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PART I – FINANCIAL SYSTEM STABILITY

Chapter 1. Overview

Chapter 2. Macroeconomic and Financial Risks

Chapter 3. Financial Situation of the Non-Financial Private Sector

Chapter 4. Banking System

1. OVERVIEW

The summer of 2007 saw the onset of an international financial crisis that deepened in September 2008. As the crisis began to interweave with the global economic downturn, the Portuguese banking system found itself working within an extremely tight framework. The country's economy is small but economically and financially integrated, so the global turmoil impacted on the banks. The present crisis is one of the severest of recent decades. Its first phase was characterised by major difficulties in most of the wholesale debt markets, including the money markets, but it then spread, with falls in the stock markets and, more recently, with the transmission of its effects to the real economy, as credit risk took increasingly concrete form.

In the years before the crisis, financing in the wholesale markets had been of importance for the expansion of Portuguese banks, as indeed it had been internationally. Against this backdrop, it became clear that certain balance sheet items (and related pension funds), were vulnerable to fluctuations in stock markets and to the size, persistence and deepening of market woes. The result was a slowdown in banking activity and a revision of banks' asset and liabilities management strategies. The country's banks have, however, shown considerable resilience in the face of this particularly stormy climate and have managed to keep their financial intermediation activity on track. A wide range of factors has played a part in this process.

In the first place, what stands out is the situation of the economy and the banks' balance sheets when the crisis broke. The economy was not plagued by any speculative property price bubble, which was propitious for the financial situation of companies and individuals, and consequently for banks. In terms of the financial system, Portuguese banks may well have been exposed to turmoil in the international wholesale debt markets, but two things weighed in the balance: the fact that financing was fundamentally denominated in euros; and the medium to long-term maturities in their operations. This has eased the adjustment of the banks as they ride the financial storm and no hard landing has materialized. Furthermore, the asset portfolios of the banks have not been substantially exposed to the complex assets that were at the core of the current crisis. Asset portfolios have, of course, been considerably drained of value, above all as the contagion caught hold of stock markets. But, in the Portuguese case, the securitisation of credit – a process which has grown significantly since 2002 – has been predominantly related to mortgage loans and the majority of these have not been derecognized, since this can only happen when there is a transfer of all the rights pertaining to the assets and all the risks underlying them. This meant that the banks had made a correct assessment of risk before embarking on these operations and they have continued after securitisation contracts are signed to monitor the capacity of their customers to keep up with repayments. The main reasons why the banks securitised loans were firstly to transform illiquid into liquid assets; and secondly to cut back financing costs. It is worth noting in this context that there are relatively few incentives in Portugal for banks to use securitisation with capital requirements in mind, since a clutch of the securities with greater subordination (equity tranche) is normally retained on their balance sheets: there is a high weighting for these in the determining of capital ratios.

In the second place, Portuguese banks, like other European banks, have made use of the changes in the regulatory framework of the Eurosystem monetary policy. And they have also had state guarantees available, with the government guaranteeing debt issued by the banks as part of the concerted action undertaken by the governments of Europe and other advanced economies. As a final point, the liquidity situation of the banks has benefited since the start of the crisis from portfolios shifts by their customers, above all from individuals. This has come on the back of greater risk aversion and consequently

less appetite for financial assets that are more prone to be buffeted in the markets: hence the increase in demand for bank deposits. The banks themselves have adopted more competitive strategies to build customer deposits, with a closer link between the rates they pay and the rates in the money markets.

Although slowing down in comparison to the years prior to the crisis, banks activity experienced strong growth in 2008 (8.2 per cent on a consolidated basis measured by total assets). The slowdown in banks' activity was across the globe, being particularly marked in banks mired with assets more vulnerable to price fluctuations in plummeting security markets. In Portuguese banks, the portfolio of securities and financial investments plunged 15 per cent over the year. This portfolio, however, only accounts for a relatively small proportion of total assets, where the dominant item is the customer credit portfolio. This accounts for two-thirds of the balance sheet and was up 10 per cent over the year. The fall in the portfolio of securities and financial investments reflected not only the shift in asset prices; the major groups also disposed of holdings. In part, the move in customer credit reflected the influence of international activity carried out by some of the major banking groups. In the domestic market, strong growth was still evinced in loans to non-financial corporations, though the pace slowed towards the end of the year. In addition, non-financial corporations issued substantial amounts of commercial paper, taken in large measure by the banks. In terms of households, loans for housing continued on the downward trend that had set in during 2006 which gathered momentum in the second half of the year under review. Loans for consumption and other purposes continued to grow strongly in the first half of 2008 but then slowed markedly. The lower growth in loans to the non-financial private sector came as banks tightened their criteria for new loans, in tandem with a fall in the demand for credit.

Against a backdrop of global financial and economic crisis, where turbulence in the international wholesale financing markets featured strongly, Portuguese banks have been rejigging the structure of their financing, aiming to cushion the impact of the turmoil on their operations, their profitability and their solvency. By and large, the expansion of banks' activity had come on the back of an increase in customer deposits, but they also tapped into Eurosystem monetary policy operations and to a lesser extent into the international debt markets. In the midst of all this, the year-end saw a fall in liabilities involving securities. In tandem, as in an array of European banks, there was a rise in financial leverage, defined as the ratio between total assets and own funds; and this was in spite of capital increase operations during the course of the year. The same was true for the relationship between tangible own funds and tangible assets.

Customer deposits grew strongly (they were up 12 per cent in December 2008) and this contributed to an improvement in the structural position of liquidity in the banking system, illustrated by the fall in the ratio between credit and deposits, in particular for domestic institutions. The financing problems in the wholesale debt markets were felt above all in medium to long-term operations, which led to a partial shift to shorter maturities, even though this meant higher costs. Most banks across the world were doing likewise.

Taking the year as a whole, the banks managed to issue a considerable volume of debt. The total came in at 17 thousand million euros in bonds, this being the main instrument after securitised debt. Mortgage-backed bonds accounted for 40 per cent of the total. These represent a lower risk for investors, since they are guaranteed by loans for housing which is a dedicated item in banks' portfolios. Be this as it may, the year check saw a big fall in net bond issues by banks overall.

During 2009, nearly 18 per cent of the outstanding balance of Portuguese banks' bonds will mature. More than half of this had been issued on the bond markets by the end of April as the conditions for debt issues eased in the first months of the current year. However, persistent difficulties continue to hamper access to this type of financing, so the guarantees from the Portuguese government concern-

ing debt issues by the banks are still important, making it easier for banks to refinance their liabilities in these markets. The guarantees enable Portuguese banks to tap into medium-term financing in the wholesale markets, shouldering a lower risk premium than for unsecured bonds. They do, however, have to pay a 50 b.p. commission to the State, to which must be added the premium levied on their credit default swap (or through similar banks, if there is no credit default swap for this issuer) if the security is issued with a maturity of more than one year. During the year under review, there was only one issue of state-guaranteed bonds and this was by the *CGD*, though other banks followed suit in early 2009. In spite of the particularly unfavourable climate, Portuguese banks have still managed to issue securitised debt without State guarantee. In fact, only around 45 per cent of the amount issued in the first four months of 2009 has been backed by the State guarantee.

In the Portuguese banking system overall, the liquidity gaps in, which highlight the relationship between highly liquid assets and volatile liabilities, have moved favourably for longer maturities (more than one year). This reflects two things: an increase in highly liquid assets, above all eligible assets for collateral Eurosystem monetary policy operations, and a cut in liabilities involving securities.

So, although the climate was particularly unfavourable, the banks managed to obtain the financing they needed for the relatively large expansion of credit seen during the year. The trend towards raising more funds from customers is a positive sign, implying less exposure to wholesale debt markets, though it must be borne in mind that the recent pace of growth in deposits is not likely to be sustainable for a long period, since there has been a major adjustment of household portfolios involved and this cannot be expected to occur again to the same extent. The measures taken to shore up the financial system, specifically in terms of the State guarantees underpinning banks' debt issues and the changes in the operational framework of the Eurosystem monetary policy operations, should continue to smooth access to financing for the country's banks, even with major turbulence still affecting the wholesale financing markets. The liquidity of Portuguese banks is not likely, therefore, to curtail financing for the economy, above all when a slowdown in demand for bank loans is expected, itself likely to go hand in hand with improvements in the credit/deposit ratio and in the liquidity gap up to one year.

As far as market risk is concerned, the banks are still very exposed, especially to the stock market through bank employees' pension funds, even though the disposal of holdings and the reclassification of some financial assets have cushioned the impact of market fluctuations on their income statements. Where pension funds are concerned, there has been a marked fall in portfolio values on the back of the market turmoil, even though the banks themselves have increased their contributions. Some actuarial gains were in fact recorded, related to the increase in the actuarial discount rate, and this helped to pin back the funds' total liabilities. At year-end, the actuarial discount rate of the main pension funds stood at between 5.5 and 6.0 per cent. This was higher than the average return on Portuguese public debt for the year and could represent a risk factor if the discrepancy in the level between the two types of rate should persist in coming years. Given the big uncertainty hanging over the performance of the financial markets in 2009, it is possible that the actuarial discrepancies in the pension funds could be negative again and generate increased pressure on the solvency ratio of a number of institutions.

Over the last decade, growing indebtedness has become a marked structural feature of the Portuguese economy. During the year under review, there were contrasting moves in the indebtedness of individuals and non-financial corporations. Where individuals were concerned, the ratio of debt to disposable income hardly moved as the financing capacity of the sector increased and the downward trend in the savings rate was reversed. In the case of non-financial corporations, on the other hand, the borrowing requirements rose substantially, as seen by the big increases in the ratio of indebtedness to GDP and the financial leverage ratio. Given the role of financial intermediation undertaken by the banking system in cross-border operations, the net indebtedness of this sector *vis-à-vis* non-resi-

dents represents the external counterpart of the net domestic indebtedness of the private non-financial sector (individuals and non-financial corporations). Against a backdrop of economic and financial crisis, the high level of indebtedness in the Portuguese economy makes it even more important to analyse the financial situation of the non-financial private sector so as to assess financial stability. This is so, even though there tends to be a lengthy period of adjustment for economies belonging to monetary unions, in particular where there are no speculative asset bubbles and the financial systems are sound.

Since the end of 2007, the levels of default in the non-financial private sector have risen substantially. They have in fact gone higher than in the 2003 recession, though they are still relatively well contained. The move has reversed the trend towards a slight fall that had been seen since 2004. Within this picture, however, specific provisions for credit risk remain above the minimum required by the Banco de Portugal. Expectations are for a significant rise in default in the non-financial private sector, with the current macroeconomic prospects and the uncertainty as to the repercussions of the financial crisis on economic activity, even though interest rates have fallen. In the household segment, the anticipated rise in unemployment seems set to push up defaults; and in the non-financial corporate sector, the same is likely to happen, though here the problem stems from the current juncture, along with the high cyclical nature of some sectors of the economy. In tandem, there will likely be a rise in losses given default in situations where companies are not in a position to honour their payment commitments. In fact, according to the results of a default model that incorporates economic cycle projections, the likelihood of corporate default for 2009 comes in with a rise over 2008 that is higher than in the previous twelve months. The figure looks to be heading above the previous high, recorded in 2003. Moreover, the current crisis is bringing situations that are way beyond the experience of the previous recession, and this could well lead to a greater credit risk from major exposures to non-financial corporations, above all bearing in mind the big expansion of credit to these companies in the year under review, at a time when there was already a major slowdown in the economy.

The expected rise in the default ratio of the non-financial private sector looks unlikely to jeopardise financial stability. Among the factors that explain this is the amount of individuals credit that is tied up in owner-occupier housing. Apart from this, those Portuguese households with lower income account for only a very limited slice of the mortgage market, compared with households where income is higher and the average situation in the euro area. There is, in fact, some exposure among young households with a high level of debt, but for this age group the banks usually demand personal guarantees where income is more shaky. There is also no evidence of overvaluation of property prices in Portugal; even so, there will probably be some price adjustment in the market. This could come if the perception of the crisis conditions the demand for housing assets based on expectations of future income, and of housing prices themselves, along with more stringent conditions for bank finance geared to this type of investment. Another element in the frame relates to the monetary policy and governmental measures to support small and medium-sized companies, and such measures could turn out to be important in mitigating credit risk.

Following the onset of the financial crisis in the summer of 2007, the results from banking operations in the last quarter of that year were already badly affected. This came as a result of higher financing costs, the loss of value in the portfolio of financial investments and a fall in the value of some commissions. The situation deteriorated sharply in 2008, as the international financial markets bore the brunt of the storm and the prospects for global economic growth waned fast. Profits in the banks before tax and minority interests, taken on a consolidated basis, fell by around 40 per cent. The situation was the same for return on assets as it was for return on equity, with the first standing at around 0.64 at year-end and the second at 10.6 per cent. Profitability for the year was lower than the minimums seen in the 2003 recession, though they stand up well to comparisons across Europe. It should be remem-

bered, however, that there were changes in the accounting framework from the start of 2005 through the introduction of International Accounting Standards. This affected a considerable portion of banks' financial assets, especially securities, which had to be booked at market prices. They were thus more sensitive to market fluctuations than in the previous accounting system.

The fall in return on assets came essentially as a result of impairment. Almost half was connected to credit to customers and the remainder to held-for-sale financial assets. Among the latter, a particularly salient point was the loss through impairment from cross-holdings in the banks themselves. In terms of the financial margin, however, and this is the main component in results (corresponding to approximately 60 per cent of gross income), there was a growth of around 10 per cent during the year, so its contribution to return on assets is close to the figure for a year earlier. In a period when the interest rate margin effect was relatively small, the volume effect continued to be the main determining factor for the move in financial margin; and the international activity of some of the main Portuguese banking groups played an important part in the growth of this margin. Also of note is the growing importance of international operations in the consolidated results of many institutions. The figure moved from around 20 per cent in 2007 to 40 per cent a year later, even though there was a considerable rise in the losses through impairment associated with such operations. The evolution of impairment in international banking activity reflected the downward thrust, not only in the financial markets, but also in some economies where the banks were operating, above all in Eastern Europe. Portuguese banks, in fact, do not have a very significant exposure to emerging market economies, but there are some risks, though they are limited and have low systemic impact.

Banking activity in 2009 is likely to slowdown sharply. Credit looks set to slow, after the major surge in the year under review, partly as a result of international operations. This, in tandem with greater credit risk, will put downside pressure on bank profitability. To this can be added the uncertainty as to how the financial assets and the wholesale debt markets will move, even though the first few months of 2009 have shown that the recent extreme risk aversion is ebbing.

During 2008, all the institutions under the supervisory aegis of the Banco de Portugal set out their capital adequacy ratios in accordance with the New Capital Agreement, normally designated Basle II. The criteria for Basle II fundamentally affect the calculation of capital requirements, with the definition of own funds similar to the previous agreement. As the financial crisis unfolded during the year, there were changes to the prudential and accounting supervision rules with impact on own funds. A major point here was the possibility of deferring over four years the recognition in own funds of the negative actuarial discrepancies in pension funds. At year-end, with these changes factored in, the own funds adequacy ratio for Portuguese banks, on a consolidated basis, stood at 10.3 per cent, while the Tier I ratio was 7.5 per cent.

Some banks have sold assets to focus more on their core activity and have bolstered their capital through primary market issues; and some of them have already made it clear that they will increase their own funds during 2009 to strengthen their capital ratios. This will bring them into line with the Banco de Portugal recommendation to hold Tier I capital at a minimum of 8 per cent as and from September. Financial market turmoil, however, could yet stall these plans, and the Portuguese government's recapitalisation plan can be particularly relevant here, with 4,000 million euros earmarked for the country's financial institutions.

In the current juncture, one of the main challenges for the financial system lies in the steep deterioration of the prospects for economic activity. This is likely to push up credit risk, with an increase in default rates among households and, in particular, non-financial corporations, and consequent pressure on the profitability and solvency of the country's banking system. The prospects for global economic activity are gloomy, with a severe recession expected in 2009. In addition, the size and duration of the

recession are still cloaked in uncertainty, even though some macroeconomic indicators have suggested a decline in the fall in demand. One of the preconditions for a sustained recovery of the world economy is to put the financial sector and the credit market back on an even keel. Some glimmers have been seen since the start of March, as there seems to be an easing in the extremely high level of risk aversion that was prevalent for a long period in the financial markets. The stock markets are recovering and the spreads in the debt markets are narrowing. Many uncertainties, however, still hover over the financial state of banks across the globe. Results for the first quarter of 2009 in some international banks are coming in higher than expectations. The improvement, however, may be on the back of temporary factors, as the trend for credit risk seems still to be heading upwards. Against this backdrop of extreme uncertainty, the main risk for financial stability lies in the interweaving of the financial system and the real economy, a fact that could trigger a downward spiral. Measures to support the financial system and the economy could be quintessential in the efforts to break any spiral of this nature and lay the groundwork on which the financial system can build and economic growth can flourish.

This Report was written with information available up to the end of April 2009, with the exception of monetary policy decisions, measures related to the financial system and Monetary and Financial Statistics.

MAIN INDICATORS (to be continued)
Per cent; end-of-period figures

	2002	2003	2004	2005	2006	2007	2008
Macroeconomic and financial indicators							
Real GDP (rate of change)							
US	1.6	2.5	3.6	2.9	2.8	2.0	1.1
Euro area	0.9	0.8	2.2	1.7	2.9	2.7	0.9
Portugal	0.8	-0.8	1.5	0.9	1.4	1.8	0.0
Fiscal Balance (as a percentage of GDP)							
US	-3.8	-4.8	-4.4	-3.3	-2.2	-2.9	-6.1
Euro area	-2.6	-3.0	-2.9	-2.5	-1.3	-0.7	-1.8
Portugal	-2.8	-2.9	-3.4	-6.1	-3.9	-2.6	-2.6
Current account balance (as a percentage of GDP)							
US	-4.4	-4.8	-5.3	-5.9	-6.0	-5.3	-4.7
Euro area	0.7	0.5	1.2	0.4	0.3	0.2	-0.7
Portugal	-8.1	-6.1	-7.6	-9.5	-10.0	-9.4	-12.1
Oil price (USD brent; y-o-y rate of change)	47.9	-1.4	34.0	43.1	8.2	55.4	-58.4
Key interest rates - Monetary policy							
US	1.25	1.00	2.25	4.25	5.25	4.25	0.25
Euro area	3.75	3.00	3.00	3.25	4.50	4.00	2.50
3-month Euribor	2.9	2.1	2.2	2.5	3.7	4.7	2.9
Yields on (10-year) Government bonds							
US	3.8	4.3	4.2	4.4	4.7	4.0	2.2
Euro area	4.3	4.3	3.7	3.4	4.1	4.4	3.8
Stock markets (annual rate of change)							
S&P 500	-23.4	26.4	9.0	3.0	13.6	3.5	-38.5
Dow Jones Euro Stoxx	-34.5	18.1	10.0	23.0	20.3	4.9	-46.3
PSI Geral	-20.7	17.4	18.0	17.2	33.3	18.3	-49.7
PSI Financial Services	-24.8	4.0	12.0	24.4	34.8	4.9	-62.9
Financial situation of the non-financial private sector							
Households							
Indebtedness							
As a percentage of GDP	70	75	80	85	90	94	96
As a percentage of disposable income	100	106	113	120	127	136	135
Loans granted by resident financial institutions [a]							
Annual rate of change	11.3	11.0	9.7	10.1	9.7	10.1	4.3
of which:							
Housing purposes	16.0	11.8	10.5	11.1	9.9	8.5	4.3
Consumption and other purposes	-0.1	8.9	7.4	6.9	9.3	15.9	4.6
Net lending (+) / borrowing (-) [b]							
As a percentage of GDP	3.0	3.1	2.8	3.2	2.1	0.7	1.2
As a percentage of disposable income	4.3	4.4	4.0	4.5	3.0	1.1	1.7
Currents savings [b]							
As a percentage of GDP	7.5	7.5	6.9	6.6	5.8	4.3	4.6
As a percentage of disposable income	10.6	10.6	9.8	9.3	8.1	6.2	6.5
Investment in real assets [b]							
As a percentage of GDP	6.1	5.1	5.1	5.1	4.0	4.2	4.5
Non-financial corporations							
Total debt [c]							
As a percentage of GDP	114	118	116	120	123	130	140
Annual rate of change	4.0	5.4	4.4	6.2	6.9	10.9	10.1
Financial debt [d]							
As a percentage of GDP	109	112	108	112	115	122	134
Loans granted by resident financial institutions [a]							
Annual rate of change	7.3	5.4	3.2	4.1	6.6	11.4	12.1
Net lending (+) / borrowing (-) [b]							
As a percentage of GDP	-6.4	-4.7	-4.5	-5.9	-7.4	-8.0	-10.3
Currents savings [b]							
As a percentage of GDP	7.6	8.2	8.1	6.6	5.4	4.9	3.2
Investment in real assets [b]							
As a percentage of GDP	14.9	13.8	13.6	13.7	13.7	13.8	14.8

Notes: y-o-y year-on-year. n.a. not available. **(a)** Loans granted by monetary financial institutions and other financial intermediaries adjusted for securitisations conducted through non-resident special purpose vehicles. **(b)** Net lending/borrowing, savings and investment ratios to GDP up to 2006 use National Accounts base 2000; 2007 and 2008 ratios are based on *INE*'s quarterly accounts. It corresponds to the sum of GFCF, changes in inventories, acquisitions less disposals of valuables and acquisitions less disposals of non-produced non-financial assets. **(c)** It includes loans granted by resident and non-resident credit institutions, loans/additional capital by non-resident intra-group corporations (excluding those granted to non-financial corporations having their head-office in Madeira's off-shore), commercial paper and bonds issued by non-financial corporations held by other sectors and trade credits received from other sectors. **(d)** Total debt excluding trade credits and including loans granted to non-financial corporations having their head-office in Madeira's off-shore. It corresponds to the financial accounts instruments "Securities other than shares" and "Loans".

MAIN INDICATORS (continued)
Per cent; end-of-period figures

	2002	2003	2004	2004*	2005*	2006*	2007*	2007**	2008**
Profitability									
ROE - Return on equity [e]	14.1	16.2	14.5	13.1	19.4	20.6	18.0	18.2	10.6
ROE - Return on equity - ajusted [e], [f]						18.9			
ROA - Return on assets [e]	0.78	0.91	0.87	0.65	1.03	1.30	1.18	1.15	0.64
ROA - Return on assets - ajusted [e], [f]						1.18			
Financial margin (as a percentage of average assets)	2.12	2.00	1.94	1.91	1.86	1.89	1.88	1.96	1.95
Income from services and commissions (net, as a percentage of average assets)	0.63	0.69	0.76	0.72	0.77	0.78	0.76	0.76	0.71
Cost to income ratio	59.1	57.4	57.2	71.7	58.3	53.4	53.7	54.1	53.7
Capital adequacy [g]									
Overall capital adequacy ratio	9.8	10.0	10.4	10.2	11.3	10.9	10.0	10.3	10.3
Market risk									
Net open position in equities to regulatory capital	n.d.	n.d.	n.d.	1.8	1.3	2.6	2.3	2.0	0.2
Coverage ratio of the pension funds of bank employees (as a percentage of regulatory capital)	-0.8	0.1	-0.4	-0.4	1.2	5.3	5.1	4.7	1.1
Liquidity risk									
Credit-to-deposit ratio	129.5	129.1	128.3	130.9	137.5	145.6	153.9	155.0	152.8
Coverage ratio of interbank liabilities by highly liquid assets	80.0	100.7	99.5	110.0	98.5	99.2	88.1	75.4	68.3
Liquidity gap [h]									
Up to 3 months	-2.4	1.6	2.4	1.4	-0.9	-1.5	-2.5	-1.5	-1.5
Up to 1 year	-7.2	-6.3	-3.6	-5.4	-8.2	-8.9	-11.4	-9.9	-6.4
For domestic banks									
Credit-to-deposit ratio	125.6	124.8	127.2	129.2	134.2	140.6	150.8	145.9	142.8
Coverage ratio of interbank liabilities by highly liquid assets	91.6	120.1	120.8	127.3	126.5	118.0	107.1	115.4	106.9
Liquidity gap [h]									
Up to 3 months	-3.4	0.5	0.7	0.6	-0.7	-0.9	-2.1	-1.4	-2.2
Up to 1 year	-7.6	-6.5	-4.8	-5.4	-7.4	-8.9	-10.1	-9.0	-6.7
Credit risk									
Loans granted by resident financial institutions to the non-financial private sector [a]									
Annual rate of change	9.3	8.3	6.6	6.6	7.4	8.4	10.7	10.7	7.7
Credit and interest overdue (on a consolidated basis)									
As a percentage of credit to customers	2.3	2.4	2.0	1.8	1.7	1.5	1.5	1.7	2.1
As a percentage of assets	1.6	1.6	1.3	1.3	1.1	1.0	1.0	1.1	1.4
Non-performing loans of households									
As a percentage of loans to households	1.9	2.0	1.8	1.8	1.7	1.5	1.6	1.6	1.9
Non-performing loans of non-financial corporations									
As a percentage of loans to non-financial corporations	2.4	2.1	1.7	1.7	1.7	1.5	1.4	1.4	2.2
Annual flow of new credit overdue and other credit considered to be doubtful [i]									
As a percentage of bank loans adjusted for securitisation transactions									
Households	0.4	0.5	0.2	0.2	0.2	0.3	0.4	0.4	0.7
Adjusted for sales outside the banking system					0.3	0.4	0.4	0.4	0.7
Non-financial corporations	0.7	0.5	0.5	0.5	0.6	0.4	0.6	0.6	1.2
Adjusted for sales outside the banking system					0.6	0.5	0.6	0.6	1.3
International exposure (for domestic banks):									
Share of external assets in total assets [j]	18.1	21.6	20.5	30.5	27.6	30.0	26.8	27.6	28.9
of which:									
Local assets denominated in local currency	1.2	1.7	1.6	7.2	6.4	6.7	8.0	8.2	8.4
International assets by counterparty sector:									
Banking sector	8.3	14.1	14.8	13.7	12.7	14.0	8.2	8.4	6.5
Non-banking sector	8.5	5.8	4.0	9.7	8.5	9.3	10.7	11.0	14.0

Sources: Bloomberg, IMF, *INE*, Thomson Reuteurs and Banco de Portugal.
Notes: y-o-y year-on-year; n.a. not available. *The break in the series results from the implementation of the International Accounting Standards (IAS), which also implied a redefinition of the group of banking institutions under analysis. ** Break in the series 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. **(e)** ROE and ROA indicators are based on Income before taxes and minority interests, considering average values for the period for the stocks variables. **(f)** The adjusted profitability indicators 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. **(g)** In 2008, all analysed institutions have computed the capital adequacy ratio in accordance with Basel II criteria, which mainly affected the determination of capital requirements. **(h)** This indicator is computed using information from Notice No. 1/2000, which is applicable only to financial institutions which collect deposits. **(i)** Change in amounts outstanding of credit overdue and other non-performing loans recorded in the balance sheet of resident MFIs plus write-offs/write-downs as a percentage of bank loans adjusted for securitisations. Sales outside the banking system included in the adjusted flow correspond to credit overdue and other non-performing loans not written-off, in accordance with the quarterly report defined in Instruction of Banco de Portugal No 2/2007. **(j)** From 2004 onwards, figures on external assets are based on a new information report. Comparable figures for 2004, 2005, 2006 and 2007are based on estimates on total assets for the whole set of domestic banks. Comparable figures for 2007 and 2008 are based on assets for domestic institutions.

BALANCE SHEET OF THE BANKING SYSTEM
On a consolidated basis

	EUR millions				Structure (as a percentage of total assets)				Year-on-year rate of change (per cent) [a]							
	2007		2008		2007		2008		2007				2008			
	Jun.	Dec.	Jun.	Dec.	Jun.	Dec.	Jun.	Dec.	Mar.	Jun.	Sep.	Dec.	Mar.	Jun.	Sep.	Dec.
Cash and claims on central banks	5 279	8 809	7 602	9 261	1.3	2.1	1.7	2.0	18.2	-11.9	3.5	12.4	34.6	44.0	27.5	5.1
Claims on other credit institutions	3 468	4 094	3 857	4 184	0.9	1.0	0.9	0.9	-0.4	-19.4	23.6	2.5	11.5	11.2	-12.2	2.2
Investment in credit institutions	37 614	35 995	35 898	28 001	9.2	8.4	8.0	6.0	-15.1	11.2	0.9	-6.7	-0.9	-4.6	-1.2	-22.2
Financial assets at fair value through profit or loss	25 691	22 582	23 944	21 037	6.3	5.3	5.4	4.5	5.2	13.4	4.7	0.1	-5.5	-6.8	-8.9	-6.8
Equity	1 482	1 644	1 340	1 082	0.4	0.4	0.3	0.2	-9.6	32.8	-10.3	21.9	-25.0	-9.6	-15.0	-34.1
Debt instruments	16 414	13 127	12 964	8 788	4.0	3.1	2.9	1.9	0.4	3.4	-4.0	-12.8	-20.4	-21.0	-29.0	-33.1
Other	7 795	7 812	9 640	11 166	1.9	1.8	2.2	2.4	23.3	34.9	28.5	22.3	35.8	23.7	31.0	42.9
Available-for-sale financial assets	23 894	26 467	26 861	25 961	5.9	6.2	6.0	5.6	23.3	29.9	25.4	34.2	14.7	12.4	21.4	-1.9
Equity	7 870	7 681	5 774	4 954	1.9	1.8	1.3	1.1	42.4	66.8	29.9	25.9	-9.6	-26.6	-22.9	-35.5
Debt instruments	15 548	18 019	19 290	19 177	3.8	4.2	4.3	4.1	20.3	22.4	22.6	37.0	23.9	24.1	35.4	6.4
Other	476	767	1 797	1 830	0.1	0.2	0.4	0.4	-39.2	-56.4	40.3	78.2	69.3	277.3	161.4	138.7
Investment held to maturity	1 620	1 438	2 283	4 898	0.4	0.3	0.5	1.1	-19.2	-21.8	-27.2	-28.4	65.6	40.9	81.1	240.6
Hedging derivatives	2 060	1 385	1 596	2 298	0.5	0.3	0.4	0.5	31.6	56.3	-5.6	-12.9	15.0	-22.5	17.8	65.9
Investment in subsidiaries	3 097	3 229	2 765	2 480	0.8	0.8	0.6	0.5	6.1	-11.6	-7.4	-15.3	-25.2	-10.7	-29.7	-23.2
Net credit to customers	265 636	285 561	299 858	313 786	65.3	66.7	67.0	67.7	12.5	13.9	16.8	14.5	17.9	12.9	11.9	9.9
Gross credit	272 150	292 171	306 943	321 745	66.9	68.2	68.6	69.4	12.2	13.6	16.4	14.3	17.8	12.8	12.0	10.1
of which: overdue credit to customers	4 882	4 905	5 957	6 702	1.2	1.1	1.3	1.4	4.5	8.4	5.1	14.1	21.5	22.0	31.9	36.6
Impairment and value adjustments in credit to customers	-6 514	-6 610	-7 085	-7 958	-1.6	-1.5	-1.6	-1.7	-0.4	3.9	-0.7	8.4	13.6	8.8	13.6	20.4
Securitised non-derecognised assets	18 454	19 212	22 255	27 276	4.5	4.5	5.0	5.9	23.3	20.8	3.7	18.5	10.4	20.6	19.6	42.0
of which: credit to customers	18 454	19 279	22 255	26 784	4.5	4.5	5.0	5.8	23.0	20.8	3.7	19.1	10.6	20.6	19.6	38.9
Tangible and intangible assets	4 962	5 184	5 220	5 583	1.2	1.2	1.2	1.2	13.0	12.6	10.0	10.0	10.7	5.2	6.7	7.7
Other assets	15 218	14 248	15 385	18 559	3.7	3.3	3.4	4.0	-0.3	5.4	0.6	-0.9	8.2	1.1	23.5	30.3
Total assets	**406 993**	**428 205**	**447 524**	**463 323**	**100.0**	**100.0**	**100.0**	**100.0**	**10.2**	**13.4**	**13.1**	**11.7**	**13.8**	**10.0**	**10.7**	**8.2**
Resources from central banks	2 151	5 465	6 612	13 968	0.5	1.3	1.5	3.0	-77.3	-76.6	150.0	198.8	110.2	207.4	132.9	155.6
Resources from other credit institutions	70 445	69 620	71 615	70 582	17.3	16.3	16.0	15.2	8.8	6.7	-3.0	4.1	9.8	1.7	7.6	1.4
Resources from customers and other loans	172 779	188 487	195 135	210 572	42.5	44.0	43.6	45.4	4.2	5.6	10.3	8.2	16.9	12.9	13.4	11.7
Liabilities represented by securities	95 019	96 629	104 503	92 765	23.3	22.6	23.4	20.0	32.0	44.2	23.5	17.5	12.0	10.0	4.2	-4.0
Subordinated liabilities	10 202	11 201	10 886	11 319	2.5	2.6	2.4	2.4	0.8	0.9	4.7	9.3	12.8	6.7	15.7	1.0
Financial liabilities held for trading	9 565	9 662	11 633	17 338	2.4	2.3	2.6	3.7	16.9	29.7	55.2	61.1	42.7	21.6	46.8	79.4
Hedging derivatives	2 777	2 013	2 428	2 493	0.7	0.5	0.5	0.5	76.9	92.8	7.6	7.8	5.2	-12.6	10.7	23.8
Liabilities for non-derecognised assets in securitisation operations	4 852	4 512	3 916	3 299	1.2	1.1	0.9	0.7	77.1	81.0	47.4	9.3	-10.8	-19.3	-40.0	-26.9
Other liabilities	13 470	14 105	13 979	13 171	3.3	3.3	3.1	2.8	-4.6	-0.1	3.3	0.9	2.1	3.8	3.6	-6.6
Total liabilities	**381 260**	**401 694**	**420 707**	**435 506**	**93.7**	**93.8**	**94.0**	**94.0**	**9.5**	**13.1**	**13.2**	**11.7**	**14.3**	**10.3**	**11.0**	**8.4**
Capital	25 733	26 511	26 818	27 817	6.3	6.2	6.0	6.0	21.6	17.5	12.0	11.8	6.1	4.2	5.8	4.9
Total liabilities and net wealth	**406 993**	**428 205**	**447 524**	**463 323**	**100.0**	**100.0**	**100.0**	**100.0**	**10.2**	**13.4**	**13.1**	**11.7**	**13.8**	**10.0**	**10.7**	**8.2**

Source: Banco de Portugal.
Note: (a) In 2007 year-on-year rates of change were based on the thirteen banking groups that adopted the International Accounting Standards in 2005, due to lack of comparable financial statements for the banking sector as a whole in 2006 and 2007.

PROFIT AND LOSS ACCOUNT OF THE BANKING SYSTEM

On a consolidated basis

	EUR millions						Structure (as a percentage of average assets) [a]						Year-on-year rate of change (per cent) [b]					
	2007			2008			2007			2008			2007			2008		
	H1	H2	Year	H1	H2	Year	H1	H2	Year	H1	S2	Year	H1	H2	Year	H1	H2	Year
1. Interest income	11 727	13 540	25 267	14 790	16 359	31 149	6.00	6.50	6.25	6.75	7.15	6.95	27.5	29.8	28.7	26.1	20.8	23.3
2. Interest expenses	7 821	9 505	17 325	10 560	11 861	22 420	4.00	4.56	4.29	4.82	5.18	5.00	34.9	40.3	37.8	35.0	24.8	29.4
3. Financial margin (1-2)	**3 906**	**4 035**	**7 941**	**4 231**	**4 498**	**8 729**	**2.00**	**1.94**	**1.96**	**1.93**	**1.97**	**1.95**	**14.2**	**9.1**	**11.5**	**8.3**	**11.5**	**9.9**
4. Income from capital instruments	158	37	195	219	59	278	0.08	0.02	0.05	0.10	0.03	0.06	12.8	42.7	17.5	39.0	59.6	42.9
5. Income from services and commissions (net)	1 409	1 647	3 056	1 546	1 641	3 187	0.72	0.79	0.76	0.71	0.72	0.71	4.3	14.2	9.4	9.8	-0.4	4.3
6. Income from financial assets and liabilities measured at fair value	281	-452	-172	-206	265	59	0.14	-0.22	-0.04	-0.09	0.12	0.01	-	-	172.7	-173.4	-158.6	-134.4
7. Income from available-for-sale financial assets	400	681	1 080	406	128	534	0.20	0.33	0.27	0.19	0.06	0.12	72.7	190.1	130.8	1.5	-81.2	-50.6
8. Income from foreign exchange revaluation	116	292	409	57	134	190	0.06	0.14	0.10	0.03	0.06	0.04	-60.8	31.0	-20.8	-51.4	-54.3	-53.5
9. Income from the sale of other financial assets	191	-31	160	51	271	322	0.10	-0.01	0.04	0.02	0.12	0.07	-67.1	-102.7	-79.0	-73.3	-980.1	101.0
10. Other operating profit and loss	315	371	686	345	312	656	0.16	0.18	0.17	0.16	0.14	0.15	-16.5	-22.5	-19.7	9.5	-16.0	-4.3
11. Gross income (3+4+5+6+7+8+9+10)	**6 775**	**6 580**	**13 356**	**6 648**	**7 307**	**13 956**	**3.46**	**3.16**	**3.30**	**3.03**	**3.19**	**3.12**	**9.1**	**3.0**	**6.0**	**-1.9**	**11.0**	**4.5**
12. Staff costs	1 821	2 091	3 912	1 965	2 049	4 013	0.93	1.00	0.97	0.90	0.90	0.90	-0.1	8.0	4.1	7.9	-2.0	2.6
13. General administrative costs	1 283	1 465	2 748	1 369	1 510	2 878	0.66	0.70	0.68	0.62	0.66	0.64	8.5	11.8	10.2	6.7	3.1	4.7
14. Depreciation and amortisation	264	295	559	283	315	598	0.14	0.14	0.14	0.13	0.14	0.13	6.5	14.1	10.4	6.9	6.9	6.9
15. Provisions net of restitutions and annulments	131	81	212	36	-98	-62	0.07	0.04	0.05	0.02	-0.04	-0.01	112.0	-11.1	41.2	-72.6	-221.4	-129.3
16. Impairment losses and other net value adjustments	803	887	1 690	1 307	2 329	3 636	0.41	0.43	0.42	0.60	1.02	0.81	45.9	27.2	35.6	62.7	162.5	115.1
17. Negative consolidation differences	-4	-9	-12	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-
18. Appropriation of income from associates and joint ventures (equity method)	161	232	393	59	-88	-29	0.08	0.11	0.10	0.03	-0.04	-0.01	25.0	237.2	97.4	-63.0	-138.0	-107.3
19. Income before taxes and minority interests (11-12-13-14-15-16-17+18)	**2 637**	**2 002**	**4 639**	**1 749**	**1 114**	**2 863**	**1.35**	**0.96**	**1.15**	**0.80**	**0.49**	**0.64**	**7.1**	**-4.7**	**1.7**	**-33.7**	**-44.4**	**-38.3**
20. Taxes on profit	460	311	772	356	252	607	0.24	0.15	0.19	0.16	0.11	0.14	25.5	-41.4	-11.9	-22.7	-19.2	-21.3
21. Income before minority interests (19-20)	**2 177**	**1 691**	**3 868**	**1 394**	**862**	**2 256**	**1.11**	**0.81**	**0.96**	**0.64**	**0.38**	**0.50**	**4.1**	**5.3**	**4.6**	**-36.0**	**-49.0**	**-41.7**
22. Minority interests	372	281	653	293	168	462	0.19	0.13	0.16	0.13	0.07	0.10	8.2	19.4	12.8	-21.2	-40.0	-29.3
23. Net profit and loss (21-22)	**1 805**	**1 410**	**3 215**	**1 101**	**694**	**1 795**	**0.92**	**0.68**	**0.80**	**0.50**	**0.30**	**0.40**	**3.2**	**2.6**	**2.9**	**-39.0**	**-50.8**	**-44.2**

Source: Banco de Portugal.
Notes: (a) Half-year data are annualised. (b) In 2007 year-on-year rates of change were based on the thirteen banking groups that adopted the International Accounting Standards in 2005, due to lack of comparable financial statements for the banking sector as a whole in 2006 and 2007.

CAPITAL ADEQUACY OF THE BANKING SYSTEM
On a consolidated basis

EUR millions	2007		2008	
	Jun.	Dec.	Jun.	Dec.
1. Own funds				
1.1. Total original own funds for solvency purposes	19 086	19 443	21 458	23 015
1.1.1.Original own funds (gross)	19 900	20 216	22 179	23 799
1.1.2. Deductions from original own funds	814	773	721	783
1.2. Total additional own funds for solvency purposes	10 068	10 766	9 433	10 006
1.2.1. Additional own funds (gross)	10 875	11 523	10 130	10 765
1.2.2. Deductions from additional own funds	807	757	697	759
1.3. Deductions from total own funds	1 116	841	1 013	1 276
1.4. Total supplementary own funds eligible to cover market risk	17	14	0	0
Total own funds	**28 055**	**29 381**	**29 878**	**31 745**
2. Capital requirements				
2.1. Capital requirements for credit risk, counterparty credit risk and free deliveries	20 568	22 096	21 570	22 197
2.2. Settlement risk	2	1	0	0
2.3. Capital requirements for position risk, foreign exchange risk and commodities risk	881	737	803	629
2.4. Capital requirements for operational risk	9	11	1 726	1 758
2.5. Capital requirements - Fixed overheads	6	6	5	5
2.6. Large exposures - Trading book	0	0	2	0
2.7. Other and transitional capital requirements	1	0	0	0
Total capital requirements	**21 465**	**22 850**	**24 107**	**24 589**
3. Ratios (per cent)				
3.1. Own funds/Total requirements	130.7	128.6	123.9	129.1
3.2. Own funds/(Total requirements x 12.5)	10.5	10.3	9.9	10.3
3.3. Original own funds/(Total requirements x 12.5)	7.1	6.8	7.1	7.5

Source: Banco de Portugal.
Note: The break in the series shown in the table corresponds to the adoption of Basel II criteria, which is mainly reflected in developments in the capital requirement components.

2. MACROECONOMIC AND FINANCIAL RISKS

2.1. Overview

During 2008 and the first few months of 2009, the Portuguese banking system had to operate in a particularly bleak global macroeconomic and financial environment. There was still great uncertainty over the total amount of impairments that the international financial system had to bring to the surface. In addition, banks were still finding problems with financing in the wholesale markets, above all for medium to long-term operations. The only glimmer was the slight improvement in the conditions for short-term financing in the first months of 2009. Also in the frame were the dismal prospects for economic activity, with a severe global recession being forecast for 2009, which is likely to build downside pressure on the financial leverage of households, companies and banks. In this framework, there are a host of channels linking the financial system and economic activity that could clog up, exacerbating the economic and financial situation worldwide. Against such a highly uncertain backdrop, the main risk for financial stability hinges on the effects of the interaction between the financial system and the real economy. The two stack up so closely that their mutual interaction can lead to a downward spiral. Support measures for the financial system and the real economy may then be essential for the stability of the financial system and the necessary boost for economic growth.

There are many ways in which the financial system can stoke up the economic crisis. In the first place, the banks' financing problems have led to a major clampdown in access to bank credit, above all in the United States. With financing through the markets hampered, investment projects may be put on hold and private consumption may be squeezed. This could lead to insolvency among those economic agents with more vulnerable balance sheets. In addition, the turmoil in the financial system could lead to negative wealth effects, increasing the losses of some economic agents in the financial and property markets. As a last point, some of the measures put in place by the authorities across the globe to shore up the financial system could have a significant impact on public finances.

A worldwide recession cannot but have severe repercussions for the financial system. In the first place, there are the prospects of continuing problems in the property markets in those countries with overblown prices. This will continue to have a major impact on banks, above all through a fall in the asset values that underpin the loans. This situation will worsen as defaults rise. In the current climate, therefore, one of the main risks for the financial system across the globe is a rise in credit risk. This will likely affect most directly those banks that are more exposed to the property market (particularly in countries which have had property market price bubbles); it will also take a toll on sectors dependent on cyclical factors and on exports, operating in a world where trade has contracted markedly. Adding to this the general mood of uncertainty as economic conditions deteriorate, demand for credit is expected to slow. As a result, banking activity expansion is reined in and profitability hamstrung.

Portugal is a small open economy, highly integrated economically and financially. It is therefore very sensitive to the turmoil in the international financial system, to the global economic crisis and to the way that the two interact. The Portuguese financial system is not so much affected directly through the assets that triggered the current financial crisis, since it had relatively little exposure to these assets. Its woes have stemmed more from the impairment to financial assets that have resulted from the overall negative thrust in international financial markets. More importantly, Portuguese banks are also vulnerable to this turmoil because of their recourse to financing in the international wholesale markets. This has become important because of a significant and persistent discrepancy between domestic savings and investment. Against this backdrop, Portuguese banks have been adjusting their financing struc-

ture since the onset of the crisis. They have expanded their customer-based funds and, to a lesser extent, they have tapped into the Eurosystem.

In general terms, the risk factors described above have affected not only the stability of the Portuguese financial system but also the prospects for the country's economic activity, and this in turn has played its part in darkening the picture facing bank operations. Within the overall scenario, there are specific points of risk and vulnerability that may be especially relevant for the country's financial stability. In the first place, companies are likely to continue to see a major fall in external and domestic demand, particularly in sectors that are more sensitive to cyclical fluctuations. This may imply an increase in credit risk underlying exposures to these companies. There is also a high level of indebtedness in some households and companies (particularly in construction and in the property market), and this can hamper their capacity to adjust to negative shocks. Compounded by the possibility of difficulties in refinancing debt, this may well knock on to more defaults. This risk, however, could well be mitigated by the cuts in interest rates since the last quarter of 2008, since these moves have eased the debt service burden. In turn, the prospects for the housing market may worsen: on the one side, there is the economic downturn, with increased unemployment leading to income shortfalls associated with a general mood of uncertainty; and on the other side, even though there have not been unfettered overvaluations in recent years, the fall in demand could be aggravated by more stringent criteria used by the banks in their assessment of mortgage loan applications. In addition, there are some risks associated to exposure to emerging economies, even though the country's banks have no significant international exposure. The situation is limited and with low systemic risk (see "Section 4.2 *Activity and profitability*", of this Report). As a last point, there has been a rise in sovereign risk, associated inter alia with the measures taken by the State in support of the banking system, which could reduce the impact of government intervention in the economy, namely through an increase in financing costs for domestic economic agents.

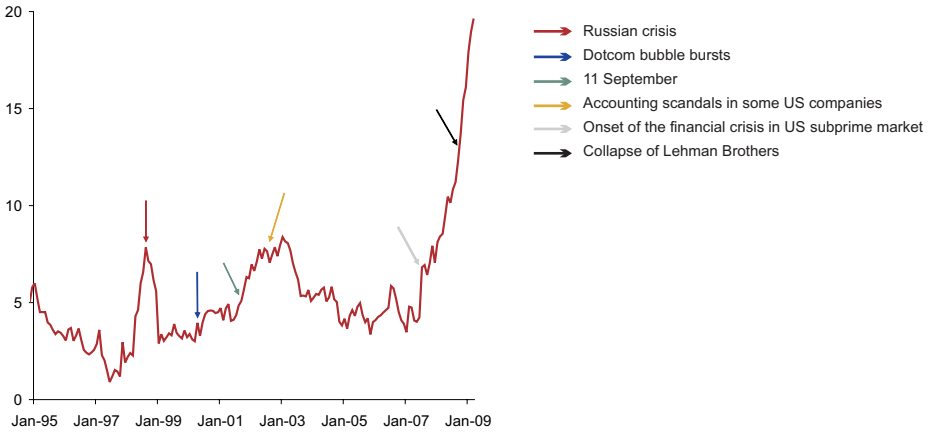
Against this backdrop, Portuguese banks are still facing a series of risks that are particularly virulent. In particular, the considerable slowdown in economic activity is likely to lead to a visible increase in credit risk, even though the fall in interest rates has mitigated this risk. Liquidity risk also continues to affect banking operations, given the problems in tapping into wholesale markets, above all for the medium to long term. This particular risk, however, is offset to a certain extent by the strong growth in customer deposits, the ECB moves to ensure liquidity and government measures to underpin the financial system. Given this, bank liquidity is not likely to hamper financing for the economy, above all when the demand for bank loans is generally seen to be falling. Furthermore, part of the scenario has been the fact that the market turmoil has brought in its wake a drop in the value of assets that are sensitive to market risk. This has had a downside effect on the profitability and solvency of Portuguese banks, with the risk of further losses still hovering over these markets. Moreover, the portfolios of bank employees pension funds have also been hard hit by the downward pressure on financial asset prices, especially shares. A number of measures have been taken over the last few months, however, to mitigate the effects of this, acting as a shield for banks' capital and profits.

2.2. Global risks and vulnerabilities

Banks operated throughout 2008 in the most gloomy of circumstances. The financial turmoil that surfaced in the summer of 2007 got worse in early 2008, as a number of financial groups posted losses and the possibility of economic recession loomed ever larger, against a backdrop of heightened risk aversion (Chart 2.2.1). In mid-March, the financial markets took another hammering, as fears grew for the survival of the North American investment bank Bear Sterns. Federal Reserve action at the time in solving the problem went some way to halting the slide on the international financial markets. Over the following weeks and months, however, solvency issues arose in other North American systemic finan-

Chart 2.2.1

RISK AVERSION INDEX



Source: Goldman Sachs.
Note: The Goldman Sachs risk aversion index measures the propensity to invest in risky as opposed to risk-free assets. The asset price model takes into consideration the future consumption of individuals. A high point on the chart indicates greater aversion to risk and, all else being equal, a lower propensity to invest in risky assets.

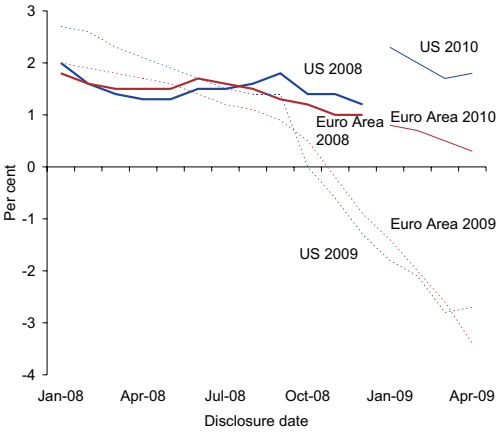
cial institutions, among them Fannie Mae, Freddie Mac and AIG. The North American authorities intervened, public funds in hand. In September 2008, however, they decided not to shore up the investment bank Lehman Brothers, which declared itself insolvent in mid month. The extent of the contagion that followed, both direct and indirect, could not have been anticipated. There was a dramatic increase in the perception of counterparty risk, bringing in its train a sudden worsening of the prospects for economic activity (Chart 2.2.2). With the global financial crisis now full-blown, a swathe of measures was announced across the world. Some were concerted, and aimed at getting the financial markets back on an even keel and thus bolstering confidence in the financial system (see "Box 2.1 *Measures taken*

Chart 2.2.2

DEVELOPMENTS IN FORECASTS FOR ECONOMIC GROWTH

Rate of change in GDP

US and euro area



Source: Consensus Economics.

by the Portuguese authorities relating to the financial system during the international financial crisis", of this Report). Since the end of the year under review, these measures have been complemented by others focusing on fiscal stimuli and support for the economy.

Seen overall, the impact of the financial turmoil on the economy has been far greater than could have been anticipated in the summer of 2007 (Chart 2.2.3). The turmoil can be traced back to a number of factors that had contributed to economic expansion over the previous years. Among them were the extent of leverage in the financial system, the spreading of risk and the historically low risk premiums in the market. The financial innovation that sprang from these dynamics was not duly regulated, above all in the United States, and it later became clear that a considerable part of the risks taken on board by the financial system was not covered by own funds. In addition, the incentives for those involved did not always take social well-being sufficiently into consideration. Salient among these were the policies

Chart 2.2.3 (to be continued)

COMPARISON WITH PREVIOUS PERIODS OF TURMOIL

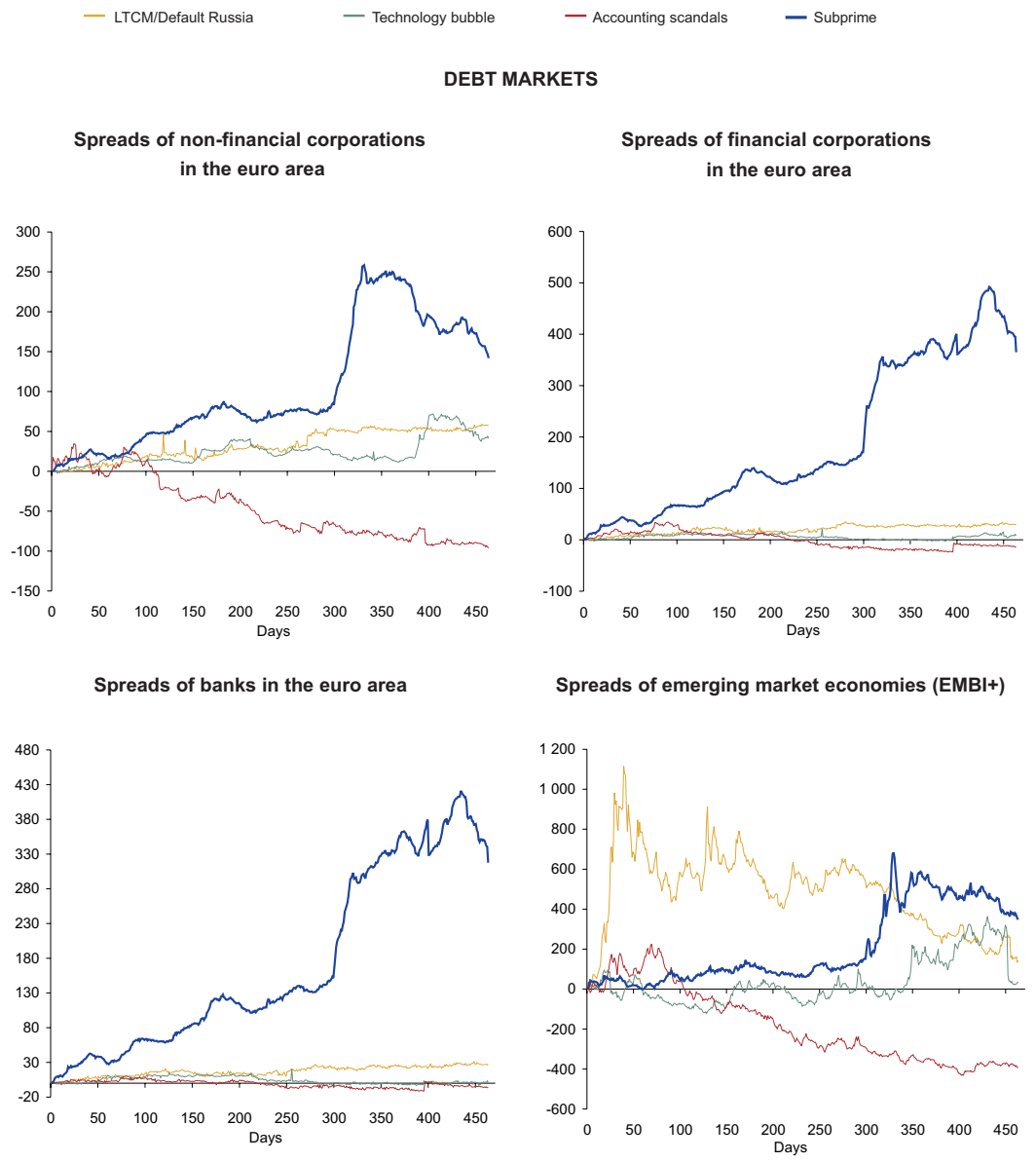
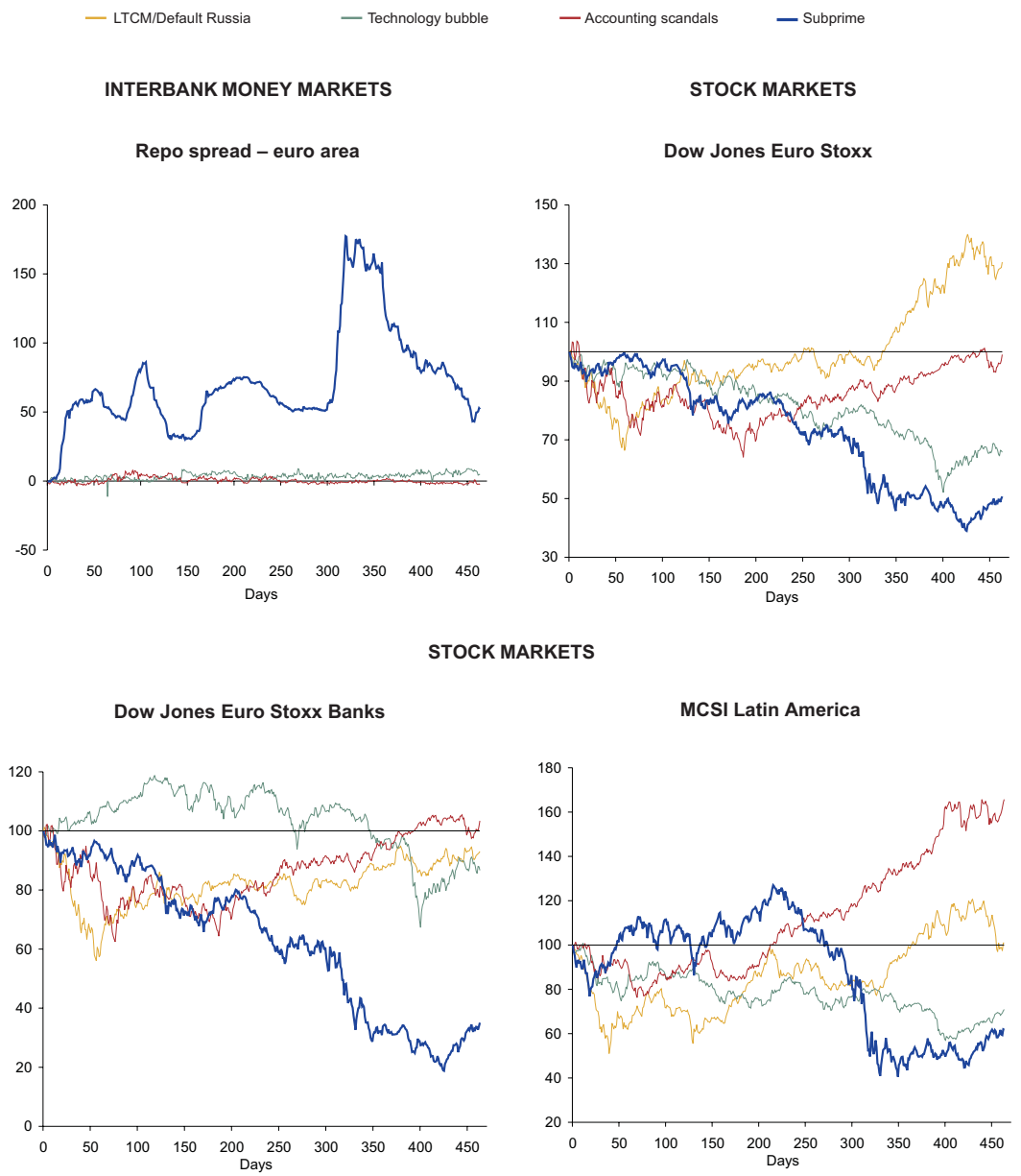


Chart 2.2.3 (continued)

COMPARISON WITH PREVIOUS PERIODS OF TURMOIL



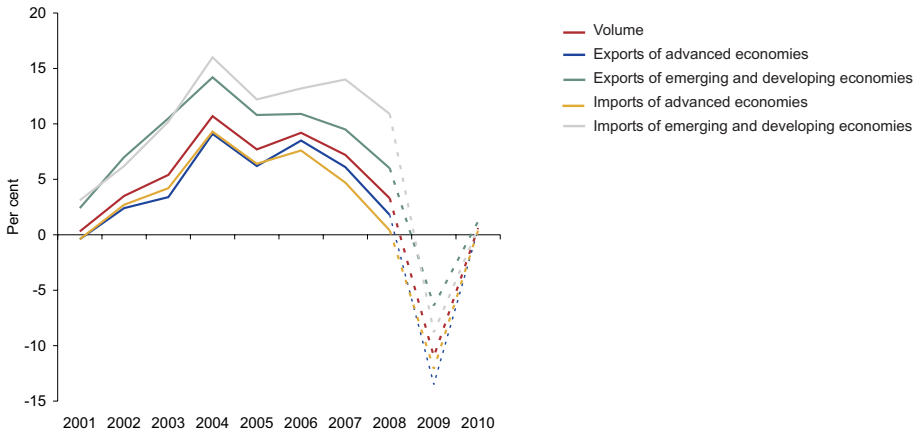
Sources: Bloomberg, JP Morgan, Merrill Lynch, Thomson Reuters and Banco de Portugal.
Notes: The x axis gives the number of working days since the maximum or minimum seen immediately before the turmoil in each period. Specifically, 17/07/1998 was considered for the LTCM crisis as the reference date, 10/03/2000 for the technology bubble, 25/06/2002 for the accounting scandals and 23/07/2007 for the subprime crisis. The spreads are differences, in b.p. compared with the point of reference. In the stock market indices, the reference date is standardised to 100. Given the duration of the current financial turmoil, there is some temporal overlap between the different periods of turmoil shown on the chart.

that related to risk management and financial institutions' remuneration packages. At the current juncture, there is still considerable uncertainty about the total losses from exposure to those assets that caused the turmoil. In the early stages of the market turbulence, the impact on the real economy was expected to be relatively mild, but as awareness grew of the fact that the direct and indirect losses to be borne by the banks were set to be steep, and as uncertainty grew as to the effects of the financial after-shocks on the real economy, the probability of recession gradually increased. The prospects for

Chart 2.2.4

WORLD TRADE

Annual rate of change in volumes



Source: IMF.

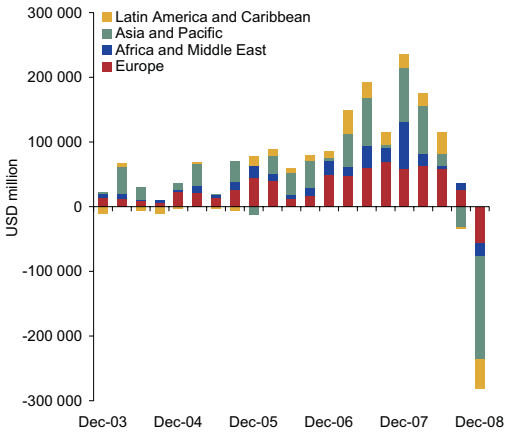
economic activity deteriorated sharply in the wake of the Lehman Brothers collapse, with the spread of losses that stemmed from it rippling round the world. In tandem, a widespread loss of confidence began to pervade the scene. Assets were offloaded on a large scale and no corner of the financial market was left unscathed. From the last quarter of the year onwards, the prospects for economic growth darkened around the world, with a global recession being forecast for 2009. According to the IMF, this will be the worst recession since the great depression, it will spare few countries in the world, and it will take its toll most of all on the advanced economies.

As economic activity has lost momentum, world trade has contracted significantly (Chart 2.2.4). As and from the third quarter above all, a general loss of confidence took hold, as uncertainty remained high and access to financing difficult. In addition, though to a lesser degree, some of the measures taken by authorities around the world were laced with protectionism. This took the form, for instance, of subsidies to specific sectors of the economy or a rise in tariffs on certain imports. Emerging market economies have also been affected by plummeting world trade as well as by a fall in what had previously been massive financial flows. The economies of Eastern Europe have been even more affected, above all because of their close interconnection with the banking system of western Europe. A substantial part of the banking system of these countries is in the hands of Austrian, Belgian, German, Italian and Swedish banks, and for some of these countries, the banking exposure to Eastern Europe, seen in terms of percentage of GDP, looms large. As deleveraging takes its course, those banks with exposure to emerging market economies have been reining in the credit being made available, in order to bring down the credit risk underlying their portfolios, to concentrate the available liquidity in domestic markets, and to strengthen their solvency ratios (Chart 2.2.5). The restrictions on access to credit are likely to make the situation of these economies even worse. In conjunction with this, the rise in credit risk looks set to negatively impact on those European banks that are most exposed to the countries in question. The worsening of credit quality in these economies is in part associated with foreign exchange losses, since a large part of the debt contracted in previous years, including by companies and households, is denominated in foreign currency.

Chart 2.2.5

EXTERNAL ASSETS OF BANKS *VIS-A-VIS* EMERGING MARKET ECONOMIES

Estimated exchange rate adjusted quarterly changes



Source: BIS (Locational Banking Statistics).

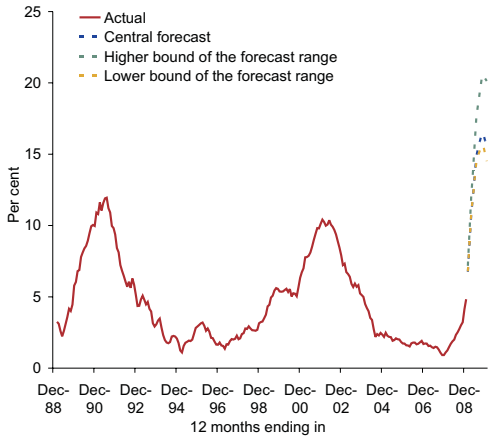
In short, the massive turbulence in the world's financial system has had a very adverse effect on the world economy, above all since the third quarter of the year under review. A number of factors could well bring more downside pressure to bear, with the negative impact extending over time in spite of support from authorities the world over. It goes without saying that the slowing of economic activity will have serious repercussions on the financial system. Moreover, the prospects for the financial system and for the real economy continue to be imbued with a high level of uncertainty as to the duration and size of the processes needed to put the previously accumulated imbalances to rights. One of the main risks in this area is connected with the effects of the interaction between the financial system and economic activity. Such effects could flow through a variety of channels. On the financial side, a system that runs smoothly is a fundamental pillar on which economic growth is built, playing its part in creating the conditions for optimal decisions on consumption, investment and savings among economic agents. On the economic side, a slowdown in activity will perforce have a negative cyclical impact on the activity, profitability and solvency of banks, given the nature of risks that they take on. With the dovetailing interaction between the financial system and the global economy, a downward spiral could be set in motion, with political measures needed to invert the cycle.

Within this particular framework, a closely interconnected cluster of risks can be pinpointed, all with a relevant role to play in the above mentioned amplifying mechanism: (i) increase in **credit risk**; (ii) **difficulties in accessing credit**; (iii) the size and duration of the process needed to correct the overvaluation of **property markets** in certain countries; and lastly (iv) uncertainty as to the **impact of measures to support the financial system and the economy**, where concerns are arising over the sustainability of public finances.

As the prospects for economic activity worsen, there is logically **greater credit risk** associated with the asset portfolios held by banks (Charts 2.2.6 and 2.2.7). A number of factors come together here to increase the likelihood of a general rise in default levels, with some specific sectors of the economy bearing the brunt. Firstly, although official interest rates are low, a continuing rise in unemployment is likely to make debt service more difficult for a considerable number of households. IMF forecasts published in April 2009 point to the unemployment rate in the advanced economies rising from 5.8 per cent in 2008 to 8.1 per cent a year later and 9.2 per cent in 2010. As this scenario unfolds, there is likely to be a

Chart 2.2.6

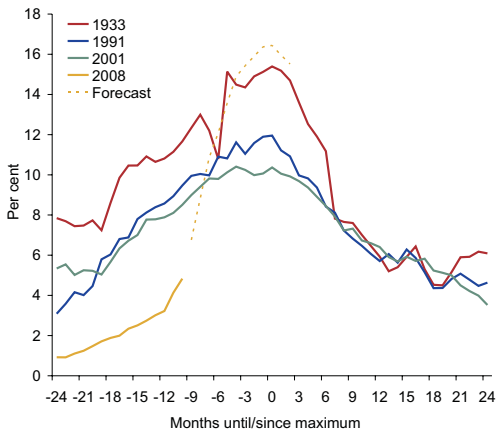
FORECASTS FOR GLOBAL DEFAULT RATES



Source: Moody's.
Note: Forecast for default rates on speculative grade bonds.

Chart 2.2.7

GLOBAL DEFAULT RATES IN PREVIOUS RECESSIONS



Source: Moody's.
Note: Default rates on speculative grade bonds.

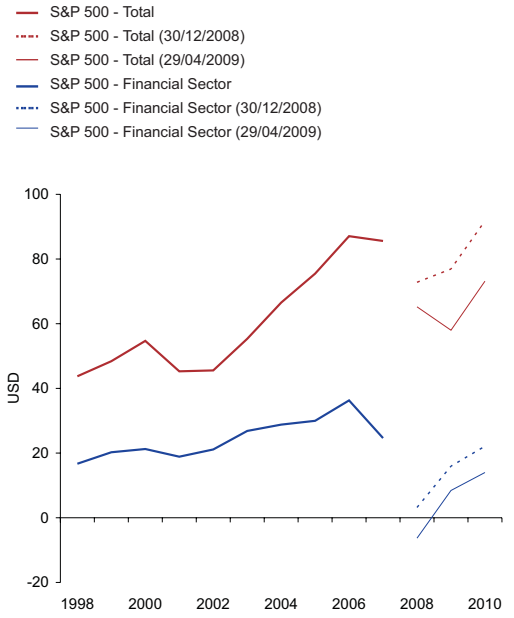
rise in defaults. Added to this is the worsening financial situation of many companies as demand falls, with defaults again pushing up, in spite of the cuts in interest rates. According to analysts' estimates, profitability in non-financial companies could worsen again during 2009 (Charts 2.2.8 and 2.2.9). On top of this is the rise in debt market financing costs, which is likely to have a substantial effect on the companies that use this channel for financing, above all those that have low ratings (Chart 2.2.10). Banks may also suffer from negative wealth effects in the private sector. In concrete terms, the financial crisis, abetted in some countries by a property crisis, should result in a fall in the value of assets pledged as guarantees for bank loans. As is common in times of recession, there is likely to be a rise in loss given default, since the banks will find it more difficult to recoup assets in situations of default.

The increase in defaults since the onset of the turmoil has been predominantly with lower credit quality debtors, but the worsening economic climate looks likely to widen the net to segments with better quality credit. This is in part because of the increased correlation between the economic situation of different sectors that is generally seen in periods of recession, although there are in fact some sectors that are more vulnerable than others. In the first place, companies and households with higher levels of debt will find it more difficult to keep up repayments if there is a negative shock. There is also a relevant risk to economic growth from the deflation that could well occur in a number of countries. If this happens, those in debt will see the amount they owe increase in real terms, a situation that could lead to a fall in the quality of credit.[1] Households facing unemployment are also likely to become more vulnerable to default, above all if the situation persists. On top of this, those banks that are more exposed to the housing market and to construction and real estate sectors are likely to be caught up in substantial losses, above all in countries where house price correction reaches large proportions. The construction sector has levels of structural debt that are higher than the average for other sectors This stems from their longer production cycles and can increase their vulnerability to shocks of such a nature. As a final point, those companies whose activity is more sensitive to cyclical fluctuations or where production is geared above all to exports will probably be more affected by the global economic downturn, and more defaults are likely.

(1) See "Box 2 *Recent consumer price developments and deflation risks in the euro area*", Banco de Portugal, *Economic Bulletin-Spring* 2009.

Chart 2.2.8

EARNINGS PER SHARE OF FINANCIAL AND NON-FINANCIAL CORPORATIONS - S&P 500



Source: Thomson Reuters (I/B/E/S).
Notes: Figures up to 2007 are analysts' estimates in January of t + 2 relating to t (*i.e.* the figures for 2007 relate to estimates for that year made in 2009). The estimated figures relate to analysts' forecasts for t at the date indicated in the key.

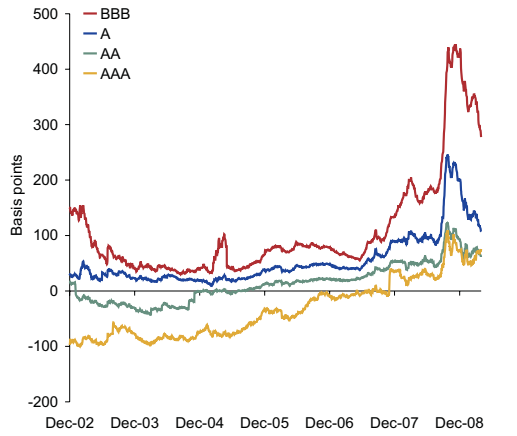
Chart 2.2.9

EARNINGS PER SHARE OF FINANCIAL AND NON-FINANCIAL CORPORATIONS - DJ EURO STOXX

Source: Thomson Reuters (I/B/E/S).
Notes: Figures up to 2007 are analysts' estimates in January of t + 2 relating to t (*i.e.* the figures for 2007 relate to estimates for that year made in 2009). The estimated figures relate to analysts' forecasts for t at the date indicated in the key.

Chart 2.2.10

SPREADS OF NON-FINANCIAL CORPORATIONS FOR EURO-DENOMINATED BOND ISSUES



Sources: iBoxx and Thomson Reuters.

There are, however, some issues which mitigate this risk. In aggregate terms, companies were in a solid financial situation overall before the crisis set in, with relatively high levels of liquidity and profitability. Moreover, the fall in interest rates, against a background of subdued inflationary pressures, redounds to the benefit of economic agents who are repaying debt at variable rates of interests. As a

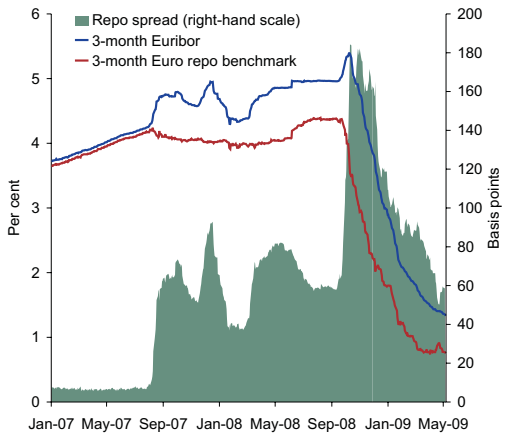
result, default is likely to affect in the main those households facing unemployment or other negative shocks on their income and also those companies with more vulnerable balance sheets and steep falls in the demand for their products.

Another of the major risks for financial stability and for the economy is the possibility of **major quantitative restrictions in access to credit** as a result of banks' financing problems or insufficient capital of their own, in what is generally known as a credit crunch. If banks find on-going difficulties in accessing finance in the wholesale markets, especially at medium or long maturities, their capacity to lend is hobbled. It is important to note here that short-term financing has been gradually easing, partly as a result of the intervention of central banks (Chart 2.2.11). Actions taken by some governments to guarantee banks' debt issues have also helped, although the cost of borrowing has stayed high. Some financial deleveraging is likely to be needed in the near future to ease pressure on solvency ratios, in circumstances where there is a dearth of capital buffers to cover some risks previously off-balance sheet but now again subject to intermediation, and with impairment on the rise. Conscious of this, banks have been curtailing credit by tightening lending criteria, reinforced by an expected rise in credit risk (Chart 2.2.12). These factors could well bring the supply of credit down, but the trend towards a slowdown in bank lending is also likely to reflect a cyclical easing of demand, as uncertainty factors in and the economic situation becomes increasingly overcast.

Given all of this, it is not a straightforward task to understand if the slowdown in credit granted by banks is fundamentally the result of demand or supply side factors. By and large, it is the effect of demand that holds sway when the flow of credit slows in the context of low interest rates, since such a scenario implies a leftwards shift in the demand curve. By contrast, a fall in the volume of credit granted when interest rates are higher or hold steady implies a leftwards shift in the supply curve, reflecting difficulties that banks are experiencing in accessing finance or even capital constraints. In addition, with the volume of credit on the wane, there could well be a fall in the amounts available for specific loans against a backdrop of a steep rise in credit risk and worsening economic prospects. There are clearer signs in the United States that there may well be a contraction in the supply of credit, given the major reduction

Chart 2.2.11

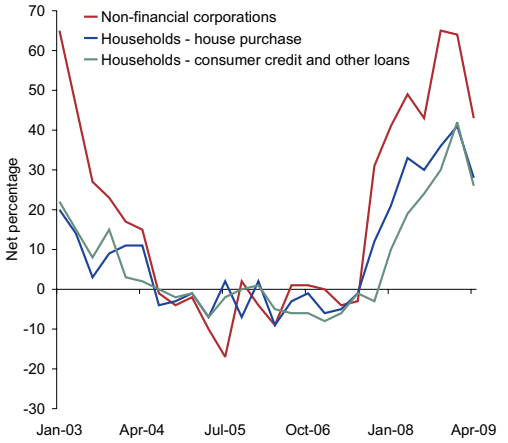
THREE-MONTH MONEY MARKET INTEREST RATES - EURO AREA



Source: Thomson Reuters.
Note: Repo spread calculated as the difference between the interest rate on non-collateralised money market operations (3-month Euribor) and the rate on collateralised operations in the same market (3-month euro repo benchmark).

Chart 2.2.12

BANKS' CREDIT STANDARDS IN THE EURO AREA



Source: ECB (Bank Lending Survey in euro area).
Note: The net percentage is the difference between the percentage of banks stating that the credit standards for loan approvals were tighter than the quarter before and the percentage of banks stating that the credit standards were eased. A net positive percentage, therefore, means that most banks applied tighter credit standards.

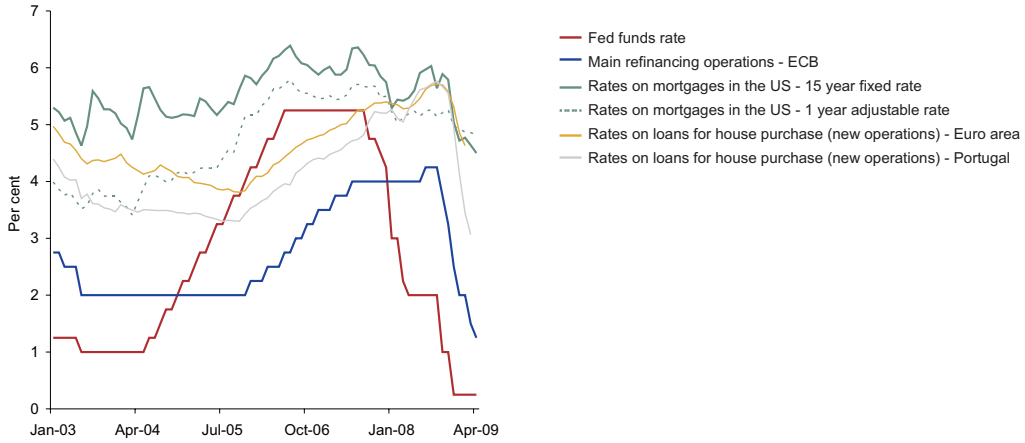
in the volume of credit provided, with interest rates in the banking system remaining at the same time relatively high *vis-à-vis* the monetary policy reference interest rates (Chart 2.2.13). In the euro area, on the other hand, credit did not slowdown sharply during 2008, although a reduction in volume has been seen since the end of the year (Chart 2.2.14). There is also evidence that in the euro area the transmission from monetary policy to banking interest rates has been more intense than in the United States. This makes it more difficult to assess whether the supply effects outweigh the effects stemming from a retrenching of demand. In Eastern Europe, the slowdown in credit has been much more marked. Given that a substantial part of the banking system here is in the hands of euro area banks, the latter may well be focusing more on domestic credit as risk aversion intensifies and credit risk rises. IMF estimates point to a very marked contraction in credit to these countries, given the imbalances that have accumulated over recent years.

Authorities have taken a raft of measures to stimulate bank lending. In addition, non-financial companies are still able to tap into wholesale markets for financing, even though the costs are higher than in previous years. Access to financing in the market is, however, fundamentally limited to major companies with better quality of credit, though these companies may have an important role in channelling funds to other companies through trade credit. Investment and private consumption in turn are also affected by the current uncertainty over how big the economic and financial crisis will be and how long it will last. The trend again is towards a reduction in the demand for credit. With this in mind, it is fundamental for the authorities to implement measures to ensure that credit is available for the economy, and alleviate the effects stemming from the banks' capital and financing restrictions.

The **process of correction in the property markets** is another risk that has a role in financial stability. The subprime problems in the United States played their part in triggering the financial turmoil in the summer of 2007. However, the property market woes in the United States market spread to other segments, including the non-residential, with steep falls in asset values. Over and beyond this, house price tumbled in countries that had seen strong upward moves in the first half of the decade. Among these were the United Kingdom, Ireland and Spain (Chart 2.2.15). Uncertainty remains over the size and duration of this correction process, with the situation aggravated by the worsening economic climate. The combination of higher unemployment, a larger number of company insolvencies, and lower

Chart 2.2.13

INTEREST RATES IN THE US AND THE EURO AREA

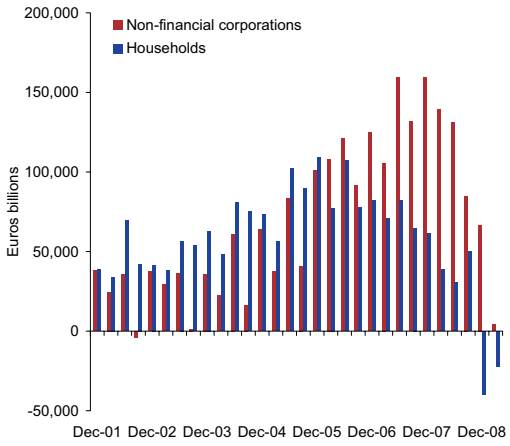


Sources: ECB, Freddie Mac (Primary Mortgage Market Survey), Thomson Reuters and Banco de Portugal.
Notes: Interest rates on US mortgage loans relate to contractual 15 year fixed rates and 1 year adjustable rates. Interest rates for house purchase in the euro area and in Portugal relate to interest rate of new operations for this type of financing for all maturities.

Chart 2.2.14

LOANS GRANTED BY EURO AREA BANKS TO RESIDENTS

Quarterly flows

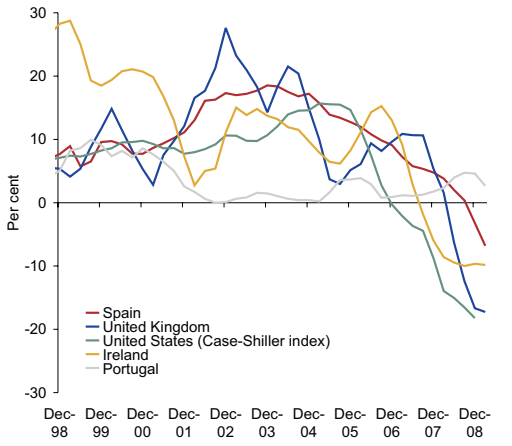


Source: ECB.

Chart 2.2.15

HOUSE PRICES

Year-on-year rate of change



Sources: Newsletter *Confidencial Imobiliário* and Thomson Reuters.

investment, is likely to push down house prices even further. And there is a further twist here: as the expectations remain of continuing falls in prices, so demand for these assets weakens even more.

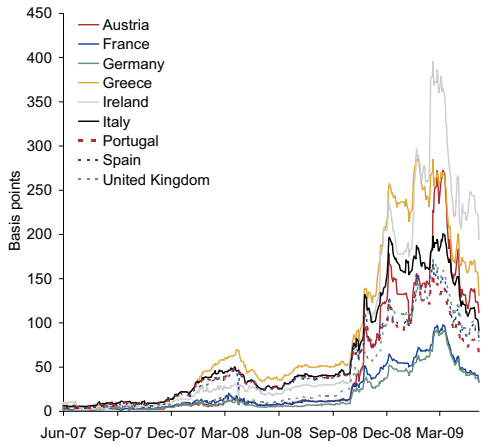
A worsening scenario in the property markets pushes credit risk up a notch, above all for banks with exposures to mortgage loans, and more importantly where construction and property development are concerned. On top of this, a fall in the prices of property assets means a fall in the value of assets used as collateral for loans. This situation is particularly serious where the loan to value ratio is high and where legal regimes either make it difficult to recoup collateral or offer few incentives for due repayment of the debt.[2] Ipso facto, stabilising the property market, especially in the United States, is an essential pre-condition for stabilising the financial system.

As a final point of importance in terms of risk, there is the uncertainty hanging over the **impact and the effectiveness of the measures being used to shore up the financial system and the economy**. The extent and intensity of the problems affecting the financial system have forced international authorities to take an array of measures to support the financial system. Up to mid-year, these measures centred on solutions for problems in specific institutions, but the collapse of Lehman Brothers in September demanded systemic measures across the globe. In October, a number of measures were announced to protect depositors, guarantees were given to underwrite the issue of bank debt, recapitalization funds were set up and in some cases there was an agreed purchase of low liquidity assets (see "Box 2.1 *Measures taken by the Portuguese authorities relating to the financial system during the international financial crisis*", of this Report). Subsequently, as the real economy weakened, measures in support of the economy were slotted into place. This situation reinforces the importance of ensuring the sustainability of public finances and is particularly relevant for countries with a weaker starting point in terms of budget balance and/or external debt, as well as for countries where the financial system has a disproportionate size in the economy (Chart 2.2.16). Here it is necessary to ensure that these measures are the right ones to reestablish financial stability and spur economic growth while minimizing potential distortions stemming from putting them into practice. In addition, it is necessary to

(2) See "Box 4.3 *Aspects of higher risk mortgage loans in the United States and Europe*", of this Report.

Chart 2.2.16

CREDIT DEFAULT SWAPS FOR EUROPEAN SOVEREIGN ISSUERS (5 YEARS SENIOR)



Source: Thomson Reuters.

set out first the exit strategies to be used when these measures are no longer needed, specially those that relate to monetary policy, the injection of public funds and the provision of guarantees. In all of this, it needs to be remembered that the effects of interaction between the financial system and the economy are mutually reinforcing. It is therefore crucial for the measures to be sufficient and effective enough to break the thrust of a potential downwards spiral.

It is also necessary, for the medium and long run, to rethink financial system regulation, and there are in fact already a number of initiatives under way. The main challenges relate to the need to ensure the correct alignment of incentives for agents and to the regulation of areas that had not previously been subject to intervention by the authorities. In addition, the summer 2007 turmoil highlighted the need for close collaboration between supervisors who had large cross-border financial institutions under their aegis. This collaboration is particularly relevant when the authorities have to ensure the viability of institutions that fall into the so-called too-big-to-fail category. Institutions which are considered too big to fail (or too interconnected to fail) can assume risks in the light of incentives that are in the end self-defeating. Efforts also need to be made to mitigate some of the pro-cyclical features in the current accounting and regulatory framework. Incentives must be put in place for institutions to create buffers in periods of economic growth to be drawn on when recession looms. It is important to ensure, however, that the costs and benefits of economic and financial regulation are well thought through and avoid situations where over-regulation can hamper efficiency of the financial system, which is crucial for economic growth. Furthermore, over-regulation can also lead to attitudes based on “getting round” the regulations, making it more difficult for authorities to evaluate the actual state of the financial system.

2.3. Risks and vulnerabilities in Portugal

The Portuguese financial system is significantly exposed to the risks to financial stability at a global level. There are two factors to be taken into consideration here. Firstly, the past decade has seen Portuguese banks finance their expansion to a considerable extent through international wholesale financial markets, even though these debt issues were fundamentally in euros and in medium to long-term maturities. Moreover, customer deposits still make up banks’ dominant source of funds. Secondly, the

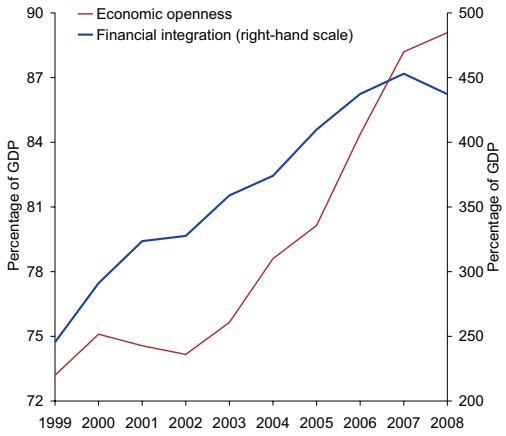
Portuguese financial system operates in a small open economy with major exposure to external shocks (Chart 2.3.1). Serious turbulence in the international financial system and a global economic downturn should impact negatively on the prospects for the country's economy and its financial system.

This impact is likely to continue to be felt through a fall in demand (both domestic and foreign), against a backdrop of great uncertainty and of a major downturn in international trade, factoring in to economic agents' decisions regarding investment and consumption. Some of the main destinations for exports of Portuguese goods and services have been severely impacted by the economic crisis, among them Spain, Germany and the United Kingdom.[3] Given the role that exports normally play in the recovery from a recession, the future growth trend of the Portuguese economy is likely to depend to a large extent on recovery in countries with which trade relations are most tightly woven. It will also depend on the capacity for exporters to survive and rebuild. Investment is also likely to play a crucial role in the recovery dynamics, for which a fall in the high level of uncertainty and a continuing ability to tap into financing are critical elements.

The international economic and financial crisis has affected Portuguese banks in a number of ways. There are still ripples of uncertainty in the wholesale markets, above all in the medium and long run, though these sources have not completely dried up[4]. The government announced a raft of measures to shore up financial stability in October and the guarantees given to the issuance of bank debt helped to keep access to these markets open, though the banks need to pay commissions to have access to these guarantees. It is worth noting that the spreads for government guaranteed bonds issued by banks are closely correlated with the cost of financing public debt. This is analysed in detail in "Section 4.5 *Liquidity risk*", of this Report. It follows that the worsening of sovereign risk that ensues from taking on the risks underlying the financial system, in tandem with the budgetary strains from the economic stimulus package, will also take its toll in terms of financing costs for banks and enterprises. Certain

Chart 2.3.1

ECONOMIC AND FINANCIAL INTEGRATION OF THE PORTUGUESE ECONOMY



Sources: *INE* and Banco de Portugal.
Notes: A country's degree of openness is defined as the sum of exports and imports as a percentage of GDP (real terms). The degree of financial integration is defined as the sum of assets and liabilities (gross) towards the rest of the world as a percentage of GDP (nominal terms).

(3) See Banco de Portugal, *Economic Bulletin-Spring* 2009.
(4) See "Section 4.5 *Liquidity risk*", of this Report.

factors have, however, helped to mitigate the wholesale market financing problems, namely the strong growth in customer deposits and temporary changes to the rules for access to liquidity through the Eurosystem.

The financial assets of Portuguese banks were hard hit during the year under review and into the early part of 2009, even though the banks themselves had no materially relevant exposure to the US subprime market (or to any assets tied closely into it). As the markets entered free fall, the profitability and the solvency of the banks came under pressure. Their own portfolios were affected, along with those of pension funds for bank employees (see "Section 4.4 *Market risk*", of this Report). Domestic and international authorities, however, took several measures to ensure a smoother impact on the banks' profitability and solvency. The international operations of Portuguese banks are relatively minor when compared with other euro area countries, and are centred on geographical areas where there is low risk. There is however some exposure to Eastern Europe but it is limited and has low systemic impact. There has been a steep downturn in these countries, as discussed in the previous section, with impact on the prospects for credit risk (see "Chapter 4 *Banking System*", of this Report).

With the Portuguese economy contracting as the global recession takes hold, there could well be a worsening of **credit risk**.[5] Families affected by unemployment will have more trouble making repayments on their debts, above all if they are highly indebted. The same will be true for exporters and companies in more cyclical sectors, such as construction and real estate activities.

Seen from this angle, the high level of indebtedness in the Portuguese economy is a focal point of vulnerability, since it restricts the capacity of economic agents to adjust. Both households and companies have recorded a strong growth in debt since the mid 1990s. This growth, described in "Chapter 3 *Financial Situation of the Non-Financial Private Sector*", of this Report, was possible because funds were available from outside the country through the banking system. Euro area integration made it possible to access financing in the wholesale markets without foreign exchange risk, thus allowing to finance the demand for bank loans during this period, against a background of structural reduction in the level and volatility of interest rates.

In what concerns households, the debt contracted was fundamentally for housing purchase and most loans were at variable rates. Given this, the sizeable cuts in interest rates in the euro area have helped to ease the pressure on families' financial situation. Furthermore, where mortgage loans are concerned, maturities are relatively long when compared to other countries. This has made it possible to smooth the debt service over time.[6] The available microeconomic evidence also suggests that the vulnerability is most acute among the young and low-income groups. The part they play in the credit market is relatively small and they usually have real and personal guarantees. This reduces the potential impact on the stability of the financial system.

The growth of debt among non-financial companies over the last decade has been related to a number of factors: the process of overhaul and internationalisation of the Portuguese entrepreneurial fabric; gross fixed capital formation; and the changes in capital structure in the face of lower external financing costs. This has come in tandem with an overall fall in interest rates (accompanied by aggressive profit distribution policies in the form of dividends). More recently, according to information from the Bank Lending Survey, debt restructuring and inventories and working capital financing needs have been the main factors sustaining the demand for credit from companies. This situation could well be a harbinger of problems in servicing debt and it could be more acute for sectors with a higher level of debt such as construction and real estate activities.

(5) See "Section 4.6 *Credit risk*", of this Report.

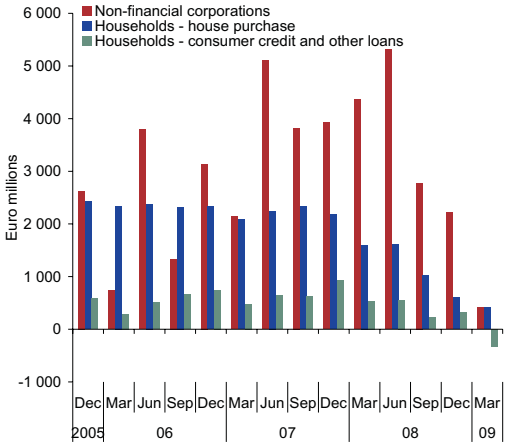
(6) See "Box 4.2 *The main characteristics of loans to households for house purchase in Portugal*", of this Report.

With the likelihood of default on the rise, there may be some difficulties in getting **access to finance from banks**.[7] It is, however, important to note here that balance sheet or capital issues are not likely to be the cause of any problems that may occur, and hence a credit crunch scenario is not likely. The possibility of banks' being hampered by liquidity problems has been pushed considerably into the background by the fact that they have moved to offset the major turbulence in the international financial markets by buttressing the funds they obtain from their customer base and from central banks (see "Section 4.5 *Liquidity risk*", of this Report). In addition, the solvency ratios of Portuguese banks have during the year stayed above regulatory minimums overall and the measures announced in November should allow them to strengthen their own funds even if the acute tensions in the financial markets persist (see "Section 4.3 *Capital adequacy*", of this Report). Against this backdrop, any fall in the supply of credit is more likely to indicate a more conservative approach by the banks in the assessment of the risks they would be taking on. This is more likely, given the pessimistic expectations of economic developments, than balance sheet or capital restrictions within the banking system. In addition, the downturn is also likely to mean less demand for bank financing from households and companies. The combination of these factors in a rising credit risk scenario is likely to result in a gradual slowdown in credit flows to households and companies. This is all the more likely given the relatively high growth of credit in the previous year, especially to non-financial companies (Chart 2.3.2)

Another element of risk relates to the possibility of a worsening in the **property market**, given the deteriorating economic fundamentals. It will not, however, stem from a correction of accumulated imbalances from previous years, as it may do in other countries. In Portugal, prices in the property market have hardly moved in real terms over recent years on the back of an adjustment to imbalances from the previous decade, which was also reflected in an uninterrupted fall in investment for housing during recent years (Chart 2.2.15). The situation is thus very different from the United States, the United Kingdom, Spain or Ireland, where assets picked up considerably in value during the last decade. In these countries, the correction is now well under way. Any downward pressure on aggregate housing prices

Chart 2.3.2

CREDIT GRANTED BY PORTUGUESE BANKS
Quarterly flows (a)



Source: Banco de Portugal.
Note: (a) Flows adjusted for securitisations and corrected for reclassifications, exchange rate changes, write-offs/write-downs and price revaluations. Includes debt securities issued by non-financial corporations in the portfolio of other monetary financial institutions.

(7) See "Box 4.5 *Likely developments in the default situation among non-financial corporations*", of this Report.

in Portugal is more likely to come if the economy enters on a steep downward path. Should property market risks materialise, they will impact on those banks that are more exposed to this market through their loan portfolios for households, as a result of a rise in unemployment. Furthermore, the impact should also come from the construction and real estate sector portfolios, where there is a high level of indebtedness and greater sensitivity to cyclical fluctuations.

There is also the issue of public sector debt and above all the persistence of some budgetary imbalances. These facts have raised questions about the sustainability of the public finances, given the need for **government measures** to shore up the financial system and budgetary measures to stimulate the economy. This has triggered a rise in the risk premium underlying Portuguese public debt, as in other euro area countries with similar situations, which may play a part in mitigating the impact of government measures on economic activity. The economic and financial package, in the context of international efforts, is likely, however, to be crucial in breaking the downward spiral caused by the interweaving of the financial system and the real economy.

In the midst of all of this, there is a clutch of risks that could impact on Portuguese banks. Firstly, the major downturn in the economy could cause credit risk to rise substantially, though low interest rates could weigh in on the other side. The banks currently have provisions above the regulatory minimum, but the rise in default can be greater than in previous recessions, particularly in segments that are more sensitive to cyclical fluctuations. Moreover, banks face a major challenge to their refinancing capacity with access to medium and long-term financing still silted up. Deposits, however, have gained substantial momentum, helping to mitigate the risk along with government guarantees on debt issuing and changes to liquidity supply in the Eurosystem operational framework. On the downside, more falls in financial asset values could add to portfolio losses in banks and in bank employees' pension funds, with profitability and solvency then under further pressure.

Portuguese banks have generally managed to cushion the impact of the financial crisis, keeping their financial intermediation on an even keel. They have adjusted their financing structure and seen a notable rise in customer deposits. This has allowed them to cut back their dependence on financing through the wholesale markets. They have also tapped into central bank funds as a way of offsetting persistent difficulties in the interbank money markets and medium to long-term debt markets. This has taken place against a backdrop characterized by increasing risk aversion and bigger information asymmetry problems. The banks have also strengthened their capital base and have disposed of assets in order to focus more on their core activity. Over and against this, there are the prospects of a major darkening of the economic climate and the banks are likely to need additional capital buffers to maintain adequate solvency ratios. With the persistence of problems in the financial markets, there could be difficulties in raising capital from private investors, and the recapitalization fund set up by the government in November 2008 could well play a major part in keeping financial stability on an even keel.

Box 2.1. Measures taken by the Portuguese authorities relating to the financial system during the international financial crisis[1]

A systemic financial crisis normally has substantial repercussions on economic growth and unemployment. In order to avert such crises, the authorities attempt to ensure stability in the financial system by analysing the risks to financial stability and by putting regulatory and prudential supervision mechanisms in place. If a systemic financial crisis looms, an array of crisis management tools is available to get the financial system back on an even keel. Monetary authorities can intervene through monetary policy operations, emergency liquidity assistance (as lender of last resort), or unconventional monetary policy instruments. In turn, supervisory authorities can contribute to solving a financial crisis through changes in prudential regulation, through direct intervention in distressed institutions with specific problems or, as a last resort, by imposing liquidation or complete overhaul. They can also play an important role in orchestrating private sector solutions where no public money needs to be at stake. Governments can also use specific tools such as state guarantees, recapitalising banks, the purchase of illiquid assets or, in extreme circumstances, nationalisation. Every financial crisis is specific and mired in its own inherent complexities. In the light of this, the use and co-ordination of all the tools available will ultimately depend on the specific scenario of each crisis.

The current international financial crisis has thrown down major challenges to the capacity of the world's competent authorities to respond with effective intervention and coordination. At first, these authorities focused on seeking a solution to the problems at the institutions with losses originating from the subprime segment of the US mortgage market. In the summer of 2007, these problems led to a crisis of confidence in the money markets, in the wake of rising uncertainty as to the extent and range of subprime related losses. In response to the turmoil, central banks moved, in many cases in concerted action, to ensure access to liquidity in the money markets against a backdrop of widespread problems on financing through the wholesale markets. As 2008 unfolded, solvency issues in many US financial institutions, such as Bear Sterns, Fannie Mae, Freddie Mac, AIG and Merrill Lynch, came to the surface. During this phase, the authorities focused on specific solutions to problems in these systemically important financial institutions. However, on 15 September the investment bank Lehman Brothers declared its insolvency, with no subsequent government bail-out. The collapse of this bank sent shock waves reverberating around the world, causing solvency problems in other banks, directly or indirectly. Among them were the Royal Bank of Scotland, ING, Dexia and Fortis in Europe. From that moment, the problems took on a different magnitude, moving from financial turbulence to a fully-fledged systemic global financial crisis. Nothing short of co-ordinated action from central banks, supervisory authorities, governments and supranational entities across the globe could bring things to rights.

Against this backdrop, the central banks reinforced some of the measures that they had been putting into place since the summer of 2007, complemented with a steady flow of additional measures to shore up the financial system in an attempt to ensure overall access to liquidity. As part of this, the central banks of the advanced economies, with some of the emerging countries following suit a while later, began to inject funds through credit operations (including in foreign currency) and make changes to the framework of monetary policy operations (for example, by changing maturities on credit operations, by enlarging the list of eligible counterparts and the collateral accepted as a guarantee, by changing minimum reserves requirements or, as in the case of the Eurosystem, through liquidity operations at fixed rate and with full allotment). Some of these measures came as a result of the concerted actions of a number of central banks. Some, among them the Federal Reserve and the Bank of England, also injected liquidity directly into the economy, through the purchase of public and private debt securities in the secondary markets. More recently, on 7 May 2009, the ECB announced that the Eurosystem would henceforth have the option of buying covered bonds in euros issued in the euro area.[2] In addition, with inflation pressures waning and bleak prospects looming for economic output, a number of central banks took interest rates down to record lows.

In mid-October 2008, various governments announced measures geared to a variety of objectives: to recover agents' confidence in the financial system, to contain systemic risk, to safeguard retail deposits, to cushion the im-

(1) *This box is in part, an up-date of the "Box 1 Main measures taken by the Portuguese authorities regarding the financial system in the context of the international financial crisis", Banco de Portugal, Economic Bulletin-Autumn 2008.*

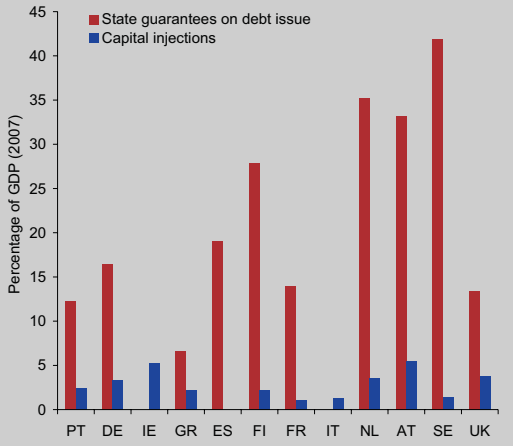
(2) *On the same date, the ECB announced that it would from then on carry out longer-term refinancing operations at 12 months maturities, and that the European Investment Bank would be accepted as counterpart in Eurosystem monetary policy operations.*

pact of the crisis on the real economy and to ensure that financing flowed into it. These measures were taken in a concerted fashion in the euro area, following a summit involving various heads of state and government leaders on 12 October. The measures were very similar to those taken in other European countries, such as the United Kingdom and Sweden.[3] The concerted action plan put forward on that day had a number of aims: (i) to ensure adequate liquidity for financial institutions; (ii) to stimulate access to financing in the securitised debt market; (iii) to make additional capital available to financial institutions to enable them to ensure financing for the economy; (iv) to ensure an efficient recapitalisation of distressed banks; (v) to allow some flexibility in the application of the international accounting standards, and lastly, (vi) to enhance the mechanisms available for co-operation between European states. Within this plan, governments in the euro area announced guarantees to banks' debt issues and, in some cases, they set up recapitalisation funds to guarantee an adequate solvency level in the financial system.[4] In addition, most countries increased the level of cover for national deposit guarantee funds (with a political guarantee in some countries covering all deposits). Over and beyond this, some countries announced they would take up some of the banks' high quality but illiquid securities and, more recently, efforts have been made to tackle the poor quality assets on the balance sheets of some banks. Given that such measures have implications for competition, the European Commission published specific guidelines governing how the measures should be put in place. The G7 also put forward a set of common principles for government support and there has been co-ordination within the Eurosystem to define the specific features of these supports.

As part of the concerted European plan, the Portuguese government announced on 12 October, that it would provide state guarantees to the issue of securitised debt by Portuguese banks, to an upper limit of 20 thousand million euros, set out in Law no. 60-A/2008 and specified in Executive Order no. 1219-A/2008 (Chart 1). This is a temporary measure and will remain in force until the end of 2009. The guarantees cover all credit institutions with registered head office in Portugal which are facing temporary liquidity constraints even though they satisfy the minimum solvency requirements. The guarantee is available only after scrutiny by the Banco de Portugal and the Portuguese Treasury and Government Debt Agency (the Instituto de Gestão de Tesouraria e do Crédito Público) and depends on the contribution of the institution to the financing of the economy and on the needs and conditions for the financing. Excluded from consideration are issues in foreign currency, issues of subordinated debt and interbank money market operations. Maturity on the debt issues guaranteed by the State must, in principle, be between

Chart 1

MEASURES ANNOUNCED BY SOME EUROPEAN COUNTRIES



Sources: Bloomberg, CEBS, ECB, European Commission, Eurostat, IMF, National Ministries of Finance and Thomson Reuters.
Notes: Information based on the sources cited, but not necessarily exhaustive. In the case of Ireland, all liabilities in the banking system were guaranteed.

(3) *The measures taken by European countries, the United States and other advanced economies are analysed in "Box 2 Authorities responses in the context of the financial crisis: liquidity management measures and intervention in financial systems", Banco de Portugal, Economic Bulletin-Autumn 2008 .*

(4) *Some countries introduced legislation to allow for injection of public funds in the banks.*

3 months and 3 years (the maximum limit can be extended to 5 years based on a reasoned proposal from Banco de Portugal). A 50 b.p. commission has to be paid to the State for debt of less than one year. If the maturity on the proposed issue is more than one year, banks have to pay in addition the premium on the bank's own credit default swap at 5 years or, if it does not exist, the premium of a representative sample of banks. If the guarantees are called in, that is, if the bank involved defaults, the State can convert the debt into capital and have a direct role in the bank's management. The features of the scheme are very similar overall to those adopted in other European countries.

On 2 November, also within the framework of the concerted European action plan, the government announced additional measures to underpin the stability of the financial system. The package included a recapitalisation plan for credit institutions headquartered in Portugal, up to a total of 4 thousand million euros. This is a temporary measure, in force until the end of 2009, defined in Law no. 63-A/2008. Its main purpose is to ensure that Portuguese banks have the necessary conditions to shore up their solvency ratio, against a background of persisting problems in wholesale debt markets and in the light of the terms set out in Banco de Portugal Circular no. 83/2008/DSB, where it is recommended that the Tier I capital ratio should be above 8 per cent as and from September 2009.[5] The basis for the capitalisation can be any financial instrument eligible as Tier 1 capital and it implies a series of requirements relating to the management of the institutions which benefit from this support measure. Under the provisions of the law, the public disinvestment should occur within three years (in exceptional circumstances and if market conditions so justify, this can be extended to five years). Certain procedures relating to practical application of the law were set down in Executive Order no. 493-A/2009. These included the specific nature of the request for access to public funds, which should include a clear statement of the contribution of the funds requested for the economy's financing and a repayment plan that guarantees substitution by instruments eligible as original own funds whose quality is on a par or superior. The Executive Order also stipulates the return on the public investment, along with the rights and duties to which the beneficiary is subject.

Since these measures were announced, a number of European banks, including the Portuguese, have requested public guarantees for debt issues, as access to financing in the wholesale markets remained constrained, especially for medium and long-term maturities. Chart 2 illustrates the state guaranteed issues covering banks from Austria, France, Germany, Ireland, Luxembourg, the Netherlands, Portugal, Spain, Sweden and the United Kingdom. The percentage of available funds called on has varied between 10 and 35 per cent up to the end of April 2009. During this period, Portuguese banks issued around 4.5 thousand million euros within the scheme, less than a quarter of the total that was made available (see "Section 4.5 Liquidity risk", of this Report).

The risk premium on the bonds issued under this scheme hinges fundamentally on the country's sovereign risk. The widest spread has been observed for Ireland, coming on the heels of the major increase in sovereign risk over the past few months (Chart 3). There are also some differences in the way the measure has been implemented, which may influence the spread. One of these, for instance, is the creation of special institutions to manage the guarantees. The spreads for Portuguese banks are relatively high, with the Portuguese Republic's rating lower than the rating for other countries with issues of government guaranteed bank debt. According to the replies of Portuguese banks to the Bank Lending Survey, the government measures that are part of the concerted action plan have to some extent eased access to financing in the market.

In some countries, such as Germany, Ireland, Greece, France, the Netherlands and the United Kingdom, the banks have used also used the recapitalisation funds to bolster their solvency, and have drawn on a substantial portion of the amounts allotted to the funds. Since the onset of the crisis, there have also been operations involving nationalisations and the injection of capital into the system outside the scope of these recapitalisation plans. Up to the date of publication of this report, no Portuguese bank has made use of the fund, though there have been a number of increases in capital through private investors (see "Section 4.3 Capital adequacy", of this Report)[6].

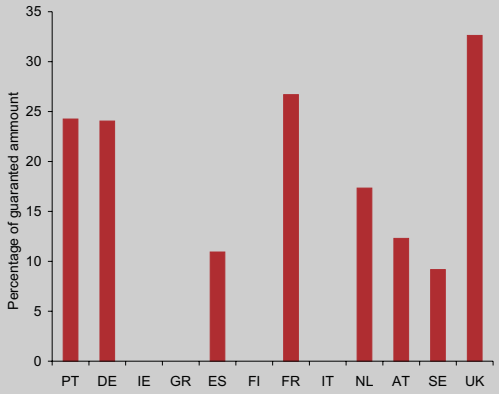
In the midst of the crisis, the Portuguese government also increased the maximum cover for the deposit guarantee fund. This moved from 25,000 to 100,000 euros per depositor and per institution, and will stay in force until Decem-

(5) *This measure is a recommendation of Banco de Portugal. Since it is not compulsory, it can therefore be applied flexibly, in the light of specific circumstances for each institution or financial group, reflecting for instance the risk profile or regulatory capital quality of each institution.*

(6) *The BPN nationalisation was promulgated in Law no. 62-A/2008. This nationalisation was not part of the recapitalisation plan. The details can be found in "Box 4.1 Banking supervision in Portugal in the cases of the Banco Português de Negócios (BPN) and the Banco Privado Português (BPP)", of this Report.*

Chart 2

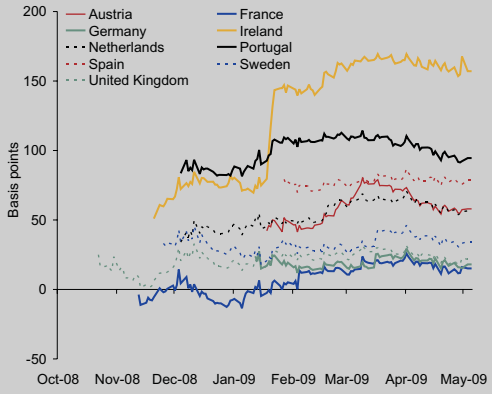
USE OF STATE GUARANTEES ON DEBT ISSUES BY EUROPEAN BANKS



Sources: Bloomberg, CEBS, ECB, European Commission, Eurostat, IMF, National Ministries of Finance and Thomson Reuters.
Notes: Information based on the sources cited, but not necessarily exhaustive. In the case of Ireland, all liabilities in the banking system were guaranteed.

Chart 3

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



Sources: Bloomberg and Banco de Portugal calculations.

ber 2011 (Decree Law no. 211-A/2008). There was, in addition, a substantial reduction in the legally defined period for redemption of deposits. Measures were also taken to firm up the duties of financial institutions in terms of information and transparency, and the powers of the National Council of Financial Supervisors (the Conselho Nacional de Supervisores Financeiros) were strengthened. The Securities Market Commission (CMVM) issued an instruction temporarily banning short-selling of shares issued by financial institutions, among other measures.

Since the international financial crisis broke, the Banco de Portugal has also been amending aspects of the prudential supervisory framework. Notice no. 6/2008 altered the treatment of unrealised gains and losses on securities classified as available-for-sale assets, based on a guideline issued by the Committee of European Banking Supervisors (CEBS) in 2004. The measure had a positive impact on own funds, since unrealised gains and losses with no impairment subsequently had a neutral effect on own funds. Notice no. 7/2008 addressed the bank employees' pension funds' exposure to changes in financial asset values (a situation that also affected the banks' solvency). The Notice states that an additional three years are allowed for the recognition of the impact of transition to the International Accounting Standards related to pension funds still not recognised in retained earnings as at 30 June 2008. Another measure taken by the Banco de Portugal relates to the revision of the limit (up from 20 per cent to 35 per cent) for recognition of preferential shares with unspecified maturity and without incentives for redemption. This measure is in line with the amendment covering Directives no. 2006/48/CE and no. 2006/49/CE. In addition, Notice no. 9/2008 stipulates that all reserves and results relating to assets set aside for deferred taxes can now be accepted as a positive element of own funds. The 10 per cent limit that was previously stipulated here is thus no longer relevant. Towards the end of the year, Notice no. 11/2008 was published, allowing for recognition of actuarial losses on pension funds during 2008, less the expected yield from their assets, to be phased in until 2012, in the light of the serious weakening of the financial markets in the last quarter of the year.

In November, as mentioned above, the Banco de Portugal issued Circular no. 83/2008/DSB, recommending that banks bolster their original own funds (Tier I) to reach a ratio above 8 per cent as and from September 2009. This is only a recommendation, and is in line with similar measures taken by other supervisory authorities with a view to boosting confidence in the robustness of the banking system. Towards the end of the year, the Banco de Portugal sent out Circular no. 97/2008/DSB, in which it reiterated the need for banks to adhere as much as possible to the recommendations of the Financial Stability Forum and the CEBS on transparency of information and assets valuation, bearing the principle of proportionality in mind. In addition, the Banco de Portugal itself has added to its requirements and requested more frequent reports on the prudential information that the banks have to report. To

take one point, since the summer of 2007, it has requested from some banks a monthly report – in some cases fortnightly – detailing its liquidity situation. Subsequently, some institutions were asked to daily submit a cash flow map. More recently, other banks were asked to send a report every month detailing their solvency situation.

Some Portuguese banks have also benefited from amendments made by the International Accounting Standards Board (IASB), with effects as and from 1 July 2008, which were subsequently endorsed by the European Commission in Regulation no. 1004/2008. The IASB has made changes to the norms for recording financial instruments at market value, giving added flexibility to the criteria for reclassification of these instruments in different portfolios (see "Section 4.4 Market risk", of this Report).

Apart from these general measures, the Portuguese authorities also had to manage problems in two banks. The problems that surfaced in the Banco Português de Negócios led to nationalisation in early November so that depositors' funds were protected. For the Banco Privado Português, the first move was to set up a private solution through a loan from six Portuguese banks backed by state guarantees. An interim board was then put in place under Banco de Portugal aegis. The two situations are analysed in "Box 4.1 Banking supervision in Portugal in the cases of the Banco Português de Negócios (BPN) and the Banco Privado Português (BPP)", of this Report.

Internationally, additional measures are still needed to reassert stability in the world's financial system and cushion the economic impact of the crisis. Specifically in terms of the financial system, an accurate assessment must be made of bank losses across the world and solutions found for their management.[7] Central banks have been ensuring overall access to liquidity, but there is still some turbulence in the interbank money markets, where trust is quintessential. Moreover, even though government guarantees have eased access to medium and long-term financing, there are still impediments to non-guaranteed debt issues in the wholesale markets. As a final point, solvency ratios in European banks have held good in circumstances where bolstering own funds through private investors has become a problem, thanks in part to support from recapitalisation plans and changes in the prudential sphere carried out by supervisory authorities.

The costs and the effectiveness of the measures put in place to shore up the financial system must continue to be carefully monitored, given their impact on public finance sustainability, as well as the potential distortions caused by such measures. Moreover, exit strategies need to be clearly defined.

For the medium to long term, there are a number of challenges. Some aspects of the financial system model need to be rethought, and indeed subject to regulation, an issue that is now on the international agenda. Incentives for agents in the financial system need to be correctly aligned, especially those related to risk management and remuneration packages. In addition, there must be a revision of the perimeter of financial regulation, above all in what concerns off-balance sheet operations, hedge funds, and large cross-border financial groups. Some changes should occur in the institutional framework of supervision internationally, possibly through the creation of supranational bodies with a remit covering micro and/or macro prudential regulation, as proposed in the Larosière report. Efforts also need to be made to introduce counter-cyclical measures in specific aspects of financial regulation (above all in capital requirements, liquidity, market risk and provisions for credit risk). The aim must be for banks to set up buffers allowing them to more easily withstand adverse shocks that are cyclical in nature. Apart from all this, there are also proposals to review how the banks' own funds requirements are calculated. To sum up, it is necessary to take the proper measures for the financial system to carry out its core function, which is to ensure the proper working of financial intermediation with an adequate control of risk, given that economic development hinges on financial stability.

(7) *Estimates on the accumulated losses in the world's financial system have been repeatedly revised as the situation in financial markets deteriorated. In the IMF's Global Financial Stability Report for April 2009, the losses from assets originating in the United States are tentatively put at 2.7 million million dollars, compared with the estimate of 1.4 million million dollars in October 2008. Factoring in assets originating in Europe and Japan could bring the losses up to 4.1 million million dollars.*

3. THE FINANCIAL SITUATION IN THE NON-FINANCIAL PRIVATE SECTOR

3.1. Overview

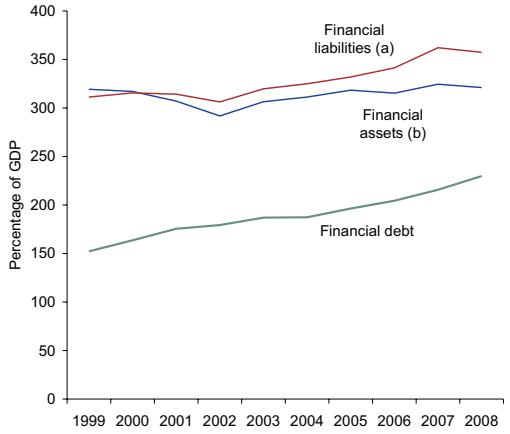
Over the past decade, increased indebtedness has become a structural feature of the Portuguese economy. The move in the International Investment Position illustrates this situation vividly. Starting from the point where the country joined the euro, the net debtor position for economic agents resident in Portugal stood at 33 per cent of GDP (1999). By the end of 2008 it had soared to around 97 per cent of GDP (Charts 3.1.1 and 3.1.2). A little less than half of this position corresponds to the resident banking sector, while the remainder is fundamentally public debt in the hands of non-residents. Given the role of the banking system in financial intermediation with the rest of the world, undertaken more markedly since the advent of the euro, the indebtedness of this sector appears as the external counterpart of the domestic indebtedness of the non-financial private sector (individuals and non-financial corporations).

Being part of the euro area has, of course, simplified access to financing in wholesale markets that are both wide and deep, and with no foreign exchange risk, though there will always be intertemporal solvency restrictions. These will become active, whether the horizon is seen as near or far, and will tend to provoke an inversion of the considerable disparity between investment and savings, either at the aggregate level or at the level of sectors and agents seen in individual terms. However, the adjustment process of economies in a monetary union tends to be drawn-out, above all if there are no speculative bubbles in the asset markets and if the financial systems are solid.

The resident sectors in Portugal hold a considerable amount of assets on the rest of the world (this stood at 170 per cent of GDP for the whole economy at year-end 2008), giving them leeway to cushion, at least temporarily, any turmoil in the international wholesale financial markets without needing abrupt

Chart 3.1.1

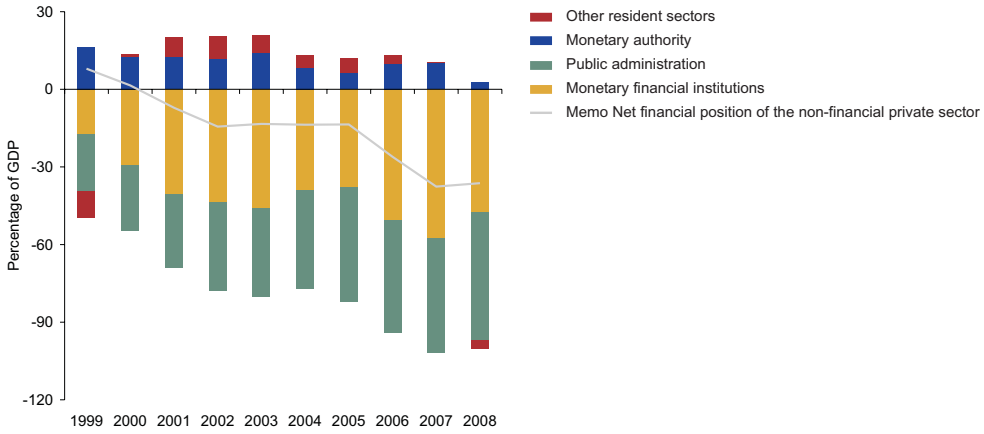
FINANCIAL POSITION OF THE NON-FINANCIAL SECTOR



Sources: *INE* and Banco de Portugal.
Notes: **(a)** Includes financial debt (loans and debt securities), shares and other holdings, insurance technical resources and other liabilities. **(b)** Includes cash and deposits, securities, loans, insurance technical reserves and other credit.

Chart 3.1.2

INTERNATIONAL INVESTMENT POSITION (IIP) – NET POSITION PER INSTITUTIONAL SECTOR



Sources: *INE* and Banco de Portugal.

adjustments in the level or standard of domestic expenditure. The necessary adjustment of the external imbalances, which have become a feature of the Portuguese economy, can be extended over time (thus smoothing the process). In this context, it should be remembered that financing the current and capital accounts deficits through 2008 (10.5 per cent of GDP) was ensured by curtailing assets on the rest of the world by approximately 13 per cent of GDP. At the same time there was a fall in liabilities, coming in at around 2 per cent of GDP, in clear contrast to the profile of financing the external deficit that had prevailed over previous years.

The prospects for the financial position of the non-financial private sector, if the focus is on financial stability, are clearly constricted by the impact of the international economic and financial crisis. One salient point here is that the severity of the current economic and financial crisis is likely to trigger a further rise in unemployment. The intensity and breadth of this will depend on two factors: one is the number of companies in a financial drift, since they can quickly become economically unviable if there is a fall in demand; and the second, this being crucial, is the expectation on the duration of the recession. The unfolding situation will illustrate the effects of the crisis on the financial position of a large number of those who are in debt to the banks. The impact of this on financial stability for the households affected will hinge critically on the distribution of wealth, income and indebtedness. The available evidence points to the fact that the low-income strata and the younger section of the population will be the most vulnerable. However, the debt burden of these more fragile groups is of little account in the overall picture, and there is the added point that risks underlying loans in this segment are likely to be mitigated by the fact that much of the credit granted is tied to mortgage guarantees, often with additional personal collateral provided by family members (typically first degree relations). In the current economic crisis, however, an increase in the unemployment rate is likely to weigh heavily on the finances of an increasing number of households, notwithstanding the fact that interest rates are still coming down.

With the turmoil in the financial markets increasingly interwoven with a deteriorating real economy, there is likely to be considerable downward pressure on the financial situation of non-financial corporations, above all as they struggle to cushion the unexpectedly sudden and harsh impact of plummeting demand. In addition, it may not be so easy for credit institutions – given the bleak climate that they have had to face since the onset of the crisis – to provide the support needed by economically viable

non-financial corporations in straightened circumstances to ensure that they are in a financial position to keep their businesses as a going concern. It may well be, as the move in credit aggregates for the year under review suggests, that the banks provided an important financial contribution to keeping operations in the sector from stalling. However, the depth and spread of the current recession will undoubtedly cut hugely into the profitability of a swathe of companies where rigidity in a considerable portion of their operational costs is a reality, hardly offset by the anticipated fall in interest in banks' lending rates. The available evidence suggests that matters will get worse across the board, impacting not only on small enterprises, but also on larger ones, many of them owing substantial amounts to banks.

With the high level of indebtedness in the non-financial private sector, it becomes pivotal to assess the extent to which this situation affects the allocation of resources that could otherwise spur growth. For the debt burden to be manageable in the future, it is important for companies to channel their resources into financing productive capacity that will allow them to service their debt in the future; and that households set their level of debt on a par with a careful assessment of income over the life cycle. In tandem, the state support plans for different sectors should focus on generating the incentives for enterprises and households to allocate their resources properly with the medium to long term in mind.

The scenario is one of vulnerability, given the significant dependence on external capital, with manifest sensitivity to sudden major and prolonged changes in those markets where resources are tapped. The need therefore is for support to underpin the financial situation of the non-financial private sector as part of the raft of measures being considered by authorities domestically and internationally to shore up the financial sector, households and enterprises. It should be noted, however, that significant deferral of debt – or even increased recourse to debt – could be counterproductive, with those benefiting now shouldering a bigger burden later. This is above all true if at the end of the deferral period the Portuguese economy has not picked up enough momentum to be growing in a materially relevant way; and all the more so, if the euro area has picked up in the meantime, since the effects of this will ripple out in the form of rising interest rates.

3.2. Individuals

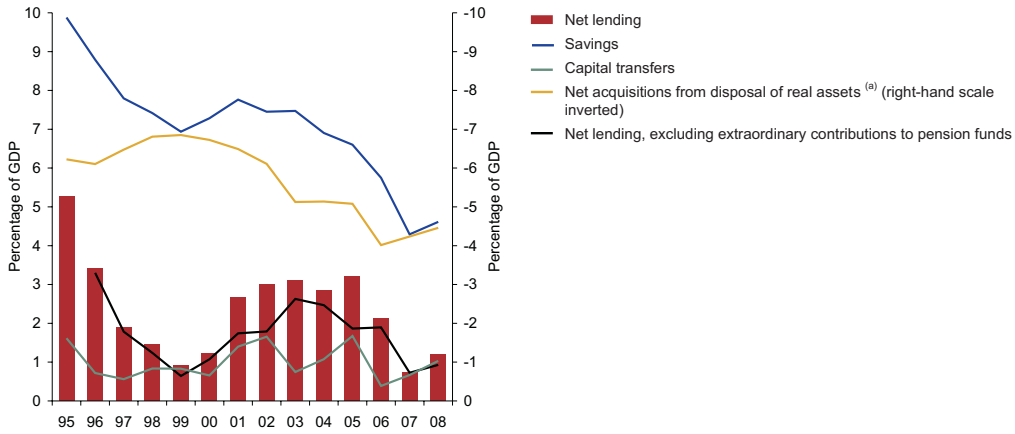
During the year under review, individuals' net lending grew by around 0.5 p.p. of GDP in year-on-year terms to stand at 1.2 per cent of GDP (Chart 3.2.1). This move reflects above all a break in the downward trend in the savings rate for the sector since 2001 and larger in capital transfers. The move in these variables more than offset the small rise in acquisitions of real assets (net of disposals).[1]

Taking the year as a whole, there was a slight recovery in the savings rate for the sector. In terms of disposable income, it rose by around 0.5 p.p., following the steep fall of around 2 p.p. in the previous year. With some pick-up in disposable income, the move was associated with a virtual stagnation (at the 2007 level) of the average annual rate of variation in private consumption. This bucked the euro area trend, where there was a major slowdown. A number of factors came into play here: income was on the rise, benefiting both from the increase in total employment and from salaries rising above the rate of inflation; there was also a rise in property income (distributed income of corporations and interest); and an upward move in social benefits.

(1) Acquisition of real assets (net of disposals) corresponds to the sum of gross fixed capital formation (GFCF), changes in inventories, acquisitions net of disposals of valuables and acquisitions net of disposals of non-produced non-financial assets. Only a part of the GFCF deriving from households relates to investment in housing, though it is a substantial part. The remainder is connected to the sector's productive operations, such as agriculture, trade, maintenance and the restaurant trade, where the proportion of sole owners is important.

Chart 3.2.1

INDIVIDUALS' NET LENDING SAVINGS AND INVESTMENT



Sources: *INE* and Banco de Portugal.
Note: (a) Corresponds to the sum of gross fixed capital formation (GFCF) changes in inventories, net acquisitions from disposal of valuables and net acquisitions from non-produced non-financial assets.

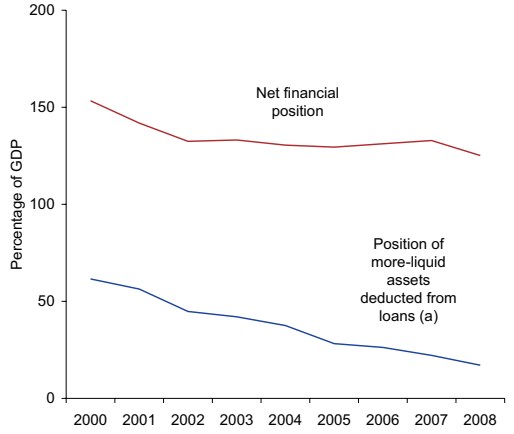
The slowdown in private consumption seen in the last quarter of the year seems to have stemmed from the deepening economic and financial crisis, and the gathering uncertainty that was clouding the prospects for household's wealth and income, with burgeoning problems in the labour market during the second half of the year. One salient point in this picture is the recent move in the growth of bank loans to individuals for consumption and other purposes. This slowed in mid-year and the trend has intensified in early 2009. In terms of mortgage loans, the pattern was the same, though the slowdown started in the early part of 2006 and intensified in 2008, especially in the second half of the year. During the first nine months of 2008, money market interest rates (used as the point of reference for most interest rates on loans) continued on the upward path that had been paved during the last quarter of 2005, even though the main operations of the ECB kept the rates practically flat. Since the start of October, in fact, official ECB rates have fallen sharply, though individuals have not derived any significant benefit from the cuts, since they are being passed on gradually by the banks, as is their wont.

During the year under review, the net financial position of individuals decreased by around 7 percentage points of GDP (Chart 3.2.2). In aggregate terms, therefore, there was less capacity in the sector to cover financial liabilities by recourse to financial assets. This shift reflected the relative stability of financial assets and the rise in liabilities, specifically in terms of long-term loans (Chart 3.2.3). There was also a fall in the cover of loans by more liquid assets, following the line that has been visible since the country joined the euro (the move is from around 200 per cent in 1999 to 118 per cent at the end of 2008). In tandem, there has been a fall in the ratio of total wealth (financial and non-financial) to total debt, though there remains a clear upside position in terms of solvency for the sector as a whole in aggregate terms (Chart 3.2.4). The way these indicators have moved since the beginning of the 1990s fundamentally mirrors the gradual but significant increase in indebtedness in the sector.

There was a slight dip during the year in the stock of financial assets held by individuals. This stemmed from a considerable fall in transactions (reaching decade minimums) but also from the substantial losses on financial assets more exposed to price fluctuations in the capital markets. The losses affected listed shares, long-term debt securities, and unit trust funds, where portfolios are fundamentally made up of the same kind of assets, as indeed are life insurance portfolios and pension funds (Charts 3.2.5, 3.2.6 and 3.2.7). Financial market turmoil was bringing substantial fluctuations in the securities

Chart 3.2.2

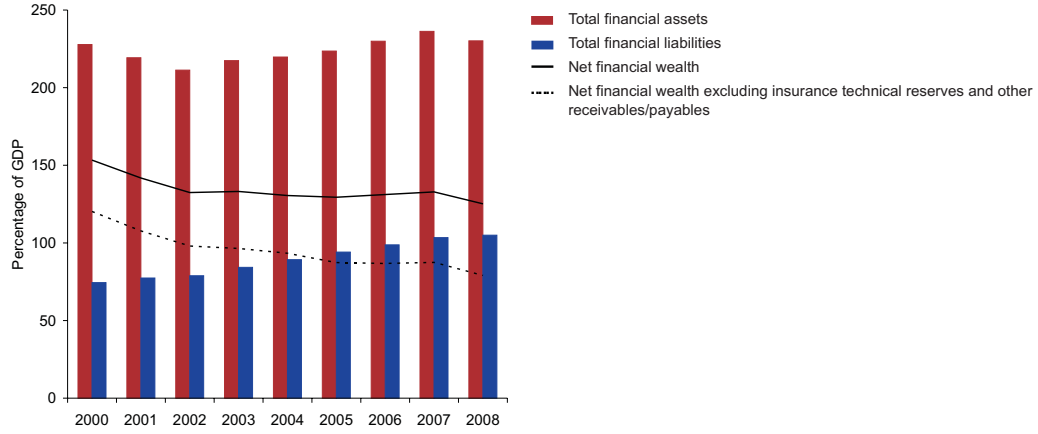
INDIVIDUALS' FINANCIAL POSITION



Sources: *INE* and Banco de Portugal.
Note: (a) Includes cash and deposits, debt securities, listed shares and units in investment funds, excluding pension plans.

Chart 3.2.3

INDIVIDUALS' FINANCIAL ASSETS AND LIABILITIES



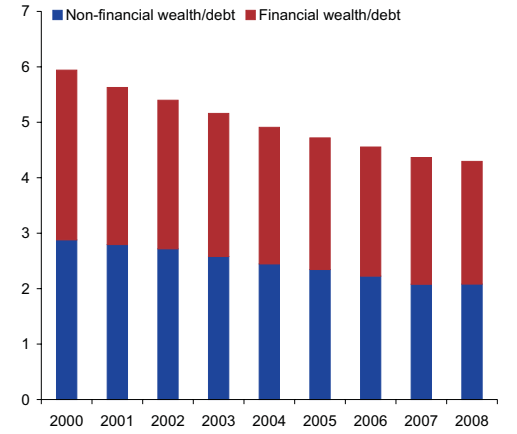
Sources: *INE* and Banco de Portugal.

component in individuals' portfolios, above all in listed shares, where there was an estimated loss of over 3 per cent of GDP for the year. There was, in fact, relative stability in total financial assets, but a significant rejigging was undertaken, affecting in particular the more liquid assets. This stemmed from both a greater risk aversion and the impact from financial market instability on the return from the array of instruments used for savings. Since the onset of turbulence in the final markets, there has been a switch to assets that are less sensitive to market buffeting, specially bank deposits.[2] As in the second half of 2007, there was a major move out of investment funds. Net redemptions tallied up at around 6 per cent of GDP for the year, the amount being particularly marked from July onwards. The move fuelled a major increase in bank deposits (which stood at around 8 per cent of GDP for the year), and was

(2) Throughout the last decade, the proportion of assets where valuation is more sensitive to market fluctuations rose gradually until 2006, and then fell in 2007 and 2008, as the current financial crisis took hold.

Chart 3.2.4

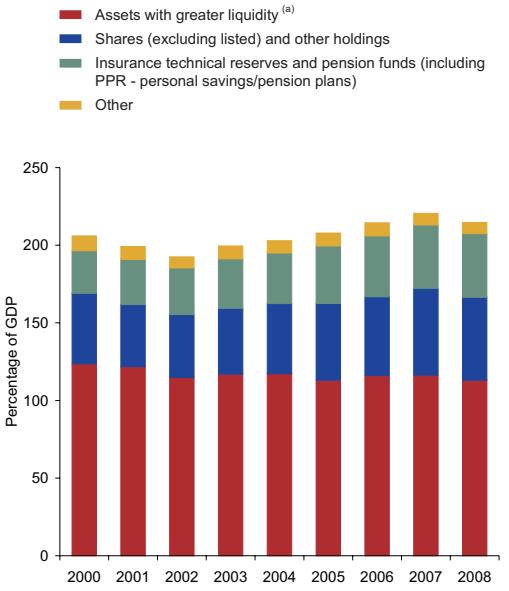
WEALTH/DEBT RATIO



Source: Banco de Portugal.

Chart 3.2.5

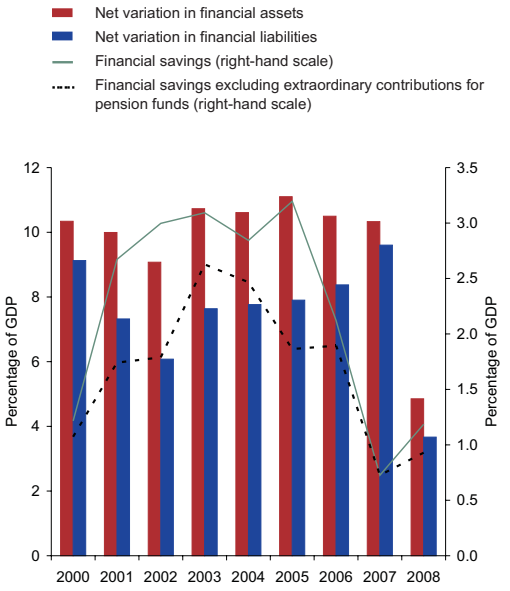
INDIVIDUALS' FINANCIAL ASSETS



Sources: *INE* and Banco de Portugal.
Note: (a) Includes cash and deposits, debt securities, listed shares and units in investment funds except retirement plans (*PPR*).

Chart 3.2.6

INDIVIDUALS' FINANCIAL OPERATIONS



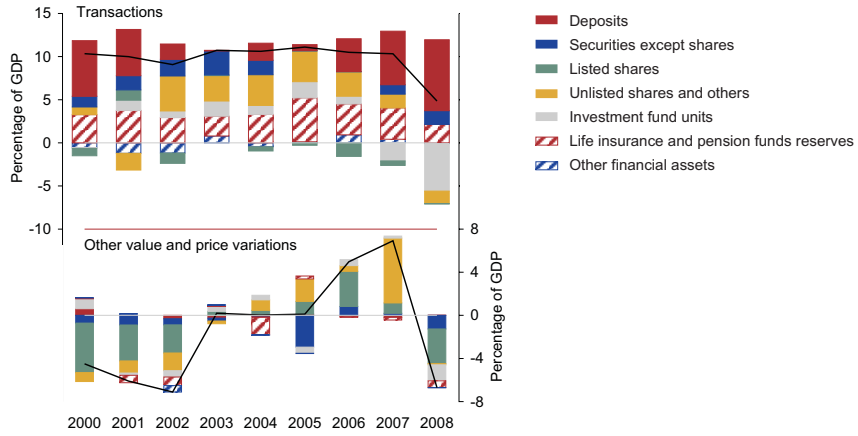
Sources: *INE* and Banco de Portugal.

probably also influenced by the more competitive stance of the banks (above all the domestic institutions) as they moved to draw in customer funds, with interest on term deposits coming close to money market interest rates as financing through the international wholesale markets became fraught with difficulties.

As for loans to individuals, the flow in 2008 was far less than in the last decade, to such an extent that the ratio of debt to disposable income remained virtually static after a long period on the rise (Charts 3.2.8 and 3.2.9). The slowing momentum was caused by both demand and supply side factors: there

Chart 3.2.7

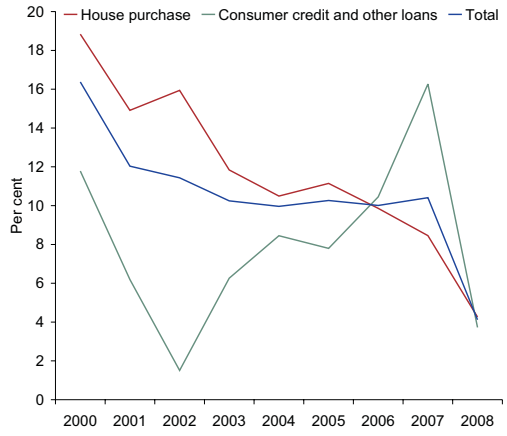
INDIVIDUALS' FINANCIAL ASSETS
Transactions and other value and price variations



Sources: *INE* and Banco de Portugal.

Chart 3.2.8

TOTAL LENDING TO INDIVIDUALS
Annual rate of change

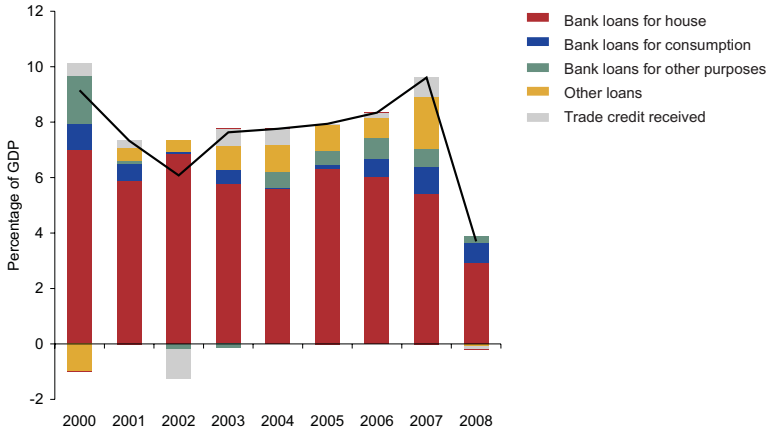


Source: Banco de Portugal.

was the effect from the rises in interest rates that had been a constant since the end of 2005 (as mentioned, the fall in interest on borrowing is only likely to have a significant effect in 2009); and credit institutions have been adjusting supply to match the major change in the macroeconomic and financial framework where they operate, coming on the back of the crisis in the international financial markets that broke out in mid-2007. In this context, Portuguese banks have been steadily tightening the terms for granting loans to individuals. In the first phase this most clearly affected loans for house purchase, but it now takes in credit for consumption and other purposes. The bigger clampdown has been more clearly visible in the increase in interest rate spreads for new operations and even more so in those considered to be of greater risk. It also, however, included reductions in loan to value figures and in the maximum maturity on offer. In the meantime, against a backdrop of falling confidence, which slipped to

Chart 3.2.9

INDIVIDUALS' TRANSACTIONS ON FINANCIAL LIABILITIES



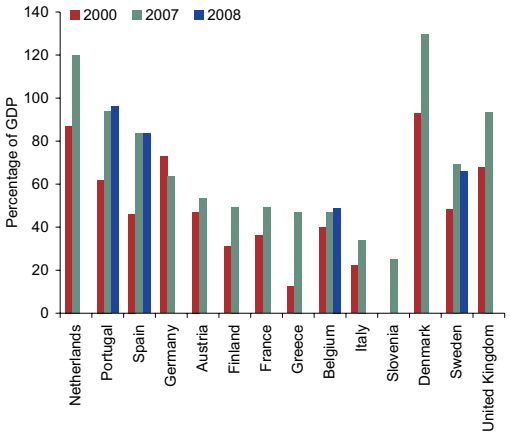
Sources: *INE* and Banco de Portugal.

record lows, the worsening prospects for the housing market and the cut in expenditure on consumer durables would also seem to have played a part in easing demand for loans.

The level of debt for individuals continues, however, to be among the highest in the euro area (Chart 3.2.10). It may well be that a rise in indebtedness among individuals has been common to most countries in Europe over the past few years, but the Netherlands was the only country in the euro area to surpass Portugal, though the United Kingdom is on a par and Denmark records an higher level The move in indebtedness in Portugal came with the transition to a new regime of nominal interest rates. They were lower, less volatile, and replete with supply side credit product innovation. This took concrete form in an array of features that made it possible to smooth or defer debt service charges. Around 75 per cent of individuals' debt relates to loans for house purchases, buttressing the rise in wealth in

Chart 3.2.10

INDIVIDUALS' FINANCIAL DEBT



Sources: Eurostat and Banco de Portugal.
Note: Consolidated accounts (except for United Kingdom, non-consolidated).

the sector. In this context, it should be mentioned that the available evidence does not point to a hard landing in residential prices in Portugal of the type witnessed in some European countries and in the United States. There was in aggregate terms no spike in the residential component of property assets. Using data from the *Confidencial Imobiliário* index, the average annual variation in prices on the supply side for the residential market in Portugal (with figures covering the period since the start of the decade) runs at 3 per cent in nominal terms, tantamount to nil in real terms. Even so, there could be some price adjustment surfacing in the market. It could stem from the economic and financial crisis, which has been hemming in demand for property through expectations on future income streams and on market prices themselves; and it could also stem from less finance from banks being available for this kind of investment. Here too mention should be made of the National Statistical Office (*INE*) survey on bank valuations in the housing market (the *Inquérito à Avaliação Bancária na Habitação*). It shows that the average figures for this indicator have been becoming ever more negative (in year-on-year terms) since the end of 2007, reaching -6 per cent at the end of the first quarter of 2009.[3] We are, of course, dealing with valuations carried out for the banks, so these figures are influenced by the tightening of their credit terms. In turn, the *Confidencial Imobiliário* index for March 2009 recorded a year-on-year variation of around 1 per cent (-0.2 per cent for second-hand property), compared with around 4 per cent (approximately 2.5 per cent for second-hand property) three months earlier.[4]

Various factors combine to make debt service charges very sensitive to the move in interest rates in the money market: there is the high level of indebtedness among individuals, and the almost total prevalence of operations at variable interest rates or with an initial rate up to one year indexed to interest rates in the money market. The information compiled by the *INE* shows that the average figure for installments rose 8.9 per cent in 2008 (in annual terms compared with 2007). This was associated with the rise in interest charges, which came in at a considerably higher figure than the growth in nominal disposable income (Charts 3.2.11 and 3.2.12).[5] The recent fall in ECB and euro money market base rates will make it possible to invert the trend towards rising installments that have characterised loans since 2006, during the cycle of ECB interest rate rises between the end of 2005 and mid-2008. We should also see a turn away from the increase in risk premiums in the international money markets since the summer of 2007, linked to the turmoil in the international financial markets. This is even more important since the banks are no longer in the position they were before the onset of the crisis, that is, in being able to adapt other contractual terms (such as, to take an obvious example, an extension to repayment periods) and thus more closely match repayments to households' capacity to carry the debt burden.

The prospects for the financial situation of individuals, with implications in terms of financial stability, depend critically on the impact of the international economic and financial crisis. Portugal is a small economy, closely integrated in economic and financial terms, so greatly exposed to global developments. One aspect of this is that 2009 is likely to see a rise in unemployment. The intensity and scope of this in the near future depends on two factors: the number of companies that are in such a fragile financial situation that they will rapidly become economically unviable as demand weakens; and, crucially, the anticipated duration of the recession. With expectations pointing to a prolonged crisis, companies will tend to lay off more workers and/or take on fewer new staff. This situation will have its repercussions on the financial situation of a considerable number of individuals needing to pay back

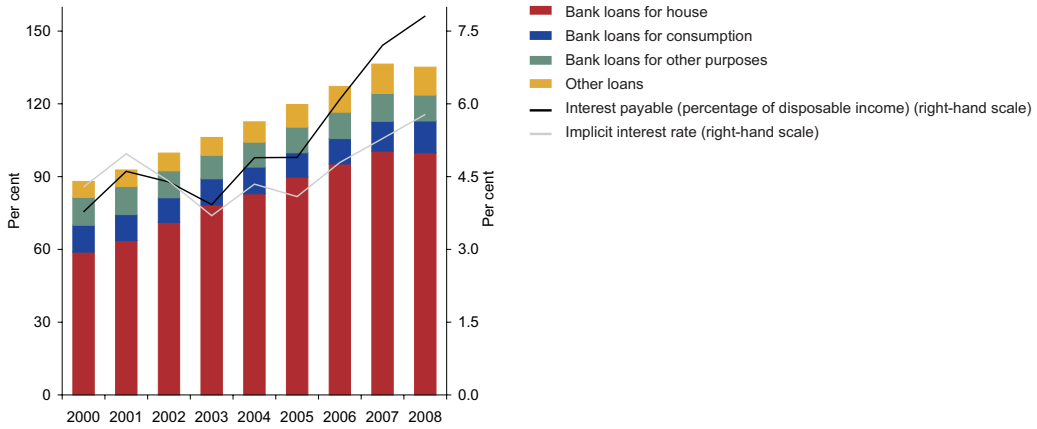
(3) This move is in line with the findings of the Bank Lending Survey, where the institutions taking part have been pointing out the risks associated with the prospects for the housing market as a factor that could hamstring the supply of credit and the prospects for the housing market being a factor in the fall in demand in the segment. These risks have been highlighted consistently, but in a more focused way since the end of 2006.

(4) This indicator is calculated on the basis of supply-side prices, weighted by region and state of use. The quality adjustment used for the calculation means, however, that it is not possible to exercise complete control over the parameters and this fact could well underlie the relatively high growth recorded towards the end of 2008. For information on methodology, see "*Índice Confidencial Imobiliário (base 2005)*", *Imométrica*, October 2006.

(5) The average value of the installment is equal to the sum of the average amount of capital paid off and the average amount of interest. More information on the survey can be obtained on *www.ine.pt*.

Chart 3.2.11

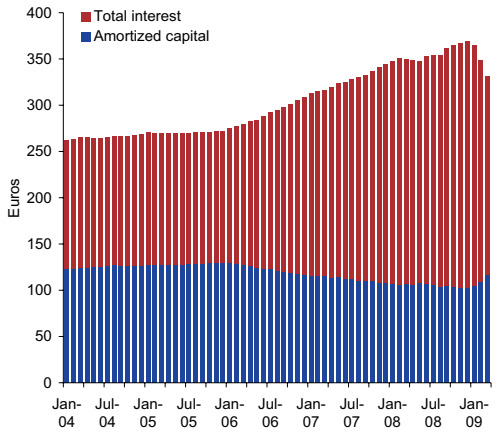
INDIVIDUALS' INDEBTEDNESS AND INTEREST PAYABLE
Percentage of disposable income



Sources: *INE* and Banco de Portugal.

Chart 3.2.12

AVERAGE INSTALMENT OF HOUSING LOAN



Source: *INE*.

loans to banks. In addition, it is not possible at present to assess the effectiveness and the temporal reach of the social measures to support households that have been announced by the government. The reasons for this lie in the uncertainty over how viable it is to keep these measures in place over a long period, allied to the possibility of the current economic crisis lasting for a long time, over and above its possible effects on employment, and, in the final instance, on household income. As a final point, it should be noted that to the extent that these measures carry with them a deferral of the financial charges on current debt, this will be picked up at some point in the future, with the households that are benefiting today having to shoulder a bigger financial burden at that point.[6] Current projections point to a recovery setting in across the euro area, with monetary and financial conditions slotting back

(6) The moratorium on repayment of instalments on owner-occupier mortgages to the equivalent of 50 per cent of the monthly amount (with a 500 euro ceiling on the reduction) fits in this framework.

into place, but if the Portuguese economy moves asynchronically, the point made above could be particularly relevant. On the other hand, against a backdrop of very low, nil or even negative inflation, those agents that are in debt cannot benefit from the nominal erosion of the debt itself, with the uncertain prospects in the labour market also in the frame.

Lastly, in terms of an assessment of the potential impact on financial stability, a deeper analysis of individuals' financial situation must bring the spotlight to bear on the distribution of wealth, income and debt. Such an assessment, however, is hampered by the fact that the information needed for it is not constantly updated. The most recent data are those from the survey on household assets and debt (the *Inquérito ao Património e Endividamento das Famílias - IPEF*), carried out during the last quarter of 2006 and the first quarter of 2007. It brings together microeconomic data on wealth and debt, income and other socio-economic features, collated from a direct interview with a sample of households. The findings suggest that households have been participating more in the debt market, with the average level of indebtedness and the debt service burden on the rise. As for participation in the debt market for purposes other than housing, the findings show that this market has also opened up, above all for households in intermediate income brackets and those where the wage-earner is under 50 years of age. The findings also point to the fact that this participation and the level of debt are particularly sensitive to the family income and to the age of the wage-earner. The figure rises with income up to a maximum at an intermediate stage, and it goes down with age and the level of schooling of the wage-earner, being higher for households with income from employment. A salient fact here is the difficulty for households on lower income to access the credit market, especially for housing. As for the ratio of debt service to monthly income, this is particularly high among younger households, although in aggregate terms for households with a mortgage, the figure for this ratio in Portugal compares favourably with the euro area.[7] The most vulnerable income brackets are certainly those at the lower end and the young, but this is not likely to jeopardise the stability of the financial system, since the debts of the households involved are a relatively small portion of the total. In addition to the mortgage, a considerable number of these debts are backed by personal guarantees, and many of these are from the family (most typically the parents). This means there is a much reduced financial stability risk from this segment (see "Box 4.2 *The main characteristics of loans to households for house purchase in Portugal*", of this Report). It should be noted that in the current context, the rise in the unemployment rate is likely to put great downside pressure on the financial situation of a growing number of households, even though interest rates continue to go down.

3.3. Non-financial corporations

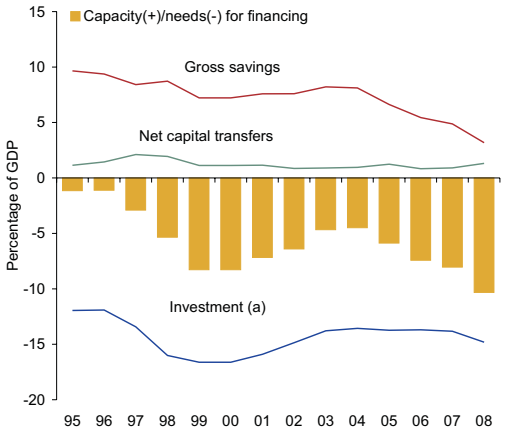
During the year under review, net borrowing of non-financial corporations were around 2 p.p. of GDP higher than a year earlier, standing at a record high of 10.3 per cent of GDP (Chart 3.3.1). This move fundamentally reflects another fall in current savings (by 1.7 p.p. of GDP). The sequence goes back to 2004, with estimates for the growth of GFCF for this sector coming in at around 1 p.p. of GDP. The fall in current savings for non-financial corporations derives basically from a fall in their operating results and a high amount paid out, in the form of interest and dividends, as remuneration of capital invested (Charts 3.3.2, 3.3.3 and 3.3.4).

The move in operational results would seem to be closely related to how economic activity was faring in Portugal and the world at large. It was particularly bleak in the last quarter of the year. The quarterly information from the Banco de Portugal Central Balance-Sheet Database (*Central de Balanços*) shows that the fall in these results reflects to a large extent a slowdown in production (and therefore

(7) See "Box 4.3 *Aspects of higher risk mortgage loans in the United States and Europe*", of this Report.

Chart 3.3.1

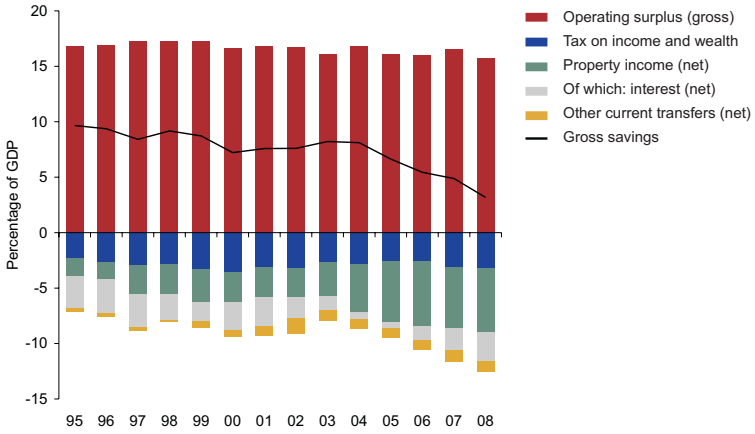
NON-FINANCIAL CORPORATIONS' NET BORROWING, SAVINGS AND INVESTMENT



Sources: *INE* and Banco de Portugal.
Notes: Annual figures for 2007 and 2008 calculated on the basis of national quarterly accounts. (a) Includes GFCF, changes in inventories, net acquisitions from disposal of valuables and net acquisitions from non-produced non financial assets.

Chart 3.3.2

CONTRIBUTIONS TO GROSS SAVINGS OF NON-FINANCIAL CORPORATIONS



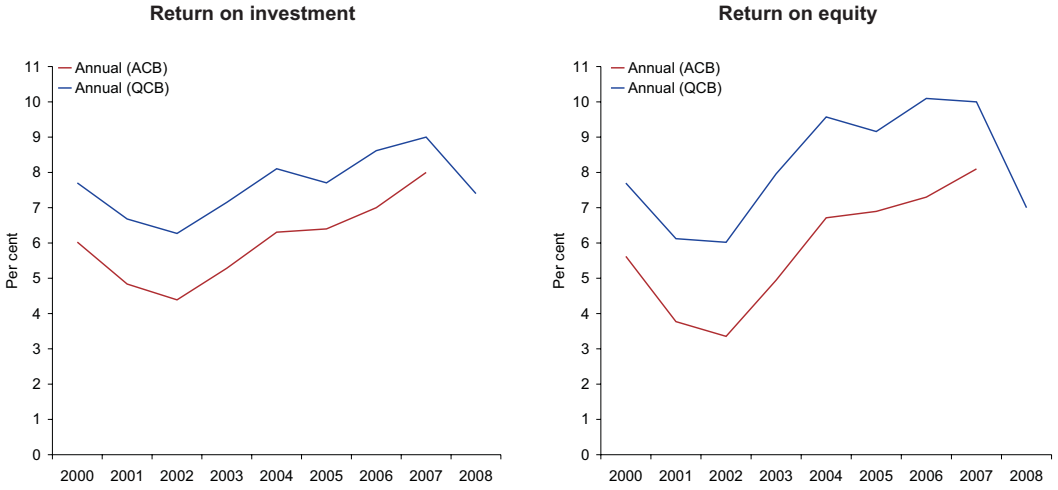
Sources: *INE* and Banco de Portugal.
Note: Net figures correspond to the difference between resources and uses.

sales) in the sector, against a backdrop where operating costs (mainly payroll costs but also intermediate consumption) present greater downside rigidity.[8] Added to the decrease in the operating surplus of the sector, there is the fact that a great deal of the return generated has been distributed in the form of interest, stemming from the rise in the average annual level of interest rates and indebtedness, and to

(8) A detailed analysis of the sample of companies in the *Central de Balanços do Banco de Portugal*, both annual (ACB) and quarterly (QCB), will be found in Supplement 5/2005 of the Banco de Portugal *Statistical Bulletin* for December 2005 and Supplement 1/2008 of the *Statistical Bulletin* for May 2008. There is a big skew towards large enterprises in the quarterly sample up to 2005 and in the annual sample, though to a lesser extent. From 2006, a simplified version was used (the *Informação Empresarial Simplificada*) and the annual analysis improved significantly, with cover now close to 100 per cent in terms of total Gross Value Added of non-financial corporations.

Chart 3.3.3

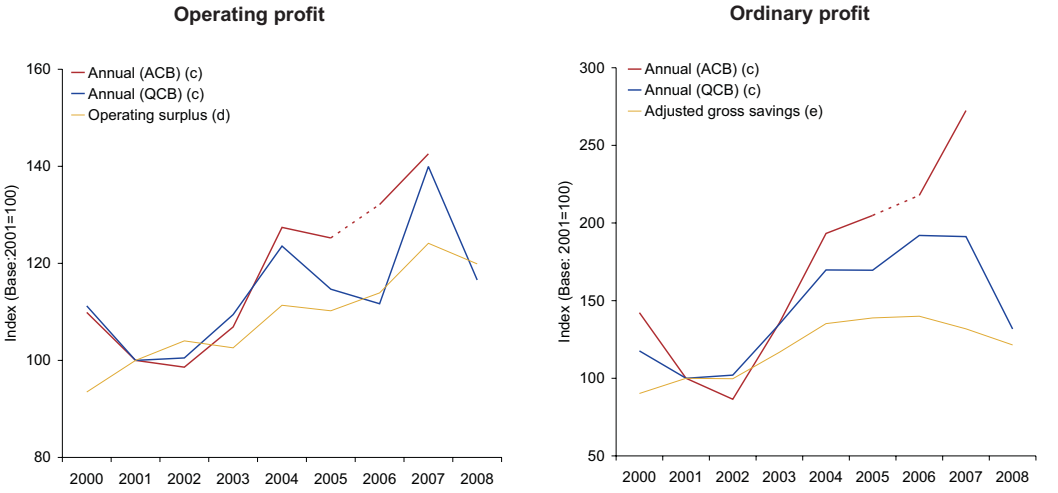
RATES OF RETURN FOR NON-FINANCIAL CORPORATIONS



Source: Banco de Portugal.
Notes: Return on capital invested = (ordinary profit + interest costs)/(shares and other equity + financial debt). Return on equity = ordinary profits/shares and other equity. ACB: Annual Central Balance-Sheet Database. QCB: Quarterly Central Balance-Sheet Database (quarterly). Ratios are calculated by applying to the most recent figure available rates of change calculated on the basis of companies with comparable figures in two consecutive years. As and from 2007, the CBA ratio has been calculated using data from the Simplified Corporate Information.

Chart 3.3.4

RESULTS IN NON-FINANCIAL CORPORATIONS



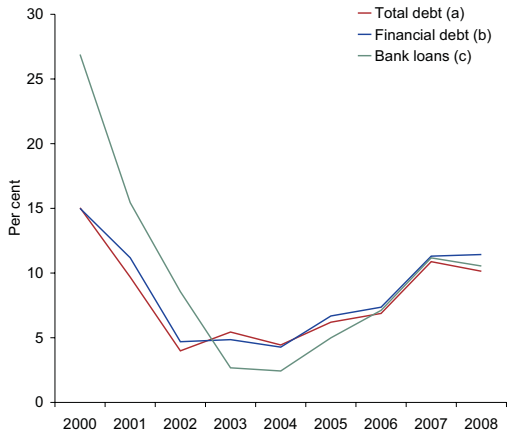
Source: Banco de Portugal.
Notes: (a) Operating profit = gross value added - personal costs +other income and operating gains (net of costs and losses) -tax (except indirect) - depreciation and provisions for the year. (b) Ordinary profit = operating profit + financial profit. Year-on-year indices calculated on the basis of cumulative figures for the year in companies on the Central Balance-Sheet database with comparable figures in two consecutive years. (c) Ordinary profit = operating profit + financial profit. The series was broken in 2006. From that year data from the Simplified Corporate Information was used. The GVA cover rate for non-financial corporations on the CBA is around 60 per cent up to 2005 and near 100 per cent since 2006. For the CBT, the cover rate is between 41 and 45 per cent. (d) Operating surplus for the year. (e) Gross savings plus distributed income of corporations payable minus net reinvested FDI earnings.

a lesser extent in the form of distribution as dividends. These factors have led to a fall in the savings rate for the sector, which knocks on to greater borrowing requirements.[9]

As all of this has unfolded, the self-financing capacity of the sector has been badly mauled. With the rise in investment as a percentage of GDP, this has translated into considerable financing requirements. These have been covered, as in recent years, through an increase in indebtedness to the financial sector through bank loans. At year-end, lending to non-financial corporations were rising considerably (it was up by 10.5 per cent), with net debt securities issues also substantially higher. These were mainly short-term, and were mainly taken by resident banks, pushing financial debt (loans and securities issues) up by 11.4 per cent (Charts 3.3.5 and 3.3.6). This pattern for financing is consistent with financial market turmoil: funds are hard to raise through increases in capital using market mechanisms or the issue of long-term debt, and the situation was particularly acute in the last quarter of the year. Financing needs hoisted the financial debt of these corporations to around 134 per cent of GDP (compared with 122 per cent at the end of 2007). This brought in its train a considerable rise in financial leverage for the sector, surpassing the most recent high, recorded in 2002 (Charts 3.3.7 and 3.3.8). Both the debt ratio and the financial leverage ratio in this sector are among the highest in Europe (Charts 3.3.9 and 3.3.10).

Chart 3.3.5

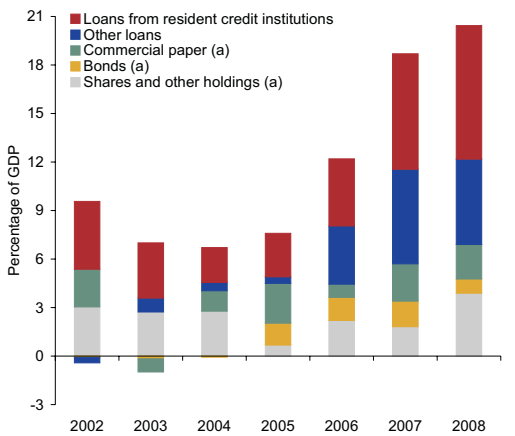
DEBT OF NON-FINANCIAL CORPORATIONS
Annual rate of change



Source: Banco de Portugal.
Notes: (a) Includes loans granted by resident and non-resident institutions; loans/supplementary payments granted by non-resident companies from the same economic group (excluding those granted to non-financial corporations in Madeira off-shore); commercial paper and bonds issued by non-financial corporations held by other sectors and trade credit received from other sectors. (b) As in (a) excluding commercial credit received from other sectors. (c) Includes loans granted by resident monetary financial institutions, adjusted for securitisation operations and corrected for reclassifications, asset write-downs and exchange rate and price revaluations.

Chart 3.3.6

MAIN FINANCING FLOWS IN NON-FINANCIAL CORPORATIONS

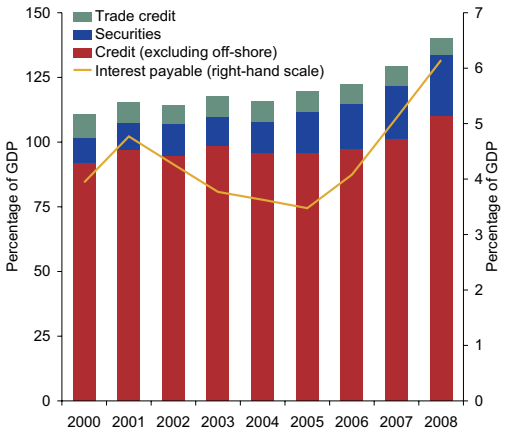


Source: Banco de Portugal.
Note: (a) Non-consolidated figures. Issue values.

(9) The operating surplus of a sector corresponds to the difference between its GVA (equal to the gross value of production less intermediate consumption) and the salaries, tax on production and imports paid by the sector. It is therefore the average of income generated (or absorbed) as a result of its productive operations (before the recording of financial costs and proceeds). Without the cost of amortization and provisions it could be interpreted, where non-financial corporations are concerned, as an approximation to the aggregate operational results of the units that make up the sector. In the national accounting system (the *Sistema Integrado de Contas Nacionais*), the operating surplus is a resource for the sector and can be transferred to other sectors in the form of yield on assets (such as interest, dividends and rentals), tax on income and assets, and current transfers. The remaining balance is the disposable income. In the case of end-user consumption sectors (families, non-profit institutions in the service of families and public administration) the disposable income is shared between final consumption expenditure and savings. In the remaining sectors (including non-financial corporations) this balance is equal to the whole amount of savings for the sector.

Chart 3.3.7

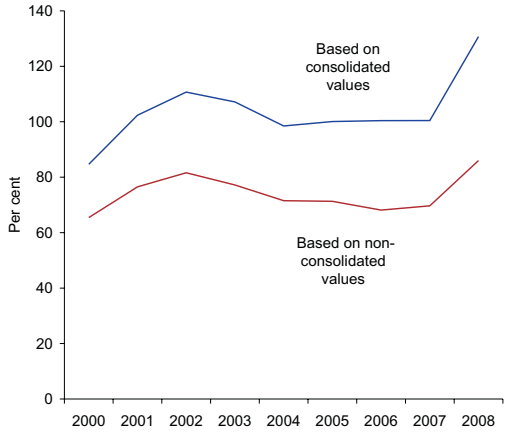
TOTAL DEBT OF NON-FINANCIAL CORPORATIONS AND INTEREST PAYABLE



Sources: *INE* and Banco de Portugal.

Chart 3.3.8

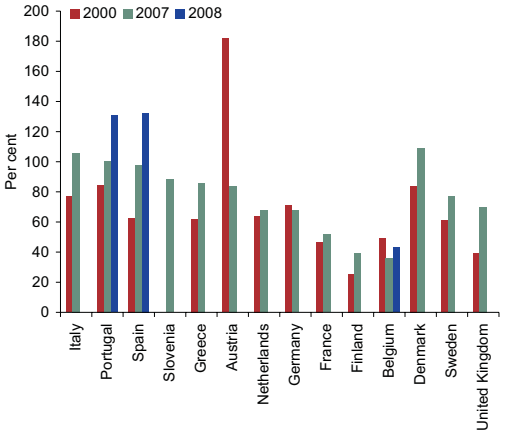
FINANCIAL LEVERAGE RATIO [a]



Source: Banco de Portugal.
Note: (a) Defined as the ratio between financial debt and capital.

Chart 3.3.9

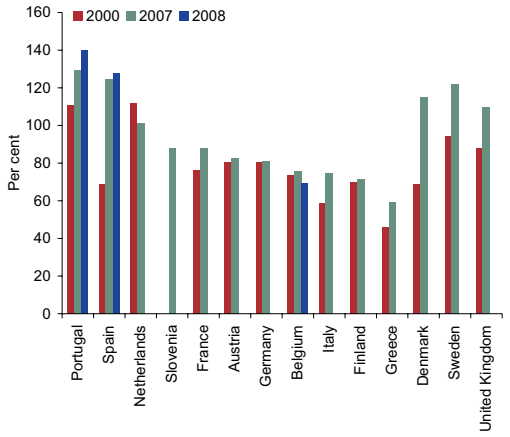
FINANCIAL LEVERAGE RATIO IN NON-FINANCIAL CORPORATIONS



Sources: Eurostat and Banco de Portugal.
Note: (a) This ratio corresponds to the ratio between the sum of the loans and debt securities in relation to capital, consolidated figures (except for United Kingdom, non-consolidated).

Chart 3.3.10

RATIO OF TOTAL DEBT TO GDP

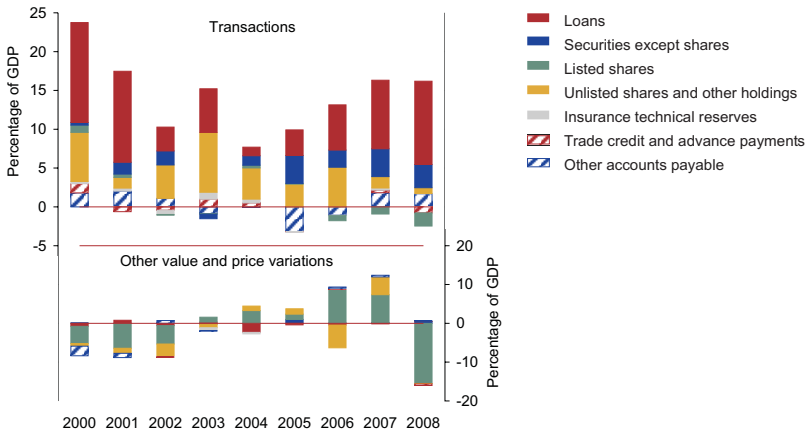


Sources: Eurostat and Banco de Portugal.
Note: (a) Total debt corresponds to the sum of loans, debt securities and trade credit on the liabilities side, consolidated figures (except for United Kingdom, non-consolidated).

In terms of the financial asset portfolios of non-financial corporations, the year saw a substantial rise in loans. These related to operations between companies and their shareholders, mainly residents, and also to direct investments abroad. In consolidated terms, net acquisitions of shares and other holdings came in a tad higher than 1 per cent. In non-consolidated terms, this was a 2.5 per cent rise, suggesting that a considerable part of the capital reinforcement of the sector (for instance through supplementary capital) was coming through a process of company consolidation. The net financial position of the sector (in consolidated terms) was marginally better than a year earlier, standing at around -164 per cent of GDP. This compares with -160 per cent when the country joined the euro. The move in 2008

Chart 3.3.11

FINANCIAL LIABILITIES IN NON-FINANCIAL CORPORATIONS
Transactions and other value and price variations



Sources: *INE* and Banco de Portugal.
Note: Consolidated figures.

looks to have stemmed from a considerable fall in the figures for company capitalisation, as listed share prices, domestic and international, ebbed in value (Chart 3.3.11).

Unstable financial markets are interweaving ever more closely with a deteriorating real economy, bringing considerable influence to bear on non-financial corporations' production and investment decisions. The crisis has taken its toll on the world economy, with repercussions in the demand for Portuguese goods and services; and it has also made it more difficult to tap into credit, above all because of the falling expectations for the economy and consequent rise in credit risk. This could ripple on in its turn, bringing a worsening financial situation on the back of the difficulty in cushioning a sudden major slowdown in demand. In addition, given the particularly adverse operating conditions that have pervaded the world since the onset of the financial crisis, credit institutions may now have less leeway for providing the conditions that will allow weakened non-financial corporations that are nonetheless economically viable to keep themselves on an even enough keel to continue as a going concern. There has of course been a big loss of momentum recorded in aggregate credit to non-financial corporations at the end of the year and at the start of 2009, but leaving aside considerations underlying the assessment of risk by banks at an individual company/operation level, the supply of credit does not seem in overall terms to be impacting greatly on the sector's capacity to stay afloat. In addition, the information coming through the survey of banks relating to the credit market (the *Inquérito aos Bancos sobre o Mercado do Crédito*) points to loan or credit line requests from companies being more associated with financing inventories and working capital and with debt restructuring. The growing importance of these needs would seem to stack up with a view of straightened financial circumstances in a swathe of companies: less of the demand focuses on the need to finance investment or mergers and acquisitions as business operations are overhauled. The banks would seem to be playing an important role in providing companies with a financial bridge over troubled waters.

The heterogeneous nature of the situation for non-financial corporations is similar to that of individuals, in terms of sectors, geographical location or dimension. Even so, and in spite of the anticipated fall in banks' lending rates, the current recession is so deep and its reach so wide that it will perforce imply a worsening return for an array of companies, especially when faced with rigidity in substantial parts of their operating costs. The deterioration is likely to be across the board in the various segments men-

tioned, leading in many cases to a cutback in operations and, in the last resort, a rise in insolvencies.[10] The recent financial and fiscal measures announced by the government to underpin companies could provide a short-term buffer, but their effectiveness and sustainability could be at stake if the crisis morphs into a deep and long-lasting recession.

(10) On this issue, see "Box 4.5 *Likely developments in the default situation among non-financial corporations*", of this Report.

4. BANKING SYSTEM[1,2]

4.1. Overview

The year 2008 was dominated by the crisis in the international financial markets. As it interwove with the worldwide economic slowdown, especially from September onwards, a bleak climate faced the banks. The Portuguese economy is small and highly integrated in economic and financial terms, and the international turmoil changed dramatically the operational environment of the country's banks. The impact was felt fundamentally in access to funds in the international wholesale markets as turbulence took its hold. In addition, substantial losses drained value from the securities and financial asset portfolio, even though Portuguese banks are not directly exposed to the assets related with the US subprime market. The focus here was the slide in shares. Despite this, Portuguese banks have demonstrated a notable capacity to adapt to a particularly unfavourable climate, having benefited from the government measures to shore up the financial system and from the changes to the regulatory framework of the Eurosystem monetary policy. In October, in concerted action with the authorities of countries across Europe and other advanced economies, the Portuguese government announced state guarantees to debt securities issues in euros placed on the market by the country's banks. Some banks took advantage of the facility towards the end of the year and at the start of 2009. Nonetheless, it has still been possible for the banks to issue non-guaranteed debt, particularly in the first quarter of 2009. Against this backdrop, one of the country's banks, the *BPN*, was nationalised and another, the *BPP*, found itself mired in problems relating to the demarcation between its asset management operations on behalf of customers and its activity in drawing in deposits, covering a considerable part of the contracts it had with its customers (see "Box 4.1. *Banking supervision in Portugal in the cases of the Banco Português de Negócios (BPN) and the Banco Privado Português (BPP)"*, of this Report). The year 2009 could well see a worsening of the impact of the crisis on the Portuguese economy as the world economy further slowdown. On the back of this, as activity slackens and companies adjust to the new reality, in all likelihood by shedding labour, credit risk may rise in the country's banking system.

As 2008 unfolded, the situation in the international financial markets deteriorated significantly. Even though Portuguese banks did not have any materially relevant exposure to the assets related to the US subprime market (or connected with them), there was a considerable fall in return on assets and return on equity. The downside shift in return on assets came above all as a result of losses through impairment (almost half associated with customer credit and the remainder to available-for-sale financial assets, with particular relevance attaching to the losses through impairment stemming from

(1) In the analysis made in this chapter, the aggregate defined as the Portuguese banking system refers to credit institutions and financial corporations operating in Portugal under the supervision of the Banco de Portugal. This does not include the institutions with head office in the offshore zone in Madeira. Financial groups are therefore considered if, on a consolidated basis, they include at least one credit institution or an investment company, as are credit institutions and investment companies on an individual basis if they are not subject to consolidation in Portugal (including the branches of credit institutions or investment companies). An analysis of this set of institutions is important to the extent that it is subject to the new Capital Adequacy Directive, being considered the benchmark universe in the large majority of European countries. It is not possible, however, to bring together data from before 2007, since not all banks adopted the International Accounting Standards (IAS) at the same time. Hence, there are different accounting systems in use in 2005 and 2006. The data presented in this chapter therefore does not always relates to the same group of institutions. In particular, up to 2004 the set of institutions takes in commercial banks and savings banks, with the exception of banks with headquarters in the offshore zone of Madeira and/or operations predominantly with non-residents. Also included as banks were branches of credit institutions with headquarters in another member state of the European Union – excluding those that cannot be classified as financial monetary institutions- as well as branches of credit institutions with head office in a third country. From December 2004 until December 2008, the banks are broken down into two groups and two periods: the first, from December 2004 to December 2007, relates to the thirteen banking groups that adopted the new IAS for their financial statements in 2005 (as at December 2004, this represented around 87 per cent of the total assets of the institutions analysed up to then); the second period is from June 2007 to December 2008. The overlap allows for a consistent analysis of the variations, with the figures for December 2007 relating to a more wide-ranging aggregate. The charts and tables in this chapter are arranged to make reading easier by introducing wherever necessary a vertical line to indicate a break in a series.

(2) Given the exceptional circumstances restricting the operations of the *BPN* and the *BPP* banking groups, which resulted in an intervention of Banco de Portugal and required a further analysis of their financial situation, year-end accounting and prudential data of these groups was not yet formally reported to Banco de Portugal. Hence, these two banking groups are not considered in the analysis in this chapter.

cross-holdings in some of the major banks themselves). Return on assets sank below the minimums witnessed during the 2003 recession, though it stood up well in international terms.

The 2008 economic and financial crisis also put great strain on the banks' capital as results slid and the market value of some of their financial instruments decreased. The banks responded in some cases with capital increase operations during the year. In 2008, all the banks set out their capital requirements in line with Basle II, which had major implications for the calculation of capital requirements relating to credit risk and operational risk. A number of changes were made to the regulations, the aim of the authorities being to cushion the negative impact of the crisis on banks' own funds. One of the salient points was the option to take a four-year deferral on the actuarial losses recorded in bank employees' pension funds. Within this whole framework, the adequacy ratio of own funds came in at 10.3 per cent in December, with Tier I standing at 7.5 per cent. The pressure on bank capital is likely to continue, however, as turmoil in the financial markets continues and economic activity is down sharply. This will bring credit risk closer to the surface.

As access to financing in the international debt markets is still hindered by turbulence, Portuguese banks have been rejigging their financing structure. One aspect of this has been the strong growth in customer funds, as risk aversion became the watchword and substantial withdrawals from unit investment funds became the norm. As deposits picked up a faster pace, they played an important part in the improvement in the structural liquidity situation of the Portuguese banking system. This is illustrated by the decrease in the credit/deposit ratio, above all in the domestic institutions. Another aspect of this was the greater use of financing through central banks, in line with what happened in other European banks. In this context, the changes to the regulatory framework of the Eurosystem monetary policy operations went a good way towards mitigating possible strains on banks' liquidity. Over and above this, Portuguese banks managed to continue to issue debt in the markets, in spite of the impediments to accessing financing in the markets for securitised debt, especially in the medium to long term. Maturities were shorter then, and the costs were higher. There are still persistent difficulties hindering access to this type of finance, however, and the guarantees provided by the Portuguese government to the issue of debt securities by the banks are still important, easing the refinancing of liabilities in the markets. In overall terms, the liquidity gaps in the Portuguese system have come in with more upside momentum, especially for longer periods of up to 1 year. The bolstering of these gaps stem in part from the increase in assets eligible as collateral in Eurosystem monetary policy operations. In turn, liabilities represented by securities narrowed their negative contribution to the liquidity gap, with the falloff in this form of financing as customer resources stacked up.

Portuguese banks, therefore, managed during the year to raise the financing they needed for their relatively strong expansion in credit, in spite of the particularly bleak climate. The trend towards strengthening customer funds was positive, since it implied less exposure to the wholesale financial markets. It must be remembered, however, that the recent pace of deposits is unlikely to be sustainable for a long period, given that it was brought about by a major adjustment to household portfolios that will be difficult to repeat to the same extent. Continuing access to financing by Portuguese banks is likely to be eased - even with persistent turbulence in the wholesale financial markets - by the measures taken to shore up the financial system, specifically as concerns the state guarantees to securitised debt issues by the banks and the changes to the Eurosystem regulatory framework. In the current context, the liquidity situation of Portuguese banks is not likely to hinder their capacity to channel finance to the economy, above all in circumstances where there is expected to be a fall in the demand for bank loans.

As already mentioned, the slide in financial asset prices on the international markets also had considerable impact on the banks' portfolios of securities and financial investments and on the results from financial operations. During the year, there was a fall in the value of the banks' securities and financial

investment portfolio even though they were not materially exposed to the assets that triggered the current financial crisis. This came in the wake of the turmoil in the financial markets and divestment of holdings by the biggest banking groups. Results from financial operations were down, mainly with the reduction in the value of financial assets, even though some banks made gains on the divestment of holdings in companies. There was a considerable rise in losses through impairment during the year, associated with available-for-sale financial assets, specifically in the banks' cross holdings, where listed values were way down.

Portuguese banks in some cases chose to dispose of holdings and reclassify some financial assets as a way of reducing the impact of market fluctuations on their income statement. The banks, however, are still much exposed to market risk through employee pension funds. The banks' contributions in fact went up but there was a considerable fall in the value of the portfolios of pension funds in the wake of the turmoil in the financial markets. Some actuarial gains were notched up, with the increase in the actuarial discount rate, and these helped to bring the present value of future liabilities down. In December, the actuarial discount rate in the main pension funds stood between 5.5 and 6 per cent, which is higher than the average yield on Portuguese public debt during the year. This represents a risk factor if the discrepancy between these rates persist over the coming years. Given the pronounced uncertainty over the performance of the international financial markets in 2009, it may well be that actuarial losses in the pension funds may occur again this year, putting increased pressure on the solvency ratio of some of the banks.

Default levels in the non-financial private sector have been rising considerably since the end of 2007, in fact going beyond what was seen in the 2003 recession, though even so, they have stayed within bounds that do not raise financial stability concerns. (see "Box 4.4. *Default in the non-financial private sector in the current crisis compared with the one in the 2003 recession",* of this Report). The move broke the marginally downward trend that had set in at the start of 2004. The default indicators may well have been up, but specific provisions for credit have stayed firm above the minimum requirements stipulated by the Banco de Portugal. Expectations are for a substantial rise in default on credit to the private non-financial sector, given the current bleak macroeconomic conditions and the uncertainty about the after-shocks from the financial crisis on economic output and in spite of cuts in interest rates. The impact is two-pronged: the anticipated rise in unemployment will contribute to an increase in default on credit to households; and companies, in the midst of the crisis and in some sectors having to cope with a very high cyclical business, are likely to default more as well as the loss given default of companies that cannot honour their financial commitments is likely to increase. According to the conclusions drawn from a model that incorporates forecasts on the economic cycle, the probability of default for 2009 will be greater than in 2008, being this increase greater than the increase which occurred from 2007 to 2008 (see "Box 4.5. *Likely developments in the default situation among non-financial corporations*", of this Report). In spite of all this, financial stability should not be in jeopardy. Credit to individuals being dominated by credit for owner-occupier mortgages helps to explain it. In addition, Portuguese households on low incomes play a small part in the mortgage market compared with high-income households and with the average situation in the euro area (see "Box 4.3. *Aspects of higher risk mortgage loans in the United States and Europe*", of this Report). There are some young families with a high level of indebtedness, but exposure is mitigated by the fact that a substantial portion of the loans involved are underpinned by personal guarantees (see "Box 4.2. *The main characteristics of loans to households for house purchase in Portugal*", of this Report). There is also no evidence of situations of excessive valuation of property assets in the country. In the meantime, the governmental and monetary policy measures to support companies, especially small and medium sized firms, could turn out to be important in taking pressure from credit risk.

Portuguese banks have, on the whole, managed to shrug off the impact of the financial crisis and have been able to keep their role as financial intermediaries. They have undertaken deep-rooted changes to the structure of their financing, by focusing on customer funds intake and, to a lesser extent, by tapping into central banks. In addition, some have divested assets to focus on their core activity and proceeded with capital increase operations in the primary market. A number have already indicated that they will buttress their own funds during 2009, bringing their capital ratios into line with the recommendations issued by the Banco de Portugal that Tier I ratio should, as and from September of this year, stand at least at 8 per cent. Continuing turbulence in the financial markets, however, could hamper this move, though here, another issue factors in: the government's 4,000 million euro recapitalisation plan for the domestic banks. In the current framework, one of the major challenges for the financial system is to stand firm against the heavy storm that looks set to break over economic output, with credit risk out in the open and households and companies caught up in the aftermath, and subsequent rises in defaults putting pressure on the profitability and solvency of the Portuguese banking system.

4.2. Activity and profitability

Activity

The summer of 2007 saw an international financial crisis characterised by massive turmoil in the wholesale debt markets and plunging asset values. This then began to interact ever more closely with the downturn in the world economy, and the effect of both these factors has been to seriously hamper the operations of the banks. The extent and persistence of developments since mid-2007 brought a slowdown in operations, given the relevance which financing in the wholesale markets had assumed in the expansion of the banking system in recent years, in line with the international trend, and the sensitivity of some elements on the balance sheet to market fluctuations. As a result, banks started to overhaul their asset and liabilities management strategies. Monetary authorities then stepped in with extraordinary measures to ensure liquidity, as the interbank money markets and the markets for commercial paper all but seized up. Over recent months, these markets have started to ease, with the banks gradually able to tap into financing again. The situation was then reinforced by a swathe of measures taken by States to shore up the banking sector at an international level. Salient among these were the strengthening of state guarantees for bank deposits, guarantees to underwrite the issue of debt securities by financial institutions, voluntary recapitalisation plans and the injection of public money in distressed banks.

The activity of the Portuguese banking system, assessed in terms of total assets in a consolidated basis, grew by 8.2 per cent in December (Table 4.2.1). They managed, therefore, to maintain growth in the midst of the financial crisis even though the strong growth of recent years lost momentum, with the biggest deceleration coming by and large from the banks that had shown very big variations in their operations in 2007 (Chart 4.2.1). The slowdown in activity was also observed at an international level. The information available for a selection of European banks shows that the slowdown was particularly acute for some of these institutions, with any increase in distribution density, compared with December 2007, coming in at values close to zero. Such a situation probably reflects the fact that the banks under review had a wider array of operations than the main Portuguese banking groups, with some of their assets displaying a greater sensitivity to capital market price variations (Chart 4.2.2). The expansion of the Portuguese banking system was sustained fundamentally by three things: the substantial growth in customer deposits; increased recourse to Eurosystem monetary policy operations; and, though to a lesser extent, continued use of the international financial markets.

There was a rise in the use of own funds, as there was across Europe, and this meant an increase in financial leverage, defined as the ratio between total assets and own funds. The same conclusion is reached if we take the ratio of tangible capital to tangible assets.[3] In line with the new prudential standards, the overall capital adequacy ratio of the banking system, on a consolidated basis – and this takes assets' risk profile into consideration – stood at 10.3 per cent in December. Solely in terms of Tier I, the adequacy ratio of original own funds stood at 7.5 per cent.[4]

The portfolio of credit to customers, which accounts for around two-thirds of assets, was the key determinant of activity growth, with a rate of change close to 10 per cent in December 2008. Although this figure is high, there was a clear deceleration in banking credit to the non-financial private sector during the second half of 2007, intensifying towards the end of 2008 and continuing unabated in the first

(3) The total for tangible assets excludes positive differences in consolidation (Goodwill) and other liquid intangible assets, among them those whose value can drop in stress situations and can impact on normal banking operations and the banks' performance.

(4) For further details on own funds ratios in the Portuguese banking system, see "Section 4.3 *Capital adequacy*", of this Report.

Table 4.2.1

BALANCE SHEET OF THE BANKING SYSTEM
On a consolidated basis

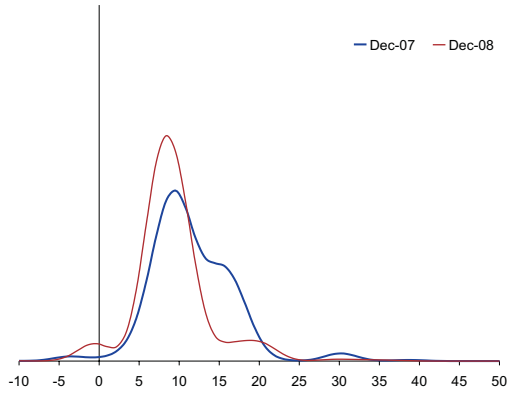
	EUR millions				Structure (as a percentage of total assets)				Year-on-year rates of change[a] (per cent)							
	2007		2008		2007		2008		2007				2008			
	Jun.	Dec.	Jun.	Dec.	Jun.	Dec.	Jun.	Dec.	Mar.	Jun.	Sep.	Dec.	Mar.	Jun.	Sep.	Dec.
Cash and claims on central banks	5 279	8 809	7 602	9 261	1.3	2.1	1.7	2.0	18.2	-11.9	3.5	12.4	34.6	44.0	27.5	5.1
Claims on other credit institutions	3 468	4 094	3 857	4 184	0.9	1.0	0.9	0.9	-0.4	-19.4	23.6	2.5	11.5	11.2	-12.2	2.2
Investment in credit institutions	37 614	35 995	35 898	28 001	9.2	8.4	8.0	6.0	-15.1	11.2	0.9	-6.7	-0.9	-4.6	-1.2	-22.2
Financial assets at fair value through profit or loss	25 691	22 582	23 944	21 037	6.3	5.3	5.4	4.5	5.2	13.4	4.7	0.1	-5.5	-6.8	-8.9	-6.8
Equity	1 482	1 644	1 340	1 082	0.4	0.4	0.3	0.2	-9.6	32.8	-10.3	21.9	-25.0	-9.6	-15.0	-34.1
Debt instruments	16 414	13 127	12 964	8 788	4.0	3.1	2.9	1.9	0.4	3.4	-4.0	-12.8	-20.4	-21.0	-29.0	-33.1
Other	7 795	7 812	9 640	11 166	1.9	1.8	2.2	2.4	23.3	34.9	28.5	22.3	35.8	23.7	31.0	42.9
Available-for-sale financial assets	23 894	26 467	26 861	25 961	5.9	6.2	6.0	5.6	23.3	29.9	25.4	34.2	14.7	12.4	21.4	-1.9
Equity	7 870	7 681	5 774	4 954	1.9	1.8	1.3	1.1	42.4	66.8	29.9	25.9	-9.6	-26.6	-22.9	-35.5
Debt instruments	15 548	18 019	19 290	19 177	3.8	4.2	4.3	4.1	20.3	22.4	22.6	37.0	23.9	24.1	35.4	6.4
Other	476	767	1 797	1 830	0.1	0.2	0.4	0.4	-39.2	-56.4	40.3	78.2	69.3	277.3	161.4	138.7
Investment held to maturity	1 620	1 438	2 283	4 898	0.4	0.3	0.5	1.1	-19.2	-21.8	-27.2	-28.4	65.6	40.9	81.1	240.6
Hedging derivatives	2 060	1 385	1 596	2 298	0.5	0.3	0.4	0.5	31.6	56.3	-5.6	-12.9	15.0	-22.5	17.8	65.9
Investment in subsidiaries	3 097	3 229	2 765	2 480	0.8	0.8	0.6	0.5	6.1	-11.6	-7.4	-15.3	-25.2	-10.7	-29.7	-23.2
Net credit to customers	265 636	285 561	299 858	313 786	65.3	66.7	67.0	67.7	12.5	13.9	16.8	14.5	17.9	12.9	11.9	9.9
Gross credit	272 150	292 171	306 943	321 745	66.9	68.2	68.6	69.4	12.2	13.6	16.4	14.3	17.8	12.8	12.0	10.1
of which: overdue credit to customers	4 882	4 905	5 957	6 702	1.2	1.1	1.3	1.4	4.5	8.4	5.1	14.1	21.5	22.0	31.9	36.6
Impairment and value adjustments in credit to customers	-6 514	-6 610	-7 085	-7 958	-1.6	-1.5	-1.6	-1.7	-0.4	3.9	-0.7	8.4	13.6	8.8	13.6	20.4
Securitised non-derecognised assets	18 454	19 212	22 255	27 276	4.5	4.5	5.0	5.9	23.3	20.8	3.7	18.5	10.4	20.6	19.6	42.0
of which: credit to customers	18 454	19 279	22 255	26 784	4.5	4.5	5.0	5.8	23.0	20.8	3.7	19.1	10.6	20.6	19.6	38.9
Tangible and intangible assets	4 962	5 184	5 220	5 583	1.2	1.2	1.2	1.2	13.0	12.6	10.0	10.0	10.7	5.2	6.7	7.7
Other assets	15 218	14 248	15 385	18 559	3.7	3.3	3.4	4.0	-0.3	5.4	0.6	-0.9	8.2	1.1	23.5	30.3
Total assets	**406 993**	**428 205**	**447 524**	**463 323**	**100.0**	**100.0**	**100.0**	**100.0**	**10.2**	**13.4**	**13.1**	**11.7**	**13.8**	**10.0**	**10.7**	**8.2**
Resources from central banks	2 151	5 465	6 612	13 968	0.5	1.3	1.5	3.0	-77.3	-76.6	150.0	198.8	110.2	207.4	132.9	155.6
Resources from other credit institutions	70 445	69 620	71 615	70 582	17.3	16.3	16.0	15.2	8.8	6.7	-3.0	4.1	9.8	1.7	7.6	1.4
Resources from customers and other loans	172 779	188 487	195 135	210 572	42.5	44.0	43.6	45.4	4.2	5.6	10.3	8.2	16.9	12.9	13.4	11.7
Liabilities represented by securities	95 019	96 629	104 503	92 765	23.3	22.6	23.4	20.0	32.0	44.2	23.5	17.5	12.0	10.0	4.2	-4.0
Subordinated liabilities	10 202	11 201	10 886	11 319	2.5	2.6	2.4	2.4	0.8	0.9	4.7	9.3	12.8	6.7	15.7	1.0
Financial liabilities held for trading	9 565	9 662	11 633	17 338	2.4	2.3	2.6	3.7	16.9	29.7	55.2	61.1	42.7	21.6	46.8	79.4
Hedging derivatives	2 777	2 013	2 428	2 493	0.7	0.5	0.5	0.5	76.9	92.8	7.6	7.8	5.2	-12.6	10.7	23.8
Liabilities for non-derecognised assets in securitisation operations	4 852	4 512	3 916	3 299	1.2	1.1	0.9	0.7	77.1	81.0	47.4	9.3	-10.8	-19.3	-40.0	-26.9
Other liabilities	13 470	14 105	13 979	13 171	3.3	3.3	3.1	2.8	-4.6	-0.1	3.3	0.9	2.1	3.8	3.6	-6.6
Total liabilities	**381 260**	**401 694**	**420 707**	**435 506**	**93.7**	**93.8**	**94.0**	**94.0**	**9.5**	**13.1**	**13.2**	**11.7**	**14.3**	**10.3**	**11.0**	**8.4**
Capital	25 733	26 511	26 818	27 817	6.3	6.2	6.0	6.0	21.6	17.5	12.0	11.8	6.1	4.2	5.8	4.9
Total liabilities and net wealth	**406 993**	**428 205**	**447 524**	**463 323**	**100.0**	**100.0**	**100.0**	**100.0**	**10.2**	**13.4**	**13.1**	**11.7**	**13.8**	**10.0**	**10.7**	**8.2**

Source: Banco de Portugal.
Note: (a) In 2007 year-on-year rates of change were based on thirteen banking groups which adopted the International Accounting Standards in 2005, due to lack of comparable financial statements for the banking sector as a whole in 2006 and 2007.

Chart 4.2.1

ASSETS RATE OF CHANGE

Empirical distribution

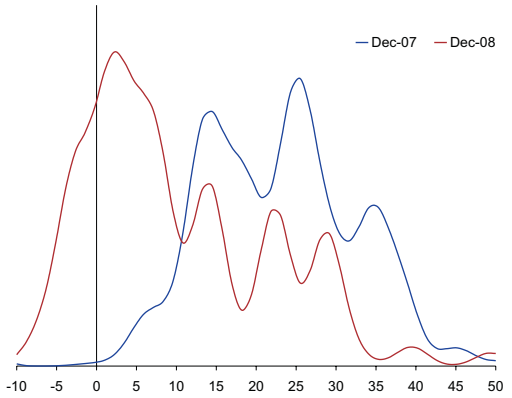


Source: Banco de Portugal.
Note: The empirical distribution is obtained through a Gaussian kernel which gives a weighting to institutions according to their assets.

Chart 4.2.2

ASSETS RATE OF CHANGE OF AN EUROPEAN BANK PANEL

Empirical distribution



Source: Bureau Van Dijk (Bankscope).
Note: The empirical distribution is obtained through non-parametric methods, specifically a Gaussian kernel which gives a weighting to institutions according to their total assets. The analysis involved 65 banking institutions from 14 European Union countries with accounts for 2008 published in the source mentioned above, as at cut-off date for this report.

months of 2009 (credit to this sector had moved from 9.9 per cent at the end of 2007, to 7.1 per cent at the end of 2008 and to 5.0 per cent in March 2009).[5] This development has to be seen against the backdrop of a slowdown in economic activity, with the percentage of nominal GDP down from around 5 per cent in 2007 to 1.8 per cent in 2008, with restraints on financing for the banks in the wholesale international debt market also in the frame. There were, however, different paths in the moves of loans to households and non-financial corporations. In the first case, the slowdown was part of a trend that had begun in mid-2006, and moved down another notch in the second quarter of 2008, when the rate of change on loans for consumption and other purposes reached its maximum for the year. Loans to non-financial corporations, on the other hand, grew very strongly during most of 2008, with the major slowdown cutting in only during the last quarter. In addition, bank financing for non-financial corporations during the year also involved considerable quantities of debt issues taken by the banks, with commercial paper being a salient feature.[6]

The value of the overall portfolio of securities and financial investments in Portuguese banks fell by around 15 per cent in 2008, as turmoil in the financial markets took its toll.[7,8] The biggest fall was in the portfolio of financial assets at fair value through profit or loss, with a much lesser fall coming in the portfolio of available-for-sale financial assets. The value of investment in branches was also down, in one banking group coming fundamentally in the wake of the sale of holdings which it had classified here. In terms of available-for-sale financial assets, there were acquisitions and divestments. Some of the

(5) Developments in loans granted to the non-financial private sector are based on information relating to the group of resident monetary institutions, in accordance with the Monetary and Financial Statistics. The annual rate of change was calculated on the basis of the ratio of the outstanding amounts of bank loans at the end of the month, adjusted for securitisation, and monthly transactions, which are calculated on the basis of outstanding amounts and adjusted for write-offs and price and exchange rate revaluations.

(6) For a more in-depth analysis on bank lending developments, see "Section 4.6 *Credit risk*", of this Report.

(7) The portfolio of securities and financial investments includes financial assets at fair value through profit or loss, including trading derivatives (net of financial liabilities held for trading purposes), available-for-sale financial assets, held-to-maturity investments, investments in branches and net amounts hedging derivatives used.

(8) For further details on the portfolio of securities in the banking system, see "Section 4.4 *Market risk*", of this Report.

main banking groups sold company holdings that they had classified as available-for-sale assets, making gains that offset to some extent the effects of the slide in capital markets seen in recent years. In addition, they disposed of holdings in other Portuguese banking groups that had been classified in this portfolio. The main groups also reclassified assets recorded at fair value through profit or loss, moving them to available-for-sale assets, to assets held to maturity, or to credit.[9] Over and against this, the portfolio of assets held to maturity moved favourably, essentially in the wake of decisions made by two major banking groups. One of them reclassified debt securities, moving them from fair value portfolios to investments held to maturity, as a way of curtailing the sensitivity of results to market fluctuations; the other made a substantial acquisition of securities.

If we look at the breakdown of financial assets in terms of risk, the financial instruments where interest rate is the main source of risk are still the major component in the portfolio, rising to a proportion of around 90 per cent in December 2008. In turn, the weight of financial assets particularly exposed to changes in share prices and other capital instruments in the total portfolio of financial instruments decreased, in line with developments in share markets and the sale of holdings in financial and non-financial corporations and in other Portuguese banks carried out by some major banking groups.

Resources from customers and other loans continue to be the main source of financing for banking activity, with a rate of change close to 12 per cent at the year-end.[10] Against a backdrop of uncertainty and volatility in the debt and capital markets, this move would seem to have come essentially on the back of greater investor demand for financial products that are less sensitive to market fluctuations. In particular, the amounts under investment fund management fell again substantially during the year, amidst financial market instability, growing risk aversion and a fall in return on their investments.[11] In addition, with the wholesale debt markets still foundering, the moves also reflected more competitive strategies used by the banks to raise funds from customers by offering a better return on deposits. They managed this by reducing the spread between their outlay on these operations and the money market interest rate. Securitisation on loans has also been an important source of financing, although in an indirect way. In fact, the current scenario has brought with it a substantial fall in the demand for securities that result from securitisation operations. Some Portuguese banks, in line with other European institutions, acquired the securities resulting from special purpose vehicles held by third parties with a view to using them as collateral in Eurosystem monetary policy operations.

Although conditions in the wholesale markets were bleak, Portuguese banks managed to keep access open to the securitised debt markets throughout the year. They issued around 17 thousand millions euros, though the costs were relatively high and maturities shorter, reflecting the difficulties around the world in placing medium to long-term debt securities. Given these problems, average maturities were down on a year earlier (from 5 to 3 years). Around half of the securities were at fixed rate, a substantial increase over 2007, when most were issued at variable rate. In addition, more than 40 per cent of the securities issued were coverage bonds. There is a lower underlying risk for investors on these bonds, since they are guaranteed by property, and the loans are recorded as autonomous assets in the banks' portfolios. A considerable part of these issues was earmarked for the refinancing of debt contracted in previous years, and there was a big drop in the net flow from this source of financing, above all in the second half of the year. In fact, liabilities in the form of securities were down by 4.0 per cent at year-end. At the same time, financing through central banks rose, though this is still a small part of the total debt

(9) This reclassification was possible from 1 July 2008, when the International Accounting Standards Board (IASB) changed the standards for financial instruments at market value to bring the requirements for reclassification of financial assets within the IAS, above all IAS 39, closer to the US requirements (US GAAP – General Accepted Accounting Principles in the United States). For further details, see "Section 4.4 *Market risk*, of this Report.

(10) For further details on the banking system financing and how it articulated with liquidity risk, see "Section 4.5 *Liquidity risk*", of this Report.

(11) For further details on investment funds, see "Section 4.5 *Liquidity risk*", of this Report.

in the banking system. The move helped cushion the effects of the turmoil in other international wholesale debt markets, including the interbank money market.

As a final point here, the guarantees provided by the State as part of the package of measures to shore up financial stability announced in October 2008 in concerted action with other European countries could turn out to be very important in keeping bank financing open in the wholesale debt markets.[12] During the year there was only one bond issue underwritten by the State, and that was by the *CGD*. In 2009, however, other banks have used the support on offer, allowing Portuguese banks to access medium-term financing in the wholesale markets.[13] The banks have, however, continued to issue securitised debt even without the state guarantee. In fact, only 45 per cent of the total issued in the first four months of 2009 was underwritten by the State.

The Portuguese financial system activity is currently constrained by a macroeconomic and financial climate that is particularly bleak across the world.[14] The massive turbulence in the international financial system, interweaving with the downturn in economic activity around the world, has impacted negatively on the country's financial system and its economy. Current estimates from the Banco de Portugal point to a contraction of 1.7 per cent in nominal GDP for 2009, against a 1.8 per cent rise in 2008.[15] The picture is still characterised by turmoil in the wholesale financial markets and economic activity still ailing. Against this backdrop, banking activity is likely to continue slowing; and as the prospects worsen for economic agents and the high level of uncertainty continues, there is likely to be a slowdown in the demand for credit. On top of this, the banks have been offering more stringent financing terms for their customers, in terms of volume, prices and other credit conditions. The most recent picture of supply-side dynamics (evaluated by the annualised quarterly rates of change, seasonally adjusted) points clearly to additional reductions in the annual rates of change over the next few months (in March 2009, the annualised quarterly rate of change for lending to the non-financial sector was 2.6 per cent). In terms of deposits, the increase seen since the onset of the crisis in the summer of 2007, which was associated with a rejigging of customers' financial asset portfolios, is not likely to be sustainable in the medium term without a substantial rise in savings in the private sector.[16] As a final point, sovereign risk came under downside pressure, with a more acute perception of the risks underlying the financial system and the efforts to support the economy. This also impacted on to the cost of financing for those banks that used state support, since the spreads on the securities issued with the guarantee were closely correlated with the cost of financing the public debt, as discussed in "Chapter 2 *Macroeconomic and Financial Risks*", of this Report. More recently there has been a narrowing of sovereign spreads, which seems to indicate that various governments have already placed in the market a large part of their estimated financing needs for the year as a whole.

Profitability

Portuguese banks do not have a materially relevant exposure to the assets associated with (or closely linked to) the North American subprime market, but the onset of the mortgage market crisis in the summer of 2007 had negative repercussions on Portuguese banks in the last months of the year. The impact was felt, among other things, in the higher cost of financing, in the loss of value in financial instruments and in the downward move in some commissions. Throughout 2008, as the situation in the

(12) See "Box 2.1 *Measures taken by the Portuguese authorities relating to the financial system during the international financial crisis*", of this Report.

(13) There is a point to be noted here, however: using this guarantee implies a lower risk than unsecured bonds, but there is a 50 b.p. commission for use of the facility, to be added to the bank's credit default swap premium (or that of a similar bank, if there is no credit default swap for the issuing bank), which is levied on maturities of greater than one year.

(14) See "Chapter 2 *Macroeconomic and Financial Risks*", of this Report.

(15) See "Box 1 *Interim update of macroeconomic projections for 2009*", Banco de Portugal, *Economic Bulletin-Spring* 2009.

(16) For further details on the sustainability of the pace of deposits see "Section 4.5 *Liquidity risk*", of this Report.

international financial markets sapped the strength of the banks, the effects intensified substantially. Income before tax and minority interests in the banking system, seen on a consolidated basis, were down by around 40 per cent (Table 4.2.2). This impacted on return on assets (coming in at 0.64) and return on equity (at 10.6 per cent). These indicators stood at 1.15 and 18.2 per cent respectively in December 2007 and 1.30 and 20.6 per cent in December 2006 (Chart 4.2.3).

Return on assets was sharply down for two reasons: the downside thrust in the international financial markets and the marked slowdown in economic activity around the world. As can be seen in chart 4.2.3, the return on assets in 2008 was lower than during the 2003 recession. At that time (with a particularly sharp downturn in 2002), the impact was felt in the fall in income from financial operations, in the commissions that were more directly tied to the capital markets, in income from associated and branches companies outside consolidation and in the buttressing of provisions. The variation in return for 2004 was to a large extent subject to downside pressure because of the behaviour of the financial margin and above all of extraordinary results.[17] It should be remembered, however, that there were changes to the accounting framework at the start of 2005, specifically the adoption of the International Accounting Standards (IAS) and one of the new points was that recording of a substantial part of the financial assets of the banks, above all securities, was at market prices. This meant greater sensitivity to market fluctuations than in the previous regime. In addition, there has been widespread uncertainty about the size and duration of the current economic and financial crisis and this will tend to bring return on assets down even more, with burgeoning credit risk in its wake.

During the year, the distribution curves for return on assets and return on equity shifted left, reflecting the lower return among the main domestic banking groups (Charts 4.2.4 and 4.2.5). In international terms, according to the information available on a selection of European banks, there was also a fall in profitability in 2008, visible in both return on assets and return on equity (Charts 4.2.6 and 4.2.7). Seen in perspective, the Portuguese banking system seems to have maintained relatively favourable levels of return.

The less than favourable developments in the international financial markets and the deteriorating prospects for economic growth showed through in financial operations and impairment.[18] Of particular relevance here are the cross-holdings in some of the main banking groups. On the other side, i.e. coming in with a positive boost to return on assets, there was the move in operational costs, continuing the trend of recent years (Chart 4.2.8). This development came about fundamentally because of lower staff costs. During 2007, a substantial amount was recorded under this heading for liabilities for pensions due to members of the executive board of one of the main Portuguese banking groups.

In 2008, set asides for provisions and losses through impairment came in with a year-on-year variation of nearly 90 per cent, and this accounted for 33 base points in reduction of return on assets, with the portion relating to credit to customers accounting for around a half of this figure.[19] There was, however, a considerable rise in recognition of impairment relating to available-for-sale assets. These impairments relate mainly to holdings in other Portuguese banking groups, where there was a substantial fall in asset values.

Income from financial operations fell by around 25 per cent during the year, coming in with a 12 base point fall in return on assets. This came fundamentally from events in the first half of the year. During

(17) For further details on the profitability of the banking system in the 2003 recession, see "Section 6.2 *Profitability*", Banco de Portugal, *Financial Stability Report* 2004.

(18) Income from financial operations correspond to the sum of income from financial assets and liabilities valued at fair value through profit or loss, income from available-for-sale financial assets, income from exchange rate revaluation and income from the sale of other financial assets.

(19) Only potential gains and losses for financial assets and liabilities valued at fair value through profit or loss are recorded on the profit and loss account of the banking system. The variation in value of available-for-sale financial assets, though recorded at market value on the balance sheet only affect income for the year when they are sold or through recognition of impairment. Unrealised variations in value of these assets are recorded in own funds accounts.

Table 4.2.2

PROFIT AND LOSS ACCOUNT OF THE BANKING SYSTEM

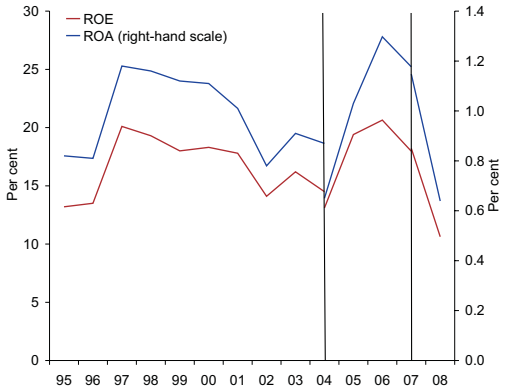
On a consolidated basis

	EUR millions						Structure (as a percentage of average assets) [a]						Year-on-year rates of change (per cent) [b]					
	2007			2008			2007			2008			2007			2008		
	H1	H2	Year	H1	H2	Year	H1	H2	Year	H1	H2	Year	H1	H2	Year	H1	H2	Year
1. Interest income	11 727	13 540	25 267	14 790	16 359	31 149	6.00	6.50	6.25	6.75	7.15	6.95	27.5	29.8	28.7	26.1	20.8	23.3
2. Interest expenses	7 821	9 505	17 325	10 560	11 861	22 420	4.00	4.56	4.29	4.82	5.18	5.00	34.9	40.3	37.8	35.0	24.8	29.4
3. Financial margin (1-2)	**3 906**	**4 035**	**7 941**	**4 231**	**4 498**	**8 729**	**2.00**	**1.94**	**1.96**	**1.93**	**1.97**	**1.95**	**14.2**	**9.1**	**11.5**	**8.3**	**11.5**	**9.9**
4. Income from capital instruments	158	37	195	219	59	278	0.08	0.02	0.05	0.10	0.03	0.06	12.8	42.7	17.5	39.0	59.6	42.9
5. Income from services and commissions (net)	1 409	1 647	3 056	1 546	1 641	3 187	0.72	0.79	0.76	0.71	0.72	0.71	4.3	14.2	9.4	9.8	-0.4	4.3
6. Income from financial assets and liabilities measured at fair value through profit or loss	281	-452	-172	-206	265	59	0.14	-0.22	-0.04	-0.09	0.12	0.01	-	-	172.7	-173.4	-158.6	-134.4
7. Income from available-for-sale financial assets	400	681	1 080	406	128	534	0.20	0.33	0.27	0.19	0.06	0.12	72.7	190.1	130.8	1.5	-81.2	-50.6
8. Income from foreign exchange revaluation	116	292	409	57	134	190	0.06	0.14	0.10	0.03	0.06	0.04	-60.8	31.0	-20.8	-51.4	-54.3	-53.5
9. Income from the sale of other financial assets	191	-31	160	51	271	322	0.10	-0.01	0.04	0.02	0.12	0.07	-67.1	-102.7	-79.0	-73.3	-980.1	101.0
10. Other operating profit and loss	315	371	686	345	312	656	0.16	0.18	0.17	0.16	0.14	0.15	-16.5	-22.5	-19.7	9.5	-16.0	-4.3
11. Gross income (3+4+5+6+7+8+9+10)	**6 775**	**6 580**	**13 356**	**6 648**	**7 307**	**13 956**	**3.46**	**3.16**	**3.30**	**3.03**	**3.19**	**3.12**	**9.1**	**3.0**	**6.0**	**-1.9**	**11.0**	**4.5**
12. Staff costs	1 821	2 091	3 912	1 965	2 049	4 013	0.93	1.00	0.97	0.90	0.90	0.90	-0.1	8.0	4.1	7.9	-2.0	2.6
13. General administrative costs	1 283	1 465	2 748	1 369	1 510	2 878	0.66	0.70	0.68	0.62	0.66	0.64	8.5	11.8	10.2	6.7	3.1	4.7
14. Depreciation and amortisation	264	295	559	283	315	598	0.14	0.14	0.14	0.13	0.14	0.13	6.5	14.1	10.4	6.9	6.9	6.9
15. Provisions net of restitutions and annulments	131	81	212	36	-98	-62	0.07	0.04	0.05	0.02	-0.04	-0.01	112.0	-11.1	41.2	-72.6	-221.4	-129.3
16. Impairment losses and other net value adjustments	803	887	1 690	1 307	2 329	3 636	0.41	0.43	0.42	0.60	1.02	0.81	45.9	27.2	35.6	62.7	162.5	115.1
17. Negative consolidation differences	-4	-9	-12	0	0	0	0.00	0.00	0.00	0.00	0.00	0.00	-	-	-	-	-	-
18. Appropriation of income from associates and joint ventures (equity method)	161	232	393	59	-88	-29	0.08	0.11	0.10	0.03	-0.04	-0.01	25.0	237.2	97.4	-63.0	-138.0	-107.3
19. Income before taxes and minority interests (11-12-13-14-15-16-17+18)	**2 637**	**2 002**	**4 639**	**1 749**	**1 114**	**2 863**	**1.35**	**0.96**	**1.15**	**0.80**	**0.49**	**0.64**	**7.1**	**-4.7**	**1.7**	**-33.7**	**-44.4**	**-38.3**
20. Taxes on profit	460	311	772	356	252	607	0.24	0.15	0.19	0.16	0.11	0.14	25.5	-41.4	-11.9	-22.7	-19.2	-21.3
21. Income before minority interests (19-20)	**2 177**	**1 691**	**3 868**	**1 394**	**862**	**2 256**	**1.11**	**0.81**	**0.96**	**0.64**	**0.38**	**0.50**	**4.1**	**5.3**	**4.6**	**-36.0**	**-49.0**	**-41.7**
22. Minority interests	372	281	653	293	168	462	0.19	0.13	0.16	0.13	0.07	0.10	8.2	19.4	12.8	-21.2	-40.0	-29.3
23. Net profit and loss (21-22)	**1 805**	**1 410**	**3 215**	**1 101**	**694**	**1 795**	**0.92**	**0.68**	**0.80**	**0.50**	**0.30**	**0.40**	**3.2**	**2.6**	**2.9**	**-39.0**	**-50.8**	**-44.2**

Source: Banco de Portugal.
Notes: (a) Half-year data are annualised. (b) In 2007 year-on-year rates of change were based on thirteen banking groups that adopted International Accounting Standards in 2005, due to lack of comparable financial statements for the banking sector as a whole in 2006 and 2007.

Chart 4.2.3

RETURN ON ASSETS AND RETURN ON EQUITY



Source: Banco de Portugal.
Note: The 2004 break in the series is due to the implementation of the International Accounting Standards. This also implied a redefinition of the banking institutions that were analysed. The 2007 break corresponds to an enlargement in the number of institutions analysed.

this period, substantial losses were recorded in the portfolio of assets valued at fair value through profit or loss as share markets tumbled and turbulence in the debt markets was the order of the day. As for income from available-for-sale financial assets, these came in positive, but they were down significantly on 2007. In the second half of 2008, some banking groups made capital gains from the disposal of holdings in companies recorded as available-for-sale assets, seeking in this way to blunt the negative impact of financial market developments and turn round the poor results posted for the previous half year. As a last point, the derivatives for hedging and trading came in very much on the upside, playing a considerable part in the increase in income from financial operations.[20]

Income from associated companies and joint ventures also contributed to the fall in return on assets for the year – the figure being around 10 basis points. This came on the back of a fall in the value of financial assets, in line with the instability witnessed on the international financial markets. One salient point here was the fall in profits in an insurance company associated with one of the main banking groups.

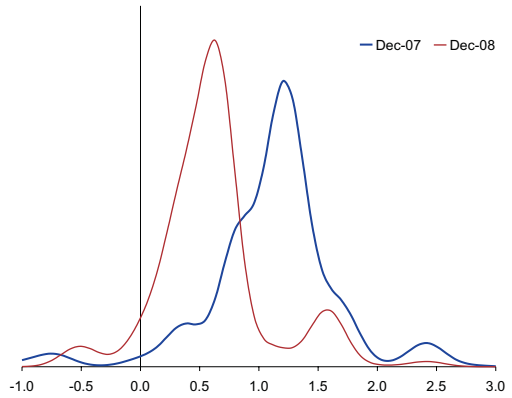
Income from services and commissions (net) grew close to 4 per cent, which accounted for a marginally negative contribution to return on assets. This was mainly due to the commissions related to investment funds, as a result of substantial redemptions of unit funds by customers and a fall in the value of the main assets held in fund portfolios, above all in the segment of shares. The amounts under investment fund management dropped again considerably during the year, amidst instability in the financial markets, a growing risk aversion and the fall in yield. Customers were quite clearly more interested in savings instruments with less sensitivity to the vagaries of the market.[21]

Over and against this, the move in operational costs again made a positive contribution to return on assets. These costs grew by approximately 4 per cent during the year, as a result of contributing less to staff costs (the main component of operating costs). The year-on-year rate of change in costs related to pension funds came down during the first three quarters of the year, though a negative rate of change was recorded in the final quarter. This quarter can be considered atypical in terms of

(20) For further details, see "Section 4.4 *Market risk*", of this Report.
(21) For further details regarding investment funds, see "Section 4.5 *Liquidity risk*", of this Report.

Chart 4.2.4

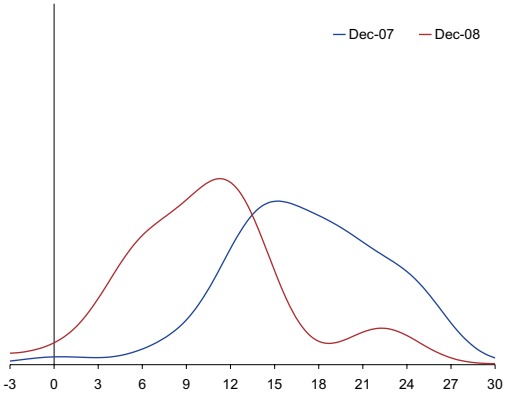
RETURN ON ASSETS
Empirical distribution



Source: Banco de Portugal.
Note: The empirical distribution is obtained through a Gaussian kernel which gives a weighting to institutions according to their assets; the indicator is calculated on the basis of results before tax and minority interests.

Chart 4.2.5

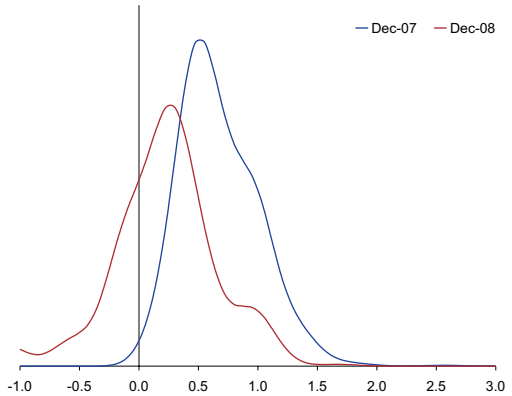
RETURN ON EQUITY
Empirical distribution



Source: Banco de Portugal.
Note: The empirical distribution is obtained through a Gaussian kernel which gives a weighting to institutions according to their assets; the indicator is calculated on the basis of results before tax and minority interests.

Chart 4.2.6

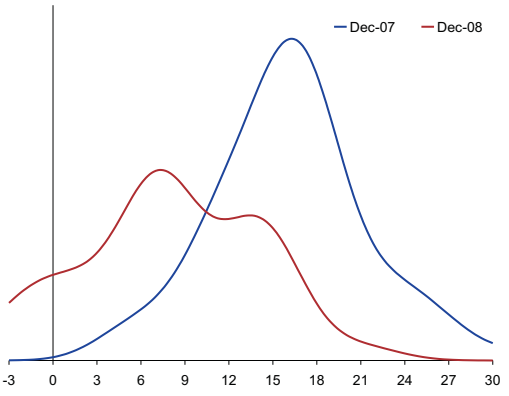
RETURN ON ASSETS OF AN EUROPEAN BANK PANEL
Empirical distribution



Source: Bureau Van Dijk (Bankscope).
Note: The empirical distribution is obtained through non-parametric methods, specifically a Gaussian kernel which gives a weighting to institutions according to their assets. The analysis involved 70 banking institutions from 14 European Union countries with accounts for 2008 published in the source mentioned above, as at cut-off date for this report.

Chart 4.2.7

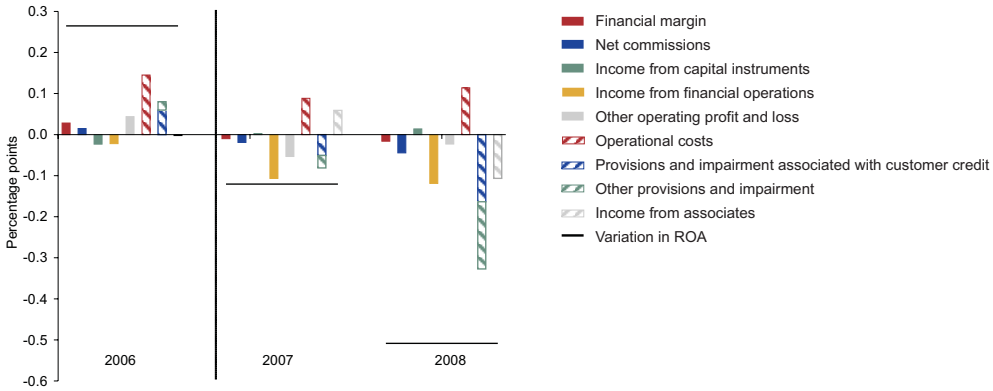
RETURN ON EQUITY OF AN EUROPEAN BANK PANEL
Empirical distribution



Source: Bureau Van Dijk (Bankscope).
Note: The empirical distribution is obtained through non-parametric methods, specifically a Gaussian kernel which gives a weighting to institutions according to their assets. The analysis involved 70 banking institutions from 14 European Union countries with accounts for 2008 published in the source mentioned above, as at cut-off date for this report.

Chart 4.2.8

CHANGE IN RETURN ON ASSETS – ROA
Breakdown contributions



Source: Banco de Portugal.
Notes: Return on assets is calculated on the basis of results before tax and minority interests. The break in the series corresponds to a change in the number of the institutions analysed. This followed an increase in the number of institutions publishing their financial statements in line with the new accounting standards (IAS)

year-on-year comparisons. As already mentioned, a substantial amount was recorded in 2007 under the heading of staff costs relating to liabilities for pensions of members of the board of one of the country's major banking groups. This made it possible to reduce costs in the year under review, and since net worth and operating costs grew in tandem, the cost-to-income ratio stayed very unchanged at 53.7 per cent, compared with 54.1 per cent a year earlier (Chart 4.2.9).[22]

During the year, the cost to income ratio became more clearly bi-modal (Chart 4.2.10). Two of the main banking groups came in with a lower ratio. In one, this fall was on the back of a cut in staff costs, which had been inflated with the pension allocation already mentioned; in the other, capital gains had been realised with the sale of holdings classified under available-for-sale assets and/or investments in branches and associates. The operations were carried out in the second half of the year, the aim being to offset the poor results from the first half. As a final point, the information available from a selection of European banks suggests that there was a manifest erosion of cost to income ratio at an international level (Chart 4.2.11). Portuguese banks continue to stand on a par with this selection of banks, though there are off course differences in concepts used.[23]

The financial margin is the main component in banks' income (accounting for around 60 per cent of gross income), and this grew by close to 10 per cent during the year, bringing its contribution to return on assets close to the figure for 2007. The volume effect continues to be crucial in the move recorded in the financial margin, in a period when the interest rate margin had far less impact. Implicit average interest rates in the outstanding amounts of the main deposit and lending operations stayed on an upward path, reflecting the rise in interest rates in the money market (benchmark for banking activity in Portugal) during the first three quarters of the year, as well as rising financing costs in other debt markets. This meant that in the year as a whole there was virtually no move in the spread between implicit deposit and lending rates. The slight increase in the spread associated with securities was almost

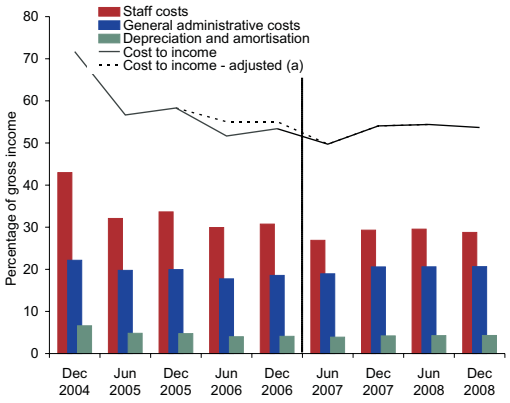
(22) The cost to income indicator corresponds to the ratio between operational costs (defined as the sum of staff costs, administrative expenses and depreciation and amortisations) to gross income.

(23) The cost to income concept used in this international comparison corresponds to a wider definition of profit and, mainly, of costs than that used by Banco de Portugal to assess the efficiency in generating income (on the basis of operational costs and banking product). This is due to the impossibility to obtain sufficiently broken down information in the Bankscope in order to apply the calculation of the latter ratio to other European countries.

Chart 4.2.9

COST TO INCOME RATIO

Breakdown, by type of cost

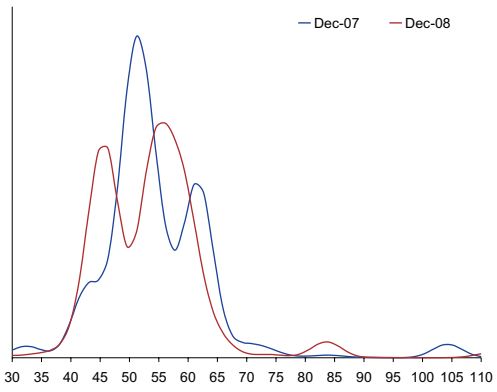


Source: Banco de Portugal.
Notes: The 2007 break in the series corresponds to an enlargement in the number of institutions analysed. (a) The adjusted indicator is obtained after deduction from results of the impact of a restructuring operation for holdings in insurance companies carried out by one of the main banking groups.

Chart 4.2.10

COST TO INCOME RATIO

Empirical distribution

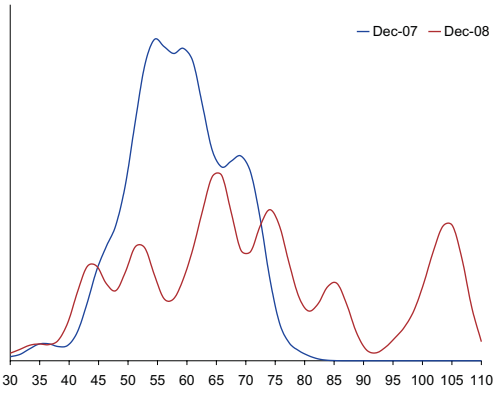


Source: Banco de Portugal.
Note: The empirical distribution is obtained through a Gaussian kernel which gives a weighting to institutions according to their assets; the indicator is calculated on the basis of results before tax and minority interests.

Chart 4.2.11

COST TO INCOME RATIO OF AN EUROPEAN BANK PANEL

Empirical distribution



Source: Bureau Van Dijk (Bankscope).
Note: The empirical distribution is obtained through non-parametric methods, specifically a Gaussian kernel which gives a weighting to institutions according to their assets. The analysis involved 67 banking institutions from14 European Union countries with accounts for 2008 published in the source mentioned above, as at cut-off date for this report.

wholly offset by the slight dip in the spread between implicit rates in credit and customer deposits (Table 4.2.3).

This fact is corroborated by developments in the spread between the deposit and lending rates applied to customers presented in the Monetary and Financial Statistics, where there was a dip in 2008, stretching into 2009 (Chart 4.2.12).

Table 4.2.3

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

Per cent

	2001	2002	2003	2004	2005	2006	2007	2008	2007		2008	
									1H	2H	1H	2H
Interest-bearing assets	**5.44**	**4.24**	**3.88**	**3.30**	**4.22**	**4.56**	**5.48**	**5.91**	**5.23**	**5.72**	**5.76**	**6.07**
of which:												
Interbank assets [b]	4.09	2.79	2.23	1.77	2.69	3.71	4.17	4.27	3.95	4.39	4.32	4.27
Non-interbank assets												
Credit	6.26	4.94	4.60	4.00	4.56	4.86	5.84	6.30	5.61	6.06	6.09	6.50
Securities	5.05	4.08	3.96	2.94	4.85	4.52	5.76	6.93	5.51	6.09	6.59	7.43
Interest-bearing liabilities	**3.59**	**2.61**	**2.28**	**1.87**	**2.32**	**2.71**	**3.47**	**3.88**	**3.21**	**3.72**	**3.75**	**4.02**
of which:												
Interbank liabilities [c]	4.42	3.00	2.42	2.02	2.89	3.58	4.42	4.65	4.16	4.69	4.64	4.66
Non-interbank liabilities												
Deposits	2.81	2.10	1.80	1.45	1.60	1.80	2.42	2.97	2.23	2.59	2.78	3.14
Securities	4.12	3.17	3.12	2.46	3.03	3.72	4.36	4.78	4.00	4.71	4.63	4.99
Subordinated liabilities	5.48	4.53	4.30	3.72	4.61	4.82	5.34	5.56	5.26	5.41	5.50	5.58
Spreads (percentage points):												
Interest-bearing assets - Interest-bearing liabilities	1.86	1.63	1.60	1.43	1.90	1.84	2.01	2.03	2.01	2.00	2.01	2.05
Credit-deposits	3.45	2.84	2.81	2.56	2.96	3.05	3.42	3.34	3.38	3.47	3.31	3.36

Source: Banco de Portugal.

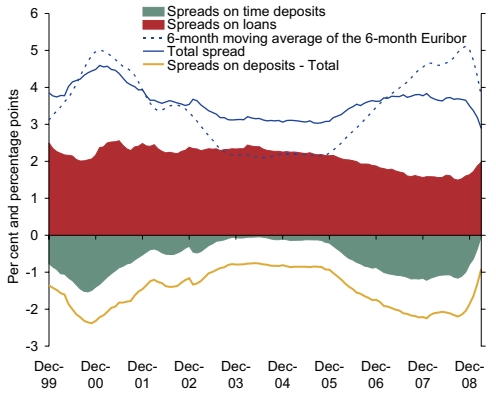
Notes: The break in the series in 2004 corresponds to the implementation of the International Accounting Standards, which also implied a redefinition of the group of banking institutions under analysis. In turn, the break in the series in 2007 corresponds to a widening of the group of institutions under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

Given the problems that the banks had since mid-2007 in tapping into the wholesale financial markets, both in terms of quantities and prices, it was no surprise to see them change their relationship with customers on various fronts. One change was the improved return for customers from a cut in interest rate spread between money market and deposit rates. Another change was the tightening of credit terms for the non-financial sector. This affected both the interest rate levels (through an increased spread) and other contract terms such as maturity, loan ceilings, and guarantees required. The relationship between the last two of these could also swing.

Until the third quarter of the year, however, the better return on term deposits did not knock on in any clear way to spreads between rates for up to two-year deposits and money market rates (Chart 4.2.13). Firstly, there is the usual step-by-step approach in the transmission of changes in short-term interest rates from the money market to bank rates for new operations; and secondly, only a fraction of deposits seem to have reaped any benefit, above all new deposits or renewed deposits with renegotiation of rates and pro-active customers.[24] Inertia also permeated into the interest rate spreads on the balance of loan operations; and on top of all this, there was the conditioning factor of the impact from the greater number of collateralized operations and, going the other way, the use of wider spreads on operations with the same level of risk. With rates falling sharply in the money market, there was a substantial increase in the spreads on lending operations and this point to the possibility of relatively large cuts in bank interest rates in the future. As the economic and financial situation worsens and credit risk surges, the spreads are likely to hold steady for lending at higher levels than seen in recent years. That this change is in the air is clear from the most recent information relating to interest rate spreads on new loans to individuals for mortgage purposes.

Chart 4.2.12

INTEREST RATE SPREADS IN OPERATIONS WITH CUSTOMERS

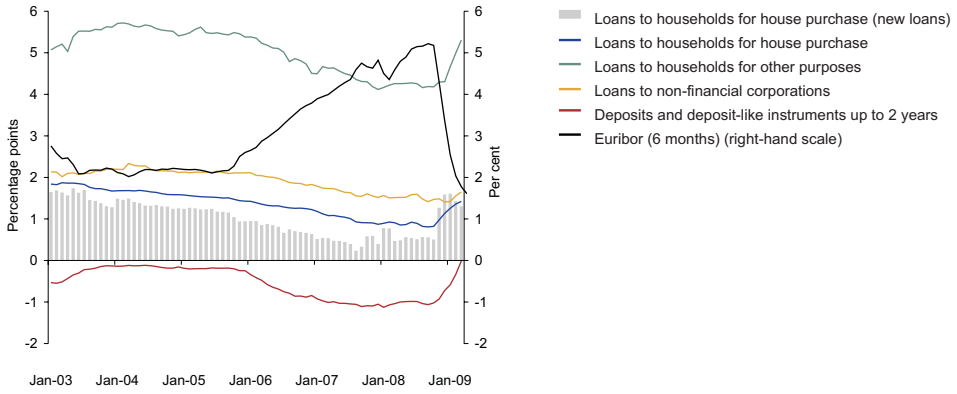


Source: Banco de Portugal.
Notes: The differentials per type of operation were calculated as the difference between the interest rates on balances (made available by Monetary and Financial Statistics) and a six-month moving average of the 6-month Euribor rate. The total differential corresponds to the difference between the interest rate on lending and the interest rate on deposits. Latest observation: March 2009.

(24) These are the requirements defined for statistically classifying a credit or a deposit operation as a new operation. Excluded, therefore, from this concept are situations where there is an automatic extension for the deposit and preexisting loan contracts, that is, those that do not demand any active involvement by the customer nor any renegotiation of the terms and conditions of the contract (including the interest rate) and the changes in interest rate that derive from automatic adjustments, since these do not mean new agreements. It should also be noted that only a fraction of the balance on deposits for each month is made up of new operations started in the period. This fraction comes in at an average for the year slightly above 10 per cent.

Chart 4.2.13

INTEREST RATE MARGINS



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

As a final point, income from international operations for some of the main banking groups are continuing to make substantial gains (31.8 per cent), accounting for around 40 per cent of the consolidated income of the financial institutions under review, compared with 18.6 per cent a year before (Table 4.2.4). Traditional banking activity, reflected in the financial margin, is still the main force behind the rise. In contrast, *i.e.* contributing on the downside, there is the very high rate of growth in losses through impairment, although the proportion of total impairment is very small (6.5 per cent). This has come in the wake of unfavourable developments not only in the international financial markets, but also in the economies where operations are carried out, among them those in Eastern Europe. Portuguese banks are, in fact, not exposed internationally in any large way but there are some risks tied to exposure to emerging markets, though they are limited and of marginal systemic impact.

Table 4.2.4

INTERNATIONAL ACTIVITY – CONTRIBUTION OF THE AGGREGATE OF FOREIGN SUBSIDIARIES
Per cent

	Relative weight for total aggregate		Year-on-year rate of change
	2007	2008	2008
Financial margin	13.5	17.3	41.0
Commissions	15.3	16.3	11.1
Gross income	14.4	18.4	33.8
Administrative costs	12.6	15.4	27.3
of which: Staff costs	12.7	15.8	27.7
Impairment	8.5	6.5	63.9
Income before taxes and minority interests	18.6	39.8	31.8

Source: Banco de Portugal.
Note: Banco de Portugal estimates based on information required by Instruction Nº 14/2006.

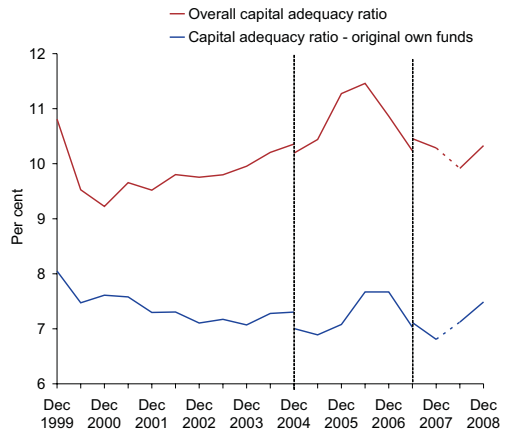
4.3. Capital adequacy[25]

In 2008, all the institutions under the supervisory of the Banco de Portugal brought their capital adequacy ratios into line with the New Capital Accord, commonly known as Basel II.[26] The criteria for Basel II fundamentally affected the calculation of capital requirements, while the definition of own funds remained similar to the previous Accord.[27] As the financial crisis unfolded during the year, there were changes to the prudential and accounting rules with impact on own funds. At year-end, with these changes factored in, the total own funds adequacy ratio for Portuguese banking system, on a consolidated basis, stood at 10.3 per cent, while the Tier I ratio was 7.5 per cent (Chart 4.3.1).

In the New Accord, the methodology for the calculation of capital requirements was substantially overhauled. One of the aims was to get a better match between the requirements and the real risk profile of assets held by the banking institutions; another was to provide better cover for risks, and this led, for example, to the introduction of requirements relating to operational risk. Basel II allows institutions to adopt different methods to determine requirements, including internal assessment models designed by the institutions themselves, which are subject to approval by national supervisors. In 2008, all financial institutions defined their capital requirements through the standardised approach in the case of credit risk and the base indicator approach for operational risk. In terms of the requirements for credit risk, which make up the main component out of total requirements, the standardised approach, along the lines of Basel I, lays down, *a priori*, a series of weights for different categories of risk. However, this method allows for differentiated risk among customers in the same business segment, since for some categories the weight is defined by reference to

Chart 4.3.1

CAPITAL ADEQUACY RATIOS



Source: Banco de Portugal.
Note: The break in the series in 2004 relates to the introduction of the International Accounting Standards. This also implied a redefinition of the selection of financial institutions to be analysed. The 2007 break relates to the enlargement of the number of institutions analysed. In 2008, the capital adequacy ratio was determined in line with Basel II for all the banks analysed and this changed fundamentally the methodology for calculating capital requirements.

(25) The set of financial institutions analysed here is different from that in the previous section, to the extent that branches of financial groups with headquarters in European Union member states are excluded.

(26) The New Capital Accord came into force in 2007. However, Community Directive 2006/48/EC allows institutions to use the previous regime in 2007, an option that was taken up by most banks in the Portuguese banking system.

(27) The main characteristics and purposes of the New Capital Accord are set out in "Chapter 7 *Regulatory Framework*", Banco de Portugal, *Financial Stability Report 2004*. The changes to the previous regime are presented together in a document published in July 2006, available on http://www.bis.org/pub/bcbs128.htm.

the rating of the counterparts, provided by an external institution (Table 4.3.1). If a comparison is made between the weights defined in the standardised approach of Basel II and the weights of Basel I for the main constituents of the credit portfolio of the Portuguese banking system, it will be seen that there are lower weights for the retail loan portfolio and for the acquisition of real estate, either commercial or residential.[28] Loans to companies were also not given a 100 per cent weight in all cases.

Given this, the moves in risk-weighted assets were conditioned to a large extent by implementation of Basel II in 2008. In particular, since the requirements for credit risk only grew moderately by comparison with the levels observed at the end of 2007, the increase in capital requirements derived above all from the requirements for operational risk (Chart 4.3.2). The behaviour of credit risk requirements looks to have translated the lower weight given to a considerable portion of the credit portfolio held by the banks, as mentioned previously, since credit to customers, although recording a slowdown, was still rising fast, at around 10 per cent (compared with around 15 per cent in December 2007).[29]

In terms of own funds, the figure set out for 2008 was conditioned by a raft of measures both international and specific to Portugal, as a response to massive pressure on banks' capital in the wake of the international financial market turmoil.[30] In international terms, the International Accounting Standards Board (IASB) introduced changes to the norms for recording financial instruments at market value.[31] In the new rules, financial instruments classified as available-for-sale assets can, in exceptional circumstances, be reclassified in the portfolio of assets held to maturity or in the credit portfolio, these being subject to different valormetric criteria. In turn, financial instruments classified in the portfolio of financial assets valued at fair value through profit or loss can also be reclassified in the above mentioned portfolios as well as in the available-for-sale assets portfolio. These measures help to cut down the sensitivity of the institutions' assets to

Table 4.3.1

CREDIT RISK: MAIN CATEGORIES OF RISK ASSETS AND THEIR WEIGHTS UNDER BASEL I AND BASEL II (STANDARDISED APPROACH)

	Weights	
	Basel I	**Basel II - Standardised approach**
Central Government / Central Banks	0%	0 a 150% (as a function of the rating)
Banks	20% OECD countries; 100% other countries	20 a 150% (as a function of the sovereign risk of the country where the bank is located)
Corporate	100%	20 a 150% (as a function of the rating)
Retail	100%	75%
Residential mortgages[(a)]	50%	35%
Commercial mortgages[(b)]	100%	50%

Source: Banco de Portugal.
Notes: (a) Weights applied up to 75 per cent of the market value for fixed assets. (b) The 50 per cent weight referred for Basel II can only be applied to that part of the loan that does not exceed 50 per cent of the market value of the fixed asset, the weight for the remainder being 100 per cent.

(28) The retail loans portfolio is fundamentally made up of loans to households and small and medium-sized enterprises with a size less than a million euros per borrower.

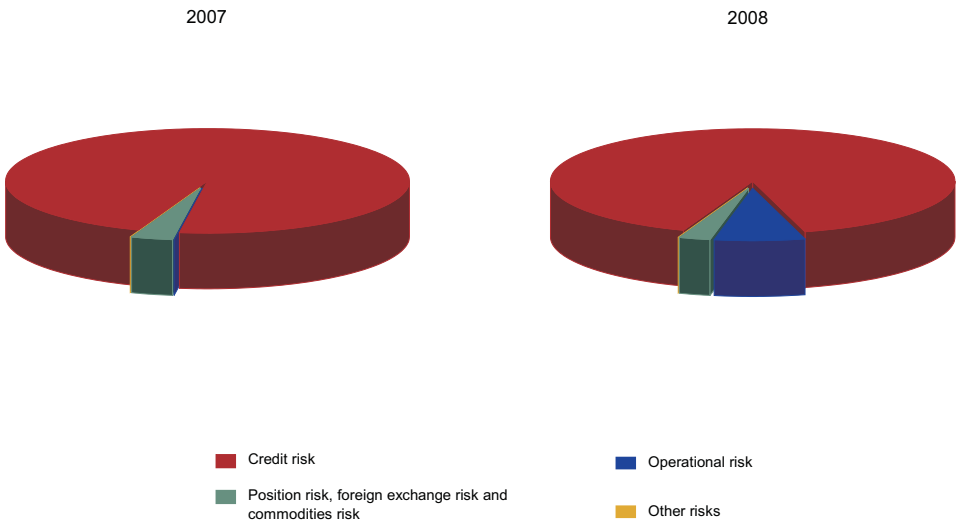
(29) For an analysis of the impact of Basel II on the requirements for credit risk in the segment of companies in Portugal, see Antão P. and Lacerda A. (2008), "An Assessment of Capital Requirements Under Basel II: the Portuguese Case", of this Report.

(30) The measures with impact on own funds are part of a package designed to shore up the financial system that was adopted by some authorities in various countries. The aim of the measures was to stabilize the financial and monetary markets and mitigate the impact of market turmoil on the capital and results of financial institutions. For more details on these measures, especially those relating to Portugal, see "Box 2.1 *Measures taken by the Portuguese authorities relating to the financial system during the international financial crisis*", of this Report.

(31) Alteration introduced through European Commission regulation no. 1004/2008.

Chart 4.3.2

STRUCTURE OF CAPITAL REQUIREMENTS ACCORDING TO CATEGORY OF RISK



Source: Banco de Portugal.
Note: In 2007, most of the institutions defined their capital requirements in line with Basel I. In 2008, they all applied Basel II, using the standardised approach for credit risk and the basic indicator approach for operating risk.

fluctuations in the financial market, and so they have an impact on own funds because there are smaller variations in results related to financial instruments and/or in reserves.[32] Domestically, the Banco de Portugal issued prudential norms giving a three-year extension for deferring the impact of adoption of the International Accounting Standards as they relate to employee benefits which were still awaiting recognition as at 30 June 2008. Moreover, deferred active taxes were accepted in full for the purposes of calculating own funds and there was an increase in the percentage of preferential shares eligible as original own funds.[33] In addition, unrealised gains and losses on debt securities in the portfolio of available-for-sale assets without impairment were no longer included in the calculation of own funds (a rule that was already in force in various European Union countries, in accordance with the guidelines defined by the Committee of European Banking Supervisors in 2004).[34] The national central bank also allowed actuarial losses recorded in 2008, deducted from the expected yield, on pension fund assets to be deferred gradually between 2009 and 2012.[35]

In 2008, by comparison with 2007, the growth in total own funds benefited from the increase in original own funds, since the remaining constituents of own funds recorded unfavourably developments. The main contribution to the positive move in own funds came from capital increase operations undertaken by some banking groups, above all during the first half of the year. The total intake was over 2000 million euros.[36]

(32) Gains and losses associated with changes in the value of the portfolio of financial assets valued at fair value through profit or loss are recorded in the income statements, whereas variations in the value of available-for-sale financial assets are only recorded in results when realised or when they suffer impairment. Potential variations in this portfolio are recorded in reserves.

(33) These changes were implemented respectively through Banco de Portugal Notice no. 7/2008, and Notice no. 9/2008, and within the scope of the draft amendment to Directive no. 2006/48/EC and Directive no. 2006/49/EC, put forward by the European Commission. New limits are proposed for eligibility of hybrid instruments as elements of own funds.

(34) This regulatory amendment was set out in Banco de Portugal Notice no. 6/2008. Previously, potential gains on debt and capital securities classified in available-for-sale financial assets portfolio were recognized at 45 per cent in additional own funds (Tier II), whereas potential losses on instruments in this portfolio were recognised at 100 per cent as a negative element in original own funds (Tier I).

(35) Regulation set out in Banco de Portugal Notice no. 11/2008.

(36) In 2007, some institutions carried out capital increase operations, but the amounts involved were considerably less. The main increase was made by *CGD*, to the amount of 150 million euros.

Also playing their part, though to a lesser extent, were the increase in minority interests (recorded in original own funds) and subordinated loans (an element of additional own funds). The factors coming in on the downside for own funds' variation were the lower operating results and the fall in the value of available-for-sale financial assets. The latter reflected potential losses in a substantial portion of the capital securities in this portfolio, tracking the steep falls in the stock markets. However, as mentioned already, the amount for own funds recorded in December 2008 included the effects of the changes to regulations. These had a considerable influence on the moves in own funds during the second half of the year. Of particular relevance for own funds was the possibility of deferring actuarial losses in bank employees' pension funds, since the allowable corridor (10 per cent of the current amount due for liabilities or the same percentage of the total amount of the fund) was being used close to the maximum by a number of banks.

The overall capital adequacy ratio of the Portuguese banking system on a consolidated basis, using the new standards, came in at 10.3 per cent in December 2008 (Table 4.3.2). At end-2007, using the previous criteria, the capital ratio was 10.3 per cent. In terms of original own funds, the ratio was 7.5 per cent at the end 2008. In December 2007, this ratio was 6.8 per cent.

An analysis of the empirical distribution of the capital adequacy ratio in 2008, using the new regulations, shows a considerable number of institutions with capital ratios of around 10.5 per cent. However, there is a large dispersion, as can be seen, in particular, by the number of institutions with capital ratio figures below the 10.5 per cent (Chart 4.3.3). Among the main banking groups, a group recorded a fall in the capital ratio, in spite of the changes to the prudential norms, with the other groups presenting ratios above 10 per cent. Where the ratio of original own funds is at issue, in 2008 most of the banks posting levels of around 7 per cent (Chart 4.3.4). This distribution is, however, bi-modal, to the extent that some of the major institutions are coming in with Tier I ratios above 8 per cent. In international terms, a comparison with a panel of Euro-

Table 4.3.2

CAPITAL ADEQUACY OF THE BANKING SYSTEM
On a consolidated basis

EUR million	2007		2008	
	Jun.	Dec.	Jun.	Dec.
1. Own funds				
1.1. Total original own funds for solvency purposes	19 086	19 443	21 458	23 015
1.1.1. Original own funds (gross)	19 900	20 216	22 179	23 799
1.1.2. Deductions to the original own funds	814	773	721	783
1.2. Total additional own funds for solvency purposes	10 068	10 766	9 433	10 006
1.2.1. Additional own funds (gross)	10 875	11 523	10 130	10 765
1.2.2. Deductions to the additional own funds	807	757	697	759
1.3. Deductions to the total own funds	1 116	841	1 013	1 276
1.4. Total supplementary own funds eligible to cover market risk	17	14	0	0
Total own funds	**28 055**	**29 381**	**29 878**	**31 745**
2. Capital requirements				
2.1. Capital requirements for credit risk, counterparty credit risk and free deliveries	20 568	22 096	21 570	22 197
2.2. Settlement risk	2	1	0	0
2.3. Capital requirements for position risk, foreign exchange risk and commodities risk	881	737	803	629
2.4. Capital requirements for operational risk	9	11	1 726	1 758
2.5. Capital requirements - Fixed overhead	6	6	5	5
2.6. Large exposures - Trading book	0	0	2	0
2.7. Other and transitional capital requirements	1	0	0	0
Total capital requirements	**21 465**	**22 850**	**24 107**	**24 589**
3. Ratios (per cent)				
3.1. Own funds/Total requirements	130.7	128.6	123.9	129.1
3.2. Own funds/(Total requirements x 12.5)	10.5	10.3	9.9	10.3
3.3. Original own funds/(Total requirements x 12.5)	7.1	6.8	7.1	7.5

Source: Banco de Portugal.
Note: The break in the series relates to the adoption of the Basel II criteria, which can be seen fundamentally in the moves in the various constituents of capital requirements.

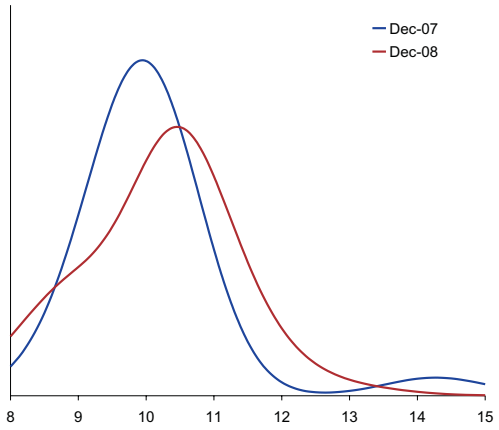
pean banking institutions shows that Portuguese banks continued to post comparatively low ratios for total own funds and for Tier I in 2008 (Chart 4.3.5 and Chart 4.3.6). It needs to be borne in mind, though, that an international comparison of solvency ratios is hampered by the fact that different domestic regimes were involved and these were probably highly relevant in 2008. There are different features to the banking systems

Chart 4.3.3

CAPITAL ADEQUACY RATIO

Own funds/(Total requirements*12.5)

Empirical distribution



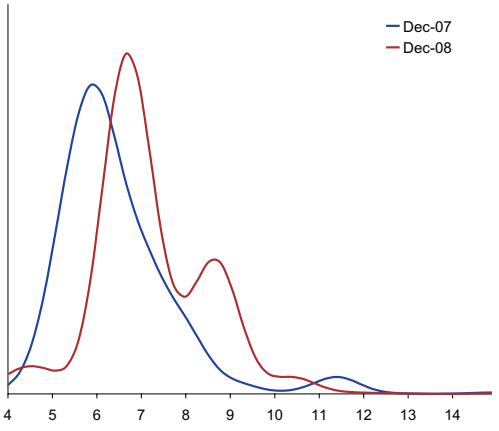
Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to a Gaussian kernel that weights institutions by total assets. In 2007, most of the institutions defined their capital requirements in line with Basel I. In 2008, the capital ratio was determined taking into account Basel II criteria and regulatory amendments related to own funds introduced during the year.

Chart 4.3.4

ADEQUACY RATIO OF ORIGINAL OWN FUNDS -TIER I

Original own funds/(Total requirements*12.5)

Empirical distribution

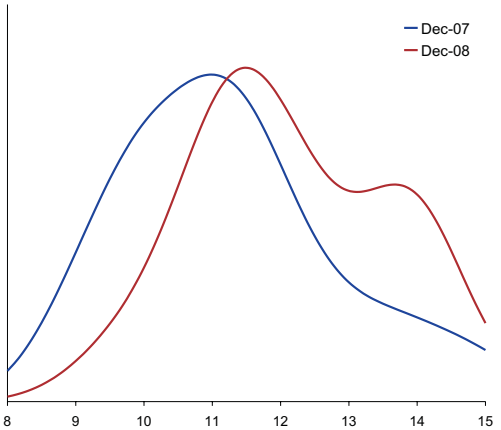


Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to a Gaussian kernel that weights institutions by total assets. In 2007, most of the institutions defined their capital requirements in line with Basel I. In 2008, the capital ratio was determined taking into account Basel II criteria and regulatory amendments related to own funds introduced during the year.

Chart 4.3.5

CAPITAL ADEQUACY RATIO FOR A PANEL OF EUROPEAN BANKS

Empirical distribution

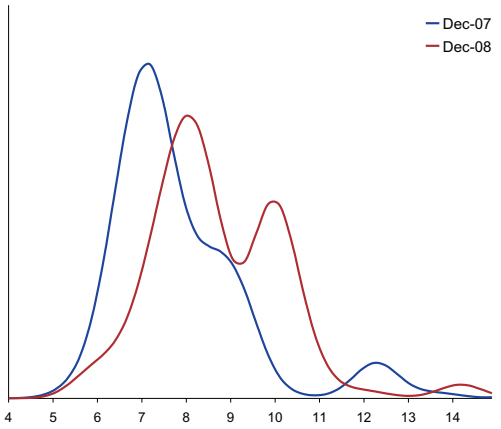


Source: Bureau Van Dijk (Bankscope).
Note: Empirical distribution obtained through recourse to a Gaussian kernel that weights institutions by total assets. Based on a range of 55 banking institutions from 14 European Union countries, whose accounts for the 2008 fiscal year were available at the above mentioned source at the cut-off date of data for this Report.

Chart 4.3.6

ADEQUACY RATIO OF ORIGINAL OWN FUNDS - TIER I – FOR A PANEL OF EUROPEAN BANKS

Empirical distribution



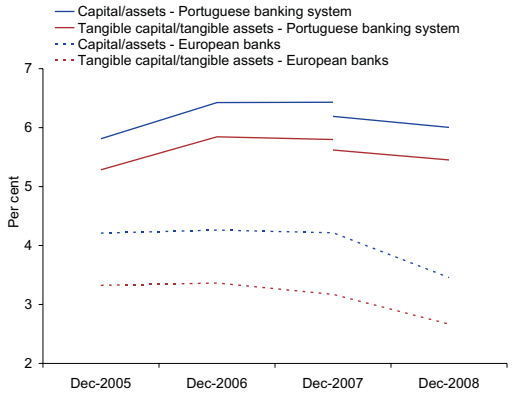
Source: Bureau Van Dijk (Bankscope).
Note: Empirical distribution obtained through recourse to a Gaussian kernel that weights institutions by total assets. Based on a range of 54 banking institutions from 14 European Union countries, whose accounts for the 2008 fiscal year were available at the above mentioned source at the cut-off date of data for this Report.

as well, among them the return on assets and the proportion of bigger banks, which give greater influence to own funds above the minimum requirements.[37] In addition, some banks among those being analysed determined the capital requirements through internal approaches that have an upside impact on the capital ratio. A salient point here is that Portuguese banks come in with a relatively more favourable position when the focus is on the ratio between capital and asset on the balance sheet, even corrected for intangible assets (Chart 4.3.7). As a final point, there is still great uncertainty over the extent of losses not yet recognised by the European banks related to the assets that triggered the current financial crisis. The register of these losses could have profound implications for recapitalisation of the banks involved. This is not likely to affect Portuguese banks, since there is no significant exposure to the operations in question.

One of the important pillars in the stability of a financial system is the adequacy of capital ratios. This gives institutions a buffer against unexpected adverse shocks while continuing to carry out their intermediation in the economy. In the current economic and financial crisis, given the more substantial risks associated with banking operations, this point is of huge relevance. Thus, the Portuguese government has put forward a recapitalisation plan for national banks totalling 4 thousand million euros, in line with the recommendation of Banco de Portugal that the Tier I ratio should be above 8 per cent from September 2009. The aim of this plan is to lay the groundwork on which the banks can increase their solvency ratios in circumstances where access to financial markets is not easy. Looking at the information available for end-2008, the amount made available by the government represents a potential increase of around 13 per cent of total own funds in the Portuguese banking system, corresponding to 1.3 p.p. both for total own funds and Tier I ratios. It should be mentioned that no institution has yet used the available funds. Additionally, for 2009 a number of capital increase operations have been announced by some banking groups, along with moves involving other instruments eligible for original own funds purposes – without recourse to the recapitalisation plan. The *Banco Espírito Santo* has carried out one operation already in the early part of the year, with a 1200 million euro capital increase.[38]

Chart 4.3.7

CAPITAL TO ASSETS RATIO



Sources: Bureau Van Dijk (Bankscope) and Banco de Portugal.
Note: The break in the series in 2007 relates to the enlargement of the number of institutions analysed. The ratios of European banks correspond to a weighted average of data based on a range of 53 institutions from 14 European Union countries, whose accounts for the 2008 fiscal year were available at the above mentioned source at the cut-off date of data for this Report.

(37) For a revision of the literature and an empirical approach to the Portuguese case, see Boucinha, M. and Ribeiro N. (2007), "Determinants of the Portuguese Bank's Capital Buffers", Banco de Portugal, *Financial Stability Report.*

(38) Looking all the main banking groups, the *BES* has carried out a capital increase operation and the *CGD* has also announced a considerable increase, to the amount of 1000 million euros.

4.4. Market risk

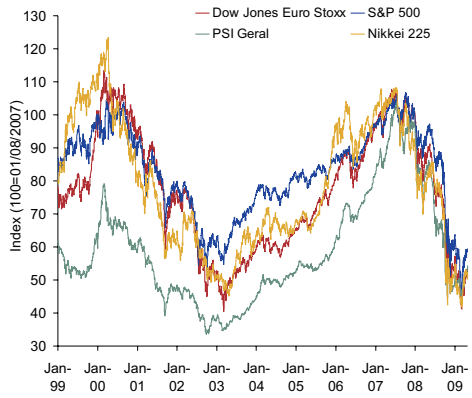
The banking system assessed from a financial market perspective

The year was marked by turmoil in the financial markets, allied to rising fears of a recession in the United States and what repercussions that would have to the world economy. Some American banks were heading into liquidation and there were difficulties in getting financing through the wholesale financing markets, with everything that that implied for the financing of the economy. Against this backdrop, the levels of uncertainty and risk aversion remained high, playing their part in the disinvestment mood that overtook segments of the financial markets, especially stocks. The value of shares tumbled and risk premiums went up. Falls on stock prices topped 38 per cent in the United States and 46 per cent in the euro area (Chart 4.4.1). As financing conditions worsened, those financial institutions more dependent on the wholesale market suffered more. These included the investment banks and institutions with a major stake in the credit derivatives market. The situation deteriorated significantly after Lehman Brothers collapsed in September. Other financial institutions were caught in the tsunami and the waves spread to other segments of the financial markets and thence to other countries. A crisis of confidence had already set in, but from this point, confidence fade even further. As doubts about the quality of credit meshed with expectations of a gradual rise in default, so spreads between private debt and public debt instruments widened as well as the spreads on credit default swaps (CDS), especially in the United States and especially in the financial sector.[39]

Following the onset of the mortgage market crisis in the summer of 2007, the financial situation of banks across the world was aggravated by bleak capital markets and unremittingly downbeat prospects for economic output. It became ever more difficult to tap into external sources of financing through the wholesale markets, with both price and quantity affected (see "Section 4.5 *Liquidity risk*", of this Report). In the first nine months of the year above all, banks drew back from supplying funds on the interbank money markets, looking to give themselves leeway in any dearth of liquidity in a climate

Chart 4.4.1

STOCK MARKET DEVELOPMENTS



Source: Bloomberg.
Note: Most recent figure: 30 April, 2009.

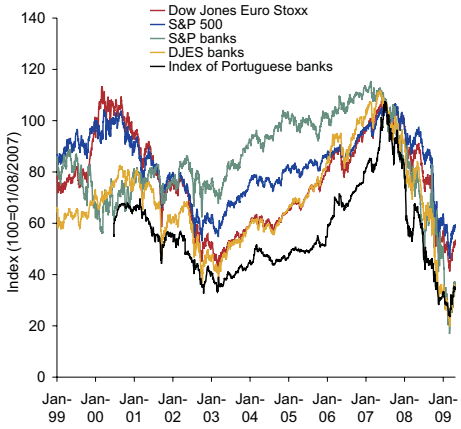
(39) For a more detailed explanation of financial market developments in 2008, see Banco de Portugal, *Economic Bulletin-Spring 2009.*

characterised by high levels of uncertainty, a widespread loss of confidence and an increase in counterpart risk. As a result, the spreads between interest on collateralised and non-collateralised operations in the interbank markets remained high, as seen since the summer of 2007. As asset losses stacked up, on the back of the slide in credit quality or the drain in value of financial assets, own funds began to slip and doubts set in as to the solvency of banks around the globe. The fourth quarter of the year saw more and more evidence of a steep fall in economic output and a substantial loss of momentum in emerging market economies, leading to another wave of uncertainty and risk aversion. As the year closed and 2009 opened, the economic downturn patched in with the financial markets with increasingly negative reverberations. The interaction between the two is one of the major risks for 2009. The markets made their assessment of the banks and stock prices of banks plummeted, the fall being greater than the market overall, with the main indices for banks dropping to decade lows (Chart 4.4.2). The effects of the crisis were felt first and foremost in the banks, but they then impacted on other sectors, specifically non-financial corporations, as the prospects for economic output took a turn for the worse. Shares of Portuguese banks fell in line with prices on stock exchanges worldwide (Chart 4.4.3). The price-to-earnings ratio in the banking sector continued on the downward path it had been on since the second half of 2007 in the aftermath of the subprime crisis (Chart 4.4.4). In Portugal, as in the United States and the euro area, the price-to-earnings ratio for the banks was well down its historical average, coming in with the lowest figures for a decade.

With all the signs pointing to a steep downturn in economic output in the last quarter of the year, governments around the world put together packages that encompassed state guarantees for new issues of debt securities by banks. This went some way towards slowly restoring confidence in the financial markets and easing the issue of debt securities by banks, leading in turn to easier financing for the non-financial private sector. One welcoming sign was the concerted nature of action taken by authorities in the advanced economies. This came as early as October in the euro area, with the G7 and then the G20 following suit. These decisions, however, led to an increase in spreads for sovereign debt in some countries in Europe, since the guarantees effectively transfer the risks from the banks to the guarantors, where explicit contingent liabilities are then lodged. In addition, there have been measures

Chart 4.4.2

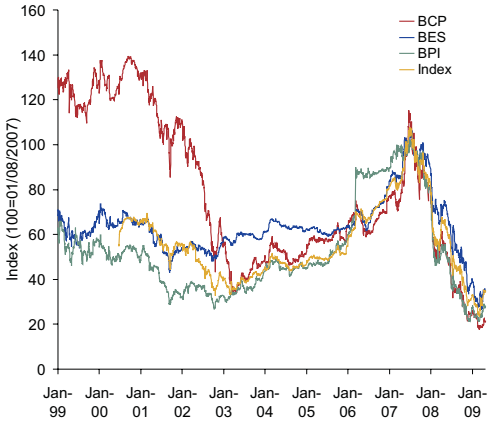
STOCK MARKET DEVELOPMENTS
Financial sector



Source: Bloomberg.
Notes: Most recent figure: 30 April, 2009. The index of Portuguese banks relates to the *BCP*, the *BPI* and the *BES*, weighted according to stock market capitalisation.

Chart 4.4.3

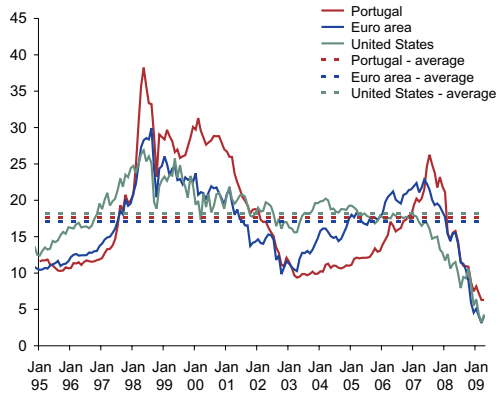
STOCK MARKET DEVELOPMENTS
Portuguese banks



Source: Bloomberg.
Notes: Most recent figure: 30 April, 2009. The index relates to the *BCP*, the *BPI* and the *BES*, weighted according to stock market capitalisation.

Chart 4.4.4

PRICE TO EARNINGS RATIO
OF THE BANKING SECTOR



Sources: Thomson Reuters and Banco de Portugal.
Notes: Historical averages for the period between January 1995 and December 2006. PER calculated as the ratio of the price index to the moving average of earnings in the previous five years. Most recent figure: 30 April, 2009.

of fiscal stimulus and/or support for specific enterprises or sectors with a view to offsetting the expected fall in economic output. The thrust of monetary policy in the main advanced economies was clearly expansionist. The North American Federal Reserve cut interest rates at high pace and magnitude throughout the year, showing no signs of letting up in the early part of 2009. The ECB has been cutting base rates since October 2008, bringing the combined total to 3 p.p. by the end of April 2009.

As already mentioned, Portuguese banks, like other European banks, had to come to terms with very bleak wholesale financial markets all through the year. In the early part of the year, medium and long-term issues were well down in volume. Even so, the banks managed to issue securities for longer maturities, above all in mid-year, when there was a respite, albeit temporary, as discussed in "Section 4.5 *Liquidity risk*", of this Report. Towards the end of the year, the *CGD* issued debt underpinned by the state guarantee. In 2009, various banking groups have issued debt securities, with almost half backed by the state guarantee. There is a 50 b.p. commission payable to the state, to which must be added the credit default swap premium for the bank (or as per another similar bank if there is no credit default swap for this particular issuer) if the securities are issued at more than one year. Endorsed in this way, Portuguese banks were able to tap into medium to long-terms funds in the wholesale market. Hence, while in 2008, especially in the last quarter, the banks found big volume restrictions on debt issues, in the early 2009 the situation eased somewhat. Conditions had changed however when compared with previous years: throughout 2008 and into 2009, issues were tied into maturities that were substantially shorter and at a cost that was relatively high (Chart 4.4.5).

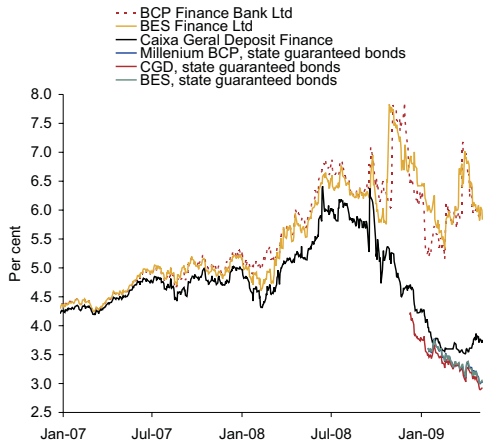
As risk aversion and reassessment of risk became the order of the day across the globe, spreads on issues by European banks widened (Chart 4.4.6). Portugal was no exception; and the situation spilled over into CDSs, where Portuguese banks saw spreads rise as the year unfolded, tracking closely the move in spreads on CDSs for other companies in the financial sector (Chart 4.4.7).

In the early of 2009, spreads on private compared with public debt rose again, as did spreads on CDSs, reaching a high never seen before. There was, in particular, a substantial rise in European banks' risk premiums during the first two months, though this eased in March. Portuguese banks were

Chart 4.4.5

YIELDS ON SUBORDINATED DEBT ISSUES AND ON DEBT ISSUED WITH STATE GUARANTEE

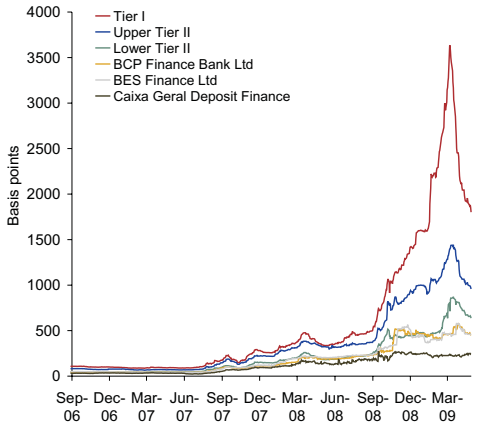
Portuguese banks



Source: Bloomberg.
Note: Most recent figure: 30 April, 2009.

Chart 4.4.6

SPREADS OF SUBORDINATED DEBT ISSUED BY EUROPEAN BANKS

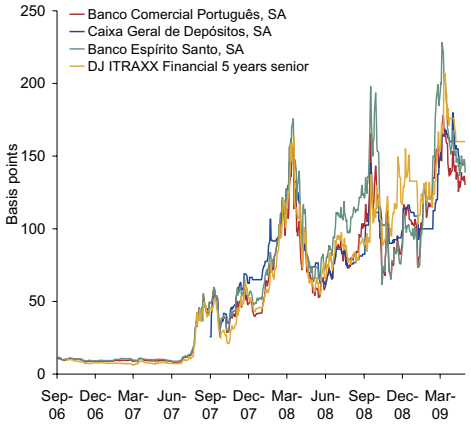


Sources: Bloomberg and JP Morgan.
Notes: Spreads refer to three distinct levels of debt subordination. Tier I represents the highest degree of subordination (i.e. the riskier exposure), and lower Tier II represents the lowest degree of subordination. Spreads of portuguese banks are computed to german public debt. Most recent figure: 30 April, 2009.

no exception. The situation spilled over into the stock markets, where the first quarter saw stock prices falling again. The fall on the Dow Jones Euro Stoxx was around 14 per cent, and around 12 per cent on the S&P 500. The banks' stock prices took the broadside, with 18 per cent falls in Europe and up to 45 per cent in the United States. As already mentioned, the major fall in economic output impacted on the banks, where a series of mutually reinforcing negative effects caused expectations of further losses to rise. The measures to shore up the financial system and the stimulus packages put together by various countries, including Portugal, went a long way towards reducing systemic risk and boosting economic

Chart 4.4.7

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



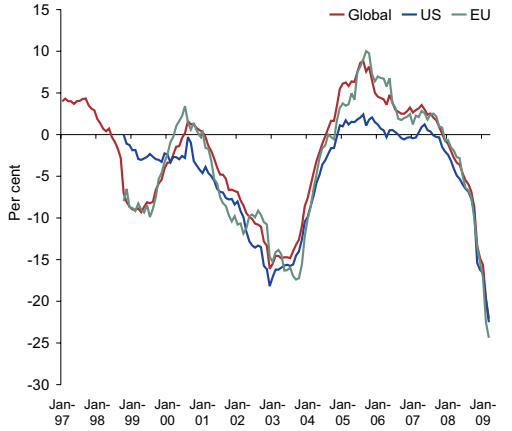
Sources: Bloomberg and Thomson Reuters.
Note: Most recent figure: 30 April, 2009.

agents' confidence in the financial system. The level of uncertainty, however, showed no sign of abating. In the first months of 2009, doubts surfaced as to the capacity of some countries to finance the rescue packages without jeopardising the sustainability of their public finances. In addition, in the early of 2009, major international organisations lowered substantially their forecasts for global economic output in 2009 and 2010. However, from the second half of March, spreads started to narrow somewhat as a number of financial institutions came out with early-year figures above expectations and the United Kingdom and the United States came out with new measures to boost the economy. At the end of April 2009, however, spreads were still above where they were before the collapse of Lehman Brothers.

As expectations for economic output worsened during 2008, credit risk for non-financial companies rose around the world. The balance on the ratings scale (upgrades compared with downgrades) has stayed on the downside, with figures reaching below the threshold of the period after the market turmoil in the beginning of the decade (Chart 4.4.8). As for banks, there were more downgrades, in net terms, than the rest of the economy put together. Risk premiums for Portuguese banks rose during the year, as they did for other banks worldwide, but there was no major downgrade. The situation, however, deteriorated in late 2008 and early 2009. In 2008, Standard & Poor's had improved the outlook for *Millennium BCP* from negative to stable at the end of April, basing the change on the fact that the bank had come to rights after a turbulent 2007. In June, the *BPN* saw its Moody's rating down, on the back of asset losses and management problems at the group. Against this, in August, Standard and Poor's notched up the *CGD*'s rating as profitability and asset quality improved and two capital increase operations were successfully carried through. In October, Fitch placed under revision (in the negative direction) its rating assessment of the *Santander Totta* and the *BPN* and Standard & Poor's gave a negative outlook for *Millennium BCP*, mentioning a possible rating downgrade if profitability and/or asset quality eroded again. The Banco *Privado Português* saw its debt downgraded by Moody's in November, with the challenges mounting for a bank whose business model hinged fundamentally on financial market developments. The first months of 2009, however, were different. There were downgrades posted for a number of banks. In January, following the Standard & Poor's downgrade of the Portuguese Republic, the *CGD* went the same way. On the same day, the same agency downgraded the *BST* and in early

Chart 4.4.8

CHANGES IN RATINGS WORLDWIDE



Sources: Moody's and Thomson Reuters.
Note: The difference between the number of upgrades and downgrades over the number of issuers with rating. Most recent figure: March 2009.

February it highlighted the vulnerability of the *Millennium BCP*, specifically in terms of its solvency when compared with other banks internationally. The debt of the *BES* and the *BPI* also came in for a negative outlook. In April, Moody's announced the revision of a number of bank ratings, in the light of the country's weakening economic outlook and the prospects for negative credit outlook. Debt issued by *BANIF* and the holding company *ESFG* were downgraded, with the two institutions placed at a point awaiting a possible downgrade. Meanwhile, the same agency placed the *CGD*, *Millennium BCP*, *BES*, *Santander Totta*, *BPI* and *MG* at the same level: awaiting a possible downgrade.

In the midst of this economic and financial crisis, the robustness of financial institutions around the world has come under the microscope. It is important to note, therefore, that a number of Portuguese banks had made it public that they intend to reinforce own funds in order to be in line with the Banco de Portugal recommendation to maintain a Tier I ratio at or above 8% from September 2009. This could involve issues of ordinary shares and other eligible financial assets. In April, *BES* has already carried out an operation to bring its capital up by around 1200 million euros (see "Section 4.3 *Capital adequacy*", of this Report).

In the wake of the financial system turmoil, the after shocks on the economy have been far more powerful than could have been anticipated in the summer of 2007. The stock markets saw the biggest fall of recent decades, with marked short-term fluctuations that have caused record volatility levels, both implicit and observed. Against this backdrop, however, market conditions brightened from March to April 2009, though there is a distinct possibility that shares will again fall across the board, dragging down the value of the banks through losses in securities portfolios and the associated results. In the capital markets, there are two factors likely to influence market developments: the issue of financial instruments on the primary market; and liquidity in the secondary markets. On these will depend whether life can be breathed back into stock markets.

It is clear now that all the support provided for the financial system managed to invert the spiralling loss of confidence that had begun with the bankruptcy of Lehman Brothers, and which seemed at the time to herald the imminent collapse of the world's financial system. In spite of this, however, it is still not possible to see which institutions have the quality foundations on which to build a solid structure in the medium term. It is this doubt that underlies the persistence of abnormally high risk premiums in the unsecured interbank market, which are close to their September 2008 levels. There is in addition great uncertainty about the amount and extent of losses in banks' financial asset portfolios, above all the exposure to complex financial instruments related to the crisis in the United States mortgage market. Banks across the world are gradually coming to recognise losses which put pressure on their profitability and solvency, and may lead to the need for more capitalisation.

The available indicators all point to the fact that we are in the early stages of a cycle which will put credit risk in the spotlight, though at present default rates are relatively low in most advanced economies. It is true that some companies have unveiled better than expected results for the early part of 2009 and this has helped the stock markets to pick up again, but these results have come on the back of cost reductions. As economic output slackens, earnings have been decreasing and pushing profitability down. Faced with the size and reach of the downturn, additional cost cutting is very likely, namely through a reduction of labour and pushing up the number of jobless. In circumstances such as these, the confidence of households is likely to stay low, with substantial falls in consumption as a result. Market analysts may well have factored in the fall in profits associated with the recession but credit risk of companies could rise even more with consumption falling as households, logically, make adjustments to their economic prospects.

The impact of capital market developments on the portfolio of financial assets of Portuguese banks and related income

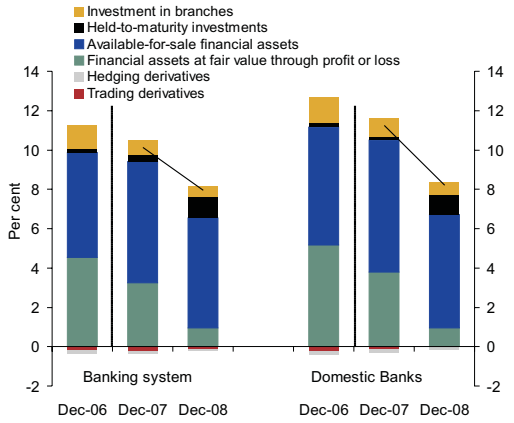
Turmoil and uncertainty were the watchwords for the financial markets during 2008, impacting on the operations of banks around the world. One of the main influences on banking activity is the difficulty in tapping into financing, either in the interbank money markets or in the medium to long-term debt markets (see "Section 4.5 *Liquidity risk*", of this Report). In addition, the fall in the price of financial assets in international markets had a substantial impact on banks' assets portfolios and on the results from banks' financial operations. Portuguese banks were not exposed in any material way to the assets that triggered the current crisis, but they nonetheless saw their portfolio of securities and financial investments decrease in value. The causes were twofold: the turbulence in the financial markets and the divestments of holdings by the main banking groups. Results on financial operations fell as asset values slid, even though some institutions made gains from disposals of holdings in companies. Losses from impairment on available-for-sale financial assets accrued substantially during the year. Most of this relates to holdings in other Portuguese banks as their prices dropped substantially during the year. Gains with commissions on financial operations were also down year on year, mainly because redemptions in mutual funds increased while the value of the main assets in their portfolios decreased. The tribulations of the financial markets had other repercussions, with pension funds seeing the value of their portfolios fall and profitability slipping below the line. In tandem, the increase in liabilities rose, even though there was an increase in the actuarial discount rate. Cover decreased but remained within regulatory limits.

The value of securities and financial investments in Portuguese banks' portfolios[40] fell by around 15 per cent during the year, as turbulence took over the financial markets and there were important sales

Chart 4.4.9

FINANCIAL ASSETS PORTFOLIO OF PORTUGUESE BANKS

Following IAS classification, as a percentage of assets



Source: Banco de Portugal.
Note: The 2007 break in the series corresponds to an enlargement in the number of institutions analysed, as mentioned in the first footnote of this chapter.

(40) The securities and financial investment portfolio includes financial assets at fair value through profit or loss, including derivatives for trading (net of held-for-trading financial liabilities), available-for-sale financial assets, held-to-maturity investments, investments in branches and the net value of derivatives for hedging.

of holdings by banks (Chart 4.4.9). The biggest fall came in assets at fair value through profit or loss; a lot farther down the scale came the decrease in value of the portfolios of investment in branches and available-for-sale financial assets. In the last there were entries and disposals. Some of the main banking groups sold company holdings classified as available-for-sale, picking up gains which offset to some extent the negative effects from the downward thrust of capital markets throughout the year. In addition, they divested holdings in other Portuguese banking groups booked in this portfolio, some of them with substantial impairment caused by tumbling stock prices, where the banking sector was hit the hardest. The main groups also reclassified assets at fair value through profit or loss, moving them into the available-for-sale, the held-to-maturity and/or the credit portfolios (the last of these is analysed in "Section 4.2 *Activity and profitability*", of this Report). This reclassification was possible after the European Commission endorsed the changes introduced by the International Accounting Standards Board (IASB) through regulation 1004/2008. The amendment covered changes to the accounting standards for recording financial instruments at market value.[41] IAS 39 stated that assets classified in financial assets at fair value through profit or loss could not be moved. From the second half of 2008 it became possible to reclassify certain assets in exceptional circumstances, such as the current financial crisis. This change stipulates that financial assets that are reclassified need not be recorded at fair value, with the last market value at the date of reclassification becoming the new cost of acquisition. Gains and losses already recognised in profit or loss should not be reversed. In this context, the effects of Notice no. 6/2008 should be noted. According to this Notice, unrealised gains and losses on debt securities classified as available-for-sale, if no impairment attaches to them, will henceforth not be included in the assessment of own funds. This Notice probably led some banks to shift debt securities from the portfolio of assets at fair value through profit or loss to the available-for-sale assets portfolio, as a means of reducing the sensitivity of own funds to changes in the value of debt securities (see "Section 4.3 *Capital adequacy*", of this Report).

The portfolio of held-to-maturity investments moved very positively, unlike the other portfolios. The increase stems fundamentally from decisions made by two large banking groups. One made a sizable acquisition of securities, while the other reclassified debt securities from fair value to held to maturity, as a way of curtailing sensitivity to market fluctuations. Another major event involved a cut in investment in branches portfolio as a large group sold off holdings that had been classified in this portfolio.

If we look at the banks' financial assets in terms of risk, interest rate risk is still the main cause for concern because of the proportion of debt securities that are held (Chart 4.4.10). Financial assets sensitive to variations in stock prices were reduced, the cut being more marked in the domestic banks, in line with developments in stock markets and the sale of holdings mentioned above.

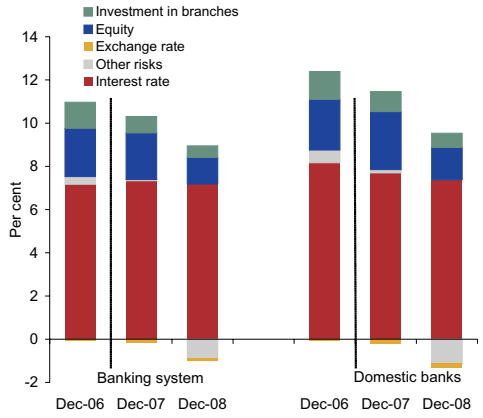
The portfolio of securities and financial investments has differing impacts on profit or loss, depending on whether gains and losses are realised and where securities are classified. Most securities held by banks are classified in financial assets at fair value through profit or loss and available-for-sale assets, being therefore booked at market price. As discussed in earlier Financial Stability Reports, the classification of securities has an impact on results. Gains and losses on financial assets at fair value through profit or loss are carried to the income statement, whether realised or not. In other words, variations of value are carried, whether the sale is realised or not. On the other hand, only realised gains and losses from the sale of securities classified as available-for-sale are carried to the income statement, with potential gains and losses recorded under capital in reserve accounts. However, when potential losses in available-for-sale assets are very high and/or considered as non-temporary, they should have an immediate impact on results, by way of losses through impairment. In short, results of the banking system

(41) This change was made to bring the requirements of the IAS (specifically IAS 39) closer to the United States standards (the US GAAP - Generally Accepted Accounting Principles in the United States).

Chart 4.4.10

FINANCIAL ASSETS PORTFOLIO OF PORTUGUESE BANKS

According to risk source, as a percentage of assets



Source: Banco de Portugal.
Note: The 2007 break in the series corresponds to an enlargement in the number of institutions analysed, as mentioned in the first footnote of this chapter.

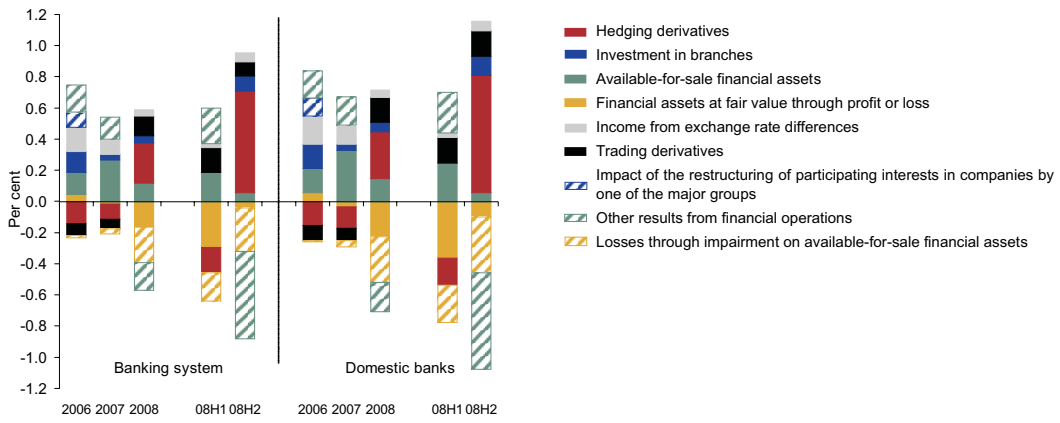
reflect changes in the value of securities held as assets at fair value through profit or loss, realised gains and losses on the sale of securities from the available-for-sale portfolio and losses through impairment in available-for-sale financial assets. This last constituent came to have great importance during 2008.

Results from securities and financial investments were down by around 25 per cent in 2008 (Chart 4.4.11). If loss through impairment is factored in, the fall is a great deal more (around 94 per cent). The

Chart 4.4.11

INCOME FROM FINANCIAL OPERATIONS AND LOSSES THROUGH IMPAIRMENT ON FINANCIAL ASSETS OF PORTUGUESE BANKS

Following IAS classification, as a percentage of assets



Source: Banco de Portugal.
Notes: Annualised half-yearly figures. The number of institutions analysed increased between 2006 and 2007, as mentioned in the initial footnote to this chapter. Figures as a percentage of average assets in the year/half-year analysed.

fall stems fundamentally from what happened in the first half of the year. During that six-month period, there were considerable losses in the portfolio of assets at fair value through profit or loss, as the stock markets dived and the debt market skewed. Available-for-sale assets came in on the up side, but way down from a year earlier. In the second half of the year, some groups made gains from the sale of company holdings classified as available-for-sale and of holdings in branches, the aim being to help cushion the effects of the downward move in the financial markets and offset the poor results from the first half-year. The substantial rise in impairment in available-for-sale assets mentioned above mostly stemmed from holdings in other Portuguese banking groups, where prices fell more than 50 per cent over the year. As a last point, derivatives held for hedging and for trading came in very much on the upside, giving a welcome boost to results from financial operations. Part of the gains from derivatives held for trading looks to have come from the break of initially considered hedging positions, resulting in a reclassification of these instruments from hedging to trading derivatives. The reclassification meant that gains were recorded, as the value of the derivatives was positive in the context of a fall in interest rates.

An analysis of how results evolved, as seen from the standpoint of risk (Chart 4.4.12), shows a considerable fall deriving from equity securities, their contribution to return on assets being different according to where they were classified (Chart 4.4.13). Assets classified at fair value through profit or loss came in with a negative contribution as prices fell in the light of falls in the stock markets, whereas a positive contribution came from assets classified as available-for-sale when holdings were sold with gains. As already mentioned, when prices of available for sale assets have fallen substantially and potential losses are very high and/or considered as non-temporary, they should be recognised as a loss through impairment. Hence, they have an impact on results for the period, even if sales have not been realised. In turn, instruments exposed to interest rate risk came in with positive figures for return on assets, mainly because of hedging derivatives that were used in interest rate operations. Results stemming from exchange rate risk in the second half of the year came in as the euro/dollar exchange rate began to move in the opposite direction of last years.

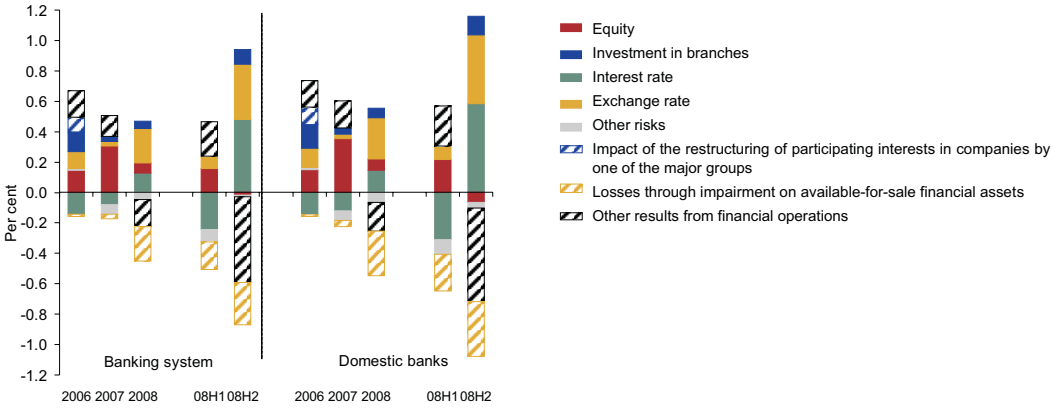
Results from commissions on financial operations excluding credit operations were down substantially for the year, the situation being very similar in both the first and the second half (Chart 4.4.14). One of the items that contributed more to this was the one related to commissions for management of mutual funds, with assets under management falling in value as customers redeemed large quantities of units and as asset prices were falling, especially in the shares segment. In fact, the amount of mutual funds under management were down substantially again for the year (see "Section 4.5 *Liquidity risk*", of this Report). With financial markets lacking ballast, risk aversion on the rise and return rates down, customers were moving increasingly into deposits and away from financial assets subject to market fluctuations.

In 2008, bank employees' pension funds were prey to moves in the international financial markets. Their portfolios were down by around 8 per cent (Table 4.4.1) as the profitability on assets fell, even though the intake through contributions rose considerably. In December 2007, a large part of the aggregate portfolio of the pension funds was made up of shares or of mutual funds with a predominance of shares (45 per cent), leaving them highly exposed to market fluctuations. There were, however, some actuarial gains that went some way towards bringing down the present value of funds' liabilities. These gains are related to the increase in the actuarial discount rate, with the large banking groups pushing up the figure by between 50 and 75 b.p. So, in December 2008, the actuarial discount rate in the main pension funds stood at between 5.5 and 6 per cent. These figures are higher than the yield on Portuguese public debt for the year and this could become a risk factor if the discrepancy between the rates does not narrow. As the value of pension funds fell and the annual increase in liabilities increased, the cover rate fell, although it stayed above minimum requirements. In December 2008, given

Chart 4.4.12

INCOME FROM FINANCIAL OPERATIONS AND LOSSES THROUGH IMPAIRMENT ON FINANCIAL ASSETS OF PORTUGUESE BANKS

In accordance with source of risk, as a percentage of assets

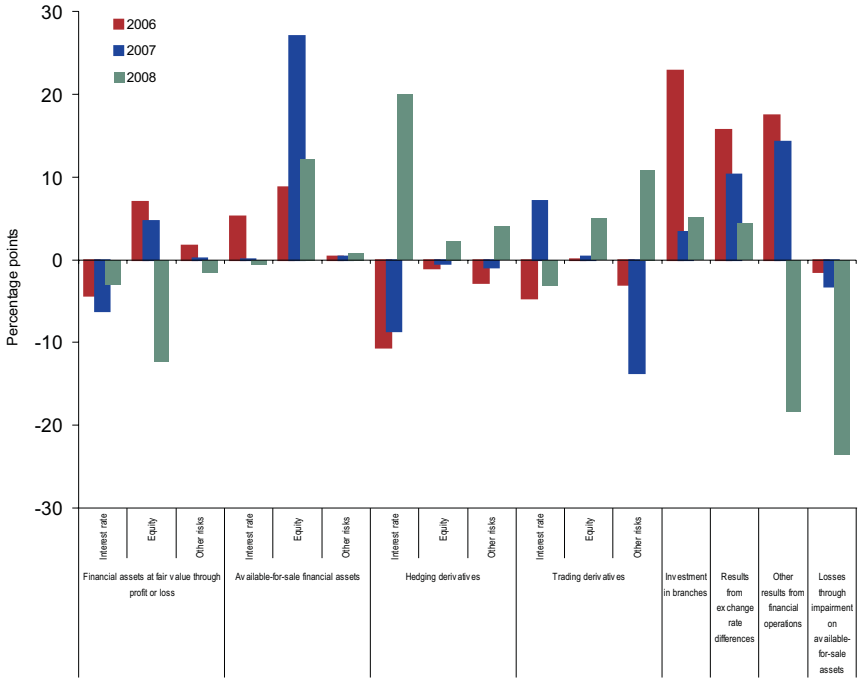


Source: Banco de Portugal.
Notes: Annualised half-yearly figures. The number of institutions analysed increased between 2006 and 2007, as mentioned in the initial footnote to this chapter. Figures as a percentage of average assets in the year/half-year analysed.

Chart 4.4.13

CONTRIBUTION OF SECURITIES AND FINANCIAL INVESTMENT PORTFOLIOS TO RETURN ON ASSETS OF THE BANKING SYSTEM

In accordance with source of risk and by segments following the IAS classification.

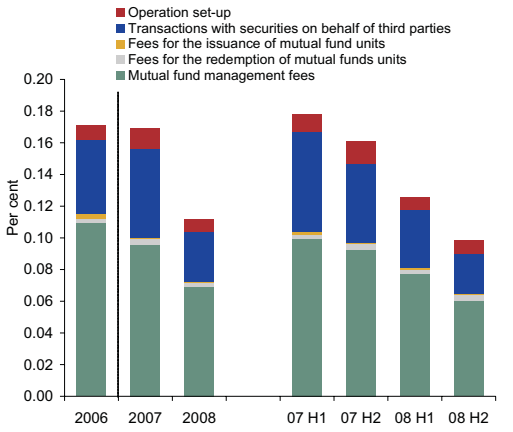


Source: Banco de Portugal.
Note: The number of institutions analysed increased between 2006 and 2007, as mentioned in the initial footnote to this chapter.

Gráfico 4.4.14

NET FEES AND COMMISSIONS ON FINANCIAL OPERATIONS

As a percentage of assets



Source: Banco de Portugal.
Notes: Annualised half-yearly figures. The number of institutions analysed increased between 2006 and 2007, as mentioned in the initial footnote to this chapter. Figures as a percentage of average assets in the year/half-year analysed.

the extraordinary situation in the international financial markets during the year, the Banco de Portugal issued the Notice no. 11/2008, allowing deferral of recognition of actuarial losses over a four-year period, as discussed in "Section 4.3 *Capital adequacy*", of this Report. As such, actuarial losses, net of the expected return on the fund, do not have an impact on own funds for 2008.

During the year, Portuguese banks were very bruised by developments in the international financial markets, with the value of securities and financial instruments well down, along with related results. As already mentioned, the banks attempted to offset the downward move in results through disposals, and they made some gains in the process. These disposals allied to the reclassification of certain financial assets, allowed Portuguese banks to reduce exposure to market fluctuations. The pension funds, however, also came under pressure, and the banks are still very exposed to market risk in this way. There is absolutely no certainty as to how the financial markets will move in 2009 and it is possible that actuarial losses in the pension funds will come again. Should this happen, they will accumulate with the (partial) impact of actuarial losses from 2008 and some institutions could see their solvency ratios under ever greater strains.

Table 4.4.1

PENSION FUNDS – BANKING SYSTEM
EUR millions

	2007	2008
Annual increase in liabilities	**489**	**677**
of which:		
Actuarial losses (gains)		
of which:	242	410
Actuarial losses (gains) arising from differences between assumptions and realised values	190	1 336
Actuarial losses (gains) arising from changes in assumptions and, where applicable, in the plans' conditions	52	(926)
Increase in liabilities arising from early retirement programmes	66	45
Liabilities		
Total liabilities	14 183	13 838
Minimum level of liabilities to be covered	13 451	13 224
Pension funds		
Pension funds value at the beginning of the year	**13 553**	**14 421**
Net income of the funds	1 063	(2 349)
Contributions to the funds	393	1 759
Contributions made by the beneficiaries	49	50
Retirement pensions paid by the funds	596	617
Survivors pensions paid by the funds	31	34
Changes in the value of the funds resulting from termination	(2)	(39)
Other net changes	3	(14)
Pension funds value at the end of the year	**14 431**	**13 178**
Coverage of the funds (Pension funds value at the end of the year – Minimum liability level to be covered)	**980**	(46)
Other coverage	411	397
Coverage of the funds (Pension funds value at the end of the year (incl. other coverage) – Minimum liability level to be covered)	**1 391**	**351**

Source: Banco de Portugal.

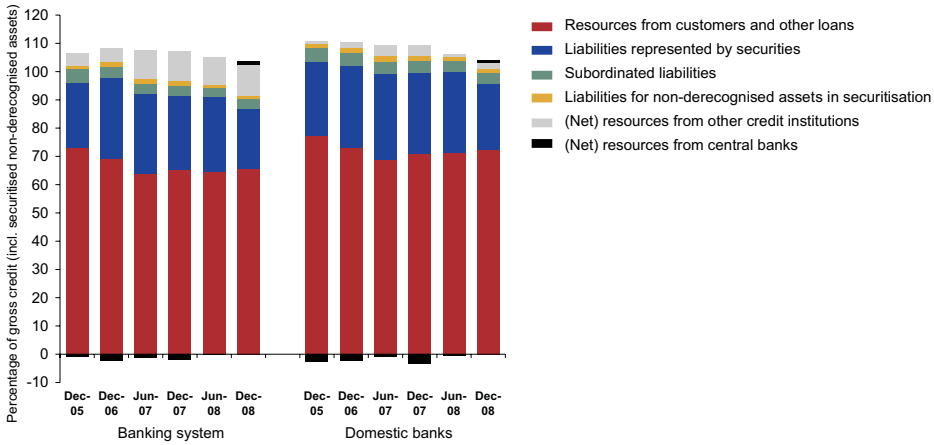
4.5. Liquidity risk

Turmoil in the international financial markets has hindered the access of financial institutions to wholesale markets across the globe, with the situation worsening in the last quarter of 2008. On one hand, the interbank money markets remained massively battered as confidence fell across the board and counterparty risk stiffened. On the other hand, medium and long-term issues in the debt markets plummeted. Against this backdrop, Portuguese banks came up against tightened reins on their financing in the wholesale markets: the amounts issued were down, financing costs were up and maturities shortened. A range of factors has, however, eased pressure on the banks' financing, among them the strong growth in resources from customers, which make up the main source of financing for Portuguese banks (Charts 4.5.1 and 4.5.2). The banks also bolstered their financing through the Eurosystem, where an array of measures has been slotted into place since the summer of 2007 to ensure access to liquidity. The measures announced by the government in the last quarter of the year to underpin the financial system also played their part in easing access to financing. Among the most important of these was the state guarantee on debt issue. As a final point here, the deterioration in the prospects for economic activity and the high level of uncertainty have contributed towards an easing of demand for credit, leading to less pressure on the financing needs of Portuguese banks. In the first months of 2009, there was some improvement in the access to wholesale markets for short-term financing and a small increase in medium and long-term debt issues. Related costs, however, remain relatively high.

As the financial and economic crisis stretched its grip across the globe and turmoil continued to hamper the smooth running of the financial system, the Portuguese banks began to overhaul their financing structure to cushion the impact of this turbulence on their activity, profitability and solvency. The groundwork for this adjustment has been the expansion of their customer funds and, to a lesser extent, their recourse to central banks, even though banks maintained some access to wholesale debt markets. As already mentioned, support came from the changes in the operational framework of Eurosystem's credit operations and the package of measures put in place by the Portuguese govern-

Chart 4.5.1

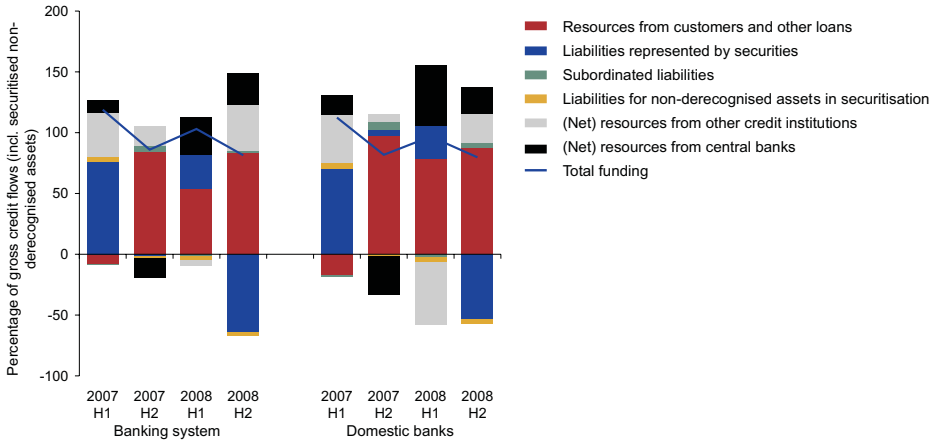
BANKING SYSTEM FINANCING SOURCES



Source: Banco de Portugal.
Notes: Estimates of securities issued by banks but placed with their customer base are included in the item 'Resources from customers'. There is a series break in 2007 which corresponds to an enlargement in the number of institutions analysed.

Chart 4.5.2

BANKING SYSTEM FINANCING FLOWS



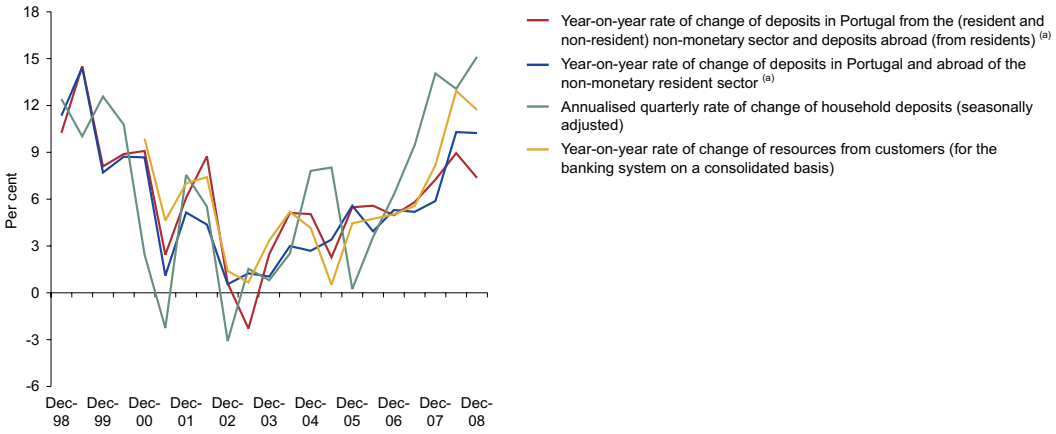
Source: Banco de Portugal.
Notes: Estimates of securities issued by banks but placed with their customer base are included in the item 'Resources from customers'. There is a series break in June 2007 which corresponds to an enlargement in the number of institutions analysed.

ment. Apart from this, the banks have been bolstering their own funds and divesting assets in financial and non-financial corporations (see "Section 4.3 *Capital adequacy*" and "Section 4.4 *Market risk*" of this Report). In fact, the financing strategies of the banks before the crisis broke played a positive part in this adjustment process, since the banks had focused essentially on medium and long-term euro-denominated financing. In addition, in the first half of 2007, before the whirlwind, the banks had issued a substantial volume of securitised debt, which meant they could cover a big part of their financing needs during that year.

The recent acceleration trend of resources from customers started in the second half of 2007, when tensions began to surface in the financial markets (Chart 4.5.3). In 2008, the trend continued to pick up momentum. The growth in deposits stems from the greater demand for this kind of investment on the

Chart 4.5.3

DEPOSIT GROWTH RATES



Source: Banco de Portugal (Monetary and Financial Statistics; International Investment Position; Banking system on a consolidated basis).
Note: (a) Excluding liabilities recorded as a counterpart for non-derecognised securitisation operations, recorded as deposit (and deposit-like instruments) of other financial intermediaries and auxiliaries.

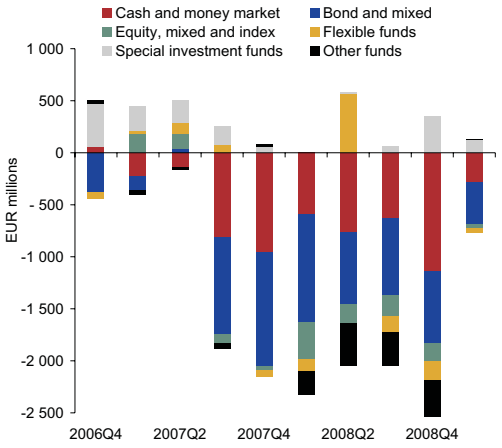
back of increased risk aversion and the slide in assets susceptible to market risk, which also led to substantial redemptions of units in investment funds (Charts 4.5.4 and 4.5.5). Meanwhile, the banks have also been adopting more competitive strategies to capture deposits. In overall terms, the growth of resident households' term deposits was particularly striking, following the 2007 trend (Chart 4.5.6).

The growth in resources from customers was marginally more significant for domestic banks, above all when consideration is taken of debt securities issued by banks to be taken up by customers. With the growth in these funds greater than credit granted, the ratio between credit and deposits saw a significant fall, especially in the domestic banks, even though there have not been any clear changes in the empirical distribution of this indicator (Charts 4.5.7 and 4.5.8). The move in this ratio is in marked contrast to what happened in other European banks in the year under review (Chart 4.5.9). The move in the credit-deposit ratio for Portuguese banks evinces a structural improvement in the liquidity position of the Portuguese banking system, with less need to tap into the wholesale debt markets.

As access to financing in the securitised debt markets became more difficult, especially in the last quarter of 2008, funds sourced from here began to dry up. There was in consequence a big fall in the net flow of liabilities represented by securities in this period (Chart 4.5.2). In spite of this, Portuguese banks succeeded in issuing a substantial volume of debt over the year, tallying around 17 thousand million euros in bonds, which are the main source of financing through securitised debt (Charts 4.5.10 and 4.5.11).[42] There was, however, a big fall in the net issue of these securities, with a considerable part seeming to be earmarked for refinancing debt contracted in previous years (Chart 4.5.12). The bond issues during the year under review were virtually all in euros (95 per cent), though maturities were shorter than a year earlier (down from 5 to 3 years), given the greater difficulties in placing debt at longer maturities (Chart 4.5.13). In addition, the banks had to shoulder higher costs with this kind of medium and long-term debt, as did most banks around the world (Chart 4.5.14). Around half the securities were fixed-rate, a considerable rise vis-à-vis the previous year, when most were variable-rate. This is probably related to the shorter maturities in the securities issued. Furthermore, over 40 per cent

Chart 4.5.4

NET SUBSCRIPTIONS OF MUTUAL AND MONEY MARKET FUNDS

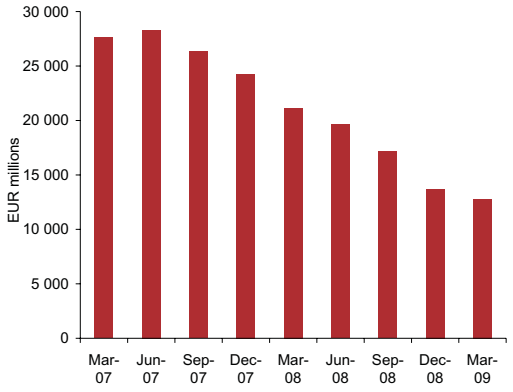


Source: *APFIPP*.
Note: Excluding groupings of funds and funds of funds, but including investment in other national funds.

Chart 4.5.5

VOLUMES UNDER MANAGEMENT IN MUTUAL AND MONEY MARKET FUNDS

End-of-period positions



Source: *APFIPP*.
Note: Excluding groupings of funds and funds of funds, but including investment in other national funds.

(42) It is estimated that about 20 per cent of the liabilities represented by securities relate to securities that derive from non-derecognized securitisations.

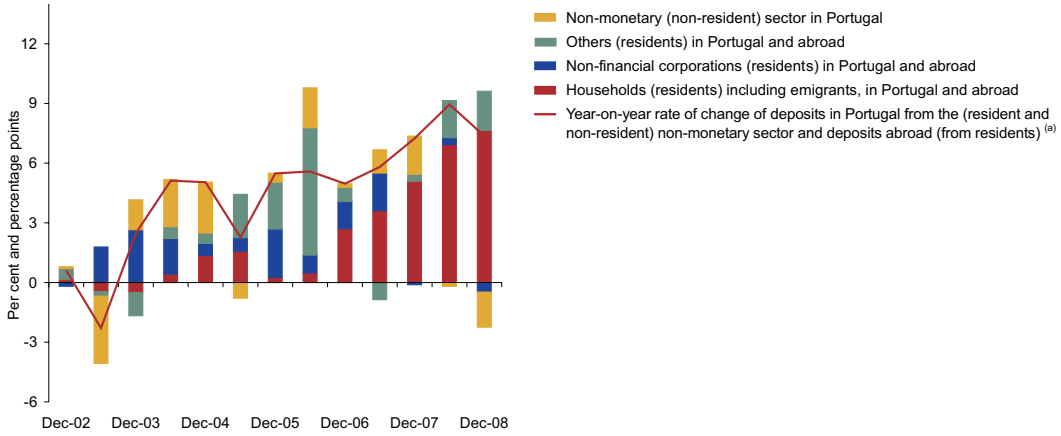
of bonds issued during the year were covered bonds. These bonds offer investors a lower risk, given that they are secured by loans for house purchase that constitute autonomous property in the banks' portfolios.

During 2009, around 18 per cent of the outstanding balance on bonds from the Portuguese banks will mature. However, up to the end of April, more than half of these had been placed on the bond markets, witness to some easing in the issuance conditions of securitised debt in the first months of 2009. With continuing difficulties in access to this type of financing, however, the guarantees set out by the Portuguese government on debt issues by the banks are still fundamental for refinancing liabilities in the

Chart 4.5.6

DEPOSITS FROM THE NON-MONETARY SECTOR

Year-on-year rate of change and respective contributions

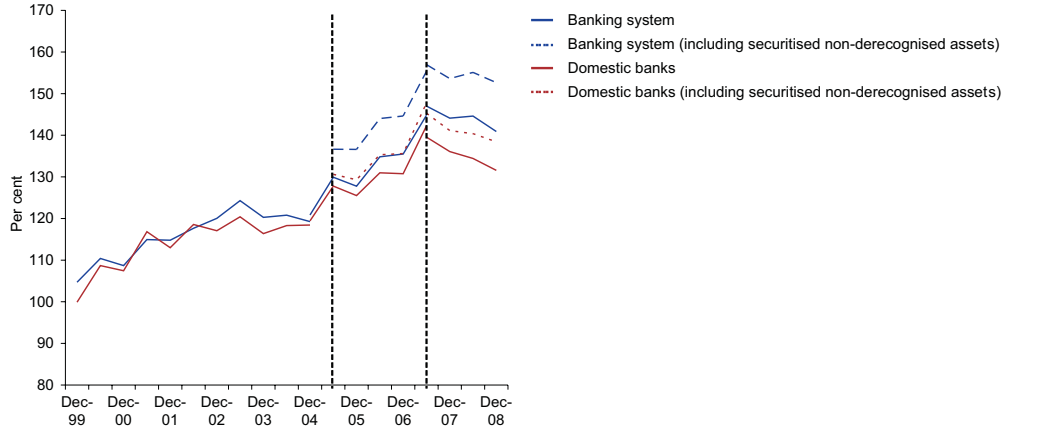


Source: Banco de Portugal (Monetary and Financial Statistics; International Investment Position).
Note: (a) Excluding liabilities recorded as a counterpart for non-derecognised securitisation operations, recorded as deposit (and deposit-like instruments) of other financial intermediaries and auxiliaries.

Chart 4.5.7

RATIO OF CREDIT TO RESORCES FROM CUSTOMERS

Including securities issued by banks and placed with customers

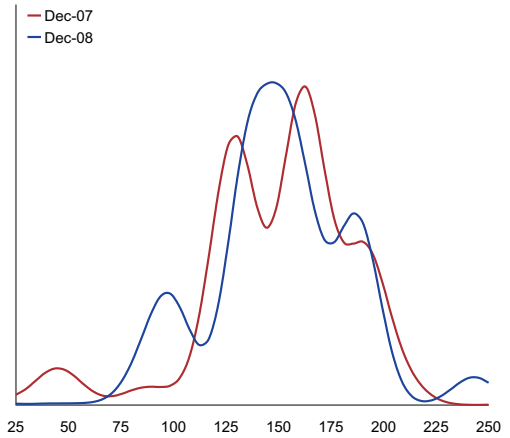


Source: Banco de Portugal.
Notes: The 2004 break in the series is due to the introduction of new accounting standards, which also implied a redefinition of the banking institutions that were analysed. The 2007 break corresponds to an enlargement in the number of institutions analysed.

Chart 4.5.8

RATIO OF CREDIT TO DEPOSITS OF DOMESTIC INSTITUTIONS

Empirical distribution

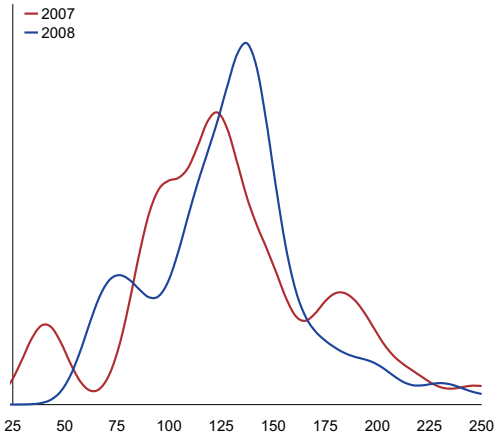


Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to non-parametric methods, namely to a Gaussian kernel that weights institutions by their assets.

Chart 4.5.9

RATIO OF CREDIT TO DEPOSITS IN A SELECTION OF EUROPEAN BANKS

Empirical distribution

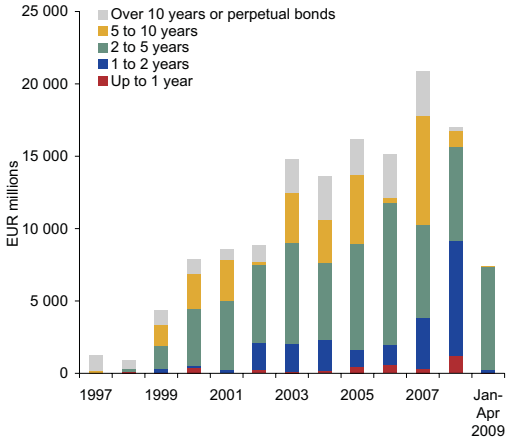


Source: Bureau Van Dijk (Bankscope).
Notes: Empirical distribution obtained through recourse to non-parametric methods, namely to a Gaussian kernel that weights institutions by their assets. Based on a range of 97 banking institutions from 14 European countries whose accounts for the 2008 fiscal year were available at the above mentioned source at the cut-off date for this report.

Chart 4.5.10

GROSS ISSUANCE OF BONDS BY PORTUGUESE BANKS BY ORIGINAL MATURITY

In Portugal and abroad

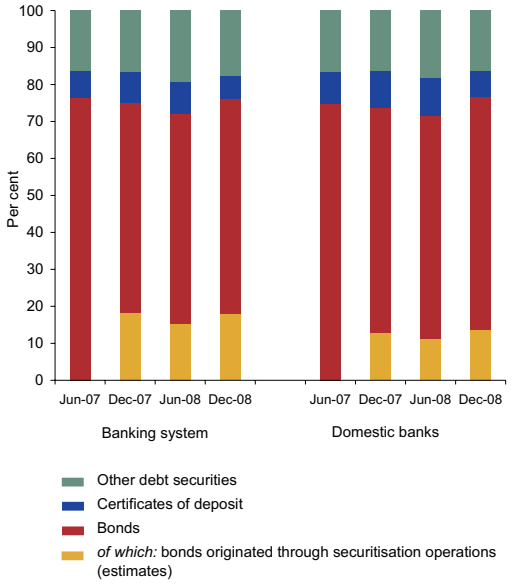


Sources: Bloomberg, Dealogic Bondware and Thomson Reuters.
Notes: Includes observations until the end of April. Includes issues by branches and subsidiaries of Portuguese banks abroad.

Chart 4.5.11

STRUCTURE OF LIABILITIES REPRESENTED BY SECURITIES

On a consolidated basis

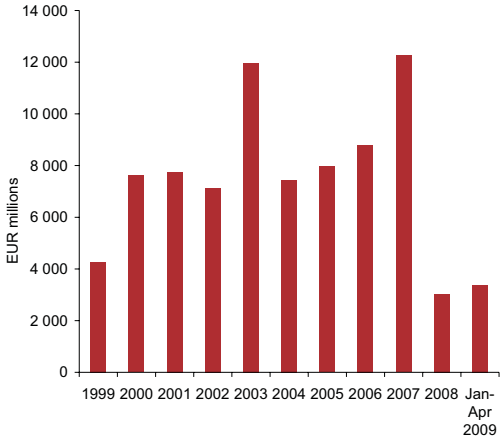


Source: Banco de Portugal.
Note: Estimates for bonds originated through securitisation operations are not available for June 2007.

Chart 4.5.12

ESTIMATE OF NET ISSUANCE OF BONDS BY PORTUGUESE BANKS

In Portugal and abroad

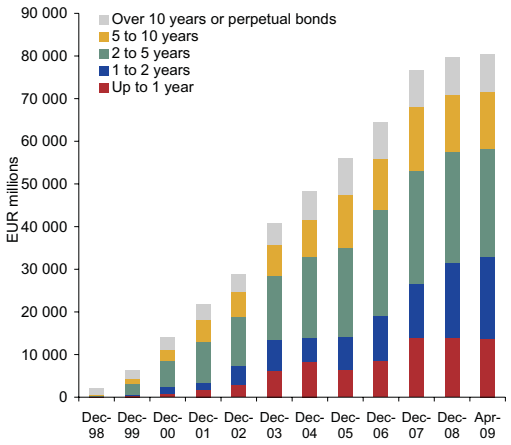


Sources: Bloomberg, Dealogic Bondware and Thomson Reuters.
Notes: Includes observations until the end of April. Includes issues by branches and subsidiaries of Portuguese banks abroad.

Chart 4.5.13

OUTSTANDING AMOUNTS OF BONDS ISSUED BY PORTUGUESE BANKS BY RESIDUAL MATURITY

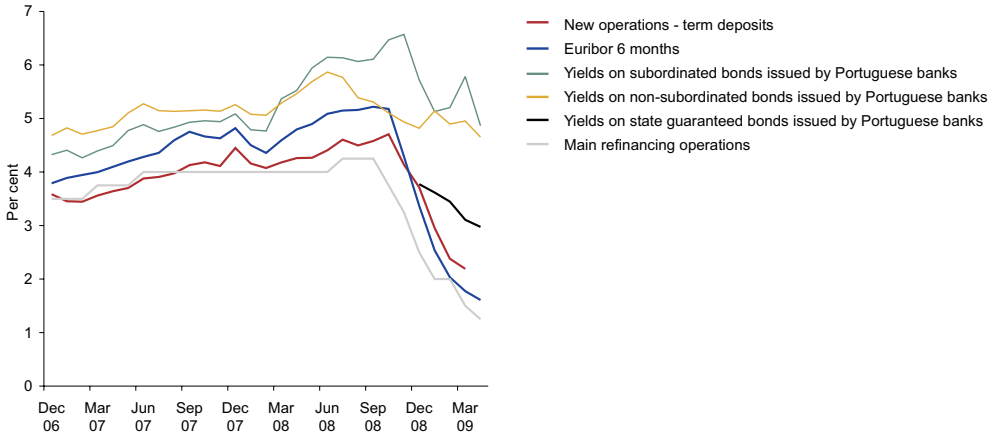
In Portugal and abroad



Sources: Bloomberg, Dealogic Bondware and Thomson Reuters.
Notes: Includes observations until the end of April. Includes issues by branches and subsidiaries of Portuguese banks abroad.

Chart 4.5.14

COST OF DEBT FINANCING FOR PORTUGUESE BANKS



Sources: Bloomberg and Banco de Portugal.
Notes: The series with yields on bonds issued by Portuguese banks refer to a weighted average of bonds from the *BCP*, *BPI*, *BES* and *CGD*. Bonds issued with state guarantee are subject to a commission to be paid to the government of 50 basis points, to which must be added the risk premium for the credit default swap of the bank itself (or similar banks, if there are no CDSs for this issuer) if the maturity is longer than one year.

markets.[43] These guarantees allow Portuguese banks to access medium-term financing in the wholesale markets, with a risk premium lower than that of non-guaranteed bonds (Chart 4.5.14). The banks, however, have to pay a 50 b.p. premium to the State, to which is added their credit default swap premium (or the premium of a similar bank if the issuer does not have one) if the security is issued for a maturity longer than one year. In 2008, there was only one bond issue with a state guarantee, by *CGD*, though other banks have already used the facility in 2009. In spite of a particularly bleak climate, Portuguese banks have succeeded in placing securitised debt even without the guarantee. In fact, only 45 per cent of the amount issued in the first four months of 2009 was backed in this way.

For shorter maturities, more use has been made of central bank financing, with unalleviated turbulence still holding its grip on the wholesale debt markets, specifically the interbank money markets. Since the summer of 2007, the ECB has taken a series of measures to ensure access to these markets, often in concerted action with other central banks. These measures have included making vast amounts of liquidity available, including in foreign currency, and an increase in maturities of refinancing operations.[44] From October of the year under review, as the world's financial system ailed badly, additional measures were deemed to be necessary. Refinancing operations were henceforth conducted at fixed rates and with full allotment, thus ensuring that all the financial institutions received the necessary financing. This measure will stay in force until at least the end of 2009. In addition, the corridor between the rates on the marginal lending and deposit facilities was temporary pegged down from 200 to 100 b.p., though the measure was relinquished at the end of January 2009. As a final point, the ECB decided in October that the list of eligible assets for collateral in Eurosystem credit operations would be temporarily enlarged.[45]

Against this background, in 2008 there was an increase in the net use of financing through central banks, as observed in other countries[46] (Charts 4.5.15 and 4.5.16 and Table 4.5.1). Overall, financing through this source increased by more than 8 billion euros during the year, while assets at central banks dipped marginally, in contrast with the strong growth at the end of 2007. The domestic banks followed suit, with a considerable increase in central bank financing, above all in the last quarter of the year. As for financing through other credit institutions, there were different thrusts in domestic and non-domestic banks. The domestic banks, for their part, decreased the net financing from this source, with fewer funds being involved and a reduction in interbank assets. This came on the back of a realignment of financing strategies as risk aversion and uncertainty came centre stage.[47] Non-domestic banks, however, made an increasing use of this source, part of which was tapped through the head office and branches of the group. So, as non-domestic banks boosted their financing through central banks and other credit institutions, reflecting the importance of intra-group financing, domestic banks moved away from the interbank money market and other wholesale financial markets and moved to central banks as their source, against a backdrop of risk aversion and information asymmetry problems.

(43) See "Box 2.1 *Measures taken by the Portuguese authorities relating to the financial system during the international financial crisis*", of this Report.

(44) In August 2007, the ECB started to conduct supplementary longer-term refinancing operations at 3-month maturities, followed by 6-month operations as and from March 2008. More recently, on 7 May 2009, the ECB announced that it would begin to conduct longer-term refinancing operations at 12 months maturities.

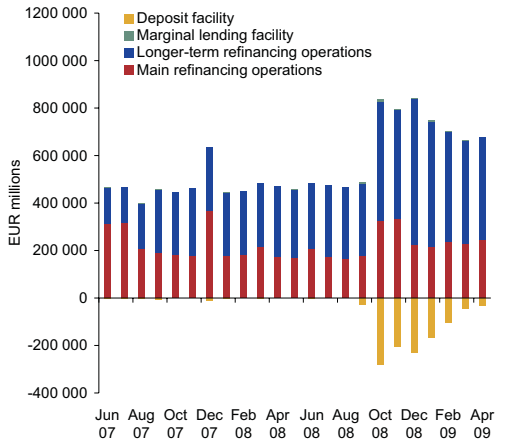
(45) This included acceptance as collateral in these operations of marketable assets issued in the euro area, denominated in US dollars, sterling pounds or yens; syndicated loans issued in euros governed by the law of the United Kingdom, debt instruments issued by credit institutions traded in a number of non-regulated markets (defined on the ECB website); and subordinated debt instruments backed by specific guarantees. In addition, the minimum rating for collateral accepted in Eurosystem credit operations was changed from A- to BBB-, except for asset-backed securities. In early September 2008, the ECB revised the risk control measures for Eurosystem credit operations. Among other measures, it set out more stringent criteria for asset-backed securities issued by entities having "close links" with the banks. This measure came into force in February 2009, though it had no impact on the collateral pools of Portuguese banks.

(46) During the first months of 2009, Portuguese banks made far less use of financing through the Eurosystem, in contrast with the trend observed in the euro area as a whole.

(47) See "Chapter 2 *Macroeconomic and Financial Risks*" of this Report.

Chart 4.5.15

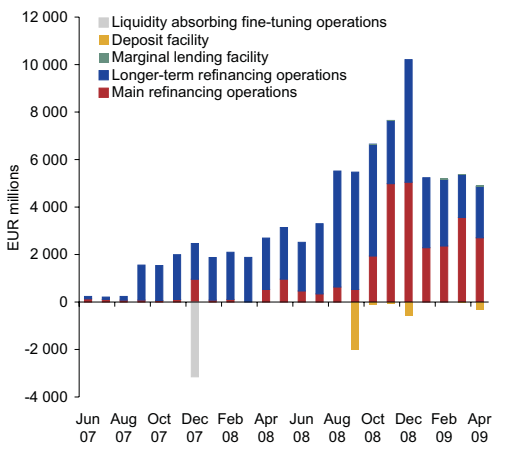
OUTSTANDING AMOUNTS ON CREDIT AND DEPOSIT OPERATIONS OF THE EUROSYSTEM



Source: ECB.

Chart 4.5.16

OUTSTANDING AMOUNTS ON CREDIT AND DEPOSIT OPERATIONS OF PORTUGUESE BANKS



Sources: ECB and Banco de Portugal.

Table 4.5.1

POSITION OF PORTUGUESE BANKS *VIS-À-VIS* OTHER CREDIT INSTITUTIONS AND CENTRAL BANKS
EUR millions

Banking system	Jun-07	Dec-07	Jun-08	Dec-08
Net resources from other credit institutions	**26 235**	**26 187**	**30 871**	**43 103**
of which *vis-à-vis* central banks	-3 210	-6 593	-1 113	3 905
Cash, claims and investment in central banks	**5 361**	**12 058**	**7 725**	**10 062**
Claims and investment in other credit institutions	**41 000**	**36 840**	**39 631**	**31 384**
in the country	7 259	8 208	8 223	11 183
abroad	33 741	28 632	31 408	20 201
head office and branches of the same institution	2 649	3 216	1 622	1 033
Resources from central banks	**2 151**	**5 465**	**6 612**	**13 968**
Resources from other credit institutions	**70 445**	**69 620**	**71 615**	**70 582**
in the country	5 905	7 125	6 605	8 291
abroad	64 540	62 495	65 010	62 291
head office and branches of the same institution	11 989	12 567	14 298	15 607

Domestic banks	Jun-07	Dec-07	Jun-08	Dec-08
Net resources from other credit institutions	**5 630**	**1 260**	**975**	**8 830**
of which *vis-à-vis* central banks	-2 382	-7 831	-1 545	2 144
Cash, claims and investment in central banks	**4 432**	**11 066**	**6 897**	**8 979**
Claims and investment in other credit institutions	**30 103**	**25 169**	**29 054**	**22 516**
in the country	5 294	5 842	5 761	8 670
abroad	24 808	19 327	23 293	13 846
head office and branches of the same institution	1	1	0	0
Resources from central banks	**2 050**	**3 235**	**5 351**	**11 123**
Resources from other credit institutions	**38 115**	**34 259**	**31 574**	**29 201**
in the country	4 261	5 084	4 708	6 079
abroad	33 854	29 176	26 867	23 122
head office and branches of the same institution	0	0	0	0

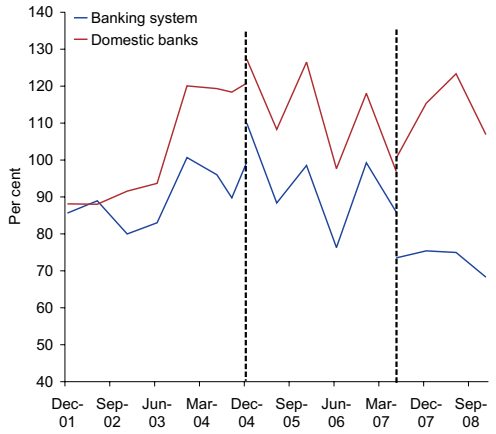
Source: Banco de Portugal.

The changes in the financing from central banks and credit institutions influenced the coverage ratio of interbank liabilities by highly liquid assets. These are defined as interbank assets and assets eligible as collateral for Eurosystem monetary policy operations (Chart 4.5.17). This ratio fell slightly during 2008, above all in the last quarter, as the international financial markets came close to stalling and banks increased their resource to central bank funding. The fall in the ratio was greater for domestic banks than for the remainder of the banking system, fundamentally because of the increase in liabilities from central banks, given that the fall in interbank assets was partially offset by a very substantial rise in assets eligible as collateral for Eurosystem monetary policy operations. At the same time, there was a rise in the dispersion of this indicator among domestic banks (Chart 4.5.18). It should be noted that the coverage ratio of interbank liabilities by highly liquid assets is still considerably lower for non-domestic banks, given their intra-group financing strategy. Fundamentally, the adjustments carried out by Portuguese banks in the structure of their financing provide the explanation for the move in this indicator. This included greater recourse to central banks, with a substantially lower refinancing risk, given the changes in the regulatory framework of Eurosystem's credit operations.

As the international financial crisis continues to plot its course, there is redoubled importance in accessing central bank funding. This has given incentives to banks to bolster their portfolio of assets eligible as collateral in Eurosystem monetary policy operations.[48] Throughout the year, the available eligible assets (that is, after deduction of the amount of financing obtained) grew by more than 110 per cent (65 per cent for domestic banks). The growth stemmed in part from reinforcement of the pool of collateral with credit claims, with covered bonds and above all with securities from securitisation opera-

Chart 4.5.17

COVERAGE RATIO OF INTERBANK LIABILITIES BY HIGHLY LIQUID ASSETS

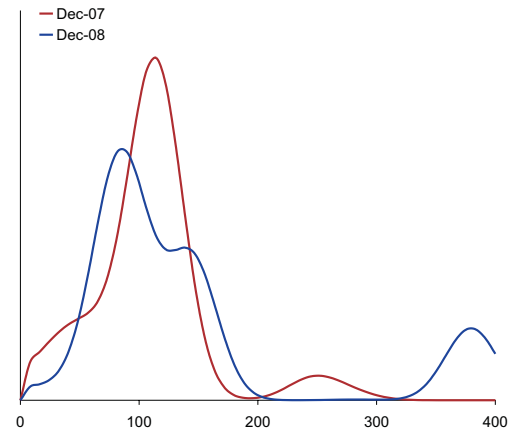


Source: Banco de Portugal.
Notes: The coverage ratio is defined as the ratio of highly liquid assets (interbank assets and debt securities eligible for monetary policy operations) to interbank liabilities. The 2004 break in the series is due to the introduction of new accounting standards, which also implied a redefinition of the banking institutions that were analysed. The 2007 break corresponds to an enlargement in the number of institutions analysed.

Chart 4.5.18

COVERAGE RATIO OF INTERBANK LIABILITIES BY HIGHLY LIQUID ASSETS OF DOMESTIC INSTITUTIONS

Empirical distribution



Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to non-parametric methods, namely to a Gaussian kernel that weights institutions by their assets.

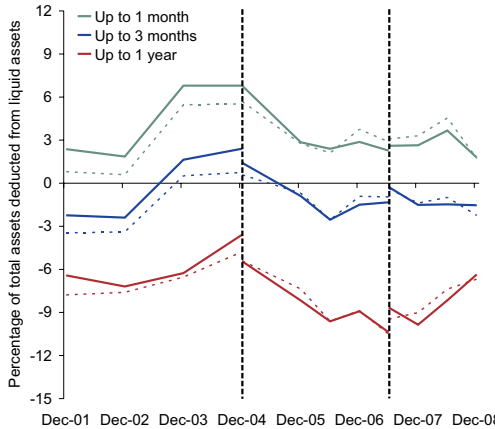
(48) As defined in *"The implementation of monetary policy in the euro area: General documentation on Eurosystem monetary policy instruments and procedures"*, marketable assets eligible for Eurosystem monetary policy operations include debt instruments issued or underwritten by central banks, public and private sector entities, and international or supranational institutions. In addition, as and from the start of 2007, non-marketable assets also became eligible as collateral for Eurosystem monetary policy operations. These include loans to non-financial corporations, to public sector entities and international or supranational institutions, as well as non-marketable retail mortgage-backed debt instruments. The quality of non-marketable assets is assessed through the Eurosystem Credit Assessment Framework (ECAF).

tions. Even though banks cannot submit as collateral assets issued or guaranteed by themselves, nor by any other entity with which they have "close links", it is possible to use securities stemming from securitisation of the institution itself, as long as there is a real and unconditional transfer to the associated special purpose vehicles of the assets underlying the operation.[49] In other words, the condition sine qua non is that these assets are wholly autonomous. The securitisation operations undertaken during the year under review therefore stem essentially from operations where banks purchase the securities resulting from these operations from the special purpose vehicles, similarly to other European banks.

Against an unremittingly sombre backdrop, Portuguese banks have nonetheless come in with favourable developments for the liquidity gaps in the system, except in the shorter term (Chart 4.5.19). The negative move in gaps up to one month comes partly on the back of an increase in financing through central banks, where the refinancing risk is small, bearing in mind the changes introduced in the regulatory framework of Eurosystem monetary policy operations. Liquidity gaps up to 3 months held steady overall and the gap up to one year came in on the upside. The last of these stemmed from the strong growth in liquid assets, with the emphasis, as already mentioned, on the move in assets eligible as collateral for Eurosystem monetary policy operations (Chart 4.5.20). In addition, irrevocable commitments assumed by third parties also helped push the indicator up.[50] Liabilities represented by securities came in with a smaller negative effect on the liquidity gap, given the fall in the recourse to this form of financing. As shown in Chart 4.5.21, there is a considerable dispersion in the liquidity gap for one year in domestic banks, with a widespread improvement witnessed in the course of the year.

Chart 4.5.19

LIQUIDITY GAPS IN CUMULATIVE MATURITY LADDERS



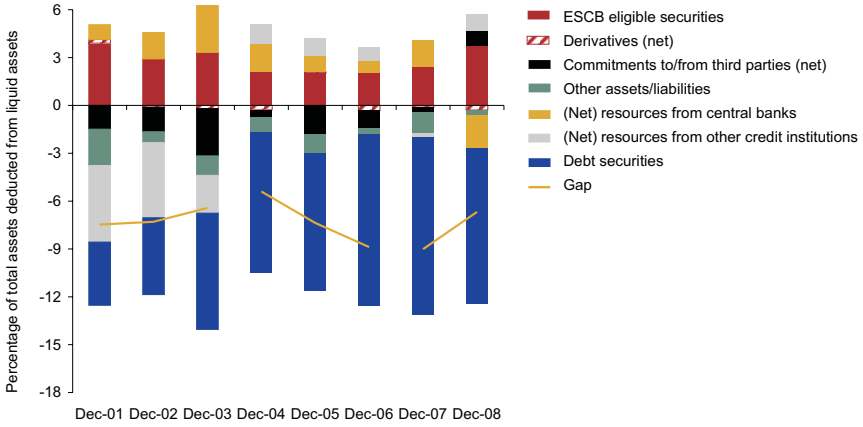
Source: Banco de Portugal.
Notes: The liquidity gap is defined as (liquid assets – volatile liabilities)/(assets – liquid assets) x 100 for each cumulative ladder of residual maturity. Calculations are based on Banco de Portugal Instruction no. 1/2000. Only financial institutions which take deposits are subject to this norm. The dashed lines show domestic institutions. The 2004 break in the series is due to the introduction of new accounting standards, which also implied a redefinition of the banking institutions that were analysed. The 2007 break corresponds to an enlargement in the number of institutions analysed.

(49) As defined in *"The implementation of monetary policy in the euro area: General documentation on Eurosystem monetary policy instruments and procedures"*, "close links" means a situation where the counterparty is linked to an issuer/debtor/guarantor of eligible assets through the fact that: i) the counterparty holds, directly or indirectly, through one or more other undertakings, 20 per cent or more of the capital of the issuer/debtor/guarantor; or ii) if the issuer/debtor/guarantor holds, directly or indirectly, through one or more other undertakings 20 per cent or more of the capital of the counterparty; or iii) a third party holds more than 20 per cent of the capital of the counterparty and more than 20 per cent of the capital of the issuer/debtor/guarantor directly or indirectly, through one or more undertakings.

(50) For liquidity purposes, irrevocable commitments assumed by third parties in the country and abroad (specifically irrevocable credit lines obtained and term contracts where the institution engages to accept a deposit) are considered as assets, as long as the operation will definitely or almost certainly take place on the given date. These assets are recorded in different columns according to their residual maturity.

Chart 4.5.20

LIQUIDITY GAP OF DOMESTIC INSTITUTIONS FOR A HORIZON UP TO ONE-YEAR

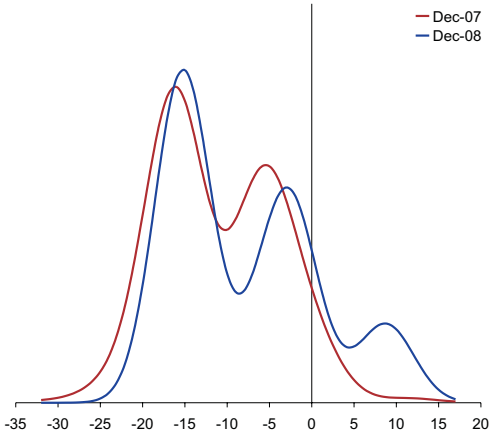


Source: Banco de Portugal.
Notes: The 2004 break in the series is due to the introduction of new accounting standards, which also implied a redefinition of the banking institutions that were analysed. The 2007 break corresponds to an enlargement in the number of institutions analysed.

Chart 4.5.21

LIQUIDITY GAP OF DOMESTIC INSTITUTIONS FOR A HORIZON UP TO ONE YEAR

Empirical distribution



Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to non-parametric methods, namely to a Gaussian kernel that weights institutions by their assets.

So, although the climate was particularly overcast, Portuguese banks succeeded in raising the finance for the relatively high expansion in credit seen during the year. The increase in deposits played a very big part in this adjustment, allowing the banks to cut their exposure to the wholesale debt markets. In addition, the use of central banks for financing helped to mitigate the impact of problems in accessing the wholesale financial markets. More recently, government guarantees on the issue of securitised debt have also helped to access financing in the wholesale markets, where, despite recent signs of some improvement, turbulence persists.

Overall, the recent trend towards reinforcing financing from the banks' own customer base, especially households, has been a positive development. If it continues, it will help to bolster the structural position of liquidity of Portuguese banks, keeping the credit-deposit ratio on a downward path and therefore reducing the exposure to the wholesale debt markets. The upbeat prospects for households' savings in 2009 could contribute to keeping this trend on course. However, the recent surge in deposits cannot be seen as sustainable for a long period of time, given that it has involved a marked adjustment of household portfolios, in a way that is unlikely to reoccur to the same extent. Seen from this point of view, the state guarantees and the changes in the Eurosystem framework are likely to continue to be important factors in ensuring access to financing by Portuguese banks, even in circumstances where the turmoil in the wholesale financial markets persists. In the current context, therefore, the liquidity situation of Portuguese banks is not likely to hamper credit, above all when the demand for bank loans is likely to fall.

As a final point, given the prominence of the problems posed by liquidity risk in the current financial crisis, efforts must continue to improve the analytical framework and the tools for prudential supervision of this component of risk in banking operations.

4.6. Credit risk

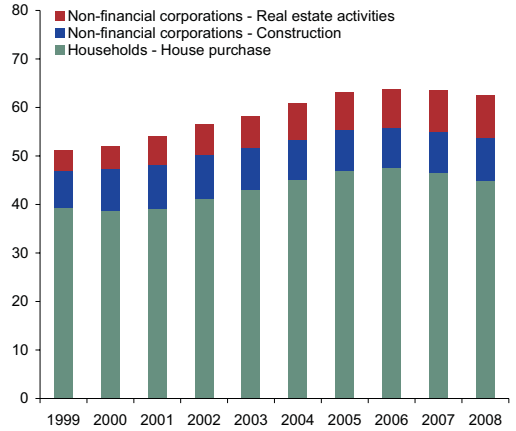
Main developments in exposure to the non-financial private sector

An analysis of credit risk in the banking system is extremely important, given the proportion of credit to total assets in the Portuguese system. At the end of 2008, the credit portfolio accounted for nearly two-thirds of total assets in Portuguese banks, on a consolidated basis, having risen slightly on a twelve-month earlier. With a major contraction in GDP seemingly in the offing, and unemployment on the rise in 2009, amidst uncertainty as to the extent and duration of the international economic and financial crisis, it is essential to assess the capacity of the banking system to withstand an ever-growing credit risk. At the beginning of the crisis market risk was the main challenge of banks, bringing with it plummeting asset values and difficulties tapping into the markets for financing. As the financial crisis was transmitted to economic activity, credit risk has become an increasing concern as a potential source of losses. In most advanced economies, the impact of the downturn on the capacity of companies and households to finance their debt burden has been somewhat alleviated by measures taken by the authorities. These included changes to the regulatory framework of monetary policy, cuts in monetary policy interest rates and state guarantees for issues of securitised debt (see "Box 2.1 *Measures taken by the Portuguese authorities relating to the financial system during the international financial crisis*", of this Report). In addition, a number of governments have announced stimulus packages designed to cushion the impact of the crisis on economic activity. In Portugal, a number of measures were put in place mid-year 2008. Salient among these was support for property owners and tenants having problems coping with financial commitments and households' support. The Budget for 2009 reinforced the support for households on lower incomes and introduced backing for smaller sized firms. In December 2008, following the European Economic Recovery Plan presented by the European Commission, the Portuguese government tabled a fiscal stimulus package focused mainly on public

Chart 4.6.1

BANKING SECTOR EXPOSURE TO THE HOUSING MARKET

Percentage of the loans portfolio



Source: Banco de Portugal.
Note: Loans to non-financial companies in construction and real-estate sector development and to individuals for housing as a percentage of the total loans granted to the non-financial private sector (adjusted for securitisation operations).

investment, support for companies and for exports (in particular through the creation of credit lines with more favourable interest rates and fiscal benefits), along with support for employment and social security.

Loans to individuals and resident non-financial companies grew robustly during 2008 even though there was a clear tendency towards slowdown throughout the second half of the year. The loan portfolio to individuals is only slightly higher than loans to non-financial companies, coming in at year-end at 53 per cent of the total, in line with the figures for the past decade. In structural terms, it is important to note the relatively high concentration on loans associated with the housing market, where lending to individuals for house purchasing standing at 45 per cent of lending to the private non-financial sector, and lending to companies in construction and real estate sectors accounting for around 17.5 per cent (Chart 4.6.1). Housing market related loans peaked in 2006, following which there was a dip in 2008, coming in around 1.3 p.p. lower than two years earlier. The fall stems from the fact that fewer loans for house purchase were granted, as the market has slowed over recent years. There is considerable variation in the risk profile of housing market related loans, with the risk associated with loans to individuals for house purchase much lower than the one associated with loans to companies. In historical terms, loans to individuals for house purchase have had very low levels of default, though the level in this segment in 2009 is likely to be higher than in the last recession. Nevertheless, default on loans to individuals for house purchase is likely to stay low, in spite of the overcast macroeconomic climate and the uncertainty concerning the duration and magnitude of the current economic and financial situation (see "Box 4.4 *Default in the non-financial private sector in the current crisis compared with the one in the 2003 recession*", of this Report). One of the reasons for the relatively optimistic forecast is that all the evidence points to the fact that the country has not seen overblown aggregate figures for house price rises; another is the dearth of any mortgage segment equivalent to the North American subprime market (see "Box 4.3 *Aspects of higher risk mortgage loans in the United States and Europe*", of this Report). To this should be added the impact of actions taken by monetary authorities, impacting directly on debt servicing, and government measures to support households. As for companies and operations connected to the housing sector, there are opposite trends: companies belonging to the construction sector have one of the highest default levels, but companies belonging to the real-estate sector have one of the lowest in the whole economy. The picture may now be colouring a different way, however, since both sectors were among the ones with the highest increase in default over the last year.

Another feature of credit in Portugal, which could constitute an additional risk, is the concentration of credit on large exposures[51] to the non-financial corporation sector. In this sense, exposures larger than 10 million euros account for half of loans total value, being originated by less than 1 per cent of the total number of counterparties (Table 4.6.1). At the other extreme, 12 per cent of loans value corresponds to 90 per cent of small exposures. During 2008, exposures to non-financial companies in the highest loan bracket went up more than the average rise in loans for the whole sector. It should be pointed that most of these exposures are to large companies, where the default rates are among the lowest in the banking system. Nevertheless, the current recession is far more serious than the previous one and as it unfolds it could bring more risk from large exposures to companies, all the more so because these companies benefited from a wave of credit in the year under review, when economic output was already sliding steeply. The Basel II agreement comes in here, in fact, as a factor that could well offset the likelihood of increased default in the current crisis as, in general terms, it sets out capital requirements that are higher for exposure to bigger companies (with all the other risk parameters unchanged). Support for this view can be found in the conclusions of a study where capital requirements in the Por-

(51) An exposure to a given company is defined as the sum of the loans of this company in the financial system.

Table 4.6.1

LOANS TO NON-FINANCIAL COMPANIES, BY SIZE OF EXPOSURE [a]
Year-on-year rates of change, per cent [b]

			Memo (in December 2008):		
	Dec-07	Dec-08	Lower limit [e] (10^3€)	Average outstanding amounts (10^3€)	Weight of the outstanding amounts in the total (%)
Total	11.9	10.6			100
Large exposures (*quantile 90*) [c]	12.0	11.1	475	3 893	88
of which: **very large exposures** (*quantile 99*) [c]	13.1	13.7	6 411	24 960	57
of which: **the largest exposures** (*quantile 99.5*) [c]	13.6	14.6	12 368	41 107	47
of which: **the maximum exposures** (*quantile 99.9*) [c]	14.9	14.7	47 256	116 595	26
Retail exposures [d]	11.1	6.9	-	56	12

Source: Banco de Portugal.
Notes: **(a)** Indicators based on information from the Central Credit Responsibilities database (CRC), with each exposure characterised by the total value of loans in the financial system of a specific non-financial company. Elements of the financial system were taken to be: all banks, savings banks, mutualist agricultural credit institutions, financial credit institutions, factoring operations, financial leasing companies, companies that issue or manage credit cards, finance houses for credit purposes and other resident financial intermediaries. **(b)** For the calculation of year-on-year rates of change, the lower limits of each exposure bracket were defined by taking December 2008 as the base point and successively applying the rates of change in total exposure for each period. **(c)** Quantiles defined on the basis of the number of companies ordered according to the exposure size. **(d)** Exposures where the amounts are less than the lower limit for Large exposures. They represent 90 per cent of the companies with debts to the institutions that are registered in the CRC. **(e)** The lower exposure in the whole of the exposures in the quantile.

tuguese system were analysed if the IRB methodology defined in Basel II had been adopted at year-end 2007. In fact, according to this study, the larger exposures (above 1 million euros) would present higher capital requirements (see the article "*An assessment of capital requirements under Basel II: the Portuguese case*, of this Report).[52] However, it should be stressed, that only a third of the exposures above 10 million euros[53] are within the category defined by Basel II as referring to large companies and therefore subject to more stringent capital requirements, keeping unchanged all other risk parameters.

The level of default in the non-financial private sector has risen substantially since the end of 2007 and has in fact topped the figure for the last recession in 2003. Even so, they are still at a reasonably moderate level (see "Box 4.4 *Default in the non-financial private sector in the current crisis compared with the one in the 2003 recession*", of this Report). In December 2007, overdue loans and other non-performing loans accounted for 1.5 per cent of loans total value (adjusted for securitisation). A year later the figure stood at around 2.0 per cent. In March 2009 it was 2.5 per cent. From early 2004 there had been a slight dip in the trend, but this was now reversed (Chart 4.6.2). The increase in default over the past year is also evident on the annual flow of new overdue loans, as a percentage of the overall amount for loans adjusted for securitisation. This figure stood at around 1 per cent, compared with around 0.5 per cent for 2007 (Chart 4.6.2). In March 2009, new overdue loans stood at around 1.1 per cent of total loans, the highest value for the decade. This indicator of default is particularly relevant as a measure for default in the financial system, since it is not influenced by write-offs that are covered by provisions, unlike the ratio of overdue loans and other non-performing loans to total loans. Non-financial companies normally experience higher levels of default than individuals, whatever the particular phase of the economic cycle under review. This is because of the predominance of housing loans in

(52) A more detailed description can be found in Antão, P. and Lacerda, A., (2009), "Credit Risk and Capital Requirements for the Portuguese Banking System", Banco de Portugal, *Working Paper* n. 8.

(53) In the study mentioned, the unit for analysis is the exposure of each financial group to a given company, while in this section, the unit of analysis is taken as system-wide exposure to a given company.

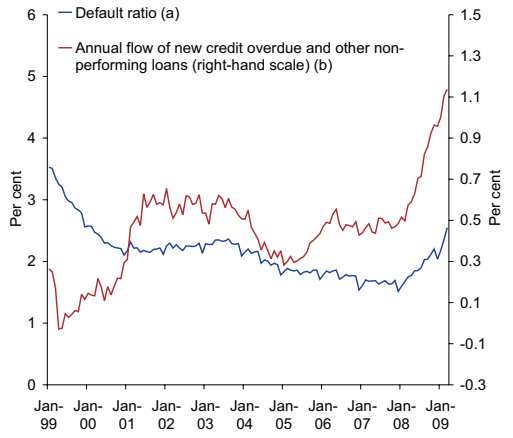
the latter group. In both groups, however, we are looking at considerable increases in 2008 and the early months of 2009. Concerning non-financial companies, in December 2007, new overdue credit and other non-performing loans accounted for 0.6 per cent of their loans, whereas the figure a twelve-month later was 1.3 per cent. The same ratio for individuals had moved from 0.4 per cent to 0.7 per cent in the same period. Within the figure for credit to individuals, default on loans to house purchase increased slightly, while default on credit for consumption and other purposes exhibited a substantial increase.

The increase in default as a proportion of total credit was seen in both the five major banking groups and in the other financial institutions in the system (Chart 4.6.3), although the ratio among the latter has increased more. This situation stems from the composition of the credit portfolio and the level of default in each category. Actually, in December 2008 the five major groups hold around 80 per cent of the loans to house purchase, which is traditionally lower on the default scale, but only around 54 per cent of the credit for consumption and other purposes. Typically, this is the credit segment with the biggest rates of default. The figures for the credit decomposition confirm the downward trend of the relative importance of the five major groups in the segment credit for consumption and other purposes. In terms of non-financial companies, which exhibit intermediate default ratios, the five biggest banking groups in December 2008 held around 68 per cent of loans granted, a figure that has been going down gradually over recent years.

In terms of provisions for credit risk, the rise in the indicators for default in 2008 found the banks with relatively stable specific provisions for overdue credit and non-performing loans, above the statutory minimums laid down by the Banco de Portugal (Chart 4.6.4).[54] Looking at provisions as a percentage

Chart 4.6.2

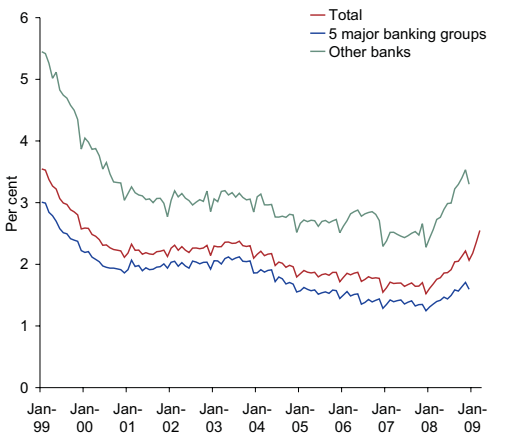
DEFAULT IN THE RESIDENT NON-FINANCIAL PRIVATE SECTOR



Source: Banco de Portugal.
Notes: **(a)** The default ratio is defined as overdue payments of capital and interest plus other non-performing loans, as a percentage of the loans to the resident non-financial private sector, corrected for securitisation. **(b)** Estimates of the annual flow of new overdue credit and other non-performing loans as a percentage of the loans, corrected for securitisation. The estimate of the annual flow of new overdue credit and other non-performing loans was calculated by adjusting the variation in the balance of overdue loans and other non-performing loans to write-offs/write-downs, reclassifications and, as and from December 2005, sales of overdue credit and other non-performing loans outside the banking system and not written-off from assets, reported on a quarterly basis as per Banco de Portugal Instruction no. 2/2007 and with information available only up to December 2008.

Chart 4.6.3

DEFAULT RATIO OF THE RESIDENT NON-FINANCIAL PRIVATE SECTOR

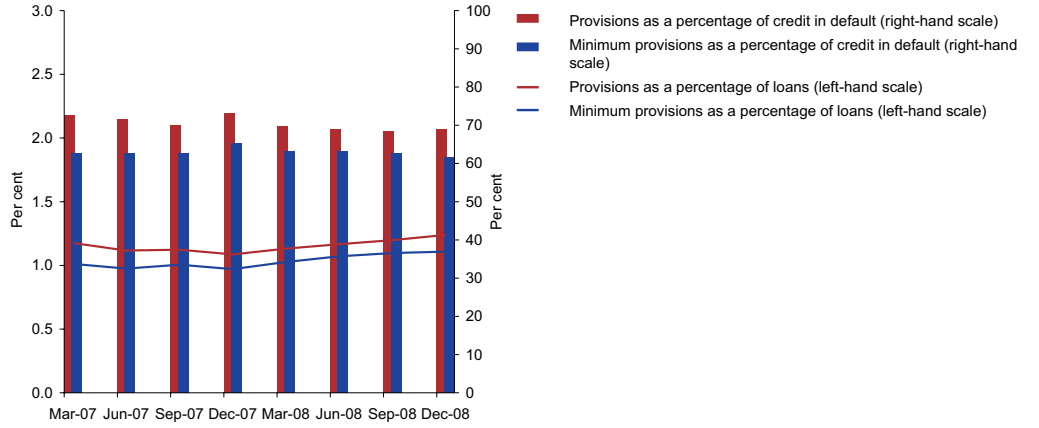


Source: Banco de Portugal.
Note: The ratio is defined as overdue payments of capital and interest plus other non-performing loans as a percentage of the loans to the resident non-financial private sector, corrected for securitisation.

(54) The analysis in this paragraph uses the prudential concept of default, which includes overdue credit at more than 90 days and other non-performing loans reclassified as overdue for the purposes of provisions, under the terms defined in Notice no. 3/95. For more details, see Instruction no.16/2004 and Notice no. 3/95 on *www.bportugal.pt/servs/sibap/sibap_p.htm*.

Chart 4.6.4

SPECIFIC PROVISIONS OF CREDIT



Source: Banco de Portugal.

of loans through the banking system, there was a year-on-year rise to end-2008 both in terms of minimum and existing provisions. In December 2008, existing provisions covered around 1.24 per cent of loans, compared with the minimum 1.11 per cent requirement. As for provisions as a percentage of credit in default, there was a fall in existing provisions in every quarter of 2008, compared with each of these periods in 2007. The fall in minimum provisions in December 2008, however, meant that the difference between existent and minimum provisions was only marginally less than in December 2007. This relative stability occurred in a period when default ratios were on the rise, as measured by the proportion of loans in default to total loans. This was common to most financial institutions (Charts 4.6.5 and 4.6.6), the same profile being visible whether through use of gross figures or figures net of specific provisions. There was also a rise of more than 20 per cent in the set-aside for impairment and provi-

Chart 4.6.5

EMPIRICAL DISTRIBUTION OF LOANS WITH DEFAULT/TOTAL LENDING

Gross values

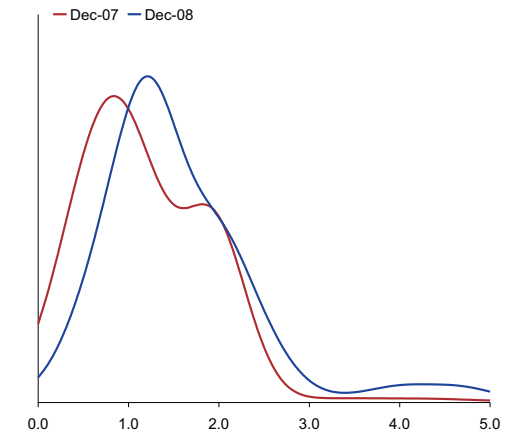
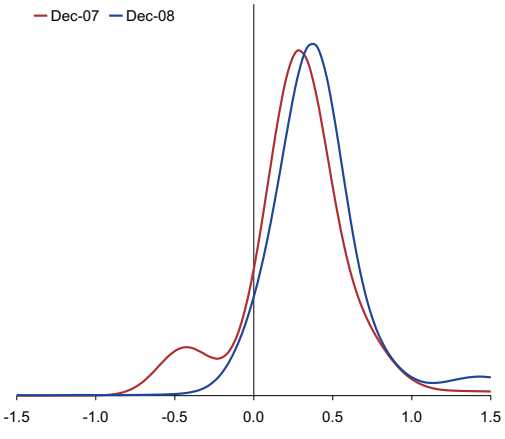


Chart 4.6.6

EMPIRICAL DISTRIBUTION OF LOANS WITH DEFAULT/TOTAL LENDING

Values net of specific provisions



Source: Banco de Portugal.
Note: The empirical distribution is obtained through a Gaussian kernel that weights institutions by their credit.

sions for overdue credit. These are consolidated figures for the year and they stem not only from actual but also from potential default.

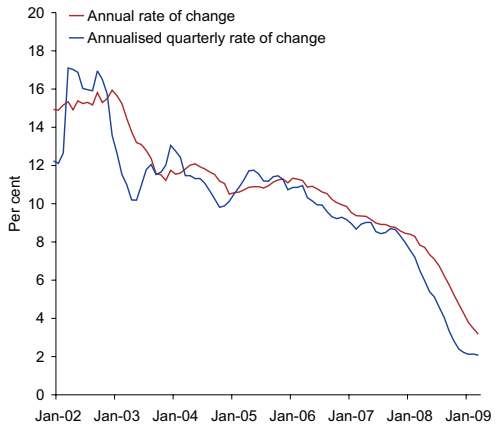
Exposure to individuals and related default

The growth in loans to individuals during the year slowed considerably, coming in at year-end at around 5 per cent, compared with 9 per cent in 2007. This slowdown follows a trend that set in around mid-2006, worsening manifestly in the second half of 2008. Looking at a breakdown in loans to individuals for house purchase and loans for consumption and other purposes, there was a considerable decrease in the growth rate of both segments. The growth rate for housing loans in December 2008 was around 4 per cent (compared with 8 per cent in December 2007), and the growth rate in credit for consumption and other purposes stood at 6 per cent, compared with 11 per cent at end-2007 (Charts 4.6.7 and Chart 4.6.8). In March 2009, the growth rates on loans for house purchase and for consumption and other purposes went down too, falling to around 3 per cent in both segments. The most recent indication of the dynamics of loans (assessed by the annualised quarterly rates of change and calculated on the basis of seasonally adjusted figures) points clearly to additional falls in the annual rates of change during the coming months (Charts 4.6.7 and 4.6.8).

The slowdown in loans to individuals was observed in the five biggest banking groups and in the other financial institutions in the system, though the pace in the latter slackened less. Smaller banks, therefore, had bigger rates of growth both for housing loans and loans for consumption and other purposes (Charts 4.6.9 and 4.6.10). The difference between the rate of growth in loans granted by the five biggest banking groups and those granted by the other banks is greater in the segment relating to loans for consumption and other purposes than in housing loans. The figures show that loans for consumption and other purposes granted by the five biggest banking groups rose by 1 per cent in December 2008, compared with 13 per cent in the other financial institutions. The differences surfacing between the two groups may be related to different criteria for approving credit, with the five biggest banking

Chart 4.6.7

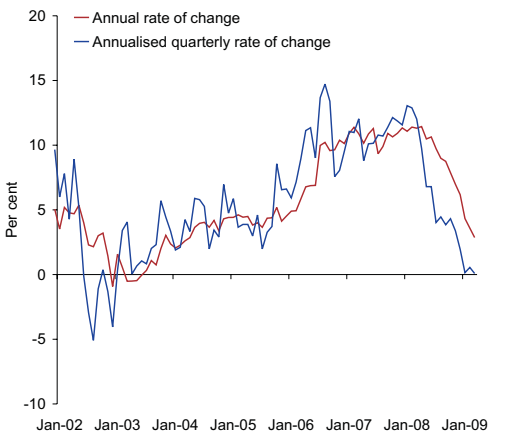
LOANS GRANTED TO INDIVIDUALS
For housing purposes



Source: Banco de Portugal.
Note: The annual and quarterly growth rates are obtained from the relation between the outstanding amount of bank loans, adjusted for securitisation operations, and the monthly transactions, which are calculated from the outstanding amounts corrected of reclassifications, write-offs/write-downs, exchange rates and price revaluations. The quarterly rate of change is seasonally adjusted. Last figure: March 2009.

Chart 4.6.8

LOANS GRANTED TO INDIVIDUALS
For consumption and other purposes

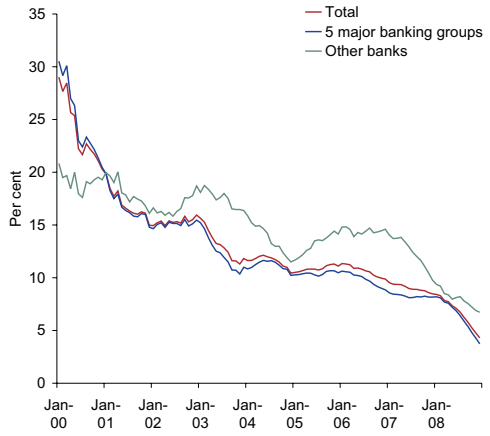


Source: Banco de Portugal.
Note: The annual and quarterly growth rates are obtained from the relation between the outstanding amount of bank loans, adjusted for securitisation operations, and the monthly transactions, which are calculated from the outstanding amounts corrected of reclassifications, write-offs/write-downs, exchange rates and price revaluations. The quarterly rate of change is seasonally adjusted. Last figure: March 2009.

Chart 4.6.9

ANNUAL RATE OF CHANGE ON LOANS GRANTED TO INDIVIDUALS

For housing purposes

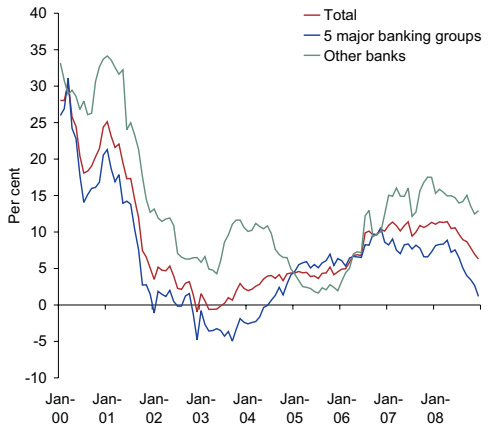


Source: Banco de Portugal.
Note: The annual growth rate is obtained from the relation between the outstanding amount of bank loans, adjusted for securitisation operations, and the monthly transactions, which are calculated from the outstanding amounts corrected of reclassifications and write-offs/write-downs. Last figure: December 2008.

Chart 4.6.10

ANNUAL RATE OF CHANGE ON LOANS GRANTED TO INDIVIDUALS

For consumption and other purposes



Source: Banco de Portugal.
Note: The annual growth rate is obtained from the relation between the outstanding amount of bank loans, adjusted for securitisation operations, and the monthly transactions, which are calculated from the outstanding amounts corrected of reclassifications and write-offs/write-downs. Last figure: December 2008.

groups curtailing loans more strictly than the others. In fact, to judge by the results of the Bank Lending Survey carried out in the five biggest banking groups, there looks to have been a tightening of the criteria for the approval of loans to individuals during the year (Chart 4.6.11). At the same time, they are also indicating that there is less of a demand for loans from this segment, above all for housing. This trend became more solid as the year went on, confirming the move to steady slowdown in the intra-annual path of loans to individuals (Charts 4.6.7 and 4.6.8).

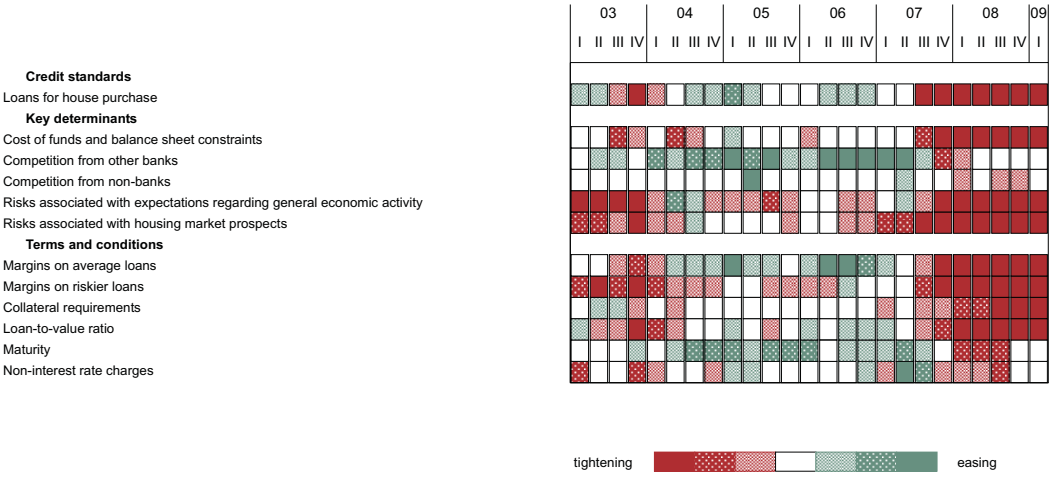
The findings of the survey show that the main reasons for more stringent terms on credit approval were the rise in financing costs, balance sheet restrictions and a less upbeat assessment of the prospects for the economy. In terms of loans for housing, the risks associated with the housing market prospects have had a negative impact on the granting of credit. In terms of credit for consumption and other purposes, tighter supply conditions are associated with the risk of greater difficulty of individuals to pay back loans and the risks that are inherent in guarantees. As a result, the banks are demanding stronger guarantees for housing credit, lower loan-to-value ratios and a higher cost for each unit of risk is being charged (Chart 4.6.11). In terms of credit for consumption and other purposes, the five major banking groups in the survey reported that their policy reflected the rise in credit risk carrying over to the spreads on offer for new operations, along with commissions and other charges not related to interest.

Throughout the year and in the first months of 2009, there was a wider spread both in loans for house purchase and loans for consumption and other purposes (Charts 4.6.12 and 4.6.13). So, the differential between the interest rate on new operations of credit for housing purposes and Euribor at six-months was 0.4 p.p. in December 2007, but had risen to 1.6 p.p. in December 2008. In the first months of 2009, the differential was settling at a the slightly lower average figure of 1.2 p.p. Part of the reason for the recent increase in the differential is the time it is taking for the banks to pass on the cuts in interest rates made by the ECB, along with the risk premium that still attaches to the money market, but even so, the differential is likely to stabilise at a higher level than in recent years because of the

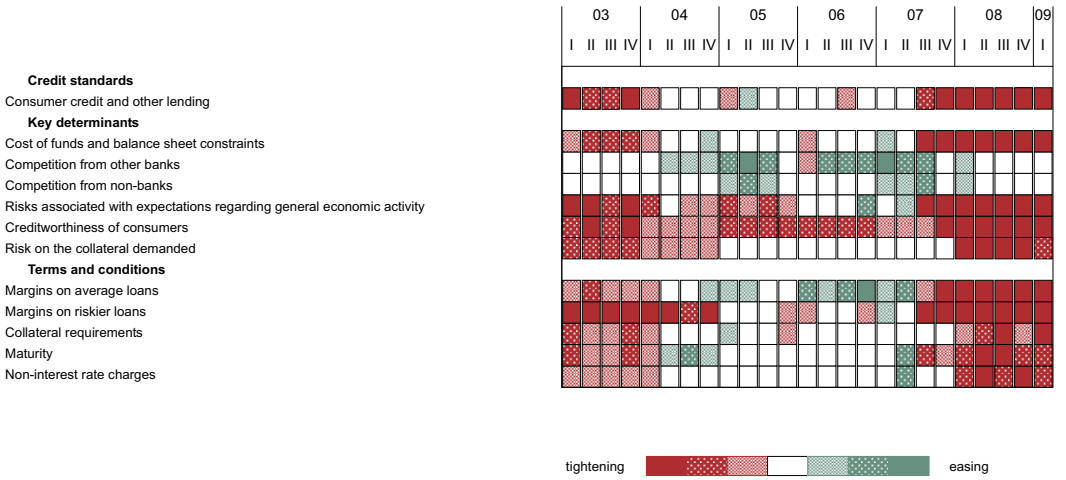
Chart 4.6.11

BANK LENDING SURVEY

Loans granted to individuals – for housing purposes



Loans granted to individuals – for consumption and other purposes



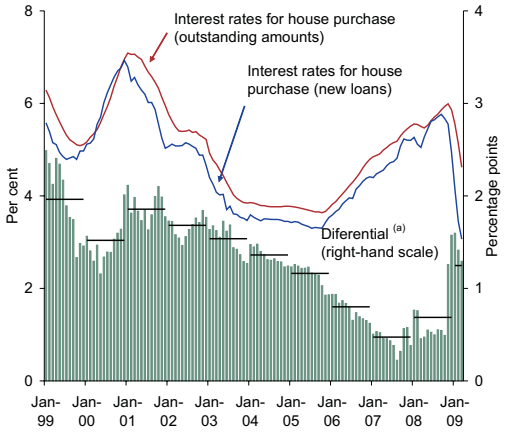
Source: Banco de Portugal.

economic and financial crisis that the world is facing and the rise in credit risk. Where credit for consumption is concerned, the spread for new operations moved from 5.6 p.p. in December 2007 to 7.1 p.p.in December 2008 and more recently to 7.8 p.p. in March 2009.

As increased credit risk materialises, it generates a higher default rate, measured by the ratio of overdue credit and other non-performing loans as a percentage of the value of loans, adjusted for securitisation. At year-end 2008, this reached a figure close to what was recorded in 2003, cutting into the falling trend that had been perceived since then (see Chart 4.6.14 and "Box 4.4 *Default in the non-financial private sector in the current crisis compared with the one in the 2003 recession*", of this Report). The increase in default came against a backdrop of higher interest rates, creating additional pressure on individuals that had recently been using bank credit as a way of keeping a high consumer profile. The worsening of default has been particularly serious in the segment of credit for consumption and other purposes. In December 2008, the rate stood at 4.7 per cent, compared with 3.6 per cent in

Chart 4.6.12

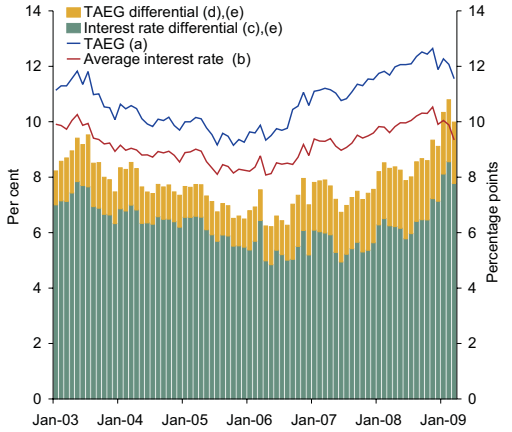
INTEREST RATES ON LOANS GRANTED TO INDIVIDUALS FOR HOUSING PURPOSES



Source: Banco de Portugal.
Note: (a) Difference between the interest rate on new loans and six-months Euribor. Latest figure: March 2009.

Chart 4.6.13

INTEREST RATES ON NEW LOANS TO INDIVIDUALS FOR CONSUMPTION AND OTHER PURPOSES



Source: Banco de Portugal.
Notes: (a) APRC: Annual percentage rate of change. (b) Average interest rate calculated on the basis of rates of new bank loans by initial rate fixation period, weighted by the amounts of new loans in each fixation period. (c) The interest rate differential (lower bar) was calculated using the six-month Euribor, the one-year Euribor and the yield of Portuguese Treasury bonds with a residual maturity of 5 years where the initial rate fixation is of up to 1 year, over 1 and up to 5 years and of over 5 years, respectively. (d) The APRC differential (upper lines) corresponds to the difference between the APRC and the average interest rate on new bank loans for consumption. (e) The differentials refer to the right-hand scale. Latest figure: March 2009.

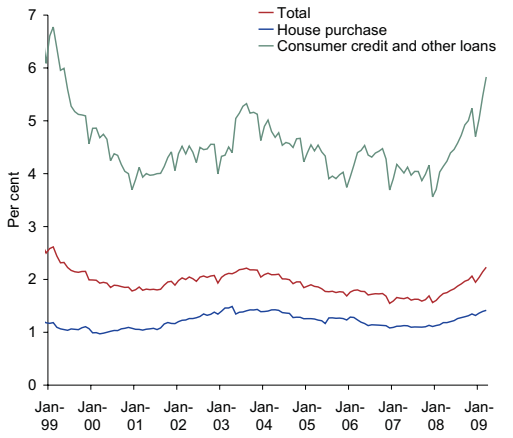
December 2007. Housing credit defaults also rose, though in a more moderate way. In this sense, the end of the year saw overdue credit and other non-performing loans accounting for around 1.3 per cent of loans granted, as against 1.1 per cent in December 2007. The rise in credit risk materialisation is even clearer if the flow of new overdue credit and other non-performing loans is analysed, as at the end of the year it is higher than the figure for 2003 (Chart 4.6.15). In 2007, new overdue credit and non-performing loans accounted for 0.4 per cent of total loans granted to individuals (adjusted for securitisation), whereas in 2008 the figure stood at a around 0.7 per cent.

The bleak macroeconomic framework and the uncertainty regarding the extent of the after-shocks from the financial crisis on economic activity and unemployment are likely to generate more default in the segment of credit to individuals, although the default level will probably stay within bounds that do not raise financial stability concerns. One of the reasons for this is that much of the credit to individuals is for house purchase on an owner-occupier basis and most of these loans are at variable rates, with most of the refixing periods being three and six months. This chimes in well with the low interest environment, which is likely to be the order of the day in the current macroeconomic framework (see "Box 4.2 *The main characteristics of loans to households for house purchase in Portugal*", of this Report). On top of this, Portuguese households on lower incomes tend not to play a big part in the credit market for house purchase compared with higher income households or the average for the euro area. There is also the fact that no subprime loan segment exists in Portugal (see "Box 4.3 *Aspects of higher risk mortgage loans in the United States and Europe*", of this Report). As a final point, the available evidence suggests that there have not been in aggregate terms any house price spikes. So, although the near future does not bode well, with an increase in unemployment impacting on the ability of some individuals to honour the debts, there seems to be little likelihood of the situation affecting financial stability in any substantial way.

Chart 4.6.14

DEFAULT RATE ON LOANS

Individuals

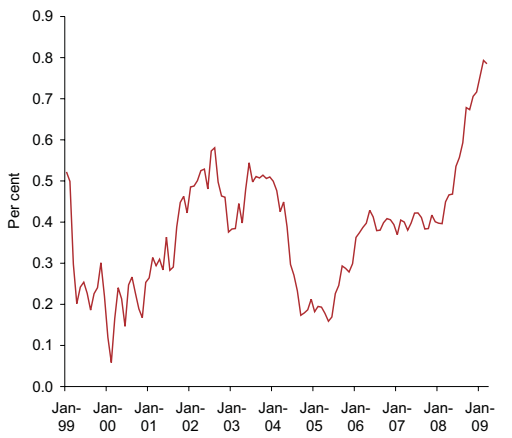


Source: Banco de Portugal.
Note: The ratio is defined as with overdue payments of capital and interest and other non-performing loans as a percentage of the loans to individuals, corrected for securitisation. Latest figure: March 2009.

Chart 4.6.15

ANNUAL FLOW OF OVERDUE LOANS AND OTHER NON-PERFORMING LOANS

Individuals



Source: Banco de Portugal.
Notes: Estimates of the annual flow of new overdue credit and other non-performing loans as a percentage of the loans, corrected for securitisation. The estimate of the annual flow of new overdue credit and other non-performing loans was calculated by adjusting the variation in the balance of overdue loans and other non-performing loans to write-offs/write-downs, reclassifications and, as and from December 2005, sales of overdue credit and other non-performing loans outside the banking system and not written-off from assets, reported on a quarterly basis as per Banco de Portugal Instruction no. 2/2007 and with information available only up to December 2008. Latest figure: March 2009.

Exposure to the non-financial corporate sector and related default

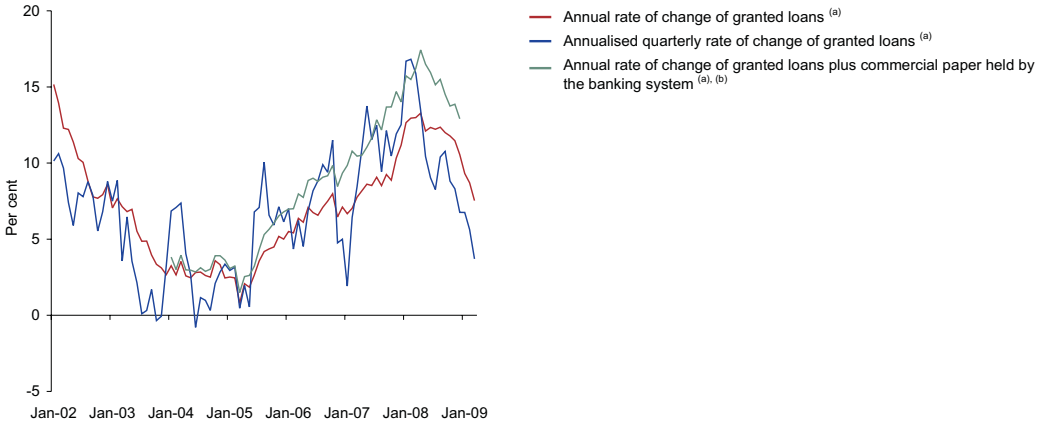
Bank lending to non-financial companies grew apace during the first months of the year, though the momentum slowed in March and ebbed even more from the last quarter onwards. In December 2008, the observed rate of growth was only marginally lower than the one in December 2007, coming in at around 11 per cent, clearly higher than the growth of housing loans and loans for consumption and other purposes. In March 2009, the slowdown in bank lending to non-financial companies ratcheted down again, with a year-on-year variation of 7.5 per cent. The annualized quarterly rate of change, using seasonally adjusted figures, showed the same trend, and the prospects are for another ratchet down in credit to non-financial companies in the next few months (Chart 4.6.16).

Banking system exposure to non-financial companies is not limited to loans, since financing these companies has also involved taking substantial amounts of securitised debt, above all in the form of commercial paper.[55] In fact, in the current context, commercial paper has become an important part of the panoply of short-term financing instruments for non-financial companies, and this can be put down in part to problems associated with the issue of debt securities at longer terms. The growth rate for commercial paper stood at around 20 per cent in December 2008, over and against 25 per cent in December 2007. In terms of the sectors where commercial paper is issued, it is issued mainly by holding companies, and by companies in the sectors of "Transport, post and telecommunications" and "Production and distribution of electricity, gas and water" (Chart 4.6.17). This illustrates the importance of commercial paper as a short-term financing instrument used by large companies. Currently, the banks are the major takers of commercial paper, continuing a trend that has strengthened over recent years.

(55) In December 2008, commercial paper issued by non-financial companies accounted for about 85 per cent of the securities issued by this sector and taken by banks. This proportion raised about 5 p.p. over 2008.

Chart 4.6.16

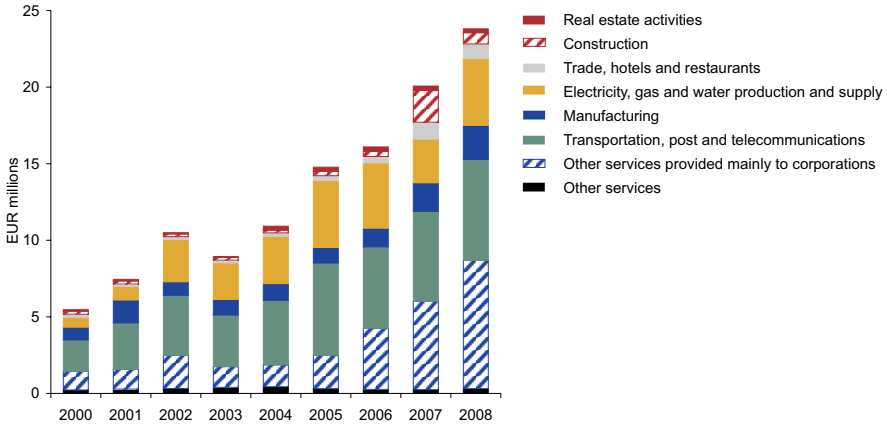
CREDIT GRANTED TO NON-FINANCIAL COMPANIES



Source: Banco de Portugal.
Notes: (a) The annual and quarterly growth rates are obtained from the relation between the outstanding amounts of bank loans (or outstanding amount of bank loans plus commercial paper), adjusted for securitisation operations, and the monthly transactions, which are calculated from the outstanding amounts corrected of reclassifications, write-offs/write-downs, exchange rates and price revaluations. The quarterly rate of change is seasonally adjusted. (b) Commercial paper held by the banks is measured by short-term securities issued by non-financial corporations and held in the portfolios of financial institutions.

Chart 4.6.17

COMMERCIAL PAPER
End-of-year values, by issuing sector

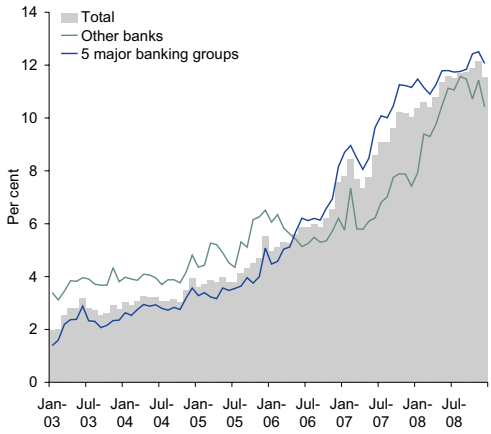


Source: Banco de Portugal.
Note: Some companies in the aggregate designated as "Other services provided mainly to corporations" were reclassified on the basis of what was understood as their main activity.

In December 2008, around 65 per cent of commercial paper was held in the banking system, compared with 56 per cent and 47 per cent in 2007 and 2006, respectively. As a result, there has been a rise in the proportion of commercial paper in the credit granted to non-financial companies (Chart 4.6.18). Given this, it is important to analyse a wider aggregate of financing for non-financial companies, encompassing loans and short-term debt securities issued by the sector and held by the banks. This aggregate illustrates the high level of bank exposure to non-financial companies, moving in tandem with bank loans, that is, with higher growth rates at the start of 2008 and then a slowdown (Chart 4.6.16).

Chart 4.6.18

PROPORTION OF COMMERCIAL PAPER HELD BY BANKS IN CREDIT GRANTED TO NON-FINANCIAL COMPANIES



Source: Banco de Portugal.
Note: Credit is taken to be loans granted and commercial paper held by the banks, this last being measured by short-term securities issued by non-financial corporations and held in the portfolios of financial institutions.

The growth rate for lending to non-financial companies was not uniform across different sectors nor in terms of size of the exposure. In particular, bigger loans have been showing higher growth rate. The bracket for loans of more than 10 million euros increased by around 14 per cent in 2008, a fact that may relate to the difficulties that large companies are having with take-up of securitised debt on the market (Table 4.6.1). In terms of concentration per sector for loans to non-financial companies, the sectors of construction and real-estate account for around 40 per cent of loans granted to non-financial companies (Table 4.6.2).

Table 4.6.2

LOANS GRANTED TO NON-FINANCIAL COMPANIES [a]
End-of-period annual rate of change, per cent

	2004	2005	2006	2007	2008		Weight in total
					Jun.	Dec.	Dec. 2008
Total	2.5	5.0	7.1	11.2	12.3	10.6	100.0
By branch of activity: [b]							
Agriculture, livestock, hunting, forestry and fishing	5.0	4.5	10.0	16.1	20.7	22.0	1.7
Mining	-6.7	0.6	-5.1	4.5	12.4	13.9	0.4
Manufacturing	-3.8	-3.0	0.7	7.9	5.9	7.7	12.6
Electricity, gas and water production and supply	-2.0	37.9	-11.3	13.7	31.8	47.8	2.8
Construction	6.0	10.7	5.4	10.7	12.8	8.6	19.2
Services	3.2	4.2	9.9	11.8	12.7	10.2	63.3
of which:							
Real estate activities	13.9	11.9	12.9	14.4	14.2	8.5	19.7
Other services provided mainly to corporations	-1.7	6.7	13.8	16.6	13.1	14.0	15.2
Trade, hotels and restaurants	2.0	3.1	7.1	6.3	10.9	7.5	17.3
Transportation, posts and telecommunications	-4.5	-10.6	0.7	11.0	14.6	18.3	5.9

Source: Banco de Portugal.
Notes: (a) Rates of change are calculated on the basis of the ratio of end-of-period outstanding amounts of bank loans and transactions, which are derived from outstanding amounts adjusted for reclassification. They are also adjusted for securitisation operations, write-offs and exchange rate and price revaluations. (b) The allocation of loans by branch of activity is calculated on the basis of the structure of the Credit Register (*Central de Responsabilidades de Crédito)*.

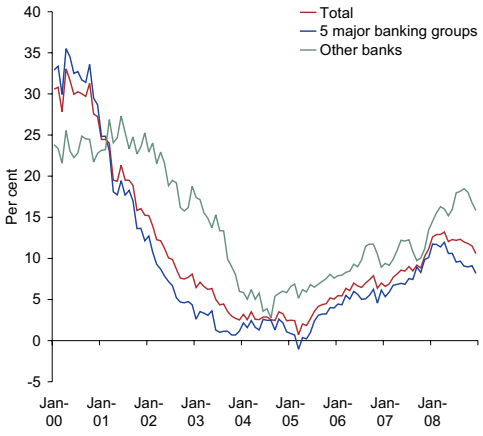
In 2008, growth in loans granted by the five biggest Portuguese banking groups to non-financial companies was clearly below what was seen in the remaining financial institutions, where the increase was around 13 per cent in 2007, moving up to 16 per cent in 2008. This is in marked contrast to what was happening to the banking system as a whole, which slowed down in 2008 compared with 2007 (Chart 4.6.19). This kind of situation is typical of a recession, when smaller banks tend to take on some of the loans which are not being picked up by the bigger banking groups. As for the commercial paper held in the banking system, in December 2008, the five biggest banking groups held around 72 per cent of the commercial paper issued by non-financial companies and taken by the banks. This is lower than the 77 per cent recorded in December 2007. For the five biggest banking groups, 2008 saw a smaller contribution from commercial paper in the growth rate for credit granted to non-financial companies (Chart 4.6.20). The other financial institutions come in with a different picture: here, commercial paper has increased its share in the rate of change to credit granted in 2008, contrasting with the little growth in this constituent over the last years. Overall, the wider credit aggregate (which includes loans and commercial paper held by the banking system) recorded growth higher than loans, both for the five biggest banking groups and for the other financial institutions.

The replies from the banks to the Bank Lending Survey show that requests for loans or credit lines from non-financial companies decreased throughout the year. In the first quarter of 2009, however, there was a slight rise over the previous three-month period, above all for short-term loans. In addition, banks reported that they were expecting more requests in the second quarter of the year, apart from short-term loans. This move seems to be related fundamentally with debt restructuring, and, to a lesser degree, stock and working capital financing. In the first quarter of 2009, according to the banks, companies were unable to generate funds internally and this was a crucial factor in the higher number of loan requests. In terms of supply, the survey shows that the banks involved were tightening the loan criteria for non-financial companies as the year progressed and into the first quarter of 2009 (Chart 4.6.21). These more stringent conditions stemmed above all from the perceived risks to economic activity in general, above all from the third quarter of the year, and the risks in some specific sectors, al-

Chart 4.6.19

LOANS GRANTED TO NON-FINANCIAL COMPANIES

Annual rate of change

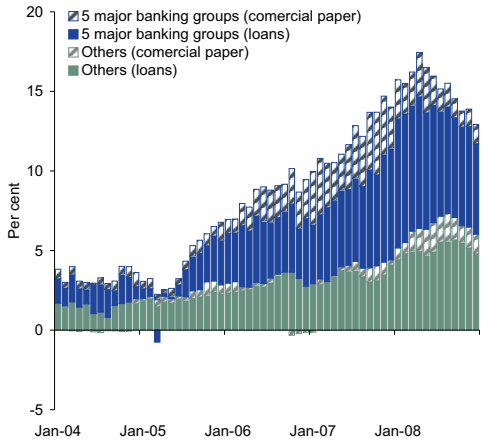


Source: Banco de Portugal.
Note: The annual growth rate is obtained from the relation between the outstanding amount of bank loans, adjusted for securitisation operations, and the monthly transactions, which are calculated from the outstanding amounts corrected of reclassifications and write-offs/write-downs. Latest figure: December 2008.

Chart 4.6.20

LOANS GRANTED AND COMMERCIAL PAPER HELD BY BANKS

Decomposition of the annual rate of change

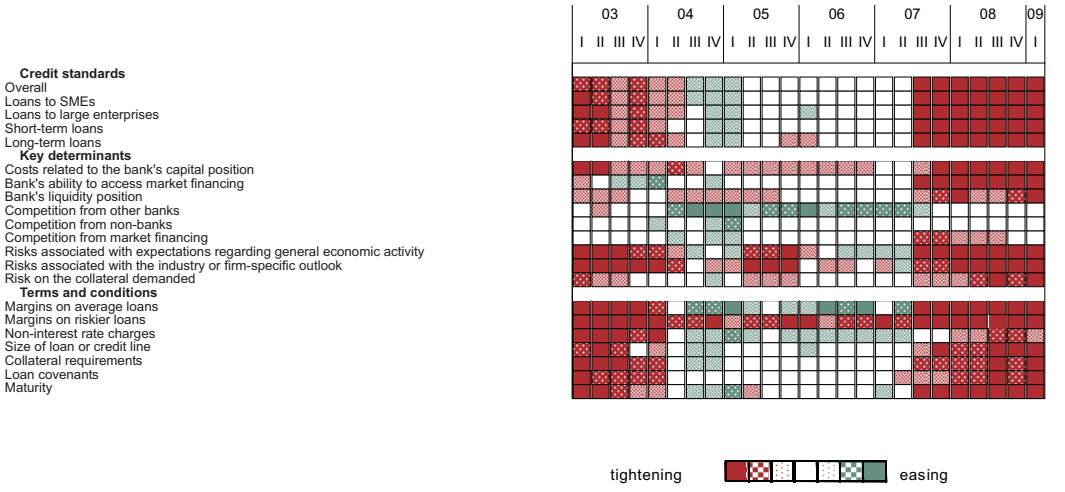


Source: Banco de Portugal.
Note: Commercial paper held by the banks is measured by short-term securities issued by non-financial corporations and held in the portfolios of financial institutions. Latest figure: December 2008.

Chart 4.6.21

BANK LENDING SURVEY

Loans granted to non-financial companies



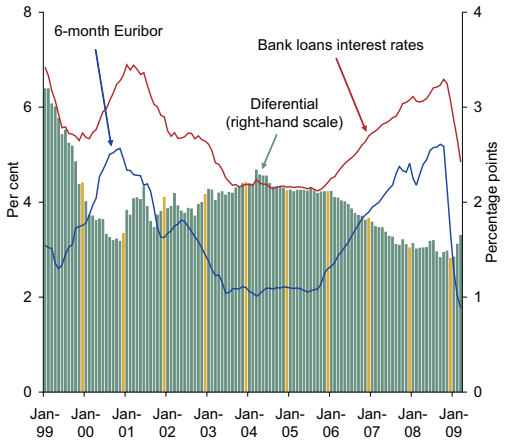
Source: Banco de Portugal.

lied with the increasing cost of capital and worsening conditions for the banks to tap into the market for financing, especially in the first half of the year. There are other points too, though of less import: the banks' liquidity situation and the risks associated to guarantees. As credit tightened, so interest rate spreads rose. Throughout the first half of the year, there was an increase in the spreads related to end-of-period balances, and although they were slight, they were in part an indication of the gradual transmission of changes in rates for new loan operations on the rates for balances (Chart 4.6.22). And it was not only spreads that were affected: the banks reported a leaner approach in general to other contract terms, highlighting the shorter maturities for new contracts and the lower amounts on offer. These developments seem to indicate that on-going difficulties in access to wholesale financing markets. Some banks considered that the difficulties were considerable, especially for medium to long-term loans and for securitisation. The maturity profile for outstanding bank loans to non-financial companies continued to lengthen for terms of more than five years, whose contribution to the variation of total outstanding bank loans presented a significant increase through the year and into the first months of 2009 (Chart 4.6.23). With the banks indicating shorter maturities as a factor conditioning approval of loans and credit lines to non-financial companies, the shift in maturity profile seems to have knocked on restructured loans that had already been contracted and the replacement of debt instruments by bank loans, given the difficulties of take-up on longer-term debt securities if good terms are being sought.

At the end of the year 2008, overdue credit and other non-performing loans accounted for more than 2 per cent of the balance on loans granted to non-financial companies. This was well above the figure for a twelve-month earlier, and was close to the figures recorded in 2003 (Chart 4.6.24). Among the factors behind this worsening ratio were the substantial increase in new overdue credit and other non-performing loans and less credit written down against assets. New overdue credit and other non-performing loans at the end of 2007 had stood at around 0.6 per cent of the average balance on loans in the sector, adjusted for securitisation; a year later and the figure was 1.3 per cent. This is substantially higher than what was seen in the previous recession in 2003 (see "Box 4.4 *Default in the non-financial private sector in the current crisis compared with the one in the 2003 recession*", of this Report).

Chart 4.6.22

INTEREST RATES IN THE MONEY MARKET, LOANS GRANTED TO NON-FINANCIAL CORPORATIONS AND THE RELATED DIFFERENTIAL

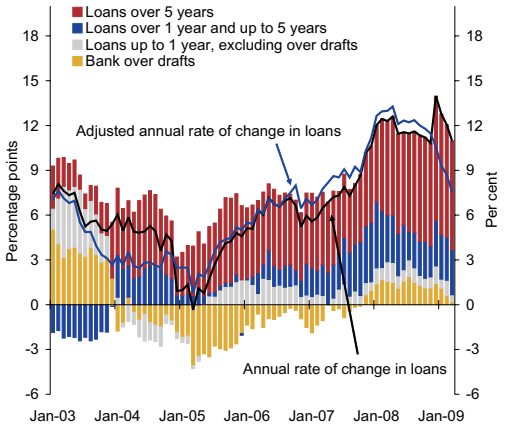


Source: Banco de Portugal.
Notes: Rates and spreads refer to end-of-period outstanding amounts. The end of each year is highlighted. Up to December 2002, interest rates on outstanding amounts are estimates. Spreads are calculated as the difference between the interest rate on outstanding amounts and the six-month moving average of the six-month Euribor. Latest figures: March 2009

Chart 4.6.23

RATE OF CHANGE OF OUTSTANDING LOANS TO NON-FINANCIAL CORPORATIONS

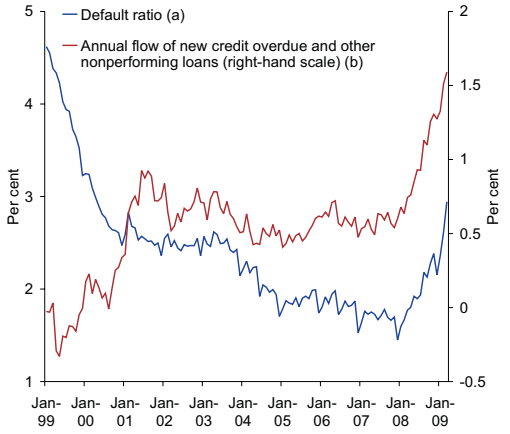
Contributions from contractual maturity segments



Source: Banco de Portugal.
Notes: The contribution of each contractual periods refers to the unadjusted outstanding amounts of loans as recorded on the banks' balance sheets, with the year-on-year rate of change indicated. The year-on-year adjusted rate is calculated on the basis of the relationship between the balances, adjusted for securitisation, and monthly transactions, which are calculated on the basis of outstanding amounts corrected for reclassifications, asset write-offs/write-downs and exchange rate and price revaluations. Latest figure: March 2009.

Chart 4.6.24

DEFAULT IN NON-FINANCIAL COMPANIES



Source: Banco de Portugal.
Notes: (a) The default ratio is defined as overdue payments of capital and interest plus other non-performing loans, as a percentage of the loans to the resident non-financial private sector, corrected for securitisation. (b) Estimates of the annual flow of new overdue credit and other non-performing loans as a percentage of the loans, corrected for securitisation. The estimate of the annual flow of new overdue credit and other non-performing loans was calculated by adjusting the variation in the balance of overdue loans and other non-performing loans to write-offs/write-downs, reclassifications and, as and from December 2005, sales of overdue credit and other non-performing loans outside the banking system and not written-off from assets, reported on a quarterly basis as per Banco de Portugal Instruction no. 2/2007 and with information available only up to December 2008.

Data from the Credit Register (*Central de Responsabilidades de Crédito*), managed by Banco de Portugal, show a rise in the number of companies with overdue credit and non-performing loans during the year, following the trend on 2007. The increase affected all categories of credit considered, with every one of them posting the proportion of companies in default at over 10 per cent (Table 4.6.3). The default ratio also increased in all the credit categories. It should be stressed that the very large exposures, accounting for more than 55 per cent of total credit granted, comes in with a default ratio that is lower than the ratio for the whole financial system put together. Despite there is clearly a high systemic risk associated with these exposures, this is an important attenuating factor.

If default in loans to non-financial companies is broken down into sectors, the figures for the year show that there is a clear increase in default in companies belonging to construction and the real-estate sectors (Charts 4.6.25 and 4.6.26). The contribution of firms belonging to the manufacturing sector to the aggregate default ratio of non-financial companies has decrease substantially. The reason behind this is that there was a fall in the amount of credit granted, as this is still a sector with a very high default ratio.

Table 4.6.3

DEFAULT INDICATORS OF CREDIT TO NON-FINANCIAL CORPORATIONS, BROKEN DOWN BY SIZE OF EXPOSURE [a]

Per cent

	Dec-05	Dec-06	Dec-07	Dec-08
Total exposure				
Number of defaulters [b]	11.8	12.0	13.4	15.0
Credit and interest overdue [c]	2.1	1.9	1.8	2.3
Large exposures (*quantile 90*) [d]				
Number of defaulters [e]	9.4	10.1	10.5	14.8
Credit and interest overdue [f]	1.5	1.4	1.3	1.9
of which: **very large exposures** (*quantile 99*) [d]				
Number of defaulters [e]	5.5	6.2	7.4	13.2
Credit and interest overdue [f]	0.5	0.4	0.4	0.9
of which: **the largest exposures** (*quantile 99.5*) [d]				
Number of defaulters [e]	4.3	5.3	6.6	12.0
Credit and interest overdue [f]	0.3	0.1	0.3	0.6
of which: **the maximum exposures** (*quantile 99.5*) [d]				
Number of defaulters [e]	4.4	3.5	5.6	10.5
Credit and interest overdue [f]	0.2	0.0	0.1	0.2
Retail exposures [g]				
Number of defaulters [e]	12.1	12.3	13.8	15.0
Credit and interest overdue [f]	5.8	5.5	5.3	6.0

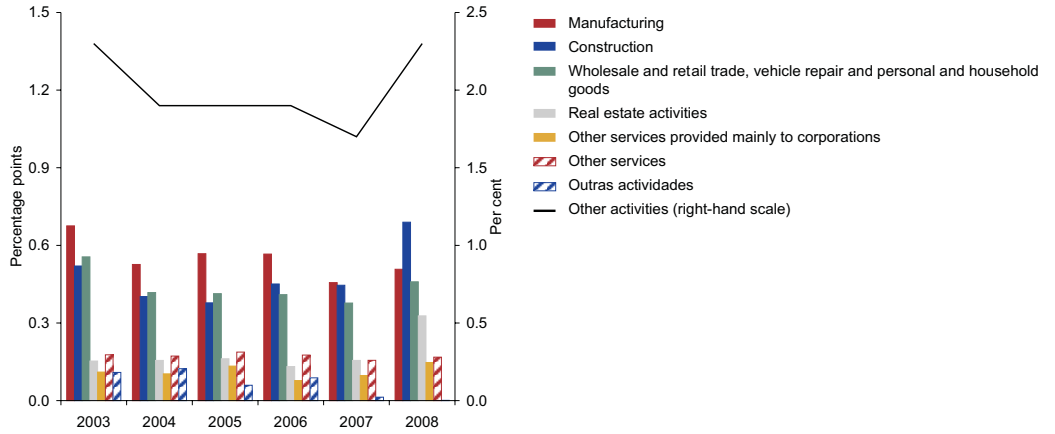
Source: Banco de Portugal.
Notes: **(a)** Indicators based on the Credit Register (*Central de Responsabilidades de Crédito – CRC*) data. They correspond to credit granted by banks, savings banks, mutual agricultural credit banks, credit financial institutions, factoring companies, leasing companies, credit card card issuing or managing companies, credit-purchase financing companies and other resident financial intermediaries. **(b)** As a percentage of the number of non-financial corporations that borrowed from financial institutions participating in the CRC. **(c)** As a percentage of total credit granted by financial institutions participating in the CRC to resident non-financial corporations. **(d)** Quantiles defined on the basis of the number of companies ranked according to the exposure amount. **(e)** As a percentage of the number of debtors in this portfolio. **(f)** As a percentage of total credit in this portfolio. **(g)** Exposures whose amounts are below the lower limit of Large exposures. They correspond to 90 per cent of companies that borrowed from institutions participating in the CRC.

Given the current economic environment, in conjunction with the high cyclical nature of some sectors, there is likely to be a rise in the rates of default, along with loss given default when companies cannot honour their financial commitments. A model created to estimate the likelihood of default, including forecasts relating to the economic cycle, comes up with an increase for 2009 over 2008, with the figures substantially higher than in the last recession (see "Box 4.5 *Likely developments in the default situation among non-financial corporations*", of this Report). However, the monetary policy measures and the government support for companies, in particular the measures geared to the small and medium-sized, should go a long way to easing the stress.

Chart 4.6.25

DEFAULT RATIO IN NON-FINANCIAL CORPORATIONS

By branch of activity



Source: Banco de Portugal.
Note: This corresponds to credit granted by resident credit institutions, including credit in securitisation operations.

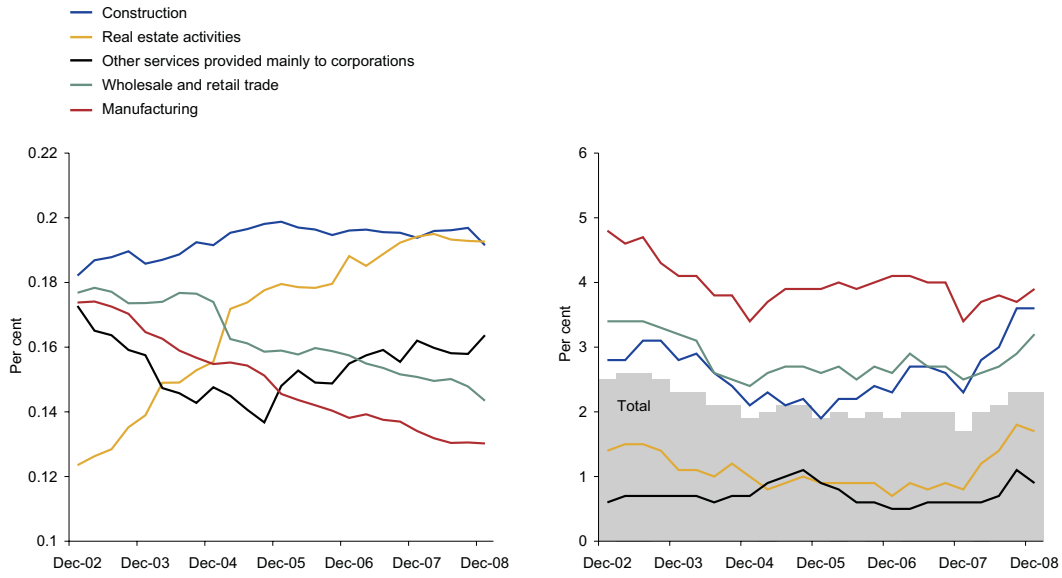
Chart 4.6.26

PROPORTION OF CREDIT [a]

By sector

DEFAULT RATIOS [b]

By sector



Source: Banco de Portugal.
Notes: **(a)** The figure for loans by sector as a percentage of total loans to non-financial corporations, including credit in securitisation operations. **(b)** Ratio defined as loans and interest due and other non-performing loans, as a percentage of the loans to the respective sector, corrected for securitisation.

International exposure of the domestic banking system

In 2008, the consolidated value of external assets in the domestic banking groups rose by around 13 per cent, as against a slight fall in 2007. A salient feature here was the change in the structure of international assets in terms of maturity and institutional sector. In fact, there was a substantial rise in the

proportion of assets with maturity at more than one year, the increase for the year coming in at around 32 per cent (Table 4.6.4), and a rise too in the proportion of the private non-financial sector. In geographical terms, there are no substantial differences from 2007, with banking system exposure to developing countries remaining small and devoid of systemic impact.

Table 4.6.4

CONSOLIDATED FOREIGN CLAIMS FROM THE PERSPECTIVE OF IMMEDIATE RISK – STRUCTURE
Per cent

	Dec. 2006	Dec. 2007	Dec. 2008
Total (10^6 €)	93 793	93 586	106 059
International claims	77.8	70.3	70.9
Maturity			
Up to 1 year	45.3	30.4	24.2
from 1 to 2 years	2.7	2.4	4.7
over 2 years	22.7	31.4	34.8
Other	7.0	5.9	7.3
Institutional borrower			
Banks	46.7	30.5	22.4
Public sector	3.3	3.3	2.3
Non-bank private sector	27.7	36.0	45.6
Other	0.0	0.5	0.7
Geographical borrower			
Developed countries	55.6	48.6	48.3
Offshore centres	10.5	6.9	7.6
Developing Europe	4.0	5.3	6.3
Other	7.6	9.4	8.7
Local claims in local currency	22.2	29.7	29.1
Geographical borrower			
Developed countries	15.6	21.3	21.0
Offshore centres	0.5	0.5	0.4
Developing Europe	4.0	5.1	4.8
Other	2.1	2.8	2.8
Memo:			
Local liabilities in local currency (10^6 €)	18 379	21 445	21 472

Source: Banco de Portugal.

Box 4.1. Banking supervision in Portugal in the cases of the Banco Português de Negócios (BPN) and the Banco Privado Português (BPP)

In the last quarter of the year, problems surfaced in two institutions that were in fact small in the context of the Portuguese banking system. They both required the intervention of the government and the Banco de Portugal. The timing and methods involved in the intervention gave paramount importance to three factors: depositors' interests in these banks and depositors' confidence in other banks, in particular, and the stability of the country's financial system, as a whole. Confidence was extremely important, given the context of extreme uncertainty about banking operations across the world at the time.

In the first case, Banco Português de Negócios (BPN) was nationalised. Although it was small, with a market share of around 2 per cent in terms of total assets, it was considered to pose the risk of some systemic impact. More specifically, the aim was to avoid the bank having to cease making payments because of its manifest problems in finding liquidity as it struggled on the brink of insolvency. One of the factors that weighed in the balance at the time when the systemic nature of the institution was being assessed was its liabilities in international markets, including securitised debt. Its demise could have jeopardised the prospects for other institutions looking to refinance their debt in these markets.

It should be remembered that the solvency of the bank emerged as a new and serious issue in June 2008, when the board of the SLN admitted to Banco de Portugal supervisory authorities that the group had a majority holding in Banco Insular, which was headquarted in Cape Verde, and held a credit portfolio of around 300 million euros. It transpired that there was also a so-called virtual bank, with a credit portfolio of more than 390 million euros, and this had not been booked in the ledgers of any entity in the group. This virtual bank had a considerable negative potential for impairment, which would have to be recorded by the group. It then became apparent that the problems of the BPN stemmed from fraud and that this fraud was persistent and deliberate, carried out at the highest level of the group. It was not related with situations that had been identified and handled within standard supervisory parameters. These situations had been pinpointed in various inspections carried out at the bank, but of themselves they did not place the existence of the bank nor its viability at risk. The problems that surfaced during inspections did not raise a serious issue of solvency or liquidity at the institution.

The second case involved the Banco Privado Português. A market solution was found here for what was essentially a small credit institution. Its size and highly specialized business area implied a small systemic impact. In the first phase, a provisional board was nominated to ensure that commitments were honoured and to assess the real situation of the bank. A consortium of some of the country's main banking groups provided a 450 million euro loan to cover withdrawals of deposits and the repayment of loans. The operation was underwritten by the State, which took special rights over the bank's assets.

There is not as yet any precise figure for the extent of the illicit acts carried out, nor is there any clear solution for either case. It should be noted, however, that the actions of the Banco de Portugal (in line with the provisions of article 12 of its statutes), look to have played a part in maintaining the stability of the country's financial system and providing specialist advice for the government.

Box 4.2. The main characteristics of loans to households for house purchase in Portugal

Loans for house purchase are a very important component of households' financial position, and they account for a considerable portion of banking operations. At end-2008, these loans represented around 100 per cent of disposable household income and approximately 45 per cent of the credit provided by banks to the non-financial private sector. It is therefore important to see how these loans work, so that we can come to some understanding of the position taken by households and the institutions. We can also come to a better perception of the risks that are inherent in these positions, in particular their sensitivity to changes in the economic and financial framework. With a view to increasing knowledge of the characteristics of loans for house purchase, the Banco de Portugal carried out an ad hoc questionnaire of the six main banking groups in the country. Together they account for about 90 per cent of such loans, as at the end of 2008.[1] The questionnaire focused mainly on the contractual features of mortgage loans granted to residents, the point of reference being the flow of loans during 2007 or the total outstanding amount of these loans at the end of that year. In addition, the questionnaire included some questions relating to the banks' financing. This was in order to get some idea of how the financing itself conditioned the way the loans were structured. This box presents the main findings from this questionnaire. Comparisons are made with other euro area countries whenever this is deemed to be relevant. Simultaneously, given that some of the findings illustrate structural characteristics of the segment, some conclusions regarding financial stability are also presented.

*The **main purpose** of the mortgage loans granted to households in 2007, according to the participating banks, was a first home. This was similar to other countries in the euro area, and corresponded, on average, to 87 per cent of the total loans granted in this segment in the year (Chart 1).[2] The next most important purpose was a second or holiday home. This accounted for around 8 per cent of the total. These results confirm the perception that the degree of risk in loans for housing is lower than in loans for other purposes. Having a home is one of the basic needs for households and there is a certain social stigma attached to defaulting on these loans. Therefore, defaults in this segment are lower than in other segments of credit.*

*In terms of the **age breakdown** of the borrower, a large part of the loans agreed in 2007, around 43 per cent, were for customers between the ages of 30 and 39 (Chart 2). There is also a significant proportion in the 20 to 29 and 40 to 49 brackets. In international terms, Portugal has one of the highest incidences of loans granted to the young. The age structure is in line with the findings of the last Household Wealth and Indebtedness Survey (Inquérito ao Património e Endividamento das Famílias – IPEF, hereinafter referred as IPEF) carried out by the Statistics Portugal and by the Banco de Portugal during the last quarter of 2006 and the first quarter of 2007.[3] The findings of that survey show that it is precisely in the 30 to 40 year-old bracket that we find maximums for the participation in the debt market and for indebtedness, with the brackets just above and below coming next. These results are consistent with the consumer life-cycle theory, whereby individuals tend to contract debt when they are young and in the early stages of a professional career, with the prospect of future rises in income.*

Regarding contractual terms for mortgage loans, the available evidence, specifically from the findings of the Bank Lending Survey, suggests that in recent years (and until the onset of the financial crisis) the banks made substantial changes to their credit policies, above all in the segment of loans for housing. These changes were visible in the application of less stringent credit standards and in the introduction of products that make it possible to adapt debt service charges to customers' financial capacity.

*One of the terms that has changed considerably relates to **maturity**, which recorded a considerably lengthening. Over the past decade, according to information from the IPEF, the weight of longer maturities showed an upward trend. In 2007, using the information from the ad hoc questionnaire, over 65 per cent of loans had maturities of more than 30 years (Chart 3). Approximately 36 per cent of loans had maturities between 40 and 50 years (the latter being the maximum reported by the six banks in the questionnaire). This makes Portugal one of the highest in the euro area for the proportion of longer maturities. It should also be remembered that the country has one of the*

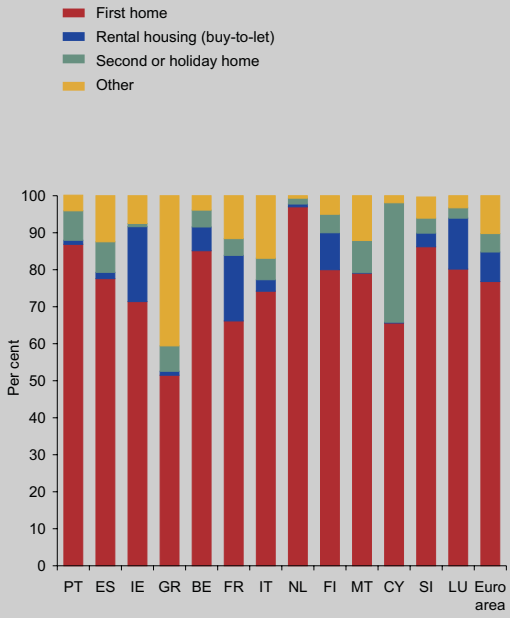
(1) *The bank questionnaire was carried out within the remit of a working group in the Eurosystem Monetary Policy Committee. The aim of the working group was to analyse the financing of mortgage loans in the euro area. The findings of the questionnaire made it possible to fill in a number of gaps in this segment. The group's report was published as the ECB Occasional paper no 101,2009, "Housing Finance in the Euro Area".*

(2) *The average figures in the box are weighted averages, the weighting being the market share of each participating bank in the mortgage loan segment, for December 2007.*

(3) *The main findings from this survey and an econometric analysis of the data can be found in Farinha, L. (2007) "Indebtedness of Portuguese households: recent evidence based on the Households Wealth Survey 2006-2007", Banco de Portugal, Financial Stability Report.*

Chart 1

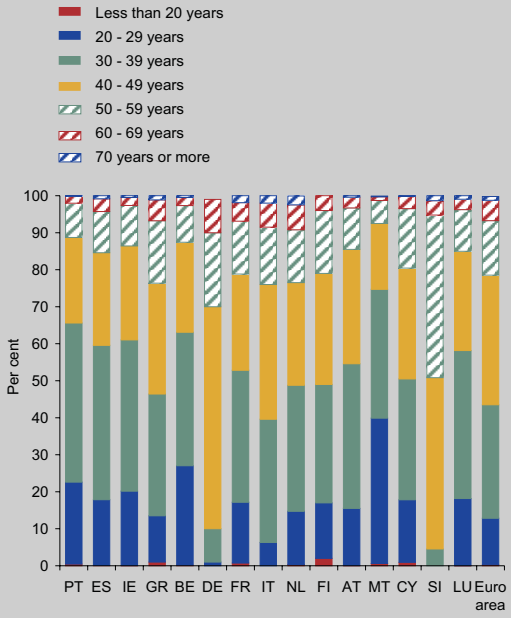
DISTRIBUTION OF LOANS FOR HOUSE PURCHASE GRANTED IN 2007, BY PURPOSE (ESTIMATES)



Sources: *Ad hoc* bank questionnaire and National Central Banks.

Chart 2

DISTRIBUTION OF LOANS FOR HOUSE PURCHASE GRANTED IN 2007, BY AGE OF THE BORROWER



Sources: *Ad hoc* bank questionnaire and National Central Banks.
Note: The information on Italy refers to outstanding amount of loans.

highest proportion of younger customers, which suggests a tie between the contract maturities and the customers' active life (and expected life span).

Having a loan over a long period makes it possible to ease the burden of debt charges through the life of the borrowers. This provides a way of keeping down the burden that households have to shoulder at each point in time, even though it means an increase in the absolute value paid off. This possibility is particularly relevant in periods when interest rates are on an upward curve, since in Portugal almost all loans are at variable ***interest rate****, with the point of reference being the rate for the interbank money market (Euribor at 3, 6 or 12 months).*

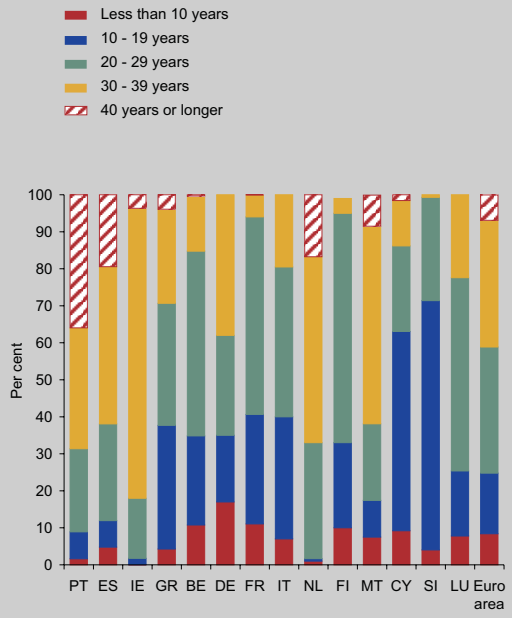
The aggregate information from the banks in the ad hoc questionnaire showed that around 92 per cent of loans granted in 2007 contained an interest rate resetting period of between 1 and 6 months (Chart 4). In the euro area, a similar policy is used in Cyprus, Slovenia, Spain and Finland, where the majority of loans had refixing periods of less than 12 months. In the euro area, in average terms, around 20 per cent of loans granted in 2007 contained an interest rate refixing period of less than 6 months, while around 40 per cent of loans were at a fixed rate for a minimum of 10 years. These findings are influenced significantly by the contractual terms used in France, Belgium, Germany, the Netherlands and Italy.

As far as ***repayment terms*** *are concerned, the most common set-up in Portugal consists of constant monthly instalments to cover the repayment of capital and interest. In 2007, around 90 per cent of loans were on these terms. Some of these contracts were for smaller instalments in the first years, as the banks made new products available.*[4] *The remaining 10 per cent also included lower monthly instalments, since they deferred the repayment of capital for the initial contract period.*

(4) *One example is to have increasing repayments in the first years of the contract, then levelling off at a higher amount in the next period; another is to have a contract with a residual payment option (i.e. payment of part of the loan on maturity of the contract).*

Chart 3

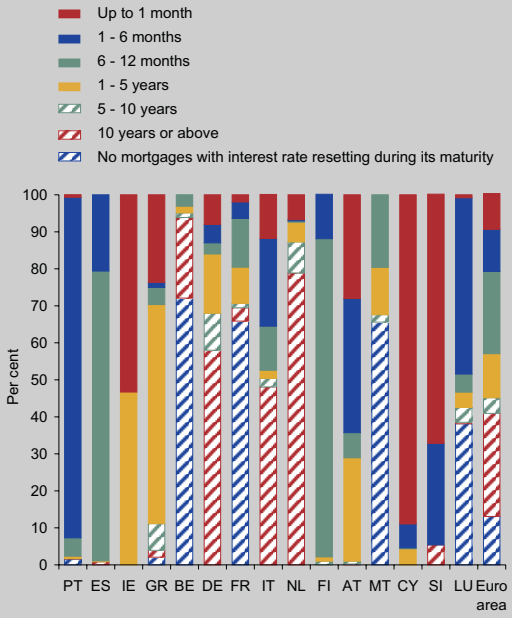
DISTRIBUTION OF LOANS FOR HOUSE PURCHASE GRANTED IN 2007, BY CONTRACT MATURITY



Sources: *Ad hoc* bank questionnaire and National Central Banks.

Chart 4

DISTRIBUTION OF LOANS FOR HOUSE PURCHASE GRANTED IN 2007, BY INTEREST-RATE RESETTING PERIOD



Sources: *Ad hoc* bank questionnaire and National Central Banks.

With variable rate loans and relatively short refixing periods, the debt service for households becomes more sensitive to changes in money market interest rates. In this context, it is worth noting that , at the end of 2007, there was a very small proportion of loans among the banks in the questionnaire with specific clauses relating to interest rate changes (for instance, with a cap on the amount to be repaid). From the point of view of the banks, the fact that even loans with longer maturity have associated variable interest rates allow them to reduce the asymmetries between the sensitivity of return on assets and liabilities to changes in short-term rates (although the spreads, defined at date of contract, remain largely unchanged during the period of the loan).

Where the cost of the mortgage loan is concerned, there are various ***commissions****, and these include initial fee, valuation fee, and registration fee, among others. The use of an array of fees is probably due to the fact that banks have been cutting down on the practice of cross subsidising, with higher commissions offsetting the shortfall caused by falling interest rates. The findings from the questionnaire show that commissions charged in 2007 referred fundamentally to pre-defined amounts, rather than commissions as a percentage of the loan. Most were front-loaded. On average, the total outlay was around 400 euros per loan. Only one of the banks in the questionnaire said that commissions were charged as a proportion of the loan, and this could be paid off on a monthly basis. If we look at fees and some charges that are front-loaded, the situation across the euro area is very diverse. This goes for the overall figure for charges and for banking service fees, assessed as a percentage of the loan (Chart 5).*[5] *The figure for Portugal is close to the median.*

In recent years, there also has been an increase in the ***loan-to-value*** *(LTV) ratio, alongside the lengthening of maturities and schemes to ease charges of households in the short term, in a context of increased competition between banks. The findings of the Bank Lending Survey show, however, that the upward move in the LTV ratio halted with the onset of the financial crisis in 2007 and reversed over 2008.*

(5) *Costs on the charts not related with the banks are for expenses incurred at the point where the house purchase is made. They include, for instance, notarial expenses and property registration. The chart in fact is only indicative, since the fee structure has been simplified because of differences between countries.*

From the responses of the banks in the ad-doc questionnaire, the LTV figure would seem to come in at around 71 per cent for the loans in 2007 for house purchase, though there are some differences in the banks' policies (the figure ranged from 54 to 81 per cent). In the euro area, only Italy, Malta and Slovenia come in with LTV ratios under 70 per cent (Chart 6). The questionnaire also shows that if the LVT is above a certain limit, in Portugal the interest rate is higher (Chart 7). For loans with LTV of 75 per cent, compared with loans with LTV of 50 per cent, there is a maximum 40 basis points difference. Looking at loans with LTV of 95 per cent compared with loans with LTV of 75 per cent, the different spread is at least 21 basis points and can rise to over 60.

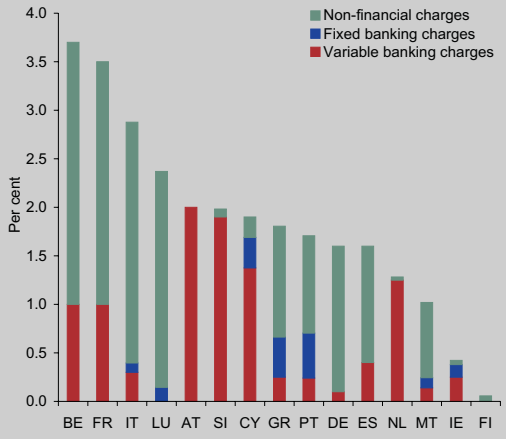
The available evidence indicates that there has been no sharp increase in house prices in Portugal, in aggregate terms, unlike in some other countries in Europe and in the United States. Should it become necessary to foreclose, therefore, the banks are unlikely to record big losses because of loan to market value differences. There are also other types of guarantees, apart from the real ***guarantees****, and this too can bring down the risk for the banks associated with this kind of loan. In Portugal, the other guarantees are related to personal guarantees (for example in the case of younger customers, where income and job security levels are lower). The total loans with this kind of additional guarantees at end-2007 accounted for, on average, around 30 per cent of the housing loans portfolio of the banks surveyed.*[6]

In terms of ***other contractual clauses*** *for housing loans, around 14 per cent of the portfolio, on average, as at the end of 2007, gave the borrower the option of increasing the amount of the loan if the value of the house had risen or if a substantial part of the mortgage had been redeemed. For 10 per cent of the portfolio, it was possible to extend maturity with no additional costs, though a mere 2 per cent contained the option of a specified grace period for payment of interest and/or capital. Overall 21 per cent included at least one of the three options described above. In addition, in line with Portuguese legislation, all loans can be repaid early, either in full or in part, though there have been commissions linked to this option.*[7] *Early repayment in 2007 accounted for around 7 per cent of the outstanding amount of mortgage loans at year-end. The previous clauses allow some leeway in renegotiating contract terms, a feature that could be particularly relevant for households in times of greater financial strains. This may also be useful for the banks, to the extent that they bring down the risk of default.*

Chart 5

CHARGES RELATING TO HOUSE PURCHASE

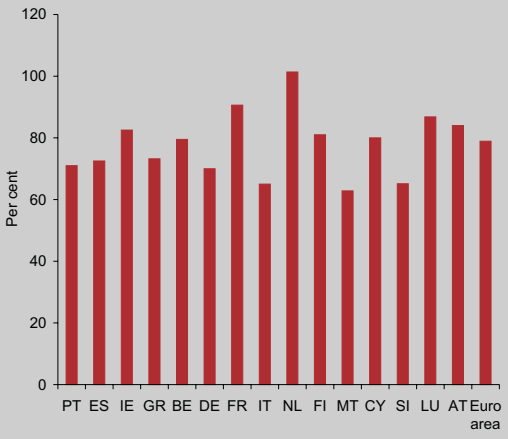
Percentage of typical mortgage loan



Sources: *Ad hoc* bank questionnaire and National Central Banks.

Chart 6

LOAN-TO-VALUE RATIO FOR A TYPICAL LOAN FOR HOUSE PURCHASE IN 2007



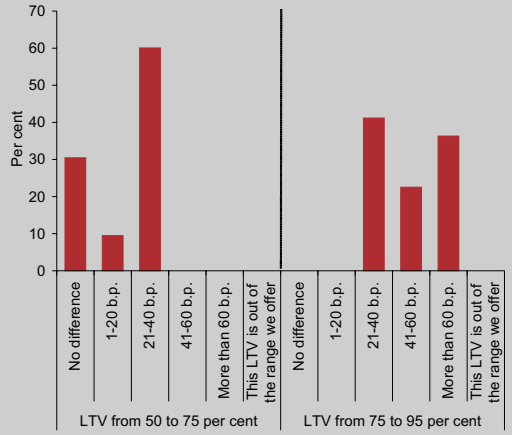
Sources: *Ad hoc* bank questionnaire and National Central Banks.

(6) *Guarantees related to government institutions or insurance companies had no relevance in the mortgage credit portfolios of these institutions at the end of 2007.*

(7) *For variable-rate loans, early repayment carried a commission equivalent to 0.5 per cent of the outstanding debt, while fixed-rate loans were subject to a 2 per cent commission (these figures being the maximum allowed by law).*

Chart 7

ESTIMATE OF THE INCREASE IN INTEREST RATES ON LOANS WITH HIGHER LOAN-TO-VALUE RATIO



Sources: *Ad hoc* bank questionnaire and National Central Banks.
Note: The vertical bars indicate the sum of the market share in the segment of loans for housing of each bank which chose the option; b.p. = basis points.

The questionnaire also led to information on the way the banks handled second mortgages, i.e. the granting of a loan to a customer whose property had already had a mortgage. The replies indicate that banks are fundamentally prepared to do this if the first loan was through them. In these circumstances, the second mortgage is normally subject to a higher interest rate, if a straight comparison is drawn with a loan for an equal amount on a first mortgage. Some banks also noted that the LTV would be lower. Also of interest here is the fact that loans backed by a mortgage for other purposes that house purchase are still not materially relevant in Portugal. The most common practice in this area is for customers to link other types of loans to the real guarantee. Taking into account the value of the property, this means that customers can take advantage of lower interest rates on the loans for other purposes than if there was no collateral.

Another relevant point is the assessment of how the ***banks' financing*** *can have an effect on housing loan operations and the term under which they are carried out. The findings of the ad hoc questionnaire show that banks' financing conditions – assuming that the financial markets are working normally – tend to reflect in the prices and amounts of housing loans.*[8]

In particular, the amount of mortgage loans was conditioned by conditions in the long-term wholesale debt markets (in terms of price and quantity). However, the maturity wholesale funding does not seem to determine the maturity of housing loans for most banks in the questionnaire. For some banks, in fact, the relationship was established precisely in the opposite direction, i.e. the maturity of mortgage loans was a conditioning factor for the maturity of the bank's funding. In terms of retail funding, which is the main source of funds for the Portuguese banking system, there was also no direct link between the maturity of these funds and the maturity of mortgage loans. It is worth remembering here that the contractual maturity of deposits is very much shorter than the real maturity. This reflects the high proportion of deposits made by households, which are extremely stable. In terms of interest rates, the spreads on mortgage loans reflects to a great extent the banks' average funding cost as well as the specific credit risk for each individual. It is also influenced by the spreads offered by other banks in the same segment.

While on the subject of financing, a note should be made of the relevance of mortgage loans for credit securitisation purposes. Securitisation in Portugal grew substantially as and from 2002 and related above all to the transfer of

(8) *Note that the aim of the ad hoc bank questionnaire was to analyse the overall characteristics of mortgage loans in 2007. After the onset on the crisis in the international financial markets in the summer of 2007, which deepened in the second half of 2008, the banks' financing was seriously affected. Given this, the relations described in the questionnaire between the financing characteristics and the contract terms for the loans could well have changed.*

housing loans. At the end of 2008, these loans accounted for almost 90 per cent of the securitised loans. The majority of securitised assets remain on the balance sheet of banks, since the opposite can only happen if there is a transfer of all the risks on and rights pertaining to the assets. This fact meant that the banks have made proper assessment of the risks before going through with the operation and they have also continued to monitor the capacity of borrowers to service the debt post contract. Across the euro area there is a wide range of options for booking securitised assets. This depends on how supervisors and/or external auditors interpret the concept of effective transfer of risks and rights on the assets in the IAS regulations (in those instances where they are applied by the banks). The findings of the questionnaire on the banks in Portugal show the main motivations for securitising mortgage loans in recent years were related to turning illiquid into liquid assets (as a form of bolstering liquidity) and a way of reduction funding costs. In this context, it is worth noting that there are few incentives for these operations related to relief of capital requirements, since the banks normally retain on their balance sheets a portion of the securities with a higher degree of subordination, which have a high weight on the determination of the solvency ratio.

In short, the exposure of banks to the housing credit segment is relatively high. However, in terms of credit risk, there are factors that reduce this exposure. Loans for house purchase are fundamentally for owner-occupiers; moreover, in line with the offer of new products, there are some features in contracts that have enabled households to smooth out the debt service so that it can be less onerous when they find repayments more difficult to make. These factors reduce the likelihood of default in this segment. It is also worth noting that, according to the findings of the IPEF, situations where there is more financial vulnerability (mainly in the younger strata and those on low income) are a relatively small proportion of the whole. In any case, a non-negligible part of mortgage loans have personal guarantees attached, apart from the real guarantees. Moreover, in aggregate terms, there is no evidence of excessive valuation of property assets in Portugal. As for other sources of risks for banks in housing loans, the use of variable interest rates makes it possible to cushion part of the variation in the banks' funding costs, although this policy could bring a higher credit risk. Furthermore, the long maturities inherent in the loans mean that there must be a very careful management of liquidity.

The current economic and financial crisis could play its part in pushing up credit risk in this segment. As unemployment rises, the quality of credit is likely to worsen, implying that defaults will be on the rise, even though interest rates are at a historic low. Moreover, the economic downturn is likely to imply lower demand and this could exert downside pressure on property prices. In addition, the turbulence in the wholesale medium to long-term debt markets has made liquidity management more demanding for the banks. The strong growth in customer deposits, however, has been a mitigating factor. The evidence suggests that banks have changed their credit policies since the onset of the crisis in the summer of 2007 and now have more stringent criteria. This fact should be reflected in the shortening of maturities, the lowering of LTV ratios and the increase of spreads, reflecting in part an increase in cost per unit of risk.

Box 4.3. Aspects of higher risk mortgage loans in the United States and Europe

The origins of the subprime mortgage market

The term "subprime" was coined in the United States to describe poor quality mortgage loans. This type of loans, which does not have an official characterization, has very specific features in terms of the type of contract and the mortgagees, and allowed access to credit by high risk households. The contracts are fundamentally short-term, and can be renegotiated more than once. For the renegotiation to occur the value of the property is essencial. Most subprime contracts are adjustable-rate mortgages (ARM), with an initial period at a fixed rate (two to three years). This rate is significantly lower than the rate that would apply to the mortgagee in terms of his/her credit risk. Following the initial period, the interest rate is indexed to the market, at a new rate that is usually far higher than the fixed rate. For this reason, the date for the change is usually known as the step-up date. The repayment plan is normally fixed at 30 years. The banks have the right to renegotiate at the end of the fixed-term period, and when housing prices are on the rise, they would agree to better terms for the households. Another feature of these contracts is the very heavy penalty tied to early repayment of the loan, especially when compared with the terms for prime mortgages. In this sense, the creditors are at an advantage at the end of the fixed-term period, because they can dictate the terms of the new agreement, which is conditioned by the upward move in the value of the property. The subprime segment is also associated with the personal insolvency regime in the US, where default on servicing the loan simply implies losing the right to the property.

As for the families involved, these contracts are associated with mortgagees who are on low incomes and with a low threshold of job security. Ipso facto, the mortgagees are high risk, coming in with low classification on the FICO[1] scale (below 640 points). This scale assesses the likelihood of default: the lower the point score, the higher the risk. This group of families has a relatively high default rate and includes situations of early settlement through acceptance of repossession either voluntarily or by way of the courts. There are other specifics to this segment: one is the high ratio between the debt service on mortgages (including both interest and principal) and household income; another, and this can be cumulative, is the high ratio between the value of the loan and the value of the property underpinning the loan (the loan-to-value ratio). Loans in the subprime segment may involve a ratio of debt service on mortgages over household income above 55 per cent and/or a loan-to-value ratio of above 85 per cent. A related category included as risky loans is made up of those households where the risk level is not sufficient for them to be classed as subprime, specifically in terms of their FICO score and the fact that they have no history of default, but they have not provided formal proof of income, or there may be a high level of risk associated with their future income. These are classed as Alt-A and are deemed to be intermediate risk, between prime and subprime.

In spite of previous periods when there was a very marked cyclical increase in default, the subprime segment was profitable. This was because of the relatively high interest rates charged by the credit institutions, even though they were lower than the rates that would truly have reflected the risk of these mortgagees. In turn, households had access to credit that otherwise they would not have access to. For the financial institutions, this kind of credit was possible because of the existence of securitisation, with a large part of this credit being converted into residential mortgage backed securities (RMBS). Between 2005 and 2006, over 80 per cent of new subprime loans were securitised, though the securitisation had a different design from traditional types. The amount involved and the risk underlying these operations depended a very great deal on the refinancing of the contracts, and this in turn depended on appreciation in the value of the property. Once the securitisation was set up, these securities were acquired by special purpose vehicles (SPVs) and transformed into CDOs (Collateralised Debt Obligations), which are long-term securities, with a rating attached and negotiated in the capital market. The possibility of securitising and then straight away selling CDOs on the mortgages boosted the market. Highly rated securities could be issued with a high return guaranteed, being offered to international investors on the lookout for more attractive debt instruments in their search for yield. The tranches of CDOs were acquired by investment funds, insurance companies, vehicles that were not included in consolidated bank balance sheets (structured investment vehicles), among others. When these operations were carried out, the credit risk was spread and clear blue water came to divide who-

(1) *FICO is the acronym for Fair Isaac Corporation, the North American company that publishes this credit risk score.*

ever had accepted the credit from the end-of-the-line holder of the securities. Two of the consequences of this were the relaxing of criteria for granting credit and less incentives to monitor the loan.

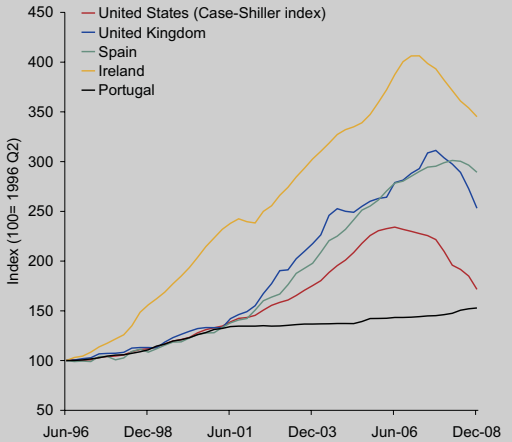
From the start of the decade to the onset of the financial crisis, the subprime market in the United States gathered momentum fast, tripling during the mortgage credit boom in 2005 – 2006. In 2006, it accounted for nearly 14 per cent of the total value of the mortgage market and 21 per cent of all new mortgages originated during that year. In the meantime, Alt-A loans stood at between 8 and 10 per cent of the market, accounting for about 25 per cent of new mortgages originated during 2006. New subprime loans fell considerably during the second half of 2007, and did not pick up again in 2008. The reason behind this was fundamentally the fall in house prices. Between 2001 and 2005, prices had risen by more than 50 per cent, an essential prerequisite for contract renegotiation. At that point, the slowdown in house price rises made it very difficult for the subprime and Alt-A debtors to service the debt once renegotiation ceased to be of interest to the banks. On top of this, securitisation became more of a problem, as information on market woes came to the surface. Against this backdrop, rises in interest rates led to a big increase in defaults, knocking on to big losses in the financial institutions that were holding the securities underpinned by this type of loan. These complex instruments spread fast, benefiting at start from a low risk-aversion framework. There was a wide range of institutions involved in the business, which did not have the information necessary to assess the risks of these instruments, and took as given the assessments by rating agencies. At this time, there is still some uncertainty over the level and distribution of the losses in financial assets portfolio of financial institutions across the globe.

The mortgage market in Europe compared with the one in the United States

Interest rates and house prices may well have been moving in a similar way in the United States and some European countries (Charts 1 and 2) and the weight of the debt service of mortgages on household income on both sides of the Atlantic may well have been similar, but the available evidence from Europe shows that an American style subprime market did not develop in the old continent. In general, there would seem to be far fewer European households mired in the kind of financial woes that left households as financially vulnerable as in the North American subprime market. The differences can be summed up in three points: firstly, as already mentioned, there are differences in the risk profile of the households ; secondly, the model for financing mortgages is not the same; and thirdly, there is very different legal framework for personal insolvency.

Chart 1

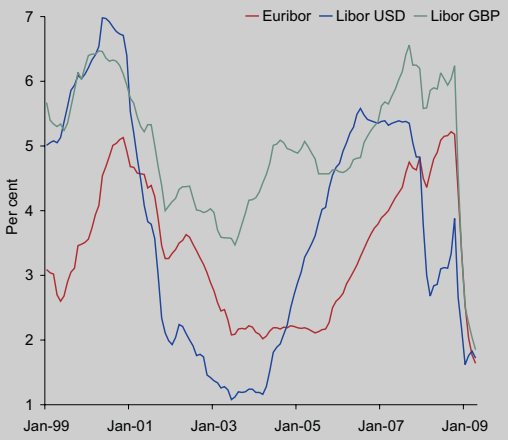
HOUSE PRICE INDEX



Sources: Newsletter *Confidencial Imobiliário* and Thomson Reuters.

Chart 2

SHORT-TERM INTEREST RATES (6 MONTHS)



Source: Thomson Reuters.
Note: Monthly average values.

The higher incidence of credit risk in the United States is a natural consequence of the fact that it is easier for a certain kind of American household to get mortgage credit. This can be confirmed by looking at the proportion of families with mortgages: around 45 per cent of the households in the United States have a mortgage[2] (2004 data), whereas the figure for the euro area is around 20 per cent and the United Kingdom around 40 per cent (2005 data). In all these areas, the ratio of households with mortgages grows with income, though the percentage is always lower in the euro area. In the United States, the percentage varies from 16 percent for families on low income to 76 per cent for families with higher incomes. In the euro area, these figures are between 4 and 40 per cent, while the United Kingdom is closer to the American figure, standing at between 10 and 68 per cent. There is also a big disparity in the figures for the ratio between debt and disposable income in the three areas. In the last quarter of 2007, household debt in the euro area stood at little more than 100 percent of disposable income, whereas the same ratio was around 140 per cent for the United States and 177 per cent for the United Kingdom. The aggregate ratio between debt service for mortgage loans and disposable income of families with a mortgage was around 20 per cent, with no appreciable differences between the United States and the euro area.

The mortgage financing model used by North American financial institutions spurred the rapid growth of the subprime segment. One characteristic of the North American mortgage market is the existence of the so-called "governmental agencies", namely Fannie Mae and Freddie Mac, whose purpose was buying up and securitising mortgage credit. These firms, whose main objective was to make possible the access to residential property through the credit market, allowed a large number of households to have access to credit for house purchases. In the ensuing rise in the price of housing, in tandem with increased demand for loans and changes to the regulatory framework of the governmental agencies, the scene was set for an increase in the importance of unregulated private financial organisations. From 2004 onwards, these came to hold an increasingly large slice of mortgage debt. As these private institutions penetrated the market and the credit was securitised, the subprime sector grew apace. The same did not happen in the euro area, where accounting practices, albeit different across countries, tend to make it difficult to take securitised loans off the balance sheet of the financial institutions where the credit was first granted. The accounting rules acted as a disincentive to taking on high-risk mortgage credit with a view to securitisation. The scenario in the United States and the United Kingdom was opposite from the euro area.

There was another fundamental difference between the North American and the euro area approach to the subprime issue: the legal framework of default. The United Kingdom in this regard, and many others discussed in this box, is between the United States and the euro area. In the United States, non payment of debt simply means the loss of the property on which the mortgage was raised. In the light of this, more importance is given to the value of guarantees and their likely future path, over and above the capacity of the mortgagees to generate income. This creates incentives for non-payment of commitments taken on and the result is foreclosure when the value of debt is higher than the value of the property mortgaged. This point is extremely important when there is a steep fall in house prices, above all when this follows a period of strong and steady growth in prices. In most euro area countries, on the other hand, households are responsible for the total amount that is owed, so if they have problems paying off their instalments, they must find other personal assets or rely on the generation of future income to cover the debt service.

The mortgage market in Portugal compared with the one in other countries

There are marked differences between the mortgage market in the United States and the euro area, and within the euro area itself there is a kaleidoscopic picture.[3] Comparisons between different euro area countries are difficult to make because the available information refers to individual surveys in specific countries, for time spans that are not always the same. In Portugal, around 30 per cent of households have mortgages. This is substantially lower than the United Kingdom (40 per cent) and the United States (45 per cent). In a comparison with other euro area countries where information on mortgage loans is available, among them Germany, Ireland, Greece, Spain, France, It-

(2) *The source of most values presented hereafter is Housing Finance in the Euro Area, Occasional Paper Series No. 101, European Central Bank, (2009), prepared by a Task Force of the Monetary Policy Committee.*

(3) *The information on euro area countries is based on micro-data from household surveys performed at country level. The data is summarized in Housing Finance in the Euro Area, Occasional Paper Series No. 101, European Central Bank, (2009), prepared by a Task Force of the Monetary Policy Committee. Notice that this information is available only for a few euro area countries.*

aly and the Netherlands, Portugal is clearly lower than the Netherlands (where the figure is 38 per cent), but higher than Italy (where the figure is only 12 per cent). For the eight European countries under review, one fact is clear: the higher the income, the bigger the proportion of households with a mortgage, with the top segment coming in very much higher. In Portugal, around 6 per cent of households in the lowest quartile of income distribution have a mortgage, compared with Italy, which has the lowest figure (4 per cent) and the maximum (excluding the Netherlands), which is Spain, with 8 per cent. The percentage of households from the top quartile with a mortgage ranges from 19 per cent in Italy to 57 per cent in Ireland, the figure for Portugal coming in at 52 per cent. The situation in the Netherlands is slightly different, with the percentage of households in the lowest income quartile coming at over 20 per cent. For other income levels, there is less of a disparity with the other euro area countries under consideration. It is more difficult to make a comparison between Portugal and the United States, given that the breakdown into categories is different. However, it is known that around 16 per cent of US households in the lowest quintile have a mortgage, compared with the 6 per cent in the lowest quartile already mentioned for Portugal.

Another important indicator for this analysis is the ratio between the debt service of mortgages and households income. This ratio is especially relevant for a country like Portugal, given that virtually all mortgages, are at variable interest rates, with 3 to 6 month adjustments. In terms of households with mortgages across the eight euro area countries under analysis, Portugal has the lowest ratio (with a median figure of 14 per cent) while the Netherlands has the highest (with a median figure of 19 per cent). This can be explained in part by the fact that Portuguese mortgage loans on the whole have longer repayment periods which allows households to smooth out the debt burden over a longer time. In addition, the median value for this ratio in Portugal does not vary greatly for different income categories, standing at 21 per cent for lower income households and 10 per cent for the highest. In contrast, the median figure for lower income households in the rest of the euro area countries under review (with the exception of Germany) is much higher (between 31 and 54 per cent), with higher income families coming in at between 12 and 17 per cent.

As a final point, credit risk analysis must take into account the loan-to-value ratio (LTV). In the euro area, for loans granted in 2007, this figure stands at around 80 per cent of the property in question, varying from 63 per cent in Malta and 101 per cent in the Netherlands.[4] Almost all of the countries in the euro area come in with a figure below 85 per cent, which is the reference point for subprime loans in the United States. In Portugal a typical loan granted in 2007 was on the basis of an LTV of 71 per cent.

The distribution of mortgage loans in Portugal

In recent years, the ratio of default on housing credit (defined as the figure for overdue credit over total credit) has remained low and stable. Looking at year-end figures, this ratio, covering all housing loans in the country, has varied between 1.0 and 1.4 per cent, with 2008 recording a rise over the twelve-month period, to stand at 1.3 per cent of total housing loans. This is close to the figures for recent years in the United States for lower risk segments and considerably lower than for the subprime segment, where the minimum over the past decade has been around 10 per cent.[5] This last figure has in fact doubled in recent years.

By using data from the Credit Register (Central de Responsabilidades de Crédito), it is possible to work out the distribution of mortgage credit in Portugal and analyse rates of default per amount of credit. The data refers to February 2009, with some observations eliminated for the purposes of analytical consistency.[6] The average credit for house purchase secured by a mortgage on the underpinning property is around 75 thousand euros, the median figure being 64 thousand euros. Loans secured by the mortgage on the property account for around 90 per cent of total loans for such a purchase. Looking at the loans in terms of size, the smallest 10 per cent represent around 1 per cent of total credit, and the top 10 per cent represent around 28 per cent (Chart 3).

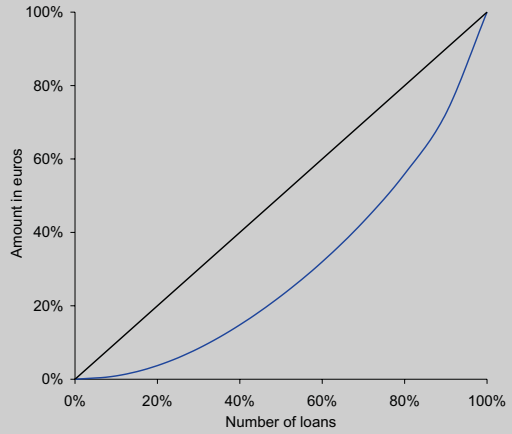
(4) *This data results from an ad-hoc questionnaire prepared by a Task Force of the Monetary Policy Committee whose aim was to study housing finance in the euro area. More detailed information can be found in "Box 4.2 The main characteristics of loans to households for house purchase in Portugal", of this Report.*

(5) *In the absence of an official source, the reported value comes from Balla, E., Carpenter, R. and Robinson, B. (2007), "Assessing the Effectiveness of the Paulson "Teaser Freezer" Plan: Evidence from the ABX Index", The Federal Reserve Bank of Richmond, Working Paper Series.*

(6) *The financial institutions showing more than 50 per cent of LTV figures at 100 were eliminated, as well as were outliers corresponding to the 98 percentile of LTV.*

Chart 3

DISTRIBUTION OF CREDIT FOR HOUSE PURCHASE



Source: Banco de Portugal (Credit Register).
Note: It considers only credit where the house is given as a guarantee.

In terms of the LTV ratio,[7] the mortgage loans reported by financial institutions in February 2009 come in with an average value of 67 per cent and a median value of 72 per cent. Around 63 per cent of credit secured by the mortgage on the property has an LTV equal to or less than 85 per cent, the reference point for subprime loans in the United States. Around 25 per cent of credit has an LTV between 70 and 80 per cent (Chart 4). If the sample is broken down according to LTV, there is no monotonicity in the default ratio (defined as the amount overdue over total credit for each category). Credit with LTV between 40 and 50 per cent, along with very high LTV, comes in with higher default rates. Credit where the LTV is between 60 and 80 per cent tends to show lower default rates (Chart 4).

In mortgage loans, the default ratio is not monotonic with the amount of the loan if we look at the deciles of distribution. Credit between 28,000 euros and 64,000 euros and above 108,000 euros comes in with very low default rates, while credit between 64,000 euros and 108,000 euros has very high default rates (Chart 5). The lowest default ratio relates to the two categories at the top of the scale, accounting for around 44 per cent of total loans for housing secured by a mortgage. Looking at default by category of credit, the higher credit brackets show levels of default that are not very sensitive to LTV. The same is not true of small loans, where there is substantially more default as the LTV rises.

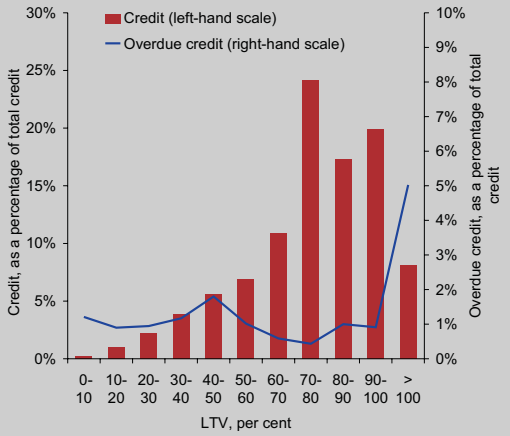
Mortgage credit in Portugal is fundamentally at a variable interest rate, and there is a considerable proportion in the hands of young people, but in spite of these facts, the default ratios have always been low. Part of this is because of the extension of maturities that have been offered, and also the fact that there are very often personal guarantees underpinning the loans, which decreases risk among the younger age groups. It could well be that in the near future the debt service burden of some households in the country will continue to increase, with the bleak macroeconomic climate bringing a rise in unemployment, but the combination of long maturities and low interest rates could offset to some extent any loss in income as installments are considerably lower. The banks, however, have already been offering long maturities over the past few years (around two-thirds of loans in 2007 were for upwards of 30 years – See "Box 4.2 The main characteristics of loans to households for house purchase in Portugal", of this Report). Overall, there are no expectations for a rise in the aggregate ratio of default on mortgage loans to the point where the stability of the financial system could be jeopardised.

(7) *LTV involves only property guarantees, excluding other type of guarantees.*

Chart 4

DISTRIBUTION AND DEFAULT RATIO ON CREDIT FOR HOUSE PURCHASE

By class of LTV

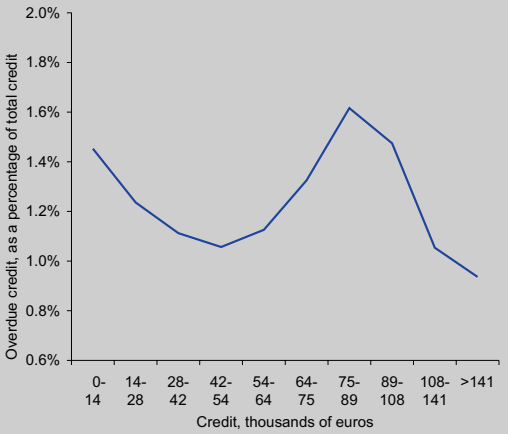


Source: Banco de Portugal (Credit Register).
Notes: It considers only credit where the house is given as a guarantee. Only the lower limit is included in each bracket.

Chart 5

DEFAULT RATIO ON CREDIT FOR HOUSE PURCHASE

By class of credit



Source: Banco de Portugal (Credit Register).
Notes: It considers only credit where the house is given as a guarantee. Only the lower limit is included in each bracket.

Box 4.4. Default in the non-financial private sector in the current crisis compared with the one in the 2003 recession

The financial crisis that broke in the summer of 2007 worsened a year later, with uncertainty persisting as to the duration and extent of its transmission to economic activity. The decade had already seen another recession, though its context and magnitude were very different. One of the features that differentiates the two recessions is credit risk. In the current severe economic and financial crisis, there are signs pointing to upcoming levels of default in the non-financial private sector that are significantly higher than in the 2003 recession. The aim of this box is to analyse default on loans to the non-financial private sector in the two recessions. For the purposes of comparison, the periods reviewed will be 2001-2003 and 2007-2009.

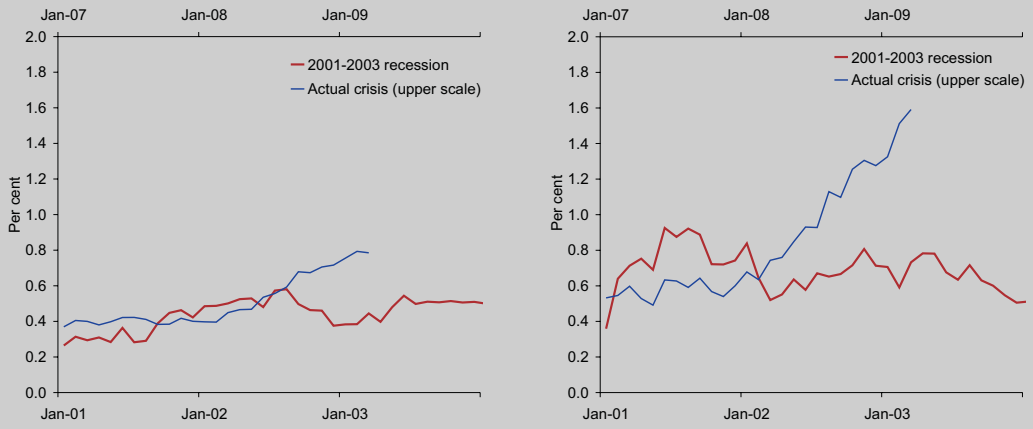
An analysis of the annual flow of overdue credit and other non-performing loans as a percentage of loans granted (adjusted for securitisation), shows a substantial increase in default in 2008. This was not the same in the previous recession, when the levels of default rose much more gradually. At the end of 2008, the figure for default was already higher than at the end of 2002 (see Chart 1). This situation is true for individuals and for non-financial companies. The rise in default is also clear in the default ratios, defined as overdue credit and interest and other non-performing loans as a percentage of total loans to the sector, which recorded substantial rises for all segments throughout 2008. For the generality of the segments, the default ratios are already higher than the ones reached at the start of 2003 (see Chart 2). It should be noted, however, that this picture is not the same for all financial institutions. In particular, the five biggest banking groups recorded levels of default at year-end 2008 lower than those recorded in December 2002 (measured by the default ratio).

The current economic and financial crisis has had more serious repercussions in terms of credit risk and this is in line with the different macroeconomic framework in the two recessions. There has been a more pronounced slowdown in GDP in the current crisis. Rates of GDP growth (observed and expected) for the current recession are clearly lower than in the 2001-2003 recession (see Chart 3). The earlier period occurred in a favourable macroeconomic framework, given that a cyclical recovery of the global economy had started in 2002 and was still under way. Since then there has been greater economic globalisation, which has had important consequences for the part played in the international economy by the Asian economies and the new members of the European Union. The current crisis was preceded by an international economic scenario marked by strong trade expansion, recovery of foreign investment

Chart 1

ANNUAL FLOW OF OVERDUE CREDIT AND OTHER NON-PERFORMING LOANS

Individuals | Non-financial companies

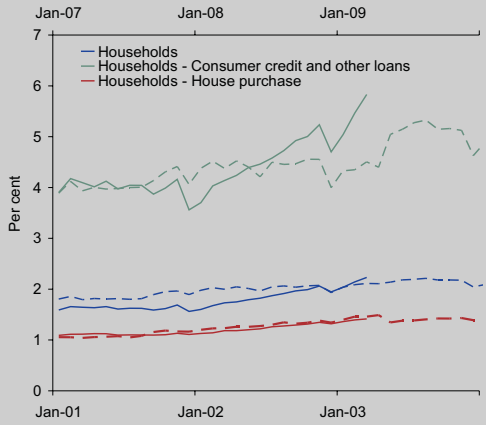


Source: Banco de Portugal.
Note: Estimate of the annual flow of new overdue credit and non-performing loans as a percentage of loans (adjusted for securitisation). This estimate was calculated on the basis of the variation in the amount of overdue credit and non-performing loans adjusted for write-offs/write-downs, reclassifications and, from December 2005, sales outside the banking system of overdue credit and non-performing loans not written-off from assets, reported quarterly as per Instruction no.2/2007 and with information available only until December 2008.

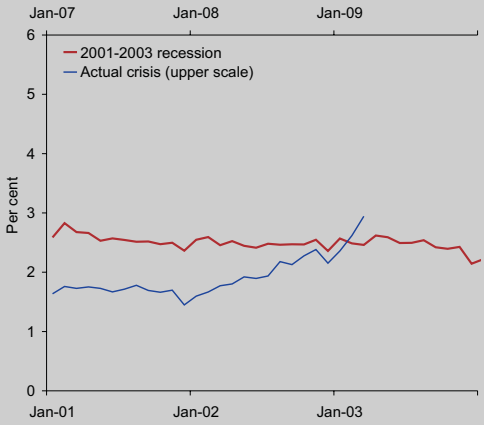
Chart 2

RATIOS OF DEFAULT ON LOANS

Individuals



Non-financial companies

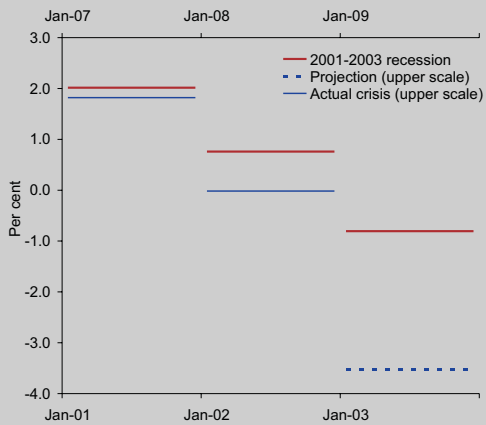


Source: Banco de Portugal.
Note: Overdue loans and other non-performing loans as a percentage of total loans to the sector (adjusted for securitisation). In the chart on the left, the broken lines refer to the 2001-2003 recession and the full lines refer to the current crisis (upper scale). Latest figure: March 2009.

flows and a surge in raw materials prices, above all oil. In 2003, the contraction in Portugal was to the order of 1 per cent of GDP and stemmed from the fall in domestic demand (private consumption and investment), with exports, in real terms, coming in with a boost to domestic product. The current recession, however, has been characterised by a fall in domestic demand, though initially only via investment, and a very marked fall in external demand, with a sudden seizure in the flow of international trade in the second half of 2008. For 2009, the most recent Banco de Portugal forecast points to a 3.5 per cent fall in GDP. The unemployment rate and the way it is moving are also both different in the two periods. At the start of the 2001-2003 period, the unemployment rate stood at around 4 per cent, and over the pe-

Chart 3

GDP

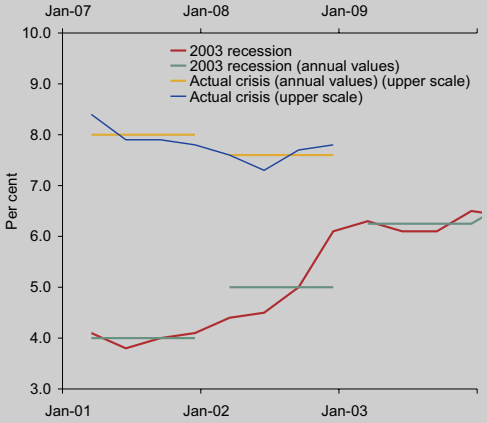


Source: Banco de Portugal.
Note: The GDP projection for 2009 is as published in Banco de Portugal, *Economic Bulletin-Spring 2009*.

riod there was a two-point rise. The rate in the current recession is higher, standing at around 8 per cent (Chart 4). An analysis of how the rate was moving in 2008 shows a fall in the first half of the year and a rise in the second. There is a significant rise expected for 2009 and this could have a negative effect on credit risk in the non-financial private sector. The expectations that the economic crisis could worsen are corroborated by qualitative indicators, which tend to reflect existing and future economic conditions. They have recorded abrupt falls since the onset of the crisis, and are currently at record lows (see "Box 4 The recent evolution of qualitative indicators", Banco de Portugal, Economic Bulletin-Spring 2009).

Chart 4

UNEMPLOYMENT RATE



Source: Banco de Portugal.

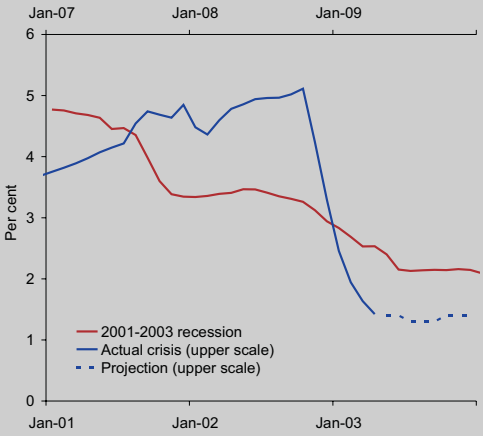
The two recessions under review occurred with Portugal part of the euro area. As such, they are characterised by relatively low interest rates, though rates moved differently in the two periods. In 2003, the slowdown in economic activity was tracked by a gradual easing of interest rates. In the current situation, however, money market rates were on an upward path until almost the end of 2008, reflecting near stability in the ECB base rates and a rise in risk premiums in the money market (Chart 5). At the end of the year, these rates fell abruptly and in the first months of the current year they stood lower than in the earlier recession. Interest rates in the various credit segments moved overall along the same path, though there were the usual lags in transmission, with increases up to the end of 2008 and a falling trend thereafter. Given the way money market rates decreased, there is likely to be another fall in interest rates in different segments of credit. This picture is different from 2003, when rates were on a downward path throughout the three-year period. Interest rates on loans throughout 2008 were above those of 2002, although this behaviour is not so clear in the case of the non-financial companies. As for the differential in interest rates in the different segments in terms of money market rates, this was in general narrower than in the 2003 recession. Rises have been coming in since the end of 2008, however, in part as a result of the lag in transmission of money market rates, and the consensus is that when they level off, it will be at a higher point than before the crisis.

The low level of interest rates in the current economic and financial crisis is particularly important as a factor in keeping default down, in circumstances where the banking system could face increasing difficulties in renegotiating loans as a way of curbing default. In fact, as banks have tightened up their criteria for new loans, there has also been a slowdown on the demand side, so the rate of growth for loans in the non-financial private sector has trimmed. The decrease in growth rates, however, was also visible in the 2003 recession, and is more evident in loans for house purchase, which have been slowing since the turn of the millennium. Loans to non-financial companies and loans for consumption and other purposes have grown more than in the 2003 recession. As in the previous crisis, however, the five biggest banking groups have seen a much bigger slowdown in loans granted.

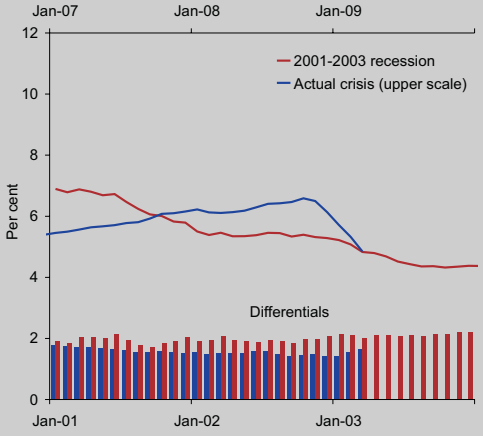
Chart 5

INTEREST RATES

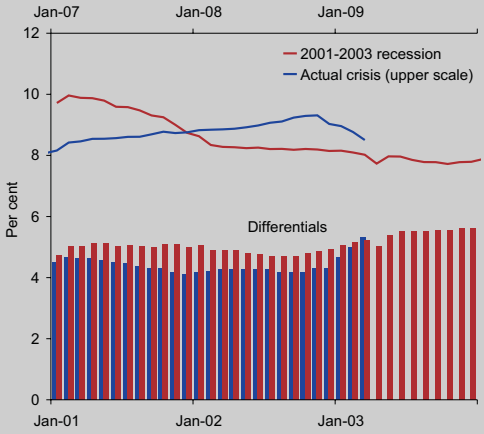
Money market (a)



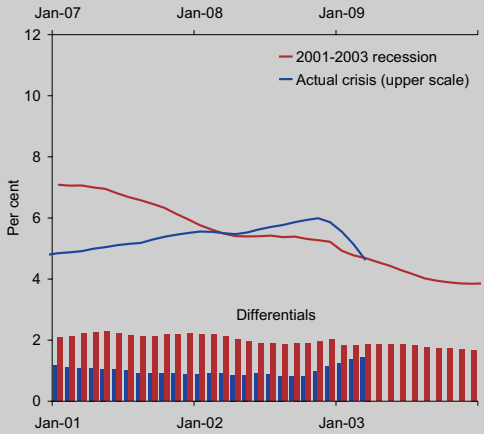
Loans for house purchase (b)



Loans for consumption and other purposes (b)



Loans to non-financial companies (b)



Source: Banco de Portugal.
Notes: (a) The money market interest rate was taken as Euribor at 3 months, with projections along the lines. (b) Interest rates (lines) refer to balances at the end f the period. The differentials (vertical bars) correspond to the difference between the rate on balances and the moving average for six months on Euribor at six months.

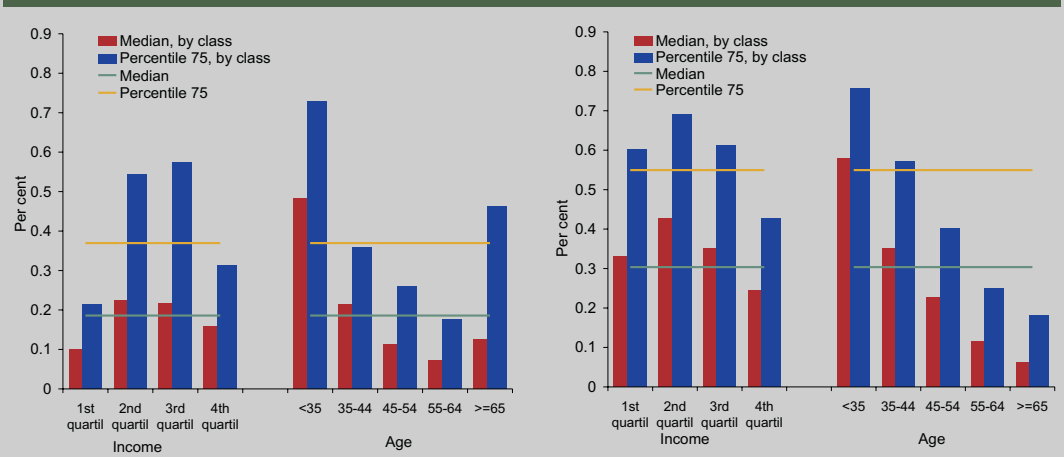
In order to understand the way default of Portuguese households is moving as well as its greater significance than in the 2003 recession, it is important to understand their financial situation. Portuguese households have over recent years built up growing levels of indebtedness that are high in the context of the euro area. In 2002, individuals indebtedness corresponded to around 100 per cent of disposable income, whereas the figure for 2008 was above 135 per cent. The surveys on wealth and indebtedness of Portuguese households (the "Inquérito ao Património e Endividamento das Famílias" - IPEF)[1], carried out in 2000 and in 2006/2007, give us a picture of the financial situation of households at two points in time at equivalent phases of the economic cycle, just before the periods under analysis. Looking at the findings from these surveys, we can see an increase in indebtedness for house purchase resulting from the higher number of households with debt alongside a rise in the average level of debt for indebted households. In fact, according to the results of this survey, and considering only indebted households, the median value for hous-

(1) *The IPEF is a survey carried out by the National Statistical Office (Instituto Nacional de Estatística) and by the Banco de Portugal, based on a sample of households. For more information, see Farinha, L., (2007), "Indebtedness of Portuguese households: recent evidence based on the household wealth survey 2006-2007".*

ing debt as a percentage of wealth is around 30 per cent, against 19 per cent in the 2000 survey (the figures for the 75 percentile of indebtedness are 55 and 37 per cent respectively) (Chart 6).[2] *The reason underlying the increase in indebtedness may be the narrower spreads used in loans for house purchase: from the 2003 recession to the end of 2008, these had been on a clear downward path. Housing debt as a percentage of wealth is higher than in most of the euro area countries for which information is available. It is substantially lower than the figure for the United Kingdom and the United States.*[3] *The same surveys also show that the debt service for house purchase as a percentage of income does not open excessive exposure for the banks in terms of the households that are in very straightened circumstances, contrary to what could have been inferred from the degree of indebtedness. For 2006, for instance, and considering only indebted households, there is a median degree of debt service for house purchase as a percentage of income of around 14 per cent, over and against 11 per cent for 2000 (the figures for the 75 percentile of debt service are 21 and 20 per cent respectively) (Chart 7). The figure for 2006 is below the figures for the euro area countries in the study mentioned earlier. Median debt for Portuguese households (when measured as a percentage of wealth) is relatively high when compared with other euro area countries, though the same is not true for debt service. This can be explained in part by the fact that mortgage contracts in Portugal run to longer maturities, and this means that the debt service can be smoothed out along the debtor's active life (see "Box 4.2 The main characteristics of loans to households for house purchase in Portugal", of this Report). To assess potential risk situations, charts 6 and 7 show the median and the 75 percentile of the degree of indebtedness as well as the ratio of debt service in indebted Portuguese households, dividing the sample according to factors that may present risk, such as household income and wage-earner's age. The evidence points to a certain weakening in the financial situation of those households with lower income, even though they are in a better position than other euro area countries. In 2006, in fact, 25 per cent of households in the lowest quartile of income distribution exhibit a debt service ratio of more than 40 per cent, compared with 33 per cent in 2000. This is not worrying from an aggregate standpoint, since only around 6 per cent of households in the lowest quartile have loans for house purchase. As for age, younger households are more in debt, and also have higher debt service ratios. It is true that these groups are particularly vulnerable to an adverse macroeconomic climate and sensitive to changes in interest rates, but the debt service is low compared with other euro area countries, and there is no evidence of aggregates house price spikes in Portugal – two important factors*

Chart 6

INDEBTEDNESS LEVEL FOR HOUSING [(a),(b)]



Source: *Inquérito ao Património e Endividamento das Famílias*.
Notes: (a) The ratio is defined as loans for house purchase over wealth of indebted households. (b) Median and 75 percentile are defined on the basis of the number of households in degree of indebtedness order.

(2) *The comparison between the two periods should be made with some caution, since the sample was not designed specifically for the IPEF, and it is not possible to have satisfactory control over the effects that this creates.*

(3) *Findings set out in "Housing Finance in the Euro Area", Occasional Paper Series No 101, European Central Bank, 2009, prepared by a task force of the Monetary Policy Committee.*

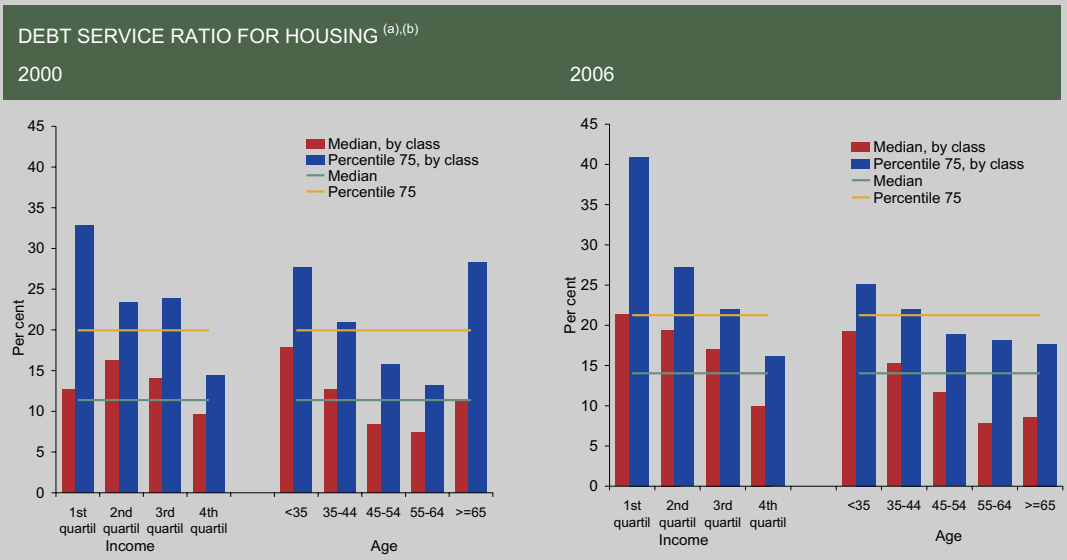
helping to minimize credit risk on house purchases. As for the figures for loans to households that are not for the purpose of house purchase, there was an increase in access to this market among those on intermediate income and those where the representative is relatively young. However, around 50 per cent of these loans were to purchase a car and around 20 per cent were for properties not destined for housing, and this goes a long way towards alleviating credit risk associated with loans to individuals, since these loans are in principle secured against the goods they were used to purchase.

As for non-financial companies, there are currently indeed higher levels of indebtedness than in 2003, but there are similarities in the factors that determine the demand for loans: inventories and working capital financing needs, decrease in internal financing and debt restructuring. However, these factors represent more pressing needs in the current circumstances. It could well be that the reason behind this is the sharp fall in sales, which in a first phase implies working capital financing but if lower sales persist over time, they translate into a permanent loss of profitability and an increase in company vulnerability. It is logical, therefore, that as companies' financial situation is eroded, debt restructuring comes up as a factor in the demand for credit, as companies have to renegotiate loans, and try for instance to extend repayments over a longer period to ease the service burden. This situation becomes more dramatic if financial markets are volatile and there are problems trying to raise capital by issuing long-term debt. The main vulnerability of domestic companies compared with the 2003 recession is in their default ratios, which have already reached a very high point. It is likely that credit risk will also become a far greater concern in the current year (see Box 4.5 Likely developments in the default situation among non-financial corporations", of this Report).

Given this climate, the current economic and financial crisis looks set to be more severe than the 2003 recession, in spite of the uncertainty as to its size and duration. There are mitigating factors, but nonetheless, the non-financial private sector of the Portuguese economy is more vulnerable than in the last recession. As for households, the greater household indebtedness in families with lower incomes and in the younger strata make the sector more vulnerable to a fall in GDP and a rise in unemployment. Non-financial companies are seeing operating profits down and debt rise. This fact, allied to problems in renegotiating debt in more favourable terms, and this is different from what was recently the norm, puts companies in an opposed situation to 2003 and could lead to a substantial rise in default. There have been, though, changes to the regulatory framework of monetary policy, cuts in monetary policy interest rates, state guarantees for issues of securitised debt and fiscal packages designed to support companies and households: these are factors that make this recession different and could well be crucial in keeping levels of default in the private sector in Portugal at an acceptably low level.

Chart 7

DEBT SERVICE RATIO FOR HOUSING [(a),(b)]



Source: *Inquérito ao Património e Endividamento das Famílias*.
Notes: (a) The ratio is defined as debt service for housing over monthly income of indebted households. (b) Median and 75 percentile are defined on the basis of the number of households in degree of debt service order.

Box 4.5. Likely developments in the default situation among non-financial corporations

Credit risk in non-financial corporations is particularly sensitive to fluctuations in economic activity.[1] Macroeconomic conditions affect the ability of businesses to make due repayment of loans from banks; and if demand for a company's products falls, its cash flow could well be impacted. By the same token, banks may rein in credit to companies in the light of uncertainties about the future. This could affect the company's production and investment strategies. In one way or another, there are fewer funds available to service debt, and if this kind of situation spreads to a wide range of companies, the banking system itself could be affected and even the economy as a whole. From a prudential standpoint, it is important to assess the likelihood of default on loans, since this will make it possible to put together strategies that will minimise solvency problems in the banking system. Default on credit is especially relevant in an economic and financial crisis like the one we are in the midst of and the issue is dealt with extensively in this report.

The model of default on credit used here and applied to non-financial corporations can, in certain macroeconomic circumstances, map out the likelihood of such default. The model includes information at the level of the overall loan amount of a given debtor and a given bank, at the debtor level, and at the macroeconomic level. More specifically, it includes 15 sectors and 4 categories of debt (classified in terms of amounts involved). The limits for the categories are 25 thousand euros, one million euros and ten million euros. They are updated using the private consumption deflator for 2008. All exposures of less than 50 euros are ruled out. Given that the model is applied to loans which a specific debtor must repay to a financial institution, we can reasonably admit that the macroeconomic circumstances are exogenous to the decisions of each company. A sample of anonymous data was used for estimating the model. The figures relate to the period between 1995 and 2008, on a quarterly basis, providing around 9 million observations.[2] The data providing loan profiles is from the Credit Register database and other Banco de Portugal databases.

Table 1 shows the structure of the 2008 sample in terms of activity and amount of credit. Almost 53 per cent of the total exposure relates to the category in excess of 10 million euros. The most representative sector is Property and Company Services, with nearly 31% of the total exposure, followed by Construction (19.2 per cent) and Business (16.1 per cent).

This credit portfolio structure will be used in the projection of expected defaults, in terms of the macroeconomic scenario described in table 2. The projected figures for GDP are as published in the Spring Economic Outlook. The short-term interest rate for the interbank market in 2009 is based on the implicit expectations in the interest rate futures market, also underlying the Spring Bulletin forecasts. The default model uses, among other regressors, the output gap and the interest rate in loans to companies. These figures are estimated from the information in Table 2. It can be seen that the macroeconomic scenario postulates a fall in GDP for 2009, and this has consequences on various levels, among them the labour market. It also leads to a worsening of the output gap. This effect is partly offset by a fall in the short-term interest rate, bringing lower rates for companies in their train, albeit only partially, given the specific increase in credit risk.

Chart 1 shows the estimated evolution of average default rates for a sample of non-financial enterprises, weighted by the total exposure of their sector and the category and size of total credit, in line with Table 1. Between 2000 and 2003 there was an increase in the likelihood of default, which then fell until 2006. The probability of default climbed rapidly in 2007 and 2008.

The figure projected for the likelihood of default in 2009 gives an increase of around 10 per cent over 2008, standing at 21 per cent above the likelihood of default at the last peak in 2003. These figures graphically illustrate the impact of worsening macroeconomic conditions on credit default in companies. Even with interest rates predicted to fall substantially – and this would in principle lower default because debt service would be easier – the pronounced

(1) *The term "non-financial corporations" refers in the widest sense to what we could call the non-financial entrepreneurial sector. This takes in, for example, non-financial companies and sole owner structures.*

(2) *This version is a more recent model of the one described in the "Financial Sector Assessment Programme Portugal: Banking System Stress-Testing", Banco de Portugal Occasional Paper, 2007, section 4.1, available on http://www.bportugal.pt/root/publish/op/2007-1.pdf. One limitation of the model is the inexistence of detailed information on the balance sheet of the debtors. The inclusion of this type of variable using the available databases would imply a considerable downgrade of the sample and skew in the findings.*

Table 1

STRUCTURE OF THE LOAN PORTFOLIO FOR NON-FINANCIAL CORPORATIONS, 2008
Average annual figures per sector and size category of exposure as a percentage of the total amount

	Categories of credit dimension, EUR 2008			
	[50 ; 2.5×10^4[	[2.5×10^4 ; 10^6[	[10^6 ; 10^7[	[10^7 ; ∞ [
Agriculture and Fisheries	0.82	0.69	0.69	0.21
Extraction	0.02	0.05	0.16	0.11
Industry	1.10	1.64	4.27	3.86
Energy	0.01	0.03	0.19	2.09
Construction	1.25	1.77	6.33	9.85
Commerce	3.28	3.48	4.65	4.68
Tourism	0.57	0.51	0.85	1.17
Transportation	0.30	0.36	0.78	4.08
Financial Services	0.26	0.20	0.18	1.64
Real State and Services	1.06	1.89	6.33	21.30
Public Services	0.01	0.01	0.55	2.56
Education	0.07	0.10	0.09	0.04
Health	0.23	0.32	0.23	0.10
Social Services	0.50	0.38	0.62	1.40
Domestic Activities	0.04	0.02	0.00	0.00

Source: Banco de Portugal.

Table 2

MACROECONOMIC SCENARIO
Average annual figures as a percentage

	3-month interbank money market interest rate	GDP real growth rate
2008	4.6	0.0
2009	1.8	-3.5

Source: Banco de Portugal.

contraction of GDP in 2009 (and consequently the enlargement of the negative output gap) would more than offset this.

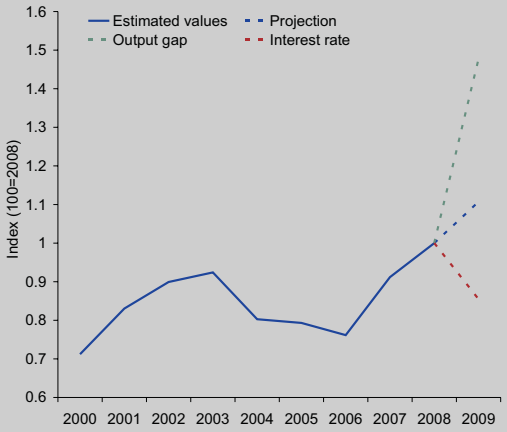
For an idea of how each macroeconomic factor plays its part in this scenario, we can construct an exercise where we allow the macro factor under analysis to track the path of the initial scenario and fix the remaining regressors at 2008 values. Since this is a non-linear model, the overlap principle is not valid, that is, we cannot add the contribution of each variable to obtain the total impact. We are not dealing here with a breakdown of the effects, but rather a comparison between alternative scenarios where we decide that only one of the macro variables will change. The findings will be found in Chart 1. We can see that if the interest rate stays at the 2008 level, the average likelihood of default will rise by almost 50 per cent, due to the negative evolution of the output gap. On the other hand, if the output gap stays at the 2008 level and the interest rate goes down in line with the scenario, the likelihood of default will go down by 15 per cent. These findings suggest that the negative effects on the real economy are greater than the positive effects of the move in interest rates in the interbank market, bearing in mind that the expectation of a rise in credit risk mitigates the fall in interest rate for companies.

In conclusion, the scenario underlying the most recent Banco de Portugal projections for 2009 implies a worsening of the likelihood of default on credit to non-financial corporations, with the figure higher than in the previous recession. The effect of the economic recession on default will be even more pronounced if there is not a substantial cut in short-term interest rates and consequently, in the rates on offer for companies.

Chart 1

LIKELIHOOD OF DEFAULT FOR NON-FINANCIAL CORPORATIONS IN ANNUAL TERMS

Weighted average per sector and size of exposure, 2008 baseline



Source: Banco de Portugal.

PART II – ARTICLES

Wealth Effects on Consumption in Portugal: A Microeconometric Approach

Capital Structure Decisions in the Portuguese Corporate Sector

An Assessment of Capital Requirements Under Basel II: The Portuguese Case

WEALTH EFFECTS ON CONSUMPTION IN PORTUGAL: A MICROECONOMETRIC APPROACH*

*Luísa Farinha***

1. INTRODUCTION

The topic of wealth effects on consumption has recently been subject to renewed research and policy interest. Sharp increases in global stock prices were recorded during the 90s, followed by strong and persistent rises in house prices in the US, the UK and some euro area economies. Over the same period, saving rates kept a falling trend. The practice of borrowing against home equity to finance consumption was largely to be found in some economies such as the US, the UK and the Netherlands. This practice was supported by historically low levels of interest rates and innovations in financial and mortgage markets and it is likely that it played a critical role in sustaining consumer expenditures. These developments enhanced the interest in studying the effect of both financial and housing wealth on consumption. More recently, in the context of the financial crisis, the sharp reverse in both stock and house price trends raised concerns that these developments could contribute to depress consumption and exacerbate the economic slowdown, reinforcing the interest in these issues.

In Portugal, unlike in the US and many other countries, there is evidence that house prices changed only slightly above the consumer price index during the period 1996-2007. The increase in the level of households' gross housing wealth, coupled with a declining trend in the savings rate, was mainly explained by the easier access to credit as the decline in nominal interest rates lowered the incidence of liquidity constraints. More recently, the conditions of access to credit have changed with the purpose of mitigating the effect of rising interest rates on debt service, thereby improving households' ability to service debt through, for example, the widening of loan maturities.[1] In Portugal equity withdrawals from housing are still limited and the average loan to value ratio is not as high as in the countries referred above. Moreover there is no evidence of a speculative bubble in house prices. However, the significant weight of housing wealth in Portuguese household portfolios makes households, in particular specific types of households, dependent on developments in the housing market. In fact, there are reasons to expect heterogeneity in the relation between housing and consumption across different types of households. The potentially different reaction of households with different characteristics to shocks in this market is therefore a relevant issue in studying wealth effects in the Portuguese economy.

The literature has long established a positive relation between consumption and wealth. Theoretical models basically predict that unexpected wealth shocks change households' permanent income, thereby affecting their life-cycle pattern of savings and consumption. Empirical studies have generally supported this prediction. As a matter of fact, empirical research on the link between wealth and consumption has generally found evidence of a positive and significant relationship connecting the two variables. In studies that make use of macro level data for the US, where the issue has been most extensively studied, the estimated marginal propensity to consume (*mpc*) out of wealth typically ranges

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(1) See Farinha (2008).

between 0.02 and 0.05. The results of individual and cross-country studies suggest that the estimated *mpc* out of wealth tends to be larger in the US or the UK than in continental European countries.

Empirical studies of wealth effects on consumption in the Portuguese economy are scarce, mainly due to the lack of appropriate data. Recently, Castro (2007) estimated the effect of both financial and housing wealth on consumption using time-series aggregate data and found a significant impact, estimating an *mpc* out of wealth of 0.03, with similar magnitudes for both types of wealth.[2]

Household micro data allow the assessment of wealth effects to be enriched by providing the possibility of estimating differential responses according to the type of household. The insights brought about by micro data may be helpful to understand which theories of the wealth effect are more consistent with individual behaviour. With household micro data it is possible to study separately the behaviour of holders and non-holders of specified assets. This is particularly useful to differentiate direct effects of wealth on consumption (that is, the effect of an asset price rise on the consumption of the asset holders, because their wealth increases) from indirect effects (that is, the effect of the asset price rise on the consumption of non-asset holders). If there is mainly a direct effect, then the heterogeneity of household portfolios necessarily implies considerable heterogeneity in the response of household consumption to asset prices.

In this paper we present evidence on the effect of total and housing wealth for the case of Portuguese consumers using data from the Household Wealth and Indebtedness Survey.[3] With micro-level data we are able to estimate different effects according to household characteristics, hence providing further insights on the relation between wealth and consumption with policy relevance. This type of data may be very helpful in providing new insights on the potential explanations underlying the relationship between wealth and consumption. This may be so, for instance, on the precautionary savings explanation (rising wealth can alleviate the need for savings for precautionary motives). Another policy relevant hypothesis that can be assessed with micro data is the effect of wealth on consumption through the relaxation of borrowing constraints.

Though panel data are not available, we can take advantage from the availability of three cross-sections corresponding to the three waves of the *IPEF* that were carried out in 1994, 2000 and 2006. Therefore, some comparisons of results in different points of the economic and credit cycles can be made.

By taking into account the potential reverse causality between wealth and consumption, we complement the results of the linear regression with the results obtained with an instrumental variables estimator, which globally reinforce the results of the former.

The remainder of the paper is organised as follows. Section 2 briefly presents the theoretical background and reviews existing empirical literature. Section 3 briefly describes the econometric methodology and presents the data. Section 4 discusses the results and section 5 presents some concluding remarks.

(2) Note that these results are not exactly comparable with results for other countries. In fact, despite a relatively high weight of shares and other equity in Portuguese household portfolios by European standards (36 per cent compared with 31 per cent in the euro area) this is largely dominated by unquoted shares and other equity (see Cardoso *et al,* 2008).

(3) This is the *Inquérito ao Património e Endividamento das Famílias* (*IPEF*), which has been carried out by Statistics Portugal and Banco de Portugal. For further details on the characteristics of the *IPEF*, see Farinha (2008).

2. LITERATURE REVIEW

The life-cycle/permanent income hypothesis supports most efforts to model the effect of changes in wealth on consumption. According to the life-cycle hypothesis, consumers try to smooth consumption over their life span on the basis of their intertemporal budget constraint. Smoothing is achieved by borrowing when young against expected future income, repaying debt when income actually rises and consuming out of accumulated wealth when retired. In this framework consumption depends on permanent income, initial wealth, life expectancy and time preference.

Researchers have extended the basic model accommodating deviations from the basic predictions and have obtained a more realistic explanation of consumer decisions. Allowing for capital market imperfections and information asymmetries, some authors have relaxed the assumption that households are able to borrow as much as they want at a given interest rate. In other cases, models have been extended so that they allow for the possibility that households may want to keep some assets for precautionary or bequest motives.

Some researchers have also recognised that not all types of wealth matter the same for consumption. They argue, for instance, that it makes sense to distinguish between financial assets and housing wealth, because of different consumer preferences, different asset characteristics in terms of their liquidity, measurability, tax treatment, use for bequest motives, etc.[4]

Two broad types of approaches have been used for the empirical assessment of wealth effects on consumption. One relies on aggregate time-series data and the other is based on household micro data. The time-series approach makes it possible to distinguish between the short-run and the long-run relationships, identifying which variables adjust to restore the long-run equilibrium in the case of a shock and to determine the time taken by the adjustment process. The existing empirical literature has generally found evidence of a positive and significant long-run relationship between wealth and consumption. However, estimates of wealth effects on consumption vary greatly across countries. Davis and Palumbo (2001), using US aggregate data, estimate a non-negligible long run *mpc* out of wealth in the range 0.03-0.06, which is somewhat higher than it is typically found for the US. In international comparisons, the estimated *mpc* out of wealth tends to be larger in the US or the UK than in continental European countries. The exact measurement of the magnitude of the wealth effects on consumption and its driving forces remain controversial.

The time-series approach is not very informative about the nature of the relationship between consumption and wealth and does not make it possible to distinguish between the alternative hypotheses that have been pointed out in the literature: the existence of a direct causality between wealth and consumption, the existence of common factors driving the two, the importance of wealth for the incidence of borrowing constraints, etc. Above all, reliance on aggregated data to estimate the effect of asset price changes on consumption fails to assess potential heterogeneous responses of different types of households that may cancel each other out in the aggregate and may therefore result in a weak estimated response of aggregate consumption to changes in wealth.

Evidence on wealth effects based on micro data is relatively more recent. By taking into account individual heterogeneity, micro data may be helpful to distinguish the relative roles of alternative hypotheses in explaining the aggregate relationship. However, evidence based on this type of data is scarce as

(4) For reviews of existing literature covering both theoretical and empirical issues, see for instance Poterba (2000) and Carrol (2004). The first paper discusses mainly the effect of stock prices on consumption and the second is more focused on the house prices impact. Paiella (2007) updates research carried out in both directions.

compared with evidence based on aggregated data. As a matter of fact, estimating wealth effects at the micro level is difficult because of a shortage of household micro data including at the same time information about consumption, wealth and socio-economic and demographic household characteristics. The ideal data set should also provide data at frequent intervals and over a sufficiently long period of time to explore the effect of asset price movements. Data sets combining all these characteristics are very rare or simply do not exist.

Most studies using micro level data present evidence for the US. Maki and Palumbo (2001), using data on the Survey of Consumer Finances (SCF), and Dynan and Maki (2001), using data from the Consumer Expenditure Survey (CES), find a direct effect of wealth on consumption which is globally compatible with the decline in aggregate savings in the US during the 90s.

Bostic *et al* (2005) match SCF and CES data and find an important role for both financial wealth and housing wealth in the determination of household consumption patterns. They also find that despite elasticities with respect to financial wealth being highly significant throughout the period of analysis (1989-2001), they are smaller than elasticities with respect to housing wealth and show a downward trend.

The evidence with European data is scarcer. There are, however, a few remarkable exceptions. Paiella (2003) and Guiso *et al* (2004) present evidence for Italy which in many respects is similar to US evidence, though the estimated size of the wealth effects tends to be smaller in Italy. Bover (2005) presents estimates of wealth effects on consumer spending using the first wave of a new survey of Spanish households. She focuses on the effects of housing wealth and finds large and statistically significant effects especially for prime age households. She interprets the estimated age pattern of the wealth effect for Spanish households as evidence of a precautionary savings motive, as housing equity withdrawals, reverse mortgages[5] and moving to a smaller house when older (downsizing) are not frequently observed in Spain.

Campbell and Cocco (2007) use household data for the UK to estimate the response of consumption to house prices. They distinguish "direct" housing wealth effects from other explanations by separating the behaviour of asset holders and non-asset holders (homeowners and renters). They argue that most young households plan to increase the size of their house later in life, and they can be thought of as "short" in housing. On the other hand, many old households plan to move to a smaller house later in life, so they are "long" in housing. Without instruments that allow households to insure these short and long positions, there is a redistributive wealth effect when unexpected shocks to house prices occur. They estimate the largest house price elasticity for older homeowners and the smallest for younger renters, which are respectively the households that are expected to gain and lose from house price increases. They also find that controlling for regional heterogeneity is important when estimating the effect of house prices on consumption.

The theoretical relationship between house price changes and consumption at both aggregated and household level has been recently investigated by Li and Yao (2007) in the context of a stochastic life-cycle economy.

Cross country evidence is even scarcer given the lack of harmonised micro level data. Sierminska and Takhtamanova (2006) use data from the Luxembourg Wealth Study[6] to investigate whether there are

(5) A reverse mortgage (or lifetime mortgage) is a loan that may be understood as the inverse of what is usually named a mortgage. In a reverse mortgage, home owners receive in monthly payments (or a bulk payment) a fraction of the available equity in their houses, where they can live until death. At that moment the heirs pay the loan or the bank executes the mortgage.

(6) The *Luxembourg Wealth Study,* together with the *Luxembourg Income Study,* assembles a group of databases containing harmonised information at the microeconomic level on households in different countries. Their ultimate goal is to enable cross-national research on diverse topics related to household finance.

differences in direct wealth effects on consumption out of different types of wealth and across age groups in three countries: Canada, Italy and Finland. Overall, they find that the effects from housing wealth are stronger than the effects from financial wealth. Moreover, their results suggest that housing wealth effects are lower for younger households. They find differences in wealth effects across countries, detected by statistically significant differences in the magnitude of the estimated elasticities.

3. METHODOLOGY AND DATA

3.1. Method

The basic specification for the consumption model may be written as:

$$C_i = f(W_i, Z_i) \tag{1}$$

It relates, at the household level, consumption, C_i, and wealth, W_i. Several economic and socio-demographic characteristics of households, Z_i, are also included as controls. The reason for including these variables is to capture the effect of permanent income which relates to current income after demographics and human capital income are taken into consideration. These variables also capture the effect of preference heterogeneity across households.

A logarithmic transformation is used to linearize monetary variables, so that the basic estimated model is:

$$lnC_i = a_0 + a_1 lnW_i + \sum_{k=2}^{K} a_k Z_{ki} + u_i \tag{2}$$

Under this specification, the coefficient a_1 should be interpreted as the elasticity of consumption to changes in wealth, that is, the percentual change in consumption if wealth changes 1 per cent. Disaggregating wealth into its components is useful as there are both theoretical and empirical reasons to expect differential impacts. However, it also leaves us with the problem of a larger number of observations taking the value zero. These observations have to be discarded when the logarithmic transformation is used. Debt has also to be included in the model for a more comprehensive characterisation of households' overall financial position. However, the consideration of debt, which may be viewed as negative wealth, complicates matters somewhat more. The procedure that was taken was to define wealth as net worth, that is, the sum of financial and non-financial assets net of total debt.[7] Housing wealth refers to the value of the household's main residence and other real estate properties net of loans for housing purposes. Financial wealth is defined as the sum of deposits, mutual funds, stocks and bonds net of loans for other than housing purposes.

The baseline model can be extended by letting the regression coefficients vary according to several household characteristics D_j. This specification may be written, in its general form, as follows:

$$lnC_i = a_0 + a_1 lnW_i + \sum_{j=1}^{J} a_{wk} D_{ji} W_i + \sum_{j=1}^{J} \sum_{k=1}^{K} a_{jk} D_{ji} Z_{ki} + u_i \tag{3}$$

As argued above disaggregating the effects across households of different types can help interpreting wealth effects in distinguishing between alternative theoretical hypotheses.

(7) Taking logs forces dropping zero and negative values of net wealth. Bostic *et al* (2005) argue that the difference of two log-normal variables is normally distributed so they do not log-linearize measures of net wealth. In our case the visual inspection of estimated distributions for the various measures of wealth indicates that taking logs is more adequate.

Though we do not have panel data, we can take advantage from the fact that the results of three waves of the *IPEF* are available. Equation 2 was also estimated by pooling pairs of samples corresponding to different cross-sections. With this exercise we can test the significance of the differences estimated in the effect of wealth on consumption in two different moments of the economic and credit cycles.

Instrumental variables estimation

One problem with household-level studies of wealth effects is that wealth changes are due to household saving or investment decisions in prior periods. This means that reverse causality is present and hence the assumptions of exogeneity of regressors needed to the consistency of OLS estimators fail to exist. Two other sources of endogeneity may also lead to correlation between the regressors and the residual: omitted variables and measurement errors. The attempt to solve the endogeneity problem involves the use of an instrumental variables estimator.[8]

If we treat wealth as an endogenous regressor, we must have one or more additional variables available that are correlated with wealth but uncorrelated with the residual u_i. Moreover, these excluded exogenous variables must not affect consumption directly. In our case, we use gender and age dummies, and the resulting interactive variables as instruments for total net wealth. Given the relatively comprehensive set of household characteristics that are included as controls in the equation for consumption, age dummies can be excluded from that equation and can be used as valid instruments. In the case of housing wealth we used two additional variables as instruments, as explained in section 4. Equation 2 is estimated using 2SLS.[9] First stage regression results are used as a first assessment of the validity of the instruments in order to test that the instrumental variables are correlated with the endogenous regressor. In addition, a test of overidentifying restrictions tests whether the instruments are uncorrelated with the error term of the structural model.[10]

3.2. Data

The analysis presented in this paper is based on household-level data from the Household Wealth and Indebtedness Survey (*IPEF*). The main results of the paper were obtained with data from the most recent wave of the survey.[11] By making use of data from the two previous waves of the *IPEF*, which were carried out in 2000 and 1994, some comparative results were also obtained and are presented at the end of the regression analysis section. As the structure of the questionnaire and the sample design are similar for the three editions of the survey, the relevant variables for the analysis of wealth effects on consumption may be derived from the three databases. The fact that we cannot benefit from the existence of a panel does not preclude the possibility of some comparisons being carried out.[12]

The *IPEF* collects data on Portuguese household expenditure, income and wealth. This is an important feature of this database. In the case of real estate wealth, which accounts for the largest share of Portuguese households, there is detailed information including year and value of acquisition, house size, whether it is the household's main residence, etc. For each household the database also provides in-

(8) A different attempt to solve this endogeneity problem involves studying the effect of winning a lottery on household behaviour. Lottery evidence analysed by Imbens, Rubin and Sacerdote (1999) suggests that only relatively large winnings have discernable effects on household behaviour.

(9) The equation was also estimated with LIML with broadly similar results (not shown in the paper).

(10) For a general discussion of instrumental variables estimation, see for example Wooldridge (2002).

(11) The last wave of the *IPEF* was carried out during the last quarter of 2006 and the first quarter of 2007.

(12) Some problems associated with sample design and representativeness mean that comparisons based on descriptive statistics alone should be avoided. However, the results of a regression analysis, whose purpose is to identify economic relations among certain variables at the household level, remain valid as they are potentially less affected by those problems.

formation on socio-demographic characteristics such as age, education, labour market status or region of residence.

Summary statistics

To illustrate both real estate and financial wealth patterns implicit in *IPEF* 2006 sample data according to the type of household, Table 1 presents some summary statistics. Households are split according to the age, level of education and labour market situation of the household head and also according to household's income and wealth quartiles. Table 1 presents the percentage of asset holders in each household class. The assets considered are those with a market valuation, that is, housing wealth and risky financial assets (shares and other securities). These figures show that most households hold housing wealth, which is consequently more evenly distributed than risky financial assets.

Table 1

SUMMARY STATISTICS

	Fraction of households	Fraction of households holding the assets		Fraction of housing wealth in total wealth (average)
	Total	Real estate owners	Risky financial assets holders	
All	1.0000	0.7564	0.1777	0.7049
Age 20-30	0.0340	0.5417	0.0928	0.8225
Age 30-40	0.1768	0.7427	0.1913	0.7570
Age 40-50	0.2292	0.7557	0.1861	0.7203
Age 50-65	0.2782	0.7969	0.2356	0.6878
Age >65	0.2818	0.7516	0.1153	0.6785
Education 1st cycle	0.5295	0.7320	0.1001	0.6977
Education 2nd cycle	0.2680	0.7557	0.1747	0.7314
Education 3rd cycle	0.1026	0.7868	0.2968	0.7314
Education high school or college	0.0999	0.8569	0.4744	0.6715
Self-employed	0.1322	0.8140	0.3102	0.5667
Employee	0.4404	0.7612	0.1858	0.7554
Unemployed	0.0537	0.6119	0.1375	0.7437
Retired	0.3268	0.7612	0.1278	0.7068
Other	0.0468	0.6823	0.1211	0.7727
Income 1st quintile	0.2000	0.7088	0.0570	0.7418
Income 2nd quintile	0.2000	0.6755	0.0825	0.7103
Income 3rd quintile	0.2000	0.7364	0.1059	0.7446
Income 4th quintile	0.2000	0.7755	0.2033	0.6982
Income 5th quintile	0.2000	0.8807	0.4425	0.6755
Net wealth 1st quintile	0.2000	0.1108	0.0452	0.5507
Net wealth 2nd quintile	0.2000	0.7872	0.1161	0.7716
Net wealth 3rd quintile	0.2000	0.9628	0.1351	0.8132
Net wealth 4th quintile	0.2000	0.9822	0.2011	0.7927
Net wealth 5th quintile	0.2000	0.9834	0.4065	0.6406

Sources: *INE* and Banco de Portugal (*IPEF* 2006).

4. REGRESSION RESULTS

Table 2 presents the results of the estimation of the basic specification, given by equation 2 in Section 3.1. This equation relates consumption and wealth, controlling for a set of demographic and socio-economic household characteristics. These control variables are included to capture the effect of permanent income/human capital on consumption. Thus, among the control variables we also enter household labour income earned in the past twelve months.

In this equation, consumption, C_i, is measured by household monetary expenditures on food, other non-durables and durables. W_i, net total wealth, is given by the sum of household real and financial assets net of household debts. As consumption, wealth and income are measured at the household level, they are "equivalised" using a procedure that is standard in income analysis though there is no such standard in wealth literature. All the monetary variables are then divided by the square root of household size, which means that an intermediate situation between no economies of scale and perfect economies of scale within the household is considered. Furthermore, a logarithmic transformation is used to linearize monetary variables, so that the estimated coefficients on these variables should be interpreted as elasticities. The other household characteristics are included in the form of 0/1 dummy variables capturing the level of education and labour market situation of the household head, the size of the household and its region of residence.[13]

The first two columns of Table 2 show the estimated coefficients and respective t-statistics that were obtained using linear regression (OLS).[14] These results suggest that consumption is positively related to both wealth and income at the usual significance levels. The estimated elasticity of consumption

Table 2

WEALTH EFFECT ON CONSUMPTION IN 2006: OLS AND 2SLS ESTIMATES

	OLS		2SLS	
	1	2	3	4
	Coef.	t	Coef.	t
Net wealth	0.03650	9.92	0.04625	2.11
Income	0.51316	34.58	0.50579	22.44
Education 2nd cycle	0.14316	8.84	0.14262	8.79
Education 3rd cycle	0.26425	9.58	0.26266	9.51
Education high school or college	0.31982	10.45	0.31497	9.74
Employee	-0.07114	-3.48	-0.06211	-2.17
Unemployed	-0.10210	-2.93	-0.09271	-2.29
Retired or other inactive	-0.17605	-8.33	-0.17066	-6.94
Constant	3.65209	28.80	3.61479	24.43
Number of observations		7631		7631
R squared		0.4132		0.4126

Sources: *INE* and Banco de Portugal (*IPEF* 2006).
Notes: *t*-ratios computed with robust standard errors. All regressions also include control variables for family size and region of residence. Instruments: gender and age dummies.

(13) In the case of education, we have four 0/1 dummies defining respectively persons without any formal education, persons that completed the first cycle of basic education, persons with the second or third cycle and those that completed high school or college; in the case of the labour market situation, the dummies define the self-employed, the employees, the unemployed and the inactive; family size dummies distinguish households with one, two, three, four and five or more persons; regional dummies are defined according to NUTS2.

(14) In the paper we do not show the results that are obtained using sample weights in the estimation as their use does not, in general, alter the conclusions of the analysis.

with respect to wealth is around 0.04, leading to an *mpc* that is in line with European figures and lower than what has been estimated in empirical research for the case of US consumers.[15]

Some interesting results also emerge from the effect of the other socio-demographic controls included as explanatory variables. Education, acting as a proxy for human capital, clearly matters for expenditure: more educated households consume significantly more than those that did not complete more than the first level of basic education (the omitted category). The labour market situation of the household head is also likely to have a significant effect on consumption. The results suggest that the consumption of the self-employed (the omitted category) is significantly higher than the consumption in the other labour market situations that are considered. Though not shown in the tables, note that family size still matters for consumption even when "equivalised" values of the monetary variables are considered. Regional variables, which are included in order to capture the potential effect of this source of heterogeneity on consumption, are globally significant.

In Section 3.1, we argue that there are reasons to expect reverse causality between consumption and wealth, that is, this variable is likely to be determined simultaneously along with consumption. Under this hypothesis, wealth would be correlated with the residual term in equation 2, thus violating one of the conditions for the consistency of OLS. These considerations led us to also estimate equation 2 with an instrumental variables (2SLS – Two Stages Least Squares) estimator. Recognising this problem leaves us with another important difficulty – the task of finding an adequate set of instruments. In fact, the exact quantitative magnitude of the wealth effect on consumption depends on the choice of instruments. Yet, the main results of the paper on the heterogeneity of this effect across households at various stages of the life cycle and with different socio-economic characteristics remain robust to various combinations of instrumental variables.

The third and fourth columns of Table 2 present 2SLS estimates, which basically corresponds to apply least squares in two steps. Age dummies and a dummy for gender are used as instruments, that is, the source of pre-determined variation of wealth at the household level. In first stage estimations an F-test for the excluded instruments rejects the hypothesis that they do not have explanatory power.

The elasticity of consumption with respect to wealth that is estimated with IV is similar to the one obtained by OLS and similar conclusions may be also derived for the effect of the control variables on consumption.

Wealth effects according to household characteristics

More interesting results can be obtained when the models allow for differential wealth effects across households of different characteristics. As a matter of fact, with household-level data we can take advantage of the cross-sectional heterogeneity that is present in this type of data. This can be very helpful in several ways. In particular, it can help to discriminate among different theoretical hypotheses for the wealth effect on consumption.

Table 3 presents the results of the estimation of equation 3, where the coefficients on wealth are allowed to vary with household age, income and wealth classes. In this table we show the results obtained with OLS. In this case it is more difficult to find an adequate set of instruments. Using, as in the models presented in Table 2, only gender and age dummies as instruments, the 2SLS estimated elasticities in respect to net wealth tend to be larger than those obtained with OLS, in particular when they are allowed to vary with the household age class or wealth percentile. In the latter case a loss in the

(15) Note that the relation between the elasticity and the *mpc* may be given by: $\varepsilon_i = \frac{dC_i / C_i}{dW_i / W_i} = mpc / \left(C_i / W_i\right)$ and consider, for example, the sample median of C_i / W_i which is approximately 0.15.

Table 3

WEALTH EFFECT ON CONSUMPTION BY AGE, INCOME AND NET WEALTH CLASSES IN 2006: OLS ESTIMATES

	1	2	3	4	5	6
	Coef.	*t*	Coef.	*t*	Coef.	*t*
Net wealth * age 20-30	0.04546	7.15				
Net wealth * age 30-40	0.03625	8.50				
Net wealth * age 40-50	0.04198	10.65				
Net wealth * age 50-65	0.04389	11.68				
Net wealth * age >65	0.02851	7.31				
Net wealth * income 1st quintile			0.03494	7.39		
Net wealth * income 2nd quintile			0.03044	7.56		
Net wealth * income 3rd quintile			0.03421	8.89		
Net wealth * income 4th quintile			0.04025	9.95		
Net wealth * income 5th quintile			0.04458	9.38		
Net wealth * net wealth 1st quintile					0.05485	4.82
Net wealth * net wealth 2nd quintile					0.04052	4.88
Net wealth * net wealth 3rd quintile					0.03608	4.79
Net wealth * net wealth 4th quintile					0.04155	5.80
Net wealth * net wealth 5th quintile					0.05060	7.52
Income	0.50154	33.00	0.44931	12.76	0.49713	33.55
Education 2nd cycle	0.14460	8.30	0.13735	8.49	0.13996	8.68
Education 3rd cycle	0.26083	8.93	0.25140	9.13	0.26075	9.46
Education high school or college	0.32348	10.26	0.30886	9.65	0.30272	9.89
Employee	-0.06758	-3.28	-0.07140	-3.49	-0.04492	-2.18
Unemployed	-0.10939	-3.15	-0.10367	-2.99	-0.08837	-2.54
Retired or other inactive	-0.09777	-4.14	-0.17834	-8.43	-0.16349	-7.77
Constant	3.72425	28.56	4.22754	13.54	3.69291	25.38
Number of observations		7631		7631		7631
R squared		0.4187		0.4152		0.4202

Sources: *INE* and Banco de Portugal (*IPEF* 2006).
Notes: *t*-ratios computed with robust standard errors. All regressions also include control variables for family size and region of residence.

precision of the estimates is also obtained when we use the instrumental variables estimator.[16] However, it should be stressed that the pattern of the wealth effect on consumption according to the household age, income or wealth class of the household obtained with 2SLS is, in broad terms, similar to the pattern obtained with OLS.

Columns 1 and 2 show the results when the wealth effect is allowed to vary with age. These results suggest that wealth matters for consumption in all age classes. The elasticity is larger in the case of the youngest. In the second age class a hump-shaped pattern starts, peaking at an intermediate age class and decreasing afterwards. Wealth is likely to be less important for the oldest consumers. These results are consistent with the results obtained by Bover (2006) who finds a similar age pattern in the housing wealth effect for the case of Spanish households. She interprets her results as evidence of a precautionary savings motive in the effect of wealth on consumption. A similar interpretation can also be made in the case of our results, that is, these results also suggest that an increase in the value of households' wealth decreases their need for other savings (for precautionary reasons) when their life-cycle consumption needs are the largest and at an age when savings could be otherwise occurring (for instance to buy a larger house in the future). This is a plausible explanation given that equity withdrawals from housing are still limited, reverse mortgages are not used and moving to a smaller house when older (downsizing) is constrained by high transaction costs. Note that this is not inconsistent with the view that, in Portugal, easier access to credit contributed to the decline in the savings ratio.

(16) These results are available from the author upon request.

In columns 3-4 and 5-6 of Table 3 the regression coefficients on wealth are allowed to differ according to the income and the wealth class of the household, respectively. These results suggest that the effect of wealth on consumption decreases with income up to a certain level but after that level is reached the opposite relation comes up. A similar pattern also arises when the coefficients are allowed to vary with the wealth class of the household.

Homeowners and the housing wealth effects for households of different characteristics

In the rest of the paper we focus the analysis on the effect of housing wealth on consumption. As we documented above, there are reasons to expect that different types of wealth impact differently on consumption. Furthermore, housing wealth is the main component of Portuguese households' wealth and it is more evenly distributed than financial wealth. In particular, risky financial assets, the tiny component of financial wealth that would be relevant for this analysis, is concentrated in a small fraction of households. Another reason for focusing on housing wealth effects is that in this case a richer set of instruments is available, which may be helpful in checking the robustness of the results.

Table 4 presents the results obtained by restricting the sample to homeowners and focusing on the effect of housing wealth on consumption. Net housing wealth, which we also refer as home equity, is considered. This is given by the sum of the value of the household main residence and the value of other residences owned by the household net of debts obtained for housing purposes.

The estimates presented in Table 4 were obtained with 2SLS, using gender and age dummies as well as two additional variables as instruments. The first of these variables is a measure of the annual average valuation of households' housing wealth computed from survey responses.[17] The second additional instrument is given by a measure of house prices in the location of the household main residence.[18] In the specifications where the wealth coefficient is allowed to differ across households of different characteristics, the instruments are the interactions between these variables and the dummies that identify the households of different types (according to the age of the household head, the income or the wealth percentile of the household). We also estimated these models with OLS, though we do not report here the results[19]. As it is found, in general, in existing empirical literature, 2SLS estimated coefficients tend to be larger than those obtained with OLS. However, the pattern of the housing wealth effect on consumption according to the household age, income or wealth class of the household is, in broad terms, similar using both estimation strategies.

The results in Table 4 suggest that consumption is likely to be more sensitive to home equity than to net financial assets. When the housing wealth effect is differentiated across households of different types, the results generally confirm the patterns identified above for the case of net total wealth. For a visual perception, the results that differentiate according to age, income and wealth are also presented graphically, in charts 1, 2 and 3 respectively.

Comparing 2006 with 2000 and 1994

The results obtained using the databases from the previous waves of the *IPEF* can provide an additional robustness check on the results presented above. Table 5 shows the results that were obtained using 2000 data. These results suggest that the effect of wealth on consumption was stronger in 2000

(17) It is obtained from the market value of houses at the time of interview and their respective value at the time acquisition.

(18) Local house prices are proxied by data on the evaluation that banks make for mortgage purposes. These data is collected by Statistics Portugal. These are values per square metre measured at the municipality level in the case of the Lisbon and Porto regions and the municipalities of medium size. For other locations, prices at the level of NUTS 3 were used. These prices are measured at the end of 2005, about one year prior the survey data.

(19) These results are available from the author upon request.

Table 4

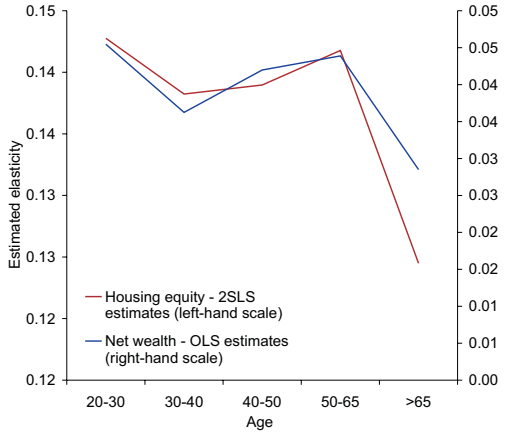
HOUSING EQUITY EFFECT ON CONSUMPTION BY AGE, INCOME AND NET WEALTH CLASSES IN 2006: 2SLS ESTIMATES

	1	2	3	4	5	6	7	8
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Housing equity	0.15650	5.44						
Housing equity * age 20-30			0.14276	3.51				
Housing equity * age 30-40			0.13823	3.73				
Housing equity * age 40-50			0.13897	3.88				
Housing equity * age 50-65			0.13897	4.05				
Housing equity * age >65			0.12449	3.53				
Housing equity * income 1st quintile					0.15081	5.45		
Housing equity * income 2nd quintile					0.14350	5.15		
Housing equity * income 3rd quintile					0.14568	5.21		
Housing equity * income 4th quintile					0.15221	5.37		
Housing equity * income 5th quintile					0.15797	5.51		
Housing equity * net wealth 1st quintile							0.23598	2.70
Housing equity * net wealth 2nd quintile							0.20890	2.89
Housing equity * net wealth 3rd quintile							0.19582	2.96
Housing equity * net wealth 4th quintile							0.19397	3.07
Housing equity * net wealth 5th quintile							0.19702	3.31
Income	0.47936	18.85	0.47627	18.54	0.42283	6.61	0.47809	20.32
Education 2nd cycle	0.14666	6.20	0.13869	5.34	0.13942	5.91	0.13939	5.84
Education 3rd cycle	0.26004	6.91	0.25795	6.46	0.24379	6.47	0.25562	6.79
Education high school or college	0.30797	6.94	0.31221	6.60	0.28977	6.24	0.29786	6.76
Employee	-0.02253	-0.73	-0.03402	-1.11	-0.02291	-0.75	-0.02434	-0.77
Unemployed	-0.02824	-0.56	-0.04540	-0.91	-0.02973	-0.60	-0.03563	-0.66
Retired or other inactive	-0.13105	-4.22	-0.03966	-1.14	-0.13089	-4.21	-0.13374	-4.01
Constant	2.61492	9.10	2.86434	8.05	3.20200	5.56	2.17756	3.16
Number of observations		3155		3155		3155		3155
R squared		0.4576				0.4546		0.4525

Sources: *INE* and Banco de Portugal (*IPEF* 2006).
Notes: *t*-ratios computed with robust standard errors. All regressions also include control variables for family size and region of residence. Instruments: age, gender, local house prices, indicator of house valuation and respective interactions with age, income and net wealth dummies.

Chart 1

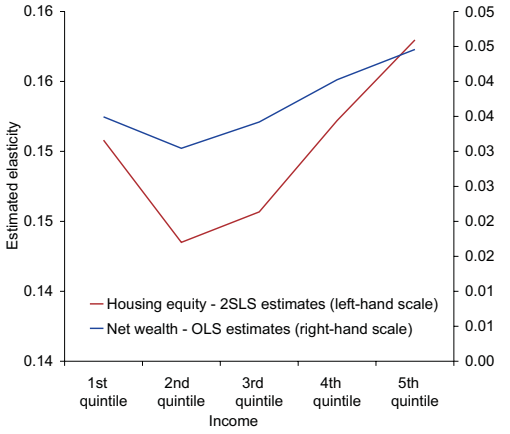
ESTIMATED WEALTH EFFECT BY AGE



Source: INE and Banco de Portugal (*IPEF* 2006).

Chart 2

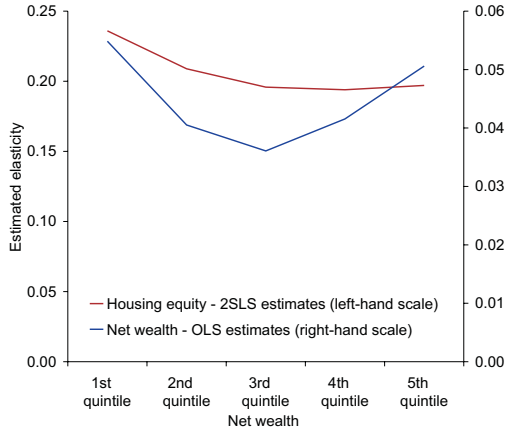
ESTIMATED WEALTH EFFECT BY INCOME CLASS



Source: INE and Banco de Portugal (*IPEF* 2006).

Chart 3

ESTIMATED WEALTH EFFECT BY NET WEALTH CLASS



Source: INE and Banco de Portugal (*IPEF* 2006).

Table 5

TOTAL AND HOUSING NET WEALTH EFFECTS ON CONSUMPTION IN 2000: OLS AND 2SLS ESTIMATES

	OLS		2SLS		OLS		2SLS	
	1	2	3	4	1	2	3	4
	Coef.	t	Coef.	t	Coef.	t	Coef.	t
Net wealth	0.07756	19.21	0.08706	3.93				
Housing equity					0.15877	15.58	0.17246	2.82
Income	0.40322	25.95	0.39704	18.70	0.38840	22.31	0.38424	15.10
Education 2nd cycle	0.16719	8.72	0.16657	8.67	0.18466	8.20	0.18412	8.07
Education 3rd cycle	0.31273	9.68	0.31107	9.54	0.29593	7.80	0.29197	6.95
Education high school or college	0.34853	9.19	0.34375	8.68	0.33160	7.55	0.32479	6.07
Employee	-0.04389	-2.10	-0.03509	-1.21	-0.05125	-2.18	-0.04627	-1.44
Unemployed	0.00989	0.19	0.01732	0.32	-0.00654	-0.11	-0.00710	-0.12
Retired or other inactive	-0.20131	-9.21	-0.19642	-8.00	-0.19465	-8.04	-0.19186	-7.01
Constant	4.59440	34.34	4.54897	27.31	3.79523	22.19	3.67717	6.74
Number of observations		5679		5679		4399		4399
R squared		0.4087		0.4081		0.4110		0.4107

Sources: *INE* and Banco de Portugal (*IPEF* 2000).
Notes: *t*-ratios computed with robust standard errors. All regressions also include control variables for family size and region of residence. Instruments: age, gender, indicator of house valuation.

Table 6

HOUSING EQUITY EFFECT ON CONSUMPTION IN 2006, 2000 AND 1994: OLS ESTIMATES

	2006		2000		1994		Test difference of coefficients (t-ratio)		
							2006 *versus* 2000	2000 *versus* 1994	2006 *versus* 1994
	Coef.	t-ratio	Coef.	t-ratio	Coef.	t-ratio			
Housing equity	0.09410	11.88	0.16605	13.67	0.11747	14.27	4.96	-3.31	2.04
Income	0.50883	27.28	0.40464	16.86	0.44000	26.23	-3.43	1.21	-2.74
Education 2nd or 3rd cycle	0.13450	6.64	0.15242	5.83	0.09151	5.92	0.54	-2.01	-1.69
Education high school or college	0.26983	9.33	0.30699	8.23	0.16513	8.10	0.79	-3.34	-2.96
Employee	-0.04327	-1.77	-0.04321	-1.53	0.00598	0.38	0.00	1.52	1.69
Unemployed	-0.04999	-1.17	-0.02939	-0.42	-0.04899	-2.63	0.25	-0.27	0.02
Retired or other inactive	-0.15396	-6.22	-0.20191	-6.75	-0.09724	-2.89	-1.23	2.32	1.36
Constant	2.98024	18.32	3.50898	15.50	1.75742	16.46	1.90	-1.75	-1.22
Number of observations		4863		2691		4359			
R squared		0.4393		0.4233		0.5506			

Sources: *INE* and Banco de Portugal (*IPEF* 1994, 2000 and 2006).
Notes: *t*-ratios computed with robust standard errors. All regressions also include control variables for family size and region of residence.

than in 2006. By pooling data from pairs of different samples, we are able to test the significance of the difference between regression coefficients in the two years considered. In Table 6 we present the results of estimating equation 2 (using linear regression) considering separately the samples for the three available waves of the survey. The three last columns of Table 6 show the t-ratios for the difference of the coefficients test in two different years (the null hypothesis is the equality of coefficients). These results suggest that the effect of housing equity increased from 1994 to 2000 but decreased in 2006. Concerning the effect of income on consumption, it is apparent from the results that, in 2000, it was not significantly larger than in 1994 but increased from 2000 to 2006.

5. CONCLUDING REMARKS

In this paper we present evidence on the effect of total and housing wealth for the case of Portuguese consumers using micro-level data from the most recent wave of the Household Wealth and Indebtedness Survey (*IPEF*) carried out during the last quarter of 2006 and the first quarter of 2007. We focus the analysis on the potential differential responses from households with different characteristics. With micro-level data we are able to estimate differential effects according to the household characteristics, hence providing further insights on the relation between wealth and consumption, a feature which may have policy relevance. Given the availability of three cross-sections, corresponding to the three waves of the *IPEF*, some comparisons of the results obtained for different points in the economic and credit cycles can be made. We take into account the potential reverse causality between wealth and consumption and present the results obtained with an instrumental variables estimator reducing the chances of inconsistency of the estimators due to problems of endogeneity.

We obtain evidence of a positive and significant effect of wealth on consumption. The estimated elasticity of consumption with respect to wealth, around 0.04-0.05, leads to an *mpc* that is in line with European figures and, as expected, is lower than what has been estimated in empirical research for the case of the US.

The results of the *IPEF* confirm that housing wealth is the most important asset in the portfolios of households in all classes considered. This evidence reinforces the importance of focusing the analysis also on the effect of housing wealth on consumption. We obtain evidence that this effect is stronger for the case of homeowners and housing wealth, what is in accordance with many examples in the recent empirical literature.

The estimated age pattern of the elasticity of consumption seems consistent with the hypothesis of precautionary savings. The effect is the largest for the youngest consumers (who are likely to be saving to buy a first house) and it is followed by a hump-shaped pattern, that is, it is higher for the middle-aged classes when consumption needs are large and savings could be otherwise occurring (for instance to buy a larger house).

In the case of the models that differentiate the effects according to income and wealth percentiles, the pattern that appears seems consistent with the view that households in the lowest income and wealth classes are likely to be liquidity constrained.

The results obtained using the databases from the previous waves of the *IPEF* that were carried out in 2000 and 1994 confirm the positive and significant effect of wealth on consumption and reinforce the importance of housing wealth for Portuguese consumers. These results also suggest that the effect of housing equity on consumption increased from 1994 to 2000 but decreased again in 2006.

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CAPITAL STRUCTURE DECISIONS IN THE PORTUGUESE CORPORATE SECTOR*

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1. INTRODUCTION

In the corporate finance literature, there are two theories of capital structure that are relevant: the trade-off theory and the pecking order theory. The trade-off theory argues that firms choose the optimal level of debt by trading off the benefits of debt against its costs. The benefits of debt include tax deductibility of interest expenses and a reduction in agency costs of equity derived from excess free cash flows. The costs of debt are mainly bankruptcy costs, either direct or indirect, and these may occur in a situation of excessive debt. According to this theory, there is an optimal level of debt which occurs when the marginal benefit equals the marginal cost of an additional unit of debt.

The pecking order theory is an alternative and more recent theory of capital structure. This theory argues that a pecking order in financing exists if there are information asymmetries between the insiders (either large shareholders or managers), and outsiders (mainly small shareholders or other investors of the company). In such case, the cost of issuing new securities is the most important issue and it goes beyond a discussion of benefits and costs of debt. The main prediction of this theory is that there is a hierarchy of financing sources. Hence, firms prefer to use retained earnings as their first financing source, followed by debt and, lastly, by equity. Equity is less interesting to firms, given that it entails larger information asymmetry costs, making its issuance more expensive relative to other funding sources.

The aim of this work is to look at decisions affecting capital structure in the Portuguese corporate sector. In other words, we discuss whether the leverage of firms follows more closely the predictions of the trade-off model and/or the pecking order model. The data used comes from the Banco de Portugal Central Balance Sheet database and covers the period from 1990 to 2007. This database collates accounting information on non-financial firms as well as other data such as the age of the firm and the number of employees.

We observe a significant negative relation between profitability and leverage, which supports the pecking order theory. However, we also observe that firms converge rapidly to their target leverage ratios, thus providing evidence in favour of the trade-off theory. We think these results may not be conflicting as they could refer to decisions made with different time-horizons in mind.

This article is organized as follows. Section 2 overviews the trade-off and the pecking order theories and discusses their main predictions on leverage ratios. Section 3 characterizes leverage in the Portuguese corporate sector using aggregate data and firm-level data. The next Section presents our empirical methodology and main results. Finally, Section 5 concludes the article.

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2. HOW DO FIRMS CHOOSE THEIR CAPITAL STRUCTURE?

Since Modigliani and Miller's (1958) irrelevance proposition, firm's capital structure decisions have been intensely investigated. The irrelevance proposition states that under strict assumptions, among which is the absence of taxes, capital structure is irrelevant to the determination of a company's value. The assumption on taxes proved to be crucial for the irrelevance proposition. In fact, a few years later, Modigliani and Miller (1963) concluded that the introduction of corporate taxes and the possibility of deducting interest on debt from taxable profits would induce firms to be completely financed by debt. However, as this is not usually observed, several authors, including Modigliani and Miller themselves (1963), argued that bankruptcy costs, and other costs associated with debt could explain why firms are not totally financed by debt. This discussion on the benefits and costs of debt is central to the trade-off theory of capital structure. According to this theory, there are forces leading firms to less leverage, for instance bankruptcy costs, and forces leading to more leverage, among them the above-mentioned tax benefits of debt and agency costs. The combination of these forces results in the existence of a target leverage at which the value of firms is maximized.

The main predictions of this theory on leverage ratios are related with the profitability of firms. In fact, profitability has a positive impact on leverage for three main reasons. First of all, as profitability increases, bankruptcy costs decrease, pushing firms to higher levels of debt. Second, as DeAngelo and Masulis (1980) argue, more profitable firms face higher expected tax rates than less or non-profitable firms. This asymmetric taxation of profits and losses drives more profitable firms to higher levels of debt as they would benefit more from the resulting tax benefits. Third, more profitable firms tend to have more free cash flow, that is, more excess earnings over profitable investments. In the agency models of Jensen and Meckling (1976) and Jensen (1986), the interests of managers and shareholders are not aligned and managers tend to waste free cash flow in perquisites and/or bad investments. In such situations, the existence of debt payments helps to reduce agency costs of equity as these payments reduce excess cash in the firm. Besides profitability, there are other characteristics of firms that help to explain target leverages. According to the theory, bankruptcy costs are expected to be lower for firms with more tangible assets as these could be used as collateral, in contrast to firms with more intangible assets. In addition, the existence of depreciation expenses helps to explain less leverage as these expenses result in tax benefits. Finally, in contrast with the above-mentioned agency models, firms with more investments would have less free cash flow for managers to allocate for their own benefit. Hence, for firms with more investments, debt is not as important as a way to monitor and constrain the actions of managers.

The pecking order theory was developed in Myers (1984), using the Myers and Majluf (1984) setting of asymmetric information. In their model, the insiders of the firm, typically the managers, are assumed to know more about the firm's prospects than outside investors. Being privy to confidential information, managers will issue risky securities only when they are overpriced (and will repurchase securities if they are underpriced). However, as investors anticipate this type of behaviour from the managers of the firm, they, the investors, will discount both new and the existing securities when new issues of risky securities are announced. As a result, managers may decide not to issue risky securities and possibly forego profitable investments because those issuances would be too expensive. To avoid distortions of investment decisions, the pecking order theory argues in favour of a hierarchy of financing. Firms are likely to finance their investments primarily with internal financing to prevent the firm from being exposed to the asymmetric information problem. If outside capital is needed, firms are likely to issue debt securities first, that is, those paying a predefined remuneration, which entails lower risk. Only when the

firm's debt capacity is reached should the firm consider equity, as it is much riskier and investors would factor in a bigger discount.

Some predictions of the pecking order are at odds with those of the trade-off theory. In the first place, there is no target leverage, as each firm chooses its leverage ratio based on financing needs. Firms choose to use debt only when internal funds are not enough to cover their investment needs and not because there are benefits and costs from having debt. Secondly, profitable firms use less debt than less profitable ones. This effect derives from the fact that more profitable firms can finance a larger portion of their activity with internally generated funds. Finally, holding profitability constant, leverage is higher for firms with higher investments, as firms need to issue debt when investment exceeds internally generated earnings. In a more complex version of the theory, firms may be considering not only the present needs but also future needs of financing. In such cases, it is possible that firms with large expected investments would prefer to maintain some free debt capacity to avoid having to refuse profitable investments in the future or having to finance these good projects with new risky securities. In such cases, large expected investments help to explain less current leverage.[1]

Although the theories are in contradiction as far as the prediction of the impact of profitability on leverage ratios is concerned, they agree on the impact of the volatility of profits on leverage ratios. For the trade-off theory, the impact of volatility is negative as it increases bankruptcy costs. For the pecking order theory, firms with more volatile cash flows are also less likely to have debt in order to lower the possibility that they will have to issue new risky securities or forego future profitable investments when cash flows are insufficient.

There are two more recent explanations of capital structure decisions, the market timing theory by Baker and Wurgler (2002) and the mechanical stock price explanation by Welch (2004). Baker and Wurgler (2002) argue that managers tend to "time the market" by issuing shares when the equity market is perceived as more favourable. This theory is in contrast with the pecking order hypothesis, as it assumes that managers are able to exploit information asymmetries to benefit current shareholders. On the other hand, as in the pecking order hypothesis, there is no reversion to a target capital ratio. To test their theory, Baker and Wurgler compare the market-to-book ratio with the capital that firms raise in the market. The Welch (2004) explanation of capital structure is based on share price fluctuations. According to this explanation, managers simply let market leverage ratios change because of share price fluctuations. However, given that most Portuguese firms are not publicly traded, testing these theories with Portuguese data is not feasible and hence our analysis will focus on testing the first two above-mentioned theories.

Against this setting, we empirically test whether leverage decisions in Portuguese firms follow the trade-off or the pecking order theory. Hence, we will study (i) how the level of leverage changes with firms' profitability and other firms' characteristics and (ii) if firms have an optimal target leverage to which they converge.

3. LEVERAGE IN THE PORTUGUESE CORPORATE SECTOR

This section provides a characterization of the financial position of the Portuguese corporate sector. The analysis is based on two main data sources: the national financial accounts and the Central Balance Sheet database. There are important differences in the compilation of data in the two sources, mainly due to their coverage, valuation principles and definition of variables. In terms of coverage, the

(1) For a more detailed discussion on the theory and empirical applications of capital structure decisions see Harris and Raviv (1991) and Fama and French (2002), among others.

national financial accounts data source covers the whole corporate sector while the Central Balance Sheet database provides data on a sample of firms. As for valuation principles, national financial accounts tend to privilege market values, while the Central Balance Sheet database relies mainly on book values, although, for the recent past, some assets may be valued at market prices, following the introduction of the international accounting standards. The Central Balance Sheet database provides detailed accounting information on Portuguese firms, and is used mostly for economic and statistical purposes. In this work, only annual data will be used, though quarterly data is also available for a smaller set of firms. Reporting was not compulsory before 2006. Despite that, the database covers around 60 per cent of total gross value added in the Portuguese economy up to 2005, with larger firms being covered more exhaustively than small and medium-sized ones. Even though this bias constitutes a shortcoming, the database is still an extremely rich and unique dataset on non-financial corporations. From 2006 onwards, the Central Balance Sheet database started to be filled in with information reported within the *IES* (Simplified Corporate Information). The *IES* is the result of a joint project by several entities (Ministry of Finance and Public Administration, Ministry of Justice, Statistics Portugal and Banco de Portugal). One advantage of the implementation of the *IES* is that it simplifies the reporting process of firms to different entities by concentrating all reports in just one. In 2006, firms were asked to report information for the previous fiscal year and, as a result, the information in the Central Balance Sheet database from 2005 onwards refers to all companies operating in Portugal instead of just to a representative sample.

Given these important differences in the collection of macro and micro data, it may not be possible to always compare statistics from the two data sources. However, both data sources provide relevant information. On one side, the national financial accounts provide information for the whole corporate sector and privilege market values; on the other, the use of data from the Central Balance Sheet database enables differences in firm size, economic sector and age to be taken into account. Moreover, the use of micro-data allows for a deeper study of the determinants of corporate leverage, exploring firm-level heterogeneity.

3.1. Using macro data

In Portugal, as in most European countries, banks play a central role in financing non-financial corporations. Between 1995 and 2007, bank loans were by far the largest source of external funds for firms, representing more than 60 per cent of total debt during most of the period considered (Table 1). Nevertheless, there was some increase in the share of debt financing through capital markets. Still, in 2007 debt securities issued by firms represented only 13 per cent of their total outstanding debt. Moreover, it is important to consider that a significant proportion of these debt securities is held by banks. Trade credit is also a very important funding source, accounting for more than one quarter of the debt of Portuguese non-financial corporations, even though its importance has been waning in the last decade.

The indebtedness of Portuguese firms has risen substantially during the last decade: whereas in 1995 loans, debt securities and trade credit of Portuguese non-financial corporations amounted to 60 per cent of GDP, in 2007 this indebtedness ratio was almost twofold. The increase in the debt-to-GDP ratio of non-financial corporations in Portugal during this period was one of the largest among European countries (Chart1). As a result, Portuguese firms were, in 2007, amongst the most indebted. The debt-to-GDP ratio of Portuguese companies was, in 2007, lower than that of Danish, Dutch, Swedish and Spanish firms. There is a striking contrast with the relative position of Portuguese firms in this international comparison in 1995, when their indebtedness was below the European average. The increase in indebtedness of Portuguese firms reflected in part the decrease in interest rates in the 90's, as a result of the

Table 1

FUNDING STRUCTURE OF THE PORTUGUESE CORPORATE SECTOR
National Financial Accounts

	Decomposition of debt [a]			Leverage [a] [b]	Total debt [c] as a percentage of GDP
	Loans	Securities other than shares	Trade credit		
1995	56	8	36	-	60
1996	55	9	37	-	61
1997	53	8	39	23	62
1998	59	8	33	26	73
1999	60	9	31	27	80
2000	62	8	30	30	89
2001	63	8	28	33	98
2002	64	10	27	35	98
2003	66	8	26	35	102
2004	64	9	27	33	99
2005	63	11	26	33	104
2006	63	12	25	33	106
2007	64	13	23	33	114

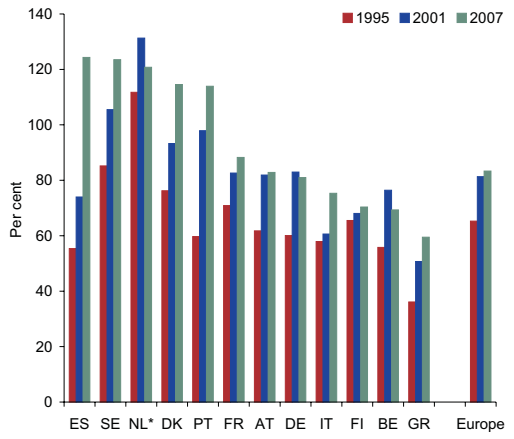
Source: Eurostat (National Financial Accounts).
Notes: (a) Non-consolidated values (in percentage). (b) Leverage is the ratio of loans plus securities other than shares to the sum of loans, securities other than shares, trade credit and shares. (c) Total debt defined by the sum of consolidated values of loans, securities other than shares and trade credit.

convergence process towards the European Monetary Union. In fact, interest paid by firms as a percentage of GDP remained relatively stable after 1999, following a period when it fell substantially.

In turn, the leverage ratio in Portuguese firms moved very differently from the debt-to-GDP ratio. The leverage ratio increased significantly during the late 90's, but remained relatively stable afterwards, at values close to 35 per cent. Moreover, the leverage ratio of Portuguese firms is broadly in line with the European average (Chart 2).

Chart 1

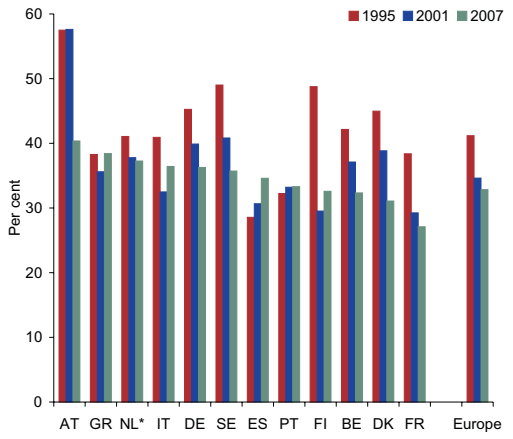
DEBT OVER GDP



Source: Eurostat.
Notes: Total debt over GDP. Total debt defined by the sum of loans, securities other than shares and trade credit. Consolidated values. Europe: average ratio for the selected countries. (*) The last value is for 2006.

Chart 2

LEVERAGE



Source: Eurostat.
Notes: Leverage defined as the ratio of the sum of loans and securities other than shares to the sum of loans, securities other than shares, trade credit and shares. Non-consolidated values. Europe: average ratio for the selected countries. (*) The last value is for 2006.

3.2. Using micro data

The previous subsection presented stylized facts on the financial position of the corporate sector using macro data. We now provide similar results using micro data from the Central Balance Sheet database, covering more than 390,000 firms between 1990 and 2007. In Table 2 we present the debt structure of all the firms included in the database.[2] Results are not directly comparable with those in Table 1 as there are differences in coverage, valuation principles and definition of some variables, as already mentioned.[3]

Table 2

DEBT DECOMPOSITION AND LEVERAGE OF THE PORTUGUESE CORPORATE SECTOR
Central Balance Sheet sample

	Debt decomposition of the total sample (% of total debt)				Leverage [(Loans + Bonds)/Assets]		
	Loans [(a)]	Debt securities	Trade credit [(b)]	Other debt	Average values for the total sample [(a)]	Average values for the reduced sample [(c)]	Median values for the reduced sample [(c)]
1990	50.7	6.5	22.5	19.5	32.1	25.7	1.8
1991	49.8	5.8	22.4	21.3	30.6	25.4	1.7
1992	50.4	5.6	21.4	22.1	30.8	25.6	1.7
1993	56.3	5.1	18.0	20.1	30.4	26.4	0.6
1994	48.5	7.8	18.6	24.6	26.6	19.1	0.4
1995	49.3	8.0	22.9	19.3	27.1	18.9	0.3
1996	49.4	6.7	24.6	18.7	29.5	20.8	1.3
1997	50.1	8.0	23.4	18.0	29.5	21.4	2.2
1998	49.2	9.1	23.8	17.3	27.3	20.0	3.5
1999	51.6	11.8	19.6	16.5	29.8	21.6	4.6
2000	59.9	6.8	18.0	14.7	29.8	19.1	7.3
2001	62.1	5.7	17.4	14.0	32.0	20.1	7.0
2002	62.3	6.1	17.0	14.0	32.3	21.0	7.2
2003	60.9	6.5	16.9	15.1	31.7	21.4	7.4
2004	61.2	8.2	16.3	13.6	32.3	21.5	6.9
2005	57.1	5.9	18.5	17.5	32.1	21.4	6.8
2006	56.5	7.8	17.7	17.4	33.8	23.3	5.3
2007	57.1	7.9	17.0	17.2	34.2	23.1	5.1
Total	56.9	7.3	18.4	16.7	31.9	21.5	4.0
Number of observations	1 331 253	1 331 253	1 331 253	1 331 253	1 331 253	350 212	350 212
Number of firms	391 327	391 327	391 327	391 327	391 327	52 825	52 825
Median number of years a firm is in the sample	3	3	3	3	3	9	9

Source: Banco de Portugal (Central Balance Sheet database).
Notes: Weighted averages except for the last column which reports median values. (a) It includes loans granted by other firms in the same group and Accounts Payable to suppliers of fixed assets. (b) It considers only Accounts Payable (excluding suppliers of fixed assets). (c) Reduced sample after the application of filters.

(2) As previously mentioned, from 2005 onwards the dataset includes all firms operating in Portugal.

(3) For instance, debt within the group is considered as loans for national financial accounts purposes. Leasing contracts are generally considered as trade credit (debt to suppliers) in the Central Balance Sheet, whereas they are classified as loans in the national financial accounts. Finally, there are several differences in the measurement of firms' equity.

We observe that bank loans are the main source of external finance for the companies included in the sample, accounting for more than 55 per cent of total debt. This observation is consistent with the evidence provided in Table 1 based on financial accounts. Trade credit accounts for slightly less than one fifth of firms' debt, though its importance has declined during the sample period. Debt securities represent a smaller amount of firms' debt (less than 10 per cent), even for the larger firms in the sample, thus illustrating the low importance of raising funding in debt markets for Portuguese firms.

Whereas for comparison between financial accounts and the Central Balance Sheet database it is reasonable to consider all firms in the database, in order to obtain non-spurious regression results we need to apply some filters to the data. First, we remove from the dataset observations with a negative value of assets and observations with a zero number of employees. We also remove observations for which there are less than two consecutive years of data and with no information on firm foundation date.[4] Moreover, to winsorize the dataset from spurious outlier observations, we delete observations below (and above) the 1st (99th) percentile for some relevant variables. We end up with a total number of more than 350,000 observations for the period from 1990 to 2007. These observations correspond to about 52,000 firms. On average, we observe firms for 9 years.

Table 2 also displays summary statistics for the leverage ratio, defined as bank loans and bonds as a percentage of total assets. When the whole sample is considered, the leverage ratio is, on average, 32 per cent, having remained relatively stable during the sample period. When only the reduced sample is considered, after applying the above-mentioned filters, the leverage ratio decreases to around 22 per cent. Moreover, the median values for this sub-sample are much lower, standing at 4 per cent.

We created four classes of firms with different sizes by taking into account the value of sales and the number of employees (firm size definitions are presented in Table 3). Most of the firms in the sample are micro firms, having less than 10 employees and less than 2 million euros in turnover. As it would be expected, most of these firms do not use external finance, more specifically bonds and bank loans. The median leverage ratio for these firms is zero during the sample period. Small firms also represent a significant part of the sample. Their median leverage ratio stands at 8 per cent, referring almost exclusively to bank loans. Medium-sized firms are the most leveraged (their median leverage ratio is 14 per cent). Finally, large firms show a slightly lower median leverage ratio (12 per cent). Most bonds are issued by this last group of firms.

We also grouped firms according to their age. The average age of a firm in this dataset is 16 years. The percentile 10 of the variable age corresponds to 3 years, that is, 10 per cent of the observations correspond to firms with less than 3 years. On the other hand, the percentile 90 corresponds to firms with 34

Table 3

CHARACTERIZATION OF DATA BY FIRM SIZE

	Number of employees (E)	Annual Sales (S) in million euros	Number of observations	Number of firms	Leverage (median)
Micro	$E \leq 10$	$S \leq 2$	171 953	38 185	0.0
Small	$10 < E \leq 50$	$2 < S \leq 10$	118 688	26 828	8.1
Medium	$50 < E \leq 250$	$10 < S \leq 50$	47 088	9 409	14.0
Large	$E > 250$	$S > 50$	12 479	2 063	12.1

Source: Banco de Portugal (Central Balance Sheet database).
Note: The sum of the column with the number of firms is higher than 52 000 as firms changed from one class size to another.

(4) These filters, most notably the foundation date, minimize the break in series from 2005 onwards, given that most of the firms included in the new information reporting system do not report their foundation date.

years. We defined four age classes according to the percentiles 25, 50 and 75 (see Table 4). We observe that leverage seems to be (non-linearly) increasing with firm age.

Finally, we also examine differences between economic sectors (Table 5), observing that the most leveraged sectors (taking into account median values) are real estate firms (18.7 per cent), followed by utilities (8.5), mining firms (7.4) and construction (5.4). Given that banks are heavily exposed to some of these sectors, these high leverage ratios may have a negative impact on credit risk, though the analysis of this issue is beyond the scope of this work.

Table 4

CHARACTERIZATION OF DATA BY FIRM AGE

Age class	Firm age in number of years (Y)	Number of observations	Leverage (median)
1	$Y \leq 7$	77 363	0.0
2	$7 < Y \leq 13$	86 194	3.8
3	$13 < Y \leq 22$	94 029	6.0
4	$Y > 22$	92 622	5.8

Source: Banco de Portugal (Central Balance Sheet database).

Table 5

LEVERAGE BY ECONOMIC SECTOR

	Number of observations	Leverage	
		Mean	Median
Agriculture	11 174	14.4	5.2
Commerce	82 102	12.4	5.0
Construction	48 999	14.9	5.4
Education	1 393	13.4	4.4
Fishing	1 099	14.2	4.9
Health	1 867	12.2	2.5
Manufacturing	142 155	11.9	5.1
Mining	3 697	13.2	7.4
Other	2 679	10.9	1.2
Other services	10 183	11.4	1.6
Real estate	3 716	25.3	18.7
Tourism	7 580	12.3	0.0
Transports	28 793	7.0	-
Utilities	1 269	19.3	8.5
Total	346 706		

Source: Banco de Portugal (Central Balance Sheet database).

4. LEVERAGE REGRESSIONS

The main objective of this study is to evaluate which of the two most relevant capital structure theories better explains the capital structure decisions of Portuguese firms. On the one hand, according to the trade-off theory, firms balance the benefits of debt, such as tax benefits and lower agency costs of equity, with the costs of debt, such as bankruptcy costs. The optimal amount of leverage occurs when the

marginal benefit of debt equals its marginal cost. As discussed in Section 2, this theory predicts that more profitable firms should have higher leverage ratios. On the other hand, the pecking order theory does not predict the existence of a target leverage ratio. Following this theory, firms would issue debt only if investment financing needs exceed their internally generated funds. Empirically, this should lead to results opposite from those predicted by the trade off theory. More profitable firms should be less indebted, as they do not need to finance as much of their activity with outside financing. Moreover, firms engaging in larger investment projects should have larger leverage ratios.

We begin by analysing the determinants of the leverage ratio. This analysis provides a direct test of the pecking order, but it does not make it possible to establish clear conclusions regarding the trade-off theory. In order to analyse the latter, we empirically test whether firms adjust their leverage ratios in order to converge to a target ratio.

4.1. Explaining the leverage ratios

Our empirical research strategy is to estimate a fixed effects panel data model such that:

$$\frac{D}{A}_{it} = f_i + \beta_1 + \beta_2 \frac{CF}{A}_{it} + \beta_3 X_{it} + \varphi_t + \varepsilon_{it}.$$

Our dependent variable is $\frac{D}{A}_{it}$, the leverage ratio, defined as bonds and loans as a percentage of total assets. The main variable of interest to test the pecking order theory is $\frac{CF}{A}_{it}$, which is computed as net earnings before provisions and depreciation, scaled by firms' assets.[5] The coefficient β_2 will play a central role in testing the pecking order theory, given that only if it assumes negative (and significant) values there will be evidence in favour of this theory.

In order to accurately estimate β_2, we need to control for relevant firm characteristics which may also affect firms' leverage. The vector X_{it} refers to this set of control variables, which includes Sales Growth, Tangible Assets/Assets, Assets, Group Dummy, Liquidity, R&D Dummy and, finally, Depreciations and Provisions. All these variables are firm-specific and time-varying. Sales growth is the year-on-year change of sales, which is included in the regressions to control for firm's growth. Tangible Assets/Assets, the share of tangible assets in total assets, controls for the asset structure of the firm, and also for the collateral potentially available for debt contracts. Firms whose assets are mostly comprised of intangibles may find it harder to obtain bank financing, thus displaying lower leverage ratios. In fact, as bankruptcy costs play a prominent role in the trade-off theory, asset tangibility is predicted to have a positive impact on leverage. We also consider a dummy variable which considers whether the firm belongs to a group, as this may yield important differences in terms of capital structure decisions, given the possibility of access to intra-group funding. If a firm records assets or liabilities within a group, then this variable takes the value one. In our regressions we also control for Liquidity, defined as short-term securities and cash as a percentage of short-term debt. Another potentially relevant explanatory variable is the R&D Dummy, which takes the value one whenever the firm records some R&D investment. This variable can be taken as a proxy for expected investment opportunities. In addition, together with the variable Depreciation, it also serves as a proxy for non-debt tax shields. In fact, expenditures on depreciations and provisions, which have important fiscal implications for firms, may also condition capital structure decisions. Thus, we also control for depreciations and provisions, mea-

(5) Alternatively, it would be possible to use a profitability measure, such as net earnings over assets. The results obtained are similar to those resulting from the cash-flow ratio.

sured as a percentage of total assets. Finally, given the apparent importance of firm size on leverage ratios, we use the logarithm of assets as a control variable as well. Moreover, in all regressions presented we control for time and firm fixed effects.

In Table 6 we present a brief statistical description of the variables considered in this analysis and in Table 7 we include a correlation matrix of the same variables.

Table 8 presents our first regression results. In the first column we present the results for a simple estimation, in which we consider as explanatory variable only the cash-flow ratio, which is our main variable of interest. We control, as in all other regressions, for time and firm fixed effects. We obtain a significant negative coefficient for cash flow. This preliminary result seems to be in favour of the pecking order theory: firms with more available funds will use less external funding than other companies.

However, this specification is clearly insufficient for more definite conclusions to be reached, given that several other firm characteristics are also likely to be important in explaining leverage ratios. Hence, in the second column of Table 8 we present another regression, in which we include the control variables specified above: Sales Growth, Tangible Assets/Assets, Assets, Group Dummy, Liquidity, R&D

Table 6

SUMMARY STATISTICS

	N	Mean	sd	min	p5	p25	p50	p75	p95	max
Leverage	346 706	12.3	16.7	0.0	0.0	0.0	4.0	20.3	47.8	81.5
CF_A	343 204	6.8	12.9	-71.4	-13.1	2.1	6.5	12.7	26.7	52.7
Inv_A	343 204	5.9	9.7	-11.2	0.0	0.0	1.8	7.4	27.1	59.3
Sales growth	269 933	8.0	43.1	-100.0	-46.5	-10.0	3.5	18.8	73.4	364.3
Tangible assets	350 208	26.8	23.7	0.0	0.3	6.8	20.6	41.6	74.9	128.6
Log assets	350 208	13.2	2.0	1.6	10.1	11.8	13.1	14.5	16.7	23.4
D_group	350 208	0.2	0.4	0.0	0.0	0.0	0.0	0.0	1.0	1.0
Liquidity	340 507	56.1	160.4	0.0	0.3	3.0	11.0	37.6	244.8	1941.8
D_RD	350 208	0.2	0.4	0.0	0.0	0.0	0.0	0.0	1.0	1.0
Dep_prov_A	346 706	6.3	6.0	0.0	0.1	2.0	4.7	8.9	18.5	35.4

Source: Banco de Portugal (Central Balance Sheet database).
Notes: Leverage is defined as bonds and loans over total assets. CF_A is net earnings before provisions and depreciation as a percentage of assets. Inv_A stands for investment as a percentage of assets and Tang_assets is the share of tangible assets in total assets. D_group is a dummy variable which takes the value one when the firm has debt to or from other firms in the group . Liquidity defined as short term securities and cash as a percentage of short term debt. D_RD is a dummy variable which takes the value one whenever the firm has invested in R&D. Dep_prov_A is depreciations and provisions for the year as a percentage of total assets.

Table 7

CORRELATION MATRIX

	Leverage	CF_A	Inv_A	Sales growth	Tangible assets	Log assets	D_ group	Liquidity	D_RD	Dep_ prov_A
Leverage	1									
CF_A	-0.1348*	1								
Inv_A	-0.0149*	0.2033*	1							
Sales growth	-0.0173*	0.1807*	0.1386*	1						
Tangible assets	0.0450*	0.1513*	0.3977*	0.0416*	1					
Log assets	0.3195*	-0.0026	-0.0315*	0.0026	0.0246*	1				
D_group	0.1233*	-0.0231*	-0.0406*	-0.0183*	0.0138*	0.4801*	1			
Liquidity	-0.1523*	0.0909*	-0.0498*	-0.0234*	-0.0652*	-0.1480*	-0.0609*	1		
D_RD	0.1399*	0.0071*	0.0475*	-0.0022	0.1082*	0.3640*	0.2451*	-0.0618*	1	
Dep_prov_A	-0.0355*	0.2881*	0.0779*	0.0064*	0.1243*	-0.1047*	-0.0271*	0.0002	-0.0089*	1

Source: Banco de Portugal (Central Balance Sheet database).
Notes: * indicates that the correlation is significant at the 5 per cent level. All variables as defined in Table 6.

Dummy and Depreciation. The results obtained with this specification are consistent with those obtained with the previous simple regression, as the coefficient associated with cash flow is hardly affected by the change in specification, remaining negative and statistically very significant.

The coefficients obtained for the control variables are all statistically significant at 5 per cent (except for the Group Dummy). First, firms with stronger sales growth show lower leverage ratios, even though this effect is very small. If this variable is seen as a proxy for growth opportunities, this negative coefficient is consistent with the trade-off theory, as risk tends to be higher for these firms, pushing up bankruptcy costs. However, it is also consistent with the complex view of the pecking order theory, which argues that firms would rather maintain some debt capacity to avoid foregoing future investments or having to finance them with new risky securities. Firms with more tangible assets (and hence with more collateral potentially available for credit) are also more indebted than other firms, as the trade-off theory predicts. Firm size seems to be extremely important in explaining leverage ratios, as larger firms show much higher leverage ratios than other firms, other firm characteristics being controlled for. This is consistent with the view that larger firms tend to be more diversified and, hence, less volatile, as discussed by Fama and French (2002). We also observe that firms belonging to a group depend less on external debt, as would be expected, even though this effect is only statistically significant at a 10 per cent level. Firms with stronger liquidity buffers are also less indebted. In contrast, we observe that firms engaging in R&D activities show higher leverage ratios than others. Finally, firms with more significant depreciations and provisions, as a percentage of their assets, also record higher leverage ratios. This effect does not comply with the predictions of the trade-off theory.

Table 8

REGRESSIONS
Dependent variable: leverage

	Baseline regressions		Lagged variables
CF_A	-0.12	-0.15	-0.09
	-51.70	*-46.89*	*-25.67*
Sales growth	-	-0.004	-0.0005
	-	*-6.22*	*-0.61*
Tangible assets	-	0.03	0.03
	-	*11.07*	*10.83*
Log assets	-	4.46	3.39
	-	*56.86*	*35.38*
D_group	-	-0.23	-0.08
	-	*-1.88*	*-0.62*
Liquidity	-	-0.003	-0.002
	-	*-17.62*	*-7.28*
D_RD	-	0.43	0.41
	-	*4.49*	*3.89*
Dep_prov_A	-	0.03	0.00
	-	*3.74*	*-0.44*
Constant	10.10	-47.77	-32.91
	55.12	*-44.27*	*-26.29*
Number of observations	340 103	255 122	189 067
Number of firms	52 451	50 467	36 067
R^2:			
within	0.030	0.062	0.035
between	0.021	0.135	0.123
overall	0.027	0.117	0.106

Sources: Banco de Portugal (Central Balance Sheet database) and authors' calculations.
Notes: t-ratios in italics. Time and firm fixed-effects and robust standard errors are considered. Leverage is defined as bonds and loans over total assets. All variables as defined in Table 6.

Nevertheless, the results for this second specification may be affected by simultaneity issues. In fact, it is possible that there are some unobserved time-varying variables which simultaneously affect the leverage ratio and other firm-specific variables, thus leading to potential endogeneity problems. In order to minimize this potential problem, we consider an alternative specification, in which all explanatory variables are lagged by one year, such that:

$$\frac{D}{A}_{it} = f_i + \beta_1 + \beta_2 \frac{CF}{A}_{it-1} + \beta_3 X_{it-1} + \varphi_t + \varepsilon_{it} \quad (1)$$

This specification is presented in the last column of Table 8. The estimated coefficient for cash-flow remains consistent with that previously observed: firms with more available funds are less indebted than other firms, controlling for other relevant firm characteristics, thus providing evidence in favour of the pecking order theory. As regards the other firm control variables, there are some differences worth noticing. In particular, Sales Growth and Depreciations are no longer statistically significant at a 5 per cent level. For all other control variables, the results are generally consistent with those observed in the previous specification.

Our results are broadly consistent with those obtained by Fama and French (2002). These authors estimate a model similar to equation (1) without considering firm-level fixed effects. We consider that the inclusion of firm-level fixed effects is crucial as they control for time invariant unobserved heterogeneity at the firm level. These authors obtain negative coefficients on profitability, thus supporting the pecking order theory.

The results presented in the previous section suggest that the determinants of firm leverage may be considerably different depending on firms' size and age. In order to better explore these possible differences, we estimate the regression with all explanatory variables lagged by one year for different size and age cohorts. The results of these estimations are displayed in Table 9. First, we observe that the estimated coefficient for $\frac{CF}{A}_{it-1}$ remains negative and statistically significant regardless of firm size. This result continues to give support to the pecking order hypothesis. Moreover, we observe that this coefficient becomes larger, in absolute value, as firm size increases, thus suggesting that large firms with more internal funds available use less external funding than comparable smaller firms. We obtain a similar result when we estimate the regressions by firm age: older firms have a similar behaviour to that of larger firms.

In terms of the other control variables, the results are broadly consistent with those previously obtained. Sales Growth, Group Dummy and Depreciation are not significant in most specifications and the remaining variables hold the same signals, when significant. Interestingly, R&D Dummy is only significant for the older firms.

For robustness purposes, we also estimate the regression for different sectors. In Table 9 we present the results for manufacturing firms, as these represent a large part of the sample used. The results are broadly consistent with those previously obtained and there is a slight improvement in the model's adjustment quality.

It is important to notice that more than 40 percent of the firms in the sample do not rely either on bank or market financing, thus having null leverage ratios. Given the possibility that this feature may affect the results of the estimations, we also present in Table 9 the regression estimated only for firms with positive leverage. Interestingly, there are some differences in the determinants of leverage ratios for this specific group of firms. Nevertheless, the results for our variable of interest, $\frac{CF}{A}_{it-1}$, remain unchanged. The main difference is that the liquidity ratio is no longer statistically significant, whereas Depreciation

Table 9

ROBUSTNESS REGRESSIONS
Dependent variable: leverage

	By firm size:				By firm age:				Robustness:			
	Micro firms	Small firms	Medium firms	Large firms	1st quartile	2nd quartile	3rd quartile	4th quartile	Manufacturing firms	Firms with positive leverage	Dependent variable: dummy leverage	Dependent variable: long term leverage
CF_A	-0.04	-0.12	-0.21	-0.29	-0.03	-0.04	-0.08	-0.12	-0.11	-0.16	-0.010	-0.06
	-9.43	*-16.43*	*-16.21*	*-11.28*	*-2.96*	*-6.55*	*-10.46*	*-16.72*	*-21.18*	*-24.40*	*-21.20*	*-6.16*
Sales growth	0.000	-0.003	-0.004	0.003	0.000	-0.001	-0.003	-0.001	0.000	0.000	0.000	-0.001
	0.25	*-1.78*	*-1.74*	*0.69*	*0.26*	*-0.45*	*-1.52*	*-0.59*	*0.30*	*0.26*	*1.39*	*-1.19*
Tangible assets	0.01	0.05	0.04	0.07	-0.01	0.04	0.03	0.03	0.04	0.02	0.01	0.04
	2.95	*7.88*	*4.75*	*3.96*	*-1.14*	*5.31*	*3.91*	*4.79*	*9.03*	*4.82*	*19.42*	*10.09*
Log assets	2.73	3.74	4.63	4.62	1.75	2.47	2.93	4.18	3.78	3.02	0.53	1.53
	17.62	*20.89*	*16.85*	*9.50*	*4.76*	*10.33*	*12.45*	*21.23*	*26.97*	*20.04*	*77.88*	*8.41*
D_group	-0.82	-0.15	-0.10	-0.18	-0.34	-0.52	0.44	0.08	-0.09	-0.10	-0.14	0.16
	-2.14	*-0.66*	*-0.46*	*-0.44*	*-0.49*	*-1.59*	*1.66*	*0.41*	*-0.45*	*-0.62*	*-6.67*	*1.24*
Liquidity	-0.001	-0.004	-0.01	-0.01	-0.002	0.001	-0.001	-0.003	-0.003	-0.001	-0.001	0.000
	-2.68	*-6.58*	*-8.11*	*-5.58*	*-1.69*	*2.06*	*-2.52*	*-8.24*	*-7.49*	*-1.16*	*-31.20*	*0.83*
D_RD	0.22	0.37	0.41	0.67	-0.16	-0.19	0.17	0.86	0.46	0.23	0.15	0.29
	0.80	*2.19*	*2.25*	*1.99*	*-0.31*	*-0.78*	*0.84*	*5.09*	*3.37*	*1.77*	*8.22*	*2.88*
Dep_prov_A	0.04	-0.01	-0.04	0.00	0.03	0.00	0.03	-0.03	-0.03	0.04	-0.01	-0.02
	3.37	*-0.61*	*-1.49*	*0.02*	*0.85*	*-0.23*	*1.79*	*-1.81*	*-2.27*	*2.52*	*-5.21*	*-1.09*
Constant	-24.17	-38.10	-54.65	-57.88	-11.33	-22.46	-26.92	-45.95	-38.01	-20.81	-6.55	-17.06
	-13.21	*-16.13*	*-12.58*	*-7.03*	*-2.57*	*-7.44*	*-8.76*	*-16.17*	*-20.86*	*-10.19*	*-72.37*	*-7.05*
Number of observations	77 877	70 037	31 839	9 314	25 953	51 606	54 426	57 082	87 053	117 954	190 557	190 557
Number of firms	19 928	15 468	6 195	1 563	12 846	16 572	13 881	10 278	14 514	26 166	36 258	36 258
R^2:												
within	0.021	0.047	0.064	0.075	0.012	0.019	0.023	0.040	0.043	0.032	-	0.010
between	0.115	0.122	0.090	0.069	0.081	0.108	0.121	0.153	0.157	0.026	-	0.069
overall	0.098	0.107	0.086	0.080	0.071	0.093	0.107	0.121	0.136	0.029	-	0.047

Sources: Banco de Portugal (Central Balance Sheet database) and authors' calculations.
Notes: t-ratios in italics. Time and firm fixed-effects and robust standard errors are considered. Leverage is defined as bonds and loans over total assets. All explanatory variables are as defined in Table 6 and lagged by 1 year. The dummy leverage takes the value one when firms have positive leverage. Long term leverage considers long term loans and bonds as a percentage of total assets.

has now a positive significant impact on leverage. Considering that the decision on whether to seek external funding or not can be made before the choice of the leverage ratio, we also estimate a discrete choice regression to empirically analyse this preliminary decision to use external funds. In this regression, the dependent variable is a binary variable which takes the value one when the firm has positive leverage. The results are also shown in Table 9. Firms with positive leverage ratios have lower cash-flow ratios than firms with no external funding, other characteristics being controlled for. All other firm characteristics considered yield results consistent with those previously obtained.

Finally, we also test an alternative definition of leverage, considering only long-term bonds and bank loans, as done by Flannery and Rangan (2006). Again, the results remain broadly consistent with those obtained in the other specifications.

4.2. Do firms have a target leverage ratio?

As discussed in Section 2, firms may have target leverage ratios to which they gradually converge over time. This is a central result of the trade-off theory. In order to test whether this conclusion is valid for the firms in our dataset, we estimate a two-step regression, in a spirit similar to that of Fama and French (2002). In the first step, we estimate a regression as defined in equation (1). However, given that the distribution of the leverage ratio has a clear discontinuity, with more than 40 percent of the firms having null leverage ratios, we estimate this regression only for the firms with positive leverage. The fitted values of this regression are our measure of the target leverage ratio. For firms without leverage, we consider that their target is zero.[6] In addition, for firms for which we obtain negative target ratios, we replace their targets by zero.

In the second-step regression, we use the fitted values of the first-step as a proxy for the target leverage (TL) in a partial adjustment model. In this model, changes in leverage ratios partially reflect the difference between firms' target leverage and the previous year's observed leverage ratio. We then estimate the following regression:

$$\Delta\frac{D}{A_{it}} = f_i + \beta_1 + \beta_2\, adjust_{it} + \beta_3\Delta\frac{CF}{A_{it}} + \beta_4\Delta\frac{CF}{A_{it-1}} + \beta_5\frac{Inv}{A_{it}} + \beta_6\frac{Inv}{A_{it-1}} + \varphi_t + \varepsilon_{it}$$

where,

$$adjust_{it} = \left[TL_{it} - \frac{D}{A_{it-1}}\right]$$

The variable $\frac{Inv}{A_{it}}$ measures investment expenditures scaled by total assets. The estimation of this partial adjustment model allows us to test the trade-off theory given that, according to this theory, firms have target leverage ratios and move toward the target over time.[7] Hence, β_2, which measures the speed of adjustment, should be positive. However, this parameter is expected to be null if the pecking order theory is valid. The investment and cash-flow variables are included to control for any short-term movements in leverage away from the target. The results of this estimation are presented in the first column of Table 10. The adjustment variable has a coefficient of 0.61, which means that every year firms get 60 percent closer to their target leverage ratio. Hence, the results are clearly in favour of an

(6) We also estimated target leverage ratios for all the firms in the sample, and the results remain robust.

(7) In the presence of a cointegration relationship, a different estimation approach should be followed. However, as the results presented in Table 10 use more than 35 000 firms, observed over 5 years, on average, the stationarity and cointegration tests for panel datasets cannot benefit from the necessary asymptotic properties. In this case, as the panel dataset has a small T and a large N, the existing panel data procedures are sufficient to consider very general temporal correlation patterns (see Hsiao, 2003).

adjustment toward the target, thus providing evidence in favour of the trade-off theory. As financing costs are higher for equity, the pecking order theory predicts that short-term variation in cashflow and investments should be absorbed by variations in debt, which is exactly what we observe. Our results are consistent with the ones in Fama and French (2002) although their speed of adjustment is much smaller than ours.

Given the discontinuity in the distribution of leverage ratios, we estimate the same regression only for firms with positive leverage. Results are presented in the second column of Table 10. The results obtained are perfectly consistent with the ones for the full sample.

Furthermore, given that firm size may be associated with different adjustment capabilities, we run the second step regression for different firm size groups. Interestingly, we observe that there are indeed different adjustment speeds. In fact, smaller firms are able to adjust much faster to their target leverage ratio. The adjustment variable has a coefficient of 0.75 for micro firms and of only 0.33 for large firms.[8] This adjustment pattern may help to explain the differences between our results and those obtained by Fama and French (2002), given that their dataset covers only large firms.

Moreover, we also consider the possibility of differences between two adjustment paths. In fact, firms can either increase or decrease their leverage in order to achieve their target ratio. We observe that firms which have a negative adjustment (*i.e.*, their target is below their current leverage) are able to reach their target faster than firms that have to increase leverage. This result seems to suggest the existence of financial constraints in issuing new financial liabilities, as well as relatively high flexibility in decreasing leverage.

Table 10

TARGET LEVERAGE RATIO: TWO-STEP REGRESSIONS
Dependent variable: change in leverage

	Two-step regressions							
	Full sample	**Firms with positive leverage**	**Micro firms**	**Small firms**	**Medium firms**	**Large firms**	**Positive adjustment**	**Negative adjustment**
	(1)	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**
Adjustment	0.61	0.62	0.75	0.61	0.49	0.33	0.48	0.71
	152.21	*127.31*	*100.11*	*97.01*	*62.44*	*26.34*	*92.29*	*72.82*
D.CF_A $_{t}$	-0.084	-0.178	-0.049	-0.112	-0.189	-0.225	-0.053	-0.181
	-34.24	*-35.86*	*-16.22*	*-22.55*	*-20.64*	*-11.99*	*-25.09*	*-21.35*
D.CF_A $_{t-1}$	-0.024	-0.048	-0.007	-0.028	-0.066	-0.087	-0.019	-0.049
	-10.89	*-10.34*	*-2.64*	*-6.19*	*-7.92*	*-5.22*	*-9.91*	*-6.30*
Inv_A $_{t}$	0.037	0.055	0.034	0.029	0.053	0.083	0.063	-0.038
	11.90	*10.81*	*7.67*	*5.49*	*5.92*	*3.80*	*19.68*	*-4.29*
Inv_A $_{t-1}$	0.023	0.033	0.015	0.025	0.048	0.070	0.022	0.055
	8.44	*7.62*	*3.91*	*5.54*	*6.28*	*3.88*	*7.93*	*7.35*
Constant	-0.92	-0.62	0.34	-1.04	-1.25	-3.55	-2.45	5.11
	-6.31	*-3.21*	*1.27*	*-4.65*	*-6.76*	*-7.82*	*-16.90*	*13.49*
Number of observations	183 783	113 669	75 246	68 268	31135	9 134	127 966	55 817
Number of firms	35 427	25 502	19 341	15 199	6 121	1 554	30 277	19 811

Sources: Banco de Portugal (Central Balance Sheet database) and authors' calculations.
Notes: t-ratios in italics. Time and firm fixed-effects and robust standard errors are considered. All variables as defined in Table 6. "D." corresponds to the first difference of the variable.

(8) We conducted the same exercise but estimating target leverage ratios in separate regressions according to firm size. The results remain consistent.

An alternative empirical strategy to test whether firms converge toward a target leverage ratio consists in using a one-step procedure as in Flannery and Rangan (2006). These authors compare different methodologies and argue that adding the lagged dependent variable on the right hand side of the equation is crucial and that a simple cross-sectional regression appears to omit this important variable. In addition, unlike Fama and French (2002), they do not estimate the model in two stages. Instead of using the model in equation (1) to generate a leverage target proxy and then use this proxy in a partial adjustment model, they estimate the partial adjustment model in just one step. They believe the two-stage estimation helps explaining the low speed of adjustment found in other works. We proceed to this estimation by rewriting the equations used in the first step, such that:

$$\frac{D}{A}_{it} = f_i + \beta_1 + \beta_2 \frac{D}{A}_{it-1} + \beta_3 \frac{D}{A}_{it-2} + \beta_4 \frac{CF}{A}_{it-1} + \beta_5 X_{it-1} + \varphi_t + \varepsilon_{it}$$

where X_{it-1} consists of the set of control variables used in the previous subsection. In order to estimate this regression, we use a fixed effects dynamic panel data model, with the Arellano-Bond (1991) estimator, using difference equations. The results are presented in Table 11. There is a clear persistence of leverage ratios over time, confirming the hypothesis that firms converge to an endogenously defined target leverage ratio. The coefficients for the control variables are consistent with those obtained before.

However, to accurately test the two main theories proposed in the literature, we need to add another variable to the regressions. This additional variable, which we call financial deficit, measures the funding needs of firms for investment and is defined as the sum of the change in working capital and of investment, less the cash-flow generated by the firm (all scaled by firms' assets) as in Frank and Goyal (2003). Firms with a larger financial deficit will likely need to rely more on external funding. In column 2 we present the results for this estimation. The results obtained continue to suggest a strong adjustment toward target leverage ratios. The financial deficit is not statistically significant, contrary to the results obtained by Flannery and Rangan (2006), who observe a positive and significant coefficient.

5. CONCLUDING REMARKS

In this paper we propose to empirically test the two most prominent theories of capital structure, the pecking order and the trade-off theories. In order to do so, we explore the information contained in the Portuguese Central Balance Sheet. We observe that banks are the most important source of long-term debt for Portuguese non-financial corporations, as access to market funding is to some extent limited to larger firms.

In this paper, we followed two distinct empirical strategies. First, we estimated a simple panel data regression, with time and firm fixed effects, using as dependent variable firms' leverage ratio. By using the cash flow as an explanatory variable, we are able to test some of the predictions of the pecking order theory. According to this theory, firms with more available internal funds should have less external funding. The results obtained with these estimations are broadly consistent with these predictions. However, this simple regression does not allow us to test the trade-off model.

Second, in order to be able to also test the predictions of the trade-off theory, we follow a complementary route. We estimate models of partial adjustment, to verify to what extent firms adjust their debt to a target leverage ratio. We observe that this adjustment exists and, when compared with other empirical studies, seems to be very strong. Hence, these results are supportive of the trade-off theory.

Table 11

TARGET LEVERAGE RATIO: ARELLANO-BOND ESTIMATOR
Dependent variable: leverage

	Target one step (GMM estimator)	
	(1)	(2)
Leverage $_{t-1}$	0.61	0.53
	8.53	*7.36*
Leverage $_{t-2}$	0.05	0.10
	1.43	*2.61*
CF_A $_{t-1}$	0.106	0.013
	1.99	*0.17*
Financial deficit $_{t-1}$	-	-0.02
	-	*-0.32*
Sales growth $_{t-1}$	0.00	-0.01
	0.02	*-0.58*
Tangible assets $_{t-1}$	0.07	0.06
	3.10	*2.80*
Log assets $_{t-1}$	-1.64	-2.38
	-1.10	*-1.59*
D_group $_{t-1}$	0.20	0.11
	1.04	*0.62*
Liquidity $_{t-1}$	0.00	0.00
	1.98	*1.14*
D_RD $_{t-1}$	1.42	1.47
	1.51	*1.55*
Dep_prov_A $_{t-1}$	-0.33	-0.29
	-3.68	*-3.40*
Number of observations	147 491	143 491
Number of firms	28 207	27 834
Number of instruments	222	236
Sargan-test (chi-square)	0.36	0.13
Arellano-Bond test		
order 1	0.00	0.00
order 2	0.99	0.27

Sources: Banco de Portugal (Central Balance Sheet database) and authors ' calculations.
Notes: t-ratios in italics. Time and firm fixed-effects and robust standard errors are considered. The estimations are obtained using difference equations as in Arellano and Bond (1991). The GMM-type instruments for these equations are the third lags of CF_A, financial deficit, sales growth, Tang_assets, Log_assets, D_RD and Dep_prov. Liq, D_group and the year dummies are standard instruments. For leverage, all lags from the third lag back are taken into account. Financial deficit is defined as the sum of the change in working capital and of investment less cash-flow scaled by assets. All other variables as defined in Table 6.

The results obtained with these two different strategies are not necessarily contradictory, as they may reflect decisions made in different time horizons. This issue needs to be further explored in future research.

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AN ASSESSMENT OF CAPITAL REQUIREMENTS UNDER BASEL II: THE PORTUGUESE CASE*

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1. INTRODUCTION

Capital requirements for banks are of foremost importance for financial stability in the sense that they are intended to minimise the probability of bank failure at reasonable cost. In fact, past episodes of widespread bank insolvency turned out to be very costly in terms of taxpayers' money and highly disruptive to the real economy reflected, for example, in output losses and steep rises in unemployment. The role of capital requirements works at least in two ways: it provides a loss absorbing cushion for unexpected events and, if properly designed, introduces incentives for banks to limit the risk of their activities. Given that capital is the most expensive source of banks' funding, capital requirements have an impact on the return on equity while potentially influencing the competitive stance in the financial sector. Against this background and given growing international capital mobility, global harmonization of prudential supervision, ensuring a level playing field among banks in different countries, is crucial. The 1988 Basel Accord (Basel Committee on Banking Supervision (1988)) was the beginning of the convergence of the rather different approaches that countries adopted. In June 2004 a revision of this framework, commonly denominated Basel II, was published by the Basel Committee on Banking Supervision (Basel Committee on Banking Supervision (2006b)). These new rules were then laid down in EU legislation and subsequently transposed into Portuguese national law, coming into force in 2007.[1]

Basel II is based on three mutually reinforcing pillars. Pillar I presents capital requirements for credit, market and operational risk, introducing the main innovations of this revision. One of them concerns the use of credit ratings (either internal or external) for the assessment of capital requirements, which become sensitive to the credit quality of each specific exposure, not relying solely on credit type. In this sense, capital requirements became dependent on the quality of credit, inferred from estimates of risk drivers such as the probability of default (PD) and the loss given default (LGD). Additionally, the volume of corporate sales and the maturity of credit may also be relevant for evaluating capital requirements. Another important innovation of Basel II is that banks are required to hold capital for operational risk. Pillar II concerns the supervision of banks. Banking supervisors are given more authority to evaluate the consistency and robustness of banks' internal risk assessment methodologies. Finally, Pillar III introduces rules on the information banks are required to publish. This pillar is also called the market discipline pillar.

The relation between capital requirements and credit quality established under Basel II is believed to have an economic pro-cyclical effect.[2] The idea is that when the economy is on the down side of the cycle credit risk measures tend to increase, resulting in higher capital requirements. As it tends to be diffi-

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(1) Given that the adoption of the new framework was optional in 2007, it was implemented by the majority of the Portuguese banks only in 2008.

(2) Benford and Nier (2007), Heid (2007) and Kashyap and Stein (2004), among many others, discuss the cyclicality impacts of Basel II using quite different approaches.

cult to raise capital in downturns, banks may be forced to reduce their lending activities, thus exacerbating shocks in the real economy. There may also be other negative shocks reflected in their capital base. In this context, an assessment of capital requirements for the European banking system is of extreme importance, as European firms rely heavily on bank financing. In Portugal, in December 2007, corporate loans represented more than 80 per cent of total corporate debt, defined by the sum of bank loans granted to and bonds issued by the corporate sector. The importance of banks as a source of financing is even higher if commercial paper in banks' portfolios is also taken into account alongside loans granted, as the sum of these two financial instruments held by banks represents more than 85 per cent of total corporate debt.

In this study, an assessment is made of the impact of Basel II rules on capital requirements driven by credit risk. Intervals of variation for the above mentioned risk drivers are established such that capital requirements for firms' credit risk under Basel II exceed capital requirements under Basel I. Moreover, for the Portuguese banking system in 2007 we conclude that, if the observed default rate is used as a proxy for the probability of default, under Basel II capital requirements for exposures larger than one million euros to small and medium sized firms are generally higher than the ones assessed under Basel I. Capital requirements for exposures to large firms are similar to those for exposures smaller than one million euros to small and medium firms, being these classes the ones that exhibit the smallest capital requirements. For the Portuguese banking system, capital requirements being higher or lower than what is stipulated under Basel I is highly dependent on the assumed loss given default. In particular, using estimates of the loss given default in previous studies of Portuguese banks (always smaller than 52 per cent) capital requirements for credit risk of non-financial firms are in general less than what is required under Basel I. Nevertheless, results should be interpreted with caution because the sample used is biased towards borrowers with better credit risk assessment, due to the lack of information on a subset of borrowers with higher than average credit risk.

This study, which is restricted to the analysis of credit risk of non-financial firms, does not look at credit risk associated with other loans, at market risk and at operational risk. Capital requirements are expected to decrease if credit risk associated with other loans is considered, as the majority of these other loans are mortgage loans which traditionally have lower values for the probability of default and loss given default. However, capital requirements would be higher if operational risk is considered as, according to Banco de Portugal (2008), in June 2008, the capital charge for operational risk accounted for 7 per cent of overall capital requirements. Nevertheless, the overall analysis is representative as loans to non-financial firms represent about 45 per cent of total loans granted to non-financial firms and households and considers the risk component with higher relevance in capital requirements.

The conclusions of this study are in line with studies carried out in other countries, despite the fact that our data captures the recent decline in the firms' financial standing. Using information for Spanish firms along the period 1994-2001, Saurina and Trucharte (2004) conclude that capital requirements driven by firms' credit risk would be 7.27 per cent, versus 8 per cent under Basel I. Fabi, Laviola, and Reedtz (2005) use data on Italian firms for 2002, and conclude that overall capital requirements for firms' credit risk would be equal to 5.8 per cent. The Results of the Fifth Quantitative Impact Study (Basel Committee on Banking Supervision (2006a)), undertaken between October and December 2005 by the Basel Committee on Banking Supervision on 31 countries,[3] show that required capital for credit risk under Basel II would decrease relative to the Basel I Accord. Although the portfolio of credits to firms implies a decrease in required capital, the main driver of this result is the mortgage portfolio, which is not analysed here.

(3) The Fifth Quantitative Impact Study was performed on all G10 countries, except the US, and other countries including Portugal.

This work is organized as follows. In Section 2, a description of capital requirements for corporate sector credit risk is presented and compared with the situation under Basel I. In Section 3, using data from the Portuguese banking system, a characterization of the loans to firms and their rates of default is presented. In Section 4, an evaluation of capital requirements for the Portuguese banking system is given. Finally, Section 5 presents the main conclusions.

2. CAPITAL REQUIREMENTS FOR CREDIT RISK

This section discusses the Basel II framework in respect to capital requirements for credit risk in non-financial firms. It starts by briefly recalling the fundamentals of the Basel II Accord and provides a general overview of the computation of capital requirements for credit risk. The second part of this section presents a comparison of capital requirements under Basel I and Basel II for firms' credit risk as a function of the risk components underlying the Basel II setting. A more detailed analysis can be found in Antão and Lacerda (2009).

2.1. Overview of capital requirements within the Basel II framework

The final version of the Basel II Accord, dated June 2004, is the result of a long process characterized by an intense dialogue between the Basel Committee on Banking Supervision, called here the Committee, the banking industry and national regulators. The Committee released several proposals for consultation and also conducted several quantitative impact studies on its proposals, aimed at measuring the impact of the new rules. The final version of the text came out of this dialogue with considerable improvements.

The Basel II Accord retains key elements of the Basel I Accord, among them the basic structure of the 1996 Market Risk Amendment regarding the treatment of market risk (Basel Committee on Banking Supervision (1996)), the definition of eligible capital and the general requirement for banks to hold total capital equivalent to at least 8 per cent of their total risk-weighted assets. Hence, under Basel II, as under Basel I, the eligible capital needs to be equal to or more than 8 per cent of the risk-weighted assets, *i.e.*, it follows the rule

$$\frac{\text{Eligible Capital}}{\text{Total Risk Weighted Assets}} \geq 8\% .$$

While the definition of eligible capital was almost kept unchanged from Basel I to Basel II, the calculation of the total risk-weighted assets has been significantly changed. The total risk-weighted assets are the sum of the risk-weighted assets for credit risk and a 12.5 multiple of the capital requirements for market risk and operational risk.[4] As far as credit risk is concerned, the risk-weighted assets are computed by applying a weight to each exposure. This weight is the value of a function provided by the Committee (hereafter denoted risk weight function), where the inputs of this function are the risk drivers of each exposure. The weight dependence on the risk drivers is a major difference to the previous regulation as, under Basel I, the weights to be applied were set for very broad categories of credit risk. The weights used were 0, 10, 20, 50 and 100 per cent. As an illustration, corporate credit used to be weighted at 100 per cent for all exposures, a situation that was widely recognized as not reflecting the heterogeneity of risks within the portfolio of corporate credit.

(4) In this sense, capital requirements are the sum of three components: 8 per cent of the risk-weighted assets for credit risk, capital requirements for market risk and capital requirements for operational risk.

One of the motivations for the revision of the Basel I Accord was the insufficient risk sensitivity in the calculation of risk-weighted assets. Since the first proposals, there was a clear intention to replace the "one-size-fits-all" framework of the Basel I Accord with a variety of options. Hence, according to the final version of the Basel II Accord, banks may decide between two broad methodologies to compute the risk-weighted assets: the Standardized approach and the Internal Ratings-based (IRB) approach.[5] These approaches differ in two main respects. First, the Standardized approach is based on external risk assessments produced by rating agencies while the IRB approach is based on banks' internal credit risk systems. Second, under the Standardized approach, risk weights are set by the Committee as a function of the external rating and take only discrete values (very similar to Basel I). Under the Internal Ratings-based approach, risk weights are obtained by applying the risk weight function defined by the Committee, giving rise to a range of values for risk weights.

To implement the IRB approach, banks should categorize credits into broad classes of assets with different underlying risk characteristics. The classes of assets are corporate, sovereign, banks, retail and equity. Although there is a class denoted corporate, some exposures to firms are not classified here. In its final version, the Accord distinguishes between exposures to small and medium sized firms (which are defined as firms with annual sales lower than 50 million euros) and exposures to larger firms. Exposures to small and medium sized firms (SMEs) are categorized either in the retail class (if the size of the exposure is smaller than 1 million euros) or in the corporate class, while exposures to larger firms are always categorized in the corporate class. Nonetheless, it should be stressed that the regulatory treatment of SMEs classified as corporate departs from the one applied to larger firms, according to their level of sales.

For each class of assets, the risk-weighted assets for credit risk result from the internally estimated risk parameters and the risk weight functions supplied by the Committee. Regarding the risk weight function, the Accord provides two different versions: one for sovereign, corporate and bank exposures and another one for retail exposures. For the first, this function is:

$$K = \left\{ LGD \times N\left[\left(\frac{1}{1-R} \right)^{0.5} NI(PD) + \left(\frac{R}{1-R} \right)^{0.5} NI(0.999) \right] - LGD \times PD \right\} \left\{ \frac{1 + (M - 2.5) \times b(PD)}{1 - 1.5 b(PD)} \right\} \times 1.06 \qquad (1)$$

where R is defined as follows

$$R = 0.12 \frac{1 - e^{-50PD}}{1 - e^{-50}} + 0.24 \left[1 - \frac{1 - e^{-50PD}}{1 - e^{-50}} \right] - 0.04 \left[1 - \frac{S - 5}{45} \right],$$

S is a function of annual sales of the firm concerned (expressed in millions of euros), M is the maturity of the exposure (expressed in years), b is defined as $b(PD) = \left[0.11852 - 0.05478 \ln(PD) \right]^2$, N denotes the standard normal cumulative distribution, NI denotes the inverse of the standard normal cumulative distribution, PD is the probability of default and LGD is the loss given default. The sales adjustment, corresponding to the third term on the R definition, applies only to corporate exposures. The function S equals annual sales in millions of euros if annual sales are between 5 and 50 million euros, it equals 5 if annual sales are smaller than or equal to 5 million euros and it equals 50 if annual sales are higher than or equal to 50 million euros.

Capital requirements are positively related with PD, LGD, M and R. The positive relationship of capital requirements on M is dependent on the loss given default and on the level of sales. In fact, a change in the maturity of the credit has a higher impact on capital requirements for higher values of S and LGD. Notice that R is the correlation coefficient representing the degree of comovement in credit risk of all

(5) The IRB methodology has to be validated by the national supervision authority.

exposures in the portfolio. This coefficient is derived from the asymptotic risk factor model underlying the capital requirements under Basel II. Finally, the factor 1.06 is an ad-hoc adjustment introduced in 2004 by the Basel Committee.

Capital requirements for retail exposures are:

$$K = \left\{ LGD \times N\left[\left(\frac{1}{1-R} \right)^{0.5} NI(PD) + \left(\frac{R}{1-R} \right)^{0.5} NI(0.999) \right] - LGD \times PD \right\} \quad (2)$$

where

$$R = 0.03 \frac{1-e^{-35PD}}{1-e^{-35}} + 0.16\left[1 - \frac{1-e^{-35PD}}{1-e^{-35}} \right].$$

Although our study concerns firms, this risk function is relevant as exposures lower than one million euros to SMEs will be classified as retail. In this case capital requirements are not dependent on the maturity of the credit as well as on the level of annual sales. The correlation (R), which is not dependent on the level of annual sales, proves to be smaller than the one for corporate exposures.

Regarding the estimation of the risk parameters, the Committee made two approaches available: the Foundation approach and the Advanced approach. Under the Foundation approach, banks are required to use their own estimate of the probability of default and rely on supervisory estimates for all other risk parameters. Under the Advanced approach, banks must use their own estimates for the PD, the LGD, the exposure at default (EAD) and the effective maturity. These two approaches apply to all credit classes with the exception of retail exposures. For retail exposures banks need to provide estimates of all risk parameters, implying that for this type of exposures only the IRB Advanced approach can be used.

2.2. A comparison between Basel I and Basel II capital requirements

The focus of this study is the risk weight function, since it provides the risk-weighted assets and therefore capital requirements.[6] In what follows we establish regions for the PD and LGD such that Basel II capital requirements for firms' credit risk are higher than the ones established under Basel I. Moreover, we also proceed with a comparison of the capital requirements if a given credit is considered retail or corporate, *ceteris paribus*.

In order to establish regions for LGD, we consider it to take values in the region between 45 and 75 per cent. These limits, although somewhat arbitrary, were benchmarks established by the Committee under the Foundation approach, given that for senior claims on corporates, not secured by recognised collateral, an LGD level of 45 per cent was assigned, while for subordinated claims on corporates a level of 75 per cent for the LGD was assigned.[7]

In Chart 1 we establish regions for the parameters PD and LGD such that Basel I is more demanding than Basel II and vice versa. We consider capital requirements for exposures to firms classified under the retail class, hereafter denoted retail for simplification, and for exposures to firms classified as corporate. For the corporate class a maturity of 0.5 and a level of annual sales smaller than or equal to 5

(6) The comparison of capital requirements under Basel I and Basel II collapses in comparing K (as defined in equations (1) and (2)) with 8 per cent. Under Basel I, as the corporate credit used to be weighted at 100 per cent, minimum capital held is $RWA^{I} \times 8\% = EAD \times 8\%$. Under Basel II the risk weighted-assets for credit risk are given by $RWA^{II} = K \times 12.5 \times EAD$, where K is supplied by the Committee. Therefore, under Basel II the minimum capital held for firms credit risk becomes $RWA^{II} \times 8\% = K \times 12.5 \times EAD \times 8\% = K \times EAD$.

(7) These levels of LGD can be adjusted on the presence of eligible collateral.

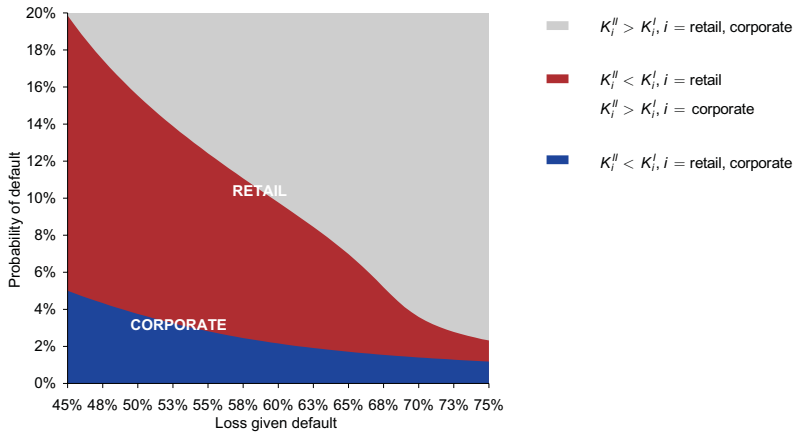
million euros were considered. In general, for very high (small) values of the LGD and PD capital requirements under Basel II are higher (smaller) than capital requirements under Basel I. In fact, for the values of PD and LGD in the grey area capital requirements under Basel II are higher than capital requirements under Basel I, for both classes of credit. The red area identifies the values of PD and LGD such that Basel II results in higher capital requirements for the corporate class but not for the retail class. Finally, the blue area identifies the set of PD and LGD values such that capital requirements under Basel II are smaller, for both types of classes. In conclusion it should be stressed that although a comparison of capital requirements under Basel II and Basel I for the corporate class is highly dependent on the estimates of the relevant risk parameters, the same does not hold if credit is categorized as retail. In fact, for values of PD and LGD presented in the literature[8] banks set capital requirements smaller than the ones under Basel I.

As stressed above, the classification of exposures as retail or corporate is crucial for the level of capital requirements. Moreover, two additional features concerning this classification should be emphasized. The first feature concerns the discontinuity in capital requirements when one exposure changes from the retail class to the corporate class, or vice-versa, as different risk functions are used. This non negligible discontinuity in the capital requirement is generally positive and increases with the loss given default as well as the sales level of the firm and the maturity of the credit.[9] For values of the probability of default and the loss given default reported in the literature (2 and 50 per cent, respectively), maturity of 2.5 years and sales of 5 million euros, the capital requirements can be either 5.2 per cent or 8.3 per cent depending on the exposure being classified as retail or corporate, as illustrated on the left hand side of Chart 2.

This example illustrates the importance of an adequate classification of exposures, as pricing decisions should be closely related to capital requirements. For instance, for the same level of sales and maturity of the exposure, a credit below the one million euros threshold has a lower capital require-

Chart 1

COMPARING CAPITAL REQUIREMENTS UNDER BASEL I (K^I) AND BASEL II (K^{II}) FOR EXPOSURES TO FIRMS CLASSIFIED AS RETAIL AND AS CORPORATE



Source: Authors' calculations.
Note: The corporate class is assumed to have a maturity of 0.5 years and annual sales smaller then or equal to 5 million euros.

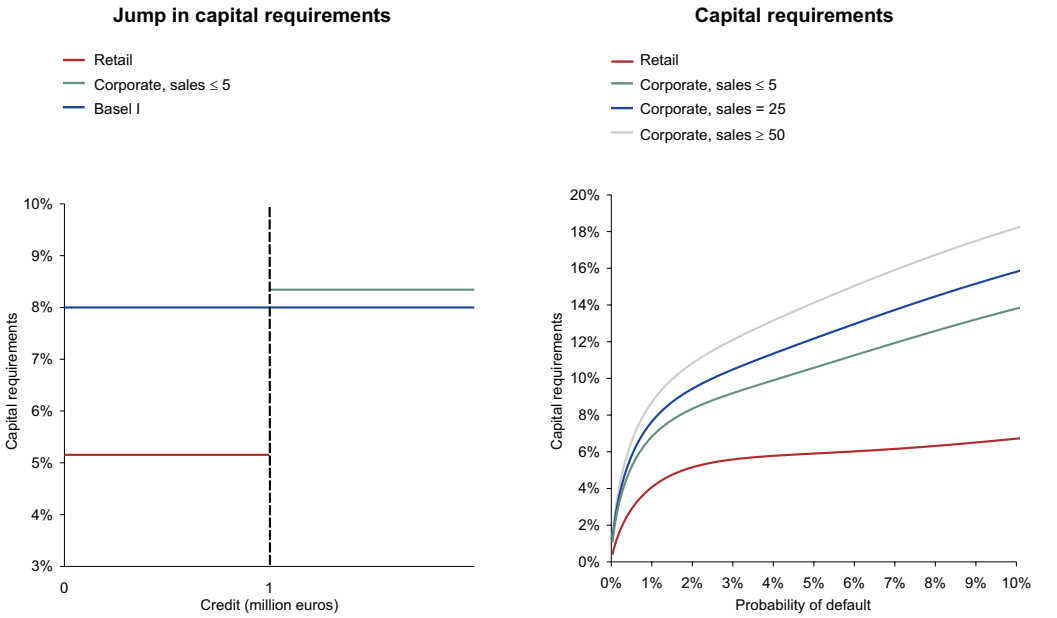
(8) See, for instance, Tarashev and Zhu (2007), Fernandes (2006), Antunes (2005), Jacobson, Lindé and Roszbach (2005), Saurina and Trucharte (2004), Dietsch and Petey (2004).

(9) For a small set of risk parameters it is conceivable that when moving from retail class to corporate class capital requirements could decrease, once again in a discontinuous way. Further details in Antão and Lacerda (2009).

ment, which can be passed through to costumers via more competitive loan pricing or simply by adding to the profit margin of the bank. As such, certain concerns may arise about the proper operation of a level playing field and/or undercapitalization of some banks based on its capacity to correctly classify the exposures to non-financial firms.

Chart 2

CHANGING FROM RETAIL TO CORPORATE CLASS



Source: Authors' calculations.
Notes: On the left panel an LGD of 50%, a PD of 2%, a maturity of 2.5 and annual sales smaller than or equal to 5 million euros are considered. On the right panel a maturity of 2.5 and an LGD of 50 per cent are considered.

The second feature concerns the different sensitivity of capital requirements to the probability of default. Among all credit classes, the retail class is the one for which capital requirements exhibit the smallest sensitivity for a given change in the probability of default, as can be seen in the right hand side of Chart 2. In fact, for a wide range of values for the probability of default, a one percentage point change in the probability of default will result in a change smaller than 0.5 percentage points in capital requirements, for an LGD of 50 per cent.

3. CHARACTERIZATION OF LOANS TO PORTUGUESE FIRMS AND THEIR RATES OF DEFAULT

This section presents a characterization of loans to Portuguese firms and their rates of default. It begins with a characterization of loans in December 2007 followed by a description of default rates in 2008, taking a definition of default in line with the one established in the Basel II Accord.

3.1. Loans to firms

The following analysis relies mostly on a Credit Register dataset managed by Banco de Portugal (*Central de Responsabilidades de Crédito*). This brings together information provided by all credit institutions operating in Portugal. The dataset collates monthly information on all loans granted to non-financial corporations, as well as credit lines, with an amount outstanding higher than 50 euros.[10] The information on loans is categorized by type of loan and this allows for a decomposition into short-term loans (loans with a maturity lower than one year), medium and long-term loans (loans with a maturity higher than one year), others (loans for which the maturity is not specified), overdue loans and unused credit lines.[11] The additional data for this work comes from the Central Balance Sheet Database (*Central de Balanços*), providing the information on annual sales necessary to calibrate the corporate function specified in equation (1). The starting point of the exercise was the credit portfolio of firms in December 2007, stratified according to the level of annual sales for the year 2007. Annual sales for 2006 were taken whenever the value for 2007 was missing in the database. After combining these databases, the sample for December 2007 has around 400 000 observations (*i.e.*, credit exposures to non-financial firms), corresponding to about 230 000 firms. In Portugal in December 2007, 201 financial institutions from more than 20 financial groups were reporting to the Credit Register. The five major financial groups operating in Portugal grant more than 68 per cent of the total outstanding loans to firms.

In order to characterize loans to firms, we begin by decomposing them by maturity and by credit class, as defined in Basel II. In terms of maturity, the decomposition is performed in the following categories: short-term loans, medium and long-term loans, overdue loans, unused credit lines, and other loans. Medium and long-term loans have the largest share in the Portuguese banking system, representing more than 50 per cent of total loans, as reported on the left hand side of Chart 3.

As for credit classes, under the IRB approach for corporate credits, banks are allowed to distinguish between exposures to small and medium size firms (SMEs) and those to large firms. SMEs are defined here as firms with reported annual sales smaller than 50 million euros. Loans extended to SMEs can then be divided into three classes according to the amount of credit granted and annual sales: retail exposure, as long as the total exposure to the banking group is smaller than 1 million euros, and two other corporate categories, as long as the total exposure is higher than 1 million euros, for different levels of sales. Summing up, the four classes in which the total credit is divided are as follows:

1. the *SME_Retail* class, which includes credits smaller than one million euros to firms with annual sales smaller than 50 million euros,[12]
2. the *SME_1* class, which includes credits higher than one million euros to firms with annual sales smaller than 5 million euros;
3. the *SME_2* class, which includes credits higher than one million euros to firms with annual sales between 5 and 50 million euros;

(10) Although not considered in this study, this data set also contains information on loans granted to households, public administration and non-incorporated business, as well as information on securitized operations.

(11) The short term loans further breakdown into commercial liabilities, finance at discount and other short term liabilities. In addition, it is possible to identify the portion of overdue loans which are under litigation.

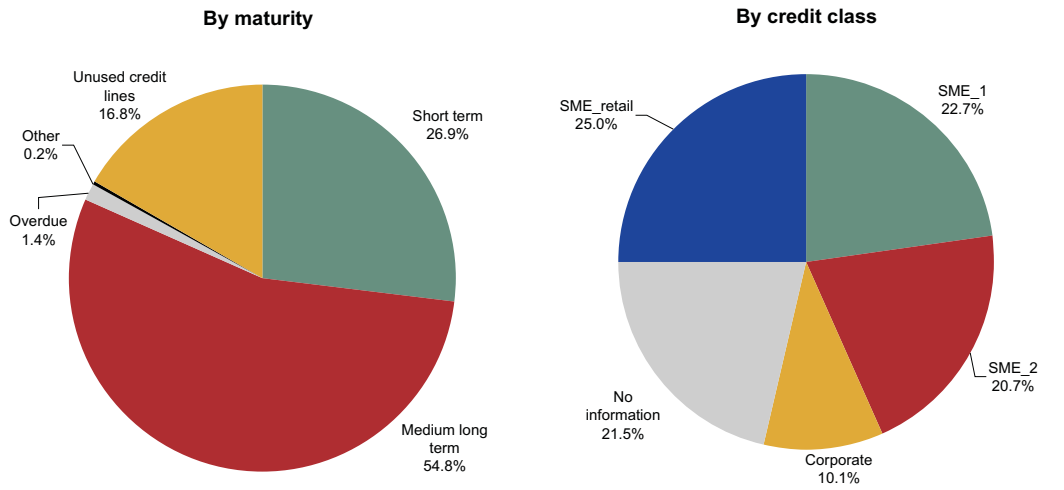
(12) There are other conditions that credits must follow to be considered as retail exposures. For instance, the retail portfolio must follow the so-called "granularity criterion", that is, it needs to be "sufficiently diversified to reduce risks", which may imply the setting of limits to aggregate exposures to one counterparty.

4. and the *Corporate* class, which includes credits of any size to firms with annual sales higher than 50 million euros.

According to this decomposition[13] most loans are granted to SMEs, where the retail is the most representative class (see the right hand side of Chart 3). Loans to firms with more than 50 million euros of annual sales account for 10 per cent of total credit to firms. If loans are categorized according only to exposure size, it is observed that 4 per cent of the total number of exposures is higher than one million euros, corresponding to 71 per cent of the total amount of credit. This result is in line with the fact that the credit portfolio of the Portuguese banking system is "*highly concentrated on large firms*", where the size of the firm is proxied by the size of its total credit, as discussed in several Banco de Portugal financial stability reports (*e.g.* Banco de Portugal (2007)).

Chart 3

DECOMPOSITION OF THE TOTAL LOANS TO FIRMS
December 2007



Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Note: On the right panel unused credit lines are excluded.

Table 1 presents a decomposition of loans by corporate class and maturity, excluding unused credit lines. This table also decomposes loans overdue across credit classes. As already mentioned, most loans have a maturity higher than one year. The debt maturity pattern is the same for those loans where a credit class can not be allocated due to the lack of information on annual sales, as these loans are mainly medium and long-term credit. Regarding the observed overdue in December 2007, it is concentrated on firms for which it is not possible to obtain information on sales. In any case, these firms will be excluded from the calculation of capital requirements, which assumes the ex-ante full coverage of overdue loans by provisions.

Finally, a decomposition of loans by corporate class and industry is presented. The industry is not a risk component as defined in Basel II but there are two main reasons to proceed with this characterization. First, the concentration of the Portuguese banking system in a few economic activity sectors, namely construction and real estate, is a persistent fact which has been reported in the Banco de Portugal *Financial Stability Report* (*e.g.* Banco de Portugal (2007)) for the last few years. The concentra-

(13) Only 78.5 per cent of total loans is allocated by credit class as there is no information available on annual sales for the remaining. Sales reported as null were not considered. Saurina and Trucharte (2004), where eight years of data are considered, have an average exposure coverage of 73.9 per cent.

Table 1

DISTRIBUTION OF LOANS BY CORPORATE CLASS AND MATURITY
As a percentage of total loans

	SME_retail	SME_1	SME_2	Corporate	No information	Total
Medium and long-term	13.4%	17.0%	13.9%	6.5%	15.2%	66.0%
Short-term	11.4%	5.6%	6.7%	3.6%	5.1%	32.4%
Overdue	0.2%	0.1%	0.0%	0.0%	1.2%	1.6%
Total	25.0%	22.7%	20.7%	10.1%	21.5%	100.0%

Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Note: Unused credit lines are excluded. The residual category "other" is assumed to have medium and long-term maturity.

tion in the real estate sector is even more severe if mortgage loans are considered, as they account for about 45 per cent of the total loans of the Portuguese banking system to the private non-financial sectors. Nevertheless, this fact has not been considered a serious vulnerability of the Portuguese financial system, since mortgage loans tend to have lower risk, as they are secured by property and real estate prices in Portugal are not believed to be overvalued as they are in some other European countries. The second reason to proceed with this characterization is related to the estimation of the probability of default of exposures (to be done in the next subsection) as, in an attempt to construct homogenous portfolios, a segmentation per economic sector is conducted.

As expected, in December 2007, loans to firms belonging to the real estate and construction sectors represented the major share of total loans, accounting for more than 38 per cent of total loans to firms (see Table 2). In addition, these firms are mostly classified in the SMEs classes. In fact, the SME_retail and the SME_1 are the most important classes for almost all economic sectors. Finally, it is not possible to characterize in terms of annual sales almost half of the loans granted to firms in the "other services provided to firms" sector, and this is, in fact, a drawback for our analysis, given that loans granted to firms belonging to this sector represent more than 14 per cent of total loans to firms.

Summing up, in December 2007, the majority of firms' loans obtained through the Portuguese banking system were characterized by having a maturity higher than one year. In addition, about 25 per cent of loans to firms could be recognized as retail exposures, and more than 38 per cent of total loans to firms were granted to firms in real estate and construction sectors.

Table 2

DISTRIBUTION OF LOANS BY CORPORATE CLASS AND ECONOMIC SECTOR
As a percentage of total loans

	SME_retail	SME_1	SME_2	Corporate	No information	Total
Construction	4.3%	6.4%	3.6%	1.9%	3.3%	19.5%
Real estate	1.9%	6.9%	4.6%	0.7%	5.3%	19.4%
Trade	7.5%	1.2%	2.4%	1.7%	2.2%	14.9%
Other services provided to firms	1.4%	4.3%	0.8%	0.9%	7.0%	14.4%
Manufacturing	5.4%	1.0%	3.5%	1.9%	1.4%	13.2%
Other services	1.5%	0.8%	1.6%	0.9%	1.1%	5.8%
Transport	1.0%	0.4%	2.3%	1.7%	0.2%	5.6%
Other economic sectors	1.8%	1.8%	1.9%	0.5%	1.2%	7.3%
No economic sector	0.1%	0.0%	0.0%	0.0%	0.0%	0.1%

Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Note: The category "Other economic sectors" includes economic sectors representing less than 4% of the total loans to firms; the "No economic sector" refers to loans to firms not possible to characterize in terms of economic sector. Unused credit lines are excluded.

3.2. The rate of default

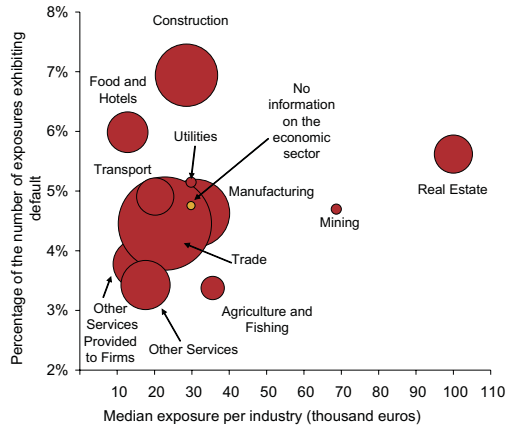
The following subsection presents a characterization of the observed rate of default of the Portuguese non-financial firms over the year 2008. The definition of default used is in line with the one in Basel II. In that context, for a financial group,[14] an exposure is considered to be in default whenever the firm is overdue more than 500 euros (loans reported either as overdue loans or loans under litigation) over three consecutive months. For the assessment of the default rate over 2008 only the exposures in December 2007 that did not exhibit default over 2007 will be considered.

The heterogeneity of loans among economic sectors motivates a first characterization of the rate of default by economic sector. The highest rate of default is observed in exposures to firms in the construction sector, while the smallest in exposures to firms in agriculture and fishing. This information is presented in Chart 4, where the horizontal axis represents the median exposure of each industry. The area of each bubble is proportional to the number of exposures in each industry.

A possible relationship between the observed rate of default and the size of the firm is also explored, as the literature documents this relationship in other countries. This analysis will be performed taking annual sales as proxy for the firm size. The absence of information on the economic sector and sales for some exposures results in the exclusion of 12.3 per cent of reported exposures, corresponding to 20 per cent of loans.[15] This reduction in the sample size creates a bias as, in general, the observations not considered correspond to firms with higher default rate. Then, in the sample finally used, 3.6 per cent of the number of exposures exhibited default in 2008. The proportion of the amount of loans exhibiting default is also 3.6 per cent.[16]

Chart 4

DEFAULT RATES



Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Note: Utilities include gas, electricity, water, post and telecommunications. The default rate corresponds to the number of exposures in a given economic sector exhibiting default in 2008 over the total number of exposures belonging to that economic sector.

(14) If an institution does not belong to a financial group it is labelled as a financial group itself, resulting in a total of 79 financial groups.

(15) Notice that this number is lower than the one presented in Chart 3 as only loans to firms that did not default during 2007 are considered. The same applies for the remaining analysis.

(16) If all the data was considered, 4.8 per cent of the exposures reported in December 2007 would exhibit default in 2008, while the proportion of the amount of those loans exhibiting default would only be 4.1 per cent of the total amount of loans.

Table 3 presents a characterization of the rate of default of the financial group exposures for different classes of firms' sales as well as exposure levels. The default rate corresponds to the number of exposures in a given class exhibiting default in 2008 over the number of exposures in the same class. Moreover, the number of exposures over the total number of exposures as well as the amount of loans over total loans are also reported.

Table 3

THE DEFAULT RATE ON THE PORTUGUESE FIRMS IN 2008

By firm sales and exposure size

			Banking group exposure					
			< 0.01	**0.01 - 0.1**	**0.1 - 1**	**1 - 10**	**> 10**	
Firms' sales	< 5	Default rate	2.6%	4.3%	4.6%	6.4%	6.2%	3.9%
		% exposures	28.8%	44.2%	16.9%	1.9%	0.1%	91.9%
		% loans	0.4%	6.2%	18.6%	17.6%	10.9%	53.8%
	5 - 50	Default rate	0.4%	0.9%	1.4%	2.3%	2.2%	1.4%
		% exposures	0.8%	1.4%	3.7%	1.3%	0.1%	7.4%
		% loans	0.0%	0.2%	5.9%	12.7%	14.1%	33.0%
	> 50	Default rate	0.0%	0.6%	0.7%	0.8%	0.9%	0.6%
		% exposures	0.1%	0.1%	0.2%	0.3%	0.1%	0.8%
		% loans	0.0%	0.0%	0.4%	3.8%	9.1%	13.3%
		Default rate	2.6%	4.1%	4.0%	4.4%	3.4%	3.6%
		% exposures	29.7%	45.7%	20.8%	3.5%	0.3%	100.0%
		% loans	0.4%	6.4%	25.0%	34.1%	34.1%	100.0%

Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Notes: Classes defined in million euros. The default rate corresponds to the number of exposures in a given class exhibiting default in 2008 over the total number of exposures belonging to the same class.

As can be observed, the rate of default decreases with the firms' sales. Hence, taking firms' sales as a proxy for the firms' size we can say that larger firms exhibit lower rate of default on their loans. This is in line with Dietsch and Petey (2004) and Jacobson, Lindé and Roszbach (2005), among others, who have also reported similar evidence in different countries. In terms of the relationship between the observed rate of default and the size of the exposure, for the adopted classes of exposure, the highest default rate is observed for exposures between one and ten million euros. The smallest default rates are observed for exposures smaller than ten thousand euros and higher than ten million euros. Credit exposures higher than ten million euros, although caused by only 0.3 per cent of the total number of exposures, correspond to 34.1 per cent of total credit. The relationship between the observed rate of default and the size of the exposure still holds if the overall sample is considered. In addition, default rates would increase, confirming the bias of our sample towards better creditors and reinforcing the importance of conducting robustness tests with the entire dataset.

In Table 4 information on the rate of default, the number of the exposures as well as the size of the exposures is also reported as per the four classes of credit previously described. The adoption of this classification, in line with Basel II, results in an asymmetric distribution of loans with a clear concentration in the SME_retail class, as already presented in previous subsection. In fact, the SME_retail class includes 95.8 per cent of the number of credit exposures and accounts for 31.7 per cent of total loans. The highest rate of default is observed for exposures classified as SME_1. Over and against this, the Corporate class presents the lowest default rate. This class, although originated by only 0.8 per cent of the number of exposures, accounts for 13.3 per cent of the total amount of loans.

Table 4

THE DEFAULT RATE ON THE PORTUGUESE FIRMS IN 2008

By credit class

	SME_retail	SME_1	SME_2	Corporate
Exposure	**<1**	**>1**	**>1**	
Sales	**< 50**	**< 5**	**5 - 50**	**> 50**
Default rate	3.6%	6.5%	2.3%	0.6%
% exposures	95.8%	2.0%	1.4%	0.8%
% loans	31.7%	28.3%	26.7%	13.3%

Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Note: Classes defined in million euros. The default rate corresponds to the number of exposures in a given class exhibiting default in 2008 over the total number of exposures belonging to the same class.

4. CAPITAL REQUIREMENTS FOR THE PORTUGUESE BANKING SYSTEM

This section assesses the implications on capital requirements driven by firms' credit risk for Portuguese banks, if the IRB methodology had been adopted in 2007. We begin by presenting the results on capital requirements for the Portuguese banking system concerning firms' credit risk. Robustness tests on this analysis are also performed. This is then followed by a comparison between the results on capital requirements at December 2007 and similar estimates at December 2006.

4.1. Capital requirements

The assessment of capital requirements concerning firms' credit risk is carried out using the observed rate of default in 2008, described in the previous section, as a proxy for the probability of default. For each class of credit and for each economic sector a different probability of default is assigned,[17] in line with the fact that in 2008 the rates of default exhibit heterogeneous behavior across these two dimensions. The capital requirements are then aggregated using as weights the proportion of the amount of loans in the total portfolio.

As described in Section 2 the computation of capital requirements under Basel II involves the knowledge of other risk components regarding each credit exposure, among them the maturity of the credit and the loss given default (see equations (1) and (2)). In terms of credit maturity, a maturity of half a year for the short term and a maturity of two years and a half for the long term is used. At a later stage, simulations with different maturities are also performed.[18] In reference to the loss given default, we first take as benchmark the values 45 and 75 per cent, as discussed in Section 2. These bounds for the LGD are in line with the results of Fernandes (2006), where data from a Portuguese commercial bank gives an average recovery rate of 48.6 per cent. In turn, using data over the period 1995-2000 from a different Portuguese commercial bank, Dermine and Neto de Carvalho (2006) concluded the mean cumulative recovery rate to be 71 per cent. Additionally, using a more comprehensive data set, covering credit information reported by Portuguese financial institutions over the period between 1995 and 2001, Antunes (2005) concludes that a rough estimate of the LGD would be 46 per cent. Finally, the re-

(17) For some economic activity sectors and some classes of credit the observed default rate in 2008 is 0 per cent. In these cases, and following Basel II, we take the probability of default to be 0.03 per cent.

(18) The simulated values for the long-term maturity are restricted as Basel II defines the maximum maturity to be 5 years.

sults of the fifth quantitative impact study (Basel Committee on Banking Supervision (2006a)) show that LGDs in the corporate portfolio range between 29.1 per cent and 56.3 per cent (the average being 39.8 per cent), while for the SME corporate portfolio, the average LGD for G10 largest banks is 35.0 per cent, but values range from 16.3 per cent to 54.5 per cent. Given the previously mentioned studies, the Basel II Accord benchmarks and the absence of information on risk mitigation, several simulations for different values of LGD were carried out.

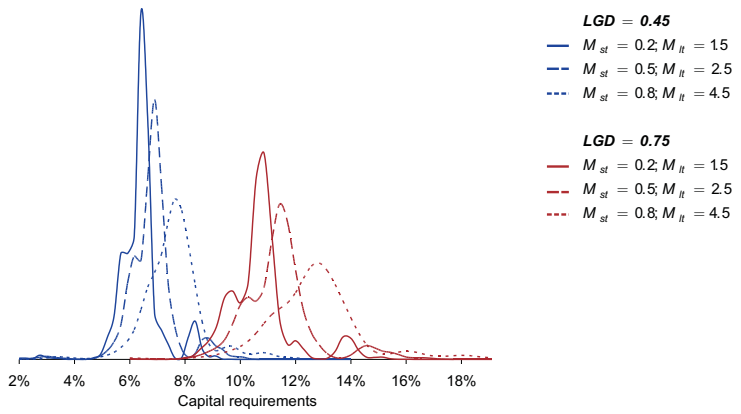
The characterization of capital requirements for the Portuguese banking system begins by analysing the heterogeneity across financial groups operating in Portugal. Capital requirements for each financial group are computed as a weighted average of the capital requirement of each credit exposure, where the weights are the ratio of each EAD over the total EAD in the financial group. The EAD includes short-term loans, medium and long-term loans as well as loans labelled as other. As a conservative scenario, these other loans, where there is no information on maturity, were considered as long-term. Note that capital requirements of each exposure depends on the amount of the exposure, maturity, annual sales, and economic sector. The influence of the economic sector on capital requirements results from the fact that the PD, which is an input of the risk weight function, may be different across economic sectors.

This analysis is carried out using empirical distributions obtained by recourse to a Gaussian kernel that weights financial groups by their total loans to firms, with results being reported in Chart 5. This analysis is performed for different values of LGD and maturity of exposures. For the LGD, the values 45 and 75 per cent were considered. For maturity three different scenarios were used: a short-term maturity of 0.2 years and a long-term maturity of 1.5 years; a short-term maturity of 0.5 years and a long-term maturity of 2.5 years; and a short-term maturity of 0.8 years and a long-term maturity of 4.5 years. As expected, capital requirements increase with the LGD and the effective maturity of the exposures. The LGD assumption proves to be crucial to the determination of capital requirements. For an LGD of 45 per cent, capital requirements for firms' credit risk are lower than 8 per cent for most institutions while the opposite happens for an LGD of 75 per cent. It is observed that the heterogeneity across banks increases with the LGD value and with the maturity of exposures. As LGD increases, capital require-

Chart 5

EMPIRICAL DISTRIBUTION OF CAPITAL REQUIREMENTS FOR DIFFERENT MATURITIES OF THE EXPOSURES AND LOSS GIVEN DEFAULT

Across financial groups



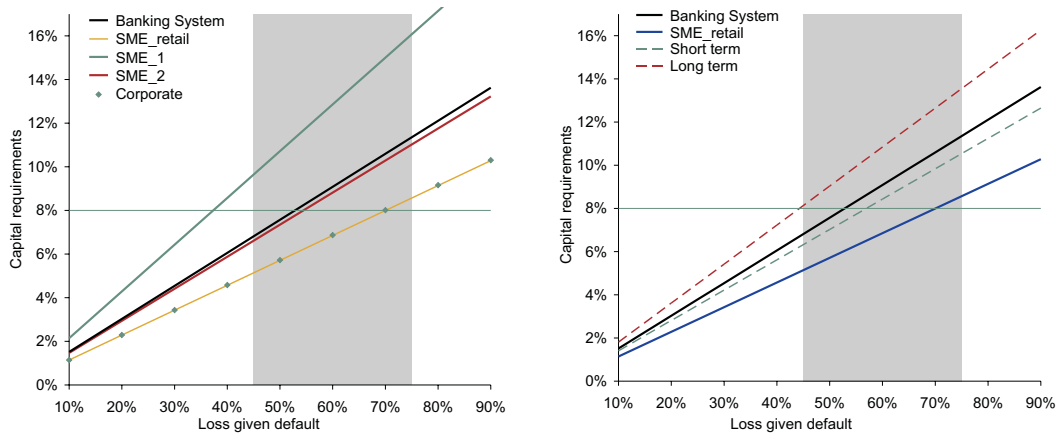
Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Note: This is an empirical distribution obtained through recourse to a Gaussian kernel that weights institutions by loans to firms.

ments exhibit higher dispersion as they are more sensitive to the composition of each financial group's loans across credit classes. An analogous conclusion can be made concerning the average maturities.

We now proceed with the analysis of capital requirements for the Portuguese banking system, weighting each financial group by its total amount of loans to non financial firms. The analysis is carried out by decomposing total loans into the credit classes previously defined and according to the maturity of exposures. Results show that capital requirements driven by firms' credit risk for the banking system will be lower than the ones under Basel I as long as the LGD is assumed to be lower than 52 per cent (see Chart 6). The Corporate and SME_retail classes are those that have a smaller capital requirement, for any level of LGD. In the case of the SME_retail class, although it presents a high probability of default, the functional form of the risk weight function induces this result. In the Corporate case, although the functional form of the risk weight function would lead to the highest capital requirements among different classes (everything else the same), its lowest probability of default induces the result. On the subject of exposures to SMEs, it should be stressed that capital requirements for exposures higher than 1 million euros and sales smaller than 5 million are above those of the overall banking system, while capital requirements for the other two SME classes are below. Capital requirements of the SME_2 class are below the ones for the SME_1 because the probability of default is much lower, although the risk weight function is more demanding. In a comparison of the SME_1 class with the SME_retail class, the fact that capital requirements are smaller for the retail results from the fact that the risk weight function is less demanding and the probability of default is lower. This corroborates the results presented in Section 2 concerning the importance of an exposure classification. In short, if the probabilities of default were the same for all classes, capital requirements for firms classified as Corporate would be higher than those for the SME_2, which in turn would be higher than those for SME_1. The SME_retail class would result in the lowest capital requirements. However, as presented in Chart 6, this is not observed because of the heterogeneous probabilities of default. In particular, the probability of default of the Corporate class is so much smaller than the SME_retail one that capital requirements turn out to be similar. Chart 6 also illustrates the fact that errors due to incorrect classification increase with higher levels of LGD. In terms of the decomposition of capital requirements according to the maturity of exposure, which is not a relevant risk driver for

Chart 6

CAPITAL REQUIREMENTS OF THE BANKING SYSTEM
By credit class and maturity



Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Note: The maturity of short-term loans was assumed to be 0.5 years while the maturity of long-term loans was assumed to be 2.5 years

capital requirements of retail exposures, longer-term maturities result in higher capital requirements, as expected (right panel of Chart 6).

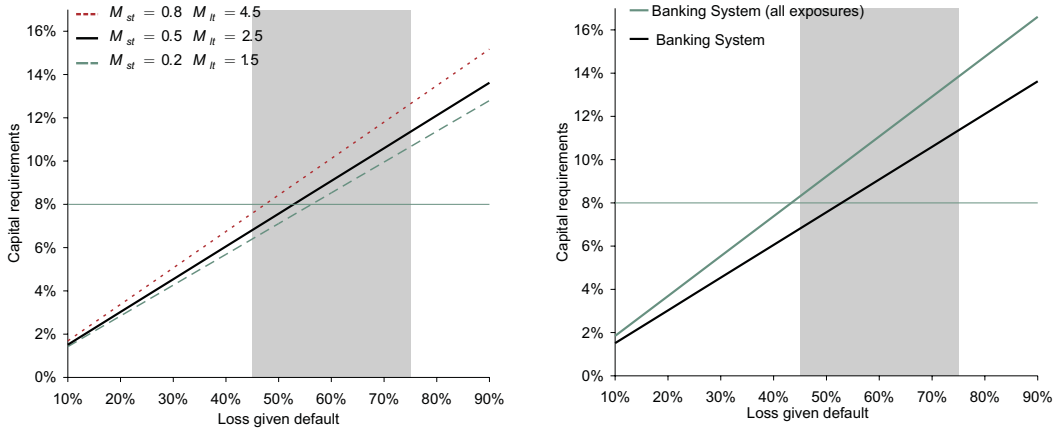
4.2. Robustness analysis

As a robustness test of the Portuguese banking system capital requirements for firms' credit risk, we assess the implications of the postulated maturities of the exposures, the exclusion of the exposures for which there is no available information on annual sales and the use of different probabilities of default. Hence, the first robustness check concerns the maturity of exposures. If the short-term maturity is assumed to be 0.2 years and the long-term maturity is assumed to be 1.5 years, a recovery rate higher than 44 per cent assures that capital requirements under Basel II are lower than those under Basel I (see left panel of Chart 7). On the other hand, assuming a short-term maturity of 0.8 years and a long-term maturity of 4.5 years, capital requirements under Basel II are lower than those under Basel I if the recovery rate is higher than 53 per cent. As previously mentioned, this value for the recovery rate is in line with previous studies on Portuguese banks.

The second robustness check concerns the bias of the sample towards better creditors, which is a drawback of the previous analysis. In this context, the exposures with no information available were divided into two groups, as a function of exposure size. The exposures smaller than 1 million euros were classified as SME_retail [19] (around 3 per cent of total loans), while all the others were classified as Corporate (around 17 per cent of total loans), the most conservative scenario for exposures higher than 1 million euros. The probability of default assigned to these exposures was, once again, the observed rate of default over 2008. For exposures smaller than 1 million euros, the observed rate of default is 13.6 per cent. For exposures higher than 1 million euros the observed rate is 9.7 per cent, which is

Chart 7

ROBUSTNESS ANALYSIS OF CAPITAL REQUIREMENTS OF THE BANKING SYSTEM



Source: Banco de Portugal (*Central de Balanços* and *Central de Responsabilidades de Crédito*).
Notes: For the right panel, the maturity of short-term loans was assumed to be 0.5 years while the maturity of long-term loans was assumed to be 2.5 years.

(19) This classification is not the most conservative as firms with sales higher than 50 million euros may have exposures lower than 1 million euros. In such cases, exposures lower than 1 million euros would be wrongly categorized as SME_retail. However, this situation was not contemplated as for firms that did not exhibit default over 2007 and with information available on sales for the year 2007, only 1.3 per cent of the loans lower than 1 million euros was caused by firms with sales higher than 50 million. Hence, given the impossibility of classifying as SME_retail or Corporate the exposures smaller than 1 million euros, the classification of the whole group as Corporate would lead to a less precise evaluation of capital requirements.

much higher than the rate observed for exposures initially classified as Corporate. In this scenario, capital requirements for firms' credit risk in the banking system remain below those under Basel I only if the recovery rate is assumed to be around or higher than 60 per cent (see right panel of Chart 7). Moreover, the consideration of these exposures causes a higher sensitivity of capital requirements with respect to the LGD.

The third robustness check concerns the use of different probabilities of default, namely the consideration of a single probability of default for the whole system and a single probability of default per different homogeneous groups of exposures. The reason underlying this robustness test is the potential error of grouping heterogeneous exposures and assigning them the same probability of default, as the risk weight functions are concave (see right-hand-side of Chart 2) on the probability of default.[20] In this context, we first considered a single probability of default of 3.6 per cent (as pointed out in subsection 3.2). Results show that capital requirements for firms' credit risk would exhibit an increase of 1.1 percentage points when compared with the baseline case presented in subsection 4.1 for an LGD of 50 per cent. Then, we considered single probabilities of default for the following homogeneous groups: i) economic sector and exposure size; ii) sales level and exposure size and iii) economic sector. The exposure size classes, as well as the level of sales classes, are as defined in (Table 3). Comparing with the baseline case presented in subsection 4.1, the highest difference in capital requirements is observed if default rates are uniform for exposures in the same economic sector. An increase of 1.33 p.p. in the level of capital requirements is observed if an LGD of 50 per cent is considered. The use of a single rate of default per sales level and exposure size results in the lowest change of around 0.7 p.p. in capital requirements (for an LGD of 50 per cent). These results stress the importance of stratifying adequately the portfolio of loans to non-financial firms into homogeneous groups for the purpose of computing capital requirements.

4.3. Time-consistency of capital requirements

Using the same approach, capital requirements driven by firms' credit risk for the Portuguese banking system were also computed for December 2006, in which case the observed rate of default in 2007 was used as a proxy for the probability of default. The comparison of capital requirements for two consecutive years allows a decomposition of its change into two important components, namely, changes in the composition of the credit portfolio and changes in the probability of default. In our data, it is observed a relevant increase in default rates, especially in the exposures classified as SME_1, resulting in an increase of 0.26 p.p. in capital requirements for an LGD of 50 per cent. This increase can go up to 0.4 p.p. if an LGD of 75 per cent is considered.[21] Most of this increase in capital requirements (around 85 per cent) is due to an increase in the probability of default in 2008. This effect results from assessing capital requirements for 2006 using, as proxy for the probability of default, the default rate in 2008, which reflects the less favorable macro-economic setting. The remaining effect (around 15 per cent) can be justified by changes in the portfolio structure.

(20) Further details in Antão and Lacerda (2009).

(21) The proportion of firms with no available information on annual sales, and hence not considered here, is higher in 2007 than in 2006. Consequently, this increase is underestimated once these firms present higher probabilities of default.

5. CONCLUSIONS

The Basel II Accord, which came into force in 2007, establishes new capital adequacy rules. In contrast to the previous Accord, this new one seeks a better alignment between regulatory capital and economic risk. One of the most important changes is the definition of capital requirements for credit risk based on internal risk ratings. Banks are permitted to develop internal methodologies to quantify the creditworthiness of their creditors. These methodologies will allow for the computation of two of the most important risk components needed for the computation of risk-weighted assets: the probability of default and the loss given default. Then, for each credit portfolio, and using some additional information, a risk weight function provided by the Basel Committee translates these risk components into capital requirements.

This work aims at studying the impact of the adoption of Basel II rules for the determination of capital requirements for firms' credit risk. It starts by establishing regions of values for the probability of default and the loss given default for which Basel II would be more demanding in terms of capital requirements for firms' credit risk than Basel I. We conclude that capital requirements for exposures classified as corporate being higher or lower than the ones under Basel I is dependent on the values assumed for the PD and the LGD. On the other hand, for credit to firms classified as retail, and for commonly accepted values for PD and LGD, capital requirements are below those under Basel I. Our analysis emphasizes the importance of an exposure's classification as retail or corporate.

In Portugal, as expected, most loans are granted to firms with annual sales smaller than 50 million euros (SMEs), from which less than half are classified as retail exposures. The real estate and construction sectors are the economic sectors where loans are more concentrated. The majority of the loans have a maturity higher than one year. The observed firms' rate of default in Portugal over the year 2008 presents a differentiated pattern across different economic sectors. Construction comes in with the highest default rate. Moreover, the observed rate of default decreases with the firms' size, taking the definition of firm size as in the Accord. For the adopted categories of exposure size, the observed rate of default is non monotonic, increasing (roughly) with the exposure size for exposures smaller than 10 million euros (which account for 66 per cent of total loans) and decreasing significantly for those higher than that amount (which account for 0.3 per cent of the number of exposures and 34 per cent of total loans).

Using the observed rate of default in 2008 as a proxy for the probability of default in 2007, assessed by economic sector and class of credit as defined in Basel II, capital requirements for the Portuguese banking system associated with loans to non-financial firms are shown to be lower than the ones under Basel I, for recovery rates higher than 50 per cent. Among the SMEs, the retail class is the one that exhibits the lowest capital requirements, despite having a high rate of default. The Corporate class displays very similar capital requirements to the SME_retail class, which can be justified by the fact that it exhibits the smallest rate of default. The empirical analysis for Portuguese non-financial firms confirms the importance of the allocation of credits among the credit classes defined under Basel II. As there is no precise information available for the maturity of exposures, different assumptions were made. Under extreme assumptions for maturity if a recovery rate of 53 per cent is assumed, capital requirements for firms' credit risk are still lower than those under Basel I. In addition, given the non-existence of information on annual sales for all exposures, a robustness check on the inclusion of these observations was carried out. Assuming standard values for maturity and a recovery rate of 50 per cent, capital requirements for firms' credit risk will still be smaller than those under Basel I. Using a different segmentation for the estimation of the probability of default, an increase in capital requirements was observed.

In all cases, only a recovery rate of 60 per cent assures that capital requirements are still lower than under Basel I. Finally, comparing capital requirements for 2006 and 2007, an increase was obtained. The main reason for this change was an increase in the probability of default, reflecting the recent deterioration of firms' credit risk.

It should be stressed that our analysis only considers the credit risk of non-financial corporations' loans, leaving aside the remaining loan portfolio, among which are mortgage loans. Market and operational risk are not assessed at all in this study. The treatment of mortgage loans is of extreme importance for the assessment of capital requirements in the Portuguese banking system, as mortgage loans represent around half of the total credit granted by banks. We believe that the inclusion of mortgage loans would result in lower capital requirements, given that these credits have collateral (resulting in lower LGD) and are classified as retail. On the other hand, the capital charge for operational risk would add up a non-negligible amount to capital requirements presented in this work.

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PART III – ANNEX

A.1 Main Indicators

A.2 Developments in the Portuguese General Index and in Sectoral Indices

A.3 Balance Sheet of the Banking System (International Accounting Standards)

A.4 Profit and Loss Account of the Banking System (International Accounting Standards)

A.5 Balance Sheet of the Domestic Institutions (International Accounting Standards)

A.6 Profit and Loss Account of the Domestic Institutions (International Accounting Standards)

A.7 Capital Adequacy of The Banking System

A.8 Capital Adequacy of The Banking System – Basel II

Table A.1

MAIN INDICATORS (to be continued)
Per cent; end-of-period figures

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Macroeconomic and financial indicators														
Real GDP (rate of change)														
US	2.5	3.7	4.5	4.2	4.4	3.7	0.8	1.6	2.5	3.6	2.9	2.8	2.0	1.1
Euro area	2.6	1.5	2.6	2.8	3.0	3.9	1.9	0.9	0.8	2.2	1.7	2.9	2.7	0.9
Portugal	2.3	3.6	4.2	4.8	3.8	3.9	2.0	0.8	-0.8	1.5	0.9	1.4	1.8	0.0
Current account balance (as a percentage of GDP)														
US	-3.1	-2.2	-0.8	0.4	0.9	1.6	-0.4	-3.8	-4.8	-4.4	-3.3	-2.2	-2.9	-6.1
Euro area	-5.1	-4.3	-2.6	-2.3	-1.4	-1.0	-1.9	-2.6	-3.0	-2.9	-2.5	-1.3	-0.7	-1.8
Portugal	-4.2	-3.8	-2.8	-2.4	-2.7	-2.9	-4.3	-2.8	-2.9	-3.4	-6.1	-3.9	-2.6	-2.6
Current account balance (as a percentage of GDP)														
US	-1.5	-1.6	-1.7	-2.4	-3.2	-4.2	-3.8	-4.4	-4.8	-5.3	-5.9	-6.0	-5.3	-4.7
Euro area	n.d.	n.d.	1.4	0.7	0.3	-0.7	0.1	0.7	0.5	1.2	0.4	0.3	0.2	-0.7
Portugal	-2.8	-4.2	-5.9	-7.0	-8.5	-10.2	-9.9	-8.1	-6.1	-7.6	-9.5	-10.0	-9.4	-12.1
Oil price (USD brent; y-o-y rate of change)	15.4	28.9	-28.8	-38.3	143.6	-5.3	-15.1	47.9	-1.4	34.0	43.1	8.2	55.4	-58.4
Key interest rates - Monetary policy														
US	5.50	5.25	5.50	4.75	5.50	6.50	1.75	1.25	1.00	2.25	4.25	5.25	4.25	0.25
Euro area	n.d.	n.d.	n.d.	n.d.	4.00	5.75	4.25	3.75	3.00	3.00	3.25	4.50	4.00	2.50
3-month Euribor	n.d.	n.d.	n.d.	n.d.	3.3	4.9	3.3	2.9	2.1	2.2	2.5	3.7	4.7	2.9
Yields on (10-year) Government bonds														
US	5.6	6.4	5.7	4.7	6.4	5.1	5.1	3.8	4.3	4.2	4.4	4.7	4.0	2.2
Euro area	7.7	6.3	5.4	3.9	5.5	5.0	5.1	4.3	4.3	3.7	3.4	4.1	4.4	3.8
Stock markets (annual rate of change)														
S&P 500	34.1	20.3	31.0	26.7	19.5	-10.1	-13.0	-23.4	26.4	9.0	3.0	13.6	3.5	-38.5
Dow Jones Euro Stoxx	8.7	21.2	37.0	29.8	39.5	-5.9	-19.7	-34.5	18.1	10.0	23.0	20.3	4.9	-46.3
PSI Geral	-4.6	32.6	65.2	26.2	12.6	-8.2	-19.0	-20.7	17.4	18.0	17.2	33.3	18.3	-49.7
PSI Financial Services	n.d.	n.d.	n.d.	n.d.	n.d.	n.d.	-14.6	-24.8	4.0	12.0	24.4	34.8	4.9	-62.9

Notes: y-o-y year-on-year; n.a. not available.

Table A.1

MAIN INDICATORS (continued)
Per cent; end-of-period figures

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Financial situation of the non-financial private sector														
Households														
Indebtedness														
As a percentage of GDP	n.a.	n.a.	42	49	57	62	65	70	75	80	85	90	94	96
As a percentage of disposable income	n.a.	n.a.	59	69	81	88	93	100	106	113	120	127	136	135
Total loans														
Annual rate of change	n.a.	n.a.	n.a.	25.1	22.7	16.4	12.1	11.4	10.2	9.9	10.3	10.0	10.4	4.1
Loans granted by resident financial institutions [a]														
Annual rate of change	n.a.	25.4	25.6	30.9	29.6	19.9	12.7	11.3	11.0	9.7	10.1	9.7	10.1	4.3
of which:														
Housing purposes	n.a.	25.9	27.3	34.6	30.0	20.2	14.9	16.0	11.8	10.5	11.1	9.9	8.5	4.3
Consumption and other purposes	n.a.	24.2	22.3	23.1	28.9	19.1	7.6	-0.1	8.9	7.4	6.9	9.3	15.9	4.6
Net lending (+) / borrowing (-) [b]														
As a percentage of GDP	5.3	3.4	1.9	1.4	0.9	1.2	2.7	3.0	3.1	2.8	3.2	2.1	0.7	1.2
As a percentage of disposable income	7.1	4.7	2.7	2.1	1.3	1.7	3.8	4.3	4.4	4.0	4.5	3.0	1.1	1.7
Current savings [b]														
As a percentage of GDP	9.9	8.8	7.8	7.4	6.9	7.3	7.8	7.5	7.5	6.9	6.6	5.8	4.3	4.6
As a percentage of disposable income	13.3	12.1	11.0	10.6	9.9	10.3	11.0	10.6	10.6	9.8	9.3	8.1	6.2	6.5
Investment in real assets [b]														
As a percentage of GDP	6.2	6.1	6.5	6.8	6.9	6.7	6.5	6.1	5.1	5.1	5.1	4.0	4.2	4.5
Change in financial assets														
As a percentage of GDP	n.a.	n.a.	n.a.	13.6	12.9	10.3	10.0	9.1	10.7	10.6	11.1	10.5	10.3	4.9
Idem, excluding extraordinary contributions to pension funds	n.a.	n.a.	n.a.	13.4	12.6	10.2	9.1	7.9	10.3	10.2	9.8	10.3	10.3	4.6
Change in financial liabilities														
As a percentage of GDP	n.a.	n.a.	n.a.	12.2	12.0	9.1	7.3	6.1	7.6	7.8	7.9	8.4	9.6	3.7

Notes: (a) Loans granted by monetary financial institutions and other financial intermediaries adjusted for securitisations conducted through non-resident special purpose vehicles. (b) Net lending / borrowing, savings and investment ratios to GDP up to 2006 use National Accounts base 2000; 2007 and 2008 ratios are based on the *INE* quarterly accounts. Investment comprises gross fixed capital formation and the net acquisition of land and intangibles.

Table A.1

MAIN INDICATORS (continued)
Per cent; end-of-period figures

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Non-financial corporations														
Total debt [c]														
As a percentage of GDP	n.a.	n.a.	93	100	104	111	116	114	118	116	120	123	130	140
Annual rate of change	n.a.	n.a.	n.a.	14.3	11.6	15.0	9.7	4.0	5.4	4.4	6.2	6.9	10.9	10.1
Financial debt [d]														
As a percentage of GDP	n.a.	n.a.	86	92	95	102	110	109	112	108	112	115	122	134
Loans granted by resident financial institutions [a]														
Annual rate of change	n.a.	n.a.	n.a.	n.a.	25.6	26.7	15.4	7.3	5.4	3.2	4.1	6.6	11.4	12.1
Net lending (+) / borrowing (-) [b]														
As a percentage of GDP	-1.1	-1.1	-2.9	-3.8	-5.3	-8.3	-7.2	-6.4	-4.7	-4.5	-5.9	-7.4	-8.0	-10.3
Current savings [b]														
As a percentage of GDP	9.7	9.4	8.4	9.2	8.7	7.2	7.6	7.6	8.2	8.1	6.6	5.4	4.9	3.2
Investment in real assets [b]														
As a percentage of GDP	12.0	11.9	13.4	15.2	16.0	16.6	15.9	14.9	13.8	13.6	13.7	13.7	13.8	14.8
Change in financial assets														
As a percentage of GDP	n.a.	n.a.	n.a.	10.5	8.9	15.3	9.5	3.2	8.9	3.0	1.0	3.9	8.0	3.3
Change in financial liabilities														
As a percentage of GDP	n.a.	n.a.	n.a.	14.2	14.3	23.7	16.9	9.2	13.7	7.6	6.7	11.4	15.4	13.7

Notes: (c) It includes loans granted by resident and non-resident credit institutions, loans/additional capital by non-resident intra-group corporations (excluding those granted to non-financial corporations having their head-office in Madeira's off-shore), commercial paper and bonds issued by non-financial corporations held by other sectors and trade credits received from other sectors. (d) Total debt excluding trade credits and including loans granted to non-financial corporations having their head-office in Madeira 's off-shore. It corresponds to the financial accounts instruments "Securities other than shares" and "Loans".

Table A.1

MAIN INDICATORS (continued)
Per cent; end-of-period figures

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2004*	2005*	2006*	2007*	2007**	2008**
Profitability [e]																
ROE - Return on equity [f]	13.2	13.5	20.1	19.3	18.0	18.3	17.8	14.1	16.2	14.5	13.1	19.4	20.6	18.0	18.2	10.6
ROA - Return on assets [f]	0.82	0.81	1.18	1.16	1.12	1.11	1.01	0.78	0.91	0.87	0.65	1.03	1.30	1.18	1.15	0.64
Financial margin (as a percentage of average assets)	2.76	2.45	2.72	2.69	2.45	2.21	2.24	2.12	2.00	1.94	1.91	1.86	1.89	1.88	1.96	1.95
Income from services and commissions (net, as a percentage of average assets)	0.44	0.43	0.59	0.79	0.76	0.70	0.63	0.63	0.69	0.76	0.72	0.77	0.78	0.76	0.76	0.71
Cost to income ratio	64.5	66.1	60.9	54.1	63.1	58.2	57.6	59.1	57.4	57.2	71.7	58.3	53.4	53.7	54.1	53.7
Capital adequacy [e],[g]																
Overall capital adequacy ratio	11.8	11.3	11.7	11.1	10.8	9.2	9.5	9.8	10.0	10.4	10.2	11.3	10.9	10.0	10.3	10.3
Market risk																
Net open position in equities to regulatory capital	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	1.8	1.3	2.6	2.3	2.0	0.2
Coverage ratio of the pension funds of bank employees (as a percentage of regulatory capital)	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-1.8	-0.8	0.1	-0.4	-0.4	1.2	5.3	5.1	4.7	1.1
Liquidity Risk [e]																
Credit-to-deposit ratio	62.5	65.4	72.5	90.9	104.7	116.0	122.7	129.5	129.1	128.3	130.9	137.5	145.6	153.9	155.0	152.8
Coverage ratio of interbank liabilities by highly liquid assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	85.6	80.0	100.7	99.5	110.0	98.5	99.2	88.1	75.4	68.3
Liquidity gap [h]																
Up to 3 months	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-2.2	-2.4	1.6	2.4	1.4	-0.9	-1.5	-2.5	-1.5	-1.5
Up to 1 year	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-6.4	-7.2	-6.3	-3.6	-5.4	-8.2	-8.9	-11.4	-9.9	-6.4
For domestic banks																
Credit-to-deposit ratio	n.a.	n.a.	n.a.	87.2	99.9	114.6	121.1	125.6	124.8	127.2	129.2	134.2	139.3	149.0	145.9	142.8
Coverage ratio of interbank liabilities by highly liquid assets	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	88.1	91.6	120.1	120.8	127.3	126.5	118.0	107.1	115.4	106.9
Liquidity gap [h]																
Up to 3 months	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-3.5	-3.4	0.5	0.7	0.6	-0.7	-0.9	-2.1	-1.4	-2.2
Up to 1 year	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	-7.8	-7.6	-6.5	-4.8	-5.4	-7.4	-8.9	-10.1	-9.0	-6.7

Notes: * The break in the series results from the implementation of the International Accounting Standards (IAS), which also implied a redefinition of the group of banking institutions under analysis. ** Break in the series 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. (e) Indicators for the period comprised between 1995 and 1997 are estimates of Banco de Portugal for a smaller set of institutions than that considered between 1998 and 2004. (f) ROE and ROA indicators are based on Income before taxes and minority interests, considering average values for the period for the stock variables. (g) In 2008, all banking institutions under analysis determined the capital ratio in line with Basel II, which changed fundamentally the methodology for calculating capital requirements. (h) This indicator is computed using information from Notice No. 1/2000, which is applicable only to financial institutions which collect deposits.

Table A.1

MAIN INDICATORS (continued)
Per cent; end-of-period figures

	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2004*	2005*	2006*	2007*	2007**	2008**
Credit risk																
Loans granted by resident financial institutions to the non-financial private sector [a]																
Annual rate of change	n.a.	16.0	23.1	26.6	27.6	23.1	14.0	9.3	8.3	6.6	6.6	7.4	8.4	10.7	10.7	7.7
Credit and interest overdue (on a consolidated basis)																
As a percentage of credit to customers	n.a.	n.a.	n.a.	n.a.	n.a.	2.2	2.2	2.3	2.4	2.0	1.8	1.7	1.5	1.5	1.7	2.1
As a percentage of assets	n.a.	n.a.	n.a.	n.a.	n.a.	1.4	1.4	1.6	1.6	1.3	1.3	1.1	1.0	1.0	1.1	1.4
Non-performing loans of households																
As a percentage of loans to individuals	n.a.	n.a.	3.2	2.5	2.0	1.8	1.9	1.9	2.0	1.8	1.8	1.7	1.5	1.6	1.6	1.9
Non-performing loans of non-financial corporations																
As a percentage of loans to non-financial corporations	n.a.	n.a.	6.4	4.7	3.2	2.5	2.4	2.4	2.1	1.7	1.7	1.7	1.5	1.4	1.4	2.2
Annual flow of new credit overdue and other credit considered to be doubtful [i]																
As a percentage of bank loans adjusted for securitisation transactions																
Individuals	n.a.	n.a.	n.a.	n.a.	0.22	0.25	0.42	0.38	0.51	0.21	0.21	0.2	0.3	0.4	0.4	0.7
Adjusted for sales outside the banking system												0.3	0.4	0.4	0.4	0.7
Non-financial corporations	n.a.	n.a.	n.a.	n.a.	-0.01	0.34	0.74	0.71	0.51	0.52	0.52	0.6	0.4	0.6	0.6	1.2
Adjusted for sales outside the banking system												0.6	0.5	0.6	0.6	1.3
International exposure (for domestic banks):																
Share of external assets in total assets [j]	n.a.	n.a.	n.a.	n.a.	23.1	21.7	19.8	18.1	21.6	20.5	30.5	27.6	30.0	26.8	27.6	28.9
of which:																
Local assets denominated in local currency	n.a.	n.a.	n.a.	n.a.	1.8	2.8	1.8	1.2	1.7	1.6	7.2	6.4	6.7	8.0	8.2	8.4
International assets by counterparty sector:																
Banking sector	n.a.	n.a.	n.a.	n.a.	14.1	12.3	10.6	8.3	14.1	14.8	13.7	12.7	14.0	8.2	8.4	6.5
Non-banking sector	n.a.	n.a.	n.a.	n.a.	7.1	6.6	7.4	8.5	5.8	4.0	9.7	8.5	9.3	10.7	11.0	14.0

Sources: Bloomberg, IMF, *INE*, Thomson Reuters and Banco de Portugal.
Notes: (i) Estimates of the annual flow of new credit overdue and other non-performing loans as a percentage of the loans, corrected for securitisation. The estimate of the new credit overdue and other non-performing loans was calculated by adjusting the variation in the balance of overdue loans and other non-performing loans to write-offs/write-downs, reclassifications and, as and from December 2005, sales of overdue credit and other non-performing loans outside the banking system and not written-off from assets, reported on a quarterly basis as per Banco de Portugal Instruction no. 2/2007 and with information available only up to December 2008. (j) From 2004 onwards, figures on external assets are based on a new information report. Comparable figures for 2004, 2005, 2006 and 2007 are based on estimates on total assets for the whole set of domestic banks. Comparable figures for 2007 and 2008 are based on assets for domestic institutions.

Table A.2

DEVELOPMENTS IN THE PORTUGUESE GENERAL INDEX AND IN SECTORAL INDICES
Annual rate of change, per cent

	2001	2002	2003	2004	2005	2006	2007	2008
PSI Geral	-19.0	-20.7	17.4	18.0	17.2	33.3	18.3	-49.7
PSI 20	-24.7	-25.6	15.8	12.6	13.4	29.9	16.3	-51.3
PSI Basic Materials	-9.7	-14.2	15.1	15.6	16.7	36.5	-4.1	-32.7
PSI Industrials	-29.1	13.4	26.4	31.1	68.3	40.9	4.8	-46.4
PSI Consumer Goods	-10.8	-13.1	-0.5	-6.7	21.2	31.6	0.2	-39.6
PSI Consumer Services	-27.8	17.0	23.7	29.3	11.6	18.0	23.1	-52.3
PSI Telecommunications	-17.7	-24.6	27.1	20.6	12.0	22.3	6.4	-32.4
PSI Utilities	-27.2	-31.4	38.0	15.5	21.7	52.4	19.3	-37.4
PSI Financials	-14.6	-24.8	4.0	12.0	24.4	34.8	4.9	-62.9
PSI Technology	-58.9	-37.9	4.5	24.0	-9.5	-15.1	-22.8	-13.1

Sources: Bloomberg and Euronext.

Table A.3

BALANCE SHEET OF THE BANKING SYSTEM (INTERNATIONAL ACCOUNTING STANDARDS)
On a consolidated basis
EUR millions

	2004	2005	2006	2007	2007*	2008*
Cash and claims on central banks	7 555	6 205	6907	7762	8 809	9 261
Claims and investment in other credit institutions	25 041	30 876	31442	29659	40 089	32 185
Financial assets at fair value through profit or loss	12 900	18 150	20 137	20 156	22 582	21 037
Equity	n.a.	853	1 301	1 586	1 644	1 082
Debt instruments	n.a.	12 221	12 734	11 106	13 127	8 788
Other	n.a.	5 076	6 102	7 464	7 812	11 166
Available-for-sale financial assets	14 806	14 037	17 965	24 114	26 467	25 961
Equity	n.a.	4 169	6 077	7 652	7 681	4 954
Debt instruments	n.a.	8 909	11 468	15 713	18 019	19 177
Other	n.a.	959	420	749	767	1 830
Investment held to maturity	520	718	663	475	1 438	4 898
Hedging derivatives	692	816	1 096	954	1 385	2 298
Investment in subsidiaries	2 613	3 475	4 070	3 447	3 229	2 480
Net credit to customers	182 717	199 873	222 898	255 139	285 561	313 786
Securitised non-derecognised assets	12 157	14 186	15 391	18 241	19 212	27 276
of which: credit to customers	12157	14 186	15 372	18 309	19 279	26 784
Tangible and intangible assets	3 611	3 886	4 232	4 655	5 184	5 583
Other assets	9 799	13 768	13 269	13 152	14 250	18 559
Total assets	272 411	305 989	338 070	377 755	428 205	463 323
Resources from central banks	3 542	6 215	1 739	5 198	5 465	13 968
Resources from other credit institutions	33 315	38 840	42 921	44 695	69 620	70 582
Resources from customers and other loans	142 784	149 139	156 633	169 436	188 487	210 572
Liabilities represented by securities	55 694	62 807	81 254	95 474	96 629	92 765
Subordinated liabilities	9 887	9 973	9 890	10 813	11 201	11 319
Financial liabilities held for trading	2 589	4 306	5 397	8 694	9 662	17 338
Hedging derivatives	562	956	1 744	1 880	2 013	2 493
Liabilities for non-derecognised assets in securitisation operations	0	2 363	4 130	4 512	4 512	3 299
Other liabilities	10 013	13 608	12 641	12 761	14 105	13 171
Total liabilities	258 386	288 208	316 349	353 462	401 694	435 506
Capital	14 025	17 782	21 721	24 293	26 511	27 817
Total liabilities and net wealth	272 411	305 989	338 070	377 755	428 205	463 323

Source: Banco de Portugal.
Note: * Break in the series related to the widening of the group of institutions under analysis.

Table A.4

PROFIT AND LOSS ACCOUNT OF THE BANKING SYSTEM (INTERNATIONAL ACCOUNTING STANDARDS)
On a consolidated basis
EUR millions

	2004	2005	2006	2007	2007*	2008*
1. Interest income	12 622	13 977	17 258	22 209	25 267	31 149
2. Interest expenses	7 504	8 601	11 273	15 534	17 325	22 420
3. Financial margin (1-2)	5 119	5 375	5 985	6 676	7 941	8 729
4. Income from capital instruments	161	217	164	193	195	278
5. Income from services and commissions (net)	1 923	2 212	2 473	2 706	3 056	3 187
6. Income from financial assets and liabilities measured at fair value	346	505	-40	-110	-172	59
7. Income from available-for-sale financial assets	104	663	455	1 050	1 080	534
8. Income from foreign exchange revaluation	208	53	498	394	409	190
9. Income from the sale of other financial assets	72	366	758	159	160	322
10. Other operating profit and loss	602	417	596	479	686	656
11. Gross income (3+4+5+6+7+8+9+10)	8 535	9 809	10 890	11 548	13 356	13 956
12. Staff costs	3 667	3 300	3 348	3 487	3 912	4 013
13. General administrative costs	1 891	1 956	2 020	2 227	2 748	2 878
14. Depreciation and amortisation	562	465	445	492	559	598
15. Provisions net of restitutions and annulments	279	187	129	183	212	-62
16. Impairment losses and other net value adjustments	1 012	1 138	1 069	1 449	1 690	3 636
17. Negative consolidation differences	0	0	0	-12	-12	0
18. Appropriation of income from associates and joint ventures (equity method)	624	217	231	456	393	-29
19. Income before taxes and minority interests (11-12-13-14-15-16-17+18)	1 749	2 981	4 109	4 179	4 639	2 863
20. Taxes on profit	228	401	722	636	772	607
21. Income before minority interests (19-20)	1 521	2 580	3 387	3 543	3 868	2 256
22. Minority interests (net)	236	383	579	654	653	462
23. Net profit and loss (21-22)	1 284	2 197	2 807	2 890	3 215	1 795

Source: Banco de Portugal.
Note: * Break in the series related to the widening of the group of institutions under analysis.

Table A.5

BALANCE SHEET OF THE DOMESTIC INSTITUTIONS (INTERNATIONAL ACCOUNTING STANDARDS)
On a consolidated basis
EUR million

	2004	2005	2006	2007	2007*	2008*
Cash and claims on central banks	6 955	5 548	6 200	7 016	7 818	8 181
Claims and investment in other credit institutions	21 629	25 780	27 037	24 223	28 416	23 314
Financial assets at fair value through profit or loss	12 038	16 302	17 822	17 606	19 609	17 233
Equity	n.a.	622	1 127	1 294	1 320	597
Debt instruments	n.a.	11 720	12 213	10 564	12 456	8 387
Other	n.a.	3 960	4 482	5 748	5 833	8 248
Available-for-sale financial assets	13 206	13 117	17 139	21 747	22 097	20 599
Equity	n.a.	3 775	5 818	7 584	7 607	4 892
Debt instruments	n.a.	8 383	10 901	13 414	13 738	13 884
Other	n.a.	959	420	749	752	1 823
Investment held to maturity	495	693	663	475	847	4 157
Hedging derivatives	669	680	885	893	904	1 730
Investment in subsidiaries	2 396	3 204	3 705	3 034	3 101	2 372
Net credit to customers	157 128	171 226	190 921	221 910	230 918	254 827
Securitised non-derecognised assets	5 214	5 316	7 332	7 757	8 687	14 082
of which: credit to customers	5214	5 316	7 314	7 824	8 755	13 590
Tangible and intangible assets	2 962	3 220	3 527	3 769	4 227	4 596
Other assets	9 006	12 983	12 145	12 284	12 848	16 234
Total assets	231 697	258 068	287 376	320 712	339 474	367 324
Resources from central banks	1 010	851	1 736	3 069	3 235	11 123
Resources from other credit institutions	24 751	27 441	31 238	31 328	34 259	29 201
Resources from customers and other loans	124 770	130 933	139 056	150 440	162 001	182 975
Liabilities represented by securities	49 509	56 715	67 989	81 460	82 167	80 448
Subordinated liabilities	8 959	8 702	8 851	9 723	10 182	10 543
Financial liabilities held for trading	1 921	3 150	3 572	6 531	7 199	13 871
Hedging derivatives	539	822	1 350	1 632	1 632	2 197
Liabilities for non-derecognised assets in securitisation operations	0	2 363	4 130	4 512	4 512	3 298
Other liabilities	8 693	12 439	11 525	11 916	12 441	11 119
Total liabilities	220 151	243 415	269 445	300 612	317 628	344 777
Capital	11 546	14 654	17 931	20 101	21 847	22 547
Total liabilities and net wealth	231 697	258 068	287 376	320 712	339 474	367 324

Source: Banco de Portugal.
Note: * Break in the series related to the widening of the group of institutions under analysis.

Table A.6

PROFIT AND LOSS ACCOUNT OF THE DOMESTIC INSTITUTIONS (INTERNATIONAL ACCOUNTING STANDARDS)
On a consolidated basis
EUR million

	2004	2005	2006	2007	2007*	2008*
1. Interest income	10 255	11 192	13 642	17 893	19 035	24 091
2. Interest expenses	5 959	6 669	8 552	12 200	12 734	17 203
3. Financial margin (1-2)	4 297	4 523	5 090	5 693	6 301	6 888
4. Income from capital instruments	141	198	156	184	185	270
5. Income from services and commissions (net)	1 610	1 835	2 028	2 237	2 471	2 549
6. Income from financial assets and liabilities measured at fair value	280	470	-45	-184	-228	61
7. Income from available-for-sale financial assets	120	643	412	981	1 012	503
8. Income from foreign exchange revaluation	213	29	488	380	388	161
9. Income from the sale of other financial assets	66	364	710	123	119	317
10. Other operating profit and loss	540	356	542	429	493	448
11. Gross income (3+4+5+6+7+8+9+10)	7 267	8 419	9 382	9 843	10 740	11 197
12. Staff costs	3 178	2 917	2 914	3 041	3 287	3 354
13. General administrative costs	1 667	1 717	1 780	1 958	2 150	2 249
14. Depreciation and amortisation	482	386	361	396	432	474
15. Provisions net of restitutions and annulments	197	180	139	168	177	-79
16. Impairment losses and other net value adjustments	835	993	919	1 275	1 383	3 175
17. Negative consolidation differences	0	0	0	-12	-12	0
18. Appropriation of income from associates and joint ventures (equity method)	587	164	160	336	338	-58
19. Income before taxes and minority interests (11-12-13-14-15-16-17+18)	1 498	2 390	3 430	3 353	3 662	1 966
20. Taxes on profit	196	296	584	502	565	410
21. Income before minority interests (19-20)	1 302	2 094	2 846	2 850	3 097	1 556
22. Minority interests (net)	197	362	551	617	649	460
23. Net profit and loss (21-22)	1 105	1 732	2 295	2 233	2 448	1 096

Source: Banco de Portugal.
Note: * Break in the series related to the widening of the group of institutions under analysis.

Table A.7

CAPITAL ADEQUACY OF THE BANKING SYSTEM
On a consolidated basis

EUR millions	1998	1999	2000	2001	2002	2003	2004	2004*	2005*	2006*
1. Own funds										
1.1. Original own funds	9 715	11 026	12 991	13 238	13 351	13 966	14 950	13 729	14 891	17 831
1.2. Additional own funds	3 834	4 269	5 026	7 030	7 809	8 313	8 567	8 337	10 776	9 833
1.3. Deductions	821	513	2 273	2 999	2 829	2 617	2 319	2 092	1 948	2 405
1.4. Supplementary own fund	13	27	0	1	0	2	2	1	0	0
Total own funds	12 740	14 809	15 745	17 270	18 331	19 664	21 200	19 975	23 719	25 259
2. Capital requirements										
2.1. Solvency ratio	8 748	10 652	13 184	14 094	14 687	15 304	15 747	15 096	16 213	17 968
2.2. Position risks	234	181	284	289	220	365	531	488	493	468
2.3. Settlement and counterparty risks	38	48	31	41	41	45	53	53	67	70
2.4. Foreign exchange rate risks	135	79	135	87	87	87	44	41	57	92
2.5. Other requirements	0	0	21	1	0	0	1	1	1	2
Total own funds requirements	9 154	10 959	13 655	14 513	15 035	15 802	16 377	15 679	16 830	18 599
Per cent										
3. Ratios										
3.1. Own funds / Total requirements	139.2	135.1	115.3	119	121.9	124.4	129.5	127.4	140.9	135.8
3.2. Own funds / (Total requirements x 12.5)	11.1	10.8	9.2	9.5	9.8	10	10.4	10.2	11.3	10.9
3.3. Original own funds / (Total requirements x 12.5)	8.5	8.0	7.6	7.3	7.1	7.1	7.3	7.0	7.1	7.7

Source: Banco de Portugal.
Note: * The break in the series results from the implementation of the International Accounting Standards (IAS), which also implied a redefinition of the group of banking institutions under analysis.

Table A.8

CAPITAL ADEQUACY OF THE BANKING SYSTEM - BASEL II
On a consolidated basis

EUR millions

	2007	2007*	2008*
1. Own funds			
1.1. Total original own funds for solvency purposes	17 466	19 443	23 015
1.1.1. Original own funds (gross)	18 324	20 216	23 799
1.1.2. Deductions from original own funds	858	773	783
1.2. Total additional own funds for solvency purposes	10 313	10 766	10 006
1.2.1. Additional own funds (gross)	11 162	11 523	10 765
1.2.2. Deductions from additional own funds	849	757	759
1.3. Deductions from total own funds	821	841	1 276
1.4. Total supplementary own funds eligible to cover market risk	12	14	0
Total own funds	**26 969**	**29 381**	**31 745**
2. Capital requirements			
2.1. Capital requirements for credit risk, counterparty credit risk and free deliveries	20 880	22 096	22 197
2.1.1. Standard approach	198	12	22 198
2.1.2. Credit risk (Notice of Banco de Portugal No 1/93) - transitional derogation from the standard approach	20 569	21 968	0
2.1.3. Free deliveries and counterparty credit risk (trading book) - transitional derogation	113	118	0
2.2. Settlement risk	0	1	0
2.3. Capital requirements for position risks, foreign exchange risks and commodity risks	602	737	629
2.3.1. Debt instruments	378	516	436
2.3.2. Equity	102	102	117
2.3.3. Foreign exchange risks	92	89	76
2.3.4. Commodity risks	30	30	1
2.4. Capital requirements for operational risk	7	11	1 758
2.5. Capital requirements - Fixed overheads	0	6	5
2.6. Large exposures - Trading book	0	0	0
2.7. Other and transitional capital requirements	0	0	0
Total capital requirements	**21 489**	**22 850**	**24 589**
Per cent			
3. Ratios			
3.1. Own funds/Total requirements	125.5	128.6	129.1
3.2. Own funds/(Total requirements x 12.5)	10.0	10.3	10.3
3.3. Original own funds/(Total requirements x 12.5)	6.5	6.8	7.5

Source: Banco de Portugal.
Note: The break in the series relates to the adoption of the Basel II criteria, which can be seen fundamentally in the moves in the various constitutes of capital requirements.