**	**39.7**	**41.9**	**41.1**	**44.6**	**46.7**	**44.1**
Resources from other credit institutions	**35.8**	**31.8**	**29.5**	**26.9**	**26.1**	**27.4**	**22.6**	**22.6**	**23.8**
in the country	5.5	7.9	6.0	4.8	5.7	5.7	5.0	5.1	6.7
abroad	30.3	23.9	23.5	22.2	20.4	21.7	17.6	17.5	16.0

Source: Banco de Portugal.

Chart 4.3.13

OUTSTANDING AMOUNTS OF MONETARY POLICY OPERATIONS OF PORTUGUESE BANKS



Source: Banco de Portugal.

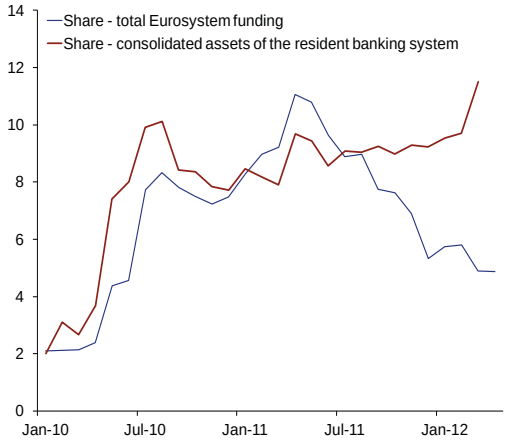
Notes: (a) Includes "Fine-tuning operations" and "Structural operations". **(b)** Includes "Fixed-term deposits" and "Reserve transactions". Last observation: May 2012.

Portugal in extended refinancing operations (LTRO – Long Term Refinancing operation; 3 years) with full allotment in December 2011, accordingly, translated, to a large extent, into an extending of the maturity on Eurosystem funding. In the first few months of 2012, Eurosystem resources obtained by resident banks in Portugal increased significantly, following the second LTRO (3 years) with full allotment by the Eurosystem in February. This operation, together with the December 2011 LTRO, helped to mitigate the refinancing risk on banks' balance sheets with around 90 per cent of Eurosystem funding now having a residual maturity of slightly less than 3 years. As in the euro area this increase in Eurosystem funding was associated with the concentration of maturities on 3 year bonds in the first months of 2012. It also reflected the significant increase in the financing of foreign banks located in Portugal. At the end of March 2012, Eurosystem funding represented around 12 per cent of the resident banks' balance sheets in Portugal and around 5 per cent of total use of Eurosystem monetary policy operations (Chart 4.3.14). This proportion has remained relatively constant since the second LTRO, following a decline, starting May 2011. Reference should also be made to the fact that resident banks, in Portugal, did not make use of the Emergency Liquidity Assistance (ELA).

Use of Eurosystem funding for the euro area as a whole followed an upwards path during the course of 2011 and in the first few months of 2012, particularly in the context of the LTRO (3 years) with full allotment, in December 2011 and February 2012, in line with the intensification and across-the-board difficulties in European banks' access to financing in the wholesale debt markets, particularly over medium and long term maturities (Chart 4.3.15). It should, however, be noted that a considerable increase in the permanent deposit facility was also observed. Disturbances only ceased to be of a significant magnitude in countries with Economic and Financial Assistance Programmes (Greece, Ireland and Portugal) but spread to other countries in which fears over the sustainability of the public finances also exist, notably Spain and Italy.

Chart 4.3.14

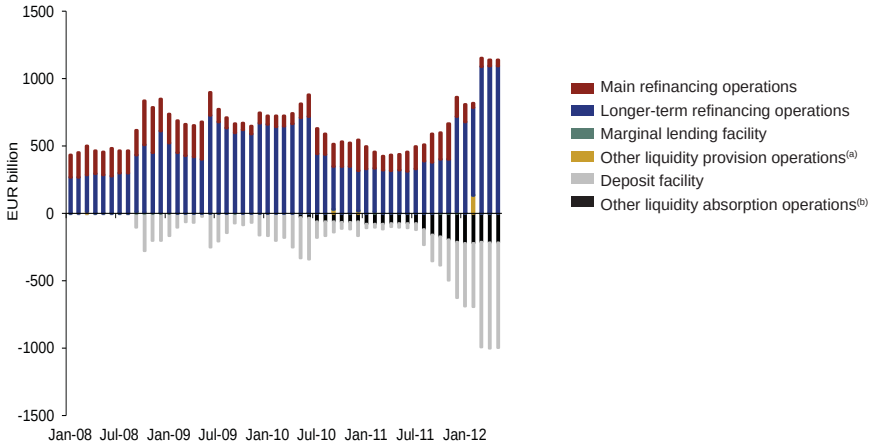
SHARE OF THE PORTUGUESE BANKING SYSTEM ON THE TOTAL EUROSYSTEM FUNDING AND ON THE CONSOLIDATED ASSETS OF THE RESIDENT BANKING SYSTEM | PER CENT



Source: Banco de Portugal.

Chart 4.3.15

OUTSTANDING AMOUNTS OF MONETARY POLICY OPERATIONS OF THE EUROSYSTEM



Source: Banco de Portugal.

Notes: (a) Includes "Fine-tuning operations" and "Structural operations". **(b)** Includes "Fixed-term deposits" and "Reserve transactions". Last observation: May 2012.

ECB Council resolutions make it possible to reinforce asset pools for collateralising lending operations, making them less sensitive to changes in international investors' risk perceptions and rating changes

The international Economic and Financial Assistance Programme provides for the need to reinforce banks' collateral, in order to, inter alia, maintain the use of Eurosystem lending operations. This is particularly relevant as the value of the collateral pool for the purposes of access to Eurosystem credit operations is negatively affected by the heightening of tensions in the international financial markets and ratings downgrades (Table 4.3.3). In first half 2011, an increase in the value of the collateral pool was registered, to which contributions were made by public debt securities, as well as covered bonds. The evolution of such assets offsets the decline noted on a level of asset backed securities.[35] Latterly, special reference should be made to the contribution of state-backed securities, enabling the mitigation of the slight decline noted in the total value of the collateral pool. More recently, the ECB Council's decision of 8 December 2011 (which came into force on 9 February 2012) to broaden the collection of assets available as collateral for monetary policy operations also helped to increase the collateral pool's value. Reference should particularly be made to the reduction of the minimum eligibility threshold in terms of securitised assets ratings (ABS-asset backed securities) and permission for domestic central banks to accept additional bank loans complying with specific eligibility criteria, as collateral. Accordingly, on 9 February 2012, the ECB Council decided to approve the following temporary measures proposed by Banco de Portugal:

- to accept bank loans with a default probability of not more than 1.5 per cent, subjecting them to more stringent risk control measures than those in force for the unique list of eligible assets;

- to extend the acceptance of the COFACE rating tool for assessing the credit quality of debtors in the services, commercial and other activity sectors.

- to accept homogenous bank loan portfolios related with:

  - mortgage loans to households (subject to a haircut of 75 per cent);

  - loans for household consumption purposes (subject to a haircut of 85 per cent);

  - loans to companies, excluding financial corporations (subject to a haircut of 70 per cent)

In mid May 2012, the amount of additional bank loans, used by resident banks in Portugal, totalled around EUR 6 billion and is expected to continue to increase during the course of this year. According to

Table 4.3.3

LONG TERM DEBT RATINGS OF THE FIVE LARGEST PORTUGUESE BANKING GROUPS AND THE PORTUGUESE GOVERNMENT

	S&P				*Moody's*				*Fitch*			
	31Dec10	16May11	4Nov11	23May12	31Dec10	16May11	4Nov11	23May12	31Dec10	16May11	4Nov11	23May12
CGD	A-	BBB-	BBB-	BB-	A1	Baa1	Ba2	Ba3	A	BBB-	BBB-	BB+
BCP	BBB+	BBB-	BBB-	B+	A3	Baa3	Ba3	Ba3	BBB+	BBB-	BBB-	BB+
BST	A	BBB-	BBB-	BB	A1	A3	Baa2	Ba1	AA	AA	AA-	BBB
BPI	A-	BBB-	BBB-	BB-	A2	Baa2	Ba2	Ba3	A-	BBB-	BBB-	BB+
BES	A-	BBB-	BBB-	BB-	A2	Baa2	Ba2	Ba3	BBB+	-	-	-
Portuguese Republic	A-	BBB-	BBB-	BB	A1	Baa1	Ba2	Ba3	A+	BBB-	BBB-	BB+

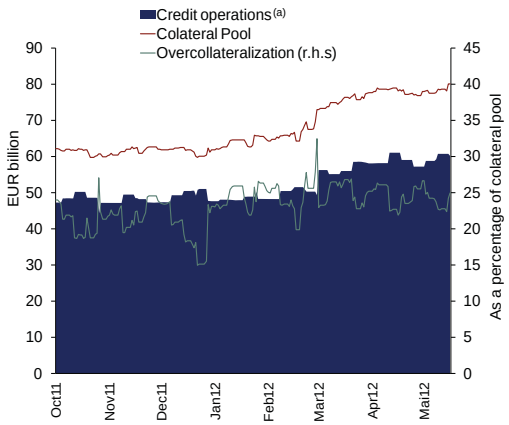
Source: Bloomberg.

Note: For banks, S&P ratings refer to the LT Local Issuer Credit category; Moody's ratings refer to the Long Term Bank Deposits category; Fitch's ratings refer to the LT Issuer Default Rating category. For the Portuguese Republic, all ratings refer to the Local Currency LT Debt category.

35 The more stringent securitised assets eligibility criteria (ABS - Asset Backed Securities) for ECB funding purposes in the form of a demand for two AAA ratings at time of issue, to enable the acceptance of securities as collateral contributed towards their decline in banks' balance sheets.

Chart 4.3.16

PORTUGUESE BANKING SYSTEM EUROSYTEM FUNDING AND COLATERAL POOL



Source: Banco de Portugal.

Notes: (a) Outstanding amounts on main refinancing operations, on longer-term refinancing operations and on occasional regularization operations. Since 4 July 2011 it also includes intraday limit credit operations. From that date the Banco de Portugal only has a unique collateral pool for the monetary policy operations and for intraday credit.

Banco de Portugal estimates, this kind of collateral generating capacity represented around EUR 30 billion. In conformity with Chart 4.3.16, there was an increase in the collateral pool from the end of February making it possible to stabilise the level of over collateralisation (by around 25 per cent), notwithstanding the increased use of Eurosystem funding by banks operating in Portugal.

Significant Improvement of liquidity gaps, following the extended period refinancing operations (3 years)

Starting from the end of 2011, a clear improvement in Portuguese banking system liquidity gaps was witnessed, especially in the case of domestic institutions. The evolution was particularly favourable in the up to 1 year gap (Chart 4.3.17).[36] This evolution largely reflected the extended refinancing operations (3 years) which in substantially extending the residual maturity of Eurosystem funding made it possible to reduce the maturity of term operations for maturities of up to 1 year (Chart 4.3.18).

In first quarter 2012, the empirical distributions of liquidity gaps of up to 1 month and up to 12 months moved slightly to the right in comparison to the end of the preceding year, pointing to an improvement of the respective gaps (Charts 4.3.19 and 4.3.20). In addition, a lower level of dispersion between the banking institutions under analysis was registered, with institutions having very negative liquidity gaps, particular in the periods of up to 12 months, ceasing to be observed.

Reduction of risk to the banks' liquidity position deriving from off-balance sheet items

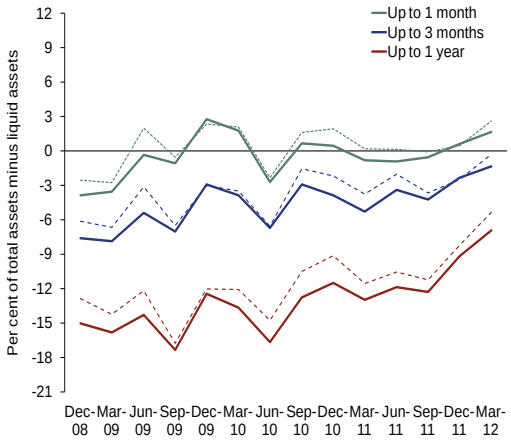
In the current context of economic crisis and, in particular, significant corporate funding difficulties, a possible source of additional pressure on banks' liquidity is associated with the commitments assumed to third parties, including lines of credit, bank overdrafts and issue of guarantees.[37]

36 Liquidity gap defined as (net assets – volatile liabilities) / (assets – net assets) *100, in each cumulative maturity bracket.

37 According to Banco de Portugal "Instruction" No.12/2009, banks report the value of their commitments to third parties, in which there is a certainty or high level of probability of execution, by ladders of maturity, including, in the classes of maturities of more than 12 months, commitments which are considered unlikely to be executed.

Chart 4.3.17

LIQUIDITY GAPS IN CUMULATIVE MATURITY LADDERS



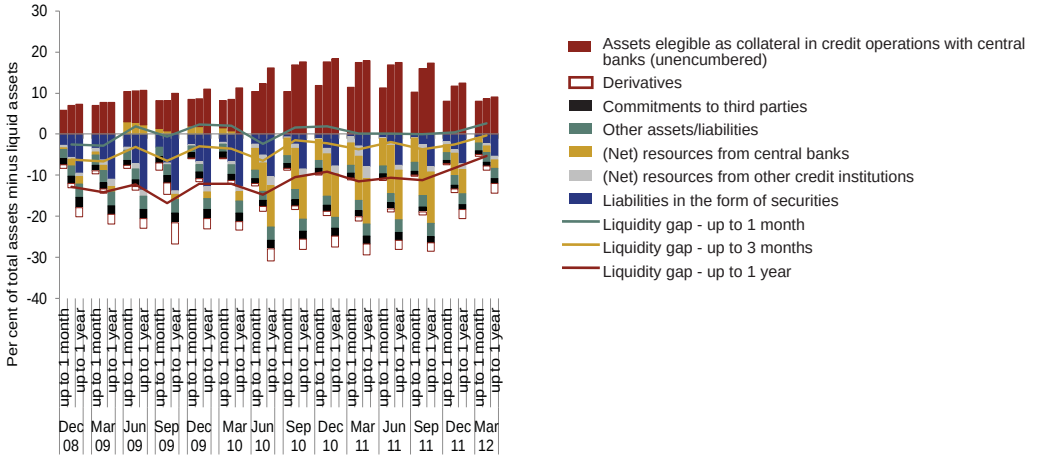
Source: Banco de Portugal.

Notes: The liquidity gap is defined as (Liquid Assets – Volatile Liabilities)/(Assets – Liquid Assets) x 100 for each cumulative ladder or residual maturity. Information obtained under the report set by Instruction No.13/2009 of Banco de Portugal. The dashed lines show domestic institutions.

The amount of commitments assumed to third parties was significantly down over the course of 2011. The major part of this amount is represented by commitments with a reduced probability of execution or with a residual maturity or more than 12 months. In turn the commitments included in the maturity categories of up to 1 year represented around 1.1 per cent of total assets, in December 2012, with particular reference to commitments with an expected execution period of less than one week which were considerably down (Chart 4.3.21). Reference should be made to the fact that a significant increase in the repayable on demand and up to 1 week categories was observed, in March 2012, associated with the evolution of irrevocable commitments to non-residents by a non-domestic bank.

Chart 4.3.18

LIQUIDITY GAPS FOR DOMESTIC INSTITUTIONS – MATURITIES UP TO 12 MONTHS | MAIN CONTRIBUTIONS

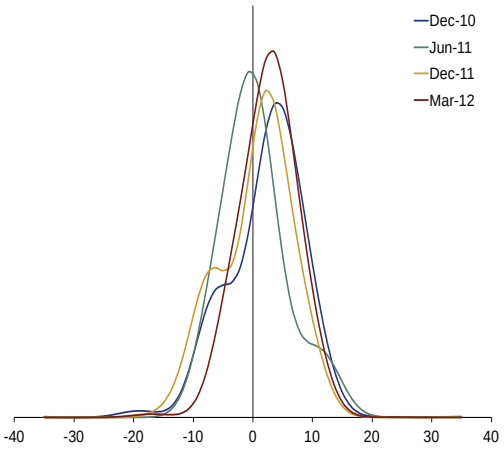


Source: Banco de Portugal.

Note: Information obtained under the report set by Instruction No.13/2009 of Banco de Portugal.

Chart 4.3.19

LIQUIDITY GAP UP TO 1 MONTH – DOMESTIC INSTITUTIONS | EMPIRICAL DISTRIBUTION

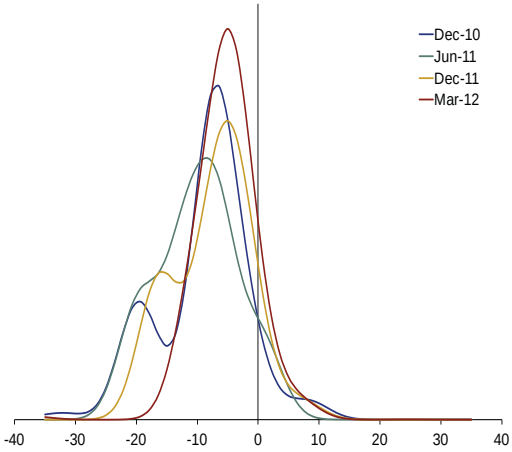


Source: Banco de Portugal.

Notes: Information obtained under the report set by Instruction No.13/2009 of Banco de Portugal. Empirical distribution obtained through resource to non-parametric methods, namely to a Gaussian Kernel that weights institutions by their assets.

Chart 4.3.20

LIQUIDITY GAP UP TO 1 YEAR – DOMESTIC INSTITUTIONS | EMPIRICAL DISTRIBUTION



Source: Banco de Portugal.

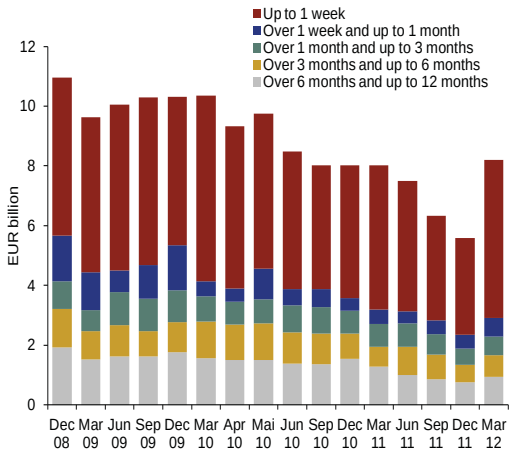
Notes: Information obtained under the report set by Instruction No.13/2009 of Banco de Portugal. Empirical distribution obtained through resource to non-parametric methods, namely to a Gaussian Kernel that weights institutions by their assets.

The banking system deleveraging process is likely to translate into an improvement of liquidity gaps

The Portuguese banking system's deleveraging process over the next few years, agreed under the international Economic and Financial Assistance Programme is likely to translate into an improvement of liquidity gaps as the banks converge to a more stable financing structure, translating into lower credit to deposits ratios. This should, inter alia, help the banks to regain access to the international wholesale debt markets, over time, and reduce their sensitivity to changes in international investors' risk perceptions.

Chart 4.3.21

COMMITMENTS TO THIRD PARTIES – BANKING SYSTEM



Source: Banco de Portugal.

Notes: Information obtained under the report set by Instruction No.13/2009 of Banco de Portugal, which considers only the set of institutions which collect customer deposits.

4.4. Credit risk

The recessionary environment characterising last year and the start of this year translated into a considerable deterioration of the non-financial private sector's financial situation and consequent materialisation of credit risk (Chart 4.4.1).[38] As a result of the worsening situation, the default ratio and annual flow of new loans in default reached their highest level since the inception of the euro area and are expected to worsen over the course of 2012. Notwithstanding an across-the-board worsening of credit risk, two distinct paths remain in evidence. Whereas the growth in the default ratio on loans to households for house purchases has been relatively gradual, with new loans in default being in line with their historical average, default ratios on loans to households for consumption and other purposes and on loans to non-financial corporations have recorded strong increases, reflecting the sharp rise in the flow of new loans in default. Such differentiation is also visible in the evolution of the non-performing credit ratio (Chart 4.4.2), with very slight growth in the loans to households for housing segment and strong growth in the other segments. Contributing to this dichotomy is likely to be not only a more limited rise in the interest rate on the loan stock for the purchase of houses in comparison to other segments, but also a lesser degree of sensitivity of default on such loans in relation to the evolution of unemployment.[39] It should also be noted that, based on the usual default determinants, the evolution of credit risk is in line with expectations. As regards non-financial corporations, although the deterioration of credit quality indicators was across-the-board to all activity sectors, it was particularly marked in the "construction", "real estate activities" and "wholesale and retail trade, repair of motor vehicles and motorcycles" sectors. This increase was also across-the-board by dimension of companies and exposure, with default continuing to be more frequent and significant on smaller loans and with smaller companies.

Together with a worsening of the materialisation of credit risk, a significant reduction in bank loans was witnessed from the second half of 2011 with the annual rate of change on loans to the non-financial private sector down to -3 per cent in March 2012 (Chart 4.4.3).[40] The analysis of a broader aggregate such as total credit to the non-financial private sector indicates, however, that the decline of credit to the non-financial private sector was less intense and occurred more gradually, with the respective annual rate of change recording values of close to -1 per cent in March 2012. The deceleration path of bank loans was common to all segments but was particularly relevant in the case of loans to households for consumption and other purposes. In the case of loans to non-financial corporations, notwithstanding a gradual slowdown, in aggregate terms, there was a strong level of differentiation between the high growth exhibited by bank loans to state owned enterprises and a negative growth in the case of private firms. This duality in bank loans tended to be attenuated by a positive contribution made by non-resident

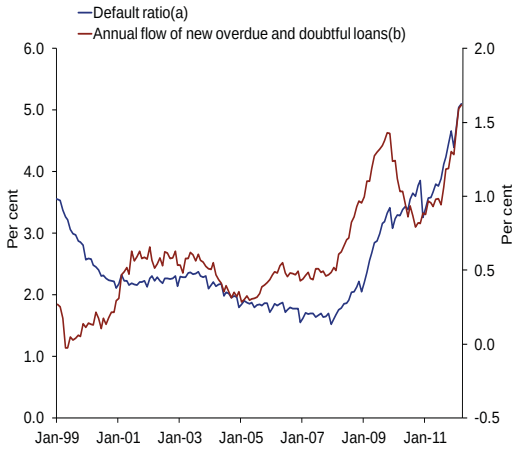
38 Four credit risk indicators are preferentially used in this chapter. The default ratio is defined as total loans overdue for more than 30 days and other doubtful loans expressed as a percentage of the loans balance adjusted for securitisation. The annual flow of new overdue and other doubtful loans (new loans in default) is expressed as a percentage of the loans, adjusted for securitisation, asset write-downs/write-offs, reclassifications and starting December 2005, credit disposals. The ratio of loans with default includes credit instalments overdue for more than 90 days and credit which is considered doubtful, after several conditions related with the severity of the default have been verified. Lastly, non-performing credit corresponds to a broader concept of credit risk made up of three elements, the amount owed on credit with instalments of capital or interest overdue for a period of 90 days or more, the overdue amount of restructured credit with certain characteristics not included in the preceding item and, lastly, the amount of credit with instalments of capital or interest overdue for a period of 90 days or more, but in relation to which there is evidence which justifies its classification as non-performing credit, namely a debtor's bankruptcy or liquidation.

39 Alves, N. and Ribeiro, N. (2011), "Modelling the evolution of households' defaults", Banco de Portugal, *Financial Stability Report*, November.

40 The annual rates of change of loans made by resident banks set out in this chapter are calculated on the basis of the relationship between bank loan balances at the end of the month, adjusted for securitisation operations and monthly transactions, which are calculated on balances adjusted for reclassifications, assets write-downs/write-offs and foreign exchange and price revaluations. The amounts are also adjusted for the purposes of credit portfolio disposals in addition to other operations of significant amount, but which have no impact in the effective financing of counterparties.

Chart 4.4.1

OVERDUE AND OTHER DOUBTFUL BANK LOANS TO THE RESIDENT NON-FINANCIAL SECTOR[(a)]

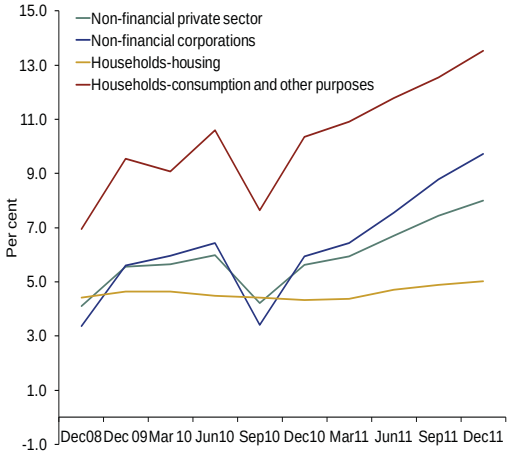


Source: Banco de Portugal.

Notes: (a) Defined as overdue loans and other doubtful loans as a percentage of the outstanding loan amounts adjusted for securitisation. The strong decline registered in December 2010 is justified by the sale of a large loan portfolio by BPN to Parvalorem, which is out of the Monetary and Financial Statistics. This sale had an impact of 0.35 per cent in the default ratio of the non-financial private sector. **(b)** The estimate of the annual flow of new overdue loans and other doubtful loans is presented as a percentage of the loans, adjusted for securitisation, and is calculated by adjusting the change in the outstanding amounts of overdue and other doubtful loans for asset write-offs/downs, reclassifications and, starting December 2005, sales outside the banking system of overdue credit and other doubtful loans not written off/down from assets, reported on a quarterly basis according to Banco de Portugal Instruction nº 17/2008. Values adjusted regarding the sale of a loan portfolio by BPN to Parvalorem. Last observation: March 2012.

Chart 4.4.2

NON-PERFORMING LOANS RATIO

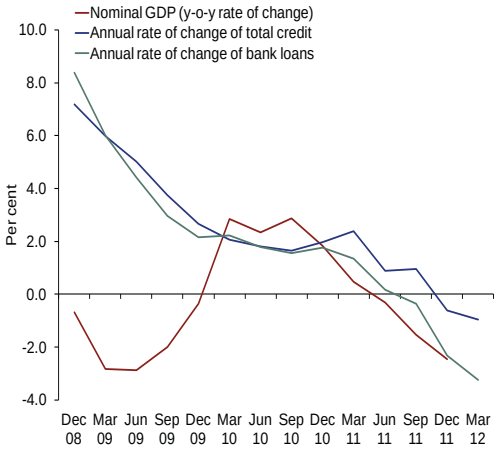


Source: Banco de Portugal.

Notes: The non-performing loans ratio encompasses three elements: total outstanding credit with overdue instalments of principal or interest for a period of more than 90 days; total value of outstanding restructured credits other than those mentioned previously and that fulfil certain characteristics, and lastly, total outstanding credit with overdue instalments of principal or interest for a period of less than 90 days, but for which there is evidence that would justify its classification as NPL, namely, bankruptcy or liquidation of debtor assets. Last observation: December 2011.

Chart 4.4.3

CREDIT TO THE NON-FINANCIAL PRIVATE SECTOR



Source: Banco de Portugal.

Notes: The annual rates of change of bank loans are calculated on the basis of the relationship between outstanding bank loans amounts at the end of the month, adjusted for securitisation operations, and monthly transactions, calculated on the basis of outstanding amounts adjusted for reclassifications asset write-offs/downs and foreign exchange and price revaluations. The amounts are also adjusted for the purposes of credit portfolio disposals in addition to other operations of significant amount, but which have no impact in the effective financing of counterparties. Total credit to the private non-financial sector includes all credit granted (loans, debt, trade credit) independently of who conceives the credit. The annual rate of change of total credit is adjusted of reclassifications, asset write-offs/downs and foreign exchange and price revaluations, as well as other operations of significant amount, but which have no impact in the effective financing of counterparties.

entities to the funding of private sector companies. However, an analysis by corporate dimension shows that this contribution is likely to have been limited to holding companies and large corporations. The analysis also makes it possible to conclude that smaller companies (micro, small and medium-sized) posted significantly negative rates of credit growth in the more recent period. The evolution of credit to these companies contrasts with the evolution of credit granted by financial institutions reporting in the Central Credit Register to exporting firms, which continued to present positive annual growth rates.

The Portuguese economy's current adjustment process is likely to continue to imply a slowdown of economic activity over the course of 2012 and consequent increase of unemployment and number of companies facing insolvency proceedings. Greater materialisation of credit risk is therefore to be expected which suggests the need for banks to continue to increase their impairment provisions on credit portfolio losses (Table 4.4.1). In December 2011, both the loans with default and non-performing credit coverage ratios registered slightly lower values than in December 2010, at 87 and 56.4 per cent, respectively, in comparison to 88.1 and 59.7 per cent, in December 2010. In this context, the financial situation of the corporate and household sector will continue to be monitored with the aim of identifying possible measures to attenuate the effects of these sectors' high debt levels, in terms of their financing capacity. Reference should, herein, be made to the recent approval of a new insolvency code which should permit the speedier identification of viable companies whose debt can be restructured. In the case of households, a collection of measures, designed to create a new juridical regime for the early detection of default risk situations, in addition to speeding up their extrajudicial resolution, in the case of the materialisation of risk, was recently submitted.

Significant deceleration of lending to households, especially in the loans for consumption and other purposes segment

Banking loans to households registered a downwards trend throughout 2011 and first quarter 2012. This evolution was common to loans both for housing and consumption and other purposes, though the drop was more pronounced in the latter case (Charts 4.4.4 and 4.4.5). Therefore, whereas loans for house purchase contracted by 2.4 per cent, in March 2012, as opposed to growth of 1.6 per over the same period of the preceding year, the rate of change on loans for consumption and other purposes fell from -1.4 per cent to -5.8 per cent. In both segments, the fact that the annualised quarterly rate of change was lower than its annual equivalent suggests that the trend towards the reduction of the annual rate of change is likely to continue over the next few months. This trend is, however, slightly attenuated when a broader aggregate, including, in addition to the loans made by banking institutions, loans made by other financial intermediaries and auxiliaries, non-financial corporations and rest of the world (Chart 4.4.6) is analysed. As regards this last aggregate, the annual rate of change stood at -2.3 percent, which contrasts with -3.2 percent in the case of bank loans.

According to the results of the most recent Bank Lending Survey, underlying this deceleration were factors on both the supply and demand side. On the demand side, the banks point to lower levels of consumer confidence, especially as regards the housing market, and less expenditure on the acquisition of durable consumer goods. On the supply side, the current environment of higher borrowing costs and banks' balance sheet restrictions should have led to more stringent lending criteria, particularly translating into an increase in spread charges, which in the first quarter of 2012 were at their highest level since the inception of the euro area (Chart 4.4.7). This increase is particularly relevant in a context in which banks are limiting their higher risk loans, thus partially mitigating a more significant increase in spread charges. Notwithstanding this trend, the last quarter of 2011 registered progressively smaller increases on both interest rates on new loans for house purchases and on balances, having even fallen in the first quarter of 2012, owing to a strong reduction in Euribor rates.

Table 4.4.1

CREDIT QUALITY INDICATORS AND PROVISIONS FOR CREDIT OVERDUE AND DOUBTFUL DEBTS AND/OR IMPAIRMENT FOR CREDIT | PER CENT

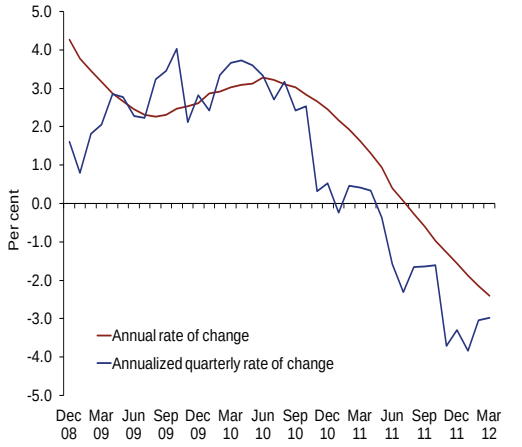
	Dec. 2007	Dec. 2008	Dec. 2009	Dec. 2010	Dec. 2011
Credit quality indicators					
Non-performing loans ratio[a][b]		3.6	5.1	5.2	7.5
Resident non-financial private sector, of which		4.1	5.6	5.6	8.0
Housing		4.4	4.6	4.3	5.0
Consumption and other purposes		7.0	9.5	10.4	13.5
Non-financial corporations		3.4	5.6	5.9	9.7
Non-residents		2.0	3.8	4.4	6.7
Ratio of loans with default[a][c]		2.0	3.2	3.4	4.7
Resident non-financial private sector, of which		2.2	3.5	3.8	5.2
Housing		1.7	2.2	2.4	2.7
Consumption and other purposes		4.5	6.7	8.1	10.9
Non-financial corporations		2.2	4.0	4.2	6.3
Non-residents		1.3	2.3	2.7	3.4
Annual flow of new overdue and other doubtful loans (Monetary and Financial Statistics)[d]					
Resident non-financial private sector, of which	0.5	1.0	1.2	0.9	1.3
Housing	0.2	0.3	0.3	0.1	0.2
Consumption and other purposes	1.3	2.3	2.0	2.1	2.7
Non-financial corporations	0.6	1.3	2.1	1.6	2.3
Provisions for credit overdue and doubtful debts and/or impairment for credit					
As a percentage of total loans[a]					
Resident non-financial private sector, of which		2.7	3.3	3.4	4.5
Housing		1.4	1.4	1.5	1.6
Consumption and other purposes		4.8	6.3	7.7	10.1
Non-financial corporations		3.5	4.2	4.2	6.2
Non-residents		2.7	3.9	3.1	3.9
As a percentage of non-performing loans[a][b]					
Resident non-financial private sector, of which		66.6	59.0	59.7	56.4
Housing		32.3	30.9	33.7	32.2
Consumption and other purposes		68.4	65.6	74.3	74.4
Non-financial corporations		102.8	75.5	70.6	63.3
Non-residents		133.1	102.1	69.8	58.2
As a percentage of loans with default[a][c]					
Resident non-financial private sector, of which		122.3	92.9	88.1	87.0
Housing		81.6	64.9	59.7	60.0
Consumption and other purposes		104.9	93.1	94.9	92.1
Non-financial corporations		157.9	106.3	100.3	97.0
Non-residents		207.6	169.2	115.4	114.8

Source: Banco de Portugal.

Notes: (a) Credit values reported on a consolidated basis by the aggregate of the Portuguese banking system (see footnote 1 on section 4.1), excluding branches of credit institutions having their head office in countries outside the European Union. Includes credit to residents and non-residents in addition to credit from foreign subsidiaries of Portuguese banks. Derecognised securitisations were not considered. **(b)** Non-performing loans defined in accordance with Banco de Portugal's Instruction nº 22/2011. Includes total outstanding credit with overdue instalments of principal or interest for a period of more than 90 days, total value of outstanding restructured credits in which payments of principal or interest, having been overdue by a period equal to or greater than 90 days, have been capitalized, refinanced or rescheduled without adequate strengthening of collateral or full repayment of overdue interest and outstanding credit with overdue instalments of principal or interest for a period of less than 90 days, but for which there is evidence that would justify its classification as non-performing loans. **(c)** Loans with default include credit and interest overdue for more than 90 days and other doubtful loans, referring to future payments of credit when there are any doubts over its collection, as established in Banco de Portugal's Official Notice nº 3/95. **(d)** Flow of overdue loans for more than 30 days and other doubtful loans made to residents by other monetary financial institution. The estimated annual flow is calculated by adjusting the change in the outstanding amounts of overdue loans for more than 30 days and other doubtful loans (recorded in the balance sheet of resident monetary financial institutions) for asset write-offs/downs, reclassifications and, starting December 2005, sales outside the banking system of overdue credit and other doubtful loans not written off/down from assets, reported on a quarterly basis according to Banco de Portugal Instruction nº 17/2008. Values adjusted for the sale of a loan portfolio by BPN to Parvalorem.

Chart 4.4.4

BANK LOANS TO HOUSEHOLDS FOR HOUSE PURCHASES[a]

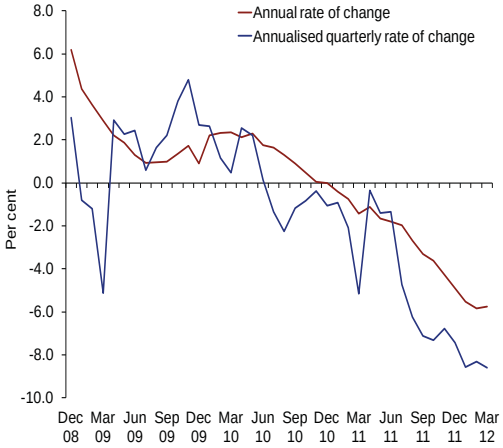


Source: Banco de Portugal.

Notes: (a) The annual and quarterly rates of change are calculated on the basis of the relationship between bank loans amounts at the end of the month, adjusted for securitisation operations, and monthly transactions, calculated on the basis of outstanding amounts adjusted for reclassifications, asset write offs/downs and foreign exchange and price revaluations. The quarterly rate of change is seasonally adjusted. The amounts are also adjusted for the purposes of credit portfolio disposals in addition to other operations of significant amount, but which have no impact in the effective financing of counterparties.

Chart 4.4.5

BANK LOANS TO HOUSEHOLDS FOR CONSUMPTION AND OTHER PURPOSES[a]

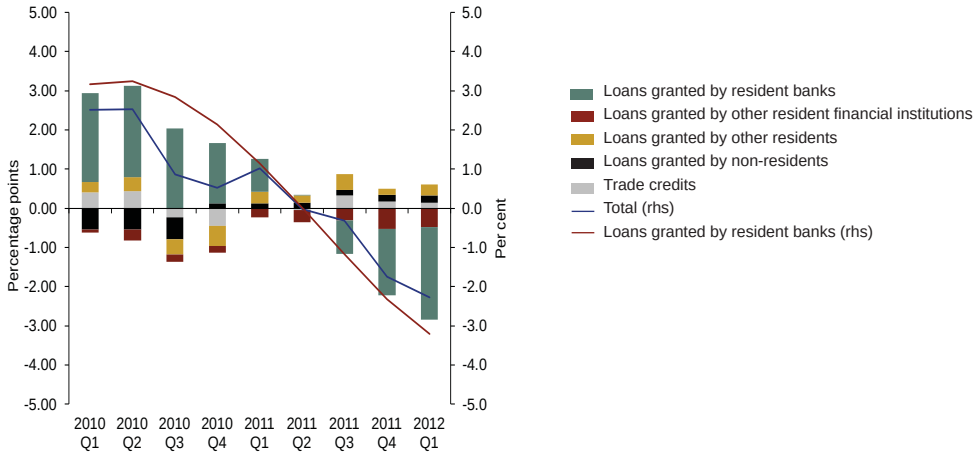


Source: Banco de Portugal.

Notes: (a) The annual and quarterly rates of change are calculated on the basis of the relationship between bank loans amounts at the end of the month, adjusted for securitisation operations, and monthly transactions, calculated on the basis of outstanding amounts adjusted for reclassifications, asset write offs/downs and foreign exchange and price revaluations. The quarterly rate of change is seasonally adjusted. The amounts are also adjusted for the purposes of credit portfolio disposals in addition to other operations of significant amount, but which have no impact in the effective financing of counterparties.

Chart 4.4.6

CREDIT GRANTED TO HOUSEHOLDS | CONTRIBUTIONS TO THE ANNUAL RATE OF CHANGE

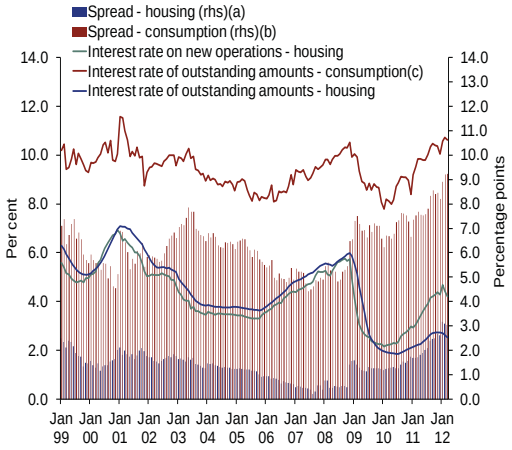


Source: Banco de Portugal.

Notes: Contributions to the annual rate of change of total credit to households. Total credit to households includes all credit granted (loans, trade credit) independently of who conceives the credit. The annual rate of change of total credit is adjusted of reclassifications, asset write-offs/downs and foreign exchange and price revaluations, as well as other operations of significant amount, but which have no impact in the effective financing of counterparties.

Chart 4.4.7

INTEREST RATES ON BANK LOANS TO HOUSEHOLDS FOR HOUSE PURCHASES AND TO CONSUMPTION



Source: Banco de Portugal.

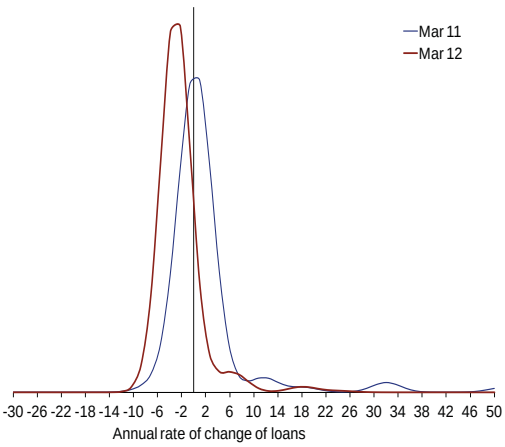
Notes: (a) Interest rate spread on new loans to households for house purchases using 6 months Euribor. **(b)** Interest rate spread on new loans to households for consumption calculated using, respectively, 6-month Euribor, 1-year Euribor and the 5-year euro interest rate swap rate, in cases in which the initial rate fixation period is up to 1 year, between 1 and 5 years and more than 5 years. **(c)** Average interest rate calculated on the basis of the rates on new loans per initial rate fixation period, weighted by the amounts of new operations in each period.

As regards the distribution of the rate of growth of bank loans to households, a greater level of proximity between the strategies implemented by the different financial institutions (Chart 4.4.8) was witnessed. This evolution is particularly visible in the case of loans for house purchase, in which the growth rates of the vast majority of institutions are concentrated at values close to the annual rate of change of the system's aggregate. Notwithstanding the high level of convergence, reference should be made, as in the same period 2010, to the existence of a small number of resident non-domestic financial institutions which continue to post significant, albeit increasingly lower, growth rates. In the loans for consumption and other purpose segment and notwithstanding the fact that a high level of dispersion continues to

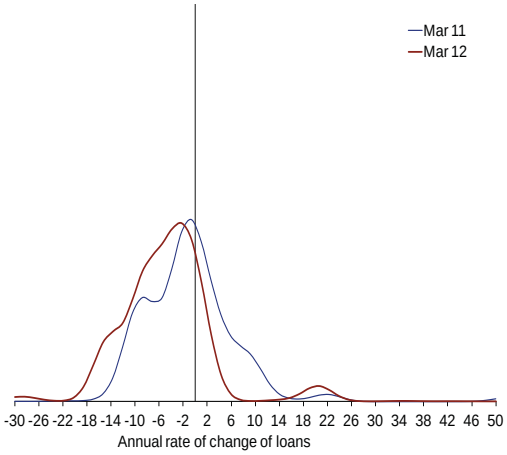
Chart 4.4.8

EMPIRICAL DISTRIBUTION OF THE ANNUAL RATE OF CHANGE ON BANK LOANS TO HOUSEHOLDS

For house purchases



For consumption and other purposes



Source: Banco de Portugal.

Note: Empirical distribution obtained by the use of a Gaussian Kernel which weights financial institutions by their lending.

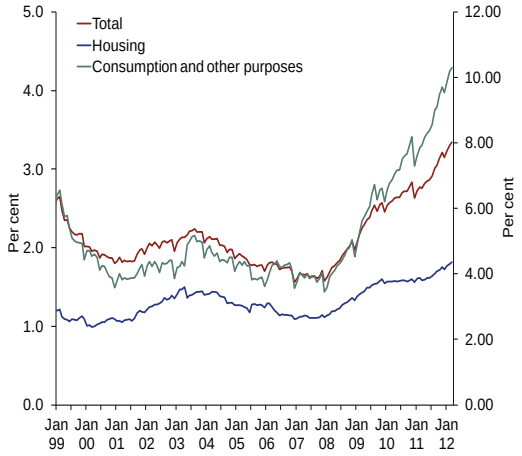
exist, proximity between institutions' growth rates was also noted, albeit less than for loans for house purchases. However, unlike December 2010, this approximation tends to occur mostly in the negative part of the distribution, with a highly significant number of institutions posting growth rates of less than -10 per cent.

Strong materialisation of credit risk in loans to households, concentrated in the loans for consumption and other purposes segment

The upwards trend in the default ratio on bank loans to households starting in 2008 (Chart 4.4.9) accentuated in second half 2011 and first quarter 2012. This evolution is also visible in the non-performing credit ratio of 6.4 per cent, in December 2011 (1 percentage point higher than in December 2010). This increase in the materialisation of credit risk reflects, however, two different situations. In the case of loans for house purchases, and coming almost two years after a certain stabilisation, a gradual increase in the default ratio was witnessed in second half 2011 and first quarter 2012. This growth reflects an increase in the flow of new loans in default, which, nonetheless, is still in line with the historical average since the inception of the euro area and much lower than the historical maximums reached in 2002-2003 (Chart 4.4.10). The increase in defaults in loans for house purchases also translated into a rise of the non-performing credit ratio, from 4.3 per cent in December 2010 to 5 per cent in December 2011 (Chart 4.4.2). Helping to mitigate the growth of defaults in loans for house purchases was the dominant proportion of loans for first homes, in which the probability of default is lower, the relatively reduced proportion of lower income households in this market, existence of personal guarantees associated with the loans and relatively low ratio between loan instalments and household income, in comparison to

Chart 4.4.9

OVERDUE AND OTHER DOUBTFUL BANK LOAN RATIOS | HOUSEHOLDS[a]

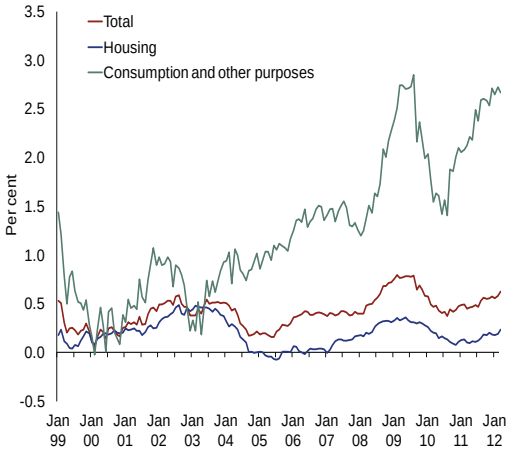


Source: Banco de Portugal.

Notes: (a) Defined as overdue loans for more than 30 days and other doubtful loans as a percentage of the outstanding loan amounts adjusted for securitisation. The decline registered in December 2010 is justified by the sale of a large loan portfolio by BPN to Parvalorem, which is out of the Monetary and Financial Statistics. This sale had an impact of 0.13, 0.02 e 0.59 per cent in the default ratio of households, households (housing) and households (consumption and other purposes), respectively. Last observation: March 2012.

Chart 4.4.10

ANNUAL FLOW OF NEW OVERDUE AND OTHER DOUBTFUL BANK LOANS | HOUSEHOLDS[a]



Source: Banco de Portugal.

Notes: (a) The estimate of the annual flow of new overdue loans and other doubtful loans is presented as a percentage of the loans, adjusted for securitisation, and is calculated by adjusting the change in the outstanding amounts of overdue and other doubtful loans for asset write-offs/downs, reclassifications and, starting December 2005, sales outside the banking system of overdue credit and other doubtful loans not written off/down from assets, reported on a quarterly basis according to Banco de Portugal Instruction nº 17/2008. Values adjusted regarding the sale of a loan portfolio by BPN to Parvalorem. Last observation: March 2012.

other countries in the euro area, which largely reflects the longer maturities on such loans in Portugal.[41] By dimension of loans (Table 4.4.2), notwithstanding the transversal nature of the increase in default ratios, the materialisation of credit risk has increased more markedly in the case of larger loans. This evolution may be associated with the fact that housing loans for larger amounts were made in the period immediately preceding the financial crisis. The deterioration of credit quality indicators has been felt in an increase of mortgage foreclosures and/or payments in kind, leading, in turn, to an increase in property assets in banks' balance sheets.[42]

As regards loans for consumption and other purposes and in line with the upwards trend, starting in 2008, a pronounced rise in the respective default ratio (Chart 4.4.9) was registered over the course of 2011 and in first quarter 2012. This increase was especially marked from second half 2011, reflecting a strong increase in the flow of new loans in default (Chart 4.4.10), which suggests that the default ratio is likely to continue to post new maximums over the course of the next few months. This increase in credit risk was also reflected in the non-performing credit ratio which increased from 10.4 per cent in December 2010 to 13.5 per cent in December 2011 (Chart 4.4.2). By dimension of exposure (Table 4.4.2)

Table 4.4.2

DEFAULT INDICATORS ON LOANS TO HOUSEHOLDS, BY SIZE OF EXPOSURE[a]

	Jun-2010	Sep-2010	Dec-2010	Jun-2011	Sep-2011	Dec-2011	Mar-2012
Housing							
Total exposure							
Number of debtors in default (%)[b]	5.2	5.1	4.9	5.1	5.4	5.4	5.7
Overdue credit and interest (%)[c]	1.8	1.8	1.8	1.8	2.0	2.0	2.0
Exposures for more than the 90th percentile[d]							
Proportion of the outstanding amounts[e]	28.4	28.5	28.6	28.6	28.6	28.6	28.6
Number of debtors in default (%)[b]	6.1	6.0	5.9	6.4	6.8	7.1	7.7
Overdue credit and interest (%)[c]	1.7	1.7	1.8	1.9	2.1	2.1	2.2
Consumption							
Total exposure							
Number of debtors in default (%)[b]	12.6	12.6	12.8	13.4	13.4	13.3	14.1
Overdue credit and interest (%)[c]	7.4	8.1	8.5	9.1	9.3	9.4	9.8
Exposures for more than the 90th percentile[d]							
Proportion of the outstanding amounts[e]	54.6	54.6	54.7	54.9	55.4	55.6	56.0
Number of debtors in default (%)[b]	13.2	13.6	13.9	14.9	15.1	15.5	16.1
Overdue credit and interest (%)[c]	5.8	6.5	7.1	7.8	8.0	8.3	8.5

Source: Banco de Portugal.

Notes: (a) Indicators based on information supplied by the Central Credit Register (CRC). Includes loans made by banks, savings banks, mutual credit agricultural institutions, financial credit institutions, factoring companies, leasing companies, credit card issuing or management companies and other resident financial intermediaries. Also includes loans granted (or held) by entities outside the financial sector which report to the CRC *i.e.,* Parvalorem, Instituto de Turismo de Portugal and, since September 2011, some debt collection companies. Only exposures to a specific institution of more than EUR 50 were considered and unused lines of credit have been excluded. A debtor is considered to be in default if the amount of credit overdue is higher than 0.5 per cent of its total exposure in relation to the all the entities reporting to CRC. The value of loans in CRC differs from the amount recorded in the Monetary and Financial Statistics essentially on account of the fact that institutions with the obligation to report directly for such purposes (banks, savings banks and mutual agricultural savings institutions) are a sub grouping of the entities participating in the CRC. **(b)** As a percentage of the number of debtors in this portfolio. **(c)** As a percentage of the total loans in this portfolio. **(d)** Percentiles defined on the basis of the number of debtors ranked by their total amount of exposure in the relevant segment. **(e)** Mortgage loans (or consumption) whose amounts are higher than the 90th percentile, as percentage of total mortgage loans (or consumption).

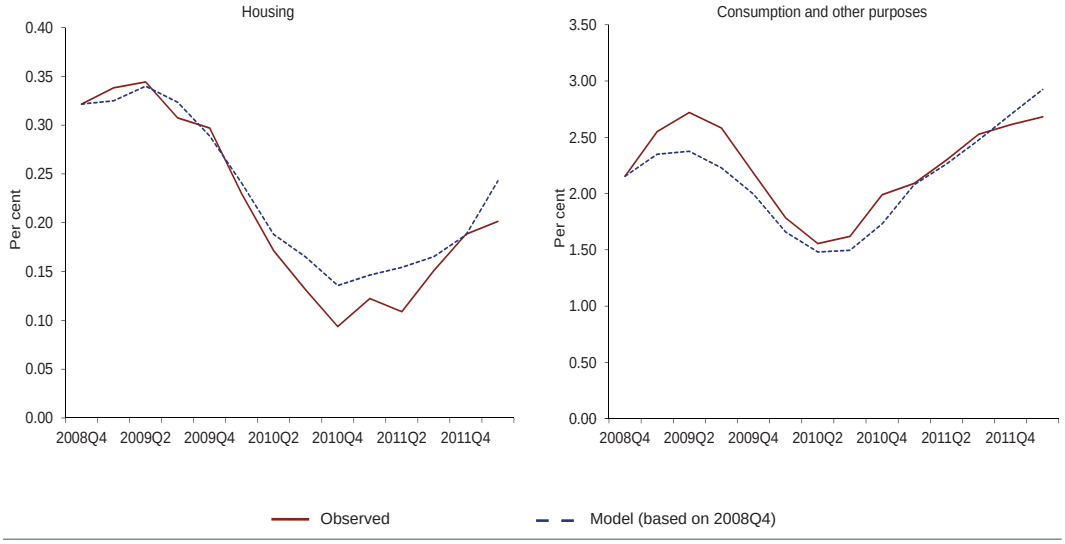
41 See Costa S. and Farinha, L. "Households' indebtedness: a microeconomic analysis based on the results of the Households' Financial and consumption survey" of this Report; "Box 4.2 *Main characteristics of loans to households for the purchase of houses in Portugal*", Banco de Portugal, Financial Stability Report - 2008; Farinha (2008), "Indebtedness of Portuguese households: recent evidence based on the households wealth survey 2006-2007", Banco de Portugal, Financial Stability Report 2007; "Box 4.3 *Credit to households and default: a characterization based on the Central Credit Register*", Banco de Portugal, *Financial Stability Report* - May 2010; "Box 4.3 *Aspects of higher risk mortgage loans in the United States and Europe*", Banco de Portugal, *Financial Stability Report* - 2008; and "Housing finance in the euro area", *Occasional Paper* No 101, ECB, 2009.

42 See "Chapter 4.1 *Overview*", of this Report.

a convergence trend of the default ratio on the largest exposures to the segment average was observed, together with an across-the-board worsening of the risk of default. In both segments the evolution of default is in line with expectations, based on the usual determinants (Chart 4.4.11).

Chart 4.4.11

DETERMINANTS OF THE ANNUAL FLOW OF NEW OVERDUE AND OTHER DOUBTFUL BANK LOANS



Source: Authors' calculations based on Alves and Ribeiro (2011) "Modelling the evolution of households' defaults" Banco de Portugal, *Financial Stability Report*, November.

Gradual deceleration in bank loans to non-financial corporations with differentiated evolution: strong increase in credit to state owned corporations and a decline in the case of private companies, particularly from the last quarter of 2011

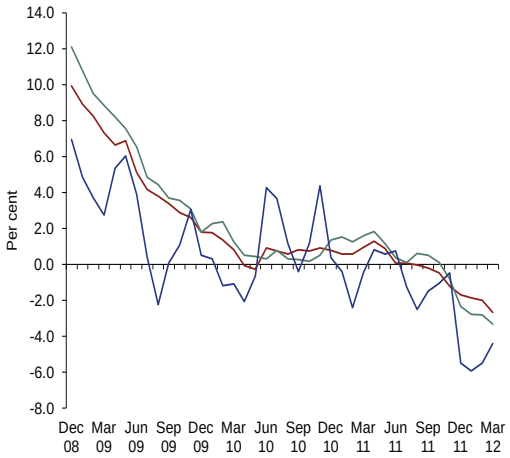
Following a period of stabilisation, between second half 2010 and first half 2011, the annual rate of change of bank loans to non-financial corporations fell once more (Chart 4.4.12). Accordingly, the annual change in March 2012 was -2.7 per cent, in contrast to growth of 0.9 per cent in the same period of the preceding year. Although aggregate bank loans to non-financial corporations are not adjusting abruptly, there was a high level of heterogeneity between companies. In particular, a discrepancy between the strong growth of loans made by resident banks to state owned corporations (not included in general government) and the contraction of bank loans to private companies (year on year rates of change stood at 18.8 and -5 percent in march 2012, respectively) has been observed (Table 4.4.3). Additionally, growth rates for the larger loans were much higher than on smaller loans. This difference is, in part, justified by the major contribution of state owned corporations which have taken out large loans. Nevertheless, an analysis of loans exclusively made to non-financial corporations in the private sector, continues to show high levels of differentiation. By corporate dimension, there is a difference between large corporations which evidence significant growth of bank credit (loans and debt securities) and micro, small and medium sized companies, whose bank credit has fallen considerably since the last quarter 2011 (Chart 4.4.13).

According to the Bank Lending Survey, this deceleration of bank loans to non-financial corporations particularly derived from supply side factors as demand was stable in the first quarter of 2012 following another year of slowdown. The more stringent lending criteria has translated, not only in a tightening of contractual terms, especially in the case of first time corporate applicants,[43] but also into a marked

43 Antunes, A. and Martinho, R. (2012), "Access to credit by non-financial firms", of this Report.

Chart 4.4.12

BANK CREDIT TO NON-FINANCIAL CORPORATIONS[a]



Source: Banco de Portugal.

Notes: (a) The annual and quarterly rate of change are calculated on the basis of the relationship between outstanding bank loans amounts (or bank loans and debt securities held by the banking system) at the end of the month, adjusted for securitisation operations, and monthly transactions, calculated on the basis of outstanding amounts adjusted for reclassifications, asset write-offs/downs and foreign exchange and price revaluations. The amounts are also adjusted for the purposes of credit portfolio disposals in addition to other operations of significant amount, but which have no impact in the effective financing of counterparties.

increase in spreads. In March 2012, the average spread on loan balances to non-financial corporations was 3.5 per cent and therefore very close to the levels recorded at the time of the inception of the euro area (Chart 4.4.14). According to Antunes and Martinho (2012) this increase is likely to be particularly related with the higher costs of borrowing and capital for the banks, as opposed to a substantial deterioration of corporate risk. Notwithstanding the continued increase of spreads, the last quarter of 2011 and the first quarter of 2012 were marked by a stabilisation of the implicit interest rate on the loan stock. One contributory factor was the reduction of Euribor.

An across-the-board decline of growth rates in bank loans was registered by branch of activity, with almost all sectors posting negative changes in March 2012 (Table 4.4.4). This decline was especially visible in the "wholesale and retail trade, repair of motor vehicles and motorcycles" sector with a fall of close to 12 per cent. Moving in the opposite direction, reference should be made to the "transport and warehousing" sector, which, in line with events over the course of 2011, posted highly positive growth rates. The strong growth of loans to this sector is likely to be related to the high proportion of state owned corporations, which generally had higher growth rates of bank loans than the others.

As regards the distribution of growth rates of loans to non-financial corporations by financial institutions (Chart 4.4.15) reference should be made to the fact that the bipolarisation of performance noted on March 2011 gave rise to a strong concentration around slightly negative annual rates of change, in March 2012.

As regards the contractual maturity of loans to non-financial corporations (Chart 4.4.16) and notwithstanding the deceleration noted over the course of 2011, loans with a maturity of more than 5 years continued to account for the largest contribution to the growth of bank loans. By contrast, loans for between 1 and 5 years made a highly negative albeit uneven contribution, over the course of 2011. Loans for maturities of less than 1 year remained stable over the course of 2011, notwithstanding the existence of differentiation between the behaviour of bank overdrafts which declined slightly and other loans for less than 1 year, with a slight increase. This evolution reflects both short and long term characteristics of bank loans to non-financial corporations. Therefore, as noted since 2003, longer term loans represent

Table 4.4.3

LENDING TO NON-FINANCIAL CORPORATIONS, BY DIMENSION OF EXPOSURES[a] | YEAR-ON-YEAR RATES OF CHANGE, PER CENT[b]

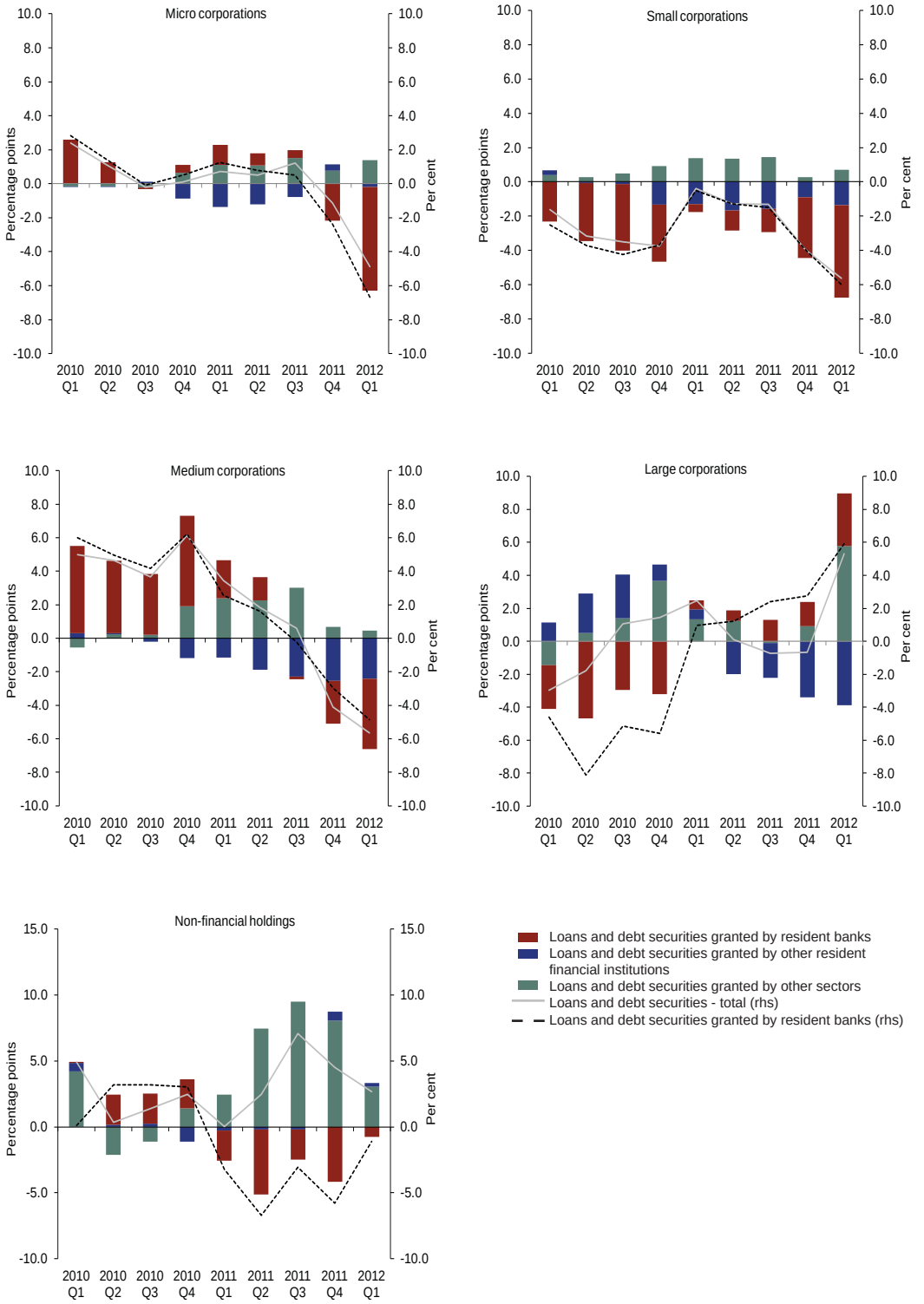
	Dec-10	Jun-11	Dec-11	Mar-12	Memo (March 2012): Lower limit[d] (10^3€)	Average outstanding amounts (10^3€)	Proportion of the outstanding amounts in the total (%)	Number of corporations
Total	**-0.7**	**-1.2**	**-2.7**	**-4.0**			**100.0**	**236 220**
Exposures for more than the 90th percentile[b]	-0.2	-0.6	-1.8	-3.1	502	4 361	88.4	23 623
from which: exposures for more than the 99th percentile[b]	1.5	1.2	0.1	-1.1	7 191	28 800	58.4	2 363
from which: exposures for more than the 99.5th percentile[b]	1.8	1.7	0.5	-0.5	14 100	47 600	48.3	1 182
from which: exposures for more than the 99.9th percentile[b]	1.3	2.8	2.3	1.4	58 800	132 000	26.8	237
Smaller exposures[c]	-3.8	-5.8	-8.9	-10.5	0.05	64	11.6	212 597
Private non-financial corporations	**-1.0**	**-1.5**	**-3.5**	**-5.0**			**95.1**	**235 871**
Exposures for more than the 90th percentile[b]	-0.6	-0.9	-2.7	-4.2	502	4 154	87.8	23 430
from which: exposures for more than the 99th percentile[b]	0.8	0.7	-1.2	-2.7	7 191	27 500	55.9	2 273
from which: exposures for more than the 99.5th percentile[b]	0.9	1.1	-1.0	-2.2	14 100	45 800	45.5	1 115
from which: exposures for more than the 99.9th percentile[b]	-0.3	1.6	-0.7	-2.9	58 800	127 000	24.4	216
Smaller exposures[c]	-3.7	-5.8	-8.9	-10.5	0.05	63	12.4	212 441
Public non-financial corporations not belonging to the general government	**10.6**	**6.5**	**17.2**	**18.8**			**4.9**	**349**

Source: Banco de Portugal.

Notes: (a) Indicators based on information supplied by the Central Credit Register (CRC), with each exposure being characterized by the total value of loans of a specific non-financial corporation. Includes loans granted by banks, savings banks, mutual credit agricultural institutions, financial credit institutions, factoring companies, leasing companies, credit card issuing or management companies and other resident financial intermediaries. Also includes loans made (or held) by entities outside the financial sector which report to the CRC *i.e.*, Parvalorem, Instituto de Turismo de Portugal and, since September 2011, some debt collection companies). Only exposures to a specific institution of more than EUR 50 were considered. **(b)** For the calculation of year-on-year rates of change, the lower limits of each exposure bracket coincide with the percentile which, at any time, are defined on the basis of the number of companies ranked by the amount of total exposure. **(c)** Exposures whose amounts are less than the lower limit for large exposures. Comprises 90 per cent of companies with debts to the institutions registered with the CRC. **(d)** Lowest amount of exposure in the whole percentile.

Chart 4.4.13

CREDIT GRANTED TO NON-FINANCIAL CORPORATIONS

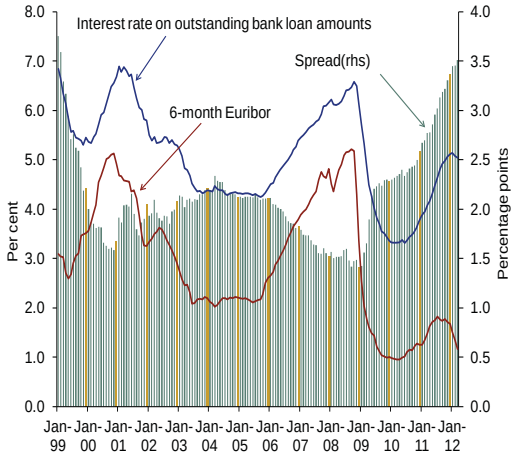


Source: Banco de Portugal.

Note: Contributions to the annual rate of change of total credit to non-financial corporations by firm size. Total credit to non-financial corporations includes all credit granted (loans, debt, trade credit) independently of who conceives the credit. The annual rate of change of total credit is adjusted of reclassifications, asset write-offs/downs and foreign exchange and price revaluations, as well as other operations of significant amount, but which have no impact in the effective financing of counterparties.

Chart 4.4.14

INTEREST RATE ON BANK LOANS TO NON-FINANCIAL CORPORATIONS



Source: Banco de Portugal.

Notes: Rates and spread refer to end of period outstanding amounts. End of years are underlined. Up to December 2002, the rates on the outstanding amounts are estimated. The spread is calculated as the difference between the rate on the outstanding amounts and the 6-month moving average of 6-month Euribor. Last observation: March 2012.

Table 4.4.4

LOANS GRANTED BY OTHER MONETARY FINANCIAL INSTITUTIONS TO NON-FINANCIAL CORPORATIONS | BY SECTOR[a], ANNUAL RATE OF CHANGE, END-OF-PERIOD, PER CENT[b]

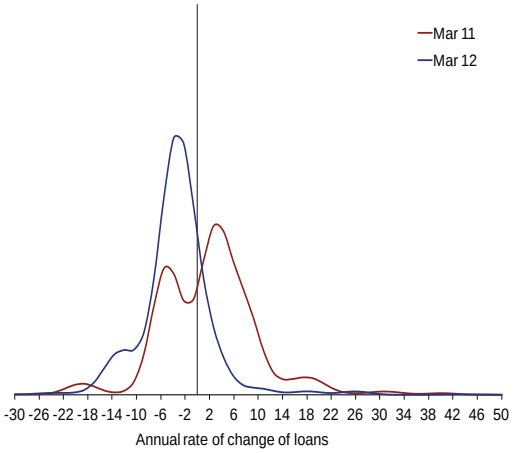
	2008	2009	2010 [c]	2011	March 2012[c]	
						Proportion in total loans
Total	9.9	1.8	0.8	-1.7	-2.7	100.0
By branch of activity:						
Agriculture, livestock and fishing	23.4	5.6	6.1	-1.1	-5.0	1.8
Mining and quarrying	9.4	1.4	-3.8	-2.9	-6.8	0.4
Manufacturing	9.2	3.2	1.0	-2.0	-5.0	13.0
Electricity, gas and water	49.6	9.6	9.3	0.3	0.9	4.4
Construction	3.1	0.7	-5.8	-3.8	-5.4	20.2
Trade	4.2	-2.6	1.4	-5.3	-11.9	12.5
Transport	20.8	5.0	11.8	5.1	6.2	7.1
Restaurant and hotels	12.9	11.2	16.6	-3.7	0.9	5.3
Media	10.3	6.1	19.4	2.5	-0.7	1.2
Non-financial holdings	15.5	2.3	7.9	0.4	1.9	9.8
Real estate activities	13.8	1.4	-5.1	-0.8	-4.5	13.4
Consultancy	8.7	-7.4	-1.9	-4.1	-3.0	6.5
Education, health and other social care activities	13.7	15.7	5.0	0.9	5.7	4.3
Other services activities	149.7	96.1	870.7	378.8	280.6	0.1

Source: Banco de Portugal.

Notes: (a) Loans from other monetary financial institutions, with the allocation of loans by sector of activity being estimated on the basis of the structure of Central Credit Register. **(b)** Rates of change are calculated on the basis of the relationship between outstanding bank loan amounts at the end of the period and transactions calculated on the bases of outstanding amounts adjusted for reclassifications. They are also adjusted for securitisation operations, asset write-offs/write-downs, foreign exchange and price revaluations, asset disposals and other operations of significant amount, but which have no impact in the effective financing of counterparties.

Chart 4.4.15

EMPIRICAL DISTRIBUTION OF THE ANNUAL RATE OF CHANGE ON BANK LOANS TO NON-FINANCIAL CORPORATIONS

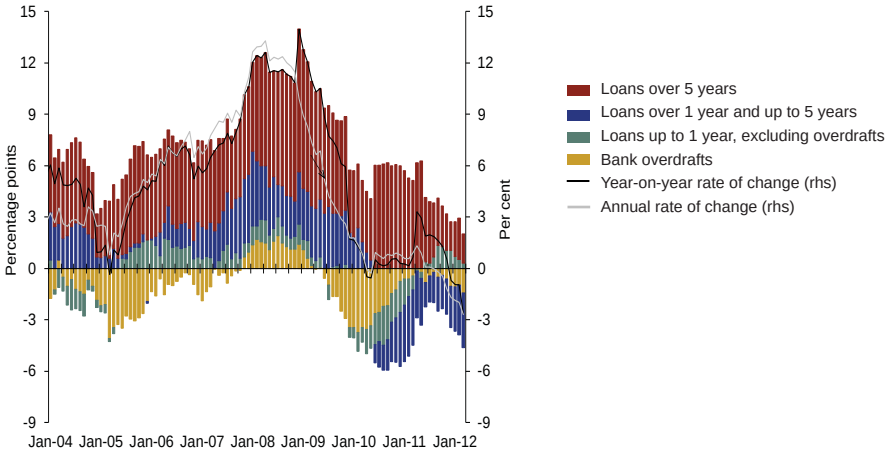


Source: Banco de Portugal.

Note: Empirical distribution obtained by the use of a Gaussian kernel which weights financial institutions by their lending.

Chart 4.4.16

CONTRIBUTIONS OF CONTRACTUAL MATURITY SEGMENTS TO THE RATE OF CHANGE ON OUTSTANDING BANK LOANS TO NON-FINANCIAL CORPORATIONS



Source: Banco de Portugal.

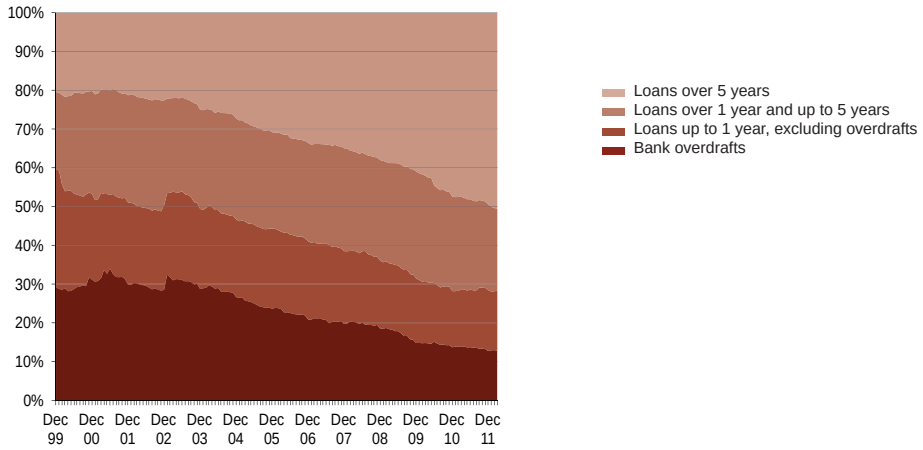
Notes: The contributions refer to unadjusted outstanding amounts of bank loans recognised as banks assets, for which the year-on-year rate of change is presented. The annual rate of change is calculated on the basis of the relationship between outstanding amounts of bank loans adjusted for securitisation operations and monthly transactions calculated on the outstanding amounts adjusted for reclassifications, asset write-offs/downs and exchange rate and price revaluations. Bank overdrafts were classified as having a maturity of less than one year. The values presented were adjusted regarding the sale of a loan portfolio by BPN to Parvalorem as well as the reclassification of Refer, Metro de Lisboa and Metro do Porto, which became part of the general government sector.

an increasingly larger proportion of total loans to non-financial corporations (Chart 4.4.17). This trend is likely to have been more recently sustained by an increase in credit restructuring operations. However, this was accompanied by a decline in the average maturity of new lending operations which is likely to be associated with the more restrictive conditions imposed by banks in their loans to companies.[44]

44 Antunes, A. and Martinho, R. (2012), "Access to credit by non-financial firms", of this Report.

Chart 4.4.17

LOANS TO NON-FINANCIAL CORPORATION BY CONTRACTED MATURITY | WEIGHT ON TOTAL LOANS



Source: Banco de Portugal.

Note: Weight of each contractual maturity based on outstanding amounts.

Lastly, there was a decline in the funding of companies through the banking system's purchase of debt securities in March 2012 in comparison to the same period of the preceding year. An analysis of the evolution of a broader credit aggregate, including loans and companies' debt securities, shows that bank credit to non-financial corporations have been falling more significantly than suggested solely by an analysis of loans (Chart 4.4.12). Accordingly, the annual rate of change of this aggregate in March 2012 was -3.3 per cent, in contrast to a growth of 1.6 per cent for the same period 2011.

Lending by non-residents mitigates the slowdown of bank loans to private companies, but only for the larger ones

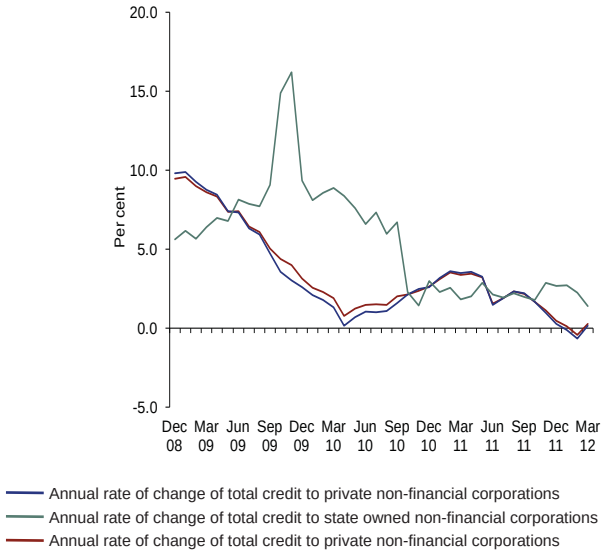
Notwithstanding the fact that bank loans to companies posted a significant decrease since the last quarter of 2011, a broader aggregate, such as total credit to these sectors,[45] evidences a certain level of stability over the course of last year (Chart 4.4.18). Such evolution particularly derived from a highly positive contribution of non-residents to private companies funding, which attenuated the differentiated evolution recorded by bank loans (Charts 4.4.19 and 4.4.20). As opposed to state owned corporations, private companies in good financial shape and with external connections benefited from significant amounts of funding from non-residents, contributing towards an approximation between the rates of change of total credit to the two sectors, which in March 2012 were 0.2 per cent for private sector companies and 1.4 per cent for state owned corporations. Also as regards private companies, it should be noted that in March 2012 the annual rate of change of loans to exporting firms was substantially above the one registered to non-financial corporations as a whole (Chart 4.4.21).

By corporate dimension (Chart 4.4.13) it is perfectly clear that, with the exception of holding companies, there is no significant difference between the annual rate of change of bank credit and total credit. In the case of holding companies there is a highly positive contribution by sectors other than resident financial institutions. This contribution is likely to be associated with non-resident entities. In the case of micro, small and medium-sized companies, notwithstanding the existence of some mitigating factors on the

45 Total credit includes loans, securities and trade credit not only made by resident banks, but also by other financial institutions and financial auxiliaries, households, general government and non-resident entities.

Chart 4.4.18

TOTAL CREDIT GRANTED TO NON-FINANCIAL CORPORATIONS



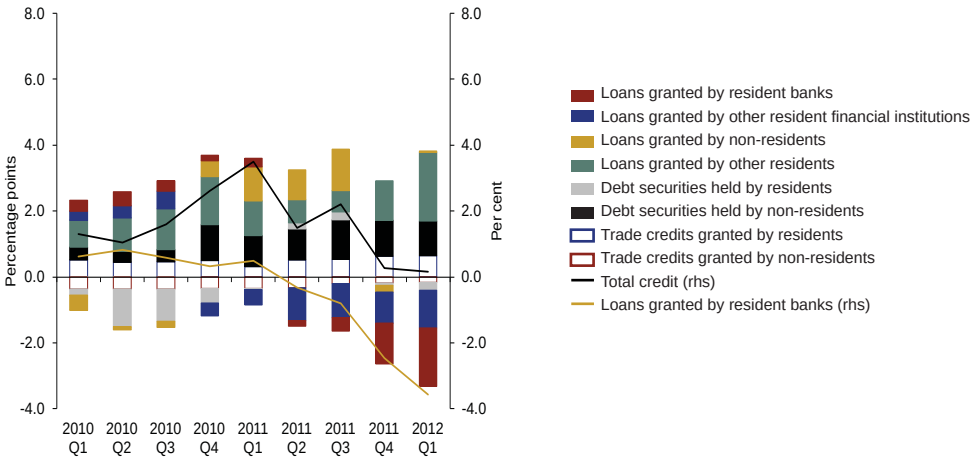
Source: Banco de Portugal.

Notes: Total credit to non-financial corporations includes all credit granted (loans, debt, trade credit) independently of who conceives the credit. The annual rate of change of total credit is adjusted of reclassifications, asset write-offs/downs and foreign exchange and price revaluations, as well as other operations of significant amount, but which have no impact in the effective financing of counterparties. The annual rate of change of total credit to state owned corporations is calculated based only on the variation of outstanding amounts. Only state owned corporations that do not consolidate in General Government are considered.

higher decrease of credit by resident banks, as was the case of loans by households and non-residents, there was also a strong reduction of credit by resident financial institutions other than banks. In the case of large companies, the evolution of credit is largely influenced by the high proportion of state owned corporations, translating into a positive contribution by resident banks. Notwithstanding, there was, at the same time, a highly positive contribution by other entities other than resident financial institutions. As with holding companies, this contribution is likely to be associated with non-resident entities.

Chart 4.4.19

CREDIT GRANTED TO PRIVATE NON-FINANCIAL CORPORATIONS | CONTRIBUTIONS TO THE ANNUAL RATE OF CHANGE

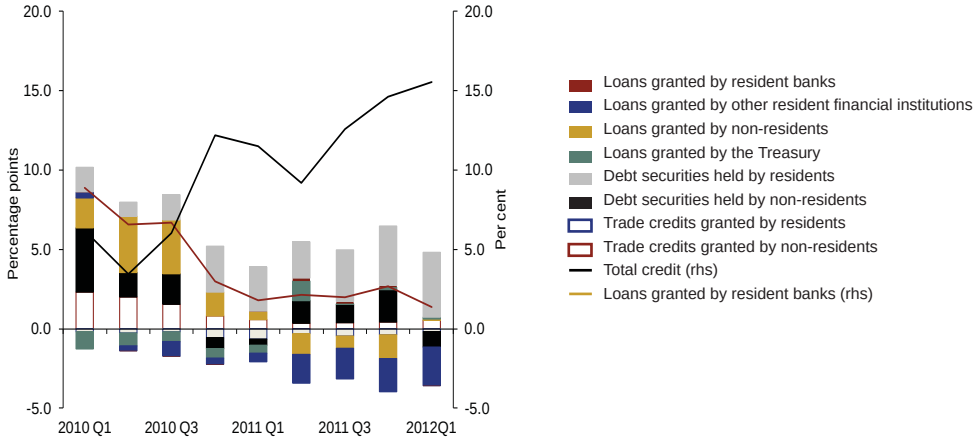


Source: Banco de Portugal.

Notes: Contributions to the annual rate of change of total credit to private non-financial corporations. Total credit to private non-financial corporations includes all credit granted (loans, debt, trade credit) independently of who conceives the credit. The annual rate of change of total credit is adjusted of reclassifications, asset write-offs/downs and foreign exchange and price revaluations, as well as other operations of significant amount, but which have no impact in the effective financing of counterparties.

Chart 4.4.20

CREDIT GRANTED TO STATE OWNED NON-FINANCIAL CORPORATIONS NOT INCLUDED IN GENERAL GOVERNMENT | CONTRIBUTIONS TO THE ANNUAL RATE OF CHANGE

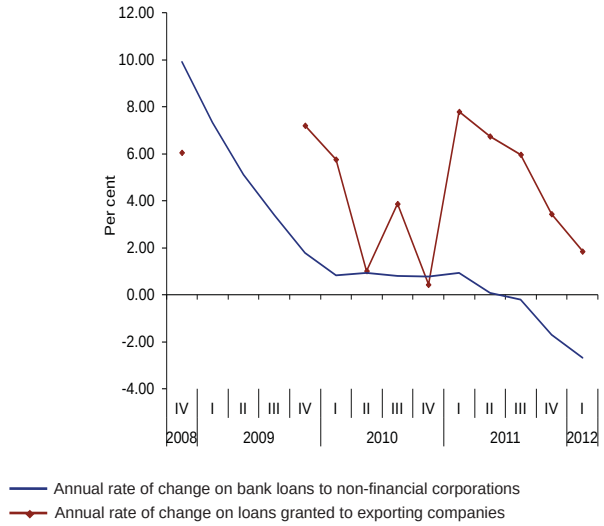


Source: Banco de Portugal.

Notes: Contributions to the annual rate of change of total credit to state owned non-financial corporations. Total credit to state-owned non-financial corporations includes all credit granted (loans, debt, trade credit) independently of who conceives the credit. The annual rate of change of total credit to state owned corporations is calculated based only on the variation of outstanding amounts.

Chart 4.4.21

LOANS TO EXPORTING COMPANIES



Source: Banco de Portugal.

Note: A firm is considered an exporting company when exports represent more than 50 per cent of its turnover or, alternatively, if exports represent more than 10 per cent and sum up more than 150 thousand euros.

Strong materialisation of the credit risk of non-financial corporations, especially in the construction, real estate activities and commercial sectors

The default ratio on loans to non-financial corporations over the course of 2011 and first quarter of 2012 posted a very high increase (Chart 4.4.22). This growth reflects a highly substantial increase in the flow of new loans in default, particularly from the second half of 2011. There was also a very marked increase in the non-performing credit ratio, from 5.9 per cent in December 2010 to 9.7 per cent in December 2011 (Chart 4.4.2). This evolution is in line with data from the Central Credit Register which point to a

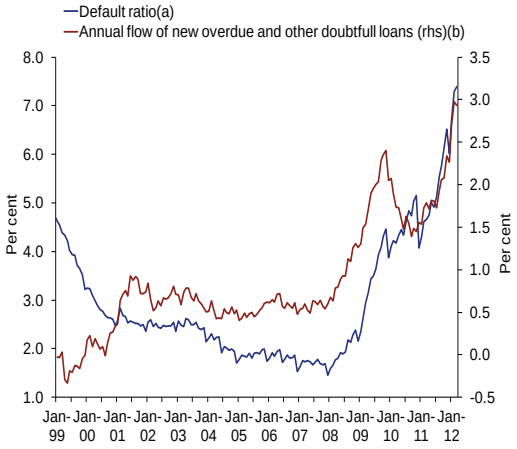
strong increase in the number of non-financial corporations in default over the course of 2011 and first quarter of 2012. This evolution is also in line with expectations based on the usual determinants relating to loan defaults by non-financial corporations (Chart 4.4.23).

There has been an across-the-board deterioration of default indicators on non-financial corporations by corporate dimension and exposure (Table 4.4.5 and 4.4.6), although the larger exposures and major companies tend to have substantially lower default ratios. Notice, however, that notwithstanding the fact that loans to non-financial corporations are concentrated at exposures higher than the 90th distribution percentile, they largely correspond to loans to micro, small and medium-sized companies, which represent approximately 84 per cent of the loans total. These companies, in March 2012, posted default ratios of 11.1, 8.5 and 6.0 per cent, respectively, in comparison to 2.2 per cent for large corporations. Reference should be made to the fact that micro, small and medium-sized corporations also posted the highest default ratio increases. Also differentiating by type of credit institution it has been noted that the default ratios are higher in the case of loans made by other non-banking financial institutions in comparison to loans made by banking institutions, notwithstanding the corporate dimension.

By branch of activity the "construction", "real estate activities" and "wholesale and retail trade, repair of motor vehicles and motorcycles" sectors continue to post the highest default ratios (Chart 4.4.24). Although these sectors represented around 46 per cent of total bank loans to non-financial corporations, in March 2012, their proportion of total credit in default is much higher (around 70 per cent). These were also the sectors with the largest increase in the default ratio. Default ratios in the "construction", "real estate activities" and "wholesale and retail trade, repair of motor vehicles and motorcycles" sectors, accordingly, increased from 8.3, 5.1 and 6.3 per cent in March 2011 to 13.8, 9.5 and 9.3 per cent in March 2012, respectively. The highest increase in defaults in these sectors is likely to be related with their greater dependence on domestic demand. Particularly in the case of the "wholesale and retail trade, repair of motor vehicles and motorcycles" sector, data from the Central Balance Sheet Database indicate

Chart 4.4.22

OVERDUE AND OTHER DOUBTFUL BANK LOANS TO THE RESIDENT NON-FINANCIAL SECTOR[a]

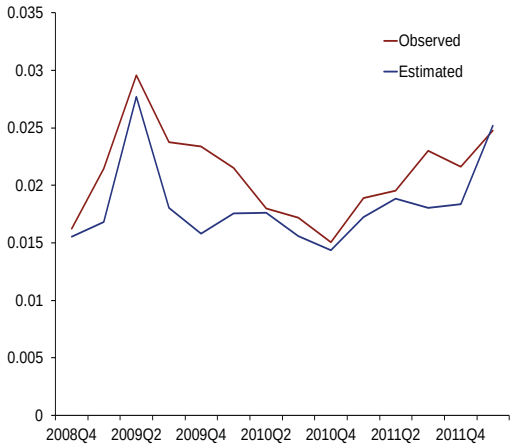


Source: Banco de Portugal.

Notes: (a) Defined as overdue loans and other doubtful loans as a percentage of the outstanding loan amounts adjusted for securitisation. The strong decline registered in December 2010 is justified by the sale of a large loan portfolio by BPN to Parvalorem, which is out of the Monetary and Financial Statistics. This sale had an impact of 0.6 per cent in the default ratio of the non-financial corporations. **(b)** The estimate of the annual flow of new overdue loans and other doubtful loans is presented as a percentage of the loans, adjusted for securitisation, and is calculated by adjusting the change in the outstanding amounts of overdue and other doubtful loans for asset write-offs/downs, reclassifications and, starting December 2005, sales outside the banking system of overdue credit and other doubtful loans not written off/down from assets, reported on a quarterly basis according to Banco de Portugal Instruction nº 17/2008. Values adjusted regarding the sale of a loan portfolio by BPN to Parvalorem.

Chart 4.4.23

DETERMINANTS OF CREDIT DEFAULT FOR LOANS TO NON-FINANCIAL CORPORATIONS



Source: Banco de Portugal.

Note: Observed and estimated evolution of the average default probability of a sample of non-financial corporations. Values in natural units. The model used, among other regressors, the GDP growth rate and the variation in the unemployment rate. GDP values are based on GDP projections in Banco de Portugal, *Economic Bulletin* - Spring. The values observed and estimated differ from those presented in Table 4.4.5 due to methodological reasons, notably, the default definition, default size, sampling and other factors.

Table 4.4.5

DEFAULT INDICATORS ON LOANS TO NON-FINANCIAL CORPORATIONS | BY SIZE OF EXPOSURE [a], PER CENT

	Dec-08	Jun-09	Dec-09	Jun-10	Dec-10	Jun-11	Dec-12	Mar-12
Total exposures								
Number of debtors in default[b]	16.3	18.5	18.7	19.6	19.9	22.0	23.9	25.8
Overdue credit and interest[c]	2.4	4.0	4.1	4.6	5.1	6.1	7.9	9.2
Exposures for more than the 90th percentile								
Number of debtors in default[e]	11.5	15.7	14.3	15.9	15.6	19.2	23.1	26.4
Overdue credit and interest[f]	1.8	3.5	3.6	4.0	4.5	5.5	7.3	8.7
from which: exposures for more than the 99th percentile[d]								
Number of debtors in default[e]	9.2	13.8	11.4	13.3	12.5	16.8	21.2	25.6
Overdue credit and interest[f]	0.9	2.6	2.3	2.6	2.9	3.6	5.0	6.4
from which: exposures for more than the 99.5th percentile[d]								
Number of debtors in default[e]	7.6	13.0	9.4	11.8	10.7	15.4	19.1	22.7
Overdue credit and interest[f]	0.6	2.4	1.9	2.1	2.4	3.0	4.0	5.4
from which: exposures for more than the 99.9th percentile[d]								
Number of debtors in default[e]	6.3	11.3	7.1	7.8	6.2	10.7	14.2	19.4
Overdue credit and interest[f]	0.3	2.0	1.3	0.9	1.3	1.3	2.0	3.3
Smaller exposures[g]								
Number of debtors in default[e]	16.8	18.8	19.1	20.1	20.3	22.3	24.0	25.7
Overdue credit and interest[f]	5.8	7.3	7.8	8.7	9.2	10.5	12.4	13.6

Source: Banco de Portugal.

Notes: (a) Indicators based on information from the Central Credit Register (CRC). Includes loans granted by banks, savings banks, mutual credit agricultural institutions, financial credit institutions, factoring companies, leasing companies, credit card issuing or management companies and other resident financial intermediaries. Also includes loans granted by entities outside the financial sector which report to the CCR *i.e.*, Parvalorem, Instituto de Turismo de Portugal and, since September 2011, some debt collection companies. Only exposures to a specific financial institution of more than EUR 50 were considered and unused lines of credit have been excluded. A non-financial corporation is considered to be in default if the amount of credit overdue is higher than 0.5 per cent of its total exposure in relation to the all the entities reporting to CRC. **(b)** As a percentage of the number of non-financial corporations with debts to institutions participating in the CRC. **(c)** As a percentage of the total credit from institutions participating in the CRC to resident non-financial corporations. **(d)** Percentiles defined on the basis of the number of companies ranked by their total amount of exposure. **(e)** As a percentage of the number of debtors in this portfolio. **(f)** As a percentage of the total credit in this portfolio. **(g)** Exposures whose amounts are less than the lower limit of large exposures. Comprising 90 per cent of the companies with debt to institutions participating in CRC.

Table 4.4.6

DEFAULT INDICATORS ON LOANS TO NON-FINANCIAL CORPORATIONS BY SIZE AND TYPE OF FINANCIAL INSTITUTION[a] | PER CENT

	Mar-10	Jun-10	Sep-10	Dez-10	Mar-11	Jun-11	Sep-11	Dez-11	Mar-12	Proportion of the outstanding amounts in the total (%) (Mar-12)
Number of debtors in default[b]										
Loans granted by monetary financial institutions	**18.5**	**18.8**	**19.0**	**18.4**	**19.9**	**20.7**	**21.6**	**22.9**	**24.6**	
Micro corporations	19.5	19.6	19.8	19.3	20.7	21.4	22.2	23.5	25.1	
Small corporations	15.1	15.5	15.8	15.1	16.9	18.1	19.1	20.7	22.7	
Medium corporations	14.3	15.0	14.9	14.8	16.6	17.8	18.8	19.9	22.5	
Large corporations	10.8	11.0	9.0	7.8	9.7	11.3	11.5	13.8	15.6	
Loans granted by non-monetary financial institutions	**19.8**	**20.3**	**21.0**	**21.8**	**22.8**	**26.7**	**28.0**	**28.5**	**31.2**	
Micro corporations	21.3	21.9	22.6	23.6	24.5	28.7	29.9	30.3	33.0	
Small corporations	16.5	16.9	17.7	18.1	19.2	23.1	24.6	25.8	28.5	
Medium corporations	16.0	16.5	17.0	16.8	17.8	20.7	22.1	23.1	25.1	
Large corporations	10.9	12.2	12.3	9.1	12.1	12.3	12.9	11.7	13.5	
Overdue credit and interest[c]										
Loans granted by monetary financial institutions	**4.4**	**4.5**	**5.0**	**4.3**	**4.9**	**5.2**	**6.0**	**6.6**	**7.8**	**100.0**
Micro corporations	7.1	7.6	8.2	7.2	8.0	8.2	9.3	9.7	11.1	34.5
Small corporations	3.9	4.0	4.2	3.9	4.6	5.0	6.0	7.0	8.5	24.7
Medium corporations	2.8	2.7	3.3	2.5	3.0	3.4	4.1	4.8	6.0	24.4
Large corporations	1.0	1.0	1.1	1.1	1.2	1.4	1.6	1.8	2.2	16.4
Loans granted by non-monetary financial institutions	**9.7**	**9.9**	**10.3**	**10.4**	**11.0**	**14.7**	**15.5**	**16.6**	**18.3**	**100.0**
Micro corporations	14.4	14.9	15.0	15.7	16.2	21.0	21.7	22.0	23.1	32.9
Small corporations	11.6	12.2	12.8	13.2	13.8	17.7	19.7	21.6	23.9	25.6
Medium corporations	8.1	8.6	9.4	8.9	10.1	12.1	12.0	14.3	16.2	24.6
Large corporations	1.8	1.0	1.2	0.9	1.3	1.9	2.6	2.5	3.3	16.9

Source: Banco de Portugal.

Notes: (a) Indicators based on information from the Central Credit Register (CRC). Includes loans granted by banks, savings banks, mutual credit agricultural institutions, financial credit institutions, factoring companies, leasing companies, credit card issuing or management companies and other resident financial intermediaries. Does not include loans granted to non-financial holdings. **(b)** As a percentage of the number of non-financial corporations with debts to monetary financial institutions or non-monetary financial institutions participating in the CRC. **(c)** As a percentage of the total credit from monetary financial institutions or non-monetary financial institutions participating in the CRC to resident non-financial corporations.

a marked fall in net profit and profitability ratios to close to half the amount registered at the end of 2010.[46] Reference should also be made to the strong rise of the default ratio in the "manufacturing industry" sector, from 5.1 per cent in March 2011 to 7.1 per cent in March 2012 and the "restaurants and hotels" sector from 3.7 per cent to 6.2 per cent over the same timeframe.

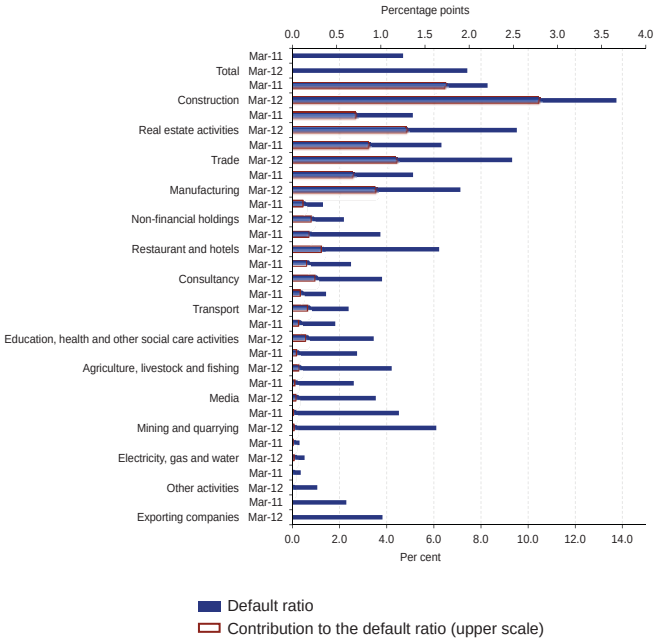
Based on the z-score model, it is noteworthy that approximately 49 percent of loans to non-financial corporations belong to the three deciles with the highest probability of default. Even though, between June 2010 and February 2012 it is observed a decrease in the weight of the three deciles with the highest risk. Following the same model and using data from 2010, the sectors that presented the highest average probability of default in 2011 were construction, tourism and real estate activities.[47]

46 For the "construction" and "real estate activities" sectors the dimension of the quarterly sample is not sufficiently representative to perform this analysis. See "Section 3 *Financial situation of households and non-financial corporations*", of this Report.

47 See "Box 4.4 *Z-scores for non-financial firms in Portugal*", of this Report.

Gráfico 4.4.24

OVERDUE AND OTHER DOUBTFUL BANK LOAN RATIOS TO NON-FINANCIAL CORPORATIONS | BY BRANCH OF ACTIVITY



Source: Banco de Portugal.

Lastly as regards exporting companies, the default ratio increased from 2.3 per cent in March 2011 to 3.8 per cent in March 2012, significantly below that registered for the non-financial corporations total.

4.5. Own funds adequacy[48]

In 2011, Portuguese banks made a major effort to reinforce their solvency levels to ensure compliance with the minimum Core Tier 1 ratio of 9 per cent by the end of the year, as established within the scope of the Economic and Financial Assistance Programme.[49] In December, the Portuguese banking system's average Core Tier 1 ratio was 9.6 per cent (8.7 per cent including the *BPN* bank), which represents an increase of 0.9 and 1.5 p.p. *vis-à-vis* June 2011 and December 2010, respectively. This improvement is explained both by the decline of risk-weighted assets, a expected development given the ongoing deleveraging process, and the increase of core own funds. Own bonds repurchase operations and the adoption of a moderate dividends distribution policy were the main solutions adopted by the banks to reinforce their own funds. Reference should also be made to capital increases by two of the main Portuguese banking groups, in the form of public offers for exchange of subordinated debt securities for the institution's common stock.

The reinforcement of solvency levels continues to be a priority for Portuguese banks, which must fulfil highly ambitious objectives, both on national and international levels, in 2012. At the end of June, the four major Portuguese banking groups[50] must comply with the prudential requirements defined at the European Council meeting of 26 October, under a European Banking Authority (EBA) proposal.[51] In addition to the needs estimated by the EBA for setting up the temporary capital buffer (sovereign buffer) and the capital shortfall deriving from the difference between the Portuguese and the EBA's definitions of the Core Tier 1 ratio,[52] these banks must recognise in regulatory capital the impact of the partial transfer of the respective pension funds to the Portuguese Social Security System and the impact of the results of the Special Inspections Programme ("SIP") on the quality of banks' assets. As regards capital needs deriving from these four challenges, reference should be made to the sovereign buffer's major contribution, estimated to be EUR 3.7 billion.

The impact of the partial transfer of the pension funds will also be felt by the remaining institutions subscribing to the Tripartite Agreements at the end of June 2012.[53] The global impact of this operation,

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48 The set of institutions analysed in this section differ from the preceding sections, as the branches of financial groups headquartered in European Union member countries are excluded.

49 The Core Tier I ratio establishes a minimum level of capital that the institutions must assure based on own funds requirements deriving from the risks associated with their activity. The ratio, as such, is assessed on the quotient between "ore" own funds and risk-weighted positions. "Core" own funds include an institution's highest quality capital, in terms of its permanence and capacity to absorb losses, less any losses and certain elements with no autonomous realisation value, based on the principle of an institution as a "going concern". Risk-weighted positions represent a measure of the risks deriving from financial activity, namely credit, market (including minimum own funds requirements, foreign exchange and trading portfolio) and operational risks. In Portugal, the Core Tier 1 measure is based on the Basel III rules applicable in 2013 for the definition of Common Equity Tier 1, i.e. prior to the application of the transitory regime for certain deductions. In particular, it does not include the deduction for investments in financial institutions which do not consolidate, nor the deduction for deferred tax assets. The calculation of the Core Tier 1 ratio is defined in Banco de Portugal's Official Notice 1/2011.

50 Those which, on account of their dimension, were included in the EBA's stress test exercises and are therefore directly covered by these resolutions.

51 The capital reinforcement measures announced at the European Council meeting of 26 October are analysed in "Box 4.3 *New capital adequacy requirements, recent developments and prospects for 2012*", Banco de Portugal, in the *Financial Stability Report* – November 2011. The capital needs for setting up the sovereign buffer were later reassessed on the basis of sovereign exposures and market prices at 30 September 2011, in which a final amount of around EUR 3.7 billion was determined (down in comparison to October's preliminary estimate of EUR 4.4 billion).

52 The temporary capital buffer refers to the elimination of the prudential filter applicable to sovereign debt securities in the available for sale financial assets portfolio and to the assessment at market prices of the sovereign debt securities in the assets held to maturity portfolio and of other credits granted to central governments, with reference to the end of September 2011. The Core Tier 1 measure used by the EBA is different from the Portuguese measure owing to the fact that it includes, inter alia, deductions regarding equity stakes in financial institutions which do not consolidate with the group and deductions relative to the difference between the expected loss and impairment for institutions using the IRB approach (except for the shares portfolio).

53 For further details, see "Box 4.2 *Accounting and prudential impact of the partial transfer of banking sector pension funds to the Social Security System*", of this Report.

which in prudential terms totals around EUR 1 billion, is mainly concentrated in the four main Portuguese banks. The situation regarding the SIP is analogous: deductions from own funds and corrections to capital requirements should also be residual for the remaining institutions involved in the exercise.[54]

In addition, starting from the end of 2012, all institutions under Banco de Portugal's supervision should achieve a minimum Core Tier 1 ratio of 10 per cent (Banco de Portugal's Official Notice, 3/2011). In this case, the additional capitalization effort should be relatively small. As regards the four main banking groups, compliance with the prudential objectives defined by the EBA for June 2012 should place them in a comfortable position to meet this objective by the end of the year. For the remainder institutions, it is noteworthy that most of them already recorded a Core Tier 1 ratio above 10 per cent at the end of 2011 and, therefore, additional capital needs should be occasional and of little significance.

The information publicly available on the date of publication of this report indicates that a significant part of the capital needs of the major private Portuguese banks will be met with recourse to the EUR 12 billion Bank Solvency Support Facility created under the Economic and Financial Assistance Programme. The legal framework for this mechanism is set out in Law 63-A/2008 of 24 November and Ministerial Order 150 – A/2012 of 17 May. The State's interest is safeguarded by regulations that set the viability requirement of beneficiary institutions, the temporary nature of the public investment and its adequate remuneration. The capital operations may take the form of the state's acquisition of shares or subscriptions for other financial instruments eligible for Core Tier 1 own funds.

An improvement in the quality of the banking system's own funds, comprising an increase of core elements, was noted in 2011.

In 2011, the evolution of the banking system's own funds implied a reorientation of banks' funding and capital policies to core elements. Although original and global own funds adequacy ratios have not lost relevance in terms of the international regulatory framework,[55] the importance recently afforded to better quality capital elements, notably in terms of their permanence and loss absorption capacity, materialised by the introduction of the Core Tier 1 ratio concept, provide the backdrop for the decline of several original and complementary own funds components (Table 4.5.1). Capital increases comprising the conversion of subordinated debt securities into equity securities and own bonds repurchase operations are examples of non-core element replacement mechanisms (generally with a replacement rate of less than one) and largely explain the different evolution of the three own funds adequacy ratios analysed (Chart 4.5.1). In the remaining part of the section, only the evolution of core elements and the Core Tier 1 ratio will be analysed.

In 2011, core own funds were up by around 10 per cent (Chart 4.5.2), explaining aproximately 57 per cent of the improvement to the banking system's Core Tier 1 ratio. In addition to the above mentioned operations, reference should be made to the positive contribution made by the incorporation of non-distributed income. Moving in the opposite direction reference should be made to the deterioration of the financial position of bank employees' pension funds, in a context of major disturbances in the international financial markets. Following the partial transfer of banks' pension funds to the Portuguese Social Security System, a new accounting policy aiming at the recognition of the negative actuarial deviations of the plans directly in shareholders' equity, in the year of occurrence, was adopted. However, to prevent the accounting policy change from having a prudential impact in December 2011, a filter enabling to neutralise part of the deviation was created. Reference should also be made to the negative impact on own funds of the deduction comprising 21 per cent of the nominal value of risk positions towards

54 For further details, see "Box 4.3 *The special inspections Programme for the financial system (SIP)*", of this Report.

55 For further details, see "Basel III: A global regulatory framework for more resilient banks and banking systems".

Table 4.5.1

OWN FUNDS ADEQUACY | ON A CONSOLIDATED BASIS, EUR MILLIONS

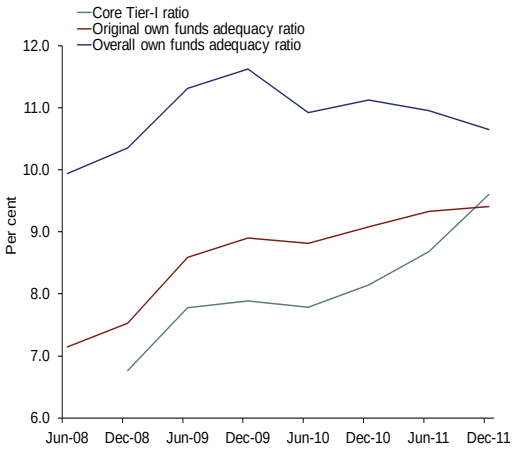
	2009	2010		2011	
	Dec.	Jun.	Dec.	Jun.	Dec.
1. Own funds					
1.1. Total original own funds for solvency purposes	25 572	26 124	27 099	27 627	25 993
1.1.1. Original own funds (gross)	27 000	27 416	29 015	29 276	27 756
of which : non core elements	4 656	4 560	4 937	3 711	1 281
1.1.2. Deductions to the original own funds	1 427	1 292	1 916	1 649	1 763
1.2. Total additional own funds for solvency purposes	9 049	8 385	7 293	6 350	4 647
1.2.1. Additional own funds (gross)	10 352	9 593	8 940	7 596	5 960
1.2.2. Deductions to the additional own funds	1 303	1 207	1 647	1 246	1 313
1.3. Deductions to the total own funds	386	1 672	702	1 179	932
1.4. Total supplementary own funds eligible to cover the market risk	0	0	0	0	0
Total own funds	**34 235**	**32 837**	**33 690**	**32 798**	**29 708**
2. Capital requirements					
2.1. Capital requirements for credit risk, counterparty credit risk and free deliveries	23 571	23 453	23 402	23 298	22 097
2.2. Settlement risk	0	0	0	0	0
2.3. Capital requirements for position, foreign exchange and commodities risks	759	855	874	772	402
2.4. Capital requirements for operational risk	1 795	1 765	1 818	1 820	1 741
2.5. Capital requirements - fixed overheads	5	4	4	5	5
2.6. Large exposures - trading book	0	0	0	0	0
2.7. Other and transitional capital requirements	0	0	0	0	0
Total capital requirements	**26 130**	**26 077**	**26 098**	**25 895**	**24 245**
3. Ratios (per cent)					
3.1. Own funds/Total requirements	131.0	125.9	129.1	126.7	122.5
3.2. Own funds/(Total requirements x 12.5)	10.5	10.1	10.3	10.1	9.8
3.3. Original own funds/(Total requirements x 12.5)	7.8	8.0	8.3	8.5	8.6
3.4. Core Tier-I ratio[a]	6.9	7.0	7.4	7.9	8.7
Memo:					
Capital ratios excluding BPN and BPP[b]					
Own funds/Total requirements	145.3	136.5	139.1	136.9	133.1
Own funds/(Total requirements x 12.5)	11.6	10.9	11.1	11.0	10.6
Original own funds/(Total requirements x 12.5)	8.9	8.8	9.1	9.3	9.4
Core Tier-I ratio[a]	7.9	7.8	8.1	8.7	9.6

Source: Banco de Portugal.

Notes: (a) Calculated as the ratio between (original own funds - non-core elements) and (total requirements x 12.5). **(b)** It should be noted that BPP was liquidated in April 2010, after which it ceased to be included in the universe of banking institutions.

Chart 4.5.1

OWN FUNDS ADEQUACY OF THE PORTUGUESE BANKING SYSTEM

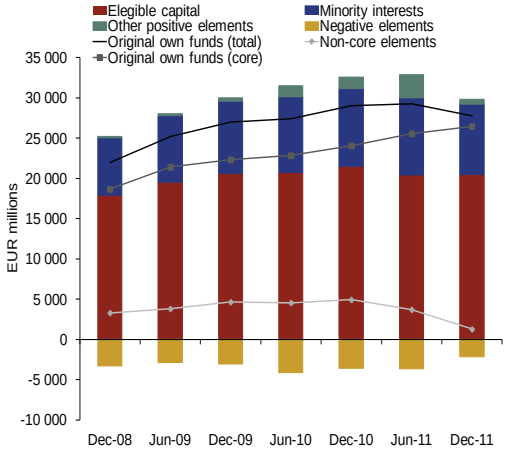


Source: Banco de Portugal.

Note: The series presented exclude *BPN* and *BPP*. It should be noted that *BPP* was liquidated in April 2010, after which it ceased to be included in the universe of banking institutions.

Chart 4.5.2

BREAKDOWN OF ORIGINAL OWN FUNDS



Source: Banco de Portugal.

Greek public debt, in September 2011, as well as the recognition of the 53.5 per cent haircut and the loss arising from the swap of 31.5 per cent of the debt in new securities with longer maturities. In any event, given the prudential filter applicable to the changes in the value of the debt securities classified in the available for sale financial assets portfolio,[56] the depreciation of the remaining public debt securities held by the banks had a relatively reduced impact on regulatory capital.

Across-the-board reinforcement of the Core Tier 1 ratio in 2011…

Own funds requirements decreased 7 per cent, in 2011, contributing aproximately 43 per cent to the improvement of the system's Core Tier 1 ratio (Table 4.5.1). This evolution reflects, on the one hand, a slowdown in the banks' activity, both in terms of their credit to customers and their financial assets portfolios (it should be remembered that total banking system assets contracted by around 3.5 per cent in 2011), and, on the other, the decline in the average assets weighting factor (measured by the risk-weighted assets to total assets ratio). Chart 4.5.3 displays the relatively homogenous position of six of the eight major Portuguese banks regarding this indicator, with reference also being made to the decline recorded by the two banks located in the upper part of the distribution. The improvement of the Core Tier 1 ratio was transversal to most banks, being also noted a relative decline of individual heterogeneity. In general (Chart 4.5.4), smaller institutions – most of which are subsidiaries of major foreign banks – show higher solvency levels than the banking system's average, mainly reflecting the fact that their assets are less weighted in terms of risk (Chart 4.5.5).

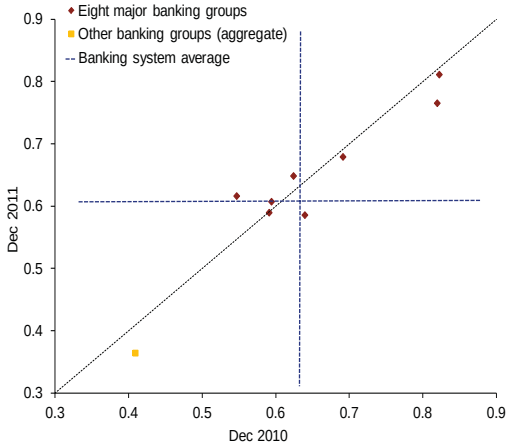
… together with a deterioration of the accounting capital to assets ratio

From a strictly accounting viewpoint, a decline in the shareholders' equity to total assets ratio was observed, even when intangible components (namely negative consolidation differences – goodwill) are excluded

56 According to sub-paragraph d) of article 10 of Banco de Portugal's Official Notice 6/2010, unrealised gains and losses, which do not represent impairment, on debt securities, credit and other amounts receivable classified as available for sale financial assets should be excluded from the calculation of original own funds

Chart 4.5.3

EVOLUTION OF THE PORTUGUESE BANKS' RISK-WEIGHTED ASSETS TO ASSETS RATIO

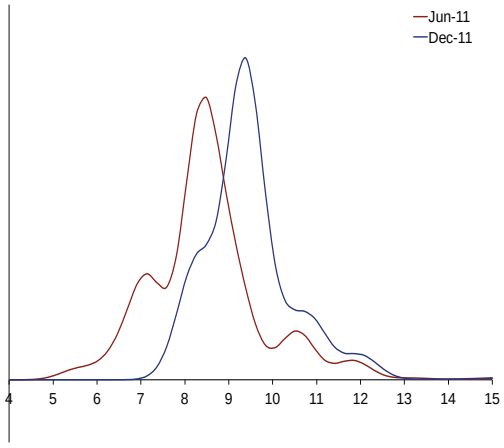


Source: Banco de Portugal.

Note: For banks that make use of IRB methods in the computation of capital requirements, risk-weighted assets were adjusted to assure proper comparability with banks that rely on standard methods.

Chart 4.5.4

CORE TIER-I RATIO | (ORIGINAL OWN FUNDS – NON-CORE ELEMENTS)/CAPITAL REQUIREMENTS * 12.5

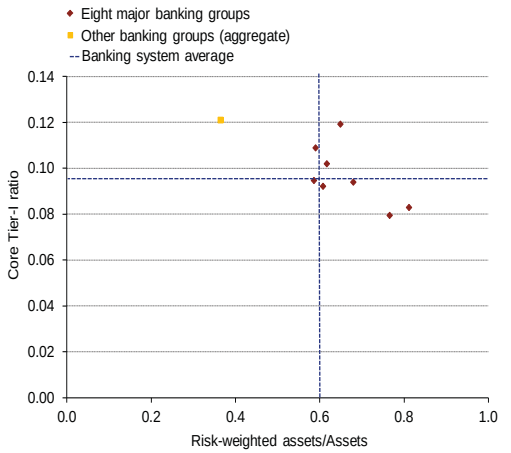


Source: Banco de Portugal.

Notes: Empirical distribution obtained by the use of a gaussian kernel in which institutions are weighted by assets. The series presented exclude *BPN* and *BPP*. It should be noted that *BPP* was liquidated in April 2010, after which it ceased to be included in the universe of banking institutions.

Chart 4.5.5

CORE TIER-I RATIO VS RISK-WEIGHTED ASSETS TO ASSETS RATIO | PORTUGUESE BANKS COMPARISON (DECEMBER 2011)

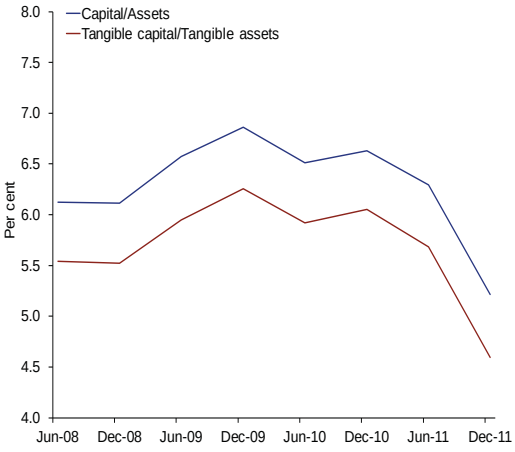


Source: Banco de Portugal.

Note: For banks that make use of IRB methods in the computation of capital requirements, risk-weighted assets were adjusted to assure proper comparability with banks that rely on standard methods.

Chart 4.5.6

CAPITAL TO ASSETS RATIO



Source: Banco de Portugal.

Note: The series presented exclude *BPN* and *BPP*. It should be noted that *BPP* was liquidated in April 2010, after which it ceased to be included in the universe of banking institutions.

(Chart 4.5.6). The increase in potential losses on the available for sale financial assets portfolio noted over the course of 2011 and the negative net income in the fourth quarter of the year made a negative contribution to this evolution. Reference should also be made to the impact on banks' accounting capital of the partial transfer of banks' pension funds to the Portuguese Social Security System deriving from a change of accounting policy on the recognition of pensions liabilities, adopted by most institutions involved in the transfer. The change resulted in the recognition of the full amount of the negative actuarial deviations accumulated up to the date of the transfer, only partly mitigated by the recognition

of deferred tax assets. The equity to total assets ratio does not differentiate between banks' assets on the basis of their associated risk. Its use as a complementary analysis tool, however, is highly pertinent as the banks' Core Tier 1 ratios may result from the use of the internal ratings based approach (IRB models) for the computation of own funds requirements which could represent a bias factor in comparisons between banks. The already mentioned decline in risk-weighted assets may, indeed, be associated both with the effective decline of banks' balance sheets implicit risk and the implementation of risk mitigation techniques made possible by the use of IRB models.

BOX 4.1 | FINANCIAL SITUATION OF THE SIX MAJOR GROUPS OF THE PORTUGUESE BANKING SYSTEM IN THE FIRST QUARTER OF 2012[1]

According to the information available for the six major Portuguese banking groups, in the first quarter of 2012, banking system activity, measured by total assets on a consolidated basis, remained virtually unchanged as compared to the end of the preceding year (Table 1). This evolution contrasts with the 1.8 per cent reduction of total assets recorded in the last quarter of 2011, which was characterised by a significant contraction in credit to customers portfolio (partly associated with credit disposals to funds) and a contraction in securities, investments and derivatives. Nevertheless, data for the first quarter show a small change in the composition of banks' assets. An increase in the portfolio of credit to customers and in the portfolio of available for sale financial assets was particularly noted, offset by the decline in claims and investment in other credit institutions and central banks. This evolution reflected the increase of public sector financing by the major Portuguese banks, both in the form of loans granted directly to central government and through the acquisition of Treasury bills. Several repurchase operations of previously securitised assets were also recorded, having a relevant impact on the change in the loan stock. As regards the available for sale financial assets portfolio, reference should also be made to the decline in secondary market yields on Portuguese public debt and on most euro area sovereigns to which Portuguese banks are exposed, contributing towards some value recovery of this portfolio. Lastly, as regards credit to customers portfolios, it is worth mentioning the 14 per cent rise in the overdue credit and interest component, implying an increase of a similar magnitude in its impairment.

In the first quarter of 2012, the trend towards a recomposition of the banks' funding structures remained in force. This comprised an increase in the weight of customer resources and a decline in the weight of market based funding sources (liabilities represented by securities and other credit institutions' resources). The favourable evolution of customer resources was highly influenced by extraordinary factors related to the management of the disbursements of financial assistance to the Portuguese State, reflected in an increase in general government deposits. In turn, the evolution of the deposits from resident households tended to stabilization. As regards debt securities, in addition to the expected decline deriving from the banks' incapacity to obtain funding in international wholesale debt markets, reference should also be made to the own bonds repurchase operations by banks, as had been the case over the course of 2011. The fact that such securities are not eligible for compliance with the new capital adequacy targets (in terms of Core Tier 1 capital) helps to make them less attractive as a source of funding. In addition, these operations generate significant gains for the banks at the time of repurchase, given the discount over the issuance price at which they trade in secondary market. Resources obtained from the central banks, namely the Eurosystem, increased in the first quarter of the year, following the refinancing operation with an extended maturity and full allotment (LTRO-Long Term Financing Operation) performed by the ECB in February. This operation, together with the December 2011 LTRO, helped to mitigate the refinancing risk of Portuguese (and euro area) banks' balance sheets over extended periods, given that around 90 per cent of the funding obtained from the Eurosystem has now a residual maturity of slightly less than 3 years.

In the first quarter of 2012, the profitability of the six major banking groups recorded a recovery from the negative values observed in the third and fourth quarters of 2011 (even if we correct for non-recurrent events in 2011), remaining, however, at a low level (Chart 1). Reference should, firstly, be made to the

1 The total assets of the six banking groups analysed in this Box (Caixa Geral de Depósitos, Espírito Santo Financial Group, Banco Comercial Português, Banco BPI, Santander Totta and Caixa Económica Montepio Geral) accounted for around 77 per cent of Portuguese banking system assets in December 2011. To neutralise the impact of the integration of Finibanco in Caixa Económica Montepio Geral, the data prior to 2011 were revised and to include the said institution.

Table 1

BALANCE SHEET OF THE SIX MAJOR BANKING GROUPS | ON A CONSOLIDATED BASIS

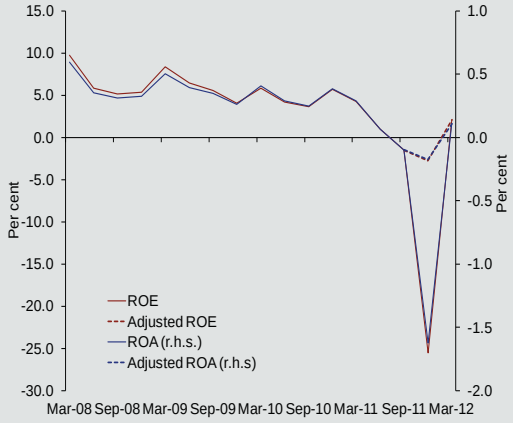
	Structure (as a percentage of total assets)				Year-on-year rates of change (per cent)					Quarterly rates of change (per cent)				
	2009	2010	2011	2012	2011				2012	2011				2012
	Dec.	Dec.	Dec.	Mar.	Mar.	Jun.	Sep.	Dec.	Mar.	Mar.	Jun.	Sep.	Dec.	Mar.
Cash and claims on central banks	3.3	2.1	2.7	2.1	-31.6	-12.4	13.8	19.1	12.5	-14.1	3.1	-2.3	37.6	-18.9
Claims and investments in other credit institutions	5.6	3.2	4.2	3.1	-38.4	-23.2	-23.1	23.1	-7.0	-2.2	3.4	2.1	19.3	-26.1
Securities, derivatives and investments	15.8	19.7	18.0	19.8	3.6	-2.8	-5.4	-12.9	5.9	-9.2	-1.4	0.6	-3.2	10.4
Net credit to customers	63.5	60.0	58.1	58.8	-4.4	-8.1	-6.8	-7.6	-3.7	-2.8	-0.2	-0.5	-4.3	1.3
Securitised non-derecognised assets	6.7	9.6	10.4	9.7	49.8	55.8	39.5	3.3	-10.1	7.4	-0.4	-1.5	-2.0	-6.6
Tangible and intangible assets	1.0	1.0	1.0	1.0	-0.1	-3.4	0.9	-3.4	-6.6	1.5	-2.9	1.1	-3.1	-1.9
Other assets	4.2	4.4	5.7	5.5	0.8	5.6	14.0	22.3	20.0	-1.0	10.6	7.9	3.6	-2.9
Total assets	**100.0**	**100.0**	**100.0**	**100.0**	**-1.4**	**-3.0**	**-2.5**	**-4.7**	**-1.4**	**-3.2**	**0.2**	**0.1**	**-1.8**	**0.2**
Resources from central banks	3.8	9.9	10.9	12.3	132.1	5.2	9.1	5.5	29.6	-8.3	10.6	4.1	-0.1	12.6
Resources from other credit institutions	7.3	7.3	5.6	4.8	-5.7	-23.7	-19.2	-26.2	-36.0	-1.3	-21.2	0.9	-5.8	-14.4
Resources from customers and other loans	45.2	46.4	52.4	53.6	7.4	11.5	8.1	7.6	10.3	-0.1	5.0	1.9	0.6	2.4
Liabilities represented by securities	27.1	20.1	17.2	15.6	-31.1	-24.3	-21.7	-18.6	-20.0	-7.7	-4.8	-6.2	-1.2	-9.2
Subordinated liabilities	2.5	2.1	1.3	1.3	-17.5	-25.7	-37.2	-39.9	-35.4	-8.8	-13.8	-15.9	-9.1	-1.9
Other liabilities	7.1	7.5	7.5	7.1	-5.1	-3.2	7.0	-4.2	-4.3	-5.6	0.9	5.1	-4.2	-5.7
Capital	6.9	6.8	5.1	5.4	-2.4	-4.7	-12.0	-29.1	-22.6	-1.3	-6.9	-5.3	-18.5	7.7
Total liabilities and capital	**100.0**	**100.0**	**100.0**	**100.0**	**-1.4**	**-3.0**	**-2.5**	**-4.7**	**-1.4**	**-3.2**	**0.2**	**0.1**	**-1.8**	**0.2**
Memo:														
Credit to customers including non-derecognised securitisation operations	72.0	71.4	70.9	71.2	1.0	-2.0	-1.6	-5.3	-3.1	-1.6	0.1	-0.3	-3.5	0.6
Loan disposal operations (cumulative since the beggining of 2010)	-	0.2	1.9	1.9	-	-	-	-	-	-	-	-	-	-
Credit to customers including non-derecognised securitisation operations (adjusted for loan disposal operations)	-	71.6	72.8	73.2	2.7	0.0	0.6	-3.1	-2.1	-0.4	0.6	-0.1	-3.2	0.7

Source: Banco de Portugal.

negative contribution of net interest income and income from services and commissions, components that showed a high level of resilience over the course of 2011 but that, at the beginning of 2012, started to reveal the effects of the deleveraging process of banks' balance sheet (Chart 2 and Table 2). The evolution of net interest income is also likely to be associated with the decline of interest rates in the interbank market, which typically result in a decrease of interest on lending operations more pronounced than the decrease of interest on customers' resources. Recognition of impairment on credit portfolios continued to have a negative effect on banks' profitability levels, in a context of growing materialisation of credit risk, whereas the recognition of additional impairment on the financial assets portfolio was relatively low. In the opposite direction, the decline in operating costs (general administrative expenses, staf costs and depreciation) , both year-on-year and in comparison to the average value for 2011, and the income received from financial operations made a positive contribution towards the evolution of results. In fact, own bonds repurchase operations had a significant impact on first quarter results, as

Chart 1

RETURN ON ASSETS (ROA) AND RETURN ON EQUITY (ROE) OF THE SIX MAJOR BANKING GROUPS |
ADJUSTED FOR NON-RECURRENT EVENTS OBSERVED IN THE FOURTH QUARTER OF 2011

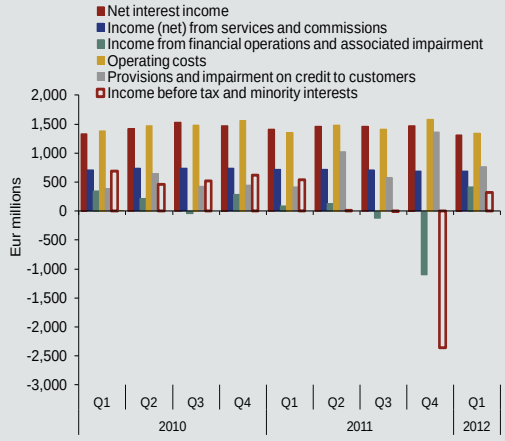


Source: Banco de Portugal.

Note: Indicators calculated on net income. Quarterly data have been anualised. Non-recurrent events comprises of the Special Inspections Programme (SIP), the partial transfer of banks' pension funds to the Portuguese Social Security System and impairment charges related to Greek public debt.

Chart 2

PROFIT AND LOSS ACCOUNT OF THE SIX MAJOR BANKING GROUPS | QUARTERLY FLOWS



Source: Banco de Portugal.

Table 2

PROFIT AND LOSS ACCOUNT OF THE SIX MAJOR BANKING GROUPS | ON A CONSOLIDATED BASIS AS A PERCENTAGE OF AVERAGE ASSETS

	Quarterly income (flow)					Cumulative income (year to date)				
	2011				2012	2011				2012
	Q1	Q2	Q3	Q4	Q1	Mar.	Jun.	Sep.	Dec.	Mar.
Net interest income	1.37	1.45	1.44	1.47	1.32	1.37	1.41	1.42	1.43	1.32
Income (net) from services and commissions	0.70	0.71	0.70	0.69	0.69	0.70	0.71	0.70	0.70	0.69
Income from financial operations	0.14	0.17	0.13	0.04	0.47	0.14	0.15	0.15	0.12	0.47
Other income	0.09	0.26	0.05	0.05	0.08	0.09	0.17	0.13	0.11	0.08
Gross income	2.30	2.59	2.33	2.25	2.56	2.30	2.44	2.40	2.37	2.56
Operating costs	1.32	1.46	1.40	1.57	1.35	1.32	1.39	1.39	1.44	1.35
Provisions and impairment	0.52	1.18	0.94	2.95	0.94	0.52	0.85	0.88	1.39	0.94
of which: associated with credit to costumers	0.40	1.01	0.57	1.36	0.77	0.40	0.71	0.66	0.83	0.77
Consolidation differences and appropriation of net income	-0.06	-0.06	0.00	0.08	-0.05	-0.06	-0.06	-0.04	-0.01	-0.05
Income before tax and minority interests	0.52	0.00	0.00	-2.36	0.32	0.52	0.26	0.18	-0.45	0.32
Income tax profit	0.09	-0.21	0.01	-0.71	0.12	0.09	-0.06	-0.04	-0.20	0.12
Income before minority interests	0.43	0.21	-0.01	-1.64	0.20	0.43	0.32	0.21	-0.25	0.20
Minority interests	0.14	0.15	0.09	0.00	0.09	0.14	0.14	0.13	0.09	0.09
Net income	0.29	0.07	-0.10	-1.64	0.11	0.29	0.18	0.09	-0.34	0.11

Source: Banco de Portugal.

Note: Quarterly and cumulative income have been annualised for the calculation of the respective percentages over average assets.

was the case, albeit to a lesser extent, in the third and fourth quarters of 2011. According to available information, excluding these operations, the income before tax and minority interests of the institutions under analysis would have been virtually nil in the first three months of the year.

The Core Tier 1 ratio of the six major banking groups posted a slight improvement over the first quarter 2012, standing at 9.4 per cent at the end of March (Table 3). This evolution particularly reflected the capital increase by one of the major Portuguese banking groups and the positive impact on core own funds, through the increase in eligible reserves and results, related to the own bonds repurchase operations by the major banks. In a context of virtual stabilisation of banks' balance sheets, own funds requirements remained relatively unchanged. For the quarter in progress, the four major Portuguese banks have scheduled important capital reinforcement operations, essentially designed to ensure compliance with regulatory capital requirements determined at the European Council meeting of 26 October, following the proposal of European Banking Authority (EBA),[2] in addition to accommodating the prudential impacts of the result of the Special Inspections Programme (SIP) and the partial transfer of banks' pension funds to the Portuguese Social Security System, which had been deferred to June 2012.

Table 3

OWN FUNDS ADEQUACY OF THE SIX MAJOR BANKING GROUPS

		2011				2012
		Mar.	Jun.	Sep.	Dec.	Mar.
1. Own funds						
Original own funds	**(A)**	26 011	25 896	24 815	24 448	24 896
of which: non-core elements	**(B)**	4 595	3 435	2 941	1 227	1 218
2. Capital requirements	**(C)**	21 426	21 508	21 336	20 082	20 196
3. Core Tier - I ratio (per cent)	**(A-B)/(C x 12.5)**	8.0	8.4	8.2	9.3	9.4

Source: Banco de Portugal.

2 For further details see "Box 4.3 *New capital adequacy requirements: recent developments and prospects for 2012*", Banco de Portugal, *Financial Stability Report*, November - 2011. The capital needs for setting up the sovereign buffer were later re-evaluated on the basis of sovereign exposures and market prices at 30 September 2011, in which a final amount of approximately EUR 3.7 billion was determined for the creation of the referred to buffer (down in comparison to the preliminary estimate of EUR 4.4 billion, in October).

BOX 4.2 | ACCOUNTING AND PRUDENTIAL IMPACT OF THE PARTIAL TRANSFER OF BANKING SECTOR PENSION FUNDS TO THE SOCIAL SECURITY SYSTEM

At the end of 2011 the government agreed with 13 credit institutions/banking groups the partial transfer of assets of pension funds to general government, with the assumption by the Social Security of the liabilities associated with the payments of the old age and survivors' pensions of banking sector retirees and pensioners.[1] The reasons underlying this operation included *inter alia* (i) the continuation of the progressive integration of banks' employees and pensioners in the State Social Security system, which began in 2009 (ii) the reduction of the Portuguese banking system's high exposure to the risks of defined benefit pension plans, (iii) the release of a high amount of assets held by pension funds and the consequent alleviation of funding constraints of the Portuguese State and (iv) compliance with the fiscal target for 2011, as agreed under the Economic and Financial Assistance Programme.[2]

The credit institutions/banking groups subscribing to the Tripartite Agreements upon which this operation was based and whose liabilities were partly transferred to the Social Security, were the following: *BCP*, *ESFG*, *BPI*, *ST*, *CEMG*, *Rentipar*, *BBVA*, Banco Popular Portugal, Banco Credibom, Banco do Brasil *AG*, Barclays Bank, BNP Paribas and *UNICRE*.

The liabilities assumed by the Social Security exclusively comprise pensions already in payment at 31/12/2011, as set out in the collective labour regulation instruments in force in the banking sector (defined benefit plans – pillar I).[3] The discount rate used to value the pension funds' liabilities was 4 per cent. This operation comprised a definitive and irreversible transfer to the Social Security System of the liabilities corresponding to credit institutions' current pensions payments, in due compliance with the conditions underlying the concept of "liquidation" provided for in the International Accounting Standards 19 (IAS 19).

As regards assets, the transfer of the pension funds' assets to the State should take place in two tranches, comprising cash and, up to 50 per cent of the amount to be transferred, Portuguese public debt, at market prices. The first tranche was transferred in cash by 31/12/2011, totalling around EUR 3.2 billion and comprising around 55% of the global value of liabilities to be transferred. The delivery of the second tranche, amounting to around EUR 2.9 billion, should occur by 30/06/2012.

Accounting impact

In 2011, most credit institutions opted to change their accounting policy regarding the recognition of actuarial gains and losses (financial and demographic) associated with their pension plans. According to the new accounting policy, actuarial deviations are recognised in own funds (OCI - other comprehen

1 See Decree Law nº 127/2011 of 31 December.

2 For further details see "Box 3.3 *Transfers of pension funds and its impact on public accounts in Portugal: 1997-2011*", Banco de Portugal, *Annual Report* - 2011.

3 Credit institutions continue to be responsible for the following liabilities, to be funded by their pension funds: (a) increases in the pensions being transferred, in accordance with the applicable collective labour regulation instruments for the banking sector; (b) deferred survivors' pensions (pensions effectively payable upon the death of retirees whose pensions were transferred at 31/12/2011); (c) the past services of current workers hired prior to 3 March 2009, for their years of service up to 31/12/2010, deriving from the publication of Decree Law nº 1-A/2011 of 3 January; (d) death grants; (e) credit institutions' payments to *SAMS* (*Serviço de Assistência Médico-Social*).

sive income) in the year of occurrence, with such institutions having abandoned the use of the corridor method provided for in IAS 19.[4]

This change in accounting policy, *i.e.,* the immediate recognition in own funds of the accumulated actuarial deviations up to the date of the transfer of the pension funds, had a negative impact on the whole banking system amounting to around EUR 3.6 billion (before tax).

At the same time, the transfer operation generated valuation differences on the liabilities to be transferred, deriving from the transfer conditions defined in Decree Law nº 127/2011, which resulted in a negative impact on net income of approximately EUR 300 million (after tax).

Prudential impact

In the prudential sphere and notwithstanding the accounting policy used to recognise the actuarial gains and losses associated with the pension plans, Banco de Portugal's prudential regulations determine that the banks should deduct from their own funds (Core Tier 1) the accumulated actuarial losses in excess of specific limits (which define the "corridor"), defined as the highest from either (i) 10 per cent of the present value of the defined benefit obligation or (ii) 10 per cent of the value of the pension funds assets.

As such, the main prudential impacts from the operation generally derive:

- On the one hand, from the loss arising from the difference between the credit institutions' estimates for the plans' liabilities and assets (in accordance with their actuarial assumptions) immediately prior to the transfer operation and, additionally, the conditions defined for the said transfer in terms of discount rate and mortality tables (which are recognised in the profit and loss account);
- On the other hand, from the decline of the limit of the "corridor" owing to the reduction of the pension fund's assets and liabilities for which credit institutions remain responsible.

In prudential terms, Banco de Portugal's Official Notice nº 1/2012 provided for the possibility of the impact deriving from the partial pension fund transfer to the Social Security System being deferred up to 30/06/2012, as agreed in the second review of the Economic and Financial Assistance Programme.

The negative prudential impact deferred to 30/06/2012 amounts approximately to EUR 1 billion for the aggregate of banking groups/credit institutions taking part in the transfer operation. This amount corresponds to around 49 basis points of the Core Tier 1 ratio of this set of institutions, assessed on the basis of the own funds requirements in December 2011. In terms of dispersion, the impact lies between negligible values in the case of several institutions and slightly above 1 percentage point in the case of others.

4 According to this accounting treatment, institutions can only recognise in their Profit and Loss account (P/L) the component of the actuarial gain or loss which exceeds the limit of the "corridor", amortized over the expected remaining working lives of the then active employee participants. The limits over which the actuarial gains and losses should be recognised under the P/L correspond to the largest value between (i) 10 per cent of the present value of the defined benefit obligation and (ii) 10 per cent of the value of the pension funds assets.

BOX 4.3 | THE SPECIAL INSPECTIONS PROGRAMME FOR THE FINANCIAL SYSTEM (SIP)

Background

The Economic and Financial Assistance Programme, agreed in May 2011 with the International Monetary Fund, European Commission and European Central Bank defined a set of measures and actions on the financial system to be undertaken by the Portuguese authorities, including the implementation of a quarterly framework to monitor the solvency and deleveraging of the eight major domestic banking groups. In this context, Banco de Portugal was endorsed with the responsibility to develop a program of special on-site inspections (SIP), with the goal of validating the data upon which the quarterly assessment of the solvency of those banking groups is based.

A Steering Committee, chaired by Banco de Portugal and made up of experts appointed by the International Monetary Fund, the European Commission, the European Central Bank, three European Union supervisory authorities – *Banco de España, Autorité de Contrôle Prudentiel* (France) and *Banque Nationale de Belgique* – and *Banco de Portugal*. The steering committee approved in July 2011 the Terms of Reference for the special inspections work, including the scope, methodological approach, implementation schedules and monitoring and control mechanisms to be adopted. According to the Terms of Reference, the SIP comprised three workstreams, with reference to 30 June 2011:

- Valuation of credit portfolios, based on an analysis of impairment on a sample of credits, as well as on the review of the adequacy of the impairment models and the related management policies and processes;
- Revision of the credit risk capital requirements calculations;
- Validation of the methodologies and parameters used in the stress test exercises regularly carried out by domestic banking groups.

The Special Inspections Programme included the eight major domestic banking groups on a consolidated basis: Banco Comercial Português, Banco BPI, Caixa Geral de Depósitos, Espírito Santo Financial Group, Caixa Económica Montepio Geral, Santander Totta, Rentipar Financeira and Sistema Integrado do Crédito Agrícola Mútuo. These banking groups represent around 80% of the Portuguese banking system in terms of total assets.

In light of the objectives, scope and scheduling of the SIP, it was decided that the credit portfolio assessment and the adequacy of the methodologies and parameters used in the stress test exercises would be undertaken by specialised audit and consultancy firms.

The work related to workstreams 1 and 2 of the SIP was carried out between the end of July and the end of November 2011, whereas the work relative to workstream 3 was carried out between November 2011 and February 2012. The SIP involved 320 persons (totalling around 172 000 working hours), including foreign specialists with similar work experience in other EU countries. The conclusions of the work relating to the SIP were assessed by the Steering Committee which confirmed their conformity with the requirements and objectives defined in the Terms of Reference. Banco de Portugal announced the global results,[1] at the same time as the disclosure of individual results by each banking group.

1 For more details see http://www.bportugal.pt/en-US/OBancoeoEurosistema/ComunicadoseNotasdeInformacao/Lists/LinksLitsItemFolder/Attachments/78/combp20111216_en.pdf and http://www.bportugal.pt/en-US/OBancoeoEurosistema/ComunicadoseNotasdeInformacao/Pages/combp2012013.aspx.

Assessment of credit portfolios

The valuation of the credit portfolios was performed by Ernst & Young Audit & Associados – Sociedade de Revisores Oficiais de Contas, S.A. and PricewaterhouseCoopers & Associados – Sociedade de Revisores Oficiais de Contas, Lda. Each of the firms was asked to analyse four banking groups, in a way to minimise possible conflicts of interest and to guarantee a balanced workload.

The audit firms analysed individual impairment levels on a specific sample of loans, including the 50 economic groups with the largest credit exposure to each banking group, in addition to other groups and entities whose exposures were selected on the basis of a broad range of credit risk indicators. For some credits new valuations for the associated collateral were taken into consideration, performed by independent valuation experts. In total, 5516 entities and 61531 credit files were reviewed, covering more than 50% of the credit portfolios included in the scope of the inspection works and subject to individual risk analysis.

As regards the assessment of collective impairment, the assumptions, methodology and historical information supporting the collective impairment models in each banking group were assessed and a sensitivity analysis of the main parameters and an estimate of the impact of the main areas for improvement were identified. Credit risk management policies, including the main control procedures, especially focusing on collateral valuation and problem assets were also analysed.

The work performed allowed concluding that credit risk management policies and their respective control procedures were globally adequate, notwithstanding the identification of areas for improvement.

As regards the assessment of credit portfolios for the eight banking groups as a whole with reference to 30 June 2011, and in order to achieve robust provisioning levels, a need to reinforce credit impairments by EUR 838 million was estimated (not considering existent impairment buffers as of the same date). This amount corresponds to 9.1% of the total impairment recognized for the credits in the scope of the SIP and 0.3% of the global amount of such credits.

The effect on total impairment of the eight banking groups as a whole was, however, lower, as the above referred impairment reinforcement needs were partly offset – in EUR 242 million – by the allocation of existent impairment buffers, already registered in the accounts on 30 June 2011, with a global amount of EUR 339 million. Additionally, in the third quarter of 2011, the eight banking groups have recognised additional impairment of EUR 208 million on several exposures in which the need to reinforce the impairments was identified.

Credit risk capital requirement validation

The validation of the calculation of capital requirements involved the collection and validation of the relevant data of each of the eight banking groups and a new calculation of the requirements using a tool which was especially designed for that purpose. The work related with this workstream was carried out by Banco de Portugal teams and included the revision of the calculation of credit risk capital requirements (representing around 90% of the capital requirements of the eight banking groups). In this context, Banco de Portugal analysed around 16.6 million contracts/exposures related to around 7.7 million debtors and incorporating the credit risk reduction effect related to 2.3 million mitigation techniques.

In this workstream, the work pointed to the need to make occasional corrections totalling around 0.6% of the total capital requirements for the eight banking groups, with reference to 30 June 2011. Banco de Portugal also assessed the risk management and control procedures underlying the calculation of risk-weighted assets and concluded that they were globally adequate.

Validation of methodologies and parameters used in the stress test exercises

In the context of the Economic and Financial Assistance Programme, Banco de Portugal was endorsed with the responsibility for carrying out regular stress test exercises, with the goal of assessing the resilience of the major domestic banking groups to the materialisation of risks in adverse macroeconomic scenarios. In particular, these exercises aim at assessing the prospective capacity of each banking group to maintain a Core Tier 1 capital ratio of no less than 6% after absorbing the simulated shocks.

In workstream 3 of the SIP, performed using the services of the specialised consultancy firm Oliver Wyman, the robustness of the methodologies and parameters used by each banking group to simulate its future activity and profitability and the evolution of its capital levels was assessed, in the context of the stress test exercises performed by Banco de Portugal.

The work on this workstream of the SIP can be divided in two components. The first component involved issues of process and governance, particularly each banking group's approach to the stress test exercises, the participation and responsibility of institutions' different departments and the involvement of their respective Boards of Directors. The second component involved a detailed analysis of the implementation of the exercise, including all risk sources, such as credit risk, market risk (including currency risk), interest rate and concentration risks. Regarding the credit risk level, which is one of the most relevant, the starting position and the projection of credit risk parameters were considered, particularly the probability of default (PD) and the loss given default (LGD). The methodology used to project impairment on credit risk and its respective interaction with credit risk parameters was also analysed. The analysis was carried out on each credit segment, notably corporations, SMEs, housing, consumption and other purposes and government bodies.

The work undertaken made it possible to classify the banking groups into four categories:

- Institutions that have used clearly appropriate parameters and methodologies: two banking groups;
- Institutions that have used appropriate parameters and methodologies: one banking group;
- Institutions that have used appropriate parameters and methodologies regarding most of the aspects under review, although requiring some improvement in particular areas: four banking groups; and
- Institutions that require some improvement in a range of specific areas, for the parameters and methodologies to be deemed adequate: one banking group.

Conclusion

The results of the SIP performed on the eight major domestic banking groups, with reference to 30 June 2011, essentially confirmed the adequacy of the data upon which the assessment of their solvency is based, underlining the resilience and financial strength of the domestic banking system with reference to the said date. The SIP has therefore played an important role in reinforcing the credibility of the banking system in the international community, including the European Union, the International Monetary Fund and the European Central Bank.

The global impact of the SIP's results on the aggregate Tier 1 ratio of the eight banking groups would translate, at the end of June, into a slight revision, from 9.1% to 8.8%, remaining above the minimum level of 8% required at the said date. Based on the results obtained and taking into account the macroeconomic prospects, Banco de Portugal requested the banking groups to continue to apply conservative criteria on their impairment calculations.

As regards the identification of areas for improvement, Banco de Portugal requested the banking groups to adopt appropriate corrective measures, with clearly defined priorities and deadlines for their implementation. Banco de Portugal will monitor the banking groups' implementation of the recommendations deriving from the SIP, on the basis of regular reporting procedures and according with the established deadlines.

BOX 4.4 | Z-SCORES FOR NON-FINANCIAL FIRMS IN PORTUGAL

Data and methodology

Two of the most important sources of information available for research and economic analysis are the *Informação Empresarial Simplificada* (IES) and the *Central de Responsabilidades de Crédito* (CRC). The first is an annual mandatory repository of information on the balance sheet of companies legally registered in Portugal, and is exhaustive. The second is the Portuguese central credit register, a tool available for banks to assess the credit status of potential borrowers, on a monthly basis. The most interesting feature of these two sources of information is that they cover vast areas of interest: on the one hand, the firms' balance sheets; on the other hand, their access to credit. Through this feature, we can formulate models for identifying credit failure and thus monitor the credit status and evolution of the firm. This box presents a brief description of a method used for this purpose and provides examples of applications.

The z-score of a firm, calculated based on its financial ratios in t, reflects the likelihood that the firm defaults on its credit liabilities in $t+1$. The IES provides the data necessary to calculate financial ratios, and the CRC allows us to identify events of default.

In the methodology recently developed at Banco de Portugal, firms are grouped according to their activity sector and size. The sectors of activity are defined by the highest aggregation level of *Classificação das Atividades Económicas*,[1] revision 3; for the firm size we use only a segmentation between micro firms (that is, with fewer than 10 employees and less than 2 million in assets or sales) and other firms. We estimated models for the following sectors: manufacturing, construction, trade, transport, tourism, real estate and services to firms.

The different models (in a total of 14) are estimated using the financial information of companies (IES) and the default variable from the CRC, for the period ranging 2006 to 2009, using a logit specification. The dependent variable is an indicator of credit default in the next period. Credit records with credit arrears or credit under litigation are only considered a default if they exceed 500 euros for a period of three consecutive months.

The explanatory variables are generally related to the level of business activity. In particular, we use debt to suppliers, debt to banks and bondholders, turnover, and profitability. All these values are measured in terms of the company's assets. Additionally, we use the rate of financial stress, measured as the ratio of capital amortization and interest payments to sales.

The details of the methodology developed at Banco de Portugal for the assignment of z-scores to companies will be published soon. Below we only present results obtained with the models applied to firms in the IES in 2010. The z-score of a company itself will be the expected probability of default for that company calculated using the logit model, conditional on the values of the financial ratios of the company in 2010.

Currently, there is an estimated z-score for an universe of 218,000 individual companies, of which about 163,000 had credit liabilities between June 2010 and February 2012.

1 This is the Portuguese Classification of Economic Activities, in many aspects similar to the NACE, the statistical classification of economic activities in the European Union.

Characterisation in 2010

For this set of firms, ten classes of default risk were defined as a function of the individual z-score. Each class corresponds to a decile of the aggregate distribution of z-scores. Table 1 summarizes the characteristics of firms according to their level of risk measured by the z-score.

For all the companies present in the 2010 IES, we can conclude that the z-score tends to be smaller (which in this case means lower risk) as the turnover of the firm gets higher, while a negative association between the z-score and the number of employees also seems to occur. With respect to the firm's assets, the pattern is less clear.

Table 2 presents the average z-scores by sector.

We can observe that, on average, the sectors of construction, tourism and real estate contain firms with greater z-scores, that is, firms more likely to default in 2011 according to the logit estimates. An important issue is to analyse the weight of each sector in total credit portfolio, as well as the distribution of credit for classes of z-score. The next section seeks to elucidate it.

Table 1

CHARACTERISTICS OF FIRMS AS A FUNCTION OF THE Z-SCORE | DATA FROM IES 2010

z-score categories	Average number of employees	Turnover (Thousand €)	Total assets (Thousand €)	Avg. z-score
1st decile (lower risk)	17	3 073	2 513	0.005
2nd decile	14	2 155	1 883	0.010
3th decile	13	2 044	1 771	0.016
4th decile	12	1 661	1 528	0.022
5th decile	11	1 291	2 620	0.029
6th decile	10	1 563	1 607	0.039
7th decile	9	971	1 377	0.054
8th decile	10	912	1 648	0.079
9th decile	10	955	2 395	0.141
10th decile (higher risk)	7	370	1 879	0.625
Total	11	1 500	1 922	0.102

Source: Banco de Portugal.

Table 2

AVERAGE Z-SCORES BY SECTOR OF ACTIVITY | DATA FROM IES 2010

Sector	Average. z-score
Manufacturing	0.09
Construction	0.12
Trade	0.08
Transportation	0.08
Tourism	0.15
Real estate	0.13
Services	0.07

Source: Banco de Portugal.

z-scores and credit in the CRC

As is known, using the CRC it is possible to calculate the total credit granted to each firm. Combining this information with the z-scores of companies, we can calculate the total credit for categories of z-scores and industries, for example. Table 3 shows some of that information for several months of 2010, 2011 and 2012.

The most salient feature of this table is the high concentration of loans in the three deciles with the highest probability of default. Also noteworthy is the relative stability of the credit amounts, by decile, between June 2010 and February 2012, albeit with a slight tendency to decrease the weight of the deciles with a higher risk. In terms of industries, Table 4 shows the concentration of credit granted by groups of z-scores.

The most interesting aspect of this table is that of the three largest sectors in terms of volume of the portfolio, two of them exhibit a strong concentration in the better classes of risk (manufacturing and trade[2]), and the other displays a strong concentration in the worst category of risk (construction). Another aspect worth noting is with transport. Although this is an industry with average z-score relatively low (Table 2), it also displays some concentration in the worst credit classes (20% of total credit in the sector). This reflects the fact that the sector includes some large companies and high z-score, namely public companies.

New credit by z-score

A key aspect of credit to non-financial firms is the risk associated with the companies to which the new credit is granted. With data from IES and CRC it is not possible to analyze this question in a clear way, because the CRC only includes stocks of credit.[3] We recently had access to a database with all new transactions or renegotiated loans by a set of resident banks containing detailed information about each loan. Grouping firms by quintiles of z-score, we can distribute the flow of new or renegotiated loans by classes of risk. The results are shown in Table 5.

Table 3

PERCENTAGES OF CREDIT GRANTED BY Z-SCORE | DATA FROM IES 2010 AND CRC

	Jun-2010	Dec-2010	Jun-2011	Dec-2011	Feb-2012
1st decile (lower risk)	5.7%	5.9%	5.4%	5.4%	5.2%
2nd decile	6.3%	6.2%	6.3%	6.6%	6.6%
3th decile	7.8%	7.8%	8.1%	8.2%	8.2%
4th decile	7.2%	7.2%	7.3%	7.3%	7.3%
5th decile	6.8%	7.0%	7.0%	7.0%	7.0%
6th decile	7.6%	7.7%	7.7%	7.8%	7.7%
7th decile	8.9%	8.9%	9.3%	9.3%	9.3%
8th decile	12.6%	12.3%	12.2%	12.3%	12.1%
9th decile	20.2%	20.1%	20.4%	20.1%	20.2%
10th decile (higher risk)	16.9%	16.9%	16.3%	16.1%	16.5%
Total	100.0%	100.0%	100.0%	100.0%	100.0%

Source: Banco de Portugal.

2 During 2011, in the context of a strong fall in internal demand, we observed a significant deterioration of the financial situation and credit quality indicators of the trade sector; thus, a rise in the weight of the worst risk classes on total credit is to be expected.

3 For a detailed description of this data set, see Antunes e Martinho (2012) "Access to credit by non-financial firms", of this Report. Note that this database does not contain operations with automatic changes prescribed by the original contract, nor renewals of credit without any change in conditions, which account for most of the credit operations.

Table 4

WEIGHT OF CREDIT IN EACH ACTIVITY SECTOR AND CLASS OF RISK, BY DEC-2011			
Sector	Best 3 cat.	Worst 3 cat.	% of total
Manufacturing	39%	7%	20%
Construction	2%	46%	27%
Trade	40%	5%	20%
Transportation	10%	20%	14%
Tourism	2%	7%	6%
Real estate	1%	11%	7%
Services	6%	5%	6%
Total	100%	100%	100%

Source: Banco de Portugal.

Table 5

FLOWS OF NEW AND RENEGOTIATED LOANS IN THREE DIFFERENT MONTHS | DATA FROM IES 2010, CRC AND INTERNAL DATABASE			
		% of loans	
	Jun-2010	Oct-2011	Dec-2011
1st quintile (lower risk)	17%	17%	17%
2nd quintilee	22%	18%	20%
3th quintile	16%	16%	16%
4th quintile	17%	19%	11%
5th quintile (higher risk)	28%	31%	36%
Total	100%	100%	100%
		% of firms	
	Jun-2010	Oct-2011	Dec-2011
1st quintile (lower risk)	18%	20%	21%
2nd quintilee	19%	21%	21%
3th quintile	20%	21%	21%
4th quintile	20%	20%	20%
5th quintile (higher risk)	22%	17%	17%
Total	100%	100%	100%

Source: Banco de Portugal.

In terms of volume of new or renegotiated credit, we can observe that the weight of the worst credit risk quintile increased. For example, in June 2010 the companies of the bottom quintile of the z-score accounted for 28% of new or renegotiated credit, a figure that rose to 36% in December 2011. However, in terms of the number of companies with new or renegotiated loans, there is a decrease in the weight of the worst quintile of firms. A more detailed analysis reveals that large public companies in the transport sector justify this conclusion. In economic terms, this high share of companies with the worst credit quality in new or renegotiated credit can be positive or negative. First, in the case of new credit, it does not seem to be desirable that firms with the highest risk get most of it. On the other hand, if we are dealing with renegotiated credit, it is natural that risky companies are those which suffer more pressure to renegotiate the terms of the contracts. Unfortunately the database does not yet allow us to tackle this question since it does not include an important part of credit flows that occur in each month, namely credit renewed under the same conditions.

Applications of z-scores

The examples in this box show the usefulness of this instrument to measure the probability of credit events at the micro level. In addition to simple applications such as those presented in this box, Banco de Portugal will develop new applications in the future as part of a macro-prudential supervision.

ARTICLES II

HOUSEHOLDS' INDEBTEDNESS: A MICROECONOMIC ANALYSIS BASED ON THE RESULTS OF THE HOUSEHOLDS' FINANCIAL AND CONSUMPTION SURVEY*

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ABSTRACT

The analysis of the Portuguese households' indebtedness based on microeconomic information is particularly useful at the present time, given the high level of debt of this sector and the increase in credit default. Using this type of data it is possible to identify structural relationships between the households' characteristics and their indebtedness and, in particular, to detect the situations of greater vulnerability, which should be taken into account in the analysis and monitoring of the adjustment process that is underway in the Portuguese economy. This paper uses data from a new survey, the Household Finance and Consumption Survey (HFCS), which took place during the second quarter of 2010. According to the results obtained, low income and young households who have taken mortgages are the most vulnerable groups of the population, for which the probability of materialisation of credit risk is higher. However, the fact that low income households have relatively low participation in the debt market mitigates the impact of their eventual entry into default on the financial situation of banks. As for young households, although their market share and the value of their loans are high, their debts are often guaranteed by real estate and the value of the debt service to income ratio for the majority of these households is lower than the usual threshold, used to identify situations of greater vulnerability.

1. Introduction

This paper presents an analysis of the distribution of households' participation in the debt market and their indebtedness level according to some relevant socio-economic and demographic characteristics of households. The analysis is based on microeconomic information obtained from a new survey, the Household Finance and Consumption Survey (HFCS), which took place during the second quarter of 2010.[1] The HFCS is part of a project at the Eurosystem level, to collect comparable information on the financial situation of households in several countries in the euro area. Collecting information on households' financial situation through the implementation of a survey has the advantage of allowing the combination of data on income, expenditure and assets of households with other relevant dimensions. In the analysis of household indebtedness, microeconomic information obtained from surveys is very useful to complement the analysis based on macroeconomic data. With this type of information it is possible in particular to analyse separately the situation of indebted households, to characterise in detail the distribution of debt and to detect the existence of any situations of greater vulnerability.

1 For a detailed presentation of the HFCS see Costa and Farinha (2012).

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

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The analysis of the Portuguese households' debt at the microeconomic level is particularly relevant at present times, given the high level of debt of this sector and the increase in credit default situations. The latest available survey data on households' wealth and debt for Portugal dated back to 2006, the year of implementation of the last edition of the Survey on Household Wealth and Indebtedness (IPEF)[2]. Since 2006 households' aggregate indebtedness maintained the increasing trend, reaching in 2009 a maximum level of about 130 per cent of disposable income, one of the highest levels within the euro area. With the worsening of the international financial and economic crisis and, in particular in the context of the sovereign debt crisis in the euro area, and the consequent difficulties of the Portuguese banks in financing in the wholesale financial markets, the criteria for granting loans to households have become tighter. Additionally, in a very unfavourable macroeconomic environment, with decreasing disposable income and rising unemployment, the demand for credit by households has also been contracting. These developments have contributed to the interruption of the increasing trend in household indebtedness, with the value of debt falling to about 126 per cent of disposable income in 2011. The data from the HFCS, dating from 2010, do not reflect the latest developments on households' finances.[3] However, these data allow us to identify structural relationships between households' characteristics and their debt and, in particular, to detect the existence of situations of greater vulnerability, which should be taken into account in analysing and monitoring the unavoidable adjustment process that is underway in the Portuguese economy.

This paper begins by describing households' participation in the debt market in terms of their socio-economic and demographic characteristics. The factors that determine this participation may differ according to the type of debt. Therefore, the analysis concerning the participation in the debt market is complemented with a characterization of the households that hold only mortgages or only another type of debt.

In the analysis of households' participation in the debt market it is important to separate demand and supply-side considerations. However, usually the available information does not allow making that distinction.[4] This paper takes advantage from the fact that the HFCS include questions that assess whether households have applied for credit in recent years and if any credit application has been refused during the same period. Therefore, it is possible to analyse separately the determinants of the probability of applying for credit and the determinants of the probability of facing restrictions on the access to credit.

In terms of financial stability it is particularly important to have information on the distribution of indebtedness among the indebted households. This analysis is crucial to identify the groups with a higher probability of materialization of credit risk. This paper includes an analysis of the relationship between households' indebtedness level and their characteristics. The level of indebtedness is measured with three alternative indicators commonly used in the literature: the ratio between the debt service and income, the ratio between debt and income and the ratio between debt and wealth.[5] In order to identify the situations that potentially generate more risk, it is more important to assess extreme situations than to analyse the typical values of the distributions. Thus, the analysis of the medians of the indebtedness ratios is complemented with a characterization of the households for which the debt ratios exceed certain values regarded as critical.

2 For an analysis of the results of IPEF 2006 see Farinha (2008). The methodological differences between the IPEF and the HFCS imply that the comparisons between the results obtained in 2006 and 2010 should be made with great caution.

3 The cost of collecting and processing information from this kind of surveys is very high so that it will always have a lower frequency than macroeconomic data.

4 For an exception in the literature see Magri (2007).

5 The debt service is given by the sum of interest payments and the repayment of principal, i.e., corresponds to the loan instalments.

The paper is organized as follows: section 2 presents the methodology and the variables used in the analysis; section 3 includes the results concerning households' participation in the debt market; section 4 analyzes the levels of debt and the indebtedness ratios defined above, and identifies the most vulnerable households; section 5 presents the main conclusions.

2. Methodology and variables

As mentioned above, the purpose of this paper is to characterize the households' participation in the debt market and their level of indebtedness in relation to some relevant economic, social, and demographic features. Section 3 of the paper presents the results of the regressions in which the dependent variables are the participation in the debt market, the decision to apply for a loan or the refusal of a loan application by a credit institution. The results presented in Section 4 refer to the regressions in which the dependent variables are the value of the indebtedness ratios or the probability that these ratios exceed certain threshold levels. When the dependent variable is a binary variable (which takes the values 0 and 1), the models were estimated according to the Logit methodology.[6] In the case of the debt ratios, where the dependent variables are continuous but always take positive values, the models were estimated by linear regression for the logarithmic transformation of the ratios.

The HFCS sample of households is a probability sample, meaning that there is a weight associated to each sampled household. These weights are equal to the inverse of the probability that the household has been selected to the sample. In the computation of totals, ratios, means, medians or other statistics of the survey variables, it is crucial to take into account these weights. In this paper all the results, including the results of the regression analysis, were obtained taking into account the final sample weights.

Another methodological aspect to be taken into account in the analysis follows from the fact that HFCS data have been subject to a process of multiple imputation. In the HFCS, missing values (resulting from the selection of the response options "do not know" or "no answer") in the variables that are the most relevant to evaluate the financial situation of households were estimated by multiple imputation. This method involves statistical techniques that take into account the relationship between the answers to several questions as well as the determinants of non-response. In order to take into account the uncertainty associated with the imputation process, the method originates five versions of the database that differ in the values assigned to the missing answers in the variables that were imputed. The five different versions of the database must be used together in the analysis. To make inference with HFCS data it is advisable to develop the analysis for each of the five databases and subsequently combine the results. For any parameter of interest (mean, median, coefficient of regression, etc.) the point estimate is given by the average of the estimates obtained from the five databases, that is:[7]

$$\bar{Q} = \frac{1}{5}\sum_{i=1}^{5}\hat{Q}_i \tag{1}$$

In turn, the total variance of the parameter is given by equation (2), which corresponds to a combination of the variance within, given by (3), which is the average of the variances obtained from each of the databases, and the variance between, given by (4), which reflects the variability due to the uncertainty concerning the imputation results.

$$T = \bar{W} + \frac{6}{5}B \tag{2}$$

6 For a full discussion of the methodology see for example Greene (2011).

7 See Rubin (2004).

$$\bar{W} = \frac{1}{5}\sum_{i=1}^{5}\hat{W}_i \tag{3}$$

$$B = \frac{1}{4}\sum_{i=1}^{5}(\hat{Q}_i - \bar{Q})^2 \tag{4}$$

The selection of the explanatory variables used in the regression analysis has taken into account that, according to the economic theory, households' decisions concerning debt are largely determined by the objective of smoothing consumption over the life-cycle. Furthermore, households also take investment decisions, in particular the decision on the acquisition of the household's main residence. There is a general consensus about the assumption that households' consumption and investment decisions, and hence their borrowing decisions, largely depend on life-cycle considerations, on their income and wealth, not only current but also prospective, which in turn are conditioned also by the education level and the work status of household members.

Therefore the characterization of indebtedness is based on variables at the household level such as the value of income, the value of real assets, the value of financial assets, the number of household members and the type of household, as well as on variables at the individual level such as the age, education level and work status of the reference person.[8] The income reference period is 2009, while for the remaining variables it is the time of the interview (2nd quarter of 2010).

Household's income is given by the sum of regular income received individually by its members (employee income, income from self-employment, income from pensions and other social benefits) and household income (income from businesses and financial assets, rents on real estate and regular social and private transfers). The value of real assets is given by the sum of the value of real estate, motor vehicles, self--employment businesses and other valuables.[9] Financial assets value is given by the sum of the value of deposits, investment funds, debt securities, shares, non self-employment businesses, voluntary pension plans and other financial assets.

Different classes of income, real assets and financial assets are identified by dummy variables that were defined according to various percentiles.[10] Dummy variables were also created for the number of household's members and the household type. The dummy on the household type intends to control for the presence of dependents, i.e, individuals younger than 25 years that do not to work and are not the household reference person or his spouse/partner, or his parent/grandparent.[11] Dummies variables were also created for the classification of households according to the age class, the education level and the work status of the reference person.[12]

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8 The reference person corresponds to the person appointed by the household as such, if this person is male, or the partner/husband of this person, if this person is female and has a partner/husband in the household.

9 This definition of real assets differs from the concept of the European System of National Accounts because it includes vehicles and participation in business.

10 Six income classes were defined corresponding to the households whose income is below the 20th percentile, is between percentiles 20 and 40, 40 and 60, 60 and 80, 80 and 90 and for those that are above the 90th percentile. In the case of wealth the classes correspond to the households whose wealth is below the 25th percentile, is between percentiles 25 and 50, 50 and 75, 75 and 90 and for those that are above the 90th percentile.

11 The dummy variables relating to the number of household members take the value 1 if the household has respectively one, two, three, four or more than four members. The dummies for the household type take the value 1, respectively if the household comprises only one adult, if it comprises various members, all being adults, and if it comprises various members, both adults and dependents. For the sake of simplicity, in the remaining of the paper dependents are labelled as children.

12 The age classes correspond, respectively, to the individuals with less than 35 years old, between 35 and 44, between 45 and 54, 55 and 64, 65 and 74 years and 75 years or more. The education levels considered correspond, respectively, to basic education, secondary education and tertiary education. These levels correspond to the levels effectively completed. The work status distinguishes employees with a permanent position, employees with temporary contracts, self-employed workers, unemployed, retirees and other situations of inactivity (such as the students and the persons dedicated to unpaid home tasks).

3. Participation in the debt market

The objective of this section is to analyse the effect of a set of socio-economic and demographic characteristics of households on their participation in the debt market. The first part of the section includes a descriptive analysis of the percentage of indebted households in each class of households according to the dimensions defined above. These dimensions are in most cases correlated with each other, what makes the interpretation of the results based on a univariate analysis particularly difficult. In order to overcome this limitation, the second part of the section presents the results of multivariate regressions for the probability of participation in the debt market.

Households' decisions concerning their participation in the debt market are expected to be determined by different factors depending on the type of debt. In particular, it is expected that mortgages, which are in most cases associated with investment decisions in real assets with a significant weight in household wealth, are more directly correlated to life-cycle expected income than the other types of debt. In order to assess the hypothesis that mortgages and other debt are determined by different factors, the situations in which households participate only in the mortgage market, only in the market for non-mortgage debt or in both types of credit markets are analysed separately. These situations are identified from the responses to different questions of the HFCS. Mortgage debt relates to loans that have a real estate property as collateral (the household main residence or other properties). Non-mortgage debt relates to non-collateralised loans, as well as to the use of overdraft facilities, credit lines or credit card debt on which interest is charged.

3.1 Univariate analysis

Table 1 presents some indicators concerning households' participation in the debt market in 2010. According to the HFCS, around 38 per cent of households hold some type of debt. Most of the indebted households have mortgages. Nevertheless, around 11 per cent have only other types of debt. In total, about 7 per cent of households have both mortgage and another type of debt.

The percentage of households having debt increases with household income, being about 12 per cent in the lowest income class and greater than 60 per cent in the highest class. This is likely to be explained by the fact that current income is positively correlated with expected income. In the case of wealth there is also a positive relationship with the participation in the debt market. As expected, this relation mainly reflects the fact that households holding real assets with higher value have a higher participation in mortgage markets.

In the case of financial wealth, the relationship between the value of assets and the percentage of indebted households is less clear. However, in the lowest classes of financial wealth there is a higher percentage of households having only non-mortgage debt than in the other wealth classes.

Households' participation in the debt market increases with the level of education of the reference person, this pattern being shaped by mortgage debt. For households who hold only other debts, the participation rates do not differ considerably across the various education classes, possibly reflecting the fact that decisions concerning non-mortgage debt are less dependent on the accumulated value of expected future income.

The percentage of indebted households tends to decrease with the age of the reference person from a certain age. This profile is related to the fact that younger households have a greater need/opportunity to apply for credit as their current income is lower than their expected future income and they have a longer life expectancy. However, debt market participation of the youngest households is lower than the participation of those in the second age class. As a matter of fact, the great uncertainty concerning future income in the case of the very young households may lead to a lower demand and/or supply of mortgages, which at this age is generally associated with the acquisition of the first residence. Finally,

Table 1

PERCENTAGE OF HOUSEHOLDS HOLDING DEBT IN 2010

	As a percentage of the number of households in each class					
	% of households	Any debt	Only mortgages	Only other debt	Both types of debt	No debt
Total	**100.0**	**37.7**	**19.4**	**11.0**	**7.3**	**62.3**
Income percentile						
Less than 20	20.0	12.4	5.6	4.9	2.0	87.6
Between 20 and 40	20.0	24.5	11.4	10.3	2.9	75.5
Between 40 and 60	20.0	44.6	24.0	11.9	8.6	55.4
Between 60 and 80	20.0	49.3	23.1	16.3	9.8	50.7
Between 80 and 90	10.0	52.9	29.0	10.9	13.0	47.1
More than 90	10.0	62.2	36.3	12.2	13.7	37.8
Real wealth percentile						
Less than 25	25.0	19.4	0.1	19.2	0.0	80.6
Between 25 and 50	25.0	26.0	13.6	8.0	4.4	74.0
Between 50 and 75	25.0	51.2	29.4	7.8	14.0	48.8
Between 75 and 90	15.0	55.8	32.9	10.4	12.5	44.2
More than 90	10.0	51.5	36.4	6.7	8.5	48.5
Financial wealth percentile						
Less than 25	25.0	31.6	12.9	12.7	6.0	68.4
Between 25 and 50	25.0	39.9	18.4	13.1	8.4	60.1
Between 50 and 75	25.0	41.0	22.0	9.4	9.6	59.0
Between 75 and 90	15.0	36.4	23.6	7.1	5.7	63.6
More than 90	10.0	40.9	24.6	11.5	4.8	59.1
Household size						
One	17.7	15.2	8.4	4.4	2.4	84.8
Two	30.6	26.5	14.0	8.7	3.8	73.5
Three	25.9	47.7	24.6	14.0	9.2	52.3
Four	18.5	57.5	30.5	12.0	15.0	42.5
Five or more	7.3	53.5	21.7	23.3	8.5	46.5
Household type						
One adult	17.7	15.2	8.4	4.4	2.4	84.8
Several adults	41.9	27.9	14.1	10.1	3.7	72.1
Adult(s) and children(s)	40.4	57.8	29.6	14.8	13.3	42.2
Age						
Under 35	9.8	55.8	26.1	18.6	11.1	44.2
35-44	20.5	66.2	35.9	15.2	15.1	33.8
45-54	18.8	48.6	26.2	11.5	10.8	51.4
55-64	19.8	33.5	17.0	12.1	4.3	66.5
65-74	16.5	13.6	5.3	6.7	1.5	86.4
75 and over	14.7	4.6	1.9	2.6	0.2	95.4
Work status						
Employee	42.0	57.9	31.3	14.4	12.3	42.1
Permanent position	36.7	58.6	32.2	13.6	12.8	41.4
Temporary contract	5.2	53.4	24.3	20.1	9.0	46.6
Self-employed	10.7	46.8	25.5	11.5	9.9	53.2
Unemployed	7.2	40.5	17.0	17.0	6.4	59.5
Retired	36.6	13.2	5.6	5.9	1.7	86.8
Other not working	3.5	16.5	6.6	9.3	0.6	83.5
Education						
Below secondary	78.4	32.5	16.5	10.5	5.4	67.5
Secondary	12.9	55.9	27.6	13.0	15.4	44.1
Tertiary	8.7	57.7	32.9	12.1	12.6	42.3

Source: Household Finance and Consumption Survey.

note that the participation in the mortgage market is larger than in the market for other debts in all age classes, except in the two highest (from 65 years old).

Regarding the work status of the reference person, the lowest percentages of indebted households correspond to the situations where the reference person is not part of the active population. Households whose reference person is an employee have the highest participation in the debt market (58 per cent, compared with 47 per cent in the case of the self-employed). About 40 per cent of the households in which the reference person is unemployed have some type of debt. However, in this case, as well as in households where the reference person is retired, the percentage of households with non-mortgage debt and the percentage of households with mortgages are similar. This is in contrast with the cases where the reference person is an employee with a permanent position or is self-employed, for which the proportion of households with mortgages is clearly higher than the proportion of households with other debts.

The participation in the debt market is also likely to be related with the household composition, particularly because it determines household consumption needs. The results of the HFCS indicate that the households with the highest participation in the debt market are those with children and/or with a larger number of members. Households with the lowest participation are those comprising only a single person.

In summary, the lowest percentages of indebted households are found in the lowest income and wealth classes, in households that do not have children and in those in which the reference person is older, is not part of the active population and has a level of education below secondary. The participation in the debt market is the highest in households whose reference person is an employee with a permanent position and is aged between 35 and 44 years. Given the importance of mortgage debt in total household debt, these regularities apply generally to the participation of households in the mortgage market. In the case of non-mortgage debt, the highest percentages of indebted households correspond to those with low wealth, with a larger number of members, those whose reference person is aged under 35 years, is unemployed or is an employee with a temporary contract. The probability of having only non-mortgage debt does not seem to be much correlated neither with the level of education, nor with income, though it seems to be slightly higher in the intermediate classes.

3.2 Regression analysis

The first part of this section includes the estimation results of regressions in which the dependent variable is the probability of households having debt. As compared to univariate analysis, these results are more adequate to identify the socio-economic and demographic characteristics differentiating indebted and non-indebted households. In order to conclude if the relations found are determined by demand and/or supply factors, the second part of this section includes some additional regressions for the credit demand by households and the supply of credit by financial institutions. These results are based on the HFCS questions regarding the existence of loan applications by each household and refusals of these requests by financial institutions.

3.2.1 Regressions for the probability of having debt

Table 2 presents the results for Logit estimates on the probability of having debt. The first column includes the results for the probability of the households having any kind of debt, the second column for the probability of having only mortgage debt and the third column for the probability of having only non-mortgage debt. In order to enhance the comparability of the results, the probability of having the different types of debt is evaluated against the alternative of not having debt. Thus the dependent variables are binary variables taking the value 1 if the household has debt and the value 0 if households do not have any debt. The variables considered include the economic and socio-demographic characteristics analyzed in the previous section.

Table 2 (to be continued)

REGRESSION RESULTS FOR THE PROBABILITY OF HAVING DEBT[a]			
	Any debt	Only mortgages	Only other debt
Income percentile			
Between 20 and 40	0.545***	0.445	0.573**
	(2.61)	(1.47)	(2.08)
Between 40 and 60	1.01***	1.087***	0.834***
	(4.9)	(3.52)	(3.02)
Between 60 and 80	1.222***	1.038***	1.325***
	(5.67)	(3.23)	(4.8)
Between 80 and 90	1.267***	1.25***	1.027***
	(5.28)	(3.91)	(2.71)
More than 90	1.785***	1.785***	1.631***
	(6.84)	(5.05)	(4.43)
Real wealth percentile			
Between 25 and 50	0.807***	6.284***	-0.504**
	(4.55)	(6.08)	(-2.32)
Between 50 and 75	1.76***	7.449***	-0.169
	(10.94)	(7.24)	(-0.83)
Between 75 and 90	1.84***	7.676***	0.066
	(9.29)	(7.19)	(0.27)
More than 90	1.787***	7.848***	-0.509
	(8.26)	(7.45)	(-1.45)
Financial wealth percentile			
Between 25 and 50	-0.375**	-0.529**	-0.245
	(-2.35)	(-2.13)	(-1.2)
Between 50 and 75	-0.376**	-0.468**	-0.362*
	(-2.32)	(-1.96)	(-1.72)
Between 75 and 90	-0.938***	-0.981***	-0.834***
	(-4.64)	(-3.26)	(-2.92)
More than 90	-0.981***	-1.173***	-0.494
	(-4.42)	(-3.79)	(-1.48)
Household size			
Two	0.246	0.047	0.574**
	(1.51)	(0.2)	(2.1)
Three	0.215	-0.277	0.894***
	(1.05)	(-0.99)	(2.74)
Four	0.113	-0.386	0.732**
	(0.47)	(-1.18)	(1.97)
Five or more	0.208	-0.462	1.332***
	(0.7)	(-1.16)	(3.04)
Household type			
Adult(s) and children(s)	0.343**	0.483**	-0.032
	(2.09)	(2.15)	(-0.14)
Age			
35-44	0.115	0.199	-0.019
	(0.57)	(0.71)	(-0.07)
45-54	-0.685***	-0.755***	-0.718**
	(-3.49)	(-2.79)	(-2.43)
55-64	-1.11***	-1.37***	-0.623**
	(-5.28)	(-4.87)	(-2.11)
65-74	-1.845***	-2.236***	-1.126***
	(-6.27)	(-6.12)	(-2.72)
75 and over	-2.809***	-3.183***	-1.958***
	(-8.9)	(-7.05)	(-4.66)

Table 2 (continued)

REGRESSION RESULTS FOR THE PROBABILITY OF HAVING DEB[a]			
	Any debt	Only mortgages	Only other debt
Work status			
Employee with temporary contract	0.072	0.141	0.158
	(0.36)	(0.47)	(0.59)
Self-employed	-0.418**	-0.664***	-0.323
	(-2.43)	(-3.16)	(-1.2)
Unemployed	-0.02	-0.148	0.013
	(-0.1)	(-0.51)	(0.05)
Retired	-0.36*	-0.628***	-0.264
	(-1.82)	(-2.65)	(-0.96)
Other not working	-0.823**	-1.18**	-0.351
	(-2.34)	(-2.1)	(-0.99)
Education			
Secondary	0.053	0.012	0.033
	(0.35)	(0.06)	(0.15)
Tertiary	0.187	-0.003	0.21
	(1.08)	(-0.01)	(0.77)
Constant	-1.483***	-7.052***	-1.99***
	(-5.47)	(-6.48)	(-4.87)
Number of observations	4394	3593	3278

Source: Household Finance and Consumption Survey.

Notes: (a) The results must be interpreted against the omitted categories in the regression which correspond to households with income below the 20th percentile, with real wealth below the 25th percentile, with financial wealth below the 25th percentile, with only one member, no children, whose reference person has less than 35 years, is an employee with a permanent position and has an educational level corresponding to basic education. The coefficients presented are the regression coefficients whose magnitude cannot be interpreted as the marginal effect of explanatory variable on the variable to be explained. In the logit models marginal effects have the same sign and significance of the estimated coefficients, but vary with the value of the regressors. The symbols *, ** and *** indicate that the coefficients are statistically significant at 10, 5 and 1 percent confidence level, respectively.

The results confirm that the probability of having debt is higher for households with the highest income levels. However, the probability of having mortgages is not significantly different in the two first classes of income. This may reflect the fact that in very low income levels, an increase in income is not enough for the households to have the financial capacity to get a mortgage.

The coefficient associated with the education level is not significant when the regression includes income, although it becomes positive and significant when income is omitted. This seems to confirm a high correlation between current and future income, which may contribute to explain the positive effect of income on the probability of having debt.

As expected, households in the highest real wealth classes are more likely to have a mortgage. Since most mortgage loans are intended for the purchase of property used as the collateral, the fact that the coefficients on real wealth are increasing with the classes of wealth suggests that the probability of getting a mortgage should increase with the value of property purchased. Additionally, under supply side considerations, a higher level of real wealth is expected to ease access to credit, given that real wealth may be used as collateral. By contrast, the value of financial assets is negatively correlated with the probability of having mortgage loans, probably reflecting the fact that households with a higher amount of liquid assets have less need to resort to credit. This effect seems to be also present in the likelihood of having other debts, for which real wealth does not seem to play an important role.

Regarding the family type, the results suggest that households with children are more likely to have debt and, in particular, to have mortgage debt. Controlling for the existence of children in the household, the number of family members do not seems be related to the probability of households having mortgages. Rather the probability of having other debts appears to be greater for households with more members.

Households whose reference person is older are less likely to have debt, although there are no significant differences between the first two age classes. The higher probability of having mortgages in the youngest age groups conforms to the fact that it is in these classes that households generally acquire the first residence. The probability of having only another type of debt is also lower for households in the oldest age classes than in the two youngest classes but in this case the effect of age appears to be less pronounced. The fact that mortgages have higher maturities as compared to other loans is likely to contribute to the greater importance of age for the probability of having mortgage loans.

With regard to work status, the results indicate that households whose reference person is self-employed or inactive have a lower probability of having debt and, in particular, of having mortgages. In the case of the self-employed, this may reflect the fact that these workers have in general more volatile earnings than employees with permanent contracts (the omitted category). The work status appears not to have a significant effect on the probability of households having other debts.

In general, the regression results suggest that the probability of having debt increases with the income level but declines with the level of financial wealth. Additionally, households with children have a higher probability of having mortgages and those with a greater number of members have a higher probability of having other debts. Age has a negative effect on the participation in the debt market, which seems more pronounced in the case of mortgages, probably reflecting the fact that these loans typically have longer maturities. Regarding the work status, there is some evidence that households whose reference person is self-employed or inactive have a lower probability of having mortgages, but not of having other debts.

3.2.2 Regressions for the "demand" and "supply" of credit

This section seeks to assess whether the characteristics identified as relevant to the participation of households in the debt market are mainly due to credit "supply" or credit "demand" factors.

With the HFCS variables it is possible to identify the households that in the three years preceding the survey have applied for credit and those whose applications have been turned down, only partially satisfied or satisfied in the amount desired. Thus, in order to analyze the effects from the demand and the supply side on debt market participation, two variables were built, one relating to applications for loans and another related to credit refusals. The variable on loan applications takes the value 1 for households that have applied for a loan and 0 in other cases. The refusals variable takes the value 1 for households with loan requests turned down or only partially satisfied and 0 for households in which the loan requests were satisfied in the amount desired.

Table 3 presents a characterization of households who requested credit and of those to whom these requests were refused or only partially satisfied. In total about 20 per cent of households requested loans in the three years prior to the completion of HFCS. In relative terms, compared to its weight in the population, the highest incidence of loan applications occurs in households with higher income, a greater number of members or in which the reference person is younger or is an employee. In the case of wealth, the highest percentage of loan applications occurs between the 75th and the 90th percentiles of real wealth and between the 25th and the 50th percentiles of financial wealth. Among the households who have requested credit, about 20 per cent had their applications refused or only partially satisfied. The higher incidence of these situations occurred in households with lower income, lower wealth or in cases where the reference person is unemployed, has a temporary employment contract or belongs to the two youngest or oldest age classes.

In order to identify more precisely which features are relevant to the demand for credit by households and to the provision of credit by financial institutions, the regressions results for these variables are presented in Table 4. Two alternative strategies of estimation were applied. In a first approach, models for credit applications and refusals were estimated using the entire sample. In this case the regressions include an additional explanatory variable to control for the effect of households that were already indebted at the

Table 3

CREDIT APPLICATIONS/REFUSALS IN THE THREE YEARS PRECEDING THE HFCS

	Applications[a]		Refusals[b]	
	Yes	No	Yes	No
Total	**20.1**	**79.9**	**19.6**	**80.4**
Income percentile				
Less than 20	7.2	92.8	29.2	70.8
Between 20 and 40	14.8	85.2	30.8	69.2
Between 40 and 60	24.4	75.6	28.6	71.4
Between 60 and 80	25.5	74.5	21.0	79.0
Between 80 and 90	27.2	72.8	6.5	93.5
More than 90	30.0	70.0	2.6	97.4
Real wealth percentile				
Less than 25	17.5	82.5	36.4	63.6
Between 25 and 50	13.2	86.8	20.3	79.7
Between 50 and 75	22.7	77.3	17.2	82.8
Between 75 and 90	27.6	72.4	14.2	85.8
More than 90	26.4	73.6	5.8	94.2
Financial wealth percentile				
Less than 25	16.9	83.1	27.4	72.6
Between 25 and 50	24.5	75.5	23.2	76.8
Between 50 and 75	21.0	79.0	15.0	85.0
Between 75 and 90	17.2	82.8	15.7	84.3
More than 90	19.1	80.9	12.0	88.0
Household size				
One	8.1	91.9	20.1	79.9
Two	14.1	85.9	14.5	85.5
Three	23.4	76.6	22.4	77.6
Four	30.6	69.4	20.6	79.4
Five or more	36.3	63.7	19.7	80.3
Household type				
One adult	8.1	91.9	20.1	79.9
Several adults	15.8	84.2	14.9	85.1
Adult(s) and children(s)	29.9	70.1	22.4	77.6
Age				
Under 35	41.6	58.4	25.7	74.3
35-44	31.1	68.9	20.4	79.6
45-54	22.7	77.3	16.6	83.4
55-64	18.8	81.2	15.5	84.5
65-74	7.9	92.1	20.2	79.8
75 and over	2.7	97.3	21.1	78.9
Work status				
Employee	29.8	70.2	17.1	82.9
Permanent position	29.2	70.8	14.5	85.5
Temporary contract	33.9	66.1	34.8	65.2
Self-employed	26.9	73.1	17.4	82.6
Unemployed	25.1	74.9	42.1	57.9
Retired	7.1	92.9	20.0	80.0
Other not working	8.6	91.4	0.0	100.0
Education				
Below secondary	17.5	82.5	21.8	78.2
Secondary	29.0	71.0	19.5	80.5
Tertiary	30.8	69.2	9.4	90.6

Source: Household Finance and Consumption Survey.

Notes: (a) Number of households who have applied or have not applied for credit as a percentage of the total number of households in each class. **(b)** Number of households whose loan applications were turned down or satisfied, as a percentage of the number of households that applied for credit in each class.

Table 4 (to be continued)

REGRESSION RESULTS FOR CREDIT "DEMAND" AND CREDIT "SUPPLY"[a]				
	Not excluding households with mortgages prior to 2007		Excluding households with mortgages prior to 2007	
	Credit applications	Credit refusals	Credit applications	Credit refusals
Income percentile				
Between 20 and 40	0.398*	0.243	0.5**	0.411
	(1.82)	(0.54)	(2.16)	(0.8)
Between 40 and 60	0.717***	0.151	0.715***	0.582
	(3.31)	(0.33)	(2.91)	(1.11)
Between 60 and 80	0.738***	-0.211	0.82***	-0.178
	(3.32)	(-0.44)	(3.24)	(-0.32)
Between 80 and 90	0.757***	-1.667***	0.766***	-1.463**
	(3.11)	(-2.65)	(2.59)	(-2.01)
Maior que 90	0.92***	-2.92***	1.151***	-3.216***
	(3.18)	(-2.68)	(3.49)	(-2.63)
Real wealth percentile				
Between 25 and 50	-0.031	-0.98***	-0.011	-0.94**
	(-0.17)	(-2.7)	(-0.06)	(-2.36)
Between 50 and 75	0.446***	-1.166***	0.568***	-1.398***
	(2.59)	(-3.46)	(3.04)	(-3.46)
Between 75 and 90	0.616***	-1.012**	0.727***	-1.117**
	(3.11)	(-2.16)	(3.25)	(-2.08)
More than 90	0.711***	-1.976***	0.716**	-1.323
	(2.85)	(-2.59)	(2.51)	(-1.53)
Financial wealth percentile				
Between 25 and 50	0.062	0.145	-0.004	-0.196
	(0.38)	(0.37)	(-0.02)	(-0.46)
Between 50 and 75	-0.099	0.058	-0.135	0.428
	(-0.59)	(0.14)	(-0.66)	(0.9)
Between 75 and 90	-0.47**	0.338	-0.485*	0.586
	(-2.15)	(0.64)	(-1.79)	(0.91)
More than 90	-0.608**	1.022*	-0.791**	1.249
	(-2.46)	(1.66)	(-2.52)	(1.55)
Household size				
Two	0.352*	-0.076	0.349*	-0.081
	(1.94)	(-0.17)	(1.72)	(-0.17)
Three	0.579**	0.777	0.597**	0.612
	(2.51)	(1.45)	(2.26)	(1.02)
Four	0.802***	1.13**	0.777**	0.933
	(3.09)	(1.98)	(2.56)	(1.44)
Five or more	1.114***	1.312*	1.289***	1.473*
	(3.6)	(1.88)	(3.61)	(1.9)
Household type				
Adult(s) and children(s)	-0.097	-0.184	-0.058	-0.084
	(-0.54)	(-0.47)	(-0.28)	(-0.18)
Age				
35-44	-0.612***	-0.337	-0.65***	0.162
	(-3.16)	(-0.84)	(-2.84)	(0.36)
45-54	-1.002***	-0.647*	-1.223***	-0.522
	(-5.24)	(-1.7)	(-5.47)	(-1.16)
55-64	-1.025***	-0.209	-1.229***	0.058
	(-4.9)	(-0.47)	(-5.16)	(0.12)
65-74	-1.605***	-0.117	-1.701***	0.145
	(-4.99)	(-0.18)	(-4.62)	(0.2)
75 and over	-2.514***	0.242	-2.539***	0.542
	(-7.21)	(0.27)	(-6.52)	(0.58)

Table 4 (continued)

REGRESSION RESULTS FOR CREDIT "DEMAND" AND CREDIT "SUPPLY"[a]				
	Not excluding households with mortgages prior to 2007		Excluding households with mortgages prior to 2007	
	Credit applications	Credit refusals	Credit applications	Credit refusals
Work status				
Employee with temporary contract	0.116	0.745*	0.044	1.199***
	(0.55)	(1.85)	(0.19)	(2.82)
Self-employed	-0.115	0.3	-0.411*	0.038
	(-0.64)	(0.71)	(-1.84)	(0.07)
Unemployed	0.014	1.046***	-0.033	1.482***
	(0.07)	(2.63)	(-0.14)	(3.29)
Retired	-0.43*	0.258	-0.639**	0.365
	(-1.89)	(0.5)	(-2.37)	(0.65)
Other not working	-0.867*	(b)	-0.985**	(b)
	(-1.92)		(-2.03)	
Education				
Secondary	0.1	0.072	-0.087	0.354
	(0.64)	(0.21)	(-0.46)	(0.89)
Tertiary	0.334*	0.159	0.347	0.404
	(1.83)	(0.3)	(1.57)	(0.66)
Holding debt before 2007	-0.482***	0.528	-	-
	(-3.49)	(1.57)	-	-
Constant	-1.466***	-1.164**	-1.35***	-1.721***
	(-5.49)	(-2.1)	(-4.61)	(-2.73)
Number of observations	4325	719	3463	508

Source: Household Finance and Consumption Survey.

Notes: (a) The results must be interpreted against the omitted categories in the regression which correspond to households with income below the 20th percentile, with real wealth below the 25th percentile, with financial wealth below the 25th percentile, with only one member, no children, who have no mortgage loans contracted before 2007, whose reference person has less than 35 years, is an employee with a permanent position and has an educational level corresponding to basic education. The coefficients presented are the regression coefficients whose magnitude cannot be interpreted as the marginal effect of explanatory variable on the variable to be explained. In the logit models marginal effects have the same sign and significance of the estimated coefficients, but vary with the value of the regressors. The symbols *, ** and *** indicate that the coefficients are statistically significant at 10, 5 and 1 per cent confidence level, respectively. **(b)** The dependent variable never takes the value 1 for the households of this class, so that, for the purpose of estimating the model these households are combined with those of the previous class.

time of the loan application. The variable considered is a dummy that takes the value 1 for households having mortgage debt contracted before 2007 and 0 in the opposite case[13]. In a second approach, regressions were conducted for a subsample that includes only households who had no mortgage debt in 2006. This approach is more consistent with the analysis in the previous section that identified the characteristics that distinguish households who are indebted from those who do not have any debt. The findings obtained with the two approaches are similar.

The positive relation between the probability of having debt and household income appears to result, as expected, both from the supply and the demand for credit. On one hand, households in the two highest income classes are less likely to have their loan applications refused than households with lower income and on the other hand, households in the lowest income percentile are less likely to apply for credit.

As expected, households with the highest levels of real wealth have a higher probability of having applied for credit and that these requests have been satisfied. In the case of financial wealth, the fact that households with the highest allocations are less likely to have debt seems to reflect primarily an effect on the demand side, confirming the argument that households with higher amounts of liquid assets are less likely to resort to credit.

13 The HFCS does not include information that allows identifying accurately households who had no debt in 2006. However, in the case of mortgages it is possible to identify households with loans granted before 2007 if they were alive at the time of interview. For non-mortgage debt there is no information on the year the loans were taken.

Larger households are more likely to apply for credit but have also a higher probability that their applications are turned down. These opposing effects might explain why in the regression on the probability of having debt, the number of household members do not have a significant effect.

In the case of age, the negative relation found for the probability of having debt seems to be determined by the demand for credit. In fact, households with younger members have greater need to borrow, particularly to finance their investment decisions. In the regressions where the variable to be explained is the existence of restrictions on the access to credit, age classes are generally not significant. This suggests that, when controlling for other characteristics, age does not matter for the decision of financial institutions to grant credit.

With regard to work status, the results suggest that the lower probability of having debt found for households whose reference person is self-employed or inactive is determined by a lower demand for credit. Indeed, these situations seem not to significantly affect the decision of the lender. Among the households who requested loans, applications are more likely to be refused when the reference person is an employee with a temporary contract or is unemployed.

In summary, the larger participation in credit market of households with higher income and higher real wealth is likely to reflect both demand and supply side factors. By contrast, the lower participation of households with a high level of financial wealth, of those whose reference person is older, self-employed or inactive seems to reflect mainly the decision of these households not to participate in the debt market. Those households whose reference person is unemployed or is employed with a temporary contract are more likely to have their loan applications turned down by financial institutions.

4. Households indebtedness

In the previous section we analyzed the decision of households to participate in the debt market. When households decide to borrow they have also to take a decision regarding the extent of indebtedness. In this section we analyze this decision and its consequences in terms of vulnerability of the financial situation of households. The first part of the section presents a brief description of the median levels of household debt. The decisions on the amount of debt are expected to take into account the ability to pay debts. Thus, the second part of the section examines the degree of household indebtedness and vulnerability based on three measures of the debt burden: the debt service to income ratio, the debt to income ratio and the debt to wealth ratio.

4.1 Indebtedness levels

The set of charts 1 shows the median debt by households' characteristics and type of debt together with the percentage of households holding debt.[14,15]

Higher values of debt are found in households with higher real wealth, higher income and with a younger reference person. This behaviour stems from mortgages, given the higher amounts of this type of credit.[16]

There are some differences in the distribution of mortgage debt and non-mortgage debt according to the characteristics of the households. The median value of mortgage debt clearly decreases with the age of the reference person, which is due to the fact that these debts are contracted at relatively low age,

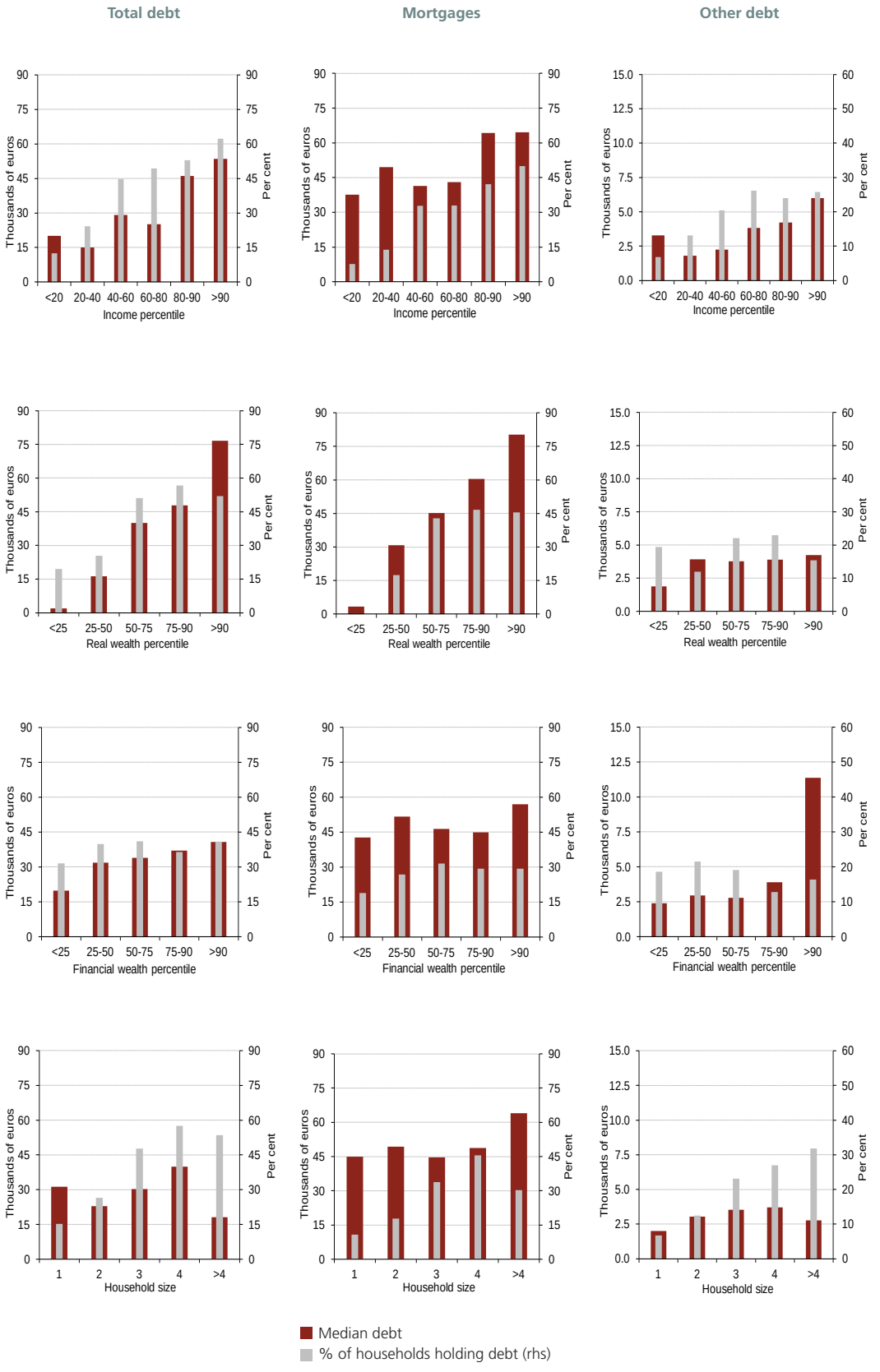
14 The percentage of households with mortgages (other debt) includes all families that have this type of debt, not only those who have only mortgages (other debt), as was the case in Table 1.

15 Median values are a better indicator than means for the typical borrower since they are less dependent on the extreme values of the distribution.

16 The households in the highest age class or in the lowest real wealth percentile are the only ones for which the median value of mortgage debt is not much higher than the median value of non-mortgage debt.

Chart 1 (to be continued)

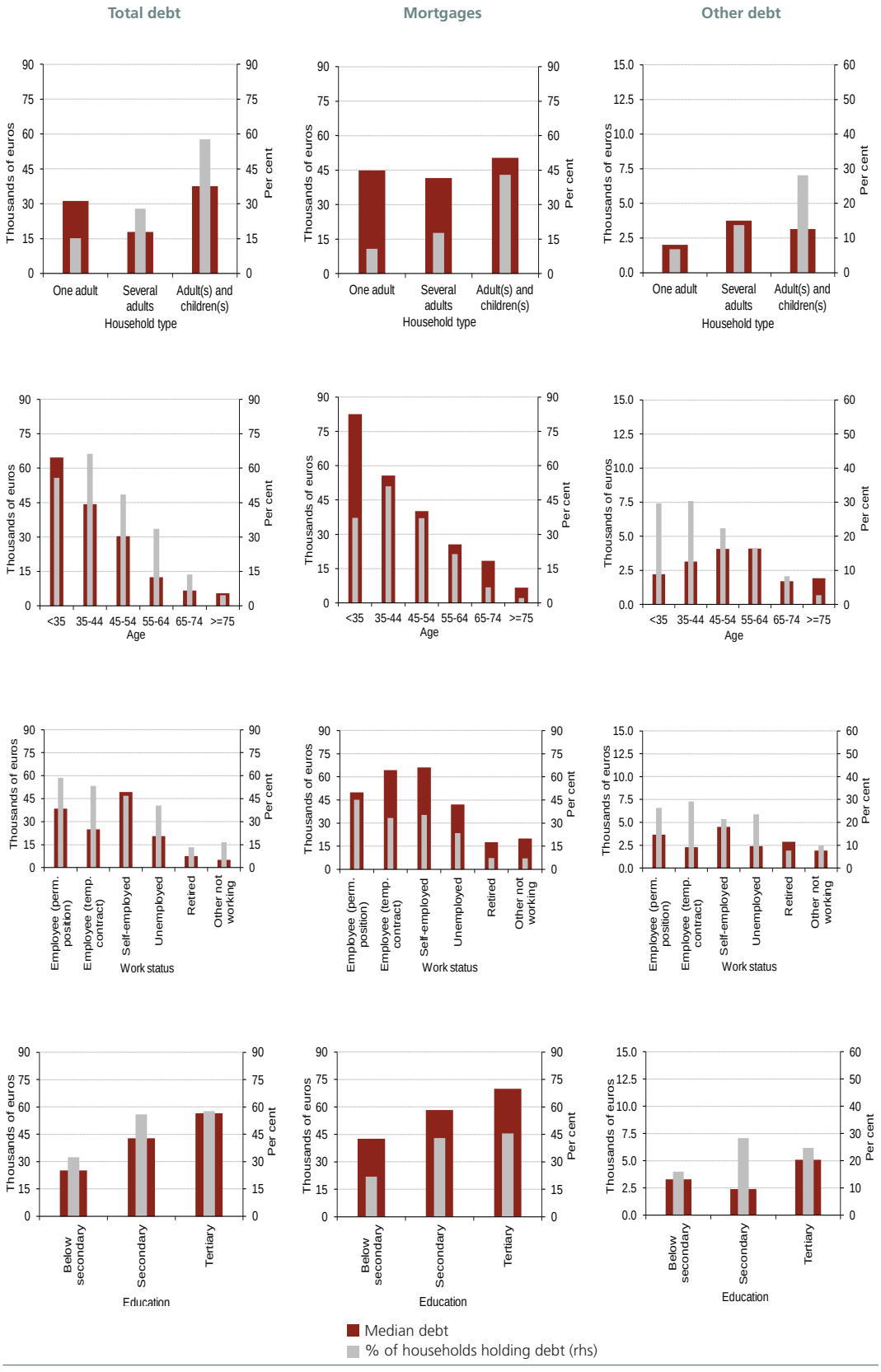
MEDIAN DEBT VALUES AND DEBT MARKET PARTICIPATION



Source: Household Finance and Consumption Survey.

Chart 1 (continued)

MEDIAN DEBT VALUES AND DEBT MARKET PARTICIPATION



Souce: Household Finance and Consumption Survey.

being repaid over the life. In the case of non-mortgage debt the median value increases until the age of 45-55 years old, being similar in the next age group and clearly lower in the two older age classes. The value of mortgage debt is, as expected, strongly correlated with the amount of real wealth of households. In turn, the distribution of non-mortgage debt by classes of real wealth is relatively uniform. The distribution of mortgage debt by class of financial wealth do not presents a clear pattern. In the case of non-mortgage debt, households in the highest financial wealth percentile have a median value of debt much higher than the remaining households. In both types of debt the median values show an increasing trend with income percentiles.

Overall, the median amounts of debt are higher in classes where there is a higher percentage of indebted households. This suggests that the reasons associated with the decision to participate in the debt market and decisions about the amount of debt are not very different. There are however some cases where a different pattern emerges. In the mortgage debt, households in the two lowest income classes have a limited participation in the debt market but median levels of debt that are close to the ones of the intermediate classes of income. When total debt is considered, households with the lowest income have, however, median debt levels lower than higher income households. As regards the number of family members, the smallest households have a low participation in the debt market but median debt levels, in particular in mortgages, relatively close to the ones of the larger households. In the case of age, households whose reference persons are under 35 years old have a median value of mortgage debt much higher than that of households in the following age class, but have a more reduced participation in the mortgage market. This behaviour is attenuated when considering the total debt. In fact, households whose reference persons are younger have a high participation in non-mortgage credit market but relatively limited amounts of debt. Finally, it should be noted that households in the highest level of financial wealth have a high median amount of other debts but a similar participation in this market as compared to other households.

4.2 Indebtedness ratios

It is expected that decisions on the debt amount are taken according to the households' ability to repay their debts. A common measure of debt burden corresponds to the ratio between the amount of debt and households income. Considering, as usual, the annual income, this measure gives the number of years it would take to pay off the debt if the household used all of its income for this purpose. A second indicator of indebtedness, frequently used in the analysis, is the ratio of debt on the gross wealth. This indicator, by analogy with the debt to capital ratio used for corporations, measures the solvency of households within a relatively long period. Indeed, the ratio debt to wealth takes into account the fact that households can dispose of their accumulated assets to pay their debts. In the short term, households may dispose only from the most liquid assets and in the medium/long term they may also dispose from their less liquid assets. A more intuitive measure of the ability of households to repay their debts is given by the ratio between the value of debt service due in a given period and households income in the same period. This indicator measures the ability of households to repay their debts, mainly in the short term. If the debt service represents a very high proportion of the household income it is more likely that households default on their commitments (with the payment of debts or with other accounts) or be forced to retract their level of consumption. The debt service ratio has the advantage of not only take into account variables related to the amount owed and household income, but also reflecting the level of interest rates.

In assessing the degree of indebtedness it is important to give special attention to the most vulnerable, i.e., to households that have more difficulty in meeting their debt responsibilities both in the short-term as well as in the medium/long term. For analysis purposes, it is common to consider that households are more vulnerable when debt ratios exceed certain threshold levels. In this paper, the threshold levels used were 40 per cent for the ratio of debt service to income, three times for the ratio of debt to income and

75 per cent for the ratio between debt and wealth.[17] The first part of this section includes an univariate analysis of the median values of the three debt ratios and of the percentage of households that exceed the critical values of these ratios, distributed according to various characteristics of households. The second part of the section includes the results of some regressions intended to identify the most relevant households characteristics associated with different degrees of indebtedness and with the different probabilities of households being in vulnerable situation.

4.2.1 Univariate analysis

The set of charts 2 includes, for the various characteristics of households, the median values of the three debt ratios. The median values correspond to typical values of the distribution, which are not the most suitable indicators to assess the importance of risky situations. Thus these charts include also the percentage of households in which the ratios exceed the critical levels. In this analysis only households with debt were considered.

For all of indebted households, the median value of the debt service to income ratio is 16 per cent, of the debt to income ratio is 1.3 and of the debt to wealth ratio is 26 per cent. These median values are below the threshold levels. It is also important to quantify the incidence of situations in which those limits are exceeded. About 13 per cent of the indebted households have ratios of debt service to income above 40 per cent, 28 per cent have debt ratios to income higher than 3 and 15 per cent have an outstanding debt greater than 75 per cent of the value of their assets. In total the critical values for the three ratios are simultaneously exceeded for 2.5 per cent of households.

The proportion of households with debt service to income ratio and debt to wealth ratio at worrying levels are thus significantly lower than the proportion of households with very high debt to income ratios. This is largely due to the very high proportion of mortgage loans in the total debt of Portuguese households. Indeed, mortgage debt service level is lowered by the fact that in Portugal mortgage loans typically have very long maturities. According to data from HFCS, the median of the initial maturity of the loans contracted in 2010 stood at 30 years.[18] Another factor that contributes favourably to the level of debt service to income ratio is that most mortgage loans have variable interest rates indexed to money market interest rates, which have remained at relatively low levels. Additionally, mortgage loans in Portugal typically have fixed interest rate spreads over the life of the contracts, which stayed at very low levels for debt taken in the years prior to the start of sovereign debt crisis in the euro area. Finally, the fact that it did not occurred a bubble in the Portuguese housing market, or the subsequent sharp fall in property prices which would have caused a reduction in the value of real wealth, contributes to the relatively low level of the debt to wealth ratio.

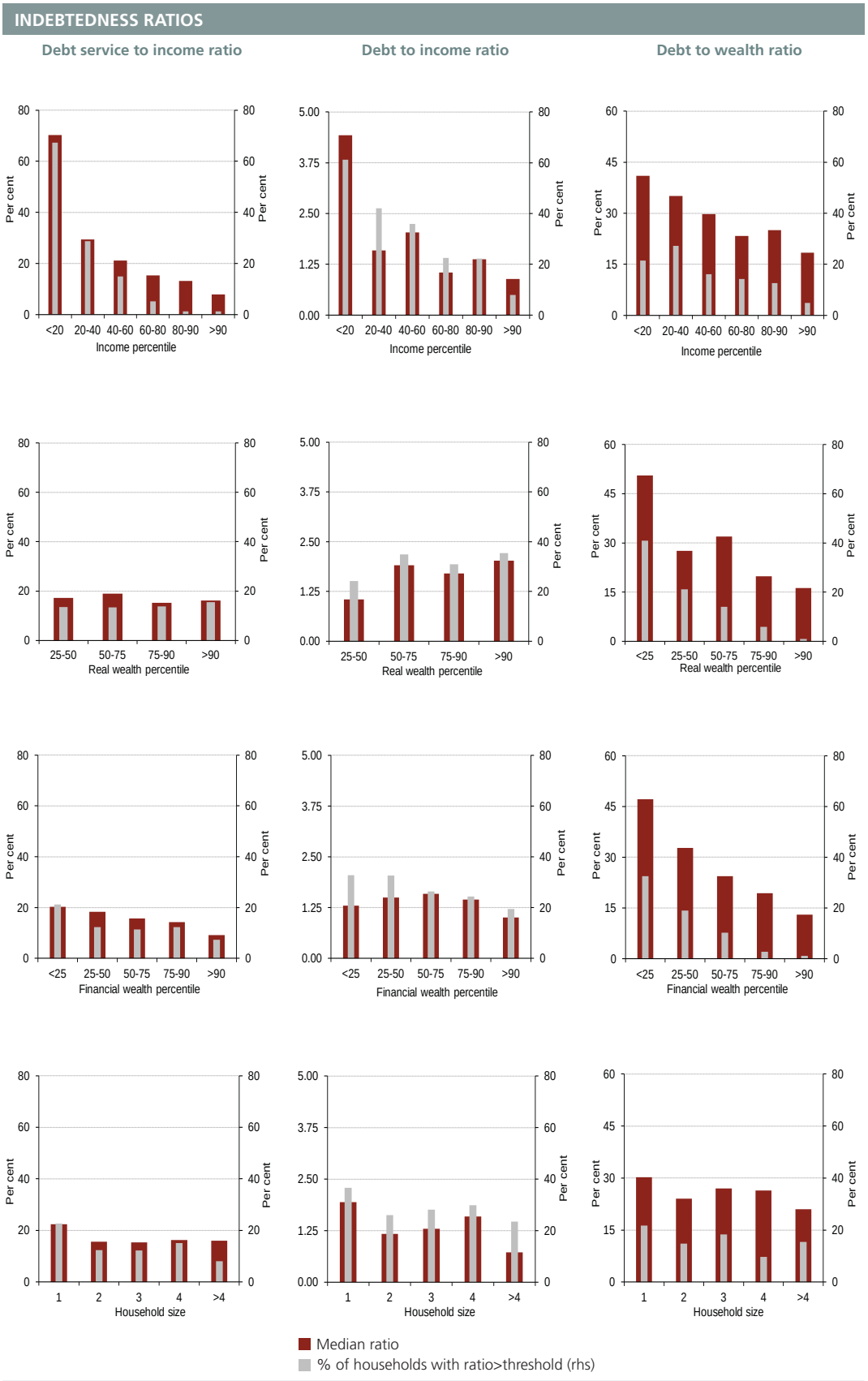
The debt service ratio declines with households' income level, being particularly high in the case of the households at the lowest income percentile, where the critical value is clearly surpassed. In fact, more than 60 per cent of indebted households in the lowest income class have debt service to income ratios above 40 per cent. In what concerns other household characteristics, the most vulnerable situations, according to this ratio, are more evenly distributed and the median ratios lie in maximum at about 20 per cent that is around half the threshold level.

The median value of the debt to income ratio clearly exceeds the critical level for the households in the lowest income percentile and is close to this value for the households in the youngest age class. This means that at least half of these households have debt to income ratios around or above 3. In fact, about

17 These threshold levels, which are commonly used in analyses for other countries (see, for example, Bank of Spain (2011) and Bricker et al (2011)), are related to the criteria used by banks in lending decisions.

18 The analysis of loan maturities by periods when loans were granted shows some increase in maturities in the period 2003-06 and some stability thereafter.

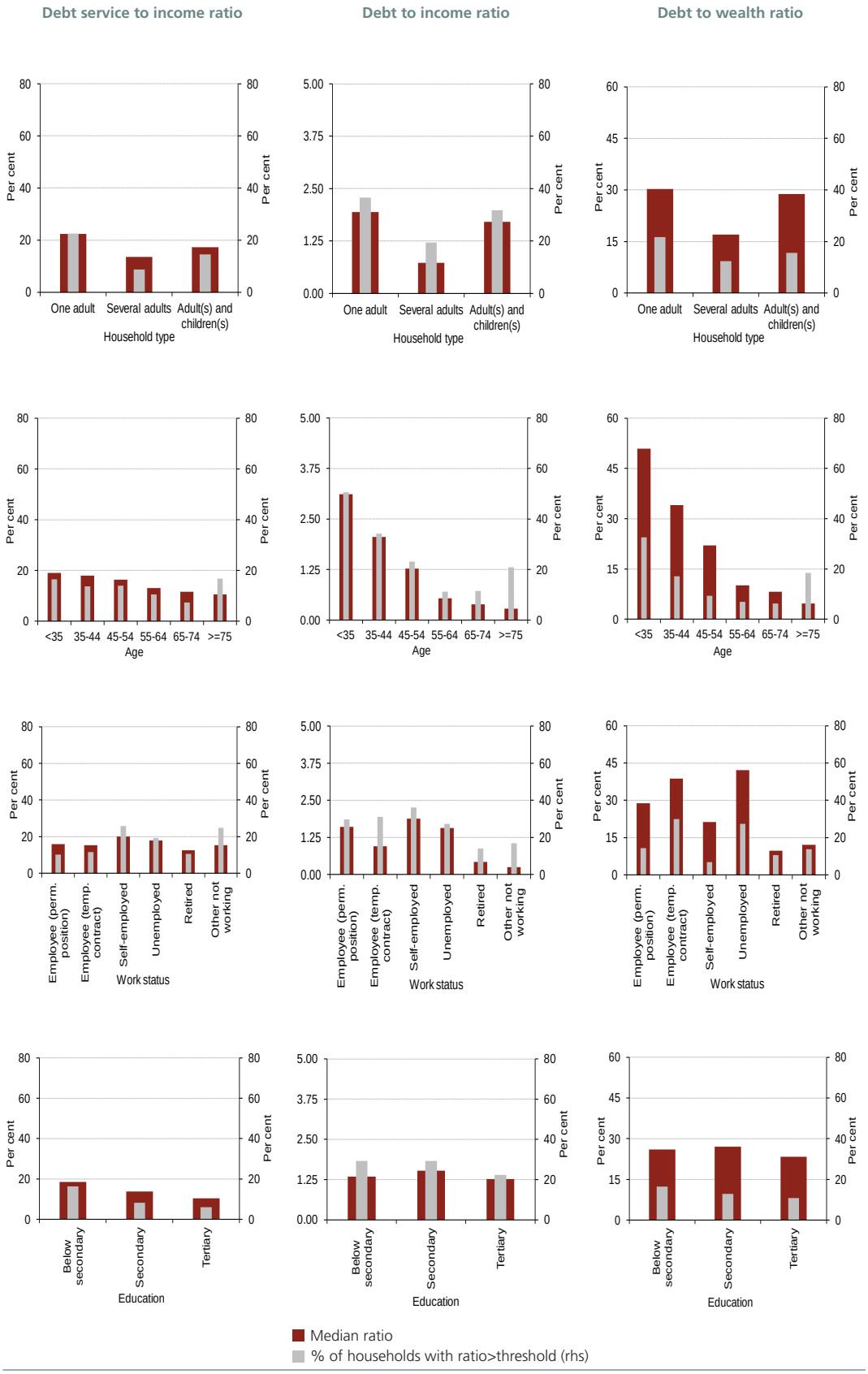
Chart 2 (to be continued)



Source: Household Finance and Consumption Survey.

Chart 2 (continued)

INDEBTEDNESS RATIOS



Source: Household Finance and Consumption Survey.

60 per cent of indebted households in the lowest income percentile and 50 per cent of those whose reference person has less than 35 years have debt to income ratios above 3. The negative relationship between the age of the reference person and the level of the debt to income ratio is consistent with the fact that debt, especially mortgage, is contracted at relatively young ages, and paid back over the life until around retirement age. The distributions of debt to income ratio for the other characteristics of households are more homogeneous than for income or age.

Finally, the highest median values of the debt to wealth ratio correspond, as expected, to households with the lowest levels of real or financial wealth, or to households where the reference person has less than 35 years old. The median ratios in these classes are nevertheless still below the critical value. For the groups of households with the lowest levels of financial wealth or income and in which the reference person has less than 35 years old, is unemployed or is an employee with a temporary contract there is a higher incidence of debt to wealth ratios greater than 75 per cent, than for the remaining households groups.

In summary, the most vulnerable situations occur in the lowest income class. In this class the critical values of the ratios debt service to income and debt to income are exceeded by more than 60 per cent of indebted households. Nevertheless, in the case of debt to wealth ratio the proportion of these households that exceed the critical value is only about 20 per cent. In the youngest age group, whose debts have been taken recently, about 50 per cent of the indebted households exceed the critical value of the ratio of debt to income. However, this situation is mitigated by the fact that the levels of the ratios of debt service to income and debt to wealth are relatively moderate.

4.2.2 Regression analysis

Table 5 presents the results of linear regressions for the ratios of debt service to income, debt to income and debt to wealth as well as Logit regressions for the probability that these ratios exceed the threshold levels. The last column of the table consists of the results of the Logit regression for the probability that the three ratios exceed simultaneously the threshold levels. In all cases, the analysis is made only for the indebted households. The explanatory variables consist in the characteristics of households used in the previous analysis. The values of debt and of debt service may differ significantly depending on the type of debt. This aspect is controlled in the regressions by including a dummy variable indicating if households have simultaneously non-mortgage debt and mortgage debt and a dummy variable indicating if households only have non-mortgage debt.

The results for the individual debt burden ratios confirm that income and age characteristics are decisive for the degree of indebtedness and vulnerability of households. Households in the lowest income class have higher debt to income ratios and debt service to income ratios and are more likely to find themselves in situations of great vulnerability. Income is not significant however for the debt to wealth ratio. With regard to age, households whose reference person is under 35 years old have higher indebtedness ratios than households with older reference persons. This effect is less pronounced in the case of the ratio of the debt service than in the other two ratios. In fact the probability that the ratio of debt service exceed 40 per cent is not related to age. For this situation contributes, on one hand, the fact that in households with younger reference persons loans have been contracted recently[19], and thus still have very high outstanding amounts, and, on the other hand, the fact that in Portugal most mortgages have constant instalments.

Households with higher real wealth levels generally have higher ratios of debt service to income and of debt to income. This situation is likely to result from the fact that most households use credit to acquire properties and that loans for higher amounts are generally secured by real estate. In the case of the debt to wealth ratio there is, as expected, a negative effect associated with the real and financial wealth.

19 The age effect became not significant in the regression for the probability that the debt ratio to wealth is higher than 75 per cent, when it is only used data for households that did not have mortgages until 2006.

Table 5 (to be continued)

REGRESSION RESULTS FOR THE INDEBTEDNESS RATIOS[a]

	Debt service to income		Debt to income		Debt to wealth		Prob (all ratios> thresholds)
	Ratio	Prob (Ratio>40)	Ratio	Prob (Ratio >3)	Ratio	Prob (Ratio >75)	
Type of debt							
Mortages and other debt	0.384***	1.057***	0.371***	0.759***	0.402***	0.934***	2.138***
	(8.32)	(3.86)	(5.38)	(3.56)	(5.85)	(3.64)	(3.56)
Only other debt	-0.315***	-1.98***	-2.069***	-3.264***	-1.947***	-2.527***	-2.919***
	(-4.54)	(-3.29)	(-14.81)	(-5.86)	(-13.84)	(-4.28)	(-2.97)
Income percentile							
Between 20 and 40	-0.883***	-2.255***	-0.814***	1.55***	-0.24	0.403	-0.536
	(-5.73)	(-5.15)	(-4.12)	(-3.19)	(-1.05)	(0.88)	(-0.79)
Between 40 and 60	-1.24***	-3.661***	-1.206***	2.929***	-0.251	0.08	-1.91***
	(-9.68)	(-9.3)	(-6.93)	(-6.48)	(-1.17)	(0.2)	(-2.64)
Between 60 and 80	-1.482***	-4.945***	-1.463***	3.608***	-0.229	0.342	-3.007***
	(-12.12)	(-11.69)	(-8.46)	(-7.73)	(-1.08)	(0.83)	(-3.25)
Between 80 and 90	-1.73***	-7.141***	-1.678***	-4.371***	0.044	0.763	-5.539***
	(-13.36)	(-7.94)	(-9.02)	(-8.22)	(0.2)	(1.45)	(-3.67)
More than 90	-2.203***	-7.377***	-2.304***	-5.955***	-0.044	0.563	(b)
	(-15)	(-7.44)	(-11.18)	(-9.48)	(-0.18)	(0.89)	
Real wealth percentile							
Between 25 and 50	0.187	-0.841	0.552***	0.727	-2.249***	-2.858***	-2.288*
	(1.53)	(-1.03)	(2.72)	(0.8)	(-10.41)	(-4.55)	(-1.87)
Between 50 and 75	0.243**	-0.493	0.872***	1.516*	-2.444***	-3.802***	-2.476**
	(2.05)	(-0.62)	(4.24)	(1.68)	(-11.47)	(-5.89)	(-2.13)
Between 75 and 90	0.377***	0.327	0.994***	2.117**	-2.773***	-4.789***	-2.585**
	(2.81)	(0.37)	(4.28)	(2.26)	(-11.84)	(-6.46)	(-1.97)
More than 90	0.574***	1.42	1.265***	3.274***	-3.125***	(b)	(b)
	(3.9)	(1.45)	(4.93)	(3.33)	(-12.29)		
Financial wealth percentile							
Between 25 and 50	-0.002	-0.524	-0.001	0.183	-0.347***	-0.703***	-0.377
	(-0.02)	(-1.14)	(-0.01)	(-0.57)	(-2.87)	(-2.65)	(-0.65)
Between 50 and 75	-0.03	-0.372	-0.021	0.612*	-0.542***	-1.325***	-0.925
	(-0.36)	(-0.82)	(-0.18)	(-1.85)	(-4.42)	(-3.92)	(-0.93)
Between 75 and 90	-0.002	0.204	-0.052	0.526	-0.756***	-3.357***	-0.721
	(-0.02)	(0.42)	(-0.37)	(-1.56)	(-4.52)	(-3.99)	(-0.49)
More than 90	-0.154	-0.314	0.065	0.219	-0.828***	(b)	(b)
	(-1.24)	(-0.36)	(0.36)	(-0.42)	(-3.93)		
Household size							
Two	0.021	-0.068	0.007	0.106	-0.192	-0.216	-0.29
	(0.22)	(-0.14)	(0.05)	(0.31)	(-1.25)	(-0.54)	(-0.34)
Three	-0.009	-0.204	0.033	0.196	-0.177	0.061	-0.458
	(-0.08)	(-0.33)	(0.19)	(0.43)	(-0.98)	(0.13)	(-0.41)
Four	-0.019	-0.066	-0.114	0.094	-0.269	-0.622	-0.976
	(-0.14)	(-0.1)	(-0.62)	(-0.2)	(-1.45)	(-1.08)	(-0.93)
Five or more	-0.034	-0.203	-0.111	0.134	-0.241	-0.161	(b)
	(-0.24)	(-0.28)	(-0.5)	(0.23)	(-1.15)	(-0.25)	
Household type							
Adult(s) and children(s)	-0.028	0.322	-0.039	0.06	-0.082	-0.338	1.245
	(-0.35)	(0.75)	(-0.3)	(-0.16)	(-0.63)	(-0.95)	(1.39)

Table 5 (continued)

REGRESSION RESULTS FOR THE INDEBTEDNESS RATIOS[a]	Debt service to income		Debt to income		Debt to wealth		Prob (all ratios> thresholds)
	Ratio	Prob (Ratio>40)	Ratio	Prob (Ratio >3)	Ratio	Prob (Ratio >75)	
Age							
35-44	-0.147*	-0.31	-0.223*	1.208***	-0.124	-0.705**	-0.81
	(-1.73)	(-0.64)	(-1.77)	(-3.97)	(-0.98)	(-2.2)	(-1.55)
45-54	-0.138*	-0.259	-0.576***	2.014***	-0.444***	-1.51***	-0.563
	(-1.65)	(-0.54)	(-4.28)	(-5.75)	(-3.19)	(-4.32)	(-0.88)
55-64	-0.317***	-0.284	-1.054***	2.988***	-0.961***	-2.249***	-1.604
	(-3.47)	(-0.48)	(-5.85)	(-6.5)	(-5.21)	(-4.47)	(-1.26)
65-74	-0.457***	-1.097	-1.11***	2.923***	-1.061***	-2.748***	-1.23
	(-3.28)	(-1.29)	(-4.32)	(-3.81)	(-4.04)	(-3.93)	(-0.82)
75 and over	-0.317	0.122	-1.15***	2.189*	-1.056***	-0.916	-0.222
	(-1.62)	(0.11)	(-3.05)	(-1.91)	(-2.77)	(-1.22)	(-0.14)
Work status							
Employee with temporary contract	-0.024	-0.372	-0.146	-0.05	0.053	0.414	0.513
	(-0.3)	(-0.8)	(-1.13)	(-0.15)	(0.42)	(1.19)	(0.92)
Self-employed	0.197***	0.804*	0.154	0.039	0.02	-0.184	-1.295
	(2.67)	(1.84)	(1.13)	(0.12)	(0.15)	(-0.37)	(-0.98)
Unemployed	-0.021	-0.048	0.033	0.052	0.214	0.292	1.104*
	(-0.21)	(-0.12)	(0.21)	(-0.12)	(1.32)	(0.76)	(1.94)
Retired	-0.015	-0.121	-0.089	0.138	-0.115	0.518	0.073
	(-0.15)	(-0.21)	(-0.5)	(-0.24)	(-0.63)	(1.02)	(0.07)
Other not working	0.109	1.000	-0.373	1.016	-0.389	0.731	(b)
	(0.38)	(0.68)	(-1.52)	(-1.17)	(-1.02)	(1.1)	
Education							
Secondary	-0.139**	-0.304	-0.195*	0.002	-0.251**	-0.113	-0.408
	(-2.54)	(-0.91)	(-1.82)	(0.01)	(-2.33)	(-0.33)	(-0.52)
Tertiary	-0.149**	-0.338	0.055	0.086	-0.087	0.197	0.802
	(-2)	(-0.66)	(0.44)	(0.24)	(-0.69)	(0.35)	(0.77)
Constant	-0.404*	2.306**	1.626***	2.767***	2.379***	3.631***	0.332
	(-1.79)	(2.47)	(5.48)	(2.72)	(7.71)	(4.07)	(0.24)
Number of observations	1576	1576	1576	1576	1576	1576	1576

Source: Household Finance and Consumption Survey.

Notes: (a) The results must be interpreted against the omitted categories in the regression which correspond to households with only mortgage debt, with income below the 20th percentile, with real wealth below the 25th percentile, with financial wealth below the 25th percentile, with only with one member, no children, whose reference person has less than 35 years, is an employee with a permanent position and has an educational level corresponding to basic education. In the logit models the coefficients presented correspond to the regression coefficients whose magnitude cannot be interpreted as the marginal effect of explanatory variable on the variable to be explained. In the logit models marginal effects have the same sign and significance of the estimated coefficients, but vary with the value of the regressors. The symbols *, ** and *** indicate that the coefficients are statistically significant at 10, 5 and 1 per cent confidence level, respectively. **(b)** The dependent variable never takes the value 1 for the households of this class, so that, for the purpose of estimating the model these households are combined with those of the previous class.

In what concerns the work status, the results suggest that households whose reference person is self--employed have the highest ratios of debt service to income and the greatest probability that these ratios exceed 40 per cent. This might be explained by the fact that self-employment income, which typically is more volatile, has suffered a greater reduction than other sources of income after the borrowing decisions were taken. This result seems consistent with the fact that 2009 (the reference year for income) has been a year of recession.

Finally, the variables on the type of debt are significant in all regressions. Households with mortgage debt together with other debts are more vulnerable than the ones who only have mortgages and households with only other debts are less vulnerable.

The regression on the probability that households are in a situation of extreme vulnerability, i.e., a situation where the thresholds for the three ratios are simultaneously surpassed, suggests that this occurs mainly in cases of the two lowest income percentiles, of the lowest real wealth percentile and when the reference person is unemployed.[20] Among these very vulnerable households, the ones with low income and in an unemployment situation mostly have mortgage debt, while the ones with lower values of real wealth mostly have only non-mortgage debt.

5. Conclusions

The indebtedness level of Portuguese households is one of the highest in the euro area, although the upward trend persistently observed during more than two decades, has been interrupted, in the context of the adjustment process that is underway in the Portuguese economy. This paper analyses households' participation in the debt market and characterizes the indebted households in particular the most vulnerable. The analysis is based on data collected through the Household Finance and Consumption Survey Financial held in the second quarter of 2010. Although these data may not reflect the latest developments regarding households' financial situation, they are particularly relevant to characterize the distribution of debt and to identify the most vulnerable groups of households i.e. those groups for which the materialisation of credit risk is more likely.

The analysis of households' participation in the debt market suggests that the probability of having debt increases with the level of households' income and real wealth, and it decreases with the level of households' financial wealth. Additionally, households with children have a higher probability of having mortgages and those with a greater number of members have a higher probability of having other debts. Age has a negative effect on the participation in the debt market. Concerning the effect of the work status there is some evidence that households whose reference person is self-employed or inactive have a lower probability of having mortgages, but not of having other debts.

The larger participation in credit market of households with higher income and higher real wealth is likely to reflect both demand and supply factors. The lower participation of households with a high level of financial wealth and of those whose reference person is older, is self-employed or inactive seems to reflect mainly the decision of these households not to participate in the debt market. On the contrary, those households whose reference person is unemployed or is employed with a temporary contract are more likely to have their loan applications turned down by financial institutions.

Regarding the distribution of the debt value among the households holding debt, the HFCS results indicate that the median values of debt are, in general, higher in the groups of households in which the participation in the debt market is also higher.

The percentage of vulnerable households is higher when indebtedness is measured by the debt to income ratio than when it is measured by the ratios between the debt service and income and between debt and wealth. The relatively low incidence of situations where the ratio of debt service exceeds the usual threshold is likely to be due to the fact that in Portugal mortgages typically have very long maturities, their interest rates are indexed to money market rates, which have remained low, and their spreads are fixed.[21] In turn, the relatively moderate levels of the debt to wealth ratio partly reflect the fact that there was not a bubble in the Portuguese real estate market neither the subsequent sharp fall in property prices, which would have caused a reduction in the value of real wealth.

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20 Although age is not significant in this regression, about 65 per cent of households for whom the three threshold levels are exceeded belong to two youngest age classes. The effect of aging may be in large part captured by income. In fact, these very vulnerable households with young reference persons have low income levels.

21 The available data indicate that the debt service to income ratio is relatively low in Portugal, when compared with other euro area countries, even in the case of the households in the lowest income classes. See ECB (2009).

The analysis of the distribution of the indebtedness ratios according to the households' characteristics suggests that the most vulnerable cases occur in the lowest income and age classes, and when these households hold mortgages, especially if they also hold other debts. In the lowest income class and in the case of the youngest borrowers, whose debts have been taken recently, the percentage of households with very high debt to income ratios is very large. Households in the lowest income class are also likely to have high debt service to income ratios, while in the case of the youngest households this ratio is usually relatively moderate.

According to the HFCS results, the percentage of households in a situation of extreme vulnerability, i.e. those households with difficulties in fulfilling their debt commitments both in the short and in the medium/long term, was relatively low in 2010. However, under the current very unfavourable macroeconomic environment, characterized by a reduction in disposable income and a sharp increase in unemployment, households in very vulnerable situations are likely to increase. In particular, the case of households having taken high levels of debt in the past, and facing meanwhile a significant deterioration of their financial situation deserve special attention.

Low income and young households who have taken mortgages are the most vulnerable groups of the population. These are the groups for which the probability of materialisation of credit risk is larger. However, in the perspective of financial stability it should be taken into account that the participation of low income households in the debt market is relatively low, mitigating the impact of their eventual entry into default on banks financial situation. In the case of young families, although their participation in the debt market is high, their debts are generally guaranteed by real estate. Additionally, for the majority of these households the debt service ratios are lower than the usual threshold. These results are in line with those obtained in the last edition of IPEF held in 2006.

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ACCESS TO CREDIT BY NON-FINANCIAL FIRMS*

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ABSTRACT

In order to study the availability of credit to non-financial firms, we use in this article two different approaches, one based on prices and the other on amounts of loans. Using unique data sets, the first exercise is to estimate an econometric model for the interest rates on new or renegotiated loans made by non-financial firms in June 2010, controlling for characteristics of the loan and the company. Then, we show that the part of the increase between June 2010 and October 2011 in interest rates for similar loans that is explained by variations in the characteristics of loans and businesses is residual. This suggests that factors such as the increase in banks' financing and capital costs may have been the source of this increase in interest rates. In the exercise with quantities, we estimate a model of the amount of credit using a panel of loans (or companies), including loan (or firm) fixed effects. We show that the typical credit amount of a non-financial firm fell rapidly from the beginning of 2009 on, attaining a minimum of several years. This decline was especially sharp for companies which first sought credit.

1. INTRODUCTION

On 6 April 2011 the Portuguese government officially requested to the European Commission a programme of economic and financial assistance, in the same day when the short-term sovereign debt reached its highest price since the introduction of the euro. Although this outcome had been signalled by many market participants and political commentators since the beginning of 2011, the situation deteriorated rapidly since early 2010 with the publication of a substantial revision of the budget deficit for 2009. From May 2010 on, Portuguese banks lost access to international medium and long term wholesale debt markets. The question of access by non-financial firms to credit became particularly relevant, both because of the importance of this sector for the country's GDP, and of its role within the programme of economic and financial assistance.

We propose two complementary approaches to the problem, one based on prices and the other on quantities. The first approach is to use two unique databases: the *Informação Empresarial Simplificada* (IES),[1] which contains annual balance sheets of non-financial firms, and a data set from Banco de Portugal that contains detailed information about new or renegotiated loans granted by five major Portuguese banking groups in two different moments: one corresponds to minimum recent interest rates in this type of loan (June 2010) and the other (October 2011) corresponds to the maximum reached after a period of rapid increase. Additionally, the start of the programme of economic and financial assistance mediates these two moments. We used data from the IES on the firms' balance sheets to control for important

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

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1 Simplified Business Information, in Portuguese.

sources of risk at that level. We then combined this information with data on new or renegotiated loans in order to assess the impact of the quality of the company's balance sheet and the characteristics of loans on the interest rates. We estimated a model using data at the reference moment (June 2010) and then used the model to predict interest rates in October 2011. By comparing the actual and observed interest rates at that time, we can have an idea of what part of the changes in observed interest rates can be explained by changes in firm and loan characteristics, and what part should be attributed to other factors such as credit restrictions, negative business outlook (not explained by changes in firms' balance sheets), increasing risk aversion, increased costs of financing by creditors, systemic increases in interest rates, and increased costs of capital. Also explored are differences in access to credit across banks through fixed effects. An important feature of IES is that it contains the universe of companies that operated in Portugal during the years in question. For this reason, our estimates of the determinants of interest rates on loans can be adjusted for the selection bias that results from the fact that only loans that were granted are actually observed.

The second approach to the problem, which although simpler is broader, is to use a third unique data set, the Central de Riscos de Crédito (CRC), which is the Portuguese central credit register. We propose two alternatives. The first is to estimate calendar fixed effects in the amount of credit granted, once we control for heterogeneity at the firm-bank relationship, firm and bank levels. The calendar fixed effects capture the secular evolution of the typical loan amount, and this can be useful in the detection of abrupt breaks or sudden increases.

The second alternative is to observe the amount of credit extended to companies in the quarter in which they first access credit. Although this phenomenon is sensitive to the economic cycle, we can compare the current situation with previous recessions and get a sense of the differences between this episode and previous episodes.

These two approaches are complementary and allow us to illustrate in detail and identify potential problems in access to credit by firms.

The results of both exercises suggest the existence of constraints on access to credit by businesses, and access to funds by banks. On the one hand, between June 2010 and October 2011, the variation in the characteristics of loans and companies cannot explain the observed variation in the prices of new loans. Among other factors, this may be due to the sharp increase in financing costs and capital costs of banks during this period. Moreover, the typical loan amount attributed to firms decreased markedly right from the beginning of 2009. This was especially true for firms that accessed credit for the first time.

2. IES AND THE LOAN INTEREST RATES

In this approach we used data from two unique data sets: the *Informação Empresarial Simplificada* (IES) and a an internal database with detailed information about new or renegotiated loans granted by five major Portuguese banking groups at two different times, corresponding to a recent minimum and a recent maximum of loan interest rates, respectively before and after the start of the assistance programme. We use data from the IES on firms' balance sheets to control for important factors governing risk at the firm level, such as size, industry, and various financial ratios. This information is then merged with the data on new or renegotiated loans. We estimate a model using data at the reference date (June 2010) and then estimate interest rates in October 2011. By comparing the estimated and the actual interest rates, we can decompose the actual change in interest rates into two effects: the first due to changes in the characteristics of the loans and the firms; the second due to other factors, including changes in the rates of aggregate interest rates, changes in financing conditions by creditors, regulatory changes, changes in the risk aversion of lenders, and changes in the cost of capital. We control for differences in access to liquidity at the bank level using bank fixed effects. Because we have the set of all potential borrowers, we can also correct for the selection bias in loans using the Heckman (1979) selection model.

We chose this approach because we want to isolate the effect of observable characteristics of loans and firms, as well as bank fixed effects, in interest rates. The other factors that could affect interest rates and that are not in the model include changes in interest rates at the euro area, credit constraints, risk aversion, financing conditions and cost of capital for creditors. Some of these factors are likely to have changed between June 2010 and October 2011, and including observations in the model estimation would contaminate parameters with any structural changes that occurred after the start of the programme of economic and financial assistance.

Alternative methods can be devised. One would be estimating the model using observations from 2010 and 2011 and a panel approach. One problem with this approach is that each company can have multiple loans, which by definition are new (or with new conditions) in both years, and this is inconsistent with the notion of a panel of loans. To avoid this problem, we could consolidate credit data by company and form a single synthetic loan characterized by average values for the interest rate, maturity, collateral and the total amount of loans. But that would imply the loss of a set of rich and detailed information. A second problem is that we are then unable to correct for selection bias.

The use of a cross section of data at a specific time to predict the interest rate at other times may be problematic in some cases. There are two facts that mitigate this problem in our application. First, the comprehensive nature of both data sets and the generous number of observations suggest that the model for the interest rate should adhere to the z-scoring models used by banks in granting credit. Related internal research and the literature (see, for example, Altman and Narayanan 1997 and Smith 2007) demonstrated that the balance sheet variables used in the model also have predictive power for a possible credit event during the following year, a major determinant of the level of interest rates. Secondly, looking at the estimates that include only companies present in both 2010 and 2011, we investigate to what extent our results are sensitive to changes in the composition of the sample; we will return to this issue later.

Data

Informação Empresarial Simplificada (IES) is a mandatory annual survey containing information about the balance sheet of Portuguese non-financial firms. The original database contains about 300 thousand companies each year. After merging this data set with the data set of new or renegotiated loans, which contains the interest rate, maturity, amount and existence of collateral, we have a sample of 66 140 new or renegotiated loans (35736 in June 2010 and 30404 in October 2011), awarded to a total of 11826 companies in June 2010 and 9489 companies in October 2011, some of them common to both moments.[2] We define the loan as the unit of observation.

Companies report data to the IES for a given year until May of the next year. In estimating the econometric model, we assume that the relevant information for granting a loan in 2010 is the balance sheet data of the firm in 2009, since for most companies this is indeed the latest official information available; we will use the same convention for loans in 2011, that is, in this case the relevant information for the firm is that of 2010.

At the firm level, we use the balance sheet and sector of activity. We construct a measure of firm size based on the recommendations of the European Commission. Micro firms are those with fewer than 10 employees and assets or sales not exceeding 2 million; small firms have fewer than 50 employees and sales or assets below 10 million; medium-sized firms have fewer than 250 employees and sales are less than 50 million or assets are less than 43 million euros, or both; large firms are the remaining ones. Table 1 presents summary statistics for the firm sample after merging the two sets of data and calculating various financial ratios, by sector; Table 2 does the same by firm size.

2 There are 4471 firms with loans in both June 2010 and October 2011.

Table 1

SUMMARY STATISTICS, OBSERVATIONS AT THE FIRM LEVEL BY SECTOR OF ACTIVITY

Number of firms			
Activity sector	Year		
	2009	2010	Total
Tourism	410	257	667
Trade	4744	3814	8558
Construction	1946	1450	3396
Real estate	278	193	471
Services	695	574	1269
Manufacturing	3239	2802	6041
Transportation	514	399	913
Total	11826	9489	21315

Number of employees			
Activity sector	Year		
	2009	2010	Total
Tourism	11607	11698	23305
Trade	110627	69535	180162
Construction	69931	65362	135293
Real estate	1210	832	2042
Services	7727	6648	14375
Manufacturing	124475	111374	235849
Transportation	14254	16985	31239
Total	339831	282434	622265

Turnover			
Activity sector	Year		
	2009	2010	Total
Tourism	1.493	2.145	1.744
Trade	1.378	1.449	1.410
Construction	1.098	1.132	1.113
Real estate	0.548	0.611	0.573
Services	1.057	1.017	1.038
Manufacturing	1.007	1.024	1.015
Transportation	1.196	1.296	1.240
Total	1.188	1.244	1.213

Non-financial debt			
Activity sector	Year		
	2009	2010	Total
Tourism	0.457	0.623	0.521
Trade	0.448	0.416	0.433
Construction	0.429	0.412	0.422
Real estate	0.423	0.296	0.371
Services	0.484	0.377	0.436
Manufacturing	0.403	0.405	0.404
Transportation	0.372	0.353	0.364
Total	0.431	0.410	0.422

Financial debt			
Activity sector	Year		
	2009	2010	Total
Tourism	0.339	0.470	0.389
Trade	0.265	0.305	0.283
Construction	0.268	0.312	0.287
Real estate	0.479	0.597	0.527
Services	0.318	0.310	0.315
Manufacturing	0.284	0.319	0.300
Transportation	0.250	0.302	0.272
Total	0.281	0.321	0.299

Own funds			
Activity sector	Year		
	2009	2010	Total
Tourism	0.137	-0.179	0.016
Trade	0.255	0.250	0.253
Construction	0.267	0.243	0.257
Real estate	0.011	0.019	0.014
Services	0.147	0.267	0.201
Manufacturing	0.272	0.247	0.261
Transportation	0.328	0.310	0.320
Total	0.249	0.235	0.243

Return on assets			
Activity sector	Year		
	2009	2010	Total
Tourism	-0.072	-0.221	-0.130
Trade	0.001	0.002	0.001
Construction	0.017	-0.002	0.009
Real estate	-0.115	-0.081	-0.101
Services	-0.010	0.027	0.007
Manufacturing	-0.006	-0.017	-0.011
Transportation	0.008	-0.002	0.004
Total	-0.004	-0.011	-0.007

Source: *IES.*

Note: See definitions of variables in the text. The number of firms and employees are totals; all other variables are averages.

Table 2

SUMMARY STATISTICS, OBSERVATIONS AT THE FIRM LEVEL BY FIRM SIZE

Number of firms			
Size	Year		
	2009	2010	Total
Micro	6206	4532	10738
Small	4349	3758	8107
Medium	1118	1060	2178
Large	153	139	292
Total	11826	9489	21315

Number of employees			
Size	Year		
	2009	2010	Total
Micro	25912	19807	45719
Small	89757	78673	168430
Medium	101099	95415	196514
Large	123063	88539	211602
Total	339831	282434	622265

Turnover			
Size	Year		
	2009	2010	Total
Micro	1.203	1.285	1.238
Small	1.190	1.231	1.209
Medium	1.100	1.122	1.111
Large	1.179	1.203	1.190
Total	1.188	1.244	1.213

Non-financial debt			
Size	Year		
	2009	2010	Total
Micro	0.480	0.466	0.474
Small	0.389	0.368	0.380
Medium	0.333	0.327	0.330
Large	0.353	0.359	0.356
Total	0.431	0.410	0.422

Financial debt			
Size	Year		
	2009	2010	Total
Micro	0.259	0.304	0.278
Small	0.293	0.325	0.307
Medium	0.350	0.369	0.359
Large	0.339	0.388	0.362
Total	0.281	0.321	0.299

Own funds			
Size	Year		
	2009	2010	Total
Micro	0.210	0.180	0.197
Small	0.291	0.289	0.290
Medium	0.297	0.286	0.292
Large	0.270	0.217	0.245
Total	0.249	0.235	0.243

Return on assets			
Size	Year		
	2009	2010	Total
Micro	-0.018	-0.036	-0.026
Small	0.012	0.013	0.012
Medium	0.012	0.012	0.012
Large	0.014	0.018	0.016
Total	-0.004	-0.011	-0.007

Source: Data from an internal data set with new or renegotiated loans granted by five large banking groups.
Note: The average maturity and interest rate are weighted by the loan amount.

In the sample, there are 11826 firms in 2010 and 9489 firms in 2011, representing 340 thousand workers in 2009 and 282 thousand workers in 2010, respectively. The most important sector in terms of number of employees is manufacturing.

Return on assets is defined as the ratio between the firm's profits and assets. Turnover is equal to sales of goods and services divided by assets. Non-financial debt is total debt to third parties except banks and bondholders, divided by assets. Total financial debt is debt to banks and bondholders, divided by assets. Own funds is equity capital plus reserves, excluding corporate profits and shareholder debt, divided by assets. In general, we see a decline in the quality of the balance sheet of firms in the sample during the period under review, and this is also true, with few exceptions, when we look at the data by industry or company size. For example, there is a decrease of capital from 0.249 to 0.235; return on assets falls

from -0.004 to -0.011; financial debt rises from 0.281 to 0.321. Turnover has a more benign behaviour, increasing from 1.19 to 1.24, like non-financial debt, which falls from 0.431 to 0.410.

Considering new or renegotiated loans (Tables 3 and 4), we see that the total loan amount increased from 1.6 billion euros in June 2010 to 1.9 billion euros in October 2011, although the number of loans

Table 3

SUMMARY STATISTICS, OBSERVATIONS AT THE LOAN LEVEL AND BY SECTOR OF ACTIVITY

Activity sector	Number of loans					
	Jun-10			Oct		
	No collateral	Collateral	Total	No collateral	Collateral	Total
Tourism	224	292	516	125	177	302
Trade	12369	4620	16989	10450	4125	14575
Construction	2500	1209	3709	1995	1009	3004
Real estate	211	193	404	141	148	289
Services	733	411	1144	575	318	893
Manufacturing	8541	3500	12041	7192	3370	10562
Transportation	598	335	933	513	266	779
Total	25176	10560	35736	20991	9413	30404

Activity sector	Total loan amount, in millions of euros					
	Jun-10			Oct		
	No collateral	Collateral	Total	No collateral	Collateral	Total
Tourism	9.0	66.4	75.5	5.3	44.5	49.7
Trade	216.4	282.7	499.2	215.4	306.3	521.7
Construction	95.5	214.5	310.0	92.6	371.2	463.8
Real estate	25.9	91.7	117.6	9.7	167.1	176.8
Services	26.3	32.4	58.7	46.9	55.0	101.9
Manufacturing	190.1	280.4	470.6	176.9	329.8	506.7
Transportation	44.9	21.7	66.6	33.6	42.8	76.5
Total	608.3	989.9	1598.2	580.5	1316.7	1897.2

Activity sector	Average maturity, in years					
	Jun-10			Oct		
	No collateral	Collateral	Total	No collateral	Collateral	Total
Tourism	0.76	2.57	2.36	0.27	0.74	0.69
Trade	0.56	1.33	1.00	0.63	1.24	0.98
Construction	1.06	2.11	1.79	0.51	0.55	0.54
Real estate	0.49	2.00	1.67	0.35	1.29	1.24
Services	0.69	1.30	1.03	1.56	1.51	1.53
Manufacturing	0.41	1.45	1.03	0.50	0.57	0.55
Transportation	5.71	1.79	4.43	0.31	0.61	0.48
Total	0.98	1.69	1.42	0.62	0.86	0.78

Activity sector	Average interest rate, in natural units					
	Jun-10			Oct		
	No collateral	Collateral	Total	No collateral	Collateral	Total
Tourism	0.0559	0.0439	0.0453	0.0688	0.0563	0.0576
Trade	0.0617	0.0495	0.0548	0.0717	0.0737	0.0729
Construction	0.0539	0.0482	0.0500	0.0739	0.0754	0.0751
Real estate	0.0657	0.0442	0.0489	0.0692	0.0724	0.0723
Services	0.0429	0.0537	0.0488	0.0645	0.0754	0.0703
Manufacturing	0.0521	0.0473	0.0492	0.0741	0.0743	0.0742
Transportation	0.0434	0.0485	0.0451	0.0865	0.0691	0.0767
Total	0.0554	0.0478	0.0507	0.0730	0.0735	0.0733

Source: Data from an internal data set with new or renegotiated loans in five large banking groups.
Note: The average maturity and interest rate are weighted by the loan amount.

Table 4

SUMMARY STATISTICS, OBSERVATIONS AT THE LOAN LEVEL AND BY FIRM SIZE

Number of loans

Activity sector	Jun-10			Oct		
	No collateral	Collateral	Total	No collateral	Collateral	Total
Micro	211	193	404	141	148	289
Small	733	411	1144	575	318	893
Medium	8541	3500	12041	7192	3370	10562
Large	598	335	933	513	266	779
Total	25176	10560	35736	20991	9413	30404

Total loan amount, in millions of euros

Activity sector	Jun-10			Oct		
	No collateral	Collateral	Total	No collateral	Collateral	Total
Micro	9.0	66.4	75.5	5.3	44.5	49.7
Small	216.4	282.7	499.2	215.4	306.3	521.7
Medium	95.5	214.5	310.0	92.6	371.2	463.8
Large	25.9	91.7	117.6	9.7	167.1	176.8
Total	608.3	989.9	1598.2	580.5	1316.7	1897.2

Average maturity, in years

Activity sector	Jun-10			Oct		
	No collateral	Collateral	Total	No collateral	Collateral	Total
Micro	0.76	2.57	2.36	0.27	0.74	0.69
Small	0.56	1.33	1.00	0.63	1.24	0.98
Medium	1.06	2.11	1.79	0.51	0.55	0.54
Large	0.49	2.00	1.67	0.35	1.29	1.24
Total	0.98	1.69	1.42	0.62	0.86	0.78

Average interest rate, in natural units

Activity sector	Jun-10			Oct		
	No collateral	Collateral	Total	No collateral	Collateral	Total
Micro	0.0559	0.0439	0.0453	0.0688	0.0563	0.0576
Small	0.0617	0.0495	0.0548	0.0717	0.0737	0.0729
Medium	0.0539	0.0482	0.0500	0.0739	0.0754	0.0751
Large	0.0657	0.0442	0.0489	0.0692	0.0724	0.0723
Total	0.0554	0.0478	0.0507	0.0730	0.0735	0.0733

Source: Data from an internal data set with new or renegotiated loans in five large banking groups.
Note: The average maturity and interest rate are weighted by the loan amount.

decreased. However, the average maturity suffered a strong decrease from 17 to 9.4 months. The largest sector in terms of loans is trade. Overall this sector and the sectors of manufacturing and construction are the most important of the sample. In terms of firm size, all four categories are important. In 2010, the interest rate seemed to have a decreasing pattern as we increased the size of the firm, but in 2011 this feature disappeared.

We chose the interest rate as the dependent variable. Since there is a dependency between the different components of a loan (price, quantity, maturity and collateral), the other components were included in the regressions we present below. Note that the average interest rates rise quite dramatically: between June 2010 and October 2011 they increased on average 226 basis points. With almost no exception, this significant increase occurred in all sectors of activity, for all firm sizes, and with or without the existence

of guarantees. It is also interesting to note that the presence of collateral does not necessarily imply a lower interest rate. While we must be careful about the fact that the portfolios are heterogeneous, the table suggests that in some cases, the existence of collateral reduces interest rates (as in the tourism sector or for the micro firms), but in others that does not seem to be the case (services and large companies). This is an issue to be resolved by regression analysis.

Regression analysis

We present two estimates of econometric models of the interest rate. The first is a simple linear regression and the second is a regression model with sample selection (Heckman 1979). The regressors previously described were used. For the selection equation, beyond the data on the company's balance sheet, we used three additional variables. Two are the terms of a quadratic polynomial of the firm age. The third is the value of the social capital value, which determines the voting rights in the legal management of the company and that rarely changes over time. These additional selection variables should ideally be correlated with the selection decision, but uncorrelated with the terms of the loan agreement. Regarding age, the hypothesis is that it is a sign of the likelihood of survival of the company, which does not necessarily determine the interest rate; this role should be attributed to the company's financial ratios. The social capital, on the other hand, represents the level of commitment of business owners in the credit relationship: the greater the commitment, the greater the probability of obtaining a loan. Again, the interest rate of the contract would be determined by the balance sheet information and the remaining terms of the contract.

Table 5 presents the estimates. For the model with correction for selection bias we also show the results of the selection equation. The models are estimated with the subsample of June 2010. If we compare the two models, we see that the results do not change much. An exception is non-financial debt, which is statistically significant and negative in the linear regression, but is not significant in the regression with correction for selection bias. Another exception is the company size: the two largest categories lose significance when accounting for selection bias.

The regression with correction for selection bias also suggests that sample selection is positively correlated with the interest rate, that is, companies that are not in the sample of loans tend to benefit from lower interest rates. This can be rationalized by the fact that companies that survive without resorting to bank loans use internal financing more frequently, which is usually an indicator of financial strength.

By focusing now on the model with selection bias correction, with few exceptions the results are consistent with an extensive literature on credit risk factors (see *e.g.* Santos 2009). The loan amount tends to decrease the interest rate and maturity: larger loans and longer terms are associated with lower interest rates. The existence of collateral appears to increase interest rates. To the extent that the guarantee may reflect the concern of the creditor that the company will not be able to repay the loan, the existence of collateral may be associated with riskier loans. In this case, the coefficient is statistically significant.

The financial ratios have a statistically significant influence on the interest rate, as expected. The higher own funds and return on assets, the lower the interest rate, and the same happens with turnover. As for non-financial debt, the respective coefficient is not significantly different from zero. Finally, financial debt tends to lower the interest rate. This may seem surprising but is consistent with a vast literature on the debt as a signalling device. In fact, if a company already has debt it is because it was able to convince lenders that it could afford it; this implies a lower interest rate for an identical firm but without previous loans. Although there are also theoretical and empirical results pointing in the opposite direction (e.g., the "hold-up problem", see Santos and Winton 2008), in this case the signalling effect seems to dominate. Firm size appears to be of little importance.

Table 5

LINEAR REGRESSION MODEL AND MODEL WITH SELECTION BIAS CORRECTION FOR THE INTEREST RATE

	Linear regression			Regression with correction of selection bias					
				Dependent variable			Selection		
	Coef.	Std. Err.	p-value	Coef.	Std. Err.	p-value	Coef.	Std. Err.	p-value
Log of loan amount	-0.0014	0.0001	0.000	-0.0014	0.0001	0.000			
Maturity	-0.0064	0.0002	0.000	-0.0066	0.0002	0.000			
Collateral	0.0023	0.0006	0.000	0.0020	0.0006	0.000			
Return on assets	-0.0053	0.0013	0.000	-0.0066	0.0013	0.000	0.0406	0.0070	0.000
Own funds	-0.0118	0.0018	0.000	-0.0044	0.0019	0.018	0.3313	0.0261	0.000
Turnover	-0.0007	0.0002	0.000	-0.0017	0.0002	0.000	-0.0215	0.0029	0.000
Non-financial debt	-0.0048	0.0018	0.009	-0.0002	0.0018	0.904	0.2843	0.0263	0.000
Financial debt	-0.0118	0.0019	0.000	-0.0037	0.0019	0.052	0.3296	0.0262	0.000
Size (base Micro)									
Small	-0.0083	0.0004	0.000	0.0047	0.0009	0.000	0.8057	0.0094	0.000
Medium	-0.0211	0.0005	0.000	-0.0015	0.0012	0.225	1.2464	0.0169	0.000
Large	-0.0192	0.0011	0.000	0.0005	0.0016	0.774	0.8495	0.0377	0.000
Activity sector (base Tourism)									
Trade	-0.0117	0.0015	0.000	0.0026	0.0017	0.125	1.0095	0.0208	0.000
Construction	-0.0004	0.0016	0.813	0.0071	0.0016	0.000	0.5458	0.0224	0.000
Real estate	-0.0078	0.0022	0.000	-0.0062	0.0022	0.004	-0.0300	0.0302	0.320
Services	-0.0057	0.0017	0.001	0.0003	0.0018	0.862	0.4995	0.0249	0.000
Manufacturing	-0.0072	0.0015	0.000	0.0052	0.0016	0.001	0.9158	0.0215	0.000
Transportation	-0.0032	0.0018	0.072	0.0030	0.0018	0.104	0.2456	0.0268	0.000
Firm age							0.0236	0.0007	0.000
Firm age squared / 100							-0.0320	0.0011	0.000
Log of social capital							0.1876	0.0025	0.000
Mills lambda				0.0147	0.0008	0.000			
Constant	0.1026	0.0024	0.000	0.0588	0.0034	0.000	-4.6581	0.0394	0.000
Obs.	35736			35736			284771		
R-squared	0.2342								
Rho				0.4252					
Sigma				0.0345					
Root MSE	0.03255								

Sources: *IES* and data from an internal data set with new and renegotiated loans granted by five large Portuguese banking groups.
Notes: Dummy variables for banks included but not shown. Loan data are for June 2010 and October 2011; balance sheet data are from December 2009 and December 2010, respectively.

Explaining the rise in interest rates

We proceed now to the main exercise of this section, which is to use the model to predict interest rates of loans in October 2011, and then compare them with actual data. Tables 6 and 7 show the results.

The most striking result is the underestimation of the interest rates by the model in October 2011. This is true for all firm size classes, and for all sectors of activity. In 2011, the model underestimates the weighted average of the interest rate by 354 basis points; within the sample, the model also underestimates the observed interest rates by 146 basis points. This means that the contribution of the regressors for the increase in average interest rate is only 18 basis points, compared to a net increase of 226 basis points. The underestimation is larger in real estate and services to firms. The manufacturing sector seems to be less prone to underestimation than other sectors. When we look at the size of the company, the underestimation is almost the same in all categories.

As mentioned earlier, if we repeat the entire procedure with the data for 2010, but using only existing businesses both in 2010 and in 2011, we have an idea of the sensitivity of results to changes in sample

Table 6

IN- AND OUT-OF-SAMPLE RESULTS FOR THE INTEREST RATE BY SELECTED SECTOR OF ACTIVITY

		Jun-10			Oct-11		
Activity sector		No collateral	Collateral	Total	No collateral	Collateral	Total
Trade	*actual*	0.0617	0.0495	0.0548	0.0717	0.0737	0.0729
	pred.	0.0430	0.0365	0.0393	0.0382	0.0346	0.0361
	diff.	0.0187	0.0131	0.0155	0.0336	0.0391	0.0368
Construction	*actual*	0.0539	0.0482	0.0500	0.0739	0.0754	0.0751
	pred.	0.0452	0.0351	0.0382	0.0429	0.0431	0.0431
	diff.	0.0087	0.0131	0.0117	0.0309	0.0322	0.0320
Real estate	*actual*	0.0657	0.0442	0.0489	0.0692	0.0724	0.0723
	pred.	0.0292	0.0179	0.0204	0.0339	0.0255	0.0260
	diff.	0.0364	0.0263	0.0285	0.0353	0.0469	0.0463
Services	*actual*	0.0429	0.0537	0.0488	0.0645	0.0754	0.0703
	pred.	0.0309	0.0403	0.0361	0.0186	0.0348	0.0273
	diff.	0.0120	0.0134	0.0128	0.0459	0.0406	0.0430
Manufacturing	*actual*	0.0521	0.0473	0.0492	0.0741	0.0743	0.0742
	pred.	0.0461	0.0374	0.0409	0.0430	0.0415	0.0420
	diff.	0.0061	0.0098	0.0083	0.0311	0.0328	0.0322
Total	*real*	0.0554	0.0478	0.0507	0.0730	0.0735	0.0733
	prev.	0.0397	0.0340	0.0362	0.0389	0.0375	0.0379
	dif.	0.0157	0.0138	0.0146	0.0341	0.0360	0.0354

Sources: *IES* and data from an internal data set with new and renegotiated loans granted by five large Portuguese banking groups.

Notes: Loan data are for June 2010 and October 2011; balance sheet data are from December 2009 and December 2010, respectively. All values weighted by loan amount.

Table 7

IN- AND OUT-OF-SAMPLE RESULTS FOR THE INTEREST RATE BY FIRM SIZE

		Jun-10			Oct-11		
Size		No collateral	Collateral	Total	No collateral	Collateral	Total
Micro	*real*	0.0617	0.0495	0.0548	0.0717	0.0737	0.0729
	prev.	0.0430	0.0365	0.0393	0.0382	0.0346	0.0361
	dif.	0.0187	0.0131	0.0155	0.0336	0.0391	0.0368
Small	*real*	0.0539	0.0482	0.0500	0.0739	0.0754	0.0751
	prev.	0.0452	0.0351	0.0382	0.0429	0.0431	0.0431
	dif.	0.0087	0.0131	0.0117	0.0309	0.0322	0.0320
Medium	*real*	0.0657	0.0442	0.0489	0.0692	0.0724	0.0723
	prev.	0.0292	0.0179	0.0204	0.0339	0.0255	0.0260
	dif.	0.0364	0.0263	0.0285	0.0353	0.0469	0.0463
Large	*real*	0.0429	0.0537	0.0488	0.0645	0.0754	0.0703
	prev.	0.0309	0.0403	0.0361	0.0186	0.0348	0.0273
	dif.	0.0120	0.0134	0.0128	0.0459	0.0406	0.0430
Total	*real*	0.0554	0.0478	0.0507	0.0730	0.0735	0.0733
	prev.	0.0397	0.0340	0.0362	0.0389	0.0375	0.0379
	dif.	0.0157	0.0138	0.0146	0.0341	0.0360	0.0354

Sources: *IES* and data from an internal data set with new and renegotiated loans granted by five large Portuguese banking groups.

Notes: Loan data are for June 2010 and October 2011; balance sheet data are from December 2009 and December 2010, respectively. All values weighted by loan amount.

composition.[3] The results (not reported here) suggest that the part of the variation in interest rates between June 2010 and October 2011 explained by changes in firms' balance sheets and the characteristics of its loans is even lower than using all observations. The same happens if we estimate the model using observations for firms present either in 2010 or 2011, or both.

This implies that variations in firms' balance sheets and the observable characteristics of loans only explain a small part of the total increase in interest rates that occurred between June 2010 and October 2011. We have to look to causes other than the firms' balance sheets and the structure of the loan portfolio. An obvious candidate is the level of interest rates in markets where there is no liquidity or solvency problems. A measure for this would be the change in Euribor. The 6-month Euribor rate was 1.012 per cent in June 2010 and 1.776 per cent in October 2011. This implies an increase of 76 basis points during this period. This rise in the Euribor helps explain an additional part of the rise in interest rates in two periods: of the total increase of 226 basis points, depending on the assumptions that we make on the pass-through of the interest rate to loan rates, 76 basis points could be explained by changes in the general level of the interest rates, and 18 basis points could be attributed to changes at the level of observable characteristics of loans and firms; 132 basis points remain unexplained.

There are some possible explanations for this difference. One is the time lapse between the balance sheet data and the beginning of the loan. However, it is reasonable to assume that the loan contracts are not immediately granted by lenders, which would reduce this delay. Moreover, the official statement of the balance sheet of the previous year is the most reliable information that many companies have to provide to banks, other than unobserved variables such as the value of the project in question or the existence of deposits of the firm in the bank. Data from 2010, on the other hand, were relatively benign, with recent indicators pointing to a substantial deterioration of balance sheets in 2011.

Another possible explanation is the increase in funding costs for banks. Faced with liquidity constraints and a demanding economic and regulatory environment, banks may shift the supply curve of funds for loans to the left, increasing equilibrium interest rates.[4] During this period, banks resorted to deposits as a way to finance their activities. As a result, rates of new deposits increased by about 120 basis points above the increase in Euribor. This value closes the gap referred to above of 132 basis points, if we are prepared to assume that all funding for new loans came from new deposits and that the pass-through was 1 for 1. There is some literature arguing that this does not happen in practice. For example, Hülsewig, Wollmershäuser and Mayer (2009) show that banks tend not to reflect the full magnitude of monetary shocks in interest rates on loans. However, given the circumstances of particular vulnerability of creditors and debtors in this period, these absorption mechanisms might not be available. This hypothesis can be investigated and is an interesting topic for future research.

During this period there was an increase in capital requirements in terms of quality of eligible regulatory capital. This raised the cost of capital and, thereby, led to an increase in interest rates for active operations. This may be another reason for the observed increase in interest rates.

Another factor may have been responsible for the sharp increase in interest rates on loans between June 2010 and October 2011: a change in banks' behaviour towards risk. This was one of the reasons why, in the base specification, we prefer not to use the 2011 data to estimate the model of the interest rate. It is easily seen that if banks become more demanding and with everything else being equal, the loan interest rates will rise.[5]

3 This corresponds to roughly 2/3 of the 2010 subsample.

4 A related explanation would be lower competitiveness in credit markets.

5 If we estimate an interest rate model using only data from October 2011, we will observe some differences in the coefficients of the financial ratios.

Finally, a sudden increase in overall demand for credit would be consistent with a literature that emphasizes the reaction of firms to the economic cycle: faced with a more demanding economic environment and less funds available, companies may choose to rely primarily on external financing. This at least would be consistent with the overall reduction in own capital documented in table 1. The validity of this hypotheses is, again, an interesting topic for future research. This hypothesis does not seem convincing in light of the results of the next section.

3. Changes in quantities of credit with loan heterogeneity

In this section we present an approach for the analysis of credit to non-financial firms that is based on the study of the amounts of credit. Note that this approach uses only data from the *Central de Responsabilidades de Crédito* (CRC), so it does not take into account the financing that some firms can get abroad, including large companies and holding companies. While this may affect the picture of the evolution of credit aggregates, is not likely to affect the regression results and the analysis in this section.

Let us first look at the evolution of total loans to non financial corporations in the CRC. Chart 1 below documents the growth rates in annual terms of total loans to non-financial firms using the CRC, as well as the rate of growth of nominal GDP for the same period.

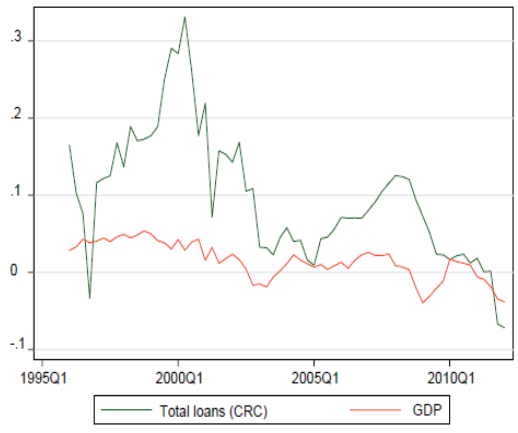
The total credit in CRC grew at rates in excess of nominal GDP in most of the period, with minima in 1996q4, 2005q1 and 2012q1.[6] The chart documents the apparent inconsistency between the economic cycle, measured by growth in nominal GDP and credit growth in the CRC. There is concern that the credit crunch may be strong enough to negatively affect the prospects of the Portuguese economy, inefficiently forcing companies to shut down or not realising business opportunities.

Fixed-effects regressions with a CRC sample

An approximate way to identify credit constraints is to run a panel regression of the logarithm of the total amount of each loan of a company, taking into account fixed effects at that level. These fixed

Chart 1

YEAR-ON-YEAR GROWTH RATE OF THE TOTAL AMOUNT OF LOANS TO NON-FINANCIAL FIRMS AND NOMINAL GDP | IN NATURAL UNITS



Source: *CRC*, 1995q1 - 2012q1, and National Accounts.

6 In 2011q4 credit sales occurred that had an impact on the credit aggregates present in the CRC, since part of the loans became owned by non-participants. However, we estimate that the impact of correcting for these sales in the annual growth rates shown in Chart 1 for 2011q4 and 2012q1 (of -6.7% and -7.1%, respectively) is at most 41 basis points.

effects will also control for the heterogeneity of firms and banks. The coefficients of the time dummies will represent the average level of loans (in logs) granted in a particular quarter, taking into account fixed effects at the level of the bank, the company and the bank-company relationship. This approach has its own share of econometric problems, so we must look at these results with caution.

Using a representative sample of companies present in the CRC from 1995q1 to 2012q1 on a quarterly basis, we consolidated the positions of each non-financial firm with respect to each credit institution; the result we called "loan". Note that this is not exactly a loan because we do not have information operation by operation, but we will keep this convention until the end of the article. We ignored registers in which the debtor appears as a secondary obligor. The sample was drawn randomly by keeping a fraction of the existing observations; then, for companies holding these loans, we recovered all the observations not taken initially. Thus, we have a representative sample of loans for each company that includes all its loans. The number of observations is 7759368. After taking logarithms of these values we estimated the following econometric model:

$$y_{i,t} = \sum_{j} \alpha_j d_{j=i} + \sum_{u} \beta_u d_{u=t} + \varepsilon_{i,t}$$

In this expression, i denotes the loan and t denotes the calendar time; $y_{i,t}$ is the logarithm of the loan i at time t; $d_{j=i}$ is an indicator function of the loan i and α_j is the respective coefficient; $d_{u=t}$ is an indicator function of time t, and β_u is the respective coefficient; and $\varepsilon_{i,t}$ is an error term. As stated, with this specification the bank and firm fixed effects are automatically considered. In simple terms, the temporal evolution of the time dummies coefficients reflects changes in the average value of the loans that cannot be explained by the usual practice in each loan during the sample period. The difficulty in estimating this model is the extremely high dimension of vector $\{\alpha_j\}$.

Full sample

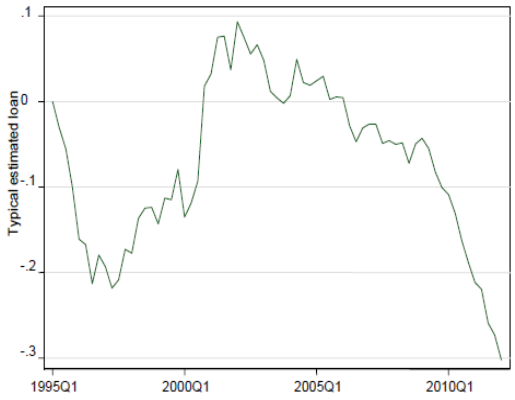
The result of this exercise using the within estimator of panel regressions and the complete sample is shown in Chart 2.

The interpretation of the figures in this chart is not immediate, so we will spend some time on this point. If we look at the regression equation above, we see that for each banking relationship (or, in our terminology, each loan), we have a number of regressors. One of these regressors is the indicator of the loan, which controls for the average level of this loan over time. We have to estimate a coefficient for each loan, which is a computationally demanding task since we have about 470 thousand loans in the sample. The other regressors are the time dummies. Unlike the previous regressors, these are common to all loans, and each coefficient will be estimated by looking at all contemporaneous loans. This allows us to interpret the coefficients as the average level of all existing loans at the same time, once we discount the fixed effect of each loan. It should be noted that the regression is performed in logarithms and thus, in the chart, the difference between two values represents a variation; the level corresponding to 1995q1 was normalized to 0. It should also be noted that in calculating the coefficient of each time dummy, all loans have the same weight, regardless of their value.

We see that initially there was a decline in the average loan value (after discounting fixed effects) until the end of 1996, followed by a sharp increase during the early 2000s. The typical loan amount peaked around 2002q4, and we observed a slow decrease until 2009q1, when it fell sharply until the end of the period under analysis. The magnitude of the reduction in the final period is very large (above 26 log points), but is particularly impressive due to the relatively short period of time ranging from 2009q1 to 2012q1. Although this number is only indicative of the possible presence of restrictions in access to credit for firms, it suggests that at least the past practices are not sufficient to explain the fall of the

Chart 2

LEVEL OF THE TYPICAL ESTIMATED LOAN (CALCULATED BY CALENDAR FIXED-EFFECTS) OBTAINED WITH FIXED EFFECTS AT THE LOAN LEVEL | IN LOGS



Source: *CRC*, 1995q1 - 2012q1.
Note: Number of observations: 7,759,368.

typical estimated loan recently observed.

There are several reasons related to the economic cycle that could help explain this pattern. The difficulty lies in understanding whether the dynamics of the business cycle can explain the evolution of credit. If we compare the behaviour of credit to GDP growth during this period (see Chart 1), we see that the annual change in GDP is much smoother than the change of credit. The chart documents the apparent inconsistency between the economic cycle, measured by GDP growth, and credit growth. Chart 3 also shows the growth rate of the typical loan estimate, calculated from Chart 2. The decline in credit (after deducting fixed effects) from 2009q1 to 2012q1, evident in the rate of growth of the typical loan during this period, is difficult to reconcile with the observed economic contraction.

In conclusion, although the value of the fall in the average level of the loan does not have a literal meaning, since it is an unweighted average on a loan by loan basis, the chart suggests a very significant

Chart 3

YEAR-ON-YEAR GROWTH RATES OF THE TOTAL AMOUNT OF LOANS TO NON-FINANCIAL FIRMS AND OF THE TYPICAL ESTIMATED LOAN | IN NATURAL UNITS

Source: *CRC*, 1995q1 - 2012q1.

change in the pattern of access to credit by firms in 2009q1 that continued until 2012q1.

We can do the same exercise, but only with firm fixed effects, that is, using the company's total bank debt vis-à-vis the entire financial system, and then proceed as before. The results are shown in Chart 4. Again, the interpretation of the graph should not be done literally, since we are also not weighting the calendar fixed effects by the debt of each firm.

Although there are differences from Chart 2, especially at the beginning of the period under review, there is also a sharp decline from 2009q1 on. This result shows a situation not unlike that seen at the level of loans, with an overall decline between 2009q1 and 2012q1 of about 23 log points in the typical firm debt. The differences between Charts 2 and 4 have to do with changes in the number of loans for each company and the distribution of loan amounts for each bank. For example, if a company that has five loans for a long period of time begins to diminish the value of all its loans except one, which is by far the largest, the contribution of this company to reduce the calendar fixed effects will be large in the first exercise, as each loan has the same weight. However, the contribution of this company to reduce the calendar fixed effects in the second exercise will be small, because the company's total debt will be reduced in a relatively small amount compared to its historical level. As a result, an explanation consistent with the observed differences between the two charts is that companies, especially early in the sample, may have increased the number of meaningful credit relationships, and now tend to reduce them.

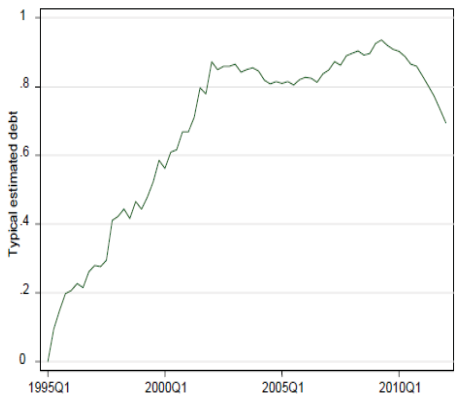
These two ways of looking at amounts of credit - by loan and by firm - are complementary. While the second reflects the evolution of average debt per company, the first gives an idea of the funding opportunities open at all times to companies, since all banking relationships have the same weight. Naturally, faced with more difficult conditions for financing, firms tend to concentrate their operations in a single banking relationship and to reduce the importance of the remaining ones; thus, the first indicator may be a more accurate measure for the conditions of access to credit for companies.

The fact remains that credit (by loan or by company) began to decline in early 2009, a situation which lasted until 2012q1, and occurred at a much faster rate than what would be predicted from the rate of growth of loans to non financial firms (Chart 1). This point is well illustrated by Chart 5.

The chart presents the annual percentage change in average debt per firm (discounting fixed effects at the firm level) and the rate of change of the total amount of loans to non financial corporations. We see that the average debt grew at negative rates for longer periods than total loans to non financial

Chart 4

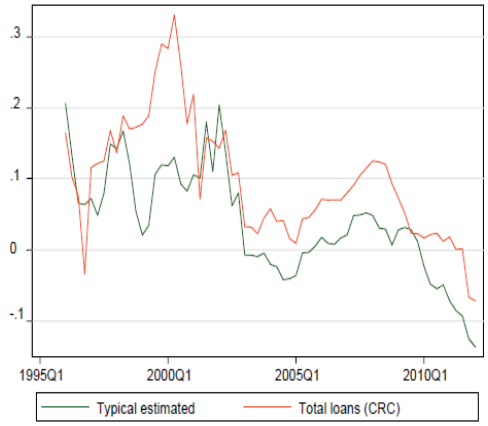
LEVEL OF THE TYPICAL ESTIMATED FIRM DEBT (CALCULATED BY CALENDAR FIXED-EFFECTS) OBTAINED WITH FIXED EFFECTS AT THE FIRM LEVEL | IN LOGS



Source: *CRC*, 1995q1 - 2012q1.
Note: Number of observations: 2,772,582.

Chart 5

YEAR-ON-YEAR GROWTH RATES OF THE TOTAL AMOUNT OF LOANS TO NON-FINANCIAL FIRMS AND OF THE TYPICAL ESTIMATED FIRM DEBT | IN NATURAL UNITS



Source: *CRC*, 1995q1 - 2012q1.

corporations. In the end, the average annual rate of firm debt has become negative in 2010q1; this only happened to total loans to non financial corporations in 2011q4. The difference between the two curves is explained by the heterogeneity in the distribution of debt. If all companies were equal and did not enter or leave activity over time, the graphics should coincide. If all companies were equal but there were companies entering in net terms, we would expect to see an increase in total credit larger than the typical firm debt. However, it can be shown that the number of firms with credit in the sample has been falling since 2007q4, which implies that the observed differences are due to differences between firms. Since the total credit to non financial firms grew more (or decreased less) than the typical firm debt, this means that there is a tendency for firms with larger debt to have higher credit growth. That is, the problem seems to affect most the smaller companies.

New firms

A second way to look at potential quantitative restrictions on credit to non-financial firms is to focus on new businesses. Although it is natural that there are fewer companies starting their activity in the negative phase of the cycle, it is not clear that, for those which are born, financing needs are larger or smaller than during the high phase of the cycle. By restricting our attention to new business and looking at the size of its initial level of funding, we get an idea of the overall level of credit constraints.

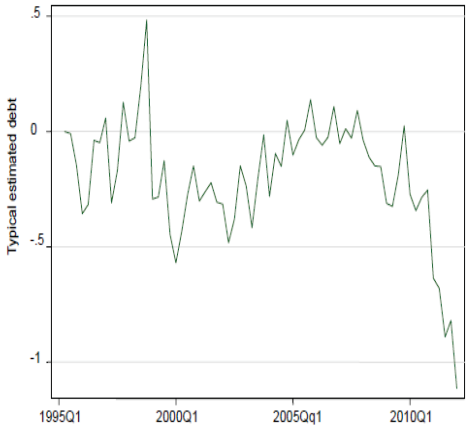
Unfortunately, we cannot identify new businesses using only the CRC. What we can do is to identify companies seeking credit for the first time. In many cases this actually correspond to new companies, but this designation is subject to the important caveat that they are new only in relation to the banking system. If we regress the logarithm of each loan for each new company, in the quarter of their appearance, on the calendar fixed effects, we obtain Chart 6. The interpretation of the figures in this chart is simpler than the previous charts: in this case, each value is simply the average of the logarithm of the loans of all the companies that appeared in this quarter. We can see that the average value of loans to new businesses had a mixed pattern until 2009, when it fell abruptly.

The same approach at the firm level does not change this picture significantly, because new companies usually have only one loan; for this reason we omit the respective graph.

The results suggest that, regardless of the reasons for the drop in credit to non-financial firms in Portugal during 2009, 2010 and 2011, it affected new (and presumably also small) firms disproportionately. In

Gráfico 6

LEVEL OF THE AVERAGE INITIAL LOAN (CALCULATED BY CALENDAR FIXED EFFECTS) RESULTING FROM AN ESTIMATION ONLY WITH NEW FIRMS AND IN THE QUARTER WHEN THEY FIRST APPEAR | IN LOGS



Source: *CRC*, 1995q1 - 2012q1.
Note: Number of observations: 472,090.

fact, if we look at the total credit for a typical company, we see a decline of about 23 per cent between 2009q1 and 2012q1, but for a new company the drop is about 70 per cent between 2009q4 and 2012q1. This is a cause for serious concern, since new firms create jobs and improve the prospects of the economy in the long run. Moreover, there is a vast literature describing the effects of the founding companies in their survival (see *e.g.* Geroski, Mata and Portugal 2011); hence it is clear that the lack of adequate initial funding may involve lower viability of businesses in the future.

Finally, it should be noted that the process of falling credit amounts documented in this section had its beginning before the programme of economic and financial assistance to Portugal, which started in May 2011. The evidence points to the beginning of the reduction in credit occurring during the first half of 2009.

4. Final remarks

The two independent sets of exercises presented in this paper suggest that access to credit by non-financial firms became more difficult from the beginning of 2009 on. Access to credit has also become much more difficult for new companies from the end of 2009 on.

In one of the exercises in this article, we show that the increase in interest rates is difficult to reconcile with the observed changes in firms' balance sheets and the characteristics of their loans, even discounting the systemic movements in interest rates on liquid markets. To the extent that new deposits could have been channelled into new loans during this period, the increase in interest rates on loans may be explained by increased funding costs of banks, and also by the rising cost of capital. However, this question cannot be adequately treated using only the available data.

In another exercise, we documented the fact that the average amount of credit has begun to fall at least since 2009, once we account for some (but not all) heterogeneity of loans and businesses. We also show that the situation of new companies in terms of funding is particularly serious.

Although there are many possible reasons for this sudden increase in the prices of loans and in the observed reduction in the quantities of credit, it seems reasonable to assume that liquidity problems for both banks and businesses were crucial. A different question is whether the regulatory intervention can alleviate the financing problems of new and old firms. The past experience suggests that one should be

very careful in designing such policies.

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SYSTEMIC RISK ANALYSIS AND OPTION-BASED THEORY AND INFORMATION*

*Martín Saldías***

ABSTRACT

This article describes the methodology to compute and the properties of aggregated and forward-looking Distance-to-Default series. These are a set of two market-based indicators to monitor systemic risk in the European banking system based on Contingent Claims Analysis and constructed using information of banks' balance sheets and equity and option quotes. These indicators are generated using information from systemically important banks and the STOXX Europe 600 Banks Index and provide methodological advantages in monitoring vulnerabilities in the banking system over time.

1. Introduction

The financial crisis started in 2007 triggered a renewed attention and operational focus as concerns research on systemic risk in banking. The emerging theoretical[1] and empirical work in this area is making great progress and has produced a wide range of methodologies to detect, to measure systemic risk and to attribute systemic risk to individual institutions in the financial system.

These new approaches are either replacing or enhancing existing methodologies that failed to capture vulnerabilities prior to this crisis. They rely on a variety of sources of information and they are also designed to incorporate new features of the phenomenon as they materialize, such as shared exposures to other economic sectors or market segments, different channels of distress transmission, extreme dependence or other complex elements of systemic risk.[2]

This article highlights one of the recent contributions in this area and describes an application of Contingent Claims Analysis (CCA) to the early detection and monitoring of systemic risk in European banking system. Portfolio and Average Distance-to-Default series are generated using information from individual banks' balance sheets and information from individual and index equity and option markets from systemically important banks based on the STOXX Europe 600 Banks Index.

These indicators contain several attractive features of other systemic risk indicators and also provide methodological advantages in monitoring vulnerabilities in the banking system over time. First, the inclusion of information from option markets, in addition to balance sheet and equity markets information, endows the indicators with forward-looking properties that enable them to detect signs of overall distress in the

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

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1 See de Bandt *et al.* (2009) for a comprehensive discussion of the concept of systemic risk.

2 Galati and Moessner (2011) and Rodríguez-Moreno and Peña (2012) provide a detailed literature review of recent and widely cited work on systemic risk and their relative performance, including inter alia the contributions by Acharya *et al.* (2010), Adrian and Brunnermeier (2011), Segoviano and Goodhart (2009) and Huang *et al* (2010). Other relevant contributions include Brownlees and Engle (2011), Drehmann, and Tarashev, (2011a, b) and Schwaab *et al.* (2011).

banking sector earlier than traditional approaches in the literature and than other market-based indicators.

Due to the inclusion of equity index information in addition to individual banks' data, these series also are able to capture interdependences and joint risk of distress in systemically important banks without turning to explicitly model the dependence structure among individual banks. It also allows detecting tail risk through the differences in equity and option prices of the index and its constituents. Being point estimates, the series produce quick and clear reaction to market distress while keeping smooth and informative long-term signals from fundamentals.

The rest of the article is structured as follows. Section 2 reviews the features of CCA and its applications to systemic risk analysis. Section 3 introduces the banks' sample and discusses the methodological approach in this article. In Section 4 the results of the model calibration are presented and I discuss the properties of the PDD and ADD series and their difference as a tool of systemic risk monitoring. Section 5 concludes.

2. Contingent Claims Analysis and Systemic Risk

Contingent Claims Analysis (CCA) is a modelling framework that applies option pricing theory to corporate default. This framework combines market-based –normally stock prices– and balance sheet information to obtain a comprehensive set of company financial risk indicators, e.g: Distance-to-Default, probabilities of default, risk-neutral credit risk premia, etc.

Based on the Merton (1974) model of credit risk[3], company liabilities are viewed as contingent claims against assets with payoffs determined by seniority. Equity becomes an implicit call option on the market value of assets with strike price defined by the default or distress barrier (determined by the risky debt). As company assets decline and move closer to a default barrier, the market value of the call option also falls. The normalized distance between market value of asset and the distress barrier is called Distance-to-Default (DD) and constitutes the financial risk indicator used in this article to assess and monitor systemic risk in Europe's banking. Distance-to-Default indicates the number of standard deviations at which the market value of assets is away from the default barrier and can be scaled into probabilities of default, if the distribution of assets were known.

The CCA approach has been cited and reviewed by the Financial Stability Board (2009) as a tool to enhance systemic risk analysis and to identify systemically important financial institutions and help establish a regulatory framework that can cope with risk arising from systemic linkages. Accordingly, several applications of this approach based on aggregated data have been implemented to analyze different dimensions of systemic risk in banking and further extensions have been developed for wider range of macro-financial issues and systemic risk, such as sovereign risk, economic output, risk transmission across sectors and quantification of systemic risk contributions.[4]

In most CCA literature thus far, the bottom-up approach of aggregation of individual DD into system-wide indicators has been conducted through simple averages, ADD series, and occasionally also through calibration of individual data into portfolios of banks based on historical return information and pairwise covariances, *i.e.* the basic version of PDD series, which means treating the system as one large bank.

Even though ADD series based on individual DD are highly informative of the dynamics and intensity of

3 See Gray and Malone (2008) for comprehensive technical review of this and extended methodologies as well as related literature.

4 Empirical applications of CCA to assess systemic risk in banking can be found in Duggar and Mitra (2007), Gray and Walsh (2008), Harada and Ito (2008) and Harada *et al.* (2010 Gray *et al*. (2007) and Gray and Jobst (2010) provide in detail discussions of further extensions of the CCA to analyze a wider range of macro-financial issues. See Antunes and Silva (2010) for the case of the Portuguese banking system and Silva *et al.* (2011) for an extension of systemic risk to the analysis of Portuguese macro-financial sectors.

system-wide risks, they can also be misleading if analyzed alone since they do not take into account bank heterogeneity, size differences, risk interdependences and sector-wide tail risks. While other measures of central tendency, such as weighted averages or quantile DD, partially solve the size problem, they are more useful when distress correlations are low and thus do not tackle well the interdependences among banks and fail to react to swings in periods of financial stress (Čihák, 2007).

PDD series enhances the information quality of ADD series, since it additionally takes into account bank size and tackles risk interdependence among banks and also tracks the evolution of the lower bound to the joint probabilities of distress. The resulting joint dynamics of PDD and ADD series works primarily as follows: when the banks' returns comovement increases in times of market distress, showing higher interdependences, both series tend to drop and the gap between them tends to narrow. Since PDD is in general higher than ADD and therefore is a lower bound of distress, the joint movement of DD series contains relevant information about increasing comovement, volatility spillovers and hence systemic risk. PDD may however become coincident indicator when computed using realized data and thus may fail to detect early signals of market stress.

In recent CCA applications, the importance of aggregation of univariate CCA models of institutions into a multivariate framework has been addressed in order to account for both linear and non-linear dependence and to track the interdependences and linkages within and across institutions, given that conventional correlation measures based on realized data become unreliable in presence of fat tails, especially in times of crisis.

In this context, the forward-looking Distance-to-Default series discussed in this article provide two innovations to this literature that tackle the issues of dependence structure among banks and early warning signals of distress. First, the inclusion of information of the reference equity index, the STOXX Europe 600 Banks Index, avoids arbitrary or explicit modeling assumptions or dependence structures among banks in the sample which tend to weaken its information quality and hinder its ability to anticipate events of high systemic risk. Instead, the PDD and ADD series will retain their forward looking properties and their difference will largely reflect the information differences embedded in the implied volatilities of the reference index and its constituents. As information from options on equity indices has not been fully exploited, this feature endows these indicators with an additional signal of distress in the banking sector.

Option implied volatilities from the bank index and its constituents convey also important information about tail risk dependence and the effects of public guarantees in system-wide risk perception.[5] The difference between the downside risks of a portfolio and that of its constituents is a crucial feature in terms of systemic risk when assets tend to have high correlation. There is a higher degree of tail dependence that is not a result of the combination of fat tails of the constituents of a basket.

3. Calibration of Portfolio and Average Distance-to-Default series

The samples used to compute the Portfolio Distance-to-Default (PDD) and Average Distance-to-Default (ADD) series are based on the constituents of the STOXX Europe 600 Banks Index and on those of the EURO STOXX Banks Index, a subset of the former, for the analysis of the banking system in the Euro area between the Third Quarter of 2002 and the Fourth Quarter of 2011.

This sector-based index includes the largest and most widely traded banks' stocks headquartered in 17 countries in Europe. It is probably the best reference of the European banking sector, reflecting the pan-European dimension of financial integration. It has an additional key feature for the purposes of this analysis in that there are liquid exchange-traded option prices on the corresponding index.

5 See Kelly *et al.* (2011) and Langnau and Cangemi (2011) for more insights.

The changing sample used to compute the PDD series includes 96 (nearly all) banks belonging to the STOXX Europe 600 Banks Index over the complete time span, taking into account changes in the quarterly index composition and updates in the broader STOXX Europe 600 Index due relevant corporate actions.[6] The bank sample used to compute the ADD series is a subset of the former. These banks are considered the core of the European banking system in terms of systemic risk and for the purposes of this research. This subsample consists of 34 large systemically important financial institutions, i.e. the largest 33 banks in the PDD sample plus the ING Group. Ideally, the PDD and ADD samples should perfectly match, but the availability of liquid option prices acts as a practical constraint.[7]

Table 1 lists the resulting 34 banks in this subsample.[8]

These banks are regarded as systemically important as they comply with several of the size, cross-jurisdictional activity, interconnectedness, substitutability and complexity criteria listed initially by request of the G-20 leaders in April 2009 and more recently by the Financial Stability Board. They constitute the core of the ECB's Large and Complex Banking Groups and the seed of the Global Systemically Financial Institutions (G-SIFI) list.

As for the models used to calibrate the DD series, at each point in time t, the Average Distance-to-Default (ADD) is represented in equation (1) below and is obtained by taking the simple average across the N individual bank DD series.

$$ADD_t = \frac{1}{N}\sum_{i=1}^{N} DD_{i,t} \tag{1}$$

Table 1

AVERAGE DISTANCE-TO-DEFAULT SAMPLE BANKS

	Bank	Country		Bank	Country
1	*RBS*	United Kingdom	18	*Natixis*	France
2	*Barclays*	United Kingdom	19	*Intesa Sanpaolo*	Italy
3	*BNP Paribas*	France	20	*KBC*	Belgium
4	*HSBC*	United Kingdom	21	*Standard Chartered*	United Kingdom
5	*Deutsche Bank*	Germany	22	*SEB*	Sweden
6	*UBS*	Switzerland	23	*DNB ASA*	Norway
7	*ING*	Netherlands	24	*Svenska Handelsbanken*	Sweden
8	*Crédit Agricole*	France	25	*Erste Group*	Austria
9	*Société Générale*	France	26	*Swedbank*	Sweden
10	*UniCredit*	Italy	27	*Banca Monte dei Paschi di Siena*	Italy
11	*Santander*	Spain	28	*Banco Popular Español*	Spain
12	*Credit Suisse*	Switzerland	29	*Mediobanca*	Italy
13	*Commerzbank*	Germany	30	*Bankinter*	Spain
14	*BBVA*	Spain	31	*Dexia*[(a)]	Belgium
15	*Lloyds Banking Group*	United Kingdom	32	*Fortis*[(a)]	Belgium
16	*Danske Bank*	Denmark	33	*HBOS*[(a)]	United Kingdom
17	*Nordea*	Sweden	34	*Alliance & Leicester*[(a)]	United Kingdom

Source: Saldías (2010).

Notes: (a) The exit dates from the sample for Alliance & Leicester, HBOS, Fortis and Dexia, are October 2008, January 2009, September 2009 and November 2011, respectively.

6 See the updated version of Saldías (2010) for the full list of banks in the sample.

7 This mismatch is reduced as the end of the sample includes several banks that resulted from M&A in earlier periods. At the end of the sample, the ADD sample includes 30 out of the 49 banks from the PDD sample and over 95% of market capitalization. See Saldías (2010) for more details.

8 There are four special cases worth pointing out. Fortis, HBOS and Alliance & Leicester were large and established banks in the sample until they were taken over by other large financial institutions from the sample, BNP Paribas, Lloyds Banking Group and Santander, respectively. As these acquisitions took place late in the sample, the banks were constituents since the start and had liquid option prices, these three banks were not dropped from the ADD sample. Dexia was deleted from the reference index in November 2011 after being broken-up due to its losses in the most acute period of the Greek debt crisis thus far.

where DD_it is the individual DD of bank i for a one-year horizon T, as it is standard practice in the literature. As presented in equation (2) below, for each bank i, $DD_{i,t}$ is a function of a distress barrier $D_{i,t}$, obtained from the banks' balance sheet data; the rate of growth of its assets $r_{i,t}$ – approximated by the risk-free interest rate in the respective home market, and two unobservable variables, namely the implied value of assets $A_{i,t}$ and the implied assets volatility σ_A. The latter two variables are estimated with standard iterative techniques using the market value of equity $E_{i,t}$ and equity price return volatility σ_A, obtained in this article from individual exchange-traded equity options.[9]

$$DD_{i,t} = \frac{\ln\left(\frac{A_{i,t}}{D_{i,t}}\right) + \left(r_{i,t} - \frac{1}{2}\sigma_{A,t}^2\right)T}{\sigma_{A,t}\sqrt{T}} \tag{2}$$

Balance sheet and market data were obtained for the period between 30 September 2002 and 31 January 2012 (2437 trading days). Balance sheet data comprise annual and interim data on total assets, short-term liabilities and equity. The market-based data include daily observations of risk-free interest rates, market capitalization, euro exchange rates and at-the-money calls and puts implied volatilities. The risk-free interest rates are 10-year government bond yields in each bank's country of origin.

Individual DD series have daily frequency. In practical terms, balance sheet information had to be modified from its original quarterly, half-yearly or, in few cases, yearly frequencies using cubic splines to interpolate into daily data. In a second step, daily default barriers (the face value of short-term liabilities plus half of that of long-term liabilities) are computed using these new series of daily balance sheet items. The last step before computing the daily average DD series is to convert put and call implied volatilities into an average implied volatility and then calibrate the individual DD.

The expression for the PDD series is the following:

$$PDD_t = \frac{\ln\left(\frac{A_{P,t}}{D_{P,t}}\right) + \left(r_{P,t} - \frac{1}{2}\sigma_{P,A}^2\right)T}{\sigma_{A,t}\sqrt{T}} \tag{3}$$

where PDD_t is the Portfolio Distance-to-Default T periods ahead at day t. The definition of the inputs in the PDD case is the same as in equation (2). However, as the PDD assumes that individual banks are regarded as a big bank, some relevant methodological changes are worth pointing out. The calibration of PDD in equation (3) requires the aggregation of balance sheet data of the PDD banks into a single series. Hence, the individual annual and interim data on total assets, short-term liabilities and equity are first converted into euro and then added up across the actual constituents from the portfolio to compute quarterly portfolio's distress barrier DP,t, before daily interpolation. The rate of growth of the portfolio assets rP,t is proxied by the Euro area synthetic 10-year government bond yield. Finally, the estimation of the unobservable variables, namely the portfolio's implied value of assets $A_{P,t}$ and the portfolio's implied asset volatility σ_A, was conducted using the equity market value of the portfolio $E_{P,t}$, directly taken as the euro-denominated market value of the reference equity index, and the portfolio's equity volatility obtained from the index options σ_E=σ_{Index}.

As mentioned lives above, using implied volatilities from the reference index and its main constituents means in practice that this paper does not only keep the forward looking component to the ADD and PDD series, but also that no covariance structure is assumed in the calibration of the aggregated data, which constitutes an important difference with existing applications of PDD. Equity volatility is taken directly from options market data, introducing market perceptions of joint distress risk and its features under extreme events.

9 For technical details of these computations, see Saldías (2010).

4. RESULTS

This section reports the results from the calibration of the PDD and ADD series described lines above and focuses on their properties and those embedded in their difference as tools to monitor systemic risk in Europe's banking system.

4.1. *DD* Series Dynamics and Systemic Risk Outlook

Chart 1 plots together on the left hand panel the forward-looking Average Distance-to-Default (ADD) and Portfolio Distance-to-Default (PDD) series, their difference and also the STOXX Europe 600 Banks Index as a reference. The right hand panel shows the PDD and ADD series computed for the Euro area-based banks with the EURO STOXX banks index as a reference.

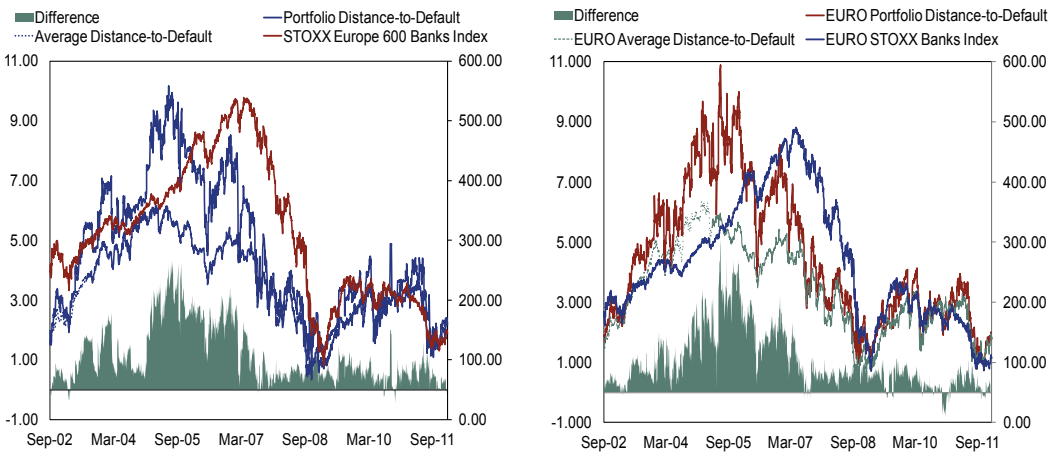
These charts serve to illustrate that the dynamics of these three series – PDD, ADD and PDD-ADD gap– provide a good picture of the market assessment and risk outlook of the banking system in Europe. As expected, PDD moves along and above ADD over the entire sample, with some exceptional periods where ADD exceeds PDD. The PDD series shows a higher standard deviation and large positive skewness (see Table 2 for summary statistics) compared to the ADD series. The first feature illustrates the quick reaction of the PDD series to new information and their effect on returns comovement across the sample, while the differences in terms of skewness show the role of ADD and PDD as lower and higher bounds of joint distress indicators, respectively.

Given a specific trend direction in the series, the difference between PDD and ADD narrows suddenly in response to specific events of high market volatility. These events take place during easily identifiable and short periods and are well illustrated by the reference equity indices. The differences tend to stay narrow for longer periods of high market volatility and when there is a high degree of joint distress in the sector. Symmetrically, positive market news are also perceived in the series through transitory widening of DD series gap during bad times, i.e. low levels of the PDD and ADD series and a continuous and narrow gap. An example of this latter case can be found in late 2008, during wide range recapitalizations in large banks, such as RBS.

The ADD and PDD series start at very low levels and with a very narrow gap in the aftermath of the WorldCom / Enron accounting scandals under a high volatility regime. The series show an upward trend

Chart 1

FORWARD LOOKING DISTANCE-TO-DEFAULT SERIES FOR EUROPE AND THE EURO AREA |
30-SEP-2002 - 31-JAN-2012



Sources: Bloomberg and author's calculation.

Chart 2

SUMMARY STATISTICS						
	European Banks			Eurozone Banks		
	PDD	ADD	PDD-ADD	PDD	ADD	PDD-ADD
Mean	4.655	3.504	1.151	4.486	3.466	1.020
Median	3.948	3.338	0.767	3.789	3.257	0.667
Maximum	10.168	6.163	4.334	10.887	6.343	5.047
Minumum	0.893	0.339	-0.472	0.958	0.410	-0.826
Std. Deviation	2.215	1.425	0.976	2.267	1.451	0.991
Skewness	0.470	-0.008	1.028	0.557	0.045	1.271
Kurtosis	-0.872	-0.996	0.119	-0.783	-1.052	1.151
Observations	2437	2437	2437	2437	2437	2437

Source. Author calculations.

and an increasing PDD-ADD gap afterwards until the end of 2005, reaching a maximum PDD-ADD gap in August, as financial markets become less volatile and the sector becomes more profitable yet increasingly levered. During this time span of low market volatility and increasing bank profitability, there are some specific and short-lived events where the PDD-ADD gap narrows significantly.[10]

Another noteworthy feature in the charts is the fact that the DD series reach their peak in 2005, long before our equity markets' benchmark reached theirs. They start a downward trend around this date, which only bounces back after the first quarter of 2009. Since August 2007, the subprime crisis drove the DD series and especially the gap to very low levels, setting a new period of high volatility, decreasing stock returns and high return comovement across banks. In this new phase, expected stock return volatility, approximated by the options implied volatilities, becomes dominant in the calibration of DD, as the elasticities of DD to changes in the default-barrier and implied asset value is decreasing with changes in the implied asset volatility. The DD series continued to plummet until the Lehman Brothers collapse and the release of the results of the first round of stress-tests in the US in May 2009. The ensuring capital injections at global scale produced an upturn in the DD series while the gap remained close to zero.

The post-Lehman period is characterized by a weak upward trend in the series, reflecting deleveraging and, arguably, better capitalization in banks' balance sheets, but the gap between them stays at very low levels, showing that transmission of volatility shocks remains high. This feature illustrates on one hand the series of capital injections across all Europe coupled with a high volatility regime in financial markets that makes contagion very likely and fast. In addition, there are significant interruptions in recovery as the European sovereign debt crisis hurt the recovery significantly between October and November 2010 and in the Summer of 2011, hitting the euro area banks DD series harder. The very end of the sample shows a marginal upturn as a consequence of the LTRO credit infusion.

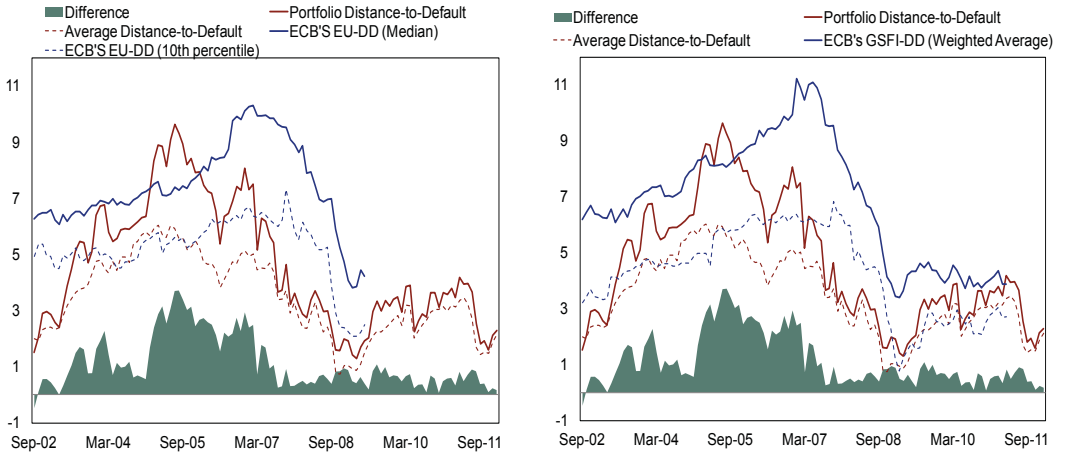
4.2. Forward-looking Properties

Chart 2 compare the forward-looking DD series and their gap to those computed with realized historical volatilities and published by the ECB. In particular, the forward-looking DD series are compared in the left hand side panel with the median of Distance-to-Default series of a sample of large EU banks and in the right hand side panel with the weighted average of Distance-to-Default series of Global Large and Complex Banking Groups. A simple graphical inspection of these figures suggests that turning points of forward-looking DD series precede those of the DD series based on historical volatilities along the whole time span.

10 These episodes include events of significant monetary policy tightening (April and May 2004, May 2005) or strong market corrections (mid-2006, February 2007).

Chart 2

FORWARD LOOKING DISTANCE-TO-DEFAULT SERIES FOR EUROPE AND THE EURO AREA | SEPTEMBER 2002 – JANUARY 2012



Source. Author calculations.

In order to test econometrically this forward-looking feature of Average and Portfolio DD series derived from option implied volatilities and their difference, I run pairwise Granger causality tests vis-à-vis these backward-looking monthly DD series.[11]

Results are reported in Table 3 and provide econometric support to the forward-looking feature of our series. They show that forward-looking DD indicators and also their difference Granger cause ECB's DD series up to two years, as the graphs suggested. More robust results are obtained for longer lags in the test using ADD because of the similar method used to obtain these series and because of the effect of

Table 3

GRANGER-CAUSALITY TESTS

X	PDD	DD_{LCBG}	ADD	DD_{LCBG}	$PDD\text{-}ADD$	DD_{LCBG}	Lags
Y	DD_{LCBG}	PDD	DD_{LCBG}	ADD	DD_{LCBG}	$PDD\text{-}ADD$	
	9.2960**	0.3409	9.9358**	1.448	4.3131**	0.5886	1
	4.6203**	2.157	4.1809**	3.1928**	3.6260**	0.6386	2
	3.3685**	2.3546*	2.8266**	2.8647**	2.9027**	1.5599	3
	0.8942	2.7027**	1.4522	1.1849	1.1	2.4833**	6
	0.7975	1.4975	1.569	1.0343	0.9672	1.4936	12
	1.5336	1.0367	2.161**	1.124	1.0934	1.7115*	24
X	PDD	$DD_{EUmedian}$	ADD	$DD_{EUmedian}$	$PDD\text{-}ADD$	$DD_{EUmedian}$	Lags
Y	$DD_{EUmedian}$	PDD	$DD_{EUmedian}$	ADD	$DD_{EUmedian}$	$PDD\text{-}ADD$	
	9.8082**	1.9012	11.5817**	3.4081*	4.4287**	0.0868	1
	4.1214**	1.496	4.5748**	1.461	2.5346*	0.9063	2
	1.9776	0.8844	2.2155*	1.4751	1.4611	0.6109	3
	0.5576	1.3161	1.2194	1.3442	0.9657	0.7811	6
	1.1634	1.3623	1.8172*	1.3476	1.1521	1.356	12
	1.0517	2.036	1.9579	2.1533	0.9604	0.6808	24

Source: Author calculations.

Notes: The table reports F-statistics of the Granger Causality Tests where the null hypothesis is "X does not Granger cause Y". **,* indicate rejection of the null at 5% and 10% levels, respectively. Averages are used to transform ADD and PDD series into monthly frequencies. $DD_{EUmedian}$ and DD_{LCBG} series obtained from European Central Bank's Financial Stability Reviews. Test samples, subject to data availability: Sep-2002 to May-2009 for $DD_{EUmedian}$; Sep-2002 to Apr-2011 for DD_{GSIFI}.

11 ADD and PDD series were previously transformed to match monthly frequency of ECB data and unit root and cointegration tests were conducted prior to the Granger causality tests. Saldías (2010) also includes Granger causality tests for the Euro area DD series. Unfortunately, the ECB publications do not disclose their portfolio composition, which may affect the tests results marginally.

transitory volatility shocks in the PDD indicator is partially cancelled out in averages and median DD series. These results strongly suggest that there is still a backward-looking component embedded that is not present in the DD series that incorporate option price information. The DD series constructed in this paper have therefore an important advantage as a tool of early detection of systemic risk.

4.3. Comovement and Risk Dependence

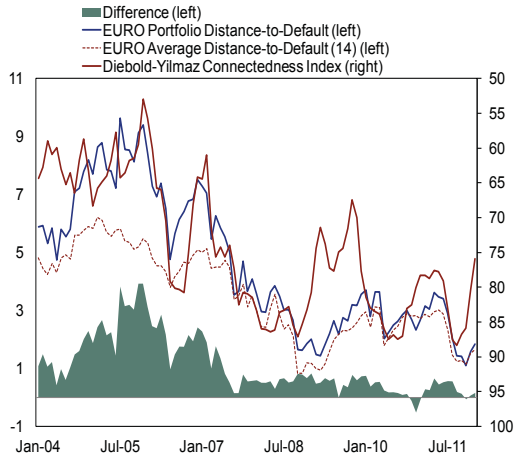
This subsection gives a closer look at the relationship between the PDD and ADD series and its properties in terms of expected comovement changes across bank returns and tail risk dependence.

The difference between PDD and ADD series embeds the comovement and correlation structure of banks' returns. In the case of series where calibration relies on realized pairwise covariances, it is a full reflection. However, when DD series are computed with individual and index option implied volatilities, the role of expected correlation on the DD gap remains important but also includes additional elements of sector-wide tail risks in extreme times. In addition, the PDD-ADD gap depends on the volatility regime in the equity markets, which means that there is a non-linear dependence structure determined by options and other data inputs. In particular, there is stronger effect of the comovement component during crisis times while under low volatility regimes, the other DD inputs, i.e. relative difference in terms of leverage and return growth, play a more relevant role.

In order to illustrate these points, Chart 3 compares the forward-looking DD series for Euro area banks to the Diebold-Yilmaz Connectedness Index (DYCI), introduced in Diebold and Yilmaz (2009). This indicator is constructed using stock prices information and is based on the decomposition of forecast error variances from a vector autoregression model. It is bound by construction between 0 and 100 and it measures the fraction of forecast error variances of banks in the sample that is explained by shocks to other bank stocks. The DYCI provides a good picture of time varying cross-section effects of stock return volatility, *i.e.* comovement and contagion, even though it does not contain signals of increasing risk from higher leverage in banks' balance sheets.

Chart 3

FORWARD LOOKING DISTANCE-TO-DEFAULT SERIES AND DIEBOLD-YILMAZ INTERCONNECTEDNESS INDEX | JANUARY 2004 – JANUARY 2012



Sources: Author calculations and www.financialconnectedness.org.
Notes: Monthly observations. EURO Average Distance-to-Default (14) is a subsample of banks that matches the DYCI banks sample.

As suggested by Figure 3, the forward-looking DD series, especially the PDD series, are highly correlated with the DYCI[12], which illustrates the ability of the DD series to track comovement and contagion. In addition, the spikes detected in the DYCI indicator (plotted on inverted scale to facilitate comparison) also illustrate the short-lived episodes where the gap between PDD and ADD narrows significantly

Charts 4 and 5 illustrate an additional feature of the PDD and ADD series. The PDD-ADD gap embeds presence of asymmetric and nonlinear dependence between the series, which is in turn determined by the volatility regime, the relative relevance of the data inputs in the calibration, and the presence of elements of tail dependence.

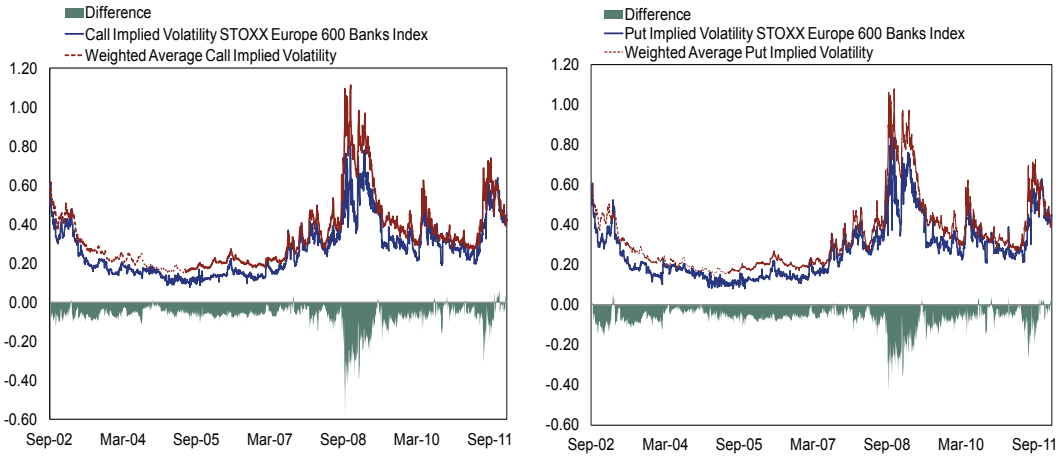
Chart 4 plots together the call and put implied volatilities of the STOXX Europe 600 Banks Index and the (market-cap) weighted average of implied volatilities across the ADD sample. The spread between these two series spread has been time-varying but negative and in reality bound between 20 and 30 percentage points for most of the time until the Lehman Brothers bankruptcy. Then, this spread widened remarkably until it receded since May 2009. The implied volatilities went back to similar levels from the early days of the financial crisis, *i.e.* August 2007 - September 2008, and the spread below 20 percentage points up to the end of 2011. This figure shows that implied volatilities gap shows an overall regular behavior, compared to the larger movements described in the forward-looking DD series difference.

Chart 5 plots this difference versus the PDD-ADD difference to provide evidence of the nonlinear relationship between these variables.[13] Even though the relationship becomes stronger when the DD gap is smaller, the relevance of the volatility component when DD series are converging suggests that the implied volatilities differences play a different role under different volatility levels.

This evidence is in line with recent findings in the literature and illustrate that options prices endow the DD series with richer information than alternative specifications that are highly relevant for systemic risk and are not only related to correlation or comovement, but also with tail events. The modeling framework also allows incorporating the information from fundamentals to track longer-term trends and systemic risk build-up.

Chart 4

PORTFOLIO AND WEIGHTED AVERAGE IMPLIED VOLATILITIES | SEPTEMBER 2002 – JANUARY 2012



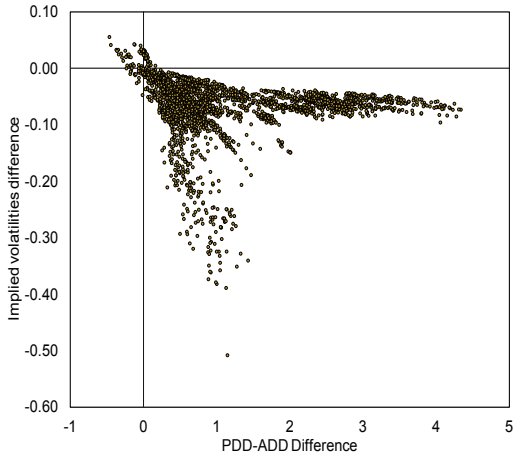
Sources: Bloomberg and author's calculations.

12 The PDD and DYCI pairwise Pearson, Kendall and Spear man correlation coefficients are -0.795, -0.516 and -0.722, respectively. These coefficients vis-à-vis the ADD series are -0.760, -0.505 and -0.712, respectively. Saldías (2010) also tests Granger-causality between the series and provide further evidence early systemic stress in the DD series, especially in the case of PDD series.

13 Saldías (2010) provides additional insights about the presence of asymmetric and nonlinear dependence between the DD series using empirical exceedance correlations and the Average Implied Correlation (AIC) indicator.

Chart 5

DIFFERENCES IN *DD* AND IMPLIED VOLATILITIES SERIES | SEPTEMBER 2002 – JANUARY 2012



Sources: Bloomberg and author's calculations.
Note: The Implied Volatility difference uses the average of put and call index implied volatilities.

5. Conclusions

This article reviewed a method to monitor systemic risk in the European banking system. The approach relies on Contingent Claims Analysis to generate aggregated Distance-to-Default series using option prices information from systemically important banks and the STOXX Europe 600 Banks Index. The analysis extends from 30 September 2002 to 31 January 2012, covering both calm times and the financial crisis.

The three series allow monitoring the banking system as a whole and look at interdependences between banks over time. They are capable of identifying long term trends of build-up of risk in the sector based on the fundamentals, while showing a quick and short-lived reaction to specific market events seen as results of market sentiment and fluctuations. They are smooth in spite of being point in time estimates and thus avoid low signal-to-noise ratios and fuzzy signals. This feature allows one to track systemic risk over time and during crisis and non-crisis episodes

Due to the inclusion of option implied volatilities, they contain forward-looking signals of distress compared to other specifications of the indicator that contain past information and to other alternative market-based indicators based only on stock prices. Finally, they convey richer information of system-wide tail risk and other market-wide policy actions via the relationship between the reference index and the constituents.

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