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PART I – **FINANCIAL SYSTEM STABILITY**

1. Overall Assessment

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1. OVERALL ASSESSMENT

Financial stability, understood as the resilience and efficiency of the main institutions and markets that constitute the financial system, is an essential element in the efficient allocation of the resources in an economy and in achieving sustained economic growth in the long run. The cornerstone of financial stability is the existence of credible financial institutions that guarantee the fulfilment of the respective contractual obligations, of markets where participants trade at fair prices and of a regulatory framework providing the adequate incentives to the management of the financial risks incurred by economic agents. These elements reduce information asymmetries between savers and investors, decreasing the relevance of situations where economically viable investment projects find no funding (adverse selection) and where incentives to excessive risk taking exist (moral hazard). In addition, such elements stimulate intertemporal contracts between economic agents, contributing to a better allocation of resources in the economy.

Due to its importance in the intermediation of funds in the economy, the banking system is a key element in the assessment of financial stability in Portugal. Developments in the banking system in the past few years confirmed its capacity of adjustment to the low trend growth of the Portuguese economy and strengthened its capacity to absorb adverse shocks in its balance sheet and profit and loss account.

Participation in the euro area and the consequent financial integration in an enlarged monetary union, decisively conditioned the behaviour of the Portuguese economy in general and the recent developments in the banking system. The new regime implied a steady decline in the level and volatility of interest rates, in a context of inflation anchored at levels consistent with price stability. These developments increased the equilibrium level of private indebtedness, temporarily boosting consumption and investment, largely financed through the external indebtedness of the banking sector. In the most recent period, the adjustment process of domestic demand and its subsequent modest recovery were gradual, as expected within the operational framework of a monetary union. In fact, in a context in which the solvency conditions resulting from the intertemporal budget constraints of economic agents continue to be relevant, financial integration allows for a better risk sharing and diversification among monetary union countries, leading to the smoothness of domestic consumption regarding idiosyncratic and temporary shocks on income and wealth. In Portugal, the banking system has played over the past few years a crucial role in these dynamics, namely through the recourse to the issuance of medium and long-term debt securities, under favourable conditions, in international markets, and to securitisation transactions, both of which have enabled the lengthening of maturities of external financing. In addition, the banking system has promoted strong innovation in the credit products offered to the private sector, supporting the strong growth of banking activity.

It should be noted that the higher capacity of the banking system to accommodate shocks, the increased possibility to smooth household consumption and the easier access to bank financing by non-financial corporations promote an efficient functioning of the economy, as they reflect increased choice possibilities on the part of economic agents. However, these dynamics tend to extend over time the reallocation of resources, namely by sustaining the maintenance of significant mismatches between domestic supply and demand and by making it more difficult for companies to leave the market. This is particularly relevant in the case of the Portuguese economy, given that the change in the pattern of comparative advantages associated with the global economic integration requires a significant reallocation of resources, translated into an increased weight of the more dynamic and competitive sectors and companies. Participation in a monetary union implies that the endogenous and equilibrium adjust-

ment of an economy will be smoothened and hence more prolonged over time. This mechanism contrasts with the high volatility and the rapid adjustment that has characterised the correction, in the past, of the significant external imbalances of the Portuguese economy. In this context, a noteworthy feature is the adjustment capacity of banks, in particular the evolution of their risk assessment and management systems, which enabled the setting of more adequate prices to the risk profile of each debtor, without triggering inefficient friction regarding the normal functioning of the market mechanisms.

The low growth of the Portuguese economy in the past few years was due to the combination of several shocks of internal and external origin with a limited capacity of the economy to react to such shocks. The latter resulted from deficiencies in the operation of labour and product markets and in the endowment of physical and human capital. Among these shocks it should be highlighted the global economic integration process, the rise in oil prices, the deceleration of activity in the euro area after 2000, the rise in the tax burden and, in the past few years, the uncertainty about the way how the major imbalances of the economy will be corrected, in particular the high structural government deficit. These factors were reflected in a significant deterioration of the competitive position of the economy in the past few years.

Weak economic growth and the consequent low employment creation – largely of a structural nature – will likely persist in the near future. In addition, according to market expectations, the key ECB interest rates will probably record further rises, in a context of maintenance of upward risks to price stability in the euro area and activity growth close to potential. A weak trend growth of the economy, in conjunction with a tighter monetary policy and the required budget constraint for the achievement of the objectives set out in the Stability and Growth Programme, shall imply some increase in the default of the credit portfolio of banks. However, the impact on the financial situation of banks is not likely to be significant.

In addition, there are global risk factors that may materialise in the near future. Among them, mention should be made of an increase in the volatility and in the oil price levels, an eventual abrupt correction of the US external imbalance and a possible sharp rise in long-term interest rates at global level. A potential further oil price increase reflects the maintenance of robust world demand and the consequent rise in the demand for energy, the stepping up of the utilisation of productive capacity along the whole production chain and the uncertainty resulting from disturbances on the supply side. The continuous rise of the imbalance of the US external accounts – notwithstanding strong activity growth over the past few years – has been financed, on the one hand, by several central banks of Asia and oil-exporting countries, within the scope of their exchange rate policy management and, on the other, by the net acquisition of US securities by the non-resident private sector. The inevitable correction of this deficit, should it result from external pressure from international financial market participants, should be associated with significant adjustments in the foreign exchange market and/or in long-term interest rates, being a risk factor to the global economy. Finally, regarding developments in long-term interest rates, it should be noted that their maintenance at low levels has been associated with a decline in the maturity premium, brought about by a number of factors, such as lower macroeconomic volatility, the demand for long-term securities by several central banks of Asia and oil-exporting countries, as well as increased investment in long-term securities by insurance corporations and pension funds in Europe and the United States. The latter is associated with regulatory changes that require a better match between the actual value of assets and liabilities. As it is not clear the maintenance of the contribution of these factors in the future, the possibility of an unexpected and abrupt rise in long-term interest rates at global level in the near future should not be ruled out.

The potential materialisation of the above-mentioned risks will necessarily have a significant impact on both the profitability and solvency of the Portuguese banking system. However, even in extreme but plausible scenarios, the banking system is expected to absorb these shocks, ensuring the mainte-

nance of financial stability. This conclusion is supported, on the one hand, by the sound situation of banks in terms of profitability, solvency, risk provisioning and liquidity management. On the other hand, the loan portfolio of most banking groups is concentrated in lower-risk segments, such as loans to households for house purchase and loans to large companies in non-tradable sectors.

Overall, in 2005 the behaviour of the banking system reinforced the conclusion that banks are resilient to the materialisation of adverse economic shocks. In fact, in 2005 the profitability, solvency and credit quality indicators recorded increases. The liquidity indicators deteriorated somewhat, reflecting the performance of institutions with less favourable liquidity indicators, although banks continued to lengthen the average maturity of market liabilities, amid favourable external financing conditions. Moreover, there was an expansion of banking activity, reflecting, in particular, the strong growth of credit, namely, of housing credit, while at the same time benefiting from the expansion of the activity of subsidiaries abroad. An international comparison reveals that, in line with previous years, the national banking system continued to have a favourable position in most performance indicators analysed in this Report.

However, it should be noted that the analysis of the banking system in 2005 is strongly conditioned by the changes arising from the implementation of the International Accounting Standards (IAS). Due to these changes, the analysis made in this Report is focused on a banking system sub-group, representing approximately 87 per cent of the total assets of the system. On the other hand, the evolution of the indicators reflects the transition to a new accounting regime, with the ensuing potential problems in making intertemporal comparisons; therefore the results should be interpreted with caution (see "Box 1.1. *Banking system data used in the 2005 Financial Stability Report*").

Profitability and Solvency

The profitability indicators of the main banking institutions operating in Portugal recorded an overall improvement in 2005. Excluding the effect of staff cost concentration regarding retirement pensions and other post-employment benefits in 2004 – resulting from the change introduced in the accounting regime in the beginning of 2005 – the rise in profitability was close to that recorded in the past few years and resulted chiefly from developments in banking activity. In particular, it should be noted that the improvement in profitability indicators reflected a positive year in most national and international financial markets, as well as a larger contribution of branches and subsidiaries abroad. In line with developments in recent years, the financial margin continued to lose importance, while the contribution from commissions to earnings continued to increase progressively. Finally, the banking system continued to make a judicious management of costs, in particular, of staff costs, which translated into a further improvement in the ratio of operational costs to gross income.

In 2005 credit quality indicators in general developed favourably. This seems to have resulted from the introduction in credit operations of certain types of contracts more tailored to the current ability of customers to service debt, namely the smoothening and deferral of the debt obligations and the renegotiation of the contractual conditions of loans. On the other hand, provisioning increased, as regards specific provisions for credit default and total credit. The increased coverage did not merely result from the implementation of the provisioning regime laid down by Banco de Portugal, but from an increase in provisions built up in excess of the minimum regulatory levels. It can therefore be concluded that in 2005 there were positive developments in the coverage of the credit risk of the banks' portfolios.

At the solvency level, and taking into account the effects of the main regulatory changes introduced in the beginning of 2005, the capital adequacy ratios improved compared with the end-2004 levels. These developments were broadly based across the main institutions in the aggregate considered in

this Report and were associated with a significant rise in own funds, resulting from the inclusion of provisions for general credit risks, the issuance by one of the major institutions considered in the analysis of a significant amount of equity securities, the growth of realised capital, and overall positive developments in the capital markets.

The solvency of the banking system was thus strengthened in 2005, standing at a level that enables the absorption of plausible shocks, even of a significant magnitude, on the balance sheet and profit and loss account of the banking system. These shocks include inter alia – due to their potential importance – possible fluctuations in asset prices, given that the IAS provide for the valuation of a more significant share of these shocks at market prices than the former accounting regime.

Market Risk

In 2005 financial markets in Portugal moved in line with the overall positive developments in international financial markets, following the trend seen in 2003 and 2004. In general, financing costs in debt markets remained at historically low levels, equity markets continued to record positive growth and the volatility levels remained subdued, reflecting reduced uncertainty in financial markets. At international level, the main exception to this relatively benign environment in financial markets was related to the downgrade of two large multinational automobile manufacturers in May 2005. This gave rise to some uncertainty in financial markets, leading to a relatively significant increase in private debt spreads, as well as to a broadly based rise in financial market volatility. From June onwards, volatility in international financial markets progressively faded away, although private debt spreads remained slightly above the levels seen in the beginning of the year, particularly for issuers with worse credit ratings. This revealed the current sensitivity of international financial markets to relevant events, which nevertheless have reduced systemic importance.

2005 was also marked by a significant flattening of the slope of the yield curve in the euro area and the United States, as a result of the maintenance of long-term interest rates at historically low levels. The persistence of low yields in debt markets and the reduced volatility levels observed during most of 2005 continued to put pressure on investors' demand for financial assets with relatively high yields.

In Portugal, in the first half of 2005 the spread of the government debt widened persistently. This may have reflected the results of the European Constitution referendums, as well as expectations of a possible downgrade of the Portuguese Republic rating by Standard & Poor's, which materialised in June, as a consequence of the Portuguese fiscal position.

Portuguese banks also benefited from the overall positive performance of financial markets, which enabled them to continue to take advantage of relatively low financing costs in international markets and to diversify their customer-driven profitability sources, against a background of compressed financial margins. Spreads of securities issued by Portuguese banks were generally in line with developments in other European banks, interrupting the downward trend seen since the beginning of 2003. Moreover, Portuguese banks benefited from a significant appreciation of their asset portfolio, which translated into substantial capital gains and into a favourable performance of the portfolios held by their pension funds.

One of the main risks in international financial markets is related to the correction of imbalances in the US, which, would they occur abruptly, could cause disturbances in these markets. The increase in long-term interest rates, namely via an increase in the risk premium, is likely to imply, on one hand, an increase in the financing cost in long maturities and, on the other, lower demand for financial assets with relatively high yields. Against this background, emerging markets should cease to benefit from such favourable debt issuance conditions. An additional risk is related to the beginning of a turn in the

credit cycle in the United States, given that available data suggest that the minimum default levels have already been reached.

In Portugal, a specific risk may arise from the apparent disparity between financing flows of non-financial corporations and the fall in corporate investment, suggesting that this increased indebtedness may be chiefly used to restructure corporate debt and to fund working capital needs. With regard to the links between financial markets and the banking system, it should be noted that the IAS imply the valuation of a larger number of assets and liabilities at market prices than the former accounting regime, increasing the sensitivity of the balance sheet and profit and loss account to market fluctuations. In this regard, while in 2005 overall positive developments in financial markets benefited the banking system, particularly adverse market conditions may have an opposite effect, strongly increasing the importance of an adequate market risk assessment and management for the performance of banks. However, part of the market risks implied in banks' assets may be offset by hedging derivatives (which mitigate, or cancel out, certain risks) or by portfolio shifts.

Liquidity Risk

Liquidity risk arises from the possibility that a bank may face difficulties in repaying its short-term liabilities and in refinancing the assets recorded in its balance sheet. In 2005, credit granted by Portuguese banks continued to grow at a far higher pace than customer deposits, although these continued to be the main financing source of the banking system. This has given rise to an increase in the credit-to-deposit ratio, in line with developments in other euro area countries.

However, in the past few years, the relevance of the credit-to-deposit ratio in the characterisation of the banks' liquidity position has been mitigated by several developments, of which Portugal's participation in the euro area is particularly noteworthy. On the one hand, the elimination of the foreign exchange risk has significantly increased the access of Portuguese banks to borrowing from international financial markets. On the other hand, Portuguese banks have resorted to alternative ways to attract resources from customers, such as the issuance of securities, subsequently placed with customers. In addition, Portuguese banks have made large securitisation operations, which have enabled the transformation of credits recorded in their balance sheet into liquid and marketable assets. Thus, the increasing financial integration of the Portuguese economy, together with financial innovation and the diversification of contractual arrangements for the investment of savings and for the liquidity management of banks, have ensured the sustainability of higher growth of credit than of resources from customers.

In 2005, there was a slight reduction in the coverage ratio of interbank liabilities by highly liquid assets of non-domestic banks and a slight increase in the domestic institutions sub-group, in line with the trend observed in previous years. Taking into account the structure of short-term assets and liabilities by residual maturities, which makes it possible to assess in a relatively integrated way the liquidity position of the banking system, liquidity gaps deteriorated slightly, countering the trend seen in the past two years. However, this indicator showed quite different levels and trends among the major Portuguese banking groups, reflected in an increase in their dispersion.

The increasing importance of Portuguese banks' borrowing from international financial markets increases potentially their vulnerability to changes in the sentiment of these markets. Hence, an adequate liquidity management by banks is particularly important in order to limit their refinancing risk. In this context, it should be noted that in 2005 financing through the issuance of securities continued to increase, contributing to the further lengthening of the average maturity of the market liabilities of the banking system.

Credit Risk

In 2005 credit granted to households continued to grow robustly, particularly in the housing loans segment. The growth of both the total debt and loans to non-financial corporations increased in 2005. In spite of the adverse economic environment, default ratios in the loan portfolio of banks remained clearly contained in 2005 both in the household and the non-financial corporate sectors.

The adoption of more adequate risk management policies by banks and the introduction of new products in the credit market seem to have contributed to sustain credit developments and to contain default indicators. In the case of households, these new products offer the possibility of reconverting short-term debt not secured by real collateral into medium to long-term debt secured by real collateral – typically a mortgage –, the approval of grace periods in the early years of loans, the adoption of variable repayment deadlines or even the possibility of repayment deferral of a significant part of a loan. Financial innovation in this business segment has helped to mitigate the emergence of default situations, by making it possible to contain the debt burden associated with growing indebtedness levels. In the non-financial corporate segment, there is evidence that the buoyancy of credit was increasingly associated with meeting financing needs related to inventories and working capital, as well as debt restructuring.

Thus, the non-financial private sector increased its current and/or prospective exposure to interest rate changes. In the current context of rising short-term interest rates, expectations point to the start of a period in which a smaller growth of credit will be accompanied by a rise in the default rates of the non-financial private sector. The materialisation of this risk will depend on the degree of persistence of the low growth of the Portuguese economy, and the associated persistence of unemployment, the magnitude of the rise in the key ECB interest rates, and the possibility that the above-mentioned financial innovation will become more broadly based.

A number of factors suggest, however, that the expected value of losses in the banking system due to default shall not be significant. First, credit granted to non-financial corporations shows a high concentration, both in terms of the number of debtors and in sectoral terms. With regard to the number of debtors, large exposures (equal to or higher than EUR 1 million) continue to represent approximately 80 per cent of total exposures. In sectoral terms, credit continues to be concentrated in non-tradable sectors. This concentration is benign as regards the credit risk, since it is associated with segments with lower insolvency probability. Second, loans to households are concentrated in the housing segment. Given the existence of mortgage collateral associated with these loans and given the absence of evidence of a speculative bubble in housing prices in Portugal, this concentration is also favourable regarding the resilience of the banking sector in the event of default of a counterparty.

Finally, it should be noted that although the international exposure of the domestic banking system to the non-resident sector continued to be low in 2005, some of the major Portuguese banking groups recorded substantial changes in the international component of their deposit-taking, lending and even earnings generation activity. Notwithstanding these recent developments, the domestic banking system continued to be characterised by reduced internationalisation, compared with the remaining euro area countries. The local assets denominated in local currency component continued to account for a small share of the assets of the domestic banking groups as a whole considered in this Report. In addition, international assets were concentrated in a relatively reduced group of countries, in their majority classified as developed countries, with high sovereign rating. Therefore, the risk associated with these assets will be relatively limited.

Box 1.1. Banking System data Used in the 2005 Financial Stability Report

The introduction of the International Accounting Standards and the International Financial Reporting Standards (IAS/IFRS) in 2005 gave rise to significant changes in the accounting of some of the main on and off-balance sheet items of the financial institutions (for details on the main changes, see Chapter 7 "Regulatory framework" in the 2004 issue of the Financial Stability Report of Banco de Portugal). Therefore, it was necessary to adopt new forms of presentation of the financial statements of the Portuguese banking system. However, the coexistence in 2005 of different accounting regimes, on a consolidated basis – the former Chart of Accounts of the Banking System (Instructions of Banco de Portugal No 4/96 and No 71/96), the so-called Adjusted Accounting Standards (AAS), and the International Accounting Standards (IAS) – together with the difficulties associated with the conduct of consistent and sufficiently robust comparative analyses between these heterogenous accounting regimes (namely as regards the types of operations and the respective valuation criteria), raised the need to redefine the universe of institutions to be covered and the degree of detail of data to be reported. Thus, the Financial Stability Report 2005, and with regard to the consolidated financial statements and the prudential reporting, only takes into consideration the institutions/banking groups that adopted the IAS (or the AAS) in the preparation of their financial statements. Specifically, account is taken of data on 13 banking groups, which represented around 87 per cent of the total assets of the Portuguese banking system in December 2004. Institutions having their head office or exclusively carrying on their activity in the Madeira offshore centre and/or their predominant activity with non-residents continue to be excluded.

It should be noted, however, that from March 2006 onwards, all institutions/banking groups taken into consideration until the end of 2004 in the banking system aggregate shall report data in accordance with IAS or AAS (the single exception being the Integrated System of Mutual Agricultural Credit - Sistema Integrado de Crédito Agrícola Mútuo, SICAM, which will only use IAS in the preparation of its financial statements in 2007).

Accounting data available, prepared in accordance with IAS and AAS, is based on the requirements laid down in Instructions of Banco de Portugal No 23/2004 and No 30/2005. Pursuant to the provisions of Instruction of Banco de Portugal No 23/2004, quarterly data are compiled on the analytical balance sheet of each institution/banking group, on an individual and on a consolidated basis. The consolidated analytical balance sheet (which provides data with a considerable degree of detail) corresponds to the composition of consolidation for consolidated supervision purposes, i.e. it only includes data on banking activity. As the first reporting relates to March 2005, it is not possible to make temporal comparisons of the different accounts between 2004 and 2005. To overcome this constraint, Banco de Portugal, through Instruction No 30/2005 (and circular letters annexed to this Instruction) called for data as at 31 December 2005 as well as for pro forma data as at 31 December 2004 on the banking activity, in the context of a specific financial statements model (balance sheet and profit and loss account), as laid down in Instruction of Banco de Portugal No 18/2005. This model contains a significant aggregation of the analytical balance sheet items, which in 2005 can only be partially overcome with recourse to analytical balance sheet data (only available from March 2005 onwards). Still, the evolution of the different indicators must be interpreted with some reserves, considering the transition to a new accounting regime.

On the other hand, Instructions of Banco de Portugal No 18/2005 and No 30/2005 give preference to the recording of on-balance sheet items by purpose, rather than by type of instrument, which was the usual procedure adopted regarding data published until December 2004. For instance, securities are classified according to their purpose (trading, investment, etc.), whereas formerly they were classified by type of instrument (debt or equity) and/or by issuer. It should be noted that the detail of the analytical balance sheet (Instruction of Banco de Portugal No 23/2004) allows for the aggregation of accounts in portfolios, according to their purpose, disaggregating each portfolio by type of instrument, which may be considered more adequate for the macroprudential analyses of the banking system.

In addition to making use of accounting and prudential data, on a consolidated basis, on the different institutions, the analyses made throughout this report are supplemented, as usual, by aggregates on an individual basis or with Monetary and Financial Statistics (MFS) aggregates. Although the universe of institutions covered in this statistical source differs from that taken into consideration in the analysis of the banking system, for the reasons mentioned above, it allows sectoral disaggregations by counterpart or by instrument whenever they are considered to be rele-

vant. Regarding the latter and with a view to adopting an approach as close as possible to that of the system on a consolidated basis, the aggregates analysed on the basis of MFS, consider (whenever justified and possible) not only the other monetary financial institutions, but also other financial intermediaries and auxiliaries (with the exception of investment funds, securitisation funds and securitisation companies), most of which belong to the composition of consolidation of the Portuguese banking system.

In some sections of the report, namely in that concerning liquidity risk, the analysis is focused, as usual, on domestic institutions as a whole. This aggregate corresponds to the total system excluding the institutions whose management is entrusted to non-resident institutions, whether these institutions are Portuguese public-law legal persons, subsidiaries of non-resident banking groups (subject to the supervision of Banco de Portugal), or branches of credit institutions having their head office abroad. The distinction between domestic and non-domestic institutions lies in the fact that, external borrowing by non-domestic institutions – unlike by domestic institutions – is typically ensured by entities with which they have a group relationship (reducing the relevance of the type and maturity of the financing).

MAIN INDICATORS (to be continued)

Per cent; end-of-period figures

	1999	2000	2001	2002	2003	2004	2005
Macroeconomic environment							
Rate of change in real GDP							
US	4.4	3.7	0.8	1.6	2.7	4.2	3.5
Euro area	2.9	4.0	1.9	1.0	0.7	1.8	1.4
Portugal	3.9	3.9	2.0	0.8	-1.2	1.1	0.3
Consumer price index (annual rate of change)							
US	2.2	3.4	2.8	1.6	2.3	2.7	3.4
Euro area (harmonized index)	1.1	2.1	2.3	2.2	2.1	2.1	2.2
Portugal (harmonized index)	2.2	2.8	4.4	3.7	3.3	2.5	2.1
Fiscal balance (as a percentage of GDP)							
US	0.6	1.3	-0.7	-4.0	-5.0	-4.7	-4.1
Euro area	-1.3	0.1	-1.8	-2.5	-3.0	-2.8	-2.4
Portugal	-2.7	-2.9	-4.3	-2.9	-2.9	-3.2	-6.0
excluding the effect of temporary measures	-2.7	-3.2	-4.3	-4.2	-5.3	-5.3	-6.0
Current account balance (as a percentage of GDP)							
US	-3.2	-4.2	-3.8	-4.5	-4.7	-5.7	-6.4
Euro area	-	-	-0.3	0.8	0.5	0.6	-0.4
Portugal	-6.5	-9.0	-8.9	-6.4	-4.0	-5.7	-8.1
EUR/USD exchange rate (annual rate of change)	-14.8	-7.4	-5.3	19.0	20.4	7.8	-13.4
3-month Euribor	3.3	4.9	3.3	2.9	2.1	2.2	2.5
Yield on Government bonds – euro area	5.5	5.0	5.1	4.3	4.3	3.7	3.4
PSI Geral (annual rate of change)	12.6	-8.2	-19.0	-20.7	17.4	18.0	17.2
PSI Financials (annual rate of change)	n.a.	7.9	-14.6	-24.8	4.0	12.0	24.4

MAIN INDICATORS (cont'd)

Per cent

	1999	2000	2001	2002	2003	2004	2004*	2005*
Profitability, provisioning and solvency								
ROE – Return on equity[a]	18.0	18.3	17.8	14.1	16.2	14.5	12.5	16.9
ROE (adjusted for staff costs related to retirement pensions and other post-employment benefits)[a]							19.3	19.9
ROA - Return on assets [a]	1.12	1.11	1.01	0.78	0.91	0.87	0.64	0.98
ROA (adjusted for staff costs related to retirement pensions and other post-employment benefits)[a]							0.99	1.15
Financial margin	2.45	2.21	2.24	2.12	2.00	1.94	1.88	1.76
Ratio of operational costs to gross income	63.1	58.2	57.6	59.1	57.4	57.2	71.7	59.6
Ratio of operational costs to gross income (adjusted for staff cost related to retirement pensions and other post-employment benefits)							60.5	54.1
Ratio of credit and interest overdue net of specific provisions to credit net of specific provisions[b]	n.a.	0.72	0.71	0.85	0.66	0.34		
Non-performing loans net of specific provisions / Total credit net of specific provisions[c]							0.44	0.30
Specific credit provisioning	1.75	1.41	1.33	1.30	1.60	1.59	1.14	1.18
Overall capital adequacy ratio	10.8	9.2	9.5	9.8	10.0	10.4	10.2	11.3
For domestic banks								
ROE – Return on equity[a]	17.7	19.3	18.0	13.6	15.8	13.7	13.0	16.4
ROE (adjusted for staff costs related to retirement pensions and other post-employment benefits)[a]							20.2	19.9
ROA - Return on assets [a]	1.15	1.20	1.06	0.79	0.92	0.85	0.65	0.93
ROA (adjusted for staff costs related to retirement pensions and other post-employment benefits)[a]							1.00	1.13
Ratio of credit and interest overdue net of specific provisions to credit net of specific provisions[b]	n.a.	0.66	0.67	0.86	0.75	0.43		
Non-performing loans net of specific provisions / Total credit net of specific provisions[c]							0.54	0.39
Overall capital adequacy ratio	10.7	8.9	9.2	9.5	9.9	10.3	10.2	11.4

MAIN INDICATORS (cont'd)

Per cent

	1999	2000	2001	2002	2003	2004	2004*	2005*
Liquidity risk								
Credit-to-deposit ratio	102.8	114.3	121.0	127.7	126.9	126.2	136.5	143.5
Coverage ratio of interbank liabilities by highly liquid assets[(d)]	101.4	88.7	91.5	87.4	100.7	104.3	110.0	102.2
Liquidity gap (as a percentage of total assets deducted from liquid assets)[(e)]								
up to 3 months	n.a.	n.a.	-2.2	-2.4	1.6	2.4	1.4	-0.2
up to 1 year	n.a.	n.a.	-6.4	-7.2	-6.3	-3.6	-5.4	-7.6
For domestic banks								
Credit-to-deposit ratio	99.6	112.9	119.3	123.7	122.6	125.1	130.1	134.9
Coverage ratio of interbank liabilities by highly liquid assets[(d)]	106.6	86.8	93.4	98.9	123.9	136.3	127.3	132.1
Liquidity gap (as a percentage of total assets deducted from liquid assets)[(e)]								
up to 3 months	n.a.	n.a.	-3.5	-3.4	0.5	0.7	0.6	0.0
up to 1 year	n.a.	n.a.	-7.8	-7.6	-6.5	-4.8	-5.4	-6.6
Credit risk								
Loans granted by resident banks to the non-financial private sector								
as a percentage of assets, on a consolidated basis[(f)]	48.5	51.9	52.9	57.0	54.8	54.9	55.0	52.8
Household indebtedness								
as a percentage of disposable income	76	85	90	97	104	110		117
as a percentage of GDP	54	60	64	68	74	78		84
Indebtedness of non-financial corporations as a percentage of GDP[(g)]	76	83	91	93	96	97		100
Credit and interest overdue (on a consolidated basis)								
as a percentage of claims on customers	n.a.	2.2	2.2	2.3	2.4	2.0	1.8	1.8
as a percentage of assets	n.a.	1.4	1.4	1.6	1.6	1.3	1.3	1.2
Non-performing loans to households								
as a percentage of loans to households	2.1	1.8	2.0	2.1	2.4	2.2		2.0
Non-performing loans to non-financial corporations								
as a percentage of loans to non-financial corporations	3.2	2.5	2.4	2.4	2.2	1.7		1.7
Annual flow of new credit overdue and other credit considered to be doubtful (as a percentage of bank loans adjusted for securitisation transactions)								
Households	0.22	0.27	0.43	0.38	0.58	0.21		0.22
Non-financial corporations	-0.01	0.34	0.74	0.76	0.56	0.52		0.60
International exposure (for domestic banks):								
Share of external assets in total assets[(f)]	n.a.	21.7	19.8	18.1	21.6	20.5	30.3	27.4
of which:								
Local assets denominated in local currency	n.a.	2.8	1.8	1.2	1.7	1.6	7.1	6.4
International assets by counterparty sector:								
Banking sector	n.a.	12.3	10.6	8.3	14.1	14.8	13.6	12.6
Non-banking sector	n.a.	6.6	7.4	8.5	5.8	4.0	9.6	8.4

Sources: Bloomberg, ECB, Euronext Lisboa, European Commission (AMECO), Eurostat, IMF and Banco de Portugal.
Notes: * The adoption of the International Accounting Standards (IAS) in 2005 gave rise to a break in the series in many of the indicators presented in this table. The break in the series resulted not only from different accounting rules, but also from the different universe of institutions taken into account. Therefore, figures for 2004 and 2005 on a comparable basis are presented for the group of institutions that adopted the IAS in 2005. For further details, see "Box 1.1. Banking system data used in the 2005 Financial Stability Report". The tables in the Annex show longer series, based on the former accounting regime. The variables and concepts in this table are described in further detail in the respective chapters. **(a)** For the purpose of calculating the return on assets and equity, account was taken of income before taxes and minority interests; for comparable 2004 and 2005 figures, account was taken of assets and equity at the end of the period (from 1998 to 2004 average figures for the period were used for these variables). **(b)** Credit and interest overdue for more than 30 days. **(c)** Non-performing loans includes credit overdue for more than 90 days and credit considered to be doubtful, reclassified as credit overdue for provisioning purposes, in accordance with Notice of Banco de Portugal No 3/95. **(d)** Considering that there are no data available on securities of public issuers on a comparable IAS basis (i.e. it is not included in Instruction of Banco de Portugal No 30/2005), as an alternative, debt instruments eligible for monetary policy operations were used for the 2004 and 2005 comparable figures. **(e)** Only 2005 figures were reported taking into account the valuation criteria underlying the application of IAS. **(f)** 2004 and 2005 comparable figures are based on a new data reporting. An estimate of assets for the total banking system is used, assuming that the relative weight of the institutions considered in this Report remained unchanged from end-2004 to 2005. **(g)** The concept of debt includes loans granted by resident and non-resident financial institutions, loans/advances granted by non-resident companies belonging to the same economic group (excluding loans to non-financial corporations having their head office in the Madeira offshore financial centre), commercial paper, bonds and other trade credits received.

BALANCE SHEET OF THE BANKING SYSTEM

On a consolidated basis

	EUR millions		Structure (as a percentage of assets)		Annual rate of change (per cent)
	2004	2005	2004	2005	2005
Cash and claims on central banks	7 555	6 205	2.8	2.0	-17.9
Assets in other credit institutions	3 338	3 239	1.2	1.1	-3.0
Investment in credit institutions	21 703	27 666	8.0	9.1	27.5
Net credit to customers	194 873	213 945	71.5	70.1	9.8
Financial assets measured at fair value through results	12 900	18 160	4.7	5.9	40.8
Available-for-sale financial assets	14 806	14 185	5.4	4.6	-4.2
Investment held to maturity	520	718	0.2	0.2	38.0
Hedging derivatives	692	814	0.3	0.3	17.5
Investment in subsidiaries	2 613	3 470	1.0	1.1	32.8
Tangible and intangible assets	3 611	3 895	1.3	1.3	7.9
Other assets	9 799	13 068	3.6	4.3	33.4
Total assets	**272 411**	**305 363**	**100.0**	**100.0**	**12.1**
Resources from central banks	3 542	6 215	1.3	2.0	75.5
Resources from other credit institutions	33 315	38 740	12.2	12.7	16.3
Resources from customers and other loans	142 784	149 142	52.4	48.8	4.5
Financial liabilities measured at fair value through results	2 589	4 460	1.0	1.5	72.3
Liabilities represented by securities	55 694	63 006	20.4	20.6	13.1
Subordinated liabilities	9 887	9 873	3.6	3.2	-0.1
Hedging derivatives	562	1 000	0.2	0.3	77.8
Liabilities on account of assets not derecognised	0	2 363	0.0	0.8	n.a.
Other liabilities	10 013	12 876	3.7	4.2	28.6
Total liabilities	**258 386**	**287 674**	**94.9**	**94.2**	**11.3**
Capital	14 025	17 689	5.1	5.8	26.1
of which: Net profit/loss for the year	1 284	2 202	0.5	0.7	71.4
Total liabilities and net situation	**272 411**	**305 363**	**100.0**	**100.0**	**12.1**

Source: Banco de Portugal.

PROFIT AND LOSS ACCOUNT

On a consolidated basis

	EUR millions		As a percentage of total assets		Annual rate of change (per cent)
	2004	**2005**	**2004**	**2005**	**2005**
1. Interest and comparable income	12 622	13 975	4.63	4.58	10.7
2. Interest and comparable costs	7 504	8 591	2.75	2.81	14.5
3. Financial margin (1-2)	**5 119**	**5 384**	**1.88**	**1.76**	**5.2**
4. Income from capital instruments	161	217	0.06	0.07	34.4
5. Net income from services and commissions	1 923	2 213	0.71	0.72	15.1
6. Profit/loss on financial assets/liabilities measured at fair value	346	440	0.13	0.14	27.3
7. Available-for-sale financial assets	104	645	0.04	0.21	521.4
8. Profit/loss on foreign exchange revaluation	208	53	0.08	0.02	-74.5
9. Profit/loss on the sale of other financial assets	72	259	0.03	0.08	257.5
10. Other net operating profit/loss	602	429	0.22	0.14	-28.7
11. Gross income (3+4+5+6+7+8+9+10)	**8 535**	**9 640**	**3.13**	**3.16**	**12.9**
12. Staff costs	3 667	3 301	1.35	1.08	-10.0
12.a Staff costs adjusted for costs related to retirement pensions and other post-employment benefits	2 712	2 771	1.00	0.91	2.2
13. Overall administrative costs	1 891	1 978	0.69	0.65	4.6
14. Depreciation for the year	562	466	0.21	0.15	-17.2
15. Provisions net of refunds and write-offs	279	206	0.10	0.07	-26.3
16. Impairment losses and other net value adjustments	1 012	1 066	0.37	0.35	5.3
17. Negative consolidation differences	0	0	0.00	0.00	-100.0
18. Appropriation of results of associated companies and joint undertakings (equity method)	624	363	0.23	0.12	-41.8
19. Income before taxes and minority interests (11-12-13-14-15-16-17+18)	**1 748**	**2 987**	**0.64**	**0.98**	**70.9**
19.a Income before taxes and minority interests adjusted for costs related to retirement pensions and other post-employment benefits	2 703	3 517	0.99	1.15	30.1
20. Taxes on profit for the year	228	402	0.08	0.13	76.3
21. Income before minority interests (19-20)	1 520	2 585	0.56	0.85	70.1
22. Minority interests (net)	236	383	0.09	0.13	62.2
23. Profit/loss for the year (net) (21-22)	**1 284**	**2 202**	**0.47**	**0.72**	**71.5**

Source: Banco de Portugal.

CAPITAL ADEQUACY

On a consolidated basis

	2004 December	2005 December	Annual rate of change 2005 December
	EUR millions		Per cent
1. Own funds			
1.1. Original own funds	13 729	14 961	9.0
1.2. Additional own funds	8 337	10 798	29.5
1.3. Deductions	2 092	1 928	-7.9
1.4. Supplementary own funds	1	0	-100.0
Total own funds	19 975	23 831	19.3
2. Own funds requirements			
2.1. Solvency ratio	15 096	16 197	7.3
2.2. Position risks	488	499	2.2
2.3. Settlement and counterparty risks	53	66	24.7
2.4. Foreign exchange risks	41	57	38.6
2.5. Other requirements	1	1	-34.8
Total own funds requirements	15 679	16 819	7.3
3. Ratios	Per cent		In percentage points
3.1. Own funds / Total requirements	127.4	141.7	14.3
3.2. Own funds / (Total requirements x 12.5)	10.2	11.3	1.1
3.3. Original own funds / (Total requirements x 12.5)	7.0	7.1	0.1

Source: Banco de Portugal.

2. MACROECONOMIC ENVIRONMENT

2.1. International Economy

In 2005 the world economy continued to grow at a faster pace than the average of the last two decades. However, there was a deceleration compared with the high growth seen in the previous year. According to IMF estimates, world output growth is estimated to have been close to 4.8 per cent. World expansion continued to be led by the United States and the Asian countries, in particular China. Output growth of the euro area also slowed in 2005, reflecting lower contributions from changes in inventories and net external demand to GDP growth.

Developments in world economic activity continued to be associated with the robust growth of international trade flows and with a further increase in foreign direct investment. However, the increase in oil prices in the course of 2005, which reinforced the developments observed in the previous year, contributed to the slowdown in world economic activity. In August and September the price of this commodity reached new historical highs, largely reflecting the disturbances caused by hurricane Katrina, in a context of supply constraints and continuing robust world demand for oil.

In fact, 2005 was marked by a further increase in most international commodity prices, which was particularly sharp in the case of oil. This rise translated into rising inflation in most countries, although underlying inflation[1] and long-term inflation expectations have remained relatively subdued. The credibility of monetary authorities regarding the pursuance of the objective of price stability and downward pressures on prices due to increased international competition have contributed to such developments. The conduct of monetary policy in the main economies reflected mixed developments in pressures on price stability, having become, in general, less accommodative (see "Chapter 4 *Market Risk*").

In 2006 the world economy is likely to continue to grow strongly. Forecasts for 2006 indicate that, from a regional perspective, expansion shall be more broadly based. With regard to the advanced economies, expectations point to sustained strong growth in the United States, the consolidation of the recovery in Japan and an acceleration in euro area activity (Chart 2.1.1). Growth of emerging and developing economies is likely to remain strong, particularly in China, India and Russia. However, potential further increases in oil prices are an important risk factor to world economic growth. In fact, current expectations indicate that over the next two years oil prices will remain close to or slightly above the level seen at the end of 2005 (Chart 2.1.2). A possible further increase in oil prices reflects the maintenance of robust world demand and the consequent increase in the demand for energy, the stepping up of capacity utilisation along the entire production chain and uncertainty resulting from supply-side disturbances.

Available data on companies in advanced economies point to improvements in the financial position in 2005 and favourable prospects for earnings in 2006. Despite the rise in energy costs associated with the continuing or even additional rise in oil prices, increased competition stemming from the emergence of new players in the world economy has contributed to the wage cost restraints in these economies.

The imbalance in external accounts in the United States was higher in 2005, continuing to be another risk factor to developments in the world economy. Like in 2004, this imbalance resulted from an in-

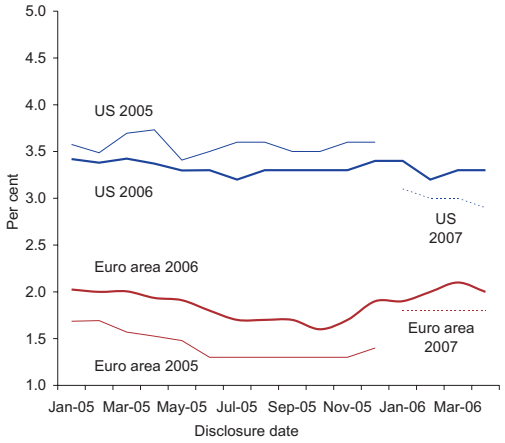
(1) Underlying inflation excludes energy and unprocessed food.

Chart 2.1.1

DEVELOPMENTS IN ECONOMIC GROWTH FORECASTS

Rate of change in GDP

United States and euro area

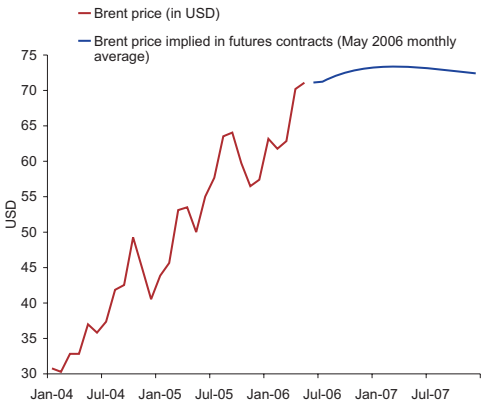


Source: Consensus Economics.

Chart 2.1.2

OIL PRICE (BRENT)

Monthly average



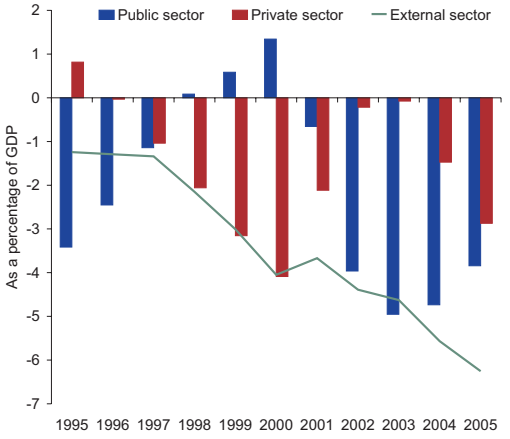
Source: Bloomberg.

crease in private sector borrowing requirements, as the public sector narrowed its deficit, which nevertheless remained at a high level (Chart 2.1.3). In 2005 the deterioration is likely to have been mainly due to the financial position of households, given that the financing capacity of non-financial corporations remained virtually stable over the same period (Chart 2.1.4). The external deficit of the US economy was very high and it is estimated to have accounted for over 6 per cent of gross domestic product (GDP) in 2005. With regard to the financing of this deficit, financial inflows from official external entities declined compared with the previous year, albeit remaining at significant levels. These flows continued to reflect the investment of international reserves accumulated by several central banks of Asia and oil-exporting countries – within the scope of their exchange rate policy management – in the acquisition of US Treasury debt. The reduction of flows from official entities was more than offset by an increase in the net acquisition of US securities by the non-resident private sector. The inevitable correction of the external deficit – should it result from external pressures from international financial market players, i.e. from an abrupt decrease in the demand for US dollars and/or dollar-denominated assets – is likely to be associated with significant adjustments in the foreign exchange market and/or long-term interest rates, accompanied by increased volatility in these markets.

In contrast to the situation in the United States over the past few years, euro area non-financial corporations continued to have borrowing requirements (Chart 2.1.4). In fact, after reaching a peak in 2000, borrowing requirements of non-financial corporations in both the United States and the euro area declined between 2001 and 2002, in line with economic growth levels and the significant fall in investment. At the same time, in the United States, non-financial corporations' internal savings increased, partly reflecting favourable developments in retained earnings, leading to a financing capacity situation of the corporate sector as from 2002. Therefore, liquidity of non-financial corporations in the United States has remained high, despite the recovery in investment in 2004 and 2005. In the euro area, the rebound in non-financial corporations' savings occurred later and was smaller, mirroring the persistence of borrowing requirements.

Chart 2.1.3

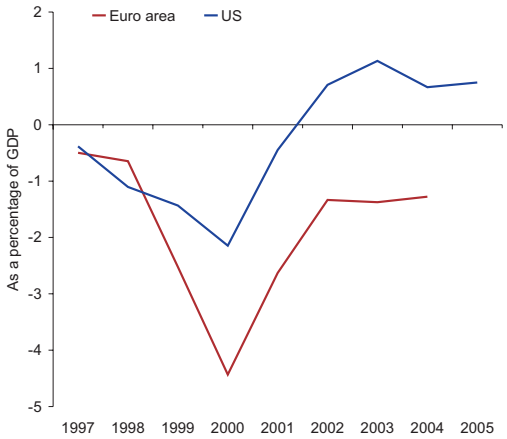
NET SAVINGS OF THE PUBLIC, EXTERNAL AND PRIVATE SECTOR
US



Source: Federal Reserve Board.

Chart 2.1.4

NET LENDING(+)/BORROWING(-) OF NON-FINANCIAL CORPORATIONS



Sources: ECB and Federal Reserve Board.
Note: Lending/borrowing equals the difference between savings and investment (adjusted for changes in inventories) plus capital transfers in net terms. The aggregate for the United States includes individual entrepreneurs, which in the euro area are included in the household sector.

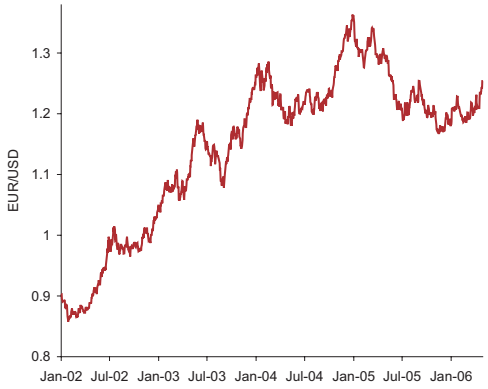
In the first quarter of 2006, long-term interest rates in the United States and the euro area increased, albeit remaining at historically low levels (see "Box 4.1. *Some factors explaining long-term interest rates in the United States and the euro area in 2005*", in Chapter 4). The persistence of long-term rates at low levels has been associated with a reduction of the risk premium due to a number of factors. On the one hand, long-term securities seem to have become relatively more attractive due to lower macroeconomic volatility, translated into higher inflation stability and in the fact that inflation expectations remained at levels consistent with price stability. On the other hand, and particularly in the United States, the higher demand for government debt securities seems to be related to purchases by several central banks of Asia and, more recently, by oil-exporting countries, within the scope of their exchange rate policy management. Moreover, the increasing investment in long-term securities by insurance corporations and pension funds in Europe and the United States, associated with regulatory changes requiring a greater correspondence between the current value of their assets and liabilities, has also contributed to the increase in demand in the long-term bond market. Although these factors have contributed to the maintenance of long-term interest rates at low levels, it is not clear whether this contribution will persist in the future, and therefore the risk of an unexpected and abrupt rise in long-term interest rates still exists.

Notwithstanding the significant external deficit in the United States, the US dollar appreciated against the euro, mainly in the first half of 2005 (Chart 2.1.5), stabilising somewhat in the second half of the year. This buoyancy may be related to developments in economic growth expectations in the United States with regard to the euro area (Chart 2.1.1) and, in this context, with developments in the interest rate differential between these economies.

In recent years, house prices in many advanced economies increased strongly, despite the deceleration seen in 2005. Although it is difficult to assess the sustainability of the levels attained, fears have emerged that price levels in a number of these economies, namely the United States and Spain, may be above the values justified by economic fundamentals and, as such, they may be subject to abrupt

Chart 2.1.5

EUR/USD EXCHANGE RATE



Source: ECB.
Note: Latest observation 28/04/2006.

reductions.[2] In turn, in the United Kingdom, despite the gradual slowdown in prices since mid-2004, these assets may be somewhat overestimated. The fears of an abrupt adjustment in house prices mainly reflect two transmission channels between developments in the real estate market (in particular price dynamics) and developments in the remaining sectors of the economy. First, a strong and continued increase in prices of real assets sustains economic growth, underpinned by private consumption rises. In fact, very marked house price increases, which lead to rises in the value of the assets used by households as collateral, make borrowing by this sector easier and indirectly allow for sustained expenditure growth above the current income for relatively long periods. Second, a marked decrease in prices in the real estate market may imply, for some households, that the value of a mortgage collateral previously agreed upon may not be sufficient to cover the debt. This type of events is not frequent but, when they occur, they imply increased risks to economic activity via the tightening of credit standards for the approval of loans by banks, with a view to limiting losses owing to customer delinquency.

The change in the exchange rate regime in China is also worthy of notice in 2005. In July, the Chinese authorities announced formally that China would abandon the peg to the US dollar and would move to a managed floating exchange rate regime, having revalued the renminbi by 2.1 per cent against the US dollar and announced that the exchange rate would be managed with reference to a basket of currencies. The introduction of greater flexibility in determining the exchange rate of the renminbi was interpreted as contributing to the moderation of accumulated tensions in international trade. However, in the course of the following months, the announced flexibility did not lead to a significant additional appreciation of the renminbi. Concerns related to an overheating in some sectors of the Chinese economy persist, amid abundant liquidity in the economy. This is strengthened by external capital inflows, partly due to the perception that the renminbi is undervalued.

In sum, volatility and high oil prices, the possible abrupt correction of the external imbalance in the United States, as well as the possibility of a marked increase in long-term interest rates are the main risk factors for world economy.

(2) In Spain, several studies point to the overvaluation of house prices. See, for example, Jorge Martínez Pagés and Luis Angel Maza (2003) "*Analysis of house prices in Spain*", Working Paper No 0307, Banco de España and Juan Ayuso and Fernando Restoy (2006) "*House prices and rents in Spain: Does the discount factor matter?*", Working Paper No 0609, Banco de España.

2.2. Portuguese Economy

In 2005 the Portuguese economic activity decelerated compared with the previous year, mainly reflecting the fall in investment and the significant decline in the contribution of exports to GDP growth. Public and private consumption, although decelerating in the course of the year, grew clearly more strongly than GDP. Moreover, employment stagnated and the unemployment rate increased. Weak economic growth in the wake of the 2003 recession contrasts with developments observed in previous business cycles, when falls in activity were followed by a clear acceleration of GDP, associated with a strong acceleration of exports and investment.

Against this background, the Portuguese GDP (Table 2.2.1) again presented one of the lowest growth levels in the European Union, with per capita income in Portugal moving further away from the average European level. This fact is associated with low trend growth in the Portuguese economic productivity, in a context of falls in investment and modest export growth rates. The latter may be related to unfavourable developments in relative labour costs and to the increased competition by new players in the world economy. Moreover, distortions hindering an efficient operation of the labour and product markets, structural fragilities in terms of the levels and quality of the physical and human capital, as well as the fiscal situation, which maintains an unsustainable trend, are hampering the economy's adjustment to the new environment arising from the strengthening of global economic integration.

The correction of the structural fiscal deficit continues to be one of the main challenges of the Portuguese economy. The persistence of this imbalance, over the medium term, may jeopardise future economic growth. In 2005 the overall general government deficit, on a National Accounts basis, is likely to amount to 6.0 per cent of GDP. According to the updated Stability and Growth Pact of December 2005, the deficit is targeted to decline to 2.6 per cent in 2008. Despite the existence of formal commitments to correct the deficit in the context of the Stability and Growth Pact, fiscal imbalances have been penalised by rating agencies. In fact, in October 2004 Standard & Poor's changed the outlook given to the Portuguese Republic from stable to negative. Subsequently, at the end of June 2005, this agency

Table 2.2.1

GDP AND MAIN EXPENDITURE COMPONENTS [a]

Real rate of change

Per cent

	2000	2001	2002	2003	2004	2005
GDP	3.9	2.0	0.8	-1.2	1.1	0.3
Private consumption	3.7	1.3	1.3	0.0	2.3	1.8
Public consumption	3.5	3.3	2.6	0.7	1.6	1.9
Investment	2.1	1.2	-4.7	-9.8	1.1	-3.7
GFCF	3.5	1.0	-3.5	-10.0	0.0	-2.7
Change in inventories [b]	-0.4	0.1	-0.4	0.0	0.2	-0.2
Domestic demand	3.3	1.7	0.1	-2.2	1.9	0.6
Contribution of domestic demand to GDP [b]	3.6	1.8	0.1	-2.4	2.0	0.7
Exports	8.4	1.8	1.4	3.7	5.3	0.9
Goods	8.2	1.5	1.8	6.3	4.3	1.0
Tourism and other services	9.0	2.6	0.5	-3.4	7.9	0.8
Imports	5.3	0.9	-0.7	-0.5	7.0	1.7
Contribution of net external demand to GDP [b]	0.3	0.2	0.7	1.2	-1.0	-0.4

Sources: *INE* and Banco de Portugal.
Notes: **(a)** Estimates of Banco de Portugal derived from *INE*'s National Accounts for 1995 to 2003 (ESA95). **(b)** Contribution to the rate of change in GDP, in percentage points.

downgraded the rating assigned to the Portuguese Republic and Fitch changed its outlook from stable to negative. However, there were no significant increases in the financing costs of the Treasury and the private sector.

As previously mentioned, available data point to a rebound in economic activity in the euro area. However, the gradual loss of competitiveness of Portuguese companies in external markets – against a background of structural weaknesses in the allocation of factors and in the quality of institutions, together with the need to proceed with fiscal consolidation – indicates that the divergence between growth in the Portuguese economy and in the euro area as a whole is likely to persist.

At the end of September 2005 short-term nominal (and real) interest rates, which in recent years have remained at historically low levels, started to rise slightly, reflecting the consolidation of expectations that the key ECB interest rates would rise. Despite the fact that previous increases were limited, the economic recovery in the euro area, together with the need to maintain medium to long-term inflation expectations anchored at levels consistent with price stability, is likely to imply additional increases in the key ECB interest rates and, consequently, in bank interest rates. Such rises may be an additional restriction to developments in expenditure of the non-financial private sector, namely considering the high indebtedness levels reached by this sector. However, a potential cycle of interest rate hikes will be gradual and subdued, given the low and stable interest rates resulting from the participation in the euro area.

The combination of the above-mentioned factors will contribute to the maintenance of low economic growth, with adverse consequences for employment and for the capacity of some companies and households to continue to service their debt. This scenario is likely to be associated with a higher delinquency in the banks' credit portfolio (see "Chapter 6 *Credit Risk*"). However, the magnitude of such an increase is not expected to jeopardise the financial stability of the banking system.

3. ACTIVITY, PROFITABILITY AND RISK COVERAGE

3.1. Overview

In 2005 activity in the major Portuguese banking institutions as a whole[1] grew remarkably, largely underpinned by the maintenance of high growth rates of credit to the resident non-financial private sector, although also benefiting from the expansion of activities of subsidiaries abroad. Growth in the securities and financial holdings portfolio, associated with favourable developments in capital markets, also contributed to the increase in assets, notwithstanding the sale of a number of holdings, deemed to be non-strategic.

Activity growth was largely financed by the issue of debt securities (mostly in euro) in international financial markets by subsidiaries and branches abroad. Within this scope, the sale of credits through securitisation transactions and the increase in interbank liabilities (in particular of non-domestic institutions[2]) were also relevant. In a context of decline in the household savings rate, resources from customers kept a relatively modest rate of change, which is also part of the strategy adopted by some of the major banking groups of channelling resources from customers to alternative investments in institutions linked to banking groups, although not included in the composition of consolidation considered.

Likewise, developments in profitability indicators of the major banking institutions operating in Portugal in 2005 should be interpreted with caution. In fact, despite of the overall improvement in these indicators, the above developments should be evaluated. In the context of the change in the accounting framework in 2005, namely the adoption of International Accounting Standards (IAS), there was a concentration in 2004 of some costs, in particular staff costs with retirement pensions and other post-employment benefits, which significantly benefited developments in the profit and loss for 2005 vis-à-vis those of the previous year, on a comparable basis.[3,4] Excluding this effect, the increase in profitability would be significantly lower, close to that recorded in the course of recent years, chiefly due to developments in the core banking business.

Within this scope, the improvement in profitability indicators reflected a positive year in most national and international financial markets, as well as a greater contribution from subsidiaries and branches abroad. The financial margin continued to lose importance, as in recent years. By contrast, the contribution from commissions to generating earnings continued to increase progressively, a trend seen since 2002.

In 2005 credit quality indicators developed favourably, which seems to have had the contribution of the introduction in credit operations of types of contract that are more adapted to the current ability of customers to service debt. In turn, provisioning increased, by specific provisions, both for credit default (comprising credit overdue for more than 90 days and non-performing loans, reclassified as credit

(1) The delimitation of the group of institutions considered in this report may be found in the" Box 1.1 Banking system data used in the 2005 *Financial Stability Report*", in Chapter 1.

(2) Account is thus taken of institutions managed by non-resident institutions, whether these are institutions governed by Portuguese law, subsidiaries of non-resident banking groups (subject to the supervision of Banco de Portugal) or branches of credit institutions having their head office abroad.

(3) At the light of the accounting regime in force up to 31 December 2004, costs with early retirements were diluted over a protracted period, and therefore changes in the pace of anticipated retirements produced a mitigated (and smooth) effect on the net profit and loss for the year (thus not significantly affecting profit and loss for 2004, as analysed in early 2005 under the previous accounting regime).

(4) These developments in staff costs occur despite significant contributions to pension funds in 2005. This apparent contradiction is accounted for by the fact that these contributions are not deemed to be cost for the year, but instead reflect increases in liabilities in the transition of accounting regime, therefore being recorded against a capital item.

overdue for provisioning purposes), and even for total credit. The increased coverage did not merely result from implementing the provisioning regime laid down by Banco de Portugal, but instead from the increase in provisions built up in excess of the minimum regulatory levels established. It can therefore be concluded that, in the year under analysis, there were positive developments in the coverage of the credit risk of the banks' portfolio.

At the solvency level, and taking into account the effects of the main regulatory changes introduced in early 2005, capital adequacy ratios improved vis-à-vis end-2004 levels.

According to information available to date, the key trends described in this section for major Portuguese banking groups are in line with those seen in most euro area countries, namely in terms of developments in profitability and solvency.[5]

3.2. Activity

In 2005 activity in major Portuguese institutions and banking groups continued to rise at a noticeable pace, largely underpinned by credit expansion (Table 3.2.1). This item (net of provisions and impairment) represented at end-2005 around 70 per cent of total assets of the institutions under analysis,

Table 3.2.1

BALANCE SHEET OF THE BANKING SYSTEM

On a consolidated basis

	EUR million		Structure (as a percentage of assets)		Rate of change (in percentage)
	2004	2005	2004	2005	2005
Cash and claims on central banks	7 555	6 205	2.8	2.0	-17.9
Claims on other credit institutions	3 338	3 239	1.2	1.1	-3.0
Investment in credit institutions	21 703	27 666	8.0	9.1	27.5
Net credit to customers	194 873	213 945	71.5	70.1	9.8
Financial assets at fair value through profit or loss	12 900	18 160	4.7	5.9	40.8
Available-for-sale financial assets	14 806	14 185	5.4	4.6	-4.2
Held-to-maturity investment	520	718	0.2	0.2	38.0
Hedging derivatives	692	814	0.3	0.3	17.5
Investment in subsidiaries	2 613	3 470	1.0	1.1	32.8
Tangible and intangible assets	3 611	3 895	1.3	1.3	7.9
Other assets	9 799	13 068	3.6	4.3	33.4
Total assets	**272 411**	**305 363**	**100.0**	**100.0**	**12.1**
Resources from central banks	3 542	6 215	1.3	2.0	75.5
Resources from other credit institutions	33 315	38 740	12.2	12.7	16.3
Resources from customers and other loans	142 784	149 142	52.4	48.8	4.5
Financial liabilities at fair value through profit or loss	2 589	4 460	1.0	1.5	72.3
Subordinated liabilities	55 694	63 006	20.4	20.6	13.1
	9 887	9 873	3.6	3.2	-0.1
Hedging derivatives	562	1 000	0.2	0.3	77.8
Liabilities for not derecognised assets	0	2 363	0.0	0.8	n.a.
Other liabilities	10 013	12 876	3.7	4.2	28.6
Total liabilities	**258 386**	**287 674**	**94.9**	**94.2**	**11.3**
Capital	14 025	17 689	5.1	5.8	26.1
of which Net profit/loss for the year	1 284	2 202	0.5	0.7	71.4
Total liabilities and net wealth	**272 411**	**305 363**	**100.0**	**100.0**	**12.1**

Source: Banco de Portugal.

(5) For further information on developments in banking systems at the euro area level, see the *Financial Stability Review* – June 2006, of the European Central Bank (available at www.ecb.int).

having increased by 9.8 per cent from the level seen at end-2004. Although still keeping a limited importance in the whole activity of institutions under analysis, international activity developed by some of the major Portuguese banking groups contributed to the increase recorded.[6] The rate of change in credit also reflects the fact that, in the context of the adoption of stricter derecognition criteria (stemming from the adoption of IAS), a significant part of credit securitisation transactions in 2005 did not bring about a reduction of the credit balance in the balance sheet of institutions. Available data indicate that the most buoyant credit segment continues to be that of loans to households for house purchase.

The average quality of the credit portfolio (assessed both by credit default indicators and by credit default prudential hedging indicators) developed favourably in 2005. This has also reflected the fact that banking institutions have adopted types of contract that are more adequate to the current ability of customers to service debt.[7]

Credit growth continued to clearly exceed growth in resources from customers. In the context of the fall in the household savings rate, households' resources kept a relatively modest rate of change. This seems to also significantly reflect the role that banking institutions have been playing, channelling resources from customers to alternative investments (namely in mutual funds and in capital redemption products associated with life insurance) in institutions that are not subject to consolidation in the banking group, although they are often linked to the same financial group. The motivation for this type of procedure may lie, on the one hand, with generating earnings through the charging of commissions and on the other with the attempt to build customer loyalty by proposing products with higher profitability in the medium to long term.

Given the divergence between credit growth and growth in resources from customers, institutions have significantly resorted to the issue of debt securities (in euro) in international financial markets through subsidiaries and branches abroad. In addition, they have been financing their current business through credit securitisation and resources raised in the money market, stress being laid, in this latter case, on non-domestic institutions.

The securities and financial holdings portfolio recorded a significant change in 2005, in line with overall favourable developments in international financial markets, notwithstanding the sale by a number of banking groups of several holdings deemed to be non-strategic.[8] This change had positive reflections at the level of the profitability and own funds of institutions.

3.3. Profitability

Overall, profitability in the banking groups under analysis as a whole increased in 2005 (Chart 3.3.1 and Table 3.3.1), as did the return on assets (ROA)[9], and the net return on equity (ROE)[10] (these indicators stood at 0.98 and 16.9 per cent respectively). Similarly to activity, profitability also benefited from the contribution of international activity.

However, this improvement in profitability, which was quite substantial for some institutions (Charts 3.3.2 and 3.3.3[11]), should be evaluated. In fact, it is the result not only of a favourable year at the level

(6) Some of the major Portuguese banking groups reported, in their reports and financial statements for 2005, significant changes in the international component of their activity as regards raising resources, granting credit and even generating earnings. Poland, Greece, Angola and Spain are among the countries where this international activity is developed.

(7) Chapter 6 – Credit risk shows an in-depth analysis of the quality of the portfolio of credit granted to the non-financial private sector.

(8) Chapter 4 – Market risk shows a more detailed analysis of developments in the securities portfolio of banking institutions.

(9) Calculated by taking into account income before taxes and minority interests.

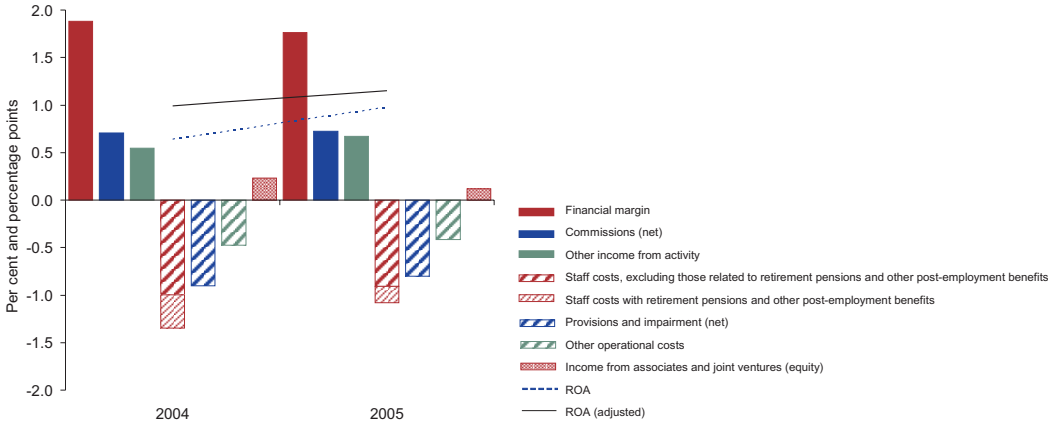
(10) Calculated by taking into account income before taxes and minority interests.

(11) This type of chart illustrates the (weighted) relative frequency of the different levels that each indicator assumes for the considered institutions.

Chart 3.3.1

RETURN ON ASSETS – ROA

Breakdown of contributions



Source: Banco de Portugal.
Note: Other operational costs include general administrative costs and amortisation and depreciation; the line "ROA (adjusted)" refers to ROA adjusted for staff costs with retirement pensions and other post-employment benefits; the return on assets is calculated by taking into account income before taxes and minority interests.

Table 3.3.1

PROFIT AND LOSS ACCOUNT

On a consolidated basis

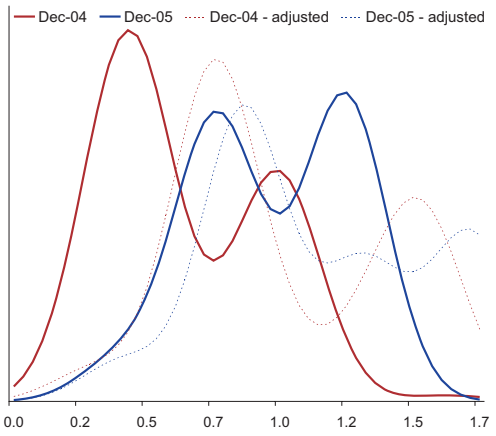
	EUR million		As a percentage of total assets		Rate of change
	2004	2005	2004	2005	%
1. Interest income	12 622	13 975	4.63	4.58	10.7
2. Interest expenses	7 504	8 591	2.75	2.81	14.5
3. Financial margin (1-2)	**5 119**	**5 384**	**1.88**	**1.76**	**5.2**
4. Income from capital instruments	161	217	0.06	0.07	34.4
5. Income from services and commissions (net)	1 923	2 213	0.71	0.72	15.1
6. Income from financial assets and liabilities measured at fair value	346	440	0.13	0.14	27.3
7. Income from available-for-sale financial assets	104	645	0.04	0.21	521.4
8. Income from foreign exchange revaluation	208	53	0.08	0.02	-74.5
9. Income from the sale of other financial assets	72	259	0.03	0.08	257.5
10. Other net operating profit and loss	602	429	0.22	0.14	-28.7
11. Gross income (3+4+5+6+7+8+9+10)	**8 535**	**9 640**	**3.13**	**3.16**	**12.9**
12. Staff costs	3 667	3 301	1.35	1.08	-10.0
12.a Staff costs adjusted for staff costs with retirement pensions and other post-employment benefits	2 712	2 771	1.00	0.91	2.2
13. General administrative costs	1 891	1 978	0.69	0.65	4.6
14. Depreciation and amortisation	562	466	0.21	0.15	-17.2
15. Provisions net of restitutions and annulments	279	206	0.10	0.07	-26.3
16. Impairment losses and other net value adjustments	1 012	1 066	0.37	0.35	5.3
17. Negative consolidation differences	0	0	0.00	0.00	-100.0
18. Appropriation of income from associates and joint ventures (equity)	624	363	0.23	0.12	-41.8
19. Income before taxes and minority interests (11-12-13-14-15-16-17+18)	**1 748**	**2 987**	**0.64**	**0.98**	**70.9**
19.a Income before taxes and minority interests adjusted for staff costs with retirement pensions and other post-employment benefits	2 703	3 517	0.99	1.15	30.1
20. Tax on profits	228	402	0.08	0.13	76.3
21. Income before minority interests	1 520	2 585	0.56	0.85	70.1
22. Minority interests (net)	236	383	0.09	0.13	62.2
23. Net profit and loss (21-22)	**1 284**	**2 202**	**0.47**	**0.72**	**71.5**

Source: Banco de Portugal.

Chart 3.3.2

RETURN ON ASSETS

Empirical distribution

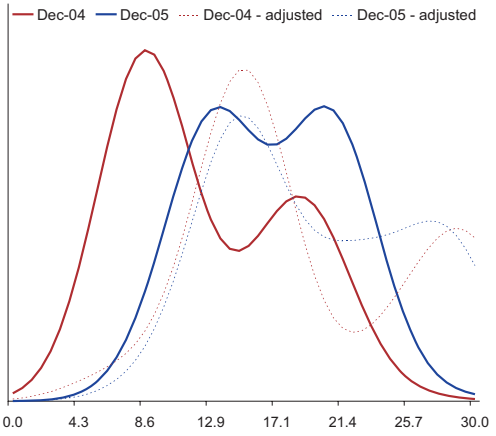


Source Banco de Portugal.
Note: Empirical distribution obtained through recourse to a Gaussian kernel that weighs institutions by their assets; the dotted line shows distributions adjusted for staff costs with retirement pensions and other post-employment benefits; profitability indicators are calculated by taking into account income before taxes and minority interests.

Chart 3.3.3

RETURN ON EQUITY

Empirical distribution



Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to a Gaussian kernel that weighs institutions by their equity; the dotted line shows distributions adjusted for staff costs with retirement pensions and other post-employment benefits; profitability indicators are calculated by taking into account income before taxes and minority interests.

of national and international financial markets (which, under the new accounting framework, tends to pass through more significantly to profit and loss for the year) but also, to a non-negligible extent, of the concentration of some costs in 2004, in the context of changes to the accounting regime. This was particularly noticeable at the level of staff costs, and in particular in the item costs with retirement pensions and other post-employment benefits. A recalculation of net profit and loss for 2004 and 2005 excluding this item shows that return on assets has improved somewhat, albeit by only 16 b.p. (compared with 34 b.p. when excluding this adjustment). In turn, return on equity, also reflecting an equity increase of 26 per cent, rose by 0.6 p.p. (instead of a 4.4 p.p. rise) (Chart 3.3.4).

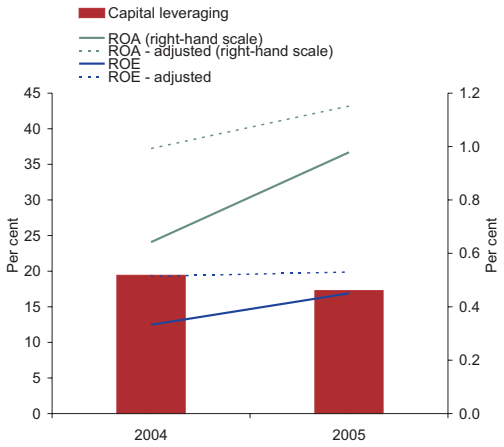
The adjustment for the effect of costs with retirement pensions and other post-employment benefits in profit and loss for the year also shows that, in addition to being of a lower magnitude, the increase in profit and loss for 2005 was broadly based across the major institutions considered. After the adjustment for the mentioned item, the dispersion of the distributions of profitability indicators is quite similar in both years.

The financial margin increased by 5 per cent in 2005. Nonetheless, in line with evidence since 2001, when the last downward cycle of interest rates began, the respective contribution to return on assets of banking institutions declined further. These developments, which affected most of the institutions under analysis, were a reflection of events already observed in previous years, such as, inter alia, the reduced level of reference interest rates, the slight additional squeeze of the overall interest rate margin in operations with customers (i.e. the differential between the headline credit rate and the headline remuneration rate paid by banks - Chart 3.3.5) and recourse to market financing so as to sustain credit expansion, the cost of which is higher than that for customer deposits.

In spite of the increases in the second half of the year, particularly in the last quarter, money market interest rates remained at extremely low levels in 2005, thus conditioning bank lending and deposit interest rates. This fact, on its own, exerts a negative influence on the financial margin, to the extent that it does not allow for banks to benefit so intensely from the fact that a component of their liabilities is not

Chart 3.3.4

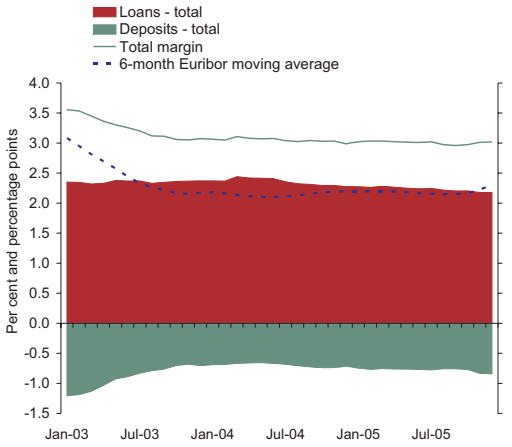
PROFITABILITY INDICATORS AND CAPITAL LEVERAGING



Source: Banco de Portugal.
Note: The dotted line shows indicators adjusted for staff costs with retirement pensions and other post-employment benefits. Capital leveraging is defined as the ratio of assets to equity; profitability indicators are calculated by taking into account income before taxes and minority interests.

Chart 3.3.5

INTEREST RATE MARGINS IN OPERATIONS WITH CUSTOMERS



Source: Banco de Portugal.
Note: Margins calculated as the difference between interest rates on balances and a 6-month moving average of the 6-month EURIBOR.

remunerated or is remunerated at a very low rate (overnight deposits, which at end-2005 accounted for around 40 per cent of total deposits with the resident banking sector).

Interest rates have also been conditioned by the narrowing of interest rate margins in the segments where competition is more intense.[12] The most evident example of this situation is seen in the segment of credit granted to households for house purchase, where the margin's annual average declined from 1.64 p.p. in 2004 to 1.51 p.p. in 2005 (Chart 3.3.6). This segment accounts for more than 40 per cent of loans granted to the non-financial private sector, and hence this squeeze of the margin influences the generation of earnings. However, the interest rate margin in customer deposits widened slightly at the end of the year, almost offsetting the narrowing of the loan margin.

In turn, the persistent and growing divergence between credit and deposit growth implies recourse to alternative sources of financing.[13] Through loan securitisation transactions, issue of securities in the market (bonds issued abroad through subsidiaries and branches, and to a lesser extent, subordinated loans) and recourse to the interbank market (in particular by non-domestic institutions), the banks are financing part of their current business at an overall higher market cost than that associated with the collection of customer deposits.

The contribution of income from services and commissions to the return on assets rose further, reflecting a 15 per cent increase in net commissions.[14] The trend seen since 2002 of a gradual increase in the importance of this type of income in generating earnings of banking institutions is therefore maintained.

(12) These developments in interest rates and differentials are confirmed by the results of the Bank Lending Survey. In the course of 2004 and especially of 2005 the competitive environment, namely among banking institutions, was systematically referred to as being a key factor contributing to an easing in the granting of loans for house purchase. This, in terms of the conditions of operations, translated into longer maturities for the repayment of loans and into a narrowing of spreads applied to medium-risk loans. Loans to non-financial corporations followed a similar trend.

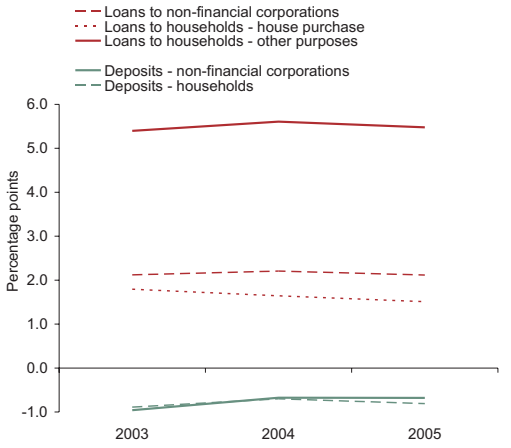
(13) Chapter 5 – Liquidity risk shows a more detailed analysis of the financing of activity.

(14) However, under the new accounting regime, commissions received associated with the amortised cost, namely those regarding the granting of credit to costumers, are recorded as interest income on an accruals basis over the life of the transaction (previously, in the context of the Chart of Accounts of the Banking Sector, they were recorded as commissions, in full, for the associated monetary flow).

Chart 3.3.6

INTEREST RATE DIFFERENTIALS IN OPERATIONS WITH CUSTOMERS

Lending and deposit operations - by sector of activity

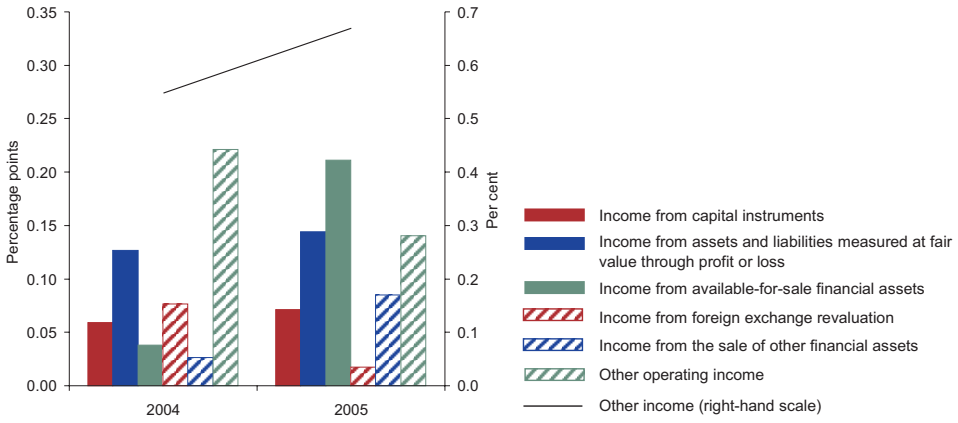


Source: Banco de Portugal.
Note: Margins calculated as the difference between annual averages of interest rates on balances and the annual average value of the 6-month moving average of the 6-month EURIBOR.

Chart 3.3.7

OTHER INCOME FROM ACTIVITY

Breakdown of the contribution to ROA



Source: Banco de Portugal.

The behaviour of the remaining income items was in line with favourable developments in financial markets in 2005 (Chart 3.3.7). These made it possible not only for the securities portfolio to be valued, but also to generate capital gains in the sale of securities and holdings.[15] This was particularly relevant, given that some banking groups sold non-strategic holdings in financial corporations outside the core of the group's business. In a negative sense, the contribution of income from foreign exchange revaluation to profitability declined.

As a result of the above mentioned developments, gross income (which reflects the behaviour of banks' main activities) increased by 13 per cent, contributing with 2 b.p. to the rise in ROA.

Under these terms, the rise in profitability was anchored in a pronounced decline in accounted costs, which was particularly relevant in staff costs (that declined 10 per cent, corresponding to a positive contribution of 27 b.p. to the rise in ROA). However, it also had a bearing on depreciation and amortisation (17 per cent reduction, contributing with over 5 b.p. to the change in ROA) and on the recording of provisions and impairment (-2 per cent, corresponding to a 6 b.p. contribution to the change in ROA). Only general administrative costs increased from 2004 levels (but still by only 5 per cent, and hence the contribution to the change in ROA was positive at 5 b.p.).

Developments in staff costs were chiefly determined by costs with retirement pensions and other post-employment benefits, which in 2005 declined by 45 per cent. These costs include, on the one hand, costs with early retirements, which in 2005 decreased by 50 per cent and, on the other, costs associated with changes in actuarial assumptions.[16] Excluding the component costs with retirement pensions and other post-employment benefits, staff costs would have increased by 2 per cent, which would correspond to a positive contribution of 9 b.p. to the change in ROA. This would be more in line with the recent past, reflecting both wage moderation and a gradual reduction in staff in most of the major banking groups.

The introduction of IAS brought about changes in the accounting method for staff costs, namely as regards costs with early retirements.[17] In the former system, early retirements were recognised as cost through a fixed amortisation plan, i.e., gradually over time. With the introduction of IAS 19, these liabilities were fully recognised in the operating accounts (under costs), when benefits were already considered vested benefits. Otherwise, these liabilities must be recognised under costs, on a straight-line basis, during the average period until benefits are considered vested benefits. Against this background, there was a concentration of costs with early retirements in 2004, thus affecting comparison with 2005 results.

Developments in staff costs in 2005 do not reflect the significant contributions that banking institutions made to their pension funds during the year, to the extent that, upon the transition to the new accounting system, these increases in liabilities were not recorded as cost for the current year, but instead they were recorded against a reduction at the level of capital items.

The reduction in depreciation and amortisation extended to the major banking institutions, although it was especially relevant in two of them (which, due to their relative weight, contributed with 13 and 3 p.p. to the observed rate of change).[18] In turn, the reduction was seen at the level of tangible assets

(15) See section 4.4 - Impact of developments in capital markets on the Portuguese banks. However, part of the gains may reflect the non-adoption by some banking groups of IAS 32 and 39 (Financial instruments: disclosure, presentation, recognition and measurement) with regard to 2004. In turn, the valuation of the securities and financial holdings portfolio is only reflected in the profit and loss to the extent that this portfolio is part of the trading book. For available-for-sale portfolio assets, the counterpart of value gains corresponds to the change in equity capital.

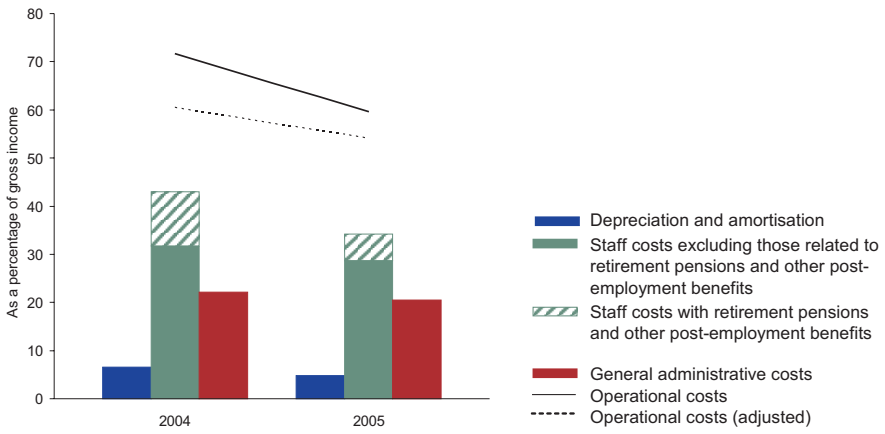
(16) This component was particularly relevant in the case of a banking group that in 2004 transferred to *Caixa Geral de Aposentações* (civil servants pension system) liabilities with the pensions of its employees.

(17) See section 7.1.5.3 of the 2004 issue of the *Financial Stability Report* of Banco de Portugal.

(18) The institution with the highest contribution indicates (in its 2005 report and financial statements) that a significant part of the reduction in this item was due to an extraordinary (non-recurring) amortisation made by a subsidiary abroad in 2004.

Chart 3.3.8

OPERATIONAL COSTS AS A PERCENTAGE OF GROSS INCOME



Source: Banco de Portugal.
Note: The line "Operational costs (adjusted)" refers to the adjusted indicator of staff costs with retirement pensions and other post-employment benefits.

and especially of intangible assets. Some of the factors that seem to have influenced developments were probably related to a more intense recourse to outsourcing (which enables the sale of assets that were allocated to it), a cut in investment in certain types of assets (such as hardware and software) and the fact that institutions may have chosen to revaluate some assets with effect from 31 December 2004 (thus increasing the value of amortisations for that year, in comparison with 2005).

Joint developments in operational costs and gross income items result in an increased efficiency in generating earnings. In fact, the ratio of operational costs as a percentage of gross income followed a downward trend, even when staff costs exclude the impact of costs with retirement pensions and other post-employment benefits (Chart 3.3.8).

Developments in total provisioning and impairment in 2005 reflected a wide series of structural events, such as the improvement of institutions' risk management systems and the risk profile of the respective portfolios (also through a greater weight of less risky assets, e.g. loans for house purchase), and one-off events, such as overall favourable developments in financial markets in 2005. Most items of this cost component followed a downward trend, with the exception of impairment losses for financial assets other than credit. Nonetheless, the increase in this latter item was concentrated in only two of the institutions considered, while the remaining did not record significant developments.

Income from associates and joint ventures declined by 42 per cent (negative contribution of 11 b.p. to the change in ROA). This occurred notwithstanding the fact that this item includes income originated in the insurance sector, which may have also benefited from favourable developments in financial markets. It may have also reflected the disposal by one of the major Portuguese banking groups, of several holdings in insurance companies (that ceased to contribute to the consolidated profit and loss for the year).

3.4. Credit Provisioning – Prudential Regime

The adoption of IAS implied fundamental changes in terms of the accounting (on a consolidated basis) of provisions. For illustrative purposes, the previous regulations implied the registration of provisions

for credit overdue, based on a criterion that considered the duration of the default situation, whereas the new regulations stipulate the recognition of credit impairment in functions estimating recoverable values and incorporating discount factors. In addition, under the new accounting standards, institutions will also be subject to impairment registration in tangible and intangible assets.

However, given their importance in total assets of banking institutions, it is important to evaluate mainly the coverage of default credit.[19] This section will make that evaluation in the light of the prudential system in force, applicable on an individual basis (laid down in Notice No 3/95).[20]

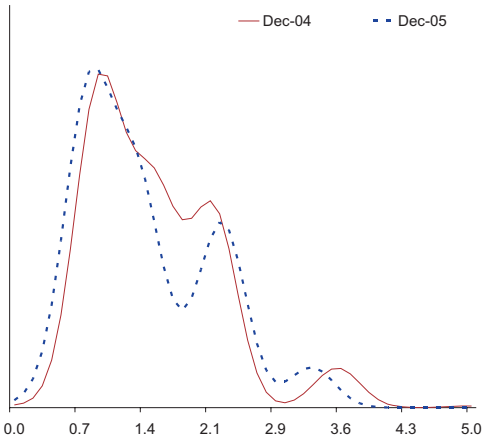
In 2005, the ratio of default credit to total credit declined to 1.48 per cent (from 1.57 per cent in 2004 and 1.99 per cent in 2003 – Chart 3.4.1).[21] The development of default reflected business practices that in some manner have mitigated the emergence of default situations. Indeed, banks have provided their customers a number of possibilities to defer charges associated with loans (chiefly in the household sector) and/or, to some extent, to renegotiate loan conditions when the counterparties show difficulties in meeting the debt service (usual in the case of non-financial corporations).[22]

Likewise, the ratio of default credit, net of provisions for non-performing loans and for credit overdue, to total credit, also net of the same provisions, declined from 0.44 per cent in 2004 to 0.30 per cent in 2005 (Chart 3.4.2). In effect, the provisioning of delinquency situations by specific provisions in the credit portfolio (already observed or highly probable) increased in 2005, to reach 75 per cent, compared with 68 per cent in 2004 and 61 per cent in 2003.

Chart 3.4.1

DEFAULT CREDIT RATIO

Empirical distribution

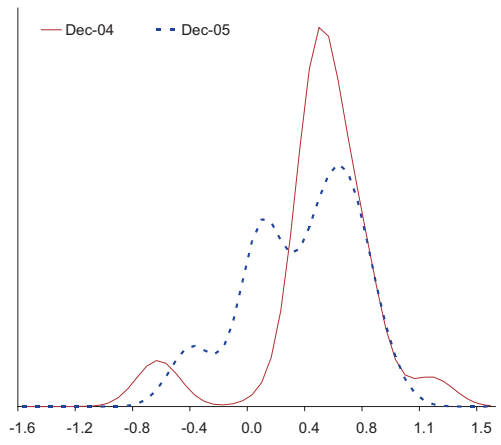


Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to a Gaussian Kernel that weights institutions by their credit. Default credit includes credit overdue for more than 90 days and non-performing loans reclassified as credit overdue for provisioning purposes, pursuant to Notice No 3/95.

Chart 3.4.2

RATIO OF (NET) DEFAULT CREDIT TO (NET) TOTAL CREDIT)

Empirical distribution



Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to a Gaussian Kernel that weights institutions by their own capital. The (default) net credit concept is defined by deducting the respective aggregate by provisions for credit overdue and for non-performing loans.

(19) The prudential concept of default credit includes credit overdue for more than 90 days and non-performing loans reclassified as credit overdue for provisioning purposes, pursuant to Notice No 3/95. For further details, see Instruction No 16/2004 and Notice No 3/95 at www.bportugal.pt/servs/sibap/sibap_p.htm.

(20) For the purpose of this analysis, the consolidation of accounts does not have significant implications at the level of credit subject to provisioning, which is based on the assumption that no considerable default/impairment situations are expected in the context of intra-group operations.

(21) This development is in line with the trend seen in the delinquency ratios of the non-financial private sector, as described in "Chapter 6 *Credit Risk*".

(22) This analysis is discussed further in "Chapter 6 *Credit Risk*".

Taking also into account that the coverage of total credit by specific provisioning increased in 2005 (albeit slightly from 1.14 to 1.18 per cent) and that the rise in coverage was not merely the result of the introduction of the provisioning system adopted by Banco de Portugal, but rather of the reinforcement of provisions built up in excess of the minimum regulatory level, it may be concluded that, in the year under review, risk coverage evolved positively in terms of credit risk coverage in the banks' portfolio.[23]

3.5. Solvency

The adoption of IAS would automatically have implications for the calculation of the adequacy of own funds.[24] However, considering that these changes may have a significant impact on the solvency ratio, albeit not corresponding to an effective change in the solvency of institutions, Banco de Portugal issued a number of new regulations on the calculation of own funds and own fund requirements, the so-called "prudential filters". In parallel with the definition of some transitional periods intended to reflect, at the prudential level, the impacts due to the adoption of IAS, these filters make it possible to mitigate more significant impacts of the new regulations on the own funds of the institutions.

Some of the main changes in solvency measurement were related to the prudential treatment of:

- Unrealised gains and losses for assets and liabilities that will be measured at fair value (as a rule, gains became partially recognised – at 45 per cent in most significant cases – whereas potential losses are fully deducted from own funds);
- Deferred taxes recorded on the assets side (which became recognised as a positive item of original own funds up to 10 per cent of the value of the latter).

In some areas, however, in spite of significant changes in accounting registration, there was no impact in terms of the prudential evaluation of own funds. These are related, inter alia, to:

- Assets not derecognised, or partially derecognised, that have been sold in securitisation transactions;
- Consolidation of special purpose entities;
- Redeemable shares that are classified as liabilities;
- Hybrid debt instruments that include a liabilities component and a capital component (e.g. convertible bonds).

Due to their larger magnitude, some of the changes occurred upon transition are the object of prudential recognition deferred in time, over transitional periods (i.e., linearly and gradually considered in the calculation of own funds). Three deferral periods were defined, based on the moment when an institution actually moves to the new accounting standards:

- 3-year period for impacts arising from: changes in the valuation criteria of financial instruments (except credit and other receivables) and non-financial instruments; the change in the

(23) Strictly under the prudential regime, credit provisioning should have increased by approximately 2 per cent. However, it rose by around 12 per cent, therefore widening the differential between the minimum regulatory value and the value of provisions built up. This divergence may be associated with a prudent behaviour of the institutions, in particular within expectations of a future decline in the average quality of the credit portfolio, in the framework of continued low growth rates in the Portuguese economy and of a gradual increase in interest rates.

(24) A summary of these changes can be found in "Section 7.1.5 Reviewing prudential regulations in the context of the new accounting standards", in the 2004 *Financial Stability Report* of Banco de Portugal. For further details, see Notices No 2/2005 and No 4/2005.

treatment of exchange-rate differences in financial holdings; the recording of deferred taxes on the assets side; and the accounting of financial instruments with underlying shares issued by the institution itself;

- 5-year period for the impact arising from the adoption of IAS 19 (Employee benefits - Pension Fund), except those related to post-employment medical care;

- 7-year period for the impact arising from the calculation of liabilities on account of post-employment medical care.[25]

On the other hand, Banco de Portugal accepts provisions for general credit risks as a positive item of additional own funds (up to a maximum ceiling of 1.25 per cent of weighted assets, in line with international standards - namely with those envisaged in the Capital Accord). Prior to this change, those provisions were deducted from own fund requirements. Changes in own fund requirements were less significant.

Table 3.5.1 illustrates the immediate and deferred impacts of these changes (as at 31 December 2005) on the own funds of the institutions that have adopted IAS in early 2005.[26]

In the transition year, the above-mentioned accounting and regulatory changes induced an increase of approximately 0.4 p.p. in the adequacy ratio of own funds. This increase reflected the fact that the positive impact (of 0.7 p.p.) of the inclusion of provisions for general credit risks as a positive item of additional own funds (and, at the end of the year, the decline in deductions), has more than offset the negative impact (on original own funds) arising from accounting changes not liable to be deferred and from changes deferred as at 31 December 2005.

Data available indicates that the total impact of these changes (up to the end of the deferral periods, 2011) on the overall adequacy ratio of own funds, albeit negative, will not be significant (not exceeding 0.1 p.p. when evaluated vis-à-vis own fund requirements calculated for December 2004). However, it will contribute to a change in the composition of own funds, since the impact will be positive on additional own funds and negative on original own funds. This fact, although no broadly based implications are expected on the institutions in general, may occasionally have effects on some institutions (in terms of the increase in their original own funds), because, under Article 6 of Notice No 12/95 (Own Funds), additional own funds cannot exceed the original own funds.

At the end of 2005, the overall adequacy ratio of own funds of all institutions under analysis stood at 11.3 per cent, compared with 10.2 per cent at the end of 2004 (Table 3.5.1). Underlying this development were the rises by 19 per cent in total own funds and by 7 per cent in total own fund requirements. This improvement in the overall adequacy ratio of own funds was broadly based across main institutions in the aggregate in question. It is worth mentioning that this ratio was below 10 per cent in the sub-group of the five major banking groups in question (Charts 3.5.1 and 3.5.2).

The increase in own funds was primarily accounted for by the expansion of additional own funds. This trend was based on the above-mentioned inclusion of provisions for general credit risks, through the issue by one of the main institutions under review of a significant amount of equity and through broadly positive developments of the capital markets. The trend of original own funds reflected not only the above-mentioned impacts arising from accounting and regulatory changes, but also the 9 per cent increase in paid-up capital (accounting for 4.8 p.p. of the increase in own funds). Finally, the cut in deduc-

(25) More recently, Banco de Portugal indicated the same deferral period (7 years) for the impact arising from the change in assumptions related to the mortality rate. The impact of this change is not considered in Table 3.5.1.

(26) Based on data collected in line with Instruction No 15/2005.

Table 3.5.1

OWN FUNDS

Impact of the accounting and regulatory changes on the institutions that have adopted the IAS on 01 Jan 2005

	Starting situation	Impact (10^6 EUR and on the overall adequacy ratio of own funds)			
	31 Dec. 04	01 Jan. 05		31 Dec. 05	
	10^6 EUR	10^6 EUR	p.p.	10^6 EUR	p.p.
Total own funds	19 975	853	0.4	822	0.4
Original own funds	13 729	-392	-0.2	-544	-0.3
Impacts not subject to deferral		-392	-0.2	-392	-0.2
Impacts to be deferred				-152	-0.1
With a 3-year transitional period				174	0.1
Deferred taxes on the assets side				481	0.2
Other impacts to be deferred				-307	-0.2
With a 5-year transitional				-214	-0.1
With a 7-year transitional				-112	-0.1
Additional own funds	8 337	1 245	0.6	1 270	0.1
Impacts not subject to deferral		1 245	0.6	1 245	0.6
Of which: Inclusion of provisions for general credit risks		1 397	0.7	1 397	0.7
Impacts to be deferred for 3 years			0.0	24	0.0
Deductions	2 092	0	0.0	-96	-0.1
Impacts to be deferred for 3 years				-96	-0.1
Supplementary own funds	1		0.0		0.0
Memo: **Own fund requirement**	15 679	15 839		16 819	

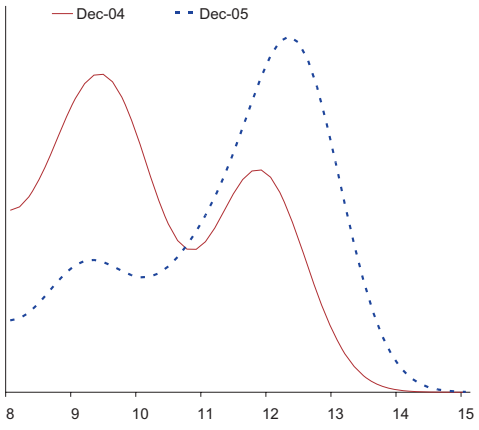
Source: Banco de Portugal.

Chart 3.5.1

CAPITAL ADEQUACY RATIO

Own funds/ (Total requirements *12.5)

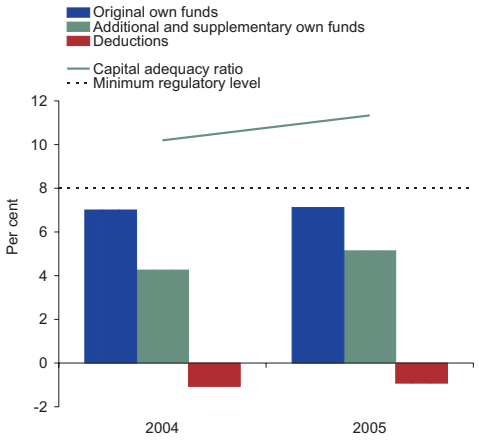
Empirical distribution



Source: Banco de Portugal.
Note: Empirical distribution .

Chart 3.5.2

CAPITAL ADEQUACY RATIO AND ITS COMPONENTS



Source: Banco de Portugal.

tions contributed with approximately 0.8 p.p. to the increase in own funds. Another factor behind this decline was the end of the deduction from own funds of non-provisioned losses in financial holdings[27] and the sale of holdings in credit institutions and other financial companies. The change in the amount in excess of the ceiling on large exposures by one large banking group under appraisal has contributed to the rise in deductions.

The development of own fund requirements continued to be chiefly determined by requirements associated with the solvency ratio (contribution of 4.5 p.p. to total requirement growth). The trend of this requirement is in line with the change observed in credit granted, additionally taking into account that most flows of credit granted to customers fall within the scope of lending to households for house purchase[28] (which, as a rule, is associated with less capital requirements than most exposures *vis-à-vis* the private sector).[29]

(27) Given that these holdings are measured at fair value (in the portfolio of assets available for sale), the respective changes in value are reflected in terms of impairment, thus affecting the solvency of the institutions through their impact on results.

(28) According to data of Monetary and Financial Statistics, this segment accounted for approximately 70 per cent of the changes in the amount outstanding of loans to the private sector in 2005.

(29) The weighting of this credit for the calculation of the solvency ratio is 50 per cent, since the immovable property is intended for the borrower' housing, up to 75 per cent of the respective value. The remaining share (if existing) is weighted at 100 per cent.

4. MARKET RISK

4.1. Overall Assessment

In 2005, financial markets in Portugal moved in line with the overall positive developments in international financial markets, following the trend seen in 2003 and 2004. In general, financing costs in debt markets remained at historically low levels, equity markets continued to record positive growth and the volatility levels remained subdued, reflecting reduced uncertainty in financial markets. At international level, the main exception to this relatively benign environment in financial markets was related to the downgrade of two large multinational automobile manufacturers, namely General Motors and Ford, in May 2005. This gave rise to some uncertainty in financial markets, leading to a relatively significant increase in private debt spreads, as well as to a broadly based rise in financial market volatility. From June onwards, volatility in international financial markets progressively faded away, although private debt spreads remained slightly above the levels seen in the first months of the year, particularly for issuers with worse credit quality. The year was also marked by a significant flattening of the yield curve slope in the euro area and the United States, as a result of the maintenance of long-term interest rates at historically low levels. The persistence of low yields in debt markets and the reduced volatility levels observed during most of 2005 continued to put pressure on investors' demand for financial assets with relatively high yields.

In Portugal, in the first half of 2005, the spread of the government debt widened persistently, which may have reflected the results of the European Constitution referendums (given that such developments were similar to those seen in other European countries), as well as expectations regarding a possible downgrade of the Portuguese Republic rating by Standard & Poor's, as a consequence of the Portuguese fiscal position. This downgrade, which came to be announced in June, had a rather moderate impact on the cost of the Portuguese government debt, which continued to be very low. Prices in the equity market increased significantly in virtually all sectors of activity. Despite the fall in corporate investment, the financing flows of Portuguese non-financial corporations rose considerably, both through recourse to bank loans and the issuance of bonds and commercial paper. In turn, Portuguese banks also benefited from the overall positive performance of financial markets, which enabled them to take advantage of relatively low financing costs in international markets and to diversify their customer-driven profitability sources, in a context of compressed financial margins. Spreads on securities issued by Portuguese banks were generally in line with developments in securities of other European banks, interrupting the downward trend seen since the beginning of 2003. Moreover, Portuguese banks benefited from a significant appreciation of their asset portfolio, which translated into substantial capital gains, as well as into a favourable performance of the portfolios held by their pension funds.

One of the main risks in international financial markets is related to the correction of imbalances in the US economy, which, would they occur abruptly, could cause disturbances in these markets. In turn, the increase in long-term interest rates, namely via an increase in the risk premium, is likely to imply, on the one hand, a rise in the financing cost in long maturities and, on the other, dissipate the pressure in search for yield. Against this background, emerging markets will cease to benefit from such favourable debt issuance conditions. An additional risk is related to the beginning of a turn in the credit cycle in the United States, given that available data suggest that the minimum default levels have already been reached. In this context, positions in hedge funds and credit derivatives, with a view to obtaining higher yields, are far more sensitive to an increase in credit risk than investments with a lower degree of underlying risk. Increased exposure to this type of instrument at the international level may imply a high

Table 4.1.1

SOME FINANCIAL INDICATORS

	Change between					
	30 Jun. 2004 and 31 Dec. 2005	31 Dec. 2004 and 31 Dec. 2005	30 Jun. 2005 and 31 Dec. 2005	maximum[a] and 31 Dec. 2005	minimum[a] and 31 Dec. 2005	31 Dec. 2005 and 30 Apr. 2006
Equity Market						
(rate of change, per cent)						
Stock indices						
Dow Jones Euro Stoxx	30.4	23.0	13.0	-29.5	98.8	10.2
S&P 500	9.4	3.0	4.8	-18.3	60.7	5.0
Nikkei 225	35.9	40.2	39.1	-22.7	111.8	4.9
PSI Geral	21.9	17.2	14.9	-22.4	83.7	17.7
Bond Market [b]						
(change in levels, basis points)						
Government bond yields						
Euro area	-53.9	-4.8	43.5	-231.7	45.8	66.0
United States	64.6	71.0	59.5	-234.2	201.7	54.8
Exchange Rate						
(rate of change, per cent)						
EUR/USD[c]	-2.9	-13.4	-2.4	-13.5	43.0	6.3
USD/JPY[d]	8.3	14.7	6.2	-12.6	16.1	-3.3
Oil Price						
(percentage change in USD)						
Spot Price (Brent)	72.3	44.4	2.0	-14.6	471.7	23.9

Sources: Bloomberg , ECB and Merril lLynch. Last observation: 30 Apr. 2006.
Notes: **(a)** Maximum and minimum values observed in the period between 01Jan. 1999 and 31Dec. 2005. **(b)** Merrill Lynch indices. **(c)** A negative change means an appreciation of the US dollar. **(d)** A negative change means a depreciation of the US dollar.

risk, given that the functioning of the market dealing with these instruments – namely its liquidity and the capacity of the main parties involved in these operations to absorb potential losses – has never been tested under adverse credit quality conditions. In Portugal, a specific risk may arise from the apparent disparity between financing flows of non-financial corporations and the fall in corporate investment, suggesting that this increased indebtedness may be mainly used to restructure corporate debt and to fund working capital needs. With regard to the links between financial markets and the banking system, it should be noted that the international accounting standards (IAS) envisage the valuation of assets and liabilities at market prices, increasing significantly the sensitivity of the balance sheet and profit and loss account to market fluctuations. Thus, while in 2005 overall positive developments in financial markets benefited the banking system, particularly adverse market conditions may have an opposite effect, strongly increasing the importance of an adequate market risk assessment and management for the performance of banks. However, part of the market risks implied in banks' assets may be offset by hedging derivatives (which mitigate, or cancel out, certain risks) or by portfolio shifts.

4.2. Financial Markets

International Financial Markets

On 1 December 2005 the ECB interrupted the relatively protracted period, started in June 2003, over which its key interest rates had remained unchanged at historically low levels, by increasing the inter-

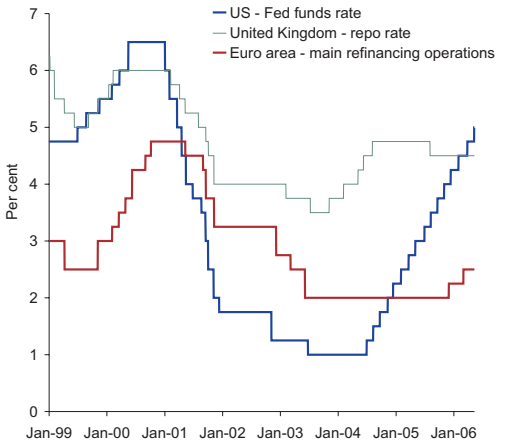
est rate on the main refinancing operations by 25 b.p., to 2.25 per cent (Chart 4.2.1). On 2 March 2006 the Governing Council decided to raise further the key ECB interest rates by 25 b.p.[1] These rises were warranted by the need to remove some of the monetary policy accommodation in the euro area, in order to maintain long-term inflation expectations anchored at levels consistent with price stability. These decisions took into account risks to price stability stemming from a positive outlook regarding developments in economic activity, some pressure on inflation due to the strong increase in energy prices, as well as ample liquidity in the euro area. Considering expectations regarding money market interest rates implied in futures contracts, market participants consider further increases in the key ECB interest rates as highly probable in 2006 (Chart 4.2.2).

In turn, the US Federal Reserve continued the cycle of gradual interest rate hikes, a policy started in 2004. The target for the federal funds rate was raised by 25 b.p. on several occasions, from 1 per cent in June 2004 to 5 per cent in May 2006. These increases were justified by the favourable performance of the economic activity, underpinned by an increase in productivity, notwithstanding the negative effects of the strong rise in energy prices and the destruction caused by hurricane Katrina in late August. According to the Federal Reserve, economic growth prospects are more subdued, reflecting the gradual cooling of the real estate market as well as the lagged effect of the monetary policy transmission and the increase in energy prices. Nevertheless some inflationary pressure is still associated with high oil prices and possible increases in the degree of resource utilisation, which may possibly account for some further tightening, albeit moderate, of the US monetary policy.

Monetary policy decisions in the euro area and the United States were reflected, as expected, in short-term money market interest rates. In the United States, the short-term interest rate continued the persistent upward trend observed since the Federal Reserve started the cycle of interest rate hikes, with only a slight decline in the wake of hurricane Katrina, which was gradually reversed in the course of September (Chart 4.2.3). In the euro area, the three-month Euribor remained stable at historically low levels throughout most of 2005. However, at the end of September short-term interest rates in the euro area started to increase slightly, reflecting the consolidation of expectations of a rise in interest rates by the end of the year. In November the upward trend in Euribor became more marked. This may

Chart 4.2.1

MONETARY POLICY – KEY INTEREST RATES



Sources: Bank of England, ECB and Federal Reserve.

Chart 4.2.2

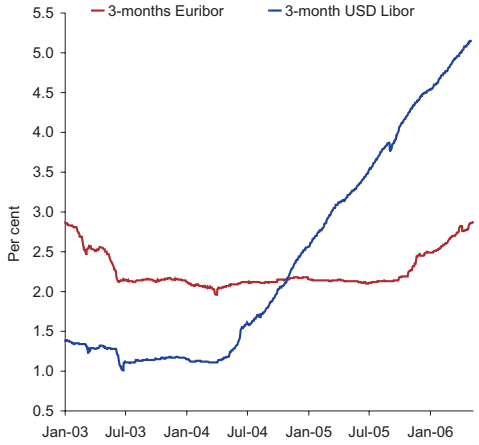
EXPECTATIONS IMPLIED IN 3-MONTH EURIBOR FUTURES CONTRACTS

Source: Bloomberg.

(1) On 8 June ECB's key interest rates were increased once more by 25 b.p.

Chart 4.2.3

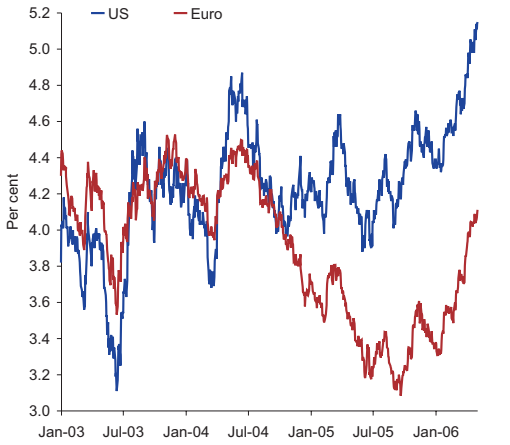
3-MONTH INTEREST RATES



Source: Bloomberg.

Chart 4.2.4

10-YEAR GOVERNMENT BOND YIELDS



Sources: Bloomberg and ECB.

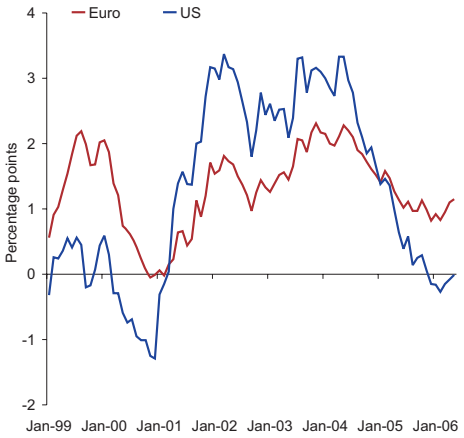
have been due to comments made by the President of the ECB around the middle of that month, which suggested a rise in short-term key interest rates. Hence, financial markets incorporated in advance the rise in the key ECB interest rates and in December, after the ECB's decision to increase these rates, the three-month Euribor remained virtually unchanged. In the first months of 2006 money market interest rates continued to increase, reflecting expectations of a further tightening of the monetary policy, which would in fact occur in early March and early June. For the second half of 2006, money market interest rates continue to encompass expectations of further increases in the key ECB interest rates.

Despite the tighter monetary policy in the United States and the rise in the key interest rates in the euro area, long-term interest rates remained at historically low levels (Chart 4.2.4). In the United States, the short-term interest rate (three-month Libor) increased by around 3 p.p. between June 2004 – when the Federal Reserve started the cycle of interest rate hikes – and the end of 2005, whereas the ten-year Government bond yield declined very slightly over the same period (-0.2 p.p.). As a result of the discrepancy between developments in short-term and long-term interest rates, the slope of the yield curve has flattened significantly in the United States. In fact, in the last quarter of 2005 interest rates for different maturities in the United States stood at very close levels, reflecting an almost flat yield curve (Chart 4.2.5). In the euro area, although the slope of the yield curve declined considerably in 2005, it continues to record overall positive values. Some of the factors underlying these developments are discussed in more detail in "Box 4.1. *Some factors explaining long-term interest rates in the United States and the euro area in 2005*".

In the last quarter of 2004, long-term interest rates in the euro area and the United States, which had showed a fairly similar behaviour in 2003 and most of 2004, started to diverge considerably. In 2005 this differential continued to widen significantly, particularly as a result of the persistent decline in long-term interest rates in the euro area in the first half of the year. Taking into account data implied in inflation-indexed bonds, this divergence seems to have mainly resulted from the decline in real yields in the euro area, given that the differential between inflation expectations in the United States and the euro area remained relatively constant (Charts 4.2.6 and 4.2.7). The widening of the differential between real yields seems to reflect basically the relative developments in long term growth expectations for the United States and the euro area.

Chart 4.2.5

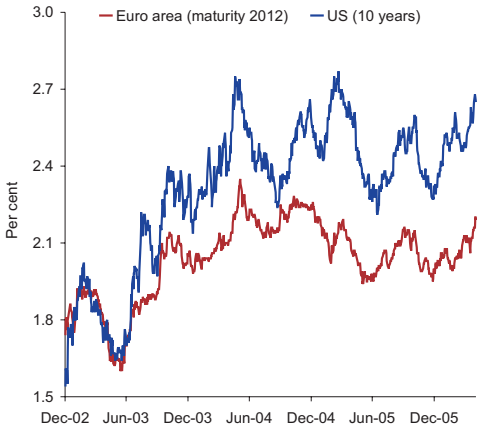
YIELD CURVE SLOPE
(10 YEARS - 3 MONTHS)



Source: Bloomberg.
Note: The yield curve slope is defined as the difference between the 10-year Government bond yield and the 3-month money market interest rate.

Chart 4.2.6

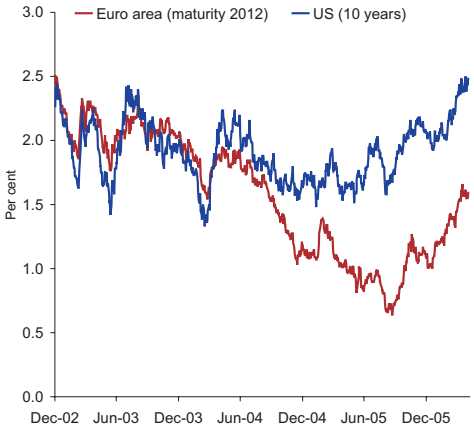
INFLATION EXPECTATIONS IMPLIED IN INFLATION-LINKED BONDS



Sources: Bloomberg and Banco de Portugal.

Chart 4.2.7

REAL GOVERNMENT DEBT YIELDS IMPLIED IN INFLATION-LINKED BONDS

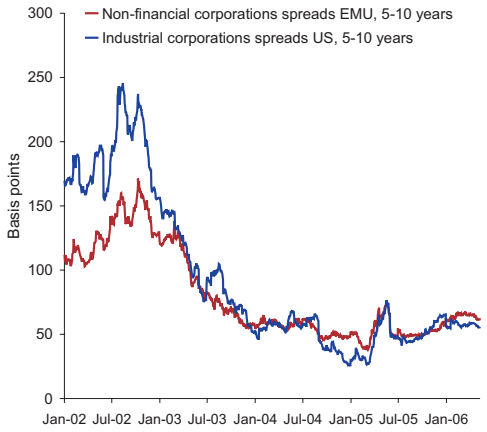


Sources: Bloomberg and Banco de Portugal.

In the course of 2005, corporate bond spreads of non-financial corporations remained low, in line with the trend observed in the previous year, reflecting the favourable economic growth prospects, as well as positive corporate earnings (Chart 4.2.8). However, the second quarter of 2005 was marked by a significant widening of debt spreads of non-financial corporations in the United States and the euro area. This widening, which was particularly significant between mid-March and end-May, was largely associated with developments in automobile manufacturers. In May, the debt ratings assigned to General Motors and Ford were significantly downgraded, as a consequence of the low profitability levels of these companies, associated with a heavy cost structure. These downgrades led to a remarkable in-

Chart 4.2.8

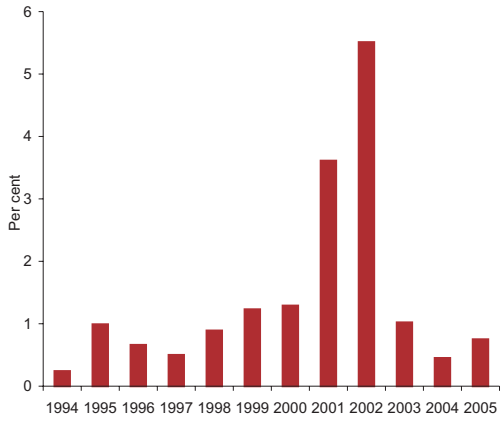
NON-FINANCIAL CORPORATE BOND SPREADS IN THE EURO AREA AND THE UNITED STATES



Sources: Bloomberg and Merrill Lynch.
Note: The spreads are calculated on the basis of the EMU Direct Government Index.

Chart 4.2.9

PERCENTAGE OF DEFAULTED BONDS (WEIGHTED BY VOLUME)



Source: Moody's Investor Service.

crease in the volume of junk debt, which gave rise to some market disturbances. Financing costs of European and US non-financial corporations increased significantly, namely for issuers with lower ratings (the spreads of higher-rated issuers remained at fairly low levels). Credit derivative markets were particularly affected by these events, with losses in some of these instruments as well as in a number of hedge funds. As from June, disturbances in debt markets subsided, with a narrowing of spreads in bond markets, although they stabilised at levels above those observed prior to these events. The terrorist attacks in London and the hurricanes in the United States had a very subdued impact on international financial markets and did not translate into an increase in the risk premium of non-financial corporations. In the last months of 2005 and in the first months of 2006 non-financial, corporate bond spreads widened somewhat. This widening may indicate that the credit cycle is turning, particularly in the United States. In fact, in 2005 default rates in debt markets rose slightly compared with the lows observed in the previous year (Chart 4.2.9). Moreover, at end-2005 the difference between the number of rating upgrades and downgrades started to decline, although overall it continued to be clearly positive.

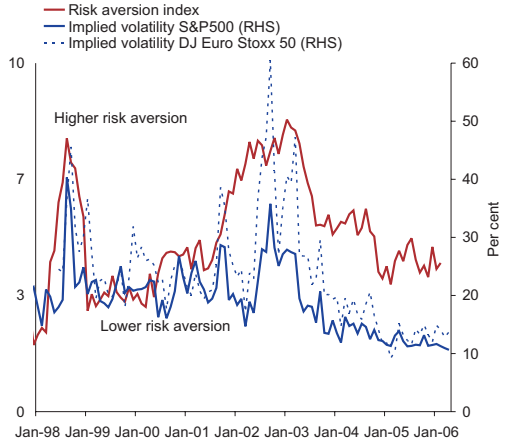
As in previous years, the persistence of relatively low yields in private debt markets and the decline in financial market volatility, against a background of moderate risk aversion, resulted in greater pressure in the search for yield (Chart 4.2.10). As a result, issuers in emerging markets continued to benefit from fairly favourable conditions in terms of debt issuance. Moreover, investors have been seeking higher returns from their investments through recourse to increasingly complex credit derivatives. This can imply a high risk, given that the operation of the market for these instruments has not yet been tested under adverse financial market conditions, namely in terms of its liquidity and of the capacity of the main players to absorb potential losses.[2] Disturbances in credit derivative markets following the downgrade of a number of automobile manufacturers helped illustrate the sensitivity of such instruments to negative events in financial markets.

In 2005 debt flows of non-financial corporations increased, in line with the trend seen in the previous year. In the United States, loans granted to non-financial corporations recorded a very strong growth

(2) Moreover, such instruments are usually traded in over-the-counter markets. This limits the available information and makes it difficult to monitor developments in these markets.

Chart 4.2.10

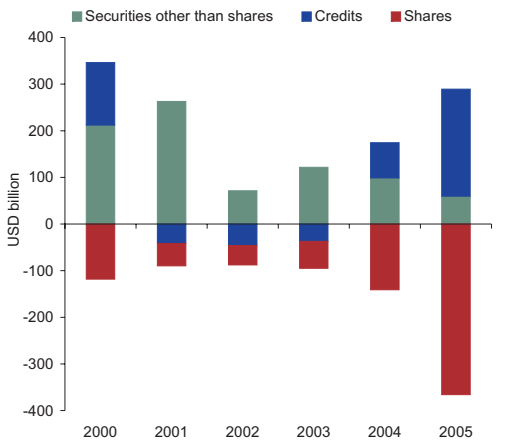
RISK AVERSION INDEX AND IMPLIED VOLATILITY IN STOCK MARKETS



Sources: Bloomberg and Goldman Sachs.

Chart 4.2.11

FINANCING FLOWS OF US NON-FINANCIAL CORPORATIONS



Source: Federal Reserve Board.

(Chart 4.2.11). Securities issues also recorded a positive flow, albeit lower than in the previous year. By contrast, the net flow of equity financing, which has recorded negative values in recent years, was even more negative in 2005, which seems to be related to the significant increase in share buybacks.[3] Financing flows of euro area non-financial corporations also grew significantly in 2005, reflecting the considerable loan growth (Chart 4.2.12). This seems to have been associated with the financing of investments resulting from mergers and acquisitions (M&A). Moreover, unlike in the United States, equity issuance in the euro area increased very significantly compared with the previous year.

Part of the flows of loans in the euro area and the United States was related to leveraged buyouts (LBOs).[4] In fact, taking into account the gross amounts of syndicated loans contracted in 2005, the financing of LBOs doubled, both in the euro area and the United States (Chart 4.2.13). In turn, the value of M&A announced by non-financial corporations of the euro area and the United States increased by around 26 per cent in 2005, although the value of operations concluded rose by less than 20 per cent (Chart 4.2.14). If, on one hand, the value of announced operations can be interpreted as a market activity indicator (associated with a subdued degree of risk aversion), only the value of operations actually completed may imply an effective increase in fund raising needs of companies, either at internal or external level. In the euro area, over 60 per cent of the value of acquisitions was funded through liquidity, whereas in the United States the value of operations funded with cash stood at around 50 per cent. Overall, leveraged buyouts, share buybacks and M&A introduce significant changes in the capital structure of companies, thus favouring the shareholders' position, which puts their creditors in a relatively less favourable position.

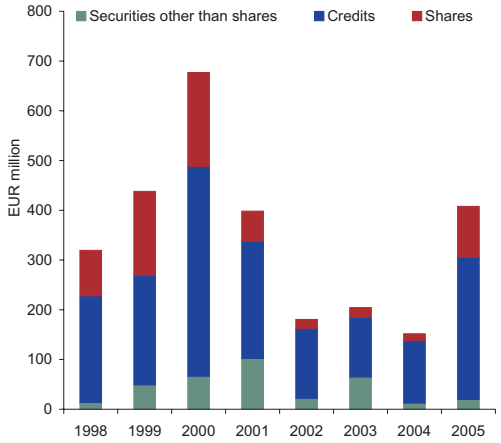
In 2005 the main stock indices followed the upward trend observed since mid-2003 (Chart 4.2.15). The US S&P 500 index recorded a positive change of 3 per cent, whereas the Dow Jones Euro Stoxx index increased by 23 per cent. In cumulative terms, between end-2002 and end-2005, the S&P 500 index

(3) Share buybacks are equity repurchase operations by a company itself. Such operations are, on one hand, a flexible manner of optimizing the capital structure of a company, in a context where alternative investment opportunities may be somewhat limited. On the other hand, they may be a more favourable way of profit distribution than dividends, mainly for tax reasons.

(4) A leveraged buyout is the acquisition of another company using borrowed money. In general, the assets of the company being acquired are used as collateral for the borrowed money. This entails a degree of risk higher than that of an acquisition operation financed by own funds or equity issuance. A management buyout (MBO) is a specific type of LBOs, where a company is acquired by its management.

Chart 4.2.12

FINANCING FLOWS OF EURO AREA NON-FINANCIAL CORPORATIONS

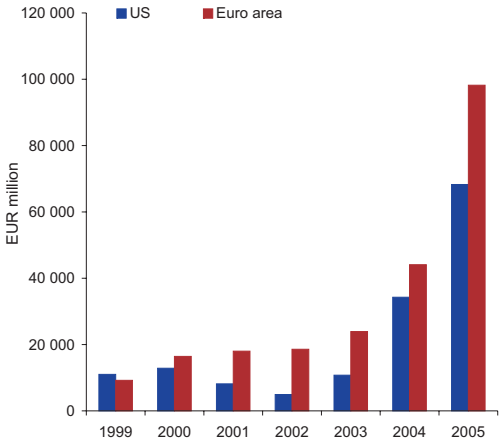


Source: ECB.

Chart 4.2.13

SYNDICATED LOANS FOR THE FINANCING OF LEVERAGED BUYOUTS AND MANAGEMENT BUYOUTS

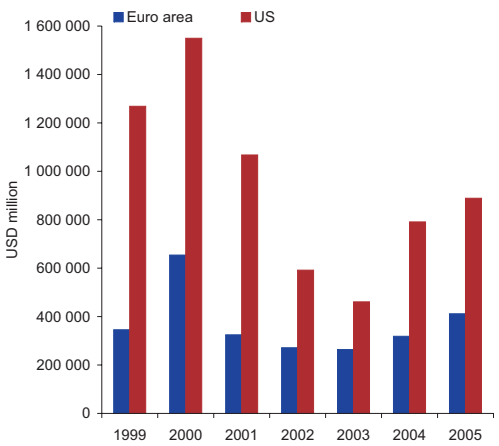
(by nationality)



Source: Loanware.
Note: Includes leveraged buyouts (LBOs) and management buyouts (MBOs).

Chart 4.2.14

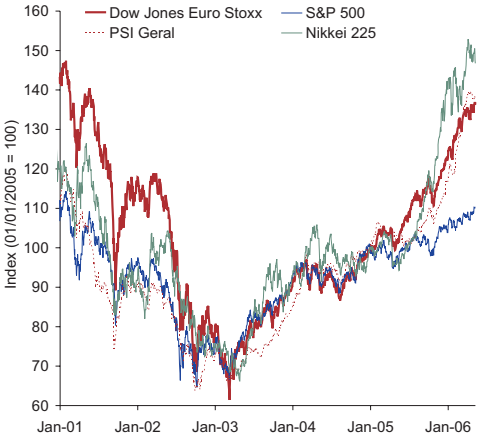
COMPLETED MERGERS AND ACQUISITIONS



Source: Bloomberg.

Chart 4.2.15

STOCK MARKET INDICES



Source: Bloomberg.

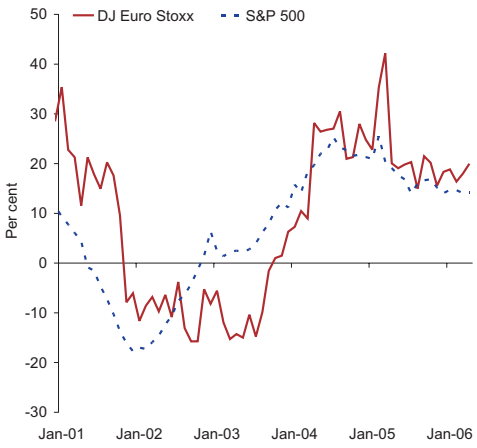
increased by around 42 per cent and the Dow Jones Euro Stoxx index recorded a valuation of around 60 per cent over the same period. In Japan, the Nikkei 225 index increased even more significantly in 2005 (40 per cent), in line with the rebound in economic activity in this country. Positive developments in stock markets have been supported by corporate earnings (often higher than market expectations), despite the strong rise in oil prices. However, the moderate growth in stock prices in the United States, most notably when compared with the strong growth in the euro area, is somewhat inconsistent with actual (and expected) economic growth and productivity differentials, as well as with the financing capacity accumulated by US companies. Therefore, this discrepancy may be partly related to stronger

growth in corporate earnings in the euro area (Chart 4.2.16). Moreover, the increase in real bond yields in the United States, which affects the discount rate used by investors for the valuation of assets, may have also contributed to the deceleration in stock prices in the United States. In addition, investors may consider US corporate stocks to be relatively overvalued, taking into account the persistence of the price-to-earnings ratio at values above its historical average. Finally, overall developments in indices were particularly conditioned by the different behaviour of the sectors they comprise. As such, the Dow Jones Euro Stoxx benefited from the rather strong valuation of banking stocks (26.5 per cent in 2005), by contrast with the United States, where bank stock prices declined by 2.2 per cent. In the euro area, positive developments in stock prices were broadly based across almost all sectors comprised in the Dow Jones Euro Stoxx index (the only exception being the telecommunications sector). In the United States, the more significant rises were recorded by the energy and utilities sector companies, which only account for around 13 per cent of the S&P 500 index, while the share prices of companies belonging to sectors with the strongest weight in the index (i.e. financial, technology, health and industrial sectors) grew rather moderately in 2005.

Volatility in stock markets remained at fairly subdued levels, particularly when compared with the period of strong volatility observed in 2001 and 2002 (Chart 4.2.10). The decline in implied volatility may have resulted from the lower macroeconomic uncertainty and higher financial integration, which allows for a better diversification of risks and a reduction in the premium demanded by investors in financial assets. However, despite the persistence of volatility at historically low levels, investors were sensitive to certain events in the course of the year, although all volatility peaks had a reduced duration and magnitude. In April and May, implied volatility in the United States and the euro area increased as a consequence of downgrades of automobile manufacturers, as well as of the uncertainty surrounding this event regarding possible losses in hedge funds and credit derivatives. The terrorist attacks in London and the hurricanes in the United States also triggered some volatility in equity markets, albeit far less than in May. In October volatility recorded a new peak, particularly in the euro area, which faded until the end of the year. Volatility in this period seems to have resulted, on one hand, from the uncertainty surrounding the point in time at which the ECB would raise its key interest rates and, on the other hand, from some uncertainty about economic growth prospects in the United States, following the release of mixed macroeconomic data.

Chart 4.2.16

ANNUAL RATE OF CHANGE IN EARNINGS PER SHARE (EPS)



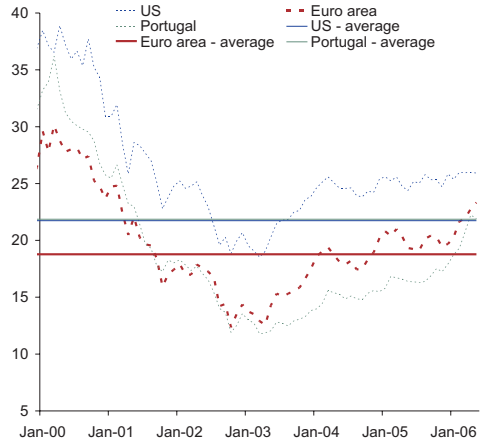
Source: Thomson Financial Datastream I/B/E/S.

The valuation in equity markets associated with positive corporate earnings in Europe and the United States was reflected in the stabilisation of the price-to-earnings ratios (Chart 4.2.17). In the euro area such ratios remained very close to their historical average, while in the United States the ratio of stock prices to the moving average of earnings in the previous five years remained slightly above its historical average, notwithstanding the moderate growth of stock prices. As previously mentioned, the discrepancy between the growth of stock prices in the euro area and the United States may also have reflected the persistence of the price-to-earnings ratio in the United States at levels above its historical average. Taking into account the estimates of market analysts, corporate earnings are likely to continue to be robust in 2006, suggesting a possible decline in the price-to-earnings ratios. In the United States, where corporate profits may be close to the peak of the cycle, the decline in these ratios may also result from a possible deceleration in stock prices, taking into account information implied in the futures market on stock price indices.

Emerging market economies continued to benefit from the search for yield, in a context of low interest rates and improved economic situation in many of these countries. Against a background of rather favourable financing conditions, emerging market debt issuance continued to record historically high volumes, reaching amounts fairly above those seen in the previous year (Chart 4.2.18). At the end of the first half of the year some countries had already reached their financing targets for 2005. A significant part of issuances had long maturities, given the demand for this type of asset. Taking advantage of the strong accumulation of foreign reserves, in December 2005 Brazil and Argentina fully repaid their loans to the IMF. Against a background of strong search for yield, debt issued in local currencies benefited from increased demand, notwithstanding the exchange rate risk underlying these instruments. Emerging market debt spreads continued to decline in 2005, sustaining the trend observed over the past few years (Chart 4.2.19). The disturbances in credit markets in April and May also affected spreads of sovereign issuers in emerging markets, albeit very moderately and temporarily, in comparison with the private debt market in advanced economies. A major risk for emerging market economies arises from the increase in long-term interest rates. This increase may imply some deterio-

Chart 4.2.17

PRICE-TO-EARNINGS RATIOS

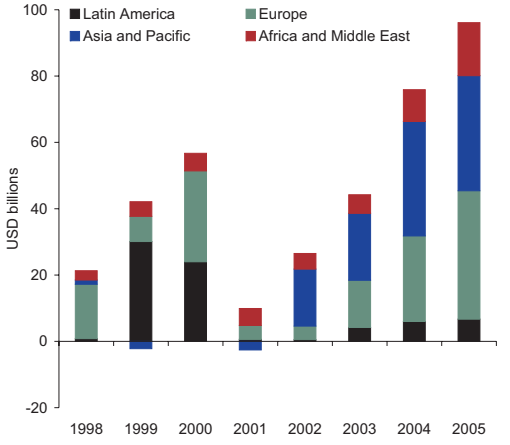


Sources: Thomson Financial Datastream and Banco de Portugal.
Note: Averages for the period from January 1983 to December 2005 (except for Portugal, where the average covers the period from January 1995 to December 2005). PER calculated as the ratio of the price index to the moving average of the last five years earnings.

Chart 4.2.18

INTERNATIONAL DEBT INSTRUMENTS ISSUED BY EMERGING MARKETS

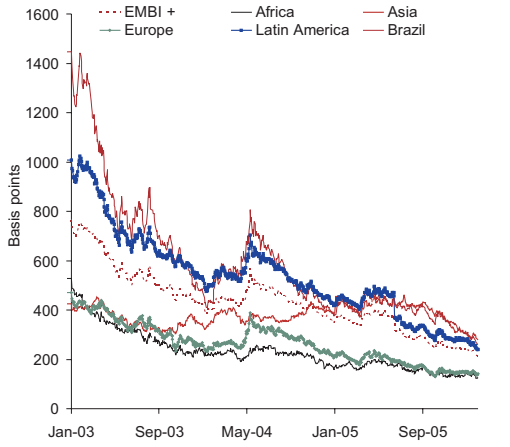
(Net issuance)



Source: BIS.

Chart 4.2.19

SPREADS BETWEEN GOVERNMENT BONDS ISSUED BY EMERGING MARKET ECONOMIES AND US GOVERNMENT BONDS [(a)]



Source: J.P. Morgan Chase.
Note: (a) EMBI+.

ration in financing conditions of emerging markets, given that the demand for profitability through investment in higher-risk instruments will lose some of its attractiveness to international investors. Moreover, in 2006 many of these countries will have a full electoral calendar, which may increase uncertainty and volatility in these markets. This may have stimulated the bringing forward of some of the issuances planned for 2006, which helps to explain the strong growth in debt issuance in emerging market economies over the last months of 2005.

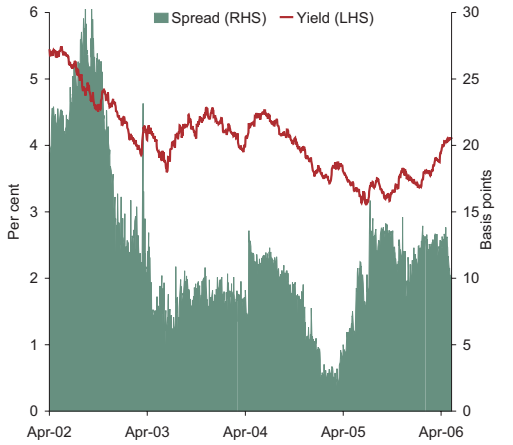
Financial Markets in Portugal

In the first half of 2005 the spread between ten-year bond yields in Portugal and Germany widened steadily, countering the narrowing recorded in 2004 (Chart 4.2.20). The gradual widening of these spreads may have reflected the results in France and the Netherlands of the referendums on the Treaty establishing a Constitution for Europe. In Greece and Italy, which also have an excessive fiscal deficit, financing costs in the debt market recorded similar developments, albeit maintaining higher spreads than those of the Portuguese government debt (Chart 4.2.21). Moreover, the increase in the spread of the Portuguese government debt may have also reflected expectations of a downward revision of the rating given to the Portuguese Republic by Standard & Poor's, following the negative outlook given in October 2004. However, the downgrade that occurred at the end of June 2005 (justified by developments in the Portuguese fiscal situation), which was accompanied by a downgrading from stable to negative of the outlook given to Portugal by Fitch, had a rather moderate impact on the financing costs of the Portuguese government debt. In fact, in the second half of 2005, the spreads of the Portuguese government debt interrupted the rising trend recorded in the first half of the year, standing at levels close to those recorded in mid-2004. Thus, developments in the first half-year had a relatively moderate, albeit persistent, effect on the financing costs of the Portuguese government debt.

In 2005 financing flows of Portuguese non-financial companies increased substantially, strengthening the trend recorded in the previous year (Chart 4.2.22). On one hand, bank lending flows increased sharply. On the other hand, the recourse to debt issuance in financial markets also expanded in 2005 through the issuance of both bonds (in particular, in the first half-year) and commercial paper (more

Chart 4.2.20

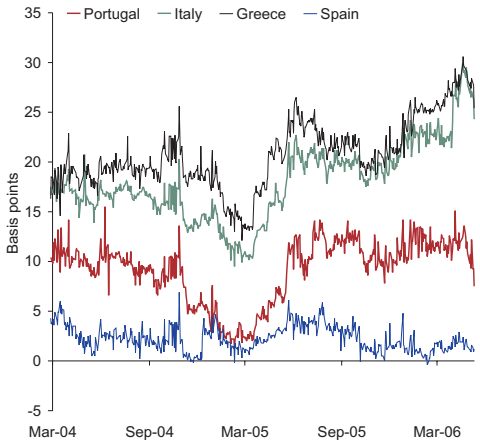
YIELDS ON PORTUGUESE GOVERNMENT BONDS AND SPREAD BETWEEN (10-YEAR) GOVERNMENT BONDS IN PORTUGAL AND GERMANY



Sources: Reuters and Banco de Portugal.
Note: End-of-day yields. The spread was calculated by interpolating the German yield curve, so as to ensure that the Portuguese 10-year benchmark bond is compared with a German bond with similar maturity.

Chart 4.2.21

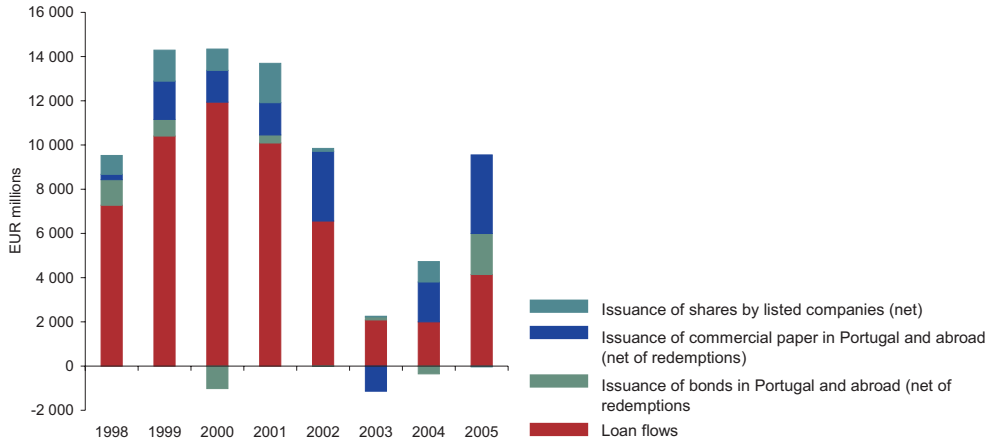
GOVERNMENT DEBT ASSET SWAP SPREADS (COMPARED TO GERMANY)



Source: Reuters.

Chart 4.2.22

FINANCING OF PORTUGUESE NON-FINANCIAL CORPORATIONS



Source: Banco de Portugal.

markedly in the second half-year).[5] In fact, the issuance of commercial paper involved quite significant amounts, compared with previous years. By contrast, net issuance of shares by listed non-financial corporations declined somewhat compared with previous years, reaching slightly negative figures for the year as a whole. Taking into account the total financing volume obtained through loans, securities

(5) Securities issued by branches and subsidiaries abroad of non-financial companies, in general with a negligible value, also increased sizeably in 2005.

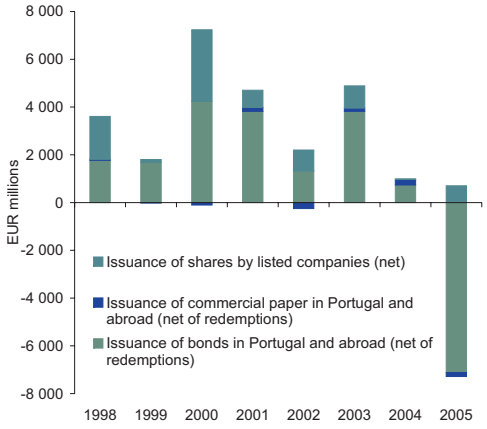
other than shares and trade credit, the indebtedness of non-financial corporations, measured as a percentage of GDP, increased slightly in 2005 (see "Chapter 6 *Credit Risk*").

Financing flows of financial corporations evolved in a very different manner from those of non-financial corporations, with a reduction in net debt issuance compared with the previous year (Chart 4.2.23). First, gross issuance of debt securities by branches and subsidiaries abroad of Portuguese banking groups, which account for a large share of their financing, recorded a relatively moderate growth in 2005. Like in 2004, issuance at long maturities persisted (for a more detailed analysis of the financing of the banking system, see "Chapter 5 *Liquidity Risk*"). Excluding issuance by branches and subsidiaries abroad, net issuance of bonds of financial corporations, in Portugal and abroad, became strongly negative in 2005. However, such developments were largely due to the early repayment of a very large amount of debt of a banking institution belonging to a non-domestic banking group, within the scope of a debt restructuring process of the group (partly counterbalanced by a significant increase in financing in the interbank money market), as well as to the early repayment of the near entirety of the debt of a non-domestic institution. Excluding the effect of these early repayments, net issuance of bonds by financial corporations was close to zero. In turn, recourse to the issuance of commercial paper by financial institutions remained negligible. Listed financial corporations recorded a positive volume of net issuance of equity, contrasting with 2004, when the recourse to this financing source had been close to zero. However, this issuance was exclusively due to the fact that convertible bonds issued by a Portuguese banking group matured at the end of the year.

In 2005 the Portuguese PSI Geral index continued the recovery trend started in mid-2003, with a positive rate of change of 17.2 per cent, i.e. slightly below the Dow Jones Euro Stoxx. The valuation of the Portuguese index exceeded 10 per cent in all sectors, with the exception of the companies of the technological sector, which recorded a negative price change in the course of 2005 (Chart 4.2.24 and Table 4.2.1). Industrial companies recorded the most significant valuation.[6] Share prices of financial services and utilities companies also increased sharply.[7] The price-to-earnings ratio increased only slightly in

Chart 4.2.23

FINANCING OF PORTUGUESE FINANCIAL CORPORATIONS

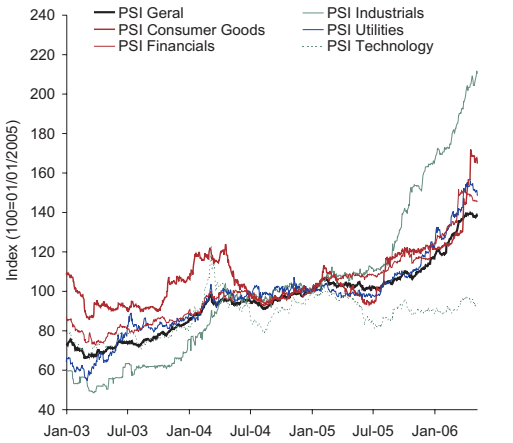


Source: Banco de Portugal.

Chart 4.2.24

PORTUGUESE STOCK PRICE INDEX

By sector of activity



Sources: Bloomberg and Euronext.

(6) The PSI Industrials represents around 19 per cent of the PSI Geral. It includes companies of the following sectors: industrial, highway management, construction, building materials, etc.

(7) These sectors represent, respectively, 29 and 15 per cent of the PSI Geral.

Table 4.2.1

DEVELOPMENTS IN THE PORTUGUESE PSI GERAL AND SECTORAL INDICES

Annual rate of change

Per cent

	2001	2002	2003	2004	2005	Change between 31 Dec. 2005 and 30 Apr. 2006	Weight in PSI Geral index
PSI Geral	-19.0	-20.7	17.4	18.0	17.2	17.7	
PSI 20	-24.7	-25.6	15.8	12.6	13.4	16.6	
PSI Basic Materials	-9.7	-14.2	15.1	15.6	16.7	27.9	1.3
PSI Industrials	-29.1	13.4	26.4	31.1	68.3	22.9	19.0
PSI Consumer Goods	-10.8	-13.1	-0.5	-6.7	21.2	39.0	0.5
PSI Consumer Services	-27.8	17.0	23.7	29.3	11.6	6.7	16.9
PSI Telecommunications	-17.7	-24.6	27.1	20.6	12.0	17.8	18.3
PSI Utilities	-27.2	-31.4	38.0	15.5	21.7	23.8	14.6
PSI Financials	-14.6	-24.8	4.0	12.0	24.4	17.7	29.0
PSI Technology	-58.9	-37.9	4.5	24.0	-9.5	4.8	0.5

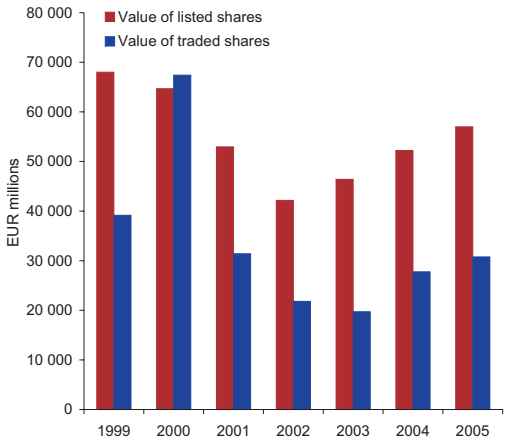
Sources: Bloomberg and Euronext.
Note: Weight in the index at 31 Mar. 2006.

2005, as a consequence of the share price valuation, given that the results of Portuguese listed companies had an overall positive evolution in 2005 (Chart 4.2.17). However, although the price-to-earnings ratio has been increasing gradually since the beginning of 2003, at end-2005 it still remained well below its historical average. The volume of transactions increased by approximately 9 per cent in 2005, while the stock market capitalisation rose by around 5 per cent (Chart 4.2.25). In turn, the turnover ratio, defined as the ratio of the value of traded shares to the value of quoted shares, did not record significant changes, remaining slightly above 50 per cent.

The historical volatility recorded by the Portuguese index remained at levels well below those recorded in the euro area and in the United States (Chart 4.2.26). In February 2005 volatility increased slightly,

Chart 4.2.25

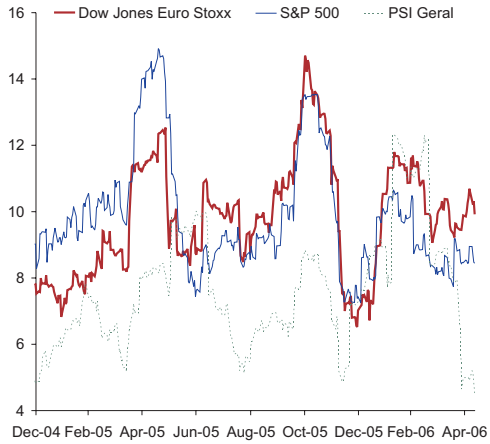
SECONDARY MARKET



Source: Euronext.

Chart 4.2.26

HISTORICAL VOLATILITY OF STOCK PRICE INDICES



Sources: Bloomberg and Banco de Portugal.
Note: The historical volatility is computed as the annualised standard deviation of daily changes over 30-business-day periods.

possibly due to the legislative elections. In the following months, the historical volatility returned to levels close to those seen at the end of 2004. In mid-April volatility increased further in the Portuguese equity market, in line with international developments, as a consequence of the situation of companies in the automobile sector. However, while at international level volatility decreased considerably from May onwards, in Portugal volatility continued to increase until July. This may have reflected, to a certain extent, uncertainty about a possible downgrading of the rating of the Portuguese Republic. When the downgrading materialised, volatility in the Portuguese financial market declined substantially. In fact, from July onwards, the volatility of the Portuguese stock index declined sharply and the valuation trend of the index also strengthened. In November, there was a further transitory and moderate increase in volatility, in line with international developments, possibly related to uncertainty as regards the timing of an increase of ECB's key interest rates.

4.3. Financial System and Capital Markets

Overall positive developments in financial markets since 2003 have conditioned favourably the performance of banking groups and insurance corporations at international level. However, the persistence of interest rates at historically low levels, chiefly in the euro area, and the virtually flat yield curve, in particular in the United States, have exerted strong pressure on the financial margins of the banking sector. As a consequence, banks have strong incentives to look for alternative income sources (such as commissions from investment activities or from mergers and acquisitions), made easier by the buoyancy of the financial markets. Besides, the squeeze in the financial margin intensifies competitive pressure on the banking sector, which may explain in part the easing of the credit standards applied to the approval of bank loans.[8] This behaviour may result from taking risks that may materialise when the economic activity starts to decelerate. In the United States, as mentioned above, there are expectations that the default rate has reached its cyclical trough. This strengthens the relevance of this question, in particular against a background of strong growth of household indebtedness, through the increasing recourse to financing at variable rates. The cyclical position of the euro area economy is quite different from that of the US economy. Therefore, the reversal of the credit cycle may show some lag in comparison with the United States.

In the United States, where the valuation of stock indices, despite being positive, was far lower than in 2004, the banking sector index declined by 2.2 per cent (Chart 4.3.1). The weak performance of banking sector share prices may be related to pressure exerted on the financial margin, resulting from the virtually flat yield curve. Conversely, the insurance corporations' index recorded quite positive developments, notwithstanding the losses resulting from hurricane Katrina damage. In the euro area, shares of banks and insurance corporations performed quite favourably, increasing by more than 25 per cent and exceeding the overall index (Chart 4.3.2). This valuation should reflect, on one hand, the positive earnings recorded by the major European banks and, on the other, expectations regarding future gains resulting from the consolidation of the process of cross-border mergers and acquisitions of European banks.[9] Likewise, the performance of shares of Portuguese banks was quite positive. The PSI Financials index recorded a valuation of around 24 per cent in 2005, with particularly robust growth in the second half of the year. Taking only into account the three major Portuguese listed banks, different

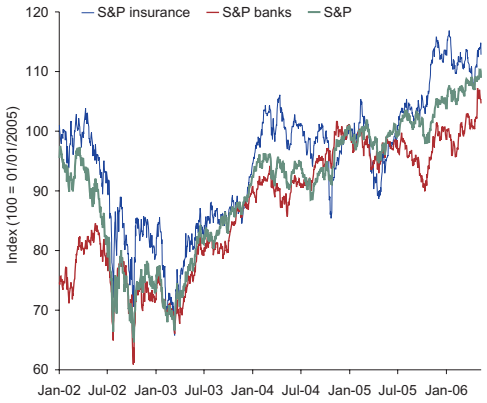
(8) Taking into consideration the qualitative surveys made to US and euro area banks (Senior Loan Officer Opinion Survey and Bank Lending Survey, respectively).

(9) See, for example, Y. Altunbas and D. M. Ibáñez (2004), "*Mergers and acquisitions and bank performance in Europe: the role of strategic similarities*", ECB *Working Paper* No 398. According to this work, bank mergers in the European Union in the past few years gave rise to increases in their profitability.

Chart 4.3.1

SHARE PRICES OF THE BANKING AND INSURANCE SECTORS VS THE TOTAL STOCK MARKET

US – Standard & Poors 500

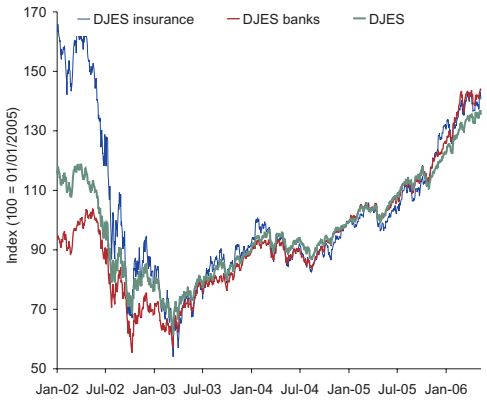


Source: Bloomberg.

Chart 4.3.2

SHARE PRICES OF THE BANKING AND INSURANCE SECTORS VS THE TOTAL STOCK MARKET

Euro area – Dow Jones Euro Stoxx



Source: *Bloomberg*.

developments were recorded: while shares of BES recorded quite moderate growth, shares of BPI and BCP recorded very significant growth in the course of 2005.[10] (Chart 4.3.3).

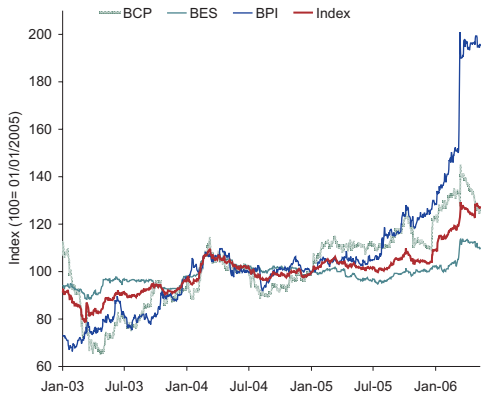
In line with developments in share prices, the evolution of the price-to-earnings ratio of the banking sector in the euro area and in the United States was quite different (Chart 4.3.4). While in the euro area the strong valuation of bank shares gave rise to a slight increase in this ratio, in the United States there was an opposite evolution. Taking into consideration estimates of market analysts, the price-to-earnings ratios of the banking sector may decrease slightly, both in the United States and in the euro area. In Portugal, the price-to-earnings ratio of the banking sector increased strongly, mirroring the valuation of this sector's shares. In fact, following the disclosure of quite positive results by Portuguese listed banks (see "Chapter 3 *Activity, Profitability and Risk Coverage*"), investors continue to incorporate favourable prospects for the future trend of the Portuguese banking system's profitability.

Spreads of debt securities issued by euro area banks also reacted to developments in credit markets in April and May 2005, having recorded a slight increase from the historically low levels observed at the end of 2004 (Chart 4.3.5). However, from June onwards, after the unwinding of financial market volatility, this increase was not fully reversed, in particular regarding issuance with higher levels of subordination. As a result, the degree of differentiation between debt securities issued by European banks with different subordination levels increased slightly in 2005. At the end of the year, securities spreads of European banks recorded a further slight rise in some segments, in line with overall debt market developments. Spreads of securities issued by Portuguese banks, in general, moved in line with those of comparable securities issued by European banks, having interrupted the downward trend observed

(10) The rise in BPI shares was particularly strong in the second half of the year, while the growth rates of BCP shares were rather high for most of the year, with the exception of the last quarter, due to uncertainty about the internationalisation strategy of this banking group. The fact that in December the attempt to buy a bank abroad did not materialise, was positively valued by investors, with a consequent strong recovery in the price of these shares. The announcement of the BCP takeover bid on BPI in early March 2006 led to a strong valuation of these banks' shares. In March, the price of BPI shares increased by approximately 30 per cent (largely as a consequence of the value offered by BCP for each share), while the price of BCP shares increased by around 6 per cent. However, in April, in part, following the decision by the Board of Directors of BPI to reject the takeover bid of BCP, the price of BCP shares declined by around 4 per cent.

Chart 4.3.3

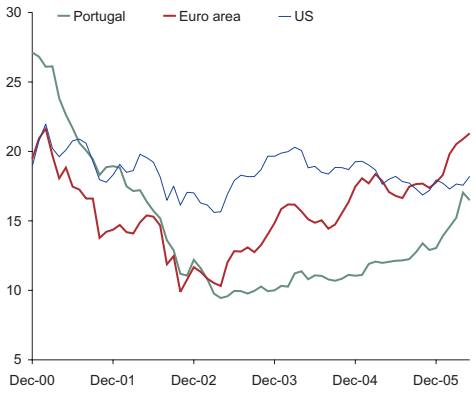
DEVELOPMENTS IN SHARE PRICES OF THREE PORTUGUESE BANKS AND IN THE INDEX COMPRISED OF THE SAME BANKS



Sources: Bloomberg and Banco de Portugal.
Note: The index is calculated by keeping unchanged in the denominator the capitalisation as at 31 Dec. 2003.

Chart 4.3.4

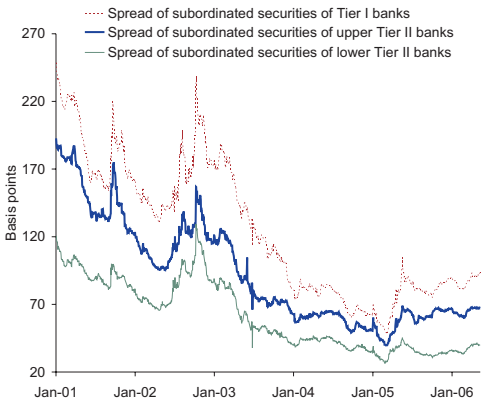
PRICE-TO-EARNINGS RATIO OF THE BANKING SECTOR



Sources: Thomson Financial Datastream and Banco de Portugal.
Note: PER calculated as the ratio of the price index to the moving average of the last five years earnings.

Chart 4.3.5

SPREADS BETWEEN SUBORDINATED SECURITIES ISSUED BY EUROPEAN BANKS (DENOMINATED IN EURO) AND GOVERNMENT BONDS



Sources: Bloomberg and JP Morgan.
Note: Spreads refer to three distinct levels of debt subordination. Tier one represents the highest degree of subordination (i.e. the riskier exposure), while Tier two represents the lowest degree of subordination.

since the beginning of 2003[11] (Table 4.3.1, Charts 4.3.6 and 4.3.7). Overall, these swings in the financing cost of Portuguese banks in international debt markets were not significant. As a consequence, at

(11) In this regard, in the second half of the year, developments in spreads of bonds issued by CGD were slightly different from those of comparable bonds of other European banks, remaining at slightly higher values. These developments may have been due to the downgrading from stable to negative of the outlook given by Fitch to the CGD group.

Table 4.3.1

SPREADS OF FIXED SECURITIES ISSUED BY EUROPEAN BANKS [a]

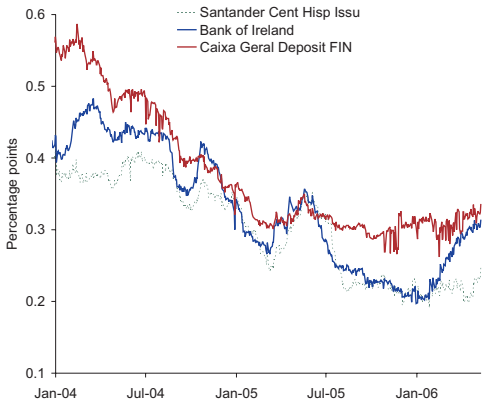
	Subordinated (Y/N)	Maturity	Rating Bloomberg Composite[b]	Spread 31 Dec. 2005 (p.p.)	Change since 31 Dec. 2004 (p.p.)	Change between the maximum and 31 Dec. 2005[c]
RABOBANK NEDERLAND	N	05 Jun. 2006	AAA	0.12	-0.02	-0.11
BANK OF IRELAND MTGE BNK	N	22 Sep. 2009	AAA	0.13	-0.01	-0.07
BANCO SANTANDER CENT-HIS	N	12 Mar. 2006	AA+	0.06	-0.03	-0.16
BANCO SANTANDER CENT-HIS	N	19 Dec. 2008	AA+	0.13	-0.03	-0.16
BANCO SANTANDER CENT-HIS	N	15 Mar. 2009	AA+	0.22	-0.04	-0.18
BANESTO SA	N	12 May. 2010	AA+	0.12	0.02	-0.12
BANCO SANTANDER CENT-HIS	N	10 Sep. 2010	AA+	0.17	0.02	-0.13
BANCO ESPANOL DE CREDITO	N	23 Feb. 2011	AA+	0.14	-0.05	-0.13
BANCO SANTANDER CENT-HIS	N	07 Feb. 2012	AA+	0.14	0.14	-0.05
BANESTO SA	N	16 Sep. 2014	AA+	0.19	0.02	-0.05
BANESTO SA	N	27 Jan. 2015	AA+	0.19	0.19	-0.04
BANCO SANTANDER CENT-HIS	N	29 Jul. 2016	AA+	0.22	0.01	-0.05
BANCO DE SABADELL SA	N	26 Jan. 2011	AA	0.14	-0.02	-0.13
BANCO DE SABADELL SA	N	29 Apr. 2013	AA	0.17	-0.03	-0.18
BANCO DE SABADELL SA	N	15 Jun. 2015	AA	0.22	0.22	-0.03
CAIXA GERAL DE DEPOSITOS	**N**	**18 Jun. 2008**	**AA-**	**0.25**	**0.00**	**-0.37**
CAIXA GERAL DE DEPOSITOS	**N**	**18 Jun. 2008**	**AA-**	**0.25**	**0.00**	**-0.37**
BANESTO ISSUANCES LTD	N	29 Jul. 2007	A+	0.28	-0.05	-0.88
BBV INT'L FIN (CAYMAN)	N	24 Dec. 2009	A+	0.36	0.02	-0.85
BANK OF IRELAND	N	22 Oct. 2010	A+	0.35	-0.04	-0.26
BANKINTER SA	N	18 Dec. 2028	A+	0.43	0.42	-0.63
BCP FINANCE BANK LTD	**N**	**09 Oct. 2006**	**A**	**0.45**	**0.01**	**-0.33**
BANCO POP VERONA NOVARA	N	16 Feb. 2007	A	0.26	-0.13	-0.27
BCP FINANCE BANK LTD	**N**	**31 Aug. 2007**	**A**	**0.29**	**-0.05**	**-1.05**
SNS BANK NEDERLAND	N	05 Nov. 2007	A	0.28	-0.13	-0.77
SNS BANK NEDERLAND	N	14 Feb. 2008	A	0.27	-0.07	-0.73
BCP FINANCE BANK LTD	**N**	**22 Dec. 2008**	**A**	**0.38**	**0.06**	**-0.27**
BANCO POP VERONA NOVARA	N	21 Jan. 2009	A	0.28	0.28	-0.06
SNS BANK NEDERLAND	N	01 Dec. 2009	A	0.28	0.28	-0.07
BES FINANCE LTD	**N**	**25 Mar. 2010**	**A**	**0.36**	**-0.04**	**-0.44**
SNS BANK NEDERLAND	N	28 May. 2014	A	2.09	0.30	-0.68
SNS BANK NEDERLAND	N	12 Nov. 2014	A	0.14	0.14	-0.20
SNS BANK NEDERLAND	N	10 Dec. 2014	A	0.13	-0.24	-0.25
BCP FINANCE BANK LTD	**N**	**31 Mar. 2024**	**A**	**0.82**	**0.09**	**-0.08**
BANCO BPI SA CAYMAN	**N**	**31 Aug. 2006**	**A-**	**0.40**	**-0.01**	**-0.89**
BANCO BPI SA CAYMAN	**N**	**31 Aug. 2007**	**A-**	**0.29**	**-0.05**	**-1.05**
BES FINANCE LTD	**N**	**12 Feb. 2009**	**A-**	**0.39**	**0.04**	**-0.25**
EUROHYPO SA DUBLIN	N	12 Mar. 2009	A-	0.35	0.10	-0.52
ING BANK NV	Y	15 Jun. 2010	AA-	0.18	-0.09	-0.73
BANCO INTERCONTINENTAL	Y	16 Jun. 2007	A+	0.28	-0.24	-0.73
BANCO INTERCONTINENTAL	Y	29 May. 2008	A+	0.88	0.00	-0.31
BBV INTL FINANCE LTD	Y	25 Feb. 2010	A+	0.18	-0.10	-1.58
ABN AMRO BANK NV	Y	28 Jun. 2010	A+	0.16	-0.12	-0.95
BANKINTER SA	Y	18 Dec. 2012	A+	0.49	-0.11	-0.42
CAIXA GERAL DEPOSIT FIN	**Y**	**12 Oct. 2009**	**A**	**0.30**	**-0.06**	**-0.77**
BANK OF IRELAND	Y	10 Feb. 2010	A	0.20	-0.15	-0.73
SANTANDER CENT HISP ISSU	Y	05 Jul. 2010	A	0.22	-0.13	-2.38
SANTANDER CENT HISP ISSU	Y	14 Mar. 2011	A	0.25	-0.12	-2.28
HYPOVEREINS FINANCE NV	Y	12 Mar. 2007	A-	0.42	-0.21	-2.60
HYPOVEREINS FINANCE NV	Y	25 Feb. 2008	A-	0.49	-0.12	-2.32
BCP FINANCE BANK LTD	**Y**	**29 Mar. 2011**	**A-**	**0.41**	**0.00**	**-1.94**
SNS BANK NEDERLAND	Y	15 Apr. 2011	A-	0.44	-0.10	-0.55
SNS BANK NEDERLAND	Y	15 Apr. 2011	A-	0.44	-0.10	-0.55
BES FINANCE LTD	**Y**	**17 May. 2011**	**A-**	**0.47**	**-0.03**	**-1.75**
Average				**0.32**	**-0.01**	**-0.62**

Sources: Bloomberg and Banco de Portugal.
Notes: (a) Sample of banks defined by taking into account banks whose size is comparable to that of the Portuguese banks considered. In addition, the ratings and maturities of bonds considered in this table are close to those of the Portuguese banks analysed, to ensure the comparability of spreads. (b) Bloomerberg Composite – average of Moody's and S&P's . (c) Maximum observed since the beginning of 2002.

Chart 4.3.6

SPREADS OF SUBORDINATED FIXED-RATE DEBT SECURITIES ISSUED BY EUROPEAN BANKS

Rating A

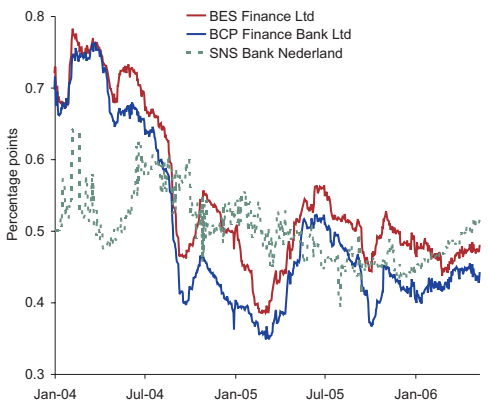


Sources: Bloomberg and Banco de Portugal.
Note: Spreads derived from the yield of German Treasury bonds with comparable residual maturity.

Chart 4.3.7

SPREADS OF SUBORDINATED FIXED-RATE DEBT SECURITIES ISSUED BY EUROPEAN BANKS

Rating A



Sources: Bloomberg and Banco de Portugal.
Note: Spreads derived from the yield of German Treasury bonds with comparable residual maturity.

the end of 2005, the securities spreads of these banks stood close to the minimum levels recorded at the end of 2004. Overall favourable conditions in the debt markets translated into a substantial amount of issuance through branches and subsidiaries abroad. Notwithstanding, in net terms this type of issuance is estimated to have been slightly lower than in 2004.

Although there are only credit default swaps[12] (CDS) with regular transactions for some of the major Portuguese banks, through their monitoring, it is possible to understand how financial market participants assess the credit risk of these banking groups. Between April and July 2005, CDS prices of Portuguese banks recorded strong volatility, in line with developments in both international debt markets and the spreads of the Portuguese government debt. From July onwards, the volatility (and the price) of these credit derivatives declined. For most of the year, CDS prices of Portuguese banks were lower than those of the DJ iTraxx Financial index,[13] despite a strong convergence in the last months of the year.

In 2005 there was only one change in the rating of the major Portuguese banking groups, namely the upgrade from C+ to B- of the Bank Financial Strength rating[14] of Santander Totta group by Moody's. In 2005 there were several changes in the outlook given by rating agencies. Thus, rating agencies revised on two occasions the outlook given to two of the major Portuguese banks, although in opposite directions. On one hand, in March 2005 Standard & Poor's changed from stable to positive the outlook given to the Millennium BCP group. On the other hand, in July Fitch changed from stable to negative the outlook given to CGD group, in line with the change in the outlook given to the Portuguese Republic.

In the first months of 2006, Standard & Poor's gave a positive outlook to BES. In addition, the ratings of Millennium BCP and Santander Totta group were upgraded by Standard & Poor's (in March and May

(12) Credit default swaps are credit derivatives that provide protection against the default of a given company.

(13) The DJ iTraxx Financial index incorporates CDS of 25 European banks and insurance corporations (including two Portuguese private banks).

(14) The Bank Financial Strength rating represents a measure of the probability of a bank resorting to external support, assessing the safety and stability of the bank itself and excluding external credit and external support risk elements.

2006, respectively). In turn, the ratings given to BPI by this agency were revised upwards, following the announcement of the takeover bid by Millennium BCP.

4.4. Impact of Capital Market Developments on Portuguese Banks

As mentioned above, due to the overall favourable performance of financial markets in 2005, Portuguese banks continued to benefit from favourable financing conditions. In addition, these developments enabled Portuguese banks to obtain substantial gains from their securities portfolio, as well as from their holdings of financial assets. Besides, the buoyant activity in the financial markets led to better results in asset management operations, making an important contribution to the persistence of high profitability levels in the banking system, even in a context of financial margin squeeze. Finally, portfolios managed by the pension funds of bank employees also benefited, in general, from the situation in international financial markets in 2005. However, notwithstanding this positive effect, Portuguese banks had to make large contributions to their pension funds, as a consequence of the implementation of the International Accounting Standards (IAS), which led to a revision of actuarial assumptions, as well as to an additional coverage of specific types of expenditure, which previously were not included in liabilities of pension funds.

The implementation of IAS brought about substantial changes in the valuation of the financial assets held by banks. While formerly only the securities held for trading were measured at fair value (the other securities were recorded at acquisition cost), in accordance with the IAS, the near entirety of the securities portfolio held by banks must be recorded at fair value. As a consequence, this change allows for a better assessment, at each moment, of the banks' financial investments, since prices and not the historical acquisition cost are taken into account. However, this change in the valuation criteria increased considerably the sensitivity of the balance sheet of banks to fluctuations in financial markets. Thus, while in 2005 developments in financial markets, in general, enabled a positive valuation of the securities portfolios of banks, in a year of unfavourable financial market performance, banks may record significant losses. However, it is important to note that part of the market risk implied in banks' assets may be offset by hedging derivatives, which mitigate (or cancel out) some risks.

With the implementation of IAS, the portfolio of securities and financial fixed assets of banks is broken down into several items, taking chiefly into consideration the purpose for which such assets are held, namely, (i) financial assets held for trading, (ii) other financial assets measured at fair value through profit or loss, (iii) available-for-sale financial assets, (iv) held-to-maturity investments, and (v) investment in subsidiaries. In 2005 these items recorded significant growth, with the exception of the available-for-sale financial assets portfolio (Chart 4.4.1).[15]

The growth of the financial assets held for trading, which represents around one third of the securities and financial fixed assets portfolio of banks, was quite significant in 2005.[16] This portfolio, which is measured at fair value, is chiefly comprised of debt securities, most of which are government securities. In addition, this portfolio also includes some derivatives with positive fair value (accounting for around 30 per cent of this item), which are chiefly interest rate swaps.[17]

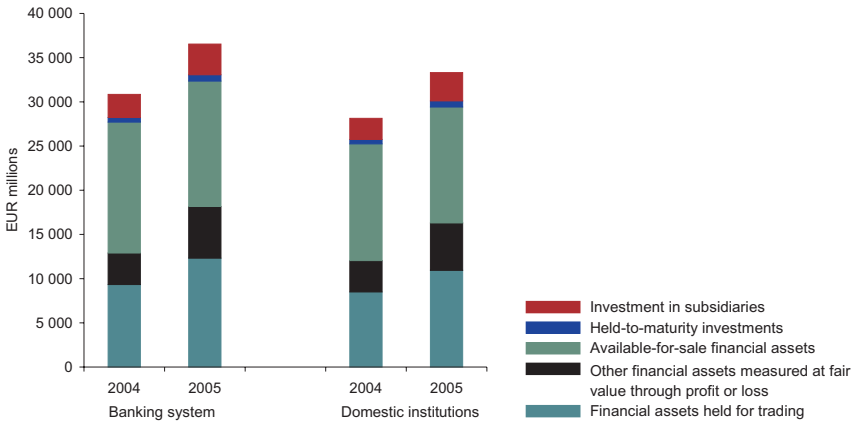
(15) The comparison between 2004 and 2005 is made on the basis of Instruction of Banco de Portugal No 30/2005, which establishes a specific set of items to be reported by the 13 banking groups that adopted the IAS in 2005. As the data for 2004 are only a pro forma, in order to guarantee some comparability between the two years, these figures should be interpreted with caution, given the importance of the change in the valuation criteria of some assets.

(16) It should be noted that part of the changes recorded in the securities and financial fixed assets portfolios of banks may reflect the non-adoption by some banking groups of IAS 32 and 39 (Financial instruments: disclosure, presentation, recognition and measurement) in the 2004 fiscal year. This originates an increase in these items in 2005, resulting from the revaluation at fair value of the assets therein included.

(17) In accordance with the IAS, all financial derivatives are included in this portfolio, except when they are explicitly held to hedge exposures.

Chart 4.4.1

SECURITIES PORTFOLIO OF THE BANKING SYSTEM



Source: Banco de Portugal.

In turn, the portfolio of other financial assets measured at fair value through profit or loss had a rather positive performance in 2005. This portfolio is chiefly comprised of debt securities. Unlike the securities of the held-for-trading financial assets portfolio, most of the securities held in this portfolio are from (resident and non-resident) private issuers. This portfolio also includes some of the securities acquired through securitisation transactions. Gains and losses in these two portfolios measured at fair value are recognised on the profit and loss account of the respective fiscal year. It should be noted that these gains and losses may arise from realised gains/losses from the sale of these assets, as well as from unrealised gains/losses arising from changes in the fair value of assets.

The available-for-sale financial assets portfolio recorded a negative change in 2005, which seems to be related to sales of assets recorded in this portfolio, given the overall positive performance of prices in financial markets. This should mostly reflect the sale of non-strategic holdings in financial corporations outside the core activity of banking groups. This portfolio, which represents more than one third of the securities and financial fixed assets portfolio of banks, records all financial assets which are not held for trading neither held to maturity. Most of this portfolio is measured at fair value, although there are also some assets measured at historical cost. Unrealised gains and losses in the available-for-sale financial assets portfolio are deferred as a reserve in own funds. The profit and loss account only recognises assets when sold (with the exception of impairment, which must be immediately recognised on the profit and loss account). Most of the shares held by banks are recorded in this portfolio.

The portfolio of held-to-maturity financial assets has a relatively small weight in total financial investment of banks (approximately 2 per cent). This portfolio, which also posted significant growth in 2005, records assets with fixed payments and maturity, which the institution intends to hold up to maturity. In 2005 this portfolio was essentially comprised of government debt securities of non-resident issuers.

Finally, investment in subsidiaries also recorded quite significant growth in 2005. This item includes investment in subsidiaries excluded from consolidation as well as in associated and joint undertakings, accounting approximately for 10 per cent of investments and financial fixed assets of Portuguese banks.

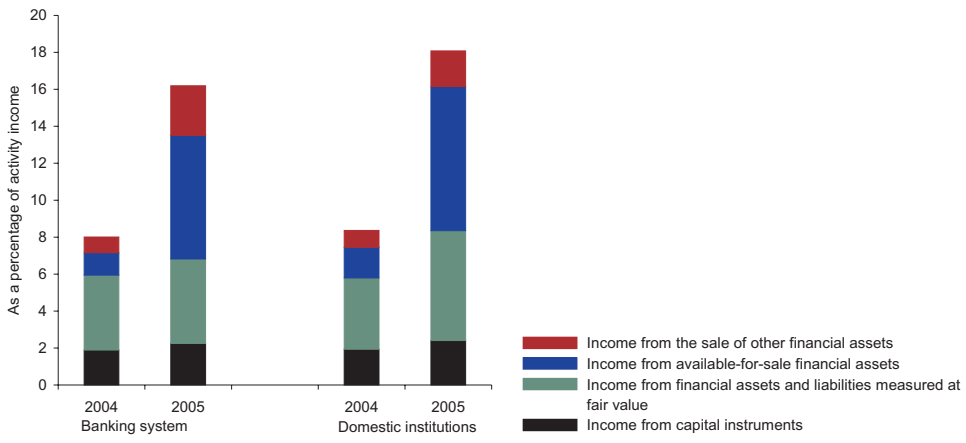
As mentioned above, part of the risk underlying the securities portfolio held by banks is hedged by derivatives. With the implementation of IAS, these derivatives started to be explicitly recorded on the balance sheet of banks. In this regard, it should be noted that hedging derivatives increased significantly in 2005. Most of these derivatives are used to hedge the fair value, with the purpose of reducing the sensitivity of portfolios to fluctuations in financial markets. In addition, some of the derivatives held are used to hedge cash flows, i.e. mainly interest rate swaps.

Overall, the globally positive developments in financial markets contributed to a favourable performance of the portfolios of financial investments held by Portuguese banks. In 2005 the financial assets measured at fair value (including the held-for-trading financial assets portfolio), held-to-maturity investments and investment in subsidiaries recorded a remarkable growth. Only the available-for-sale financial assets portfolio recorded a negative change in 2005, chiefly due to the sale of assets included in this portfolio.

As a consequence of the implementation of IAS, changes in the fair value of some financial assets have an immediate impact on the profit and loss account of the respective fiscal year, which will be added to the profit and loss arising from the sale of financial assets, as mentioned above. As a consequence of the overall positive developments in financial markets, Portuguese banks recorded significant gains from securities and other financial investment (see "Chapter 3 *Activity, Profitability and Risk Coverage*"). Income from capital instruments, which essentially cover dividends received, recorded quite significant growth in 2005 (Chart 4.4.2). In turn, gains and losses arising from financial assets and liabilities measured at fair value also increased in 2005, as a consequence of the gains from debt securities and capital instruments recorded in these portfolios. Significant gains were also recorded in the derivative instruments held for trading (chiefly foreign exchange swaps), in spite of the losses in hedging derivatives. Income from available-for-sale financial assets also increased substantially, chiefly due to equity and other capital instruments issued by non-residents. Considering that unrealised gains and losses on assets available for sale are recorded under reserves, being only recognised on the profit and loss account when these assets are sold, the value recorded by this item suggests that Portuguese banks sold this type of assets, as reflected by the negative change in the available-for-sale financial assets portfolio, which seems to have been associated with the sale of non-stra-

Chart 4.4.2

INCOME OBTAINED FROM THE SECURITIES PORTFOLIO



Source: Banco de Portugal.

tegic holdings that do not fall within the core activity of the banking groups. Finally, gains and losses arising from the sale of other financial assets also increased, chiefly due to gains in investment in subsidiaries excluded from consolidation. As a whole, gains and losses from financial investment represented around 16 per cent of banking gross income.

Activity in financial markets also affects the profitability of banks via the commissions charged on securities and financial operations. On the whole, income from services and commissions increased by approximately 15 per cent in 2005 (see "Chapter 3 *Activity, Profitability and Risk Coverage*"). However, this item includes commissions not related to the securities market.[18] In 2005 around two thirds of these commissions were related to services supplied by banks, which include investment fund management and redemption fees, commissions for investment funds management or commissions for the preparation of operations (which, as a whole, represent around 30 per cent of commissions from services supplied). In addition, commissions from transactions carried out on behalf of third parties (which include brokerage fees) represented around 10 per cent of gains/losses from commissions and services in 2005.

In 2005 the portfolios held by the pension funds of bank employees benefited from the overall positive developments in the financial markets. However, the implementation of IAS, which had already had some impact in 2004, brought about significant changes in the value of liabilities to be hedged in 2005. Actuarial gains and losses increased significantly in 2005, in line with 2004, as a consequence of the change in the actuarial assumptions (Table 4.4.1). In fact, the change in the discount rate used to calculate the current value of the funds' liabilities to a level closer to that of long-term interest rates and the revision of the mortality tables gave rise to a strong expansion of these liabilities. With regard to the impact observed in 2004 and 2005, it should be noted that actuarial gains and losses recorded in 2004 were largely related to the transfer to *Caixa Geral de Aposentações* (Portuguese civil servants pension scheme) of the pension fund of one of the major banking groups, which implied the revaluation of liabilities of this fund, as a consequence of the implementation of IAS. For the remaining banks, although some actuarial assumptions were slightly revised in 2004, the most significant changes were made only in 2005. Also as a consequence of the implementation of IAS, pension fund liabilities also increased, due to the inclusion of post-employment medical care and death grants.[19] Taking into account these effects, the increase in pension fund liabilities was higher than in assets, in spite of the valuation recorded by the financial assets held. As a consequence, Portuguese banks had to make significant contributions to their pension funds.[20] All in all, the growth of the minimum level of liabilities to be covered was slightly lower than the valuation of the assets held by pension funds (including the item "other coverage"), therefore complying with the minimum regulatory requirements.

(18) Instruction of Banco de Portugal No 30/2005, which enables a comparison between 2004 and 2005, does not include more disaggregated data on this item.

(19) Given the impact on own funds of some regulatory changes, during a transitional period, it will be possible to defer the prudential recognition. In this respect, liabilities on account of early retirement, which were still recorded as a deferred cost, and the increase in liabilities on account of death grants and of changes in the actuarial assumptions can be deferred over a period of 5 years. However, liabilities on account of post-employment medical care and changes related to the mortality table can be deferred over a period of 7 years (Notice of Banco de Portugal No 12/2001).

(20) As explained in "Chapter 3 *Activity, Profitability and Risk Coverage*", contributions made by banks to the respective pension funds were not reflected in the costs for the year, as these contributions result largely from the impact of the transition to a different accounting regime. Therefore, they are recorded as a counterpart of a capital item.

Table 4.4.1

PENSION FUNDS – BANKING SYSTEM

EUR millions

	2001	2002	2003	2004	2005
Annual increase in liabilities					
Actuarial gains and losses	637	784	264	635	1 196
of which:					
Actuarial gains and losses arising from differences between assumptions and realised values	629	763	87	-26	-90
Actuarial gains and losses arising from changes in assumptions and, where applicable, in the plans' conditions	7	22	177	660	1 286
Increase in liabilities arising from early retirement programmes	440	235	242	369	242
Annual increase in liabilities	1 254	1 225	709	1 195	1 665
Liabilities					
Total liabilities	8 556	9 371	10 328	9 236	12 208
Minimum level of liabilities to be covered	8 189	9 029	10 003	8 979	11 698
Pension fund					
Pension fund value at the beginning of the year	**7 074**	**7 878**	**8 743**	**9 818**	**8 553**
Net income of the fund	-256	-309	757	680	839
Contributions to the fund	1 430	1 640	816	1 107	2 321
Contributions made by the beneficiaries	35	40	42	43	44
Retirement pensions paid by the fund	405	454	498	533	521
Survivors pensions paid by the fund	20	21	23	20	26
Changes in the value of the fund resulting from termination	0	0	0	0	0
Other net changes	9	-42	-18	-2 430	200
Pension fund value at the end of the year	**7 868**	**8 732**	**9 819**	**8 664**	**11 409**
Coverage of the fund (pension fund value at the end of the year – Minimum liabilities level to be covered)	**-321**	**-297**	**-184**	**-315**	**-289**
Other coverage	10	146	199	231	420
Coverage of the fund (pension fund value at the end of the year (including other coverage) – Minimum liabilities level to be covered))	**-311**	**-151**	**15**	**-84**	**131**

Source: Banco de Portugal.

Box 4.1. Some Factors Explaining Long-Term Interest Rates in the United States and The Euro Area in 2005

The relative stability of long-term interest rates in recent years in the United States, against a background of rising federal funds rates, has led to some discussion on the factors underlying this discrepancy. In fact, in the last months of 2005 risk-free interest rates in the United States were virtually the same across the entire maturity spectrum, being reflected in a flat yield curve (Chart 1). In turn, in the euro area, the slope of the yield curve has also been flattening since 2004, although the key ECB rates were raised for the first time only in December 2005, following a protracted period of unchanged rates (Chart 2).

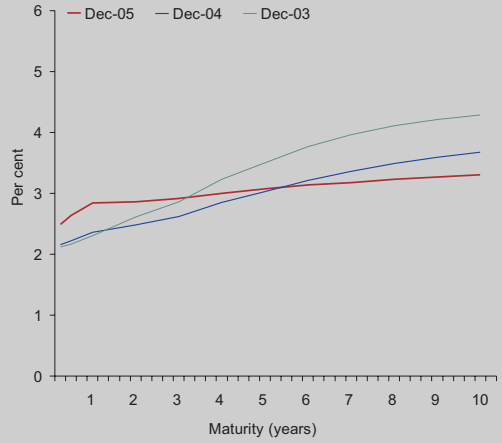
The cycle of interest rate hikes observed in 1999 and 2000 was also accompanied by a pronounced flattening of the yield curve, although there are a few differences with respect to the current tightening of monetary policy. First, long-term (and short-term) interest rates over that period were much higher than at the end of 2005 (Chart 3). In addition to this difference in the interest rate level, the cycle of interest rate hikes started by the US Federal Reserve in June 2004 has diverged from other past cycles regarding other aspects, namely due to its later start compared with market expectations, a clear communication on subsequent decisions, and the gradual and constant nature of the rise in interest rates.

Several explanations have been given for the persistence of long-term interest rates at relatively low levels in the United States, against a background of rising short-term interest rates. Such explanations may be grouped into two not mutually exclusive classes. One of the classes associates the behaviour of yields with macroeconomic prospects. Hence, the current level of long-term interest rates is likely to reflect stable inflation expectations, which have remained anchored at low levels.

Another class discusses a number of factors specific to net demand for assets with long maturities, regardless of economic conditions. Such factors are mainly related to the maturity premium compensating investors for making long-term investments.[1] The decline in the maturity premium demanded by investors has been indicated as the most likely factor behind the low level of long-term interest rates. This decline may be explained by several factors, whose relative importance is difficult to assess. First, long-term securities became relatively more attractive due to the lower volatility of economic activity and more stable inflation than in previous decades, given the objective of

Chart 1

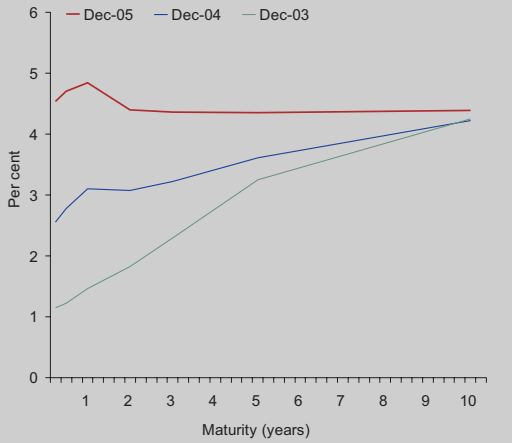
YIELD CURVE – EURO AREA



Source: Bloomberg.

Chart 2

YIELD CURVE – UNITED STATES

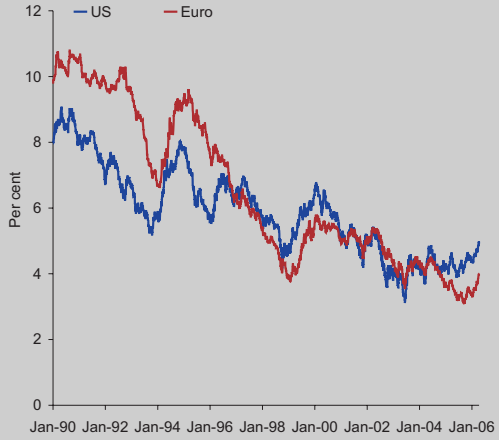


Source: Bloomberg.

(1) *The long-term interest rate may be considered an average of the spot rate and various forward interest rates which, in turn, can be broken down in two: the expected spot interest rate for a given period in the future and a maturity premium that compensates investors for making long-term investments.*

Chart 3

10-YEAR TREASURY BOND YIELDS



Sources: Bloomberg and ECB.

price stability pursued by most central banks of developed countries. Second, a number of Asian central banks and some oil-exporting countries continued to hold very substantial reserves of US Government bonds, with a view to preventing the appreciation of their currencies against the US dollar, which may also have placed some pressure on the price of these assets. Third, there are factors of a more structural nature that may be contributing to the current levels of long-term yields, namely the demand for long-term investments by institutional investors (pension funds and insurance corporations), partly due to regulatory changes,[2] so as to balance the duration of both their asset portfolio and future liabilities. Finally, the supply of long-term US Government securities has not moved in line with demand, increasing the imbalance between supply and demand. However, such imbalance had been partly offset by the issuance of long-term private debt.

There seems to be some divergence between the United States and the euro area regarding the importance of each of the above-mentioned factors to explain the low levels of long-term yields. In fact, most of these factors also contributed to the maintenance of long-term interest rates in the euro area at relatively low levels, despite the fact that the intervention of Asian central banks and oil-exporting countries was more relevant to the evolution of long-term yields in the United States than in the euro area. However, according to IMF data (Table 1), some Asian central banks are seeking to gradually diversify the exchange rate risk implied in their portfolios, by replacing US dollar-denominated assets with comparable euro-denominated assets, which is likely to add some pressure to the slope of the euro area yield curve.

With regard to the effects of the growing role played by institutional investors in financial markets, who have also contributed to the persistence of long-term interest rates at low levels in the United States and the euro area, it should be noted that typically these investors do not adopt a speculative behaviour and manage relatively stable portfolios, which may favour a decline in financial market volatility. However, given the size of these investors, portfolio shifts are likely to be associated with large volume transactions, which may have a fast and strong impact on financial asset prices.

Finally, the supply of longer-term securities is relatively lower in the United States. US government debt with a 30-year maturity, whose issuance had been interrupted since 2001, started to be issued again in February 2006. In turn, the supply of long-term securities in the euro area is relatively higher, given that a number of governments have taken advantage of the high demand for long-term securities to issue debt up to a 50-year maturity.

(2) As an illustration within this scope, changes introduced by the International Accounting Standards (IAS) specify inter alia that the present value of future pension fund liabilities, which typically have very long maturities, should be calculated in accordance with market interest rates, thus making liabilities more sensitive to developments in these rates and inducing a higher demand for fixed rate assets with very long maturities. Moreover, in most cases, the transition to IAS implied a downward adjustment of actuarial discount rates of liabilities (converging to values closer to those of long-term interest rates). This gave rise to additional contributions of participants in funds, which were mainly invested in long-term assets. Therefore, as long-term yields decline, the present value of liabilities increases. This leads pension funds to increase their demand for long-term assets. This feedback effect makes a further contribution to the fall in long-term interest rates.

Table 1

OFFICIAL FOREIGN CURRENCY RESERVES OF DEVELOPING COUNTRIES

Percentage of currency held at the end of the year

	1999	2000	2001	2002	2003	2004
US dollar	68.2	68.2	68.6	64.0	60.7	59.9
Yen	6.0	6.0	4.9	4.9	4.4	4.3
Pound sterling	3.7	3.6	3.6	3.8	3.9	4.8
Euro	19.9	20.6	21.8	26.1	28.9	29.2
Other	2.2	1.6	1.1	1.2	2.1	1.8

Source: International Monetary Fund Annual Report, 2004.

In sum, the low levels of long-term interest rates, as compared with those of short-term interest rates, seem to result from a series of factors giving rise to an imbalance between the supply and demand of long-term securities. Therefore, the persistence of the negative slope of the yield curve in the United States is not likely to be a risk factor for the US economy, in contrast to what is suggested by some literature.[3] On the contrary, as mentioned in "Chapter 2 Macroeconomic Environment", the risk may lie in the abrupt increase in long-term interest rates, as a result of the unwinding of some of the above-mentioned specific factors.

(3) See, for example, A. Estrella (2005), "Why does the yield curve predict output and inflation", Economic Journal, Vol.115, No 505, pp. 722-744. According to this literature, a negative slope of the yield curve in the United States may be a leading indicator of a recession in the short term.

5. LIQUIDITY RISK

5.1. Overall Assessment

The intermediation activity of banks presupposes the transformation of resources obtained from customers (mostly short-term liabilities) into credit granted to customers, which is an inherently illiquid and non-marketable asset, at least in the short term. In this context, liquidity risk arises from the possibility that a bank may face difficulties in repaying short-term liabilities and in refinancing the assets recorded in its balance sheet. The strong growth of credit granted by Portuguese banks, together with the persistence of moderate growth in deposits from customers, has given rise to an increase in the credit-to-deposit ratio, in line with developments in other euro area countries.

However, in the past few years, several developments, of which Portugal's participation in the euro area is particularly noteworthy, have limited the relevance of the analysis of the credit-to-deposit ratio in the characterisation of the banks' liquidity position. On the one hand, Portuguese banks have resorted to alternative ways to attract resources from customers, such as the issuance of securities, subsequently placed with customers. In addition, Portuguese banks have made large securitisation transactions, which have enabled the transformation of the loans recorded in their balance sheet into liquid and marketable assets. Hence, the increasing financial integration of the Portuguese economy, together with the process of financial innovation and with the diversification of the type of savings instruments and of liquidity management tools, have ensured the sustainability of higher growth of credit than of resources from customers. This has been reflected in the participation of Portuguese banks in the euro area money market and, chiefly, in significant issues of medium and long-term debt securities. Anyway, the increasing share of Portuguese banks' borrowing from international financial markets increases potentially their vulnerability to changes in the sentiment of these markets. Hence, an adequate liquidity management by banks is particularly important in order to limit their refinancing risk.

In 2005 credit granted by Portuguese banks continued to grow at a far higher pace than deposits from customers, although these continued to represent the main financing source of the banking system. In 2005 there was an increase in financing in the interbank money market (in particular, by non-domestic banks), which was associated with a slight reduction in the coverage ratio of interbank liabilities by highly liquid assets of non-domestic banks. By contrast, this indicator recorded a slight increase in the domestic institutions sub-group, in line with the trend observed in previous years. In addition, in 2005, liabilities resulting from the issuance of securities continued to increase, largely reflecting bond issuance by branches and subsidiaries of Portuguese banks abroad. Although these issues continued to represent very significant amounts, the (net) amounts involved in such issues declined slightly. Financing through the issuance of securities continued to contribute to the lengthening of the average maturity of the market liabilities of the banking system, enabling a substantial reduction of its refinancing risk. Taking into account the structure of short-term assets and liabilities by residual maturities, which make it possible to assess in a relatively integrated way the liquidity position of the banking system, liquidity gaps deteriorated slightly, countering the trend seen in the past two years. However, this indicator showed quite different levels and trends among the major Portuguese banking groups, implying an increase in their dispersion (due to an additional deterioration of the liquidity position of the banking groups with more negative liquidity gaps).

5.2. Financing of the Banking System

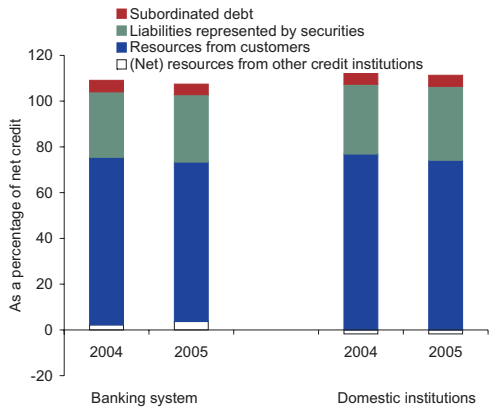
In 2005, the financing structure of Portuguese banks continued to be in line with the pattern of the past few years. Resources from customers continued to be the main financing source of Portuguese banks, though their relative importance continued to decrease (Chart 5.2.1). Conversely, there was a moderate increase in financing through the interbank money market (concentrated in the group of non-domestic institutions[1]) and a more significant increase in liabilities represented by securities.

In 2005, resources from customers, in their majority deposits from customers, increased 4.5 per cent. As this growth continued to be lower than the growth of credit granted by Portuguese banks (which increased 9.8 per cent in 2005), the weight of resources from customers in banks' financing sources, as a percentage of credit, continued to decrease in 2005.

Taking into account data from the Monetary and Financial Statistics, it is possible to obtain some information on the evolution of deposits by institutional sector[2] (Chart 5.2.2). In 2004 the major contributors to the growth of deposits were deposits from non-resident non-financial corporations, which tend to be rather volatile. This gave rise to some uncertainty regarding the stability of resources from customers (in fact, in 2005 some deposits from this sector were withdrawn). In 2005, the major contribution to the growth of deposits from the non-MFI sector was made by deposits from resident non-financial corporations. Although these deposits are not expected to be as volatile as deposits from non-resident corporations, their nature is not so stable as that of household deposits, which continued to record a

Chart 5.2.1

FINANCING SOURCES OF THE BANKING SYSTEM



Source: Banco de Portugal.
Note: (Net) resources from other credit institutions include net resources from central banks.

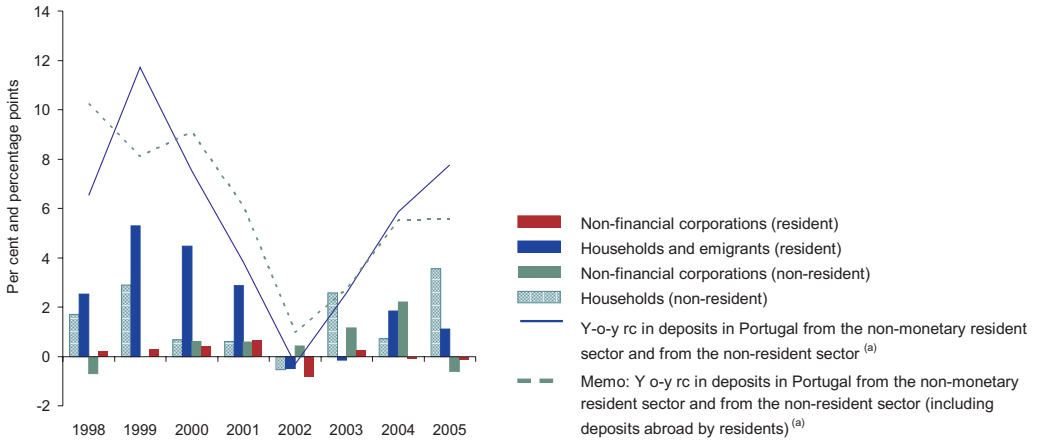
(1) The strong growth of interbank liabilities of non-domestic banking groups seems to be largely related to the debt restructuring process of a banking group, which made an early redemption of a very significant amount of bonds. This early redemption seems to have been partly offset by an increase in interbank liabilities, some of them to central banks.

(2) It should be noted that data from Monetary and Financial Statistics relate to a larger group of banking institutions than the one considered in the remainder of this chapter, which analyses only the group of institutions that has adopted the International Accounting Standards (IAS) or the Adjusted Accounting Standards (AAS) in 2005 (for a summarised distinction between IAS and AAS, see "Chapter 7 *Regulatory Framework*" of the 2004 issue of the *Financial Stability Report* of Banco de Portugal). The IAS introduced stricter criteria for the full derecognition of securitised assets. According to the IAS, the said derecognition shall only occur when all the rights and obligations associated with those assets are fully transmitted. Thus, in the Monetary and Financial Statistics, securitised credit not derecognised continues to be recorded in the banks' credit portfolio, being a counterpart of the liquidity received through the securitisation of a liability against its special purpose vehicle (SPV), which is classified as deposits (and deposit-like instruments) of other financial intermediaries and auxiliaries. However, it should be noted that these deposits are a merely statistical counterpart and as such they are not included in the deposit aggregates presented in Chart 5.2.2. In fact, on a consolidated basis, the counterpart of these operations is reflected in the item 'liabilities on account of not derecognised assets' or in the item 'liabilities represented by securities' (whenever the SPV is included in the consolidation scope of the banking group).

Chart 5.2.2

DEPOSITS IN PORTUGAL FROM THE NON-MONETARY RESIDENT SECTOR AND FROM THE NON-RESIDENT SECTOR [(a)]

Some contributions to the year-on-year rate of change



Source: Banco de Portugal (Monetary and Financial Statistics; International Investment Position).
Note: (a) Excluding liabilities recorded as a counterpart of the liquidity received from not derecognised securitisation transactions, recorded as deposits (and deposit-like instruments) of other financial intermediaries and auxiliaries.

relatively moderate growth rate. In turn, emigrants' deposits, which have recorded negative rates of change in the past few years, declined even more markedly in 2005. This may be related in part to the implementation of the Council Directive on taxation of savings.[3] Finally, deposits abroad from residents, which recorded significant growth in previous years, decreased sharply in 2005.

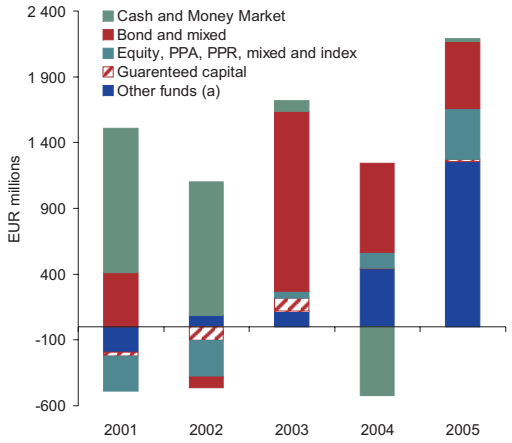
It should be noted that, in the past few years, the decreasing share of resources from customers as a financing source of Portuguese banks has been associated, on the one hand, with the fall in the household savings rate and, on the other, with the diversification of household financial investment. In fact, amid persistent negative real rates of return on time deposits, banks have channelled a significant share of these financial investments to life insurance and investment funds (whose management companies are in their majority integrated in banking groups), enabling them to increase income obtained though commissions. In 2005, the growth of net subscriptions of investment funds was particularly strong (Chart 5.2.3). Like in 2004, the item 'other funds", and in particular the special investment funds there included, recorded a remarkable growth. In addition, net subscriptions of equity funds also increased sharply, in line with positive developments in the equity market.

The financing of banks through the issuance of securities has increased substantially over the past few years. At the end of 2005, this type of financing represented more than 30 per cent of gross credit granted by the domestic banking groups analysed. Most of this financing is obtained through the issuance of securities by branches and subsidiaries of Portuguese banking groups abroad, although this item also includes securities issued by special purpose vehicles (SPV), when these belong to the consolidation perimeter of the banking groups. In fact, in 2005, gross issuance of these securities continued to increase, although less markedly than in 2004, benefiting from favourable financing conditions in international debt markets (Chart 5.2.4). In turn, the estimated amount of net issuance (taking into account the difference between gross issuance in a year and the amount outstanding of bonds with a residual maturity of less than one year at the end of the previous year) declined signifi-

(3) The implementation of this directive may have led to the channelling of emigrants' savings, under the form of deposits, to capitalisation products offered by insurance corporations and/or investment funds (in their majority linked to the banking groups).

Chart 5.2.3

BREAKDOWN OF NET SUBSCRIPTIONS OF MUTUAL FUNDS AND MONEY MARKET FUNDS

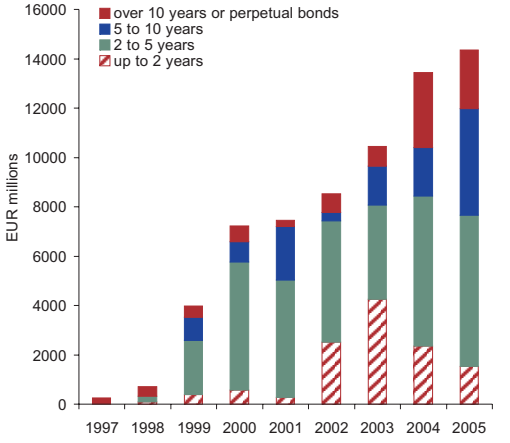


Source: *Associação Portuguesa de Fundos de Investimento, Pensões e Património (APFIPP).*
Notes: Adjusted for investment in national fund units since 2004. (a) Includes Other Funds, Flexible Funds and Special Investment Funds.

Chart 5.2.4

INTERNATIONAL ISSUES OF BONDS BY BRANCHES AND SUBSIDIARIES ABROAD OF PORTUGUESE BANKING GROUPS

Structure by original maturity



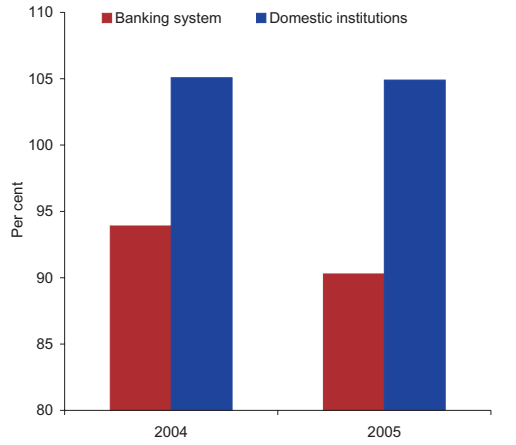
Sources: Bloomberg, Dealogic Bondware and Thomson Financial Datastream.

cantly compared with 2004. These developments were mirrored in a slight decline in the share of securities issued in the total market financing of the banking system, although this decline occurred chiefly in non-domestic banks, which, as mentioned above, increased their recourse to financing in the interbank money market (Chart 5.2.5). The largest share of bond issuance through branches and subsidiaries abroad continued to have relatively long maturities, as the recourse to this type of debt is chiefly intended to finance either highly stable assets or medium and long-term assets (credit granted to customers) (Chart 5.2.6 and Table 5.2.1). Thus, the refinancing risk of banks is substantially reduced. Most of these bonds are issued at variable rates, to avoid mismatches between the cost of these liabilities and the return on assets, as most of the credit is also granted at variable interest rates. However, in 2005, fixed-rate issuance increased somewhat, in particular regarding bonds with longer maturities (possibly due to the incentives arising from the flattening of the yield curve).

The diversification of the financing sources of the banking system, driven by the persistence of higher growth rates of credit than of deposits from customers, has also included the securitisation of credit granted by banks. This has enabled the transformation of the credit recorded in their balance sheet into liquid and marketable assets. As mentioned above, the implementation of the IAS led to changes in the assets derecognition criteria. Hence, where there is no actual sale of a securitised asset, it must continue to be recorded on the credit portfolio of banks (having as a counterpart in banks' liabilities the item "liabilities on account of not derecognised assets" or the item "liabilities represented by securities", whenever the SPV is included in the consolidation scope of the banking group). However, both derecognised and not derecognised securitised credit make it possible to obtain liquidity from an illiquid asset. Account should be taken of the fact that not derecognised securitised credit, despite continuing to be included in the credit portfolio of banks, cannot be used again to obtain additional liquidity. Thus, considering the total amount involved in securitisation operations, it can be seen that Portu-

Chart 5.2.5

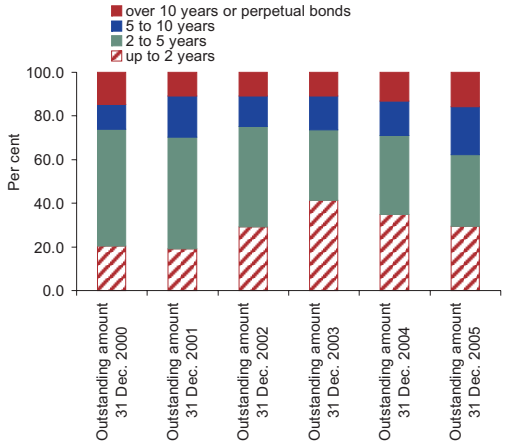
SHARE OF SECURITIES ISSUED IN TOTAL MARKET FINANCING



Source: Banco de Portugal.
Note: Market financing is defined as the sum of interbank liabilities (deducted from interbank assets) and securities (including subordinated).

Chart 5.2.6

STRUCTURE BY RESIDUAL MATURITY OF BONDS ISSUED BY BRANCHES AND SUBSIDIARIES ABROAD OF PORTUGUESE BANKING GROUPS



Sources: Bloomberg, Dealogic Bondware and Thomson Financial Datastream.

Table 5.2.1

STRUCTURE OF TOTAL OUTSTANDING AMOUNTS OF BONDS ISSUED BY BRANCHES AND SUBSIDIARIES ABROAD OF PORTUGUESE BANKING GROUPS

By type of rate and residual maturity as at 31 December 2005

As a percentage of the total outstanding amounts

	Up to 2 years	2 to 5 years	5 to 10 years	Over 10 years and perpetual bonds	Total
Variable rate	27.1	27.3	8.6	6.0	69.1
Fixed rate and others	2.4	5.4	13.4	9.8	30.9
Total	29.5	32.7	22.0	15.8	100.0

Sources: Bloomberg, Dealogic Bondware and Thomson Financial Datastream.

guese banks have continued to resort substantially to this type of operation as a way of obtaining liquidity, which may be channelled to new credit[4] (Chart 5.2.7).

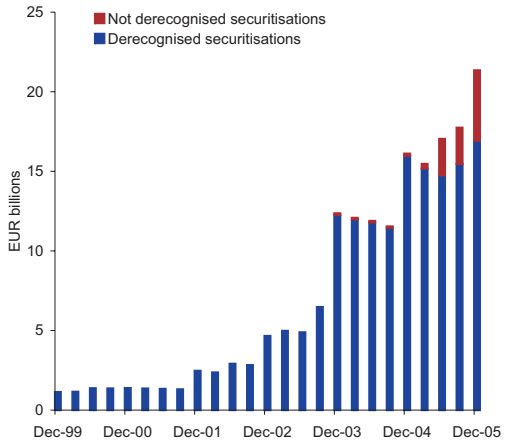
The stepping up of the recourse to international financial markets increases the sensitiveness of the banking system to potential shocks in the financial markets and in the world economy. The participation in the euro area has enabled the access to financing in international financial markets without implying an increase in foreign exchange risk, as most of the financing obtained by Portuguese banks in these markets is denominated in euro.[5] This buoyancy has been observed in both Portuguese banks

(4) Like in 2004, one of the largest non-domestic banking groups continued to hold in its balance-sheet a substantial part of debt securities originating from a securitisation transaction. As a consequence, in this case, these operations were not associated with monetary flows that constitute immediate liquidity for the bank selling the credit, although they enabled the transformation of an illiquid asset into a marketable asset. In some circumstances, these securities can be used as collateral in monetary policy operations. Excluding these operations, the growth of the amounts sold in securitisation transactions in 2005 was far stronger than in 2004.

(5) For instance, in 2005 around 95 per cent of bonds issued by branches and subsidiaries abroad were denominated in euro.

Chart 5.2.7

DEVELOPMENTS IN THE OUTSTANDING AMOUNT OF LOANS SOLD IN SECURITISATION



Source: Banco de Portugal (Monetary and Financial Statistics).

and in banks of other euro area countries, where resources from customers have also increased more moderately than credit granted, corresponding to a phenomenon of increasing financial integration.

5.3. Liquidity Indicators

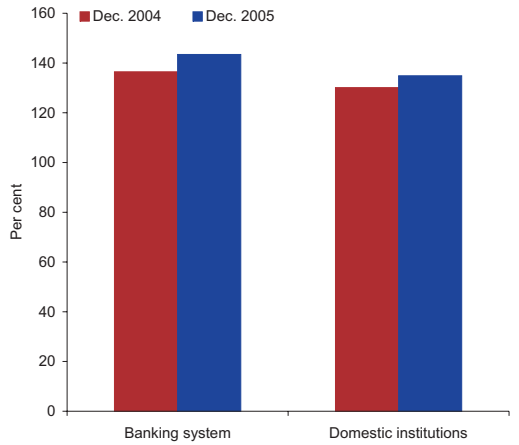
As mentioned above, in 2005, the growth of credit granted by the banking groups analysed was higher than that of resources obtained from their customers. As a consequence, the ratio of credit granted to resources from customers increased in 2005 for the group of institutions analysed, as well as for the domestic institutions sub-group (Chart 5.3.1). However, for this sub-group of institutions, the increase in this ratio was not so marked, standing at far lower levels than that of the credit-to-deposit ratio of non-domestic banks. In the past few years, the analysis of developments in this ratio has been conditioned by changes in the financing structure of the banking system, largely as a consequence of the increasing financial integration resulting from the participation in the euro area.[6] First, banks have been diversifying the ways of attracting resources from their customers. In this context, an important share of savings of the non-financial private sector has been invested in debt securities issued by banks and placed with customers. However, unlike in previous years, investment in these securities decreased strongly in 2005. Hence, taking into consideration a broader concept of resources from customers that includes these securities, the increase trend in the credit-to-deposit ratio is strengthened, in particular, regarding domestic banks (Chart 5.3.2).

The credit-to-deposit ratio continued to record a bi-modal distribution for the domestic institutions sub-group. There are two groups of institutions with distinct situations (Chart 5.3.3). While a group of institutions continues to record a ratio of credit granted in relation to deposits from customers close to 100 per cent, another group (with a higher share in the total) records higher credit-to-deposit ratios. In 2005, this ratio increased in both groups of institutions, though such increase was stronger in institutions with higher ratios.

(6) For further explanations on these developments and a detailed description of some of the liquidity indicators used in this chapter, see "Box 4.1. *Monitoring the banking system's liquidity risk*", in the 2004 issue of the *Financial Stability Report* of Banco de Portugal.

Chart 5.3.1

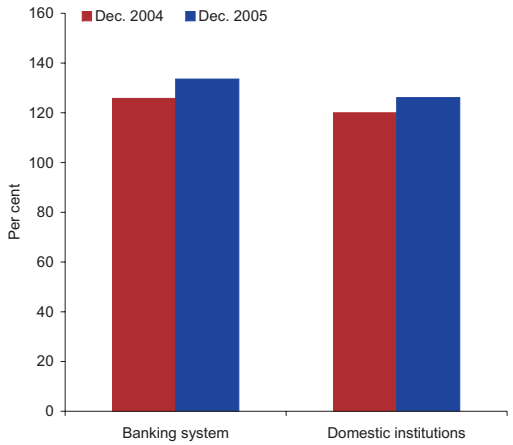
RATIO OF CREDIT TO RESOURCES FROM CUSTOMERS



Source: Banco de Portugal.

Chart 5.3.2

RATIO OF CREDIT TO RESOURCES FROM CUSTOMERS (INCLUDING SECURITIES ISSUED AND PLACED WITH CUSTOMERS)



Source: Banco de Portugal.

In 2005, interbank liabilities increased significantly. This translated into a slight reduction in the coverage ratio of interbank liabilities by highly liquid assets (defined as interbank assets and debt securities eligible for monetary policy operations) for the banking groups analysed[7] (Chart 5.3.4). However, this growth largely reflected developments in financing in the interbank market of non-domestic institutions, which increased significantly in 2005.[8] Taking only into account the domestic institutions sub-group, the growth of interbank liabilities was more moderate. Considering that these liabilities increased slightly less than highly liquid assets, the coverage ratio for the group of domestic institutions improved somewhat in 2005.

Similarly to the credit-to-deposit ratio, the distribution of the ratio of highly liquid assets to interbank liabilities also assumes a bi-modal behaviour. There are two groups of institutions with clearly distinct liquidity ratios, although these two groups moved closer together in 2005 (Chart 5.3.5).

Taking into account the diversification in the ways of attracting resources from customers, the increased recourse to market financing and the mitigation of the inherently illiquid nature of credit (through the possibility of selling assets in securitisation transactions), the analysis of the credit-to-deposit ratio (and, to a certain extent, of the coverage ratio of interbank liabilities by highly liquid assets) has some limitations regarding the characterisation of the liquidity position of banks. Moreover, a more complete analysis of the liquidity position of Portuguese banks should take into account the structure of the short-term assets and liabilities by residual maturities, by making use of the data presented in the liquidity tables.[9] Using this information, it becomes possible to compare short-term liabilities with the liquid and short-term assets held by banks.

(7) In previous years, highly liquid assets have been defined as interbank assets and securities of public issuers. However, considering that data on securities of public issuers are not available on a comparable IAS basis in 2004 and 2005, as an alternative, debt securities eligible for monetary policy operations were taken into account, based on data available in the liquidity table (Instruction of Banco de Portugal No 1/2000).

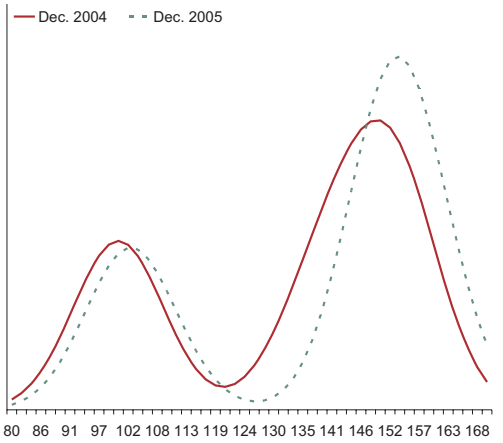
(8) As referred to above, the strong growth of interbank liabilities of non-domestic banking groups resulted chiefly from a debt restructuring process of one banking group.

(9) Using information from the Instruction of Banco de Portugal No 1/2000.

Chart 5.3.3

CREDIT-TO-DEPOSIT RATIO OF DOMESTIC INSTITUTIONS

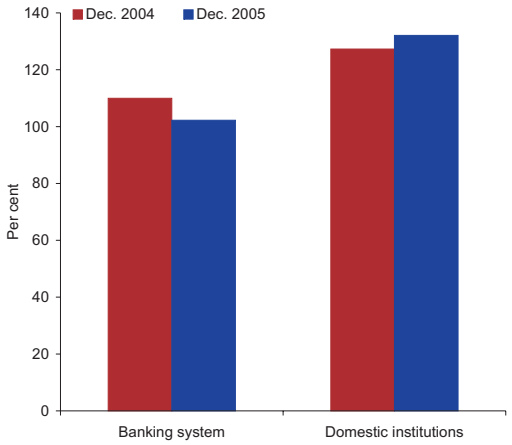
Empirical distribution



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 5.3.4

COVERAGE RATIO OF INTERBANK LIABILITIES BY HIGHLY LIQUID ASSETS

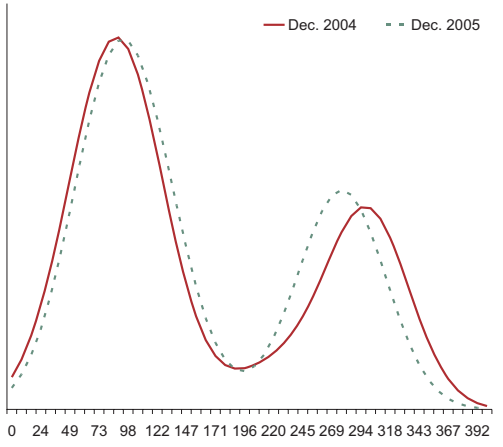


Source: Banco de Portugal.
Note: Coverage ratio is defined as the ratio of highly liquid assets (interbank assets and debt securities eligible for monetary policy operations) to interbank liabilities.

Chart 5.3.5

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

Empirical distribution

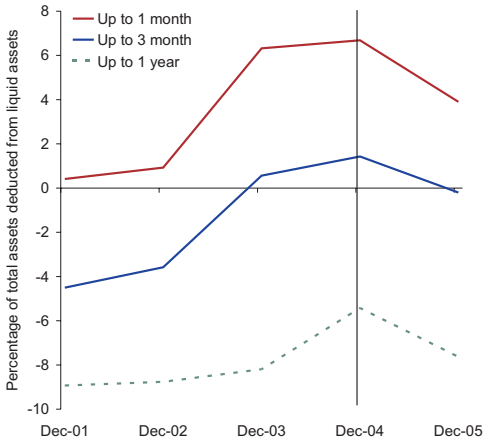


Source: Banco de Portugal.
Note: Empirical distribution obtained through recourse to non- parametric methods, namely to a Gaussian kernel that weights institutions by their assets.

Chart 5.3.6

LIQUIDITY GAP BY MATURITY LADDER

Banking system



Source: Banco de Portugal.
Note: The liquidity gap is defined as (liquid assests-volatile liabilities)/(assets-liquid assets)x100 in each residual maturity ladder.

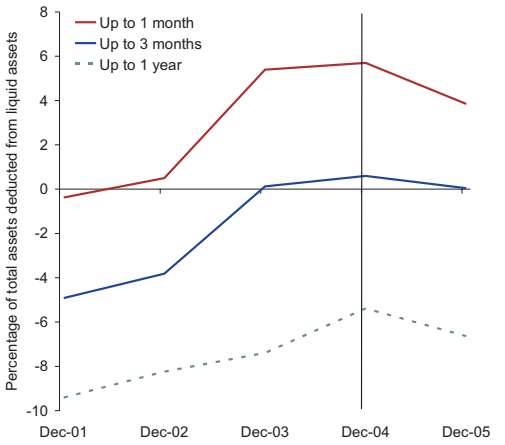
In 2005, the liquidity gaps of the banking groups analysed deteriorated slightly, countering the overall positive developments observed in the previous two years[10] (Chart 5.3.6). This deterioration, which

(10) The liquidity gap can be defined as the ratio of the difference between liquid assets (LA) and volatile liabilities (VL) to the difference between total assets (A) and liquid assets, for each maturity ladder, i.e. Gap = (LA-VL) / (A-LA). For further details on these concepts, see "Box 4.1. *Monitoring the banking system's liquidity risk*", in the 2004 issue of the *Financial Stability Report* of Banco de Portugal.

Chart 5.3.7

LIQUIDITY GAP BY MATURITY LADDER

Domestic banks

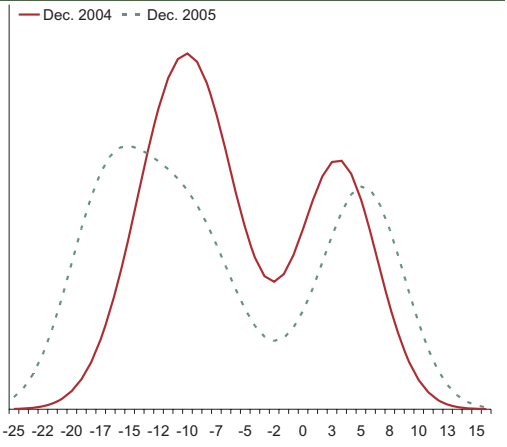


Source: Banco de Portugal.
Note: The liquidity gap is defined as (liquid assests-volatile liabilities)/(assets-liquid assets)x100 in each residual maturity ladder.

Chart 5.3.8

LIQUIDITY GAP CONSIDERING MATURITIES OF UP TO 1 YEAR 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.

was broadly based across the different maturity ladders taken into consideration, resulted chiefly from an increase in volatile liabilities, which was far higher than the increase in liquid assets of the banks analysed. These developments in volatile liabilities reflected chiefly the stepping up of the recourse to financing in the interbank money market, although liabilities to third parties and financing through debt securities also made an important contribution (notwithstanding the lengthening of the average maturity of securities issued by branches and subsidiaries abroad, which in general contributes to a decrease in the weight of short-term liabilities in the balance sheet of banks). The sub-group of domestic institutions recorded quite similar developments in these liquidity indicators, as well as a deterioration (slightly less significant) of the liquidity gaps, which resulted chiefly from the growth of interbank liabilities (Chart 5.3.7). It should be noted that although the recourse to financing through the issuance of debt securities increased far more than interbank financing for the group of domestic institutions, the lengthening of the maturities of securities issued has given rise to an increase in the average residual maturity of these liabilities. Therefore, the growth of these liabilities in the liquidity table (which only includes securities with a residual maturity of less than one year) was relatively subdued in 2005. It is important to note that the evolution of liquidity gaps in 2005 recorded relatively different trends for the major Portuguese banking groups, mirrored in a substantial increase of the dispersion between institutions (Chart 5.3.8). Persistent growth of volatile short-term liabilities at levels above those of liquid assets held by some banks may generate some pressure on their liquidity.

6. CREDIT RISK

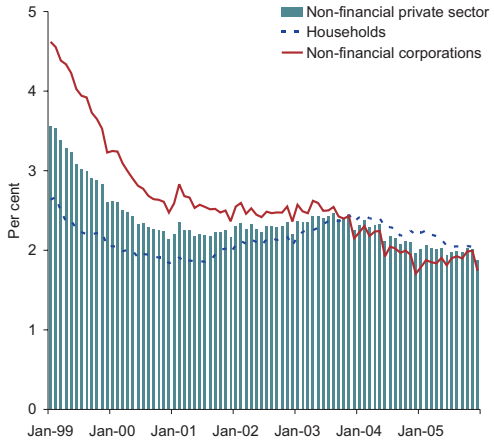
6.1. Overview

In spite of the unfavourable economic environment, default ratios in the loan portfolio of banks remained clearly contained in 2005 both in the household and the non-financial corporate sectors (Chart 6.1.1). In parallel, credit granted to households continued to grow robustly, particularly in the housing loans segment. In turn, the debt of non-financial corporations accelerated from the previous year, both in the form of loans and through the issue of securities, mostly short term.

A wide series of factors, whose relative importance is difficult to gauge, seems to have sustained developments in credit and the containment of default indicators. Among them, however, stress should be laid on the maintenance of interest rates at low levels, both in nominal and real terms. Available evidence also points to some adaptation on the credit supply side to the current ability of customers to service debt. The introduction of products in the market with clauses/features that allow for the deferral of their associated debt burden has most likely contributed to developments seen in the household segment. In turn, as regards non-financial corporations, financing needs for inventories and working capital, together with debt restructuring, were the main factors underlying the increased credit demand.[1] In addition, small and medium-sized enterprises (SMEs) have been chiefly responsible for the increase in credit demand, and there seems to be some dichotomy between the financial standing of SMEs and that of large enterprises. These different factors combined suggest that credit expansion and the relative containment of default in 2005 may not have reflected developments in the financial standing of non-financial corporations, in particular SMEs. In fact, these developments seem to have reflected the availability of banks to accommodate some difficulties that a number of enterprises may

Chart 6.1.1

DEFAULT RATIOS IN CREDIT TO RESIDENT CUSTOMERS



Source: Banco de Portugal.
Note: Credit and interest overdue and other non-performing loans as a percentage of total credit to the sector in the banking book.

(1) According to the Bank Lending Survey results.

have experienced, namely through debt renegotiation processes.[2] However, the exposure of banks to SMEs is relatively low, instead being concentrated in a limited group of enterprises that are typically large and in sectors that are less sensitive to unfavourable developments.

As long as the Portuguese economy continues to grow at a weak pace and market expectations of an increase in ECB's reference interest rates are realised, a period is to be expected in the near future where lower credit growth will be accompanied by a rise in default ratios of the non-financial private sector.

6.2. Households

In 2005 the household savings rate declined further, in line with the evidence observed since 2002. Notwithstanding the low consumer confidence levels, the rise in the unemployment rate and the effects on the permanent income stemming from the need for a structural adjustment of the public deficit and from the growing uncertainty as to the sustainability of the prevailing social security systems, private consumption maintained a higher rate of change than that in disposable income. This seems to have been underpinned not only by the low level of interest rates but also by the fact that credit institutions offered new contract modalities that allow for the financial burden associated with debt service to be contained in the short term.

In spite of the decline in the savings rate and the maintenance of fixed capital investment as a percentage of GDP at a level similar to that seen in the previous year, the net financing capacity of the sector increased slightly from 2004 (Chart 6.2.1). This was due to significant capital transfers associated with extraordinary contributions made by financial institutions to the respective pension funds.[3] In fact, excluding the impact of these transfers (that stood at 1.4 p.p. of GDP in 2005), there would have been a decline of 0.6 p.p. of GDP in the financing capacity of the sector.

The upward trend of household indebtedness was maintained in 2005 and similarly to recent years it was essentially associated with the rise in bank loans for house purchase (Chart 6.2.2) and Table "Main Indicators" in Chapter 1). In 2005 the household indebtedness ratio is estimated to have reached around 117 per cent of disposable income, which corresponds to an increase of 7 p.p.[4,5] This level continues to be one of the highest in euro area countries (Chart 6.2.3 and Table 6.2.1).

Developments in indebtedness, initially fostered in the 1990s by the increase in income (perceived as permanent) and by the significant reduction in the level and volatility of bank interest rates, appear to have been sustained in the most recent period by less tight loan approval conditions in the housing loans segment, in a context of low interest rates. These factors combined seem to have boosted the maintenance of high growth in credit demand in this segment in 2005.

(2) As established in Notice no 3/95, banks must recognise and build up provisions for non-performing loans whenever default exceeds certain triggers, defined both in terms of amount (in a specific operation or vis-à-vis a single customer) or in terms of time elapsed since the first default. Should there be a partial payment of a credit in default situation, implying a reclassification of the credit as performing, remaining amounts, as well as additional amounts, remain subject to the described conditions, with the exception being debt restructuring situations which verify both the non-increase of the exposition vis-à-vis the debtor and, at a minimum, the payment of interest at default.

(3) In accordance with the methodology for the preparation of the Portuguese National Accounts (European System of Accounts (ESA) 1995), extraordinary payments made by employers into private social security funds (such as Pension Funds) with a view to increasing these funds' technical reserves should be recorded as capital transfers, payable by the employer sector and receivable by the sector to which the funds belong. The definition of capital transfers in ESA 1995 corresponds to operations made in cash or in kind, that should result in a commensurate change in the financial or non-financial assets shown in the balance sheets of one or both parties to the transaction. Given that reserves of social security funds are considered by ESA 1995 to be assets of households, it is necessary to make a simultaneous adjustment between the fund sector and the household sector. This adjustment is then recorded in the national accounts as capital transfer payable by the sector to which the funds belong and receivable by the household sector, thus adding to the net financing capacity of the latter.

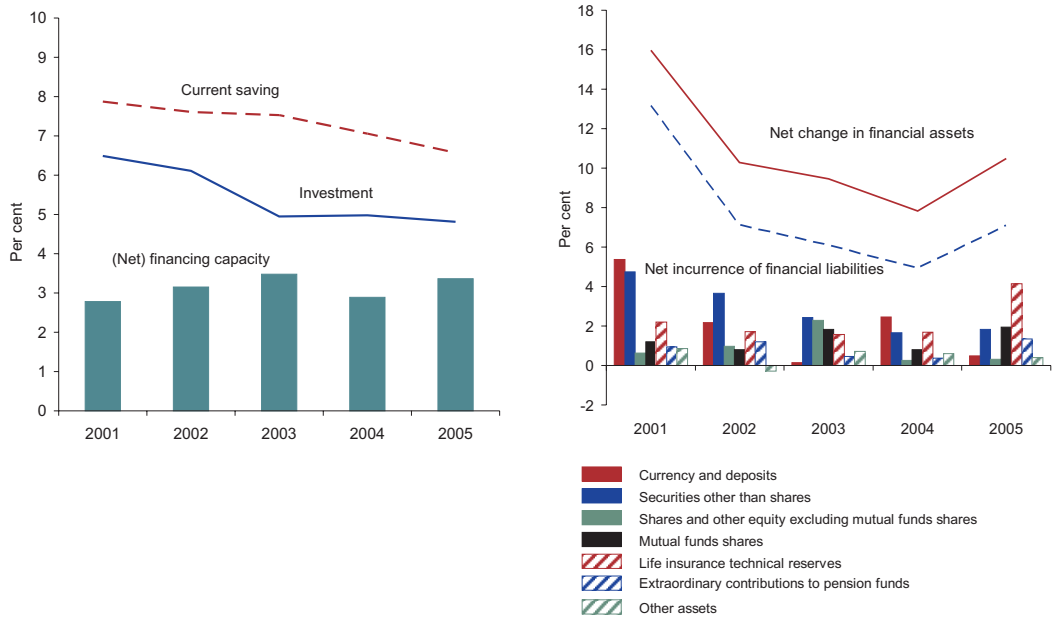
(4) Figures referring to indebtedness ratios of the non-financial private sector that are mentioned in this report differ from those shown in the 2004 Financial Stability Report due to the revision of the disposable income series, made in the context of the adoption of a new basis for the National Accounts by the National Statistical Institute (*Instituto Nacional de Estatística – INE*).

(5) At end-2005, around 78 per cent of this debt referred to house purchase-related lending. At end-2000 this figure stood at 71 per cent.

Chart 6.2.1

SAVING, INVESTMENT, FINANCING CAPACITY AND FINANCIAL OPERATIONS OF HOUSEHOLDS

As a percentage of GDP

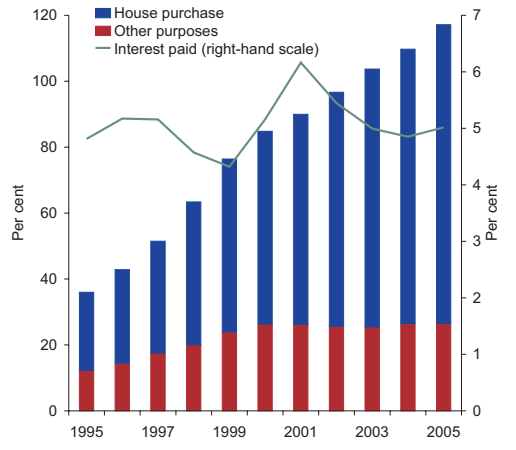


Sources: *INE* and Banco de Portugal.

Chart 6.2.2

HOUSEHOLD INDEBTEDNESS AND INTEREST PAID

As a percentage of disposable income



Sources: *INE* and Banco de Portugal.

Table 6.2.1

HOUSEHOLD INDEBTEDNESS IN EURO AREA COUNTRIES[a]

As a percentage of GDP

		Year [b]
Portugal	84.2	2005
Belgium	43.1	2005
Germany	70.3	2004
Greece	38.4	2005
Spain	72.3	2005
France	44.4	2005
Italy	30.8	2005
Netherlands	109.7	2004
Austria	53.8	2005
Finland	40.7	2004
Euro area[c]	55.0	2004

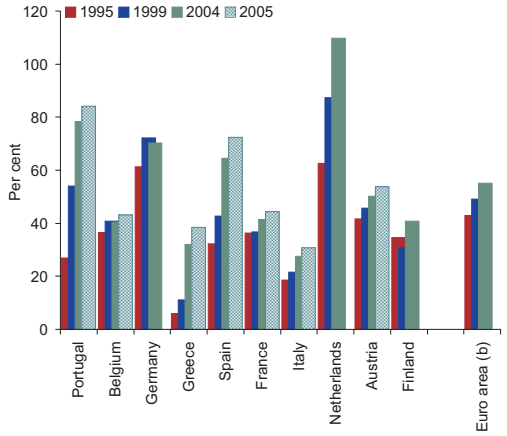
Sources: Eurostat (up to and including 2004, except Portugal), national central banks, national statistical institutes and Banco de Portugal.
Notes: Banco de Portugal calculations for 2005 (a) Includes liabilities on account of loans and securities other than shares. (b) Last known value (c) Excluding Ireland and Luxembourg.

According to data from the *Direcção Geral do Tesouro* (Directorate-General of the Treasury), the number of credit contracts increased in 2005 (by 7.8 per cent - Chart 6.2.4). However, this increase reflects not only the purchase of new houses, but also the conclusion of new contracts for the replacement of loans previously entered into in less favourable conditions. The average value of contracts concluded increased by 7.6 per cent from 2004.

Chart 6.2.3

HOUSEHOLD INDEBTEDNESS IN EURO AREA COUNTRIES [a]

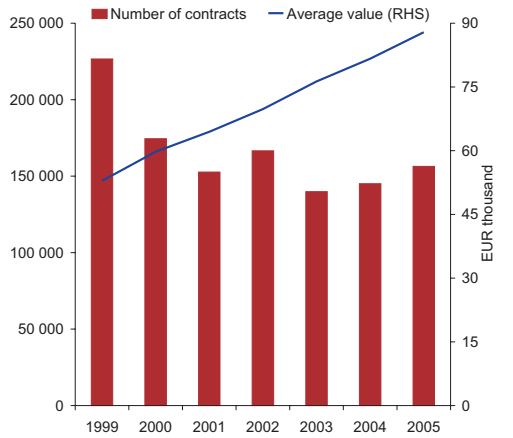
As a percentage of GDP



Sources: Eurostat (up to and including 2004, except Portugal), national central banks, national statistical institutes and Banco de Portugal.
Notes: Banco de Portugal calculations for 2005. **(a)** Includes liabilities on account of loans and securities other than shares. **(b)** Excluding Ireland and Luxembourg.

Chart 6.2.4

NEW HOUSING LOAN CONTRACTS



Source: *Direcção Geral do Tesouro*.

In line with developments in recent years, the increase in the value of contracts may be associated with less demanding loan-to-value ratios[6] (i.e. for the same real estate value, banks lend a higher amount), thus making it easier to purchase more expensive houses, larger in size and/or better in quality.[7] The rise in the ratio will on its own imply a risk increase for credit institutions. Hence, the correct assessment of real estate collateralising operations becomes increasingly important. In the event of excessive valuations (i.e. non-sustainable) of real estate, risk coverage would diminish should there be a subsequent value correction. However, available data suggest that there is no case of an excessive valuation of real estate in Portugal and therefore no expectation of any abrupt reduction in its value[8] (see "Box 6.1. *Housing prices in Portugal and macroeconomic fundamentals: evidence of quantile regression*").

In addition, higher loan-to-value ratios should be counterbalanced, on the one hand, by further demands in terms of other collateral and, on the other, by wider interest rate spreads.

According to the Bank Lending Survey results, an easing of the credit standards applied to the approval of loans has been induced by intense competition among banking institutions and has translated more notoriously into the narrowing of interest rate spreads in average-risk loans and into the widening of the maturities of operations. These practices have made it possible to contain the debt burden (Chart 6.2.5).

Given that in 2005 the market share of the 5 major banking groups in the segment of loans to households for house purchase declined slightly (although remaining above 80 per cent – Chart 6.2.6), it can be inferred that the remaining institutions (not included in the survey sample) seem to have also eased their loan approval conditions in the year under analysis.

(6) Defined as the ratio of the amount of the loan granted to the real estate value.

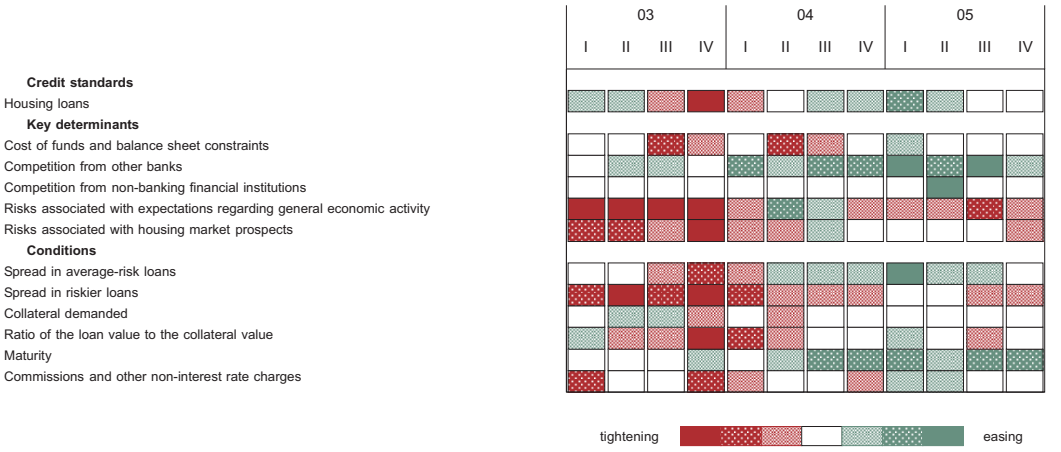
(7) In fact, the change in housing prices (assessed by developments in the average values of housing assessment by banks – source: *INE*) stood at around zero in real terms. Furthermore, price changes (approximated by this variable) were more significant for houses than for flats.

(8) Obviously, situations of real estate overvaluation are always possible in specific locations and/or segments, but, in any case, this should not have relevant systemic implications.

Chart 6.2.5

BANK LENDING SURVEY

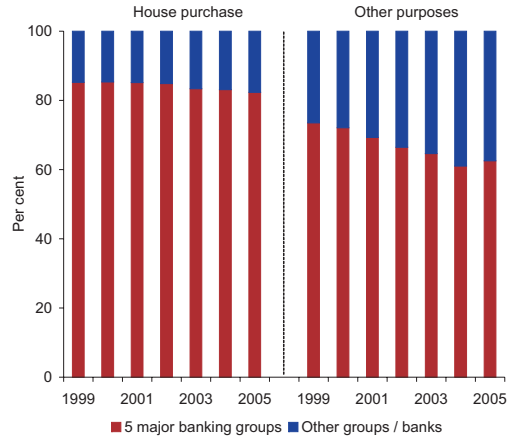
Loans to households – House purchase



Source: Banco de Portugal.

Chart 6.2.6

MARKET SHARES IN THE LOANS TO HOUSEHOLDS SEGMENTS



Source: Banco de Portugal.

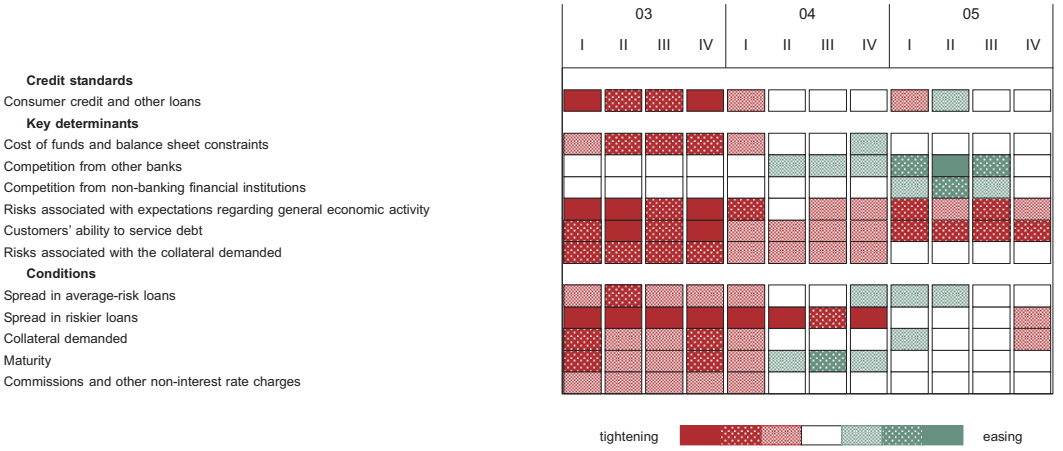
Consumer loans and loans for other purposes have maintained rates of change clearly lower than those seen in the housing segment. Although in this segment banking groups participating in the survey also reported increased pressure from competition, institutions chose to be more prudent when changing their credit standards applied to the approval of loans. This was accounted for by the greater risk associated with this type of credit, in a context of negative expectations regarding general economic activity and the customers' ability to service debt (Chart 6.2.7). Nonetheless, and contrary to the house purchase segment, the market share of the five banking groups participating in the survey increased slightly in 2005 in the segment of consumer loans and loans for other purposes.

There is a significant difference in the shares of the major banking groups in the two segments of loans to households, both in terms of level and developments over recent years. Whereas in the segment of

Chart 6.2.7

BANK LENDING SURVEY

Loans to households – Other purposes



Source: Banco de Portugal.

loans for house purchase the largest institutions (reporting in the survey) have kept a virtually unchanged share of over 80 per cent (that decreased by only 3 p.p. between 1999 and 2005), the share of the segment of consumer loans and loans for other purposes declined by 10 p.p. in cumulative terms, to 63 per cent in the same period. These different developments in both segments seem to reflect different assessments for risk and actual profitability. On the one hand, loans for house purchase tend to be less risky (default indices are typically lower and operations usually rely on real collateral, substantiated in the real estate itself), thus having lower associated capital requirements. On the other hand, this segment is the best catalyst to establish lasting comprehensive relationships with customers, reinforcing the profitability of institutions from the customer perspective, as opposed to an operation perspective, which is stricter.

In fact, the customer generates profitability not only through credit operations, but also through products associated with credit (such as life insurance and real estate insurance), but also by maintaining income-generating liability positions (such as commissions associated with cards and domiciliation). For these same reasons, in recent years larger institutions have somehow privileged the housing loans segment, to the detriment of credit for other purposes.

In aggregate terms, for the first time since 2001, interest payments as a percentage of disposable income are estimated to have increased. In fact, in 2005 the effect of the rise in the outstanding balance on the amount of interest payable was only partly offset by the reduction in lending interest rate levels.[9] Interest rates on bank loans to households started to rise in the last quarter of the year, reflecting the rise in euro area money market interest rates. These are benchmarks for most interest rates on credit granted and their rise reflected the fact that participants in the euro money market anticipated rises in the official interest rates of the European Central Bank (ECB).[10] However, the pass-through of changes in benchmarks to bank lending interest rates (on balances), albeit swift, tends to be gradual. In the case of variable rate loans, typically of longer term, this stems from the discrete (quarterly or half-yearly) nature of the benchmark revision. In the case of shorter-term loans, it is due to the fact that

(9) In annual average terms, interest rates on loans to households declined by 0.1 p.p. in 2005, i.e. a reduction clearly below those seen between 2002 and 2004.

(10) These materialised in early December 2005 and in early March 2006, to a total of 50 basis points.

they frequently have associated fixed rates in the operation period. Hence, the pass-through of already observed changes in benchmarks to bank lending interest rates will continue in 2006, and will be much more significantly reflected in interest payments. This may be amplified because markets continue to anticipate further increases in ECB's official interest rates, which has been translating into further rises in interest rate benchmarks. In turn, developments in household interest payments will also reflect developments in the stock of credit. In 2005 and in the first quarter of 2006 the latter, notwithstanding the interest rate rises already observed, kept high stable rates of change, namely in the loans for house purchase segment (Chart 6.2.8).[11]

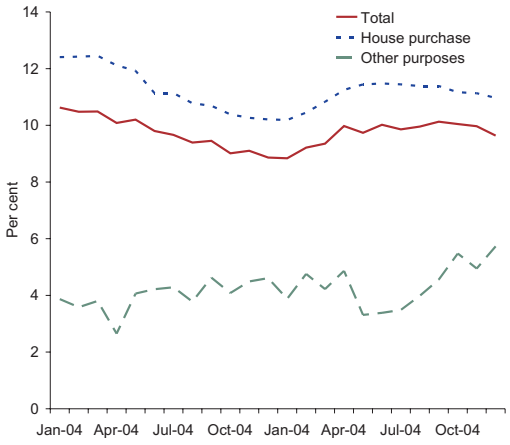
Default indicators in bank loans to households followed a positive trend in 2005 (Chart 6.2.9 and Table "Main Indicators" in Chapter 1). Ratios of credit overdue and other non-performing loans to total bank loans granted to the sector remained at lower levels in the loans for house purchase segment than in loans for other purposes and followed a downward trend over the year. These developments did not essentially result from more intense recourse to write-offs/write-downs of credits considered to be definitely uncollectable. In effect, in late 2005 the annual flow of new credit overdue and other non-performing loans, assessed as a percentage of the balance on bank loans (adjusted for securitisations), remained virtually stable at a low level, in comparison with end-2004 (Chart 6.2.10).

Given developments in the economic environment, namely as regards the labour market situation, albeit in a context of very low interest rates, the trend of default can be considered to be positive. This should have reflected the adoption of more adequate risk management policies by banks and the introduction of new products in the credit market. These policies appear to have enabled the setting of more adequate prices to the risk profile of each debtor, thus with better hedging of the respective associated risk. These products, while implying an increase in the current value of the debt cost, are mainly targeted at containing the debt burden in the short term. The characteristics of these products envisage, inter alia, the possibility of reconverting short-term liabilities with no real collateral into medium to

Chart 6.2.8

BANK LOANS TO HOUSEHOLDS

Annualised half-year rates of change of seasonally adjusted figures[(a)]

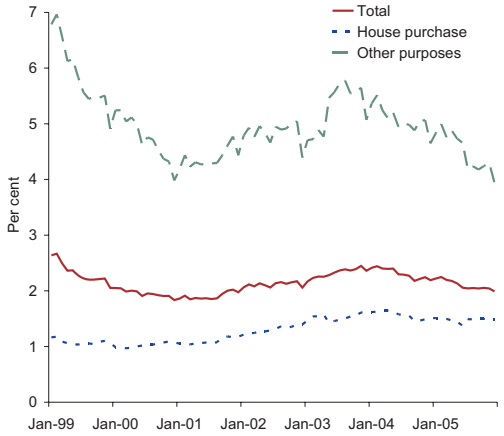


Source: Banco de Portugal.
Note: (a) Rates calculated from figures adjusted for securitisation and reclassifications, write-offs/write-downs and exchange rate and price revaluations.

(11) At the level of interest payments, the impact of joint developments in the stock of credit and interest rates may be mitigated with the adoption of regimes based on increasing instalments. However, there is no information pointing to an increase in adhesion to this modality.

Chart 6.2.9

DEFAULT RATIOS IN BANK CREDIT TO HOUSEHOLDS



Source: Banco de Portugal.

Chart 6.2.10

ANNUAL FLOW OF NEW CREDIT OVERDUE AND OTHER NON-PERFORMING LOANS

Households

Source: Banco de Portugal.
Note: Estimate of the annual flow of new credit overdue and other non-performing loans (adjusted for write-offs/write-downs) as a percentage of bank loans (adjusted for securitisation).

long-term liabilities with real collateral (typically mortgage-backed and advantageous in terms of interest rate),[12] the approval of grace periods in the early years of loans,[13] the adoption of variable repayment deadlines (that allow for the maintenance, within certain limits, of the debt service in the context of change in interest rates) or even the possibility of paying an important share of the loan at the end of the contract. Hence, financial innovation in this business segment has enabled not only to maintain high growth rates of credit to the sector, but also to mitigate the emergence of default situations, by making it possible to contain the debt burden associated with growing indebtedness levels.

However, even if these new products allow for a more adequate management of risk and profitability by credit institutions, they will not cease to have significant micro and macroeconomic consequences in the future, by promoting consumption and investment patterns that may be non-sustainable. In addition, in contrast to the 1980s and the 1990s, any erosion effect of the nominal debt will not be significant now, given the low inflation regime resulting from participation in the euro area.

In a context of growing interest rates, the adoption of these new contract modalities is expected to be intensified, given the contemporaneous benefits for both debtors and creditors. Yet, these practices are contributing to a trade-off between the expansion of indebtedness in the sector and of domestic demand in the present and in the future. In fact, given the growing amounts of saving allocated to debt service, should the scenario of increases in interest rates and weak growth of the Portuguese economy materialise, some increase in non-performing loans and/or a slowdown in consumption and investment in the economy are to be expected in the future. The incidence of these developments should be relatively heterogeneous, affecting to a much more significant extent those households that are more indebted (net of interest-bearing financial assets), those with lower income and those that tend to move into unemployment. The most recent debtors may be experiencing a more fragile situation, assuming that many of them only entered the market due to benefiting not only from reduced in-

(12) There is also the (announced) possibility of using a generic mortgage that allows for the reuse of amounts already repaid on loans for house purchase, for any purpose, without setting up a new mortgage.

(13) Some of the major institutions already allow for grace periods that may extend up to 10 years.

terest rate levels, but also from the extremely favourable contractual conditions that banks have been introducing in their products (which means that they have a higher associated risk, in average terms). Hence, given that they are not in a position to renegotiate yet more favourable conditions, they will tend to be particularly exposed to rises in interest rates, such as those that occurred in late 2005 and early 2006.

6.3. Non-financial Corporations

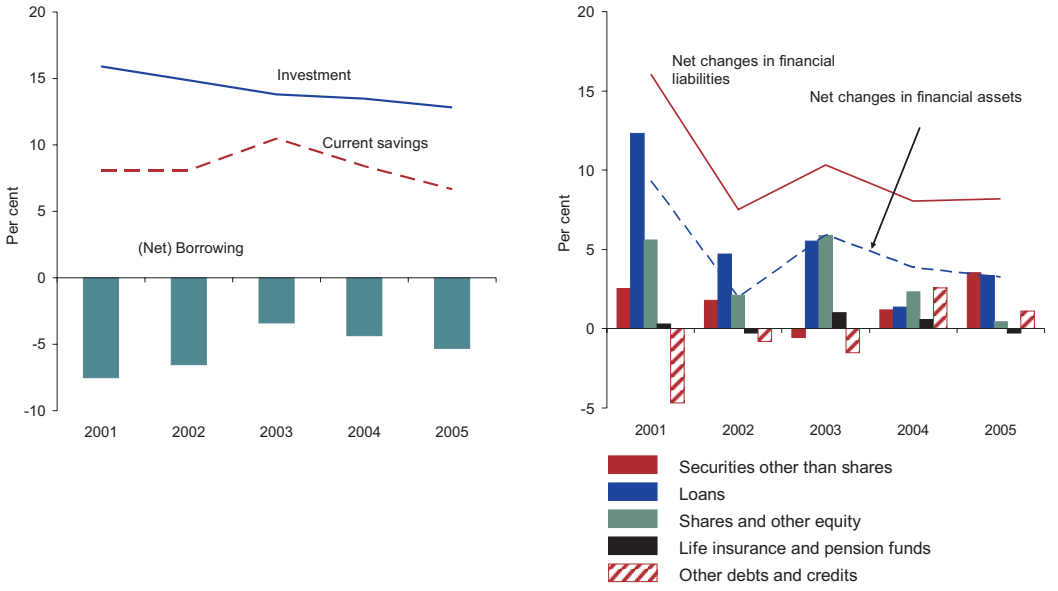
In 2005 the financing needs of non-financial corporations increased strongly *vis-à-vis* the previous year. On the one hand, corporate investment declined in line with confidence and economic sentiment indicators (Chart 6.3.1). On the other hand, current savings in this sector decreased further . At the end of the year, the indebtedness of the sector [14] stood close to 100 per cent of GDP, accounting for an increase of 3 p.p. from the previous year (and of 17 p.p. from 2000). When considering a debt aggregate consisting of loans and securities other than shares, the indebtedness ratio in relation to GDP increased 4 p.p., standing as one of the highest in European terms. (Chart 6.3.2 and Table 6.3.1).

Current savings in this sector was negatively affected by the development of the respective activity and profitability. Data from the Central Balance Sheet Data Office of Banco de Portugal on a sample of non-financial corporations[15] indicate that this development was caused by the deceleration in sales, the rigidity of wage costs and the significant increase in energy prices. It also suggests some differ-

Chart 6.3.1

SAVINGS, INVESTMENT, FINANCING NEEDS AND FINANCIAL OPERATIONS OF NON-FINANCIAL CORPORATIONS

As a percentage of GDP



Sources: *INE* and Banco de Portugal.

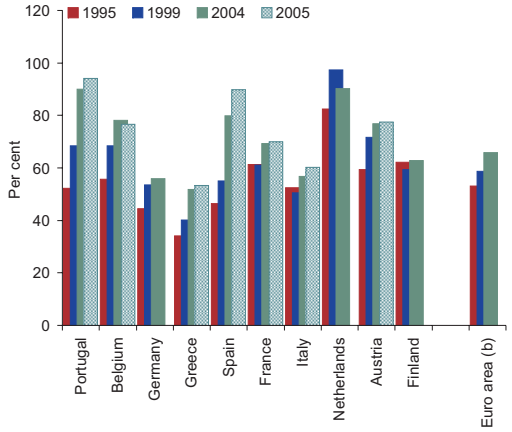
(14) The debt concept in question includes loans granted by resident and non-resident financial institutions; loans /additional capital granted by non-resident corporations of the same economic group (excluding those granted to non-financial corporations having their head office in Madeira offshore); commercial paper; bonds and trade credits received.

(15) A detailed description of the statistical information based on the Central Balance Sheet Data Office of Banco de Portugal can be found in Supplement 5/2005 to the Statistical Bulletin, December 2005. As mentioned in this supplement, the samples used cover above all large enterprises, namely in the quarterly inquiry.

Chart 6.3.2

INDEBTEDNESS OF NON-FINANCIAL CORPORATIONS IN EUROPEAN UNION COUNTRIES[(a)]

As a percentage of GDP



Sources: Eurostat (up to and including 2004, except Portugal), national central banks, national statistical institutes and Banco de Portugal.
Notes: Banco de Portugal calculations for 2005. **(a)** Including liabilities on account of loans and securities other than shares (consolidated). **(b)** Excluding Ireland and Luxembourg.

Table 6.3.1

INDEBTEDNESS OF NON-FINANCIAL CORPORATIONS IN EUROPEAN UNION COUNTRIES[(a)]

As a percentage of GDP

		Year [(b)]
Portugal	94.1	2005
Belgium	76.6	2005
Germany	55.8	2004
Greece	53.3	2005
Spain	89.8	2005
France	70.0	2005
Italy	60.3	2005
Netherlands	90.2	2004
Austria	77.5	2005
Finland	62.7	2004
Euro area[(c)]	65.9	2004

Sources: Eurostat (up to and including 2004, except Portugal), national central banks, national statistical institutes and Banco de Portugal.
Notes: Banco de Portugal calculations for 2005. **(a)** Including liabilities on account of loans and securities other than shares (consolidated). **(b)** Last known value. **(c)** Excluding Ireland and Luxembourg.

ence between developments in SMEs and in large enterprises. The latter managed to maintain positive rates of change of output and sales at around 5 per cent. To the extent that they are active in non-tradable sectors of the Portuguese economy, they will have managed, to some extent, to pass through to prices the increases in costs associated with their intermediate consumption. This, in parallel with containing wage costs through job reduction, has probably contributed to minimise reductions in profitability indices for these corporations.

In turn, SMEs recorded negative rates of change in output and sales at around 2 per cent. To the extent that they carry on their activities in tradable sectors, i.e., subject to (growing) international competition, these enterprises did not seem to have the adequate ability to pass through to prices the above-mentioned increases in costs, thereby reducing their profitability.

Banks continue to be the predominant source of indebtedness of non-financial corporations, either directly (through bank loans, which account for approximately two-thirds of total debt) or as a result of their acquisition of debt securities issued by non-financial corporations. In 2005, the value of liabilities represented by bonds and commercial paper increased by approximately 30 per cent.[16] The contribution of the short-term component to this change was 21 p.p., corresponding to an annual rate of change of 34 per cent.

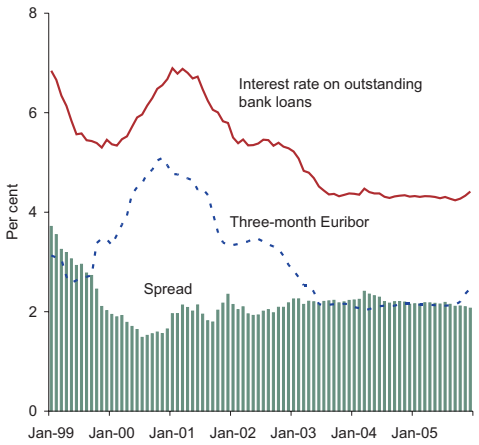
The expansion of bank credit continued to benefit from the historically low level of lending rates (Chart 6.3.3). In annual average terms, the interest rates of outstanding bank loans to non-financial corporations declined slightly (5 basis points) from the level observed in the previous year. This was fully explained by the squeeze on interest rate spreads.

In effect, lower interest rate spreads in average-risk loans was one of the changes introduced by banks since mid-2004 with a view to easing the conditions applied to the approval of loans to non-financial

(16) Debt securities represented, at the end of 2005, some 15 per cent of total debt of non financial corporations, mostly with a short term nature (commercial paper accounted for some 60 per cent of total debt securities).

Chart 6.3.3

MONEY MARKET INTEREST RATES, INTEREST RATES ON BANK LOANS TO NON-FINANCIAL CORPORATIONS AND RESPECTIVE SPREADS [a]



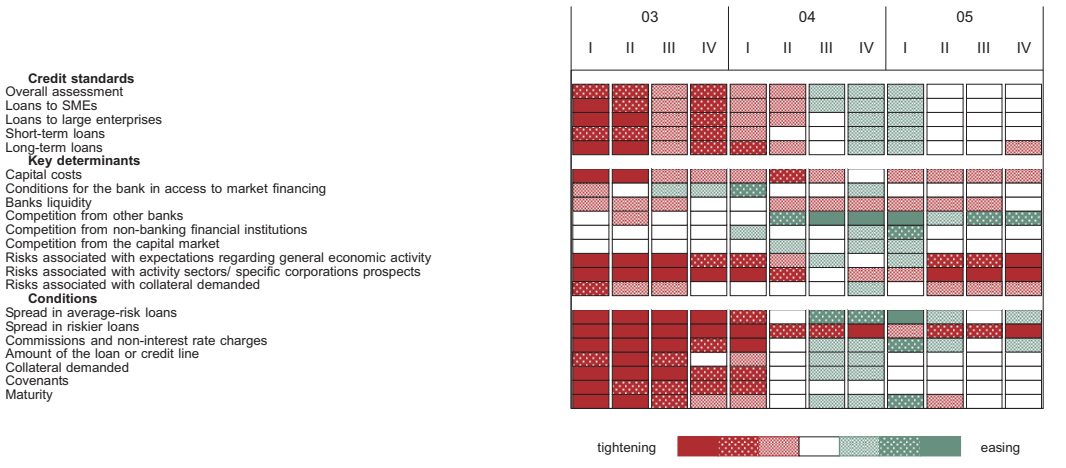
Source: Banco de Portugal.
Notes: Spreads are calculated as the difference between the interest rate on outstanding balances and the three-month moving average of three-month Euribor. (a) Rates and spreads refer to end-of-period outstanding balances. Up to December 2002, interest rates on outstanding balances are estimates.

corporations (Chart 6.3.4). The results of the Bank Lending Survey also point to a decline in commissions and non-interest rate charges. Competition, chiefly among banks, was probably the main factor behind these developments. Conversely, i.e., contributing to the tightening of the credit standards for the approval of loans, the entities participating in the Bank Lending Survey, on the one hand, pointed to the capital cost and its liquidity position (consistently over the year) and, on the other hand, they increasingly indicated the negative evaluation of the risks associated with activity sectors/specific corpo-

Chart 6.3.4

BANK LENDING SURVEY

Loans to non-financial corporations



Source: Banco de Portugal.

rations prospects and to expectations regarding the general economic activity and collateral demanded. In line with such evaluation, they have increased the cost of riskier loans.

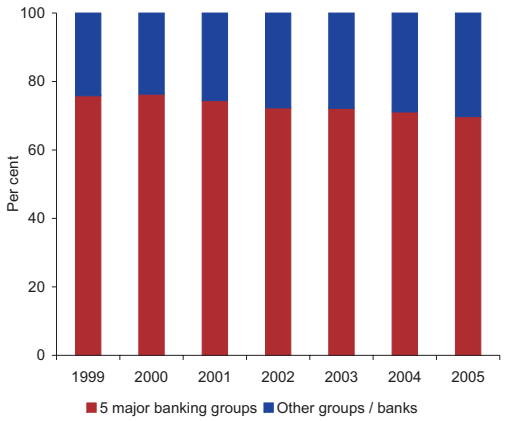
At the end of 2005, the annual rate of change of total debt of non-financial corporations stood at approximately 7 per cent, i.e., a slight increase from 6 per cent in the previous year. The first half of the year saw more significantly recourse to bond issuance, whereas in the second half of the year the recourse to the issuance of commercial paper and bank loans was privileged. At the end of 2005, the annual growth rate of loans granted by resident financial institutions to non financial corporations stood at 5 per cent (which compares with nearly 3 per cent at the end of 2004). The results of the Bank Lending Survey suggest that demand for bank loans in the first and last quarters of the year was chiefly associated with SMEs. Behind this demand were, on the one hand, financing needs for inventories and working capital and, on the other hand, debt restructuring processes. Investment financing, which is 2004 was deemed to be the main contributor to the increase in demand for loans, induced a contraction in demand for loans in 2005, in contrast to the developments in the euro area.

In 2005, the market share for the five major banking groups in this activity segment declined further, in line with the trend seen in recent years (Chart 6.3.5). This trend seems to be consistent with limiting activity in these groups to better performing non-financial corporations, in a context of less buoyant Portuguese economy in recent years. Available empirical evidence[17] suggests that, considering a range of relevant factors, corporations try to diversify their banking relations in a context of deterioration of results, whereas corporations with higher profitability tend to maintain a relatively concentrated relationship with a particular bank.

The exposure of banks to non-financial corporations continued to be characterised by high concentration. This concentration can be evaluated either in terms of the number of debtors or in sectoral terms. With regard to the number of debtors, large exposures (exposures are classified as large exposures when equal to or exceeding € 1 million) continue to represent about 80 per cent of the value of total exposures and only 6 per cent of the total number of exposures (Table 6.3.1).[18] At the end of 2005, expo-

Chart 6.3.5

MARKET SHARES IN THE LOANS TO NON-FINANCIAL CORPORATIONS SEGMENT



Source: Banco de Portugal.

(17) See Farinha and Santos (2002), "Switching from single to multiple bank lending relationships: determinants and implications", *Journal of Financial Intermediation*, 11, pp.124-151.

(18) This information is based on micro-data of the Credit Register of Banco de Portugal, and may therefore differ slightly from that reported in Monetary and Financial Statistics.

sures equal to or exceeding € 10 million represented around 45 per cent of the value of total exposures and 0.6 per cent of the total number of exposures. In turn, in sectoral terms, credit continued to concentrate on real-estate-related sectors. In effect, the sectors that have contributed the most to growth in bank loans to non-financial corporations were the construction and other real-estate activities sectors.[19,20] At the end of 2005, these sectors accounted for 19.3 and 15.9 per cent of total loans to non-financial corporations respectively, with rates of change of 8.6 and 10.7 per cent (compared with 4.9 and 13.6 per cent at the end of 2004).

Table 6.3.1

CREDIT RISK INDICATORS OF NON-FINANCIAL CORPORATIONS

Concentration indicators of loans to non-financial corporations

	Dec 02	Dec 03	Dec 04	Dec 05
Large exposures (higher than or equal to EUR 1 million)				
Weight of the amount in the total	78.7%	78.7%	78.5%	78.9%
Weight of the number of borrowers in the total	5.7%	5.7%	5.7%	5.9%
Average balance (10^3€)	5.744	5.695	5.585	5.592
of which, higher than or equal to EUR 10 million				
Weight of the amount in the total	45.8%	45.5%	44.6%	44.9%
Weight of the number of borrowers in the total	0.5%	0.5%	0.5%	0.6%
Average balance (10^3€)	38.129	36.320	35.002	33.157
Retail exposures (lower than EUR 1 million)				
Weight of the amount in the total	21.34%	21.32%	21.48%	21.09%
Weight of the number of borrowers in the total	94.34%	94.31%	94.26%	94.08%
Average balance (10^3€)	93.4	93.1	93.1	94.1

Defaulter indicators of credit granted to non-financial corporations, broken down into the size of the exposure

	Dec 02	Dec 03	Dec 04	Dec 05
Total exposure				
Number of defaulters [(a)]	13.4%	13.4%	13.2%	13.6%
Credit and interest overdue [(b)]	2.6%	2.5%	2.2%	2.1%
Total number of defaulters[(b)]	9.2%	9.5%	6.9%	7.5%
Large exposures (higher than or equal to EUR 1 million)				
Number of defaulters [(c)]	11.1%	10.8%	9.3%	9.0%
Credit and interest overdue [(d)]	1.7%	1.5%	1.3%	1.2%
Total number of defaulters [(d)]	8.0%	8.6%	5.6%	6.5%
Retail exposures (lower than EUR 1 million)				
Number of defaulters [(c)]	13.6%	13.6%	13.4%	13.8%
Credit and interest overdue [(d)]	5.9%	6.0%	5.5%	5.4%
Total number of defaulters [(d)]	13.3%	13.1%	11.7%	11.5%

Source: Banco de Portugal.
Notes: **(a)** As a percentage of the total number of defaulters. **(b)** As a percentage of total credit. **(c)** As a percentage of the total number of defaulters in this portfolio. **(d)** As a percentage of total credit in this portfolio.

(19) The exposure due to loans to households for house purchase, which posted high growth rates in recent year (over 10 per cent), can be added to this exposure in construction-related activities. At the end of 2005, this total exposure stood for 63 per cent of total loans granted to the non financial private sector (which compares with 60 per cent at the end of 2004).

(20) The analysis of the contribution of the different activity sectors to finance the aggregate of non-financial corporations is hindered by the fact that an important share of such financing occurs firstly via non-financial holdings (included in the Services sector – Other activities of services supplied mainly to corporations), from which it is subsequently broken down into the different components of the groups to which those holdings belong .

Considering that credit risk associated with non-financial corporations tends to vary inversely to their size, it can be concluded that this concentration of credit continued to be a positive factor for limiting credit risk. In turn, the relative concentration of credit in services sectors (typically non-tradable sectors), evincing a more favourable performance than manufacturing (and than tradable sectors in general), points to an identical conclusion.

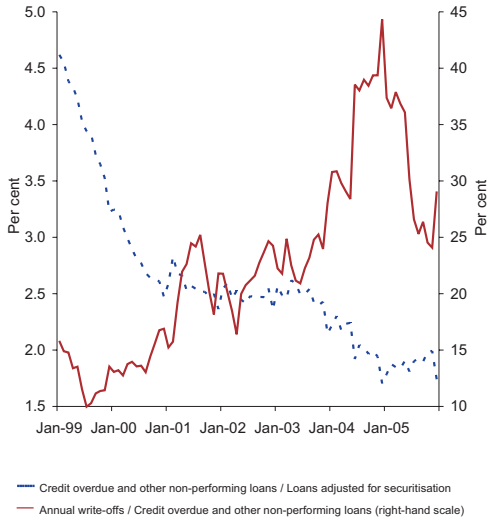
At the end of 2005, the average quality of the loan portfolio to non-financial corporations [21] deteriorated slightly from the end of the previous year (Chart 6.3.6). This trend was due, on the one hand, to less recourse to asset write-offs/write-downs, thus reversing the growing utilisation of this instrument over recent years. On the other hand, it was the result of an increase of approximately 17 per cent in the annual flow of new credit overdue and other non-performing loans (in 2003 and 2004 that flow had declined by 21 and 2 per cent respectively) (Chart 6.3.7).

The major contributions to the increase in the default ratio derived from exposures to non-financial corporations of the following sectors: real-estate, rental and services supplied to corporations and, to a lesser extent, hotels and restaurants (restaurants and similar) (Chart 6.3.8). In turn, among the other sectors with higher loan exposures to banks, the default ratios of construction and wholesale and retail trade have stabilised.[22] The default ratio of non-financial corporations in manufacturing, on the other hand, increased by around 20 basis points, to 3.3 per cent.

As mentioned above, the downward trend of the flow of new default credit (and other non-performing loans) of non-financial corporations was reversed in 2005. Given that, in general, the liabilities of recent non-compliers are restructured at an initial stage of the rise in default, which is intended to adapt the debt service to the financial capacity of the borrowers, that reversal was not as significant as it would have been otherwise.

Chart 6.3.6

DEFAULT RATIO OF LOANS TO NON-FINANCIAL CORPORATIONS



Source: Banco de Portugal.

Chart 6.3.7

ANNUAL FLOW OF NEW CREDIT OVERDUE AND OTHER NON-PERFORMING LOANS

Non-financial corporations

Source: Banco de Portugal.
Note: Estimate of the annual flow of new credit overdue and other non-performing loans (adjusted for write-offs/write-downs) as a percentage of bank loans (adjusted for securitisation).

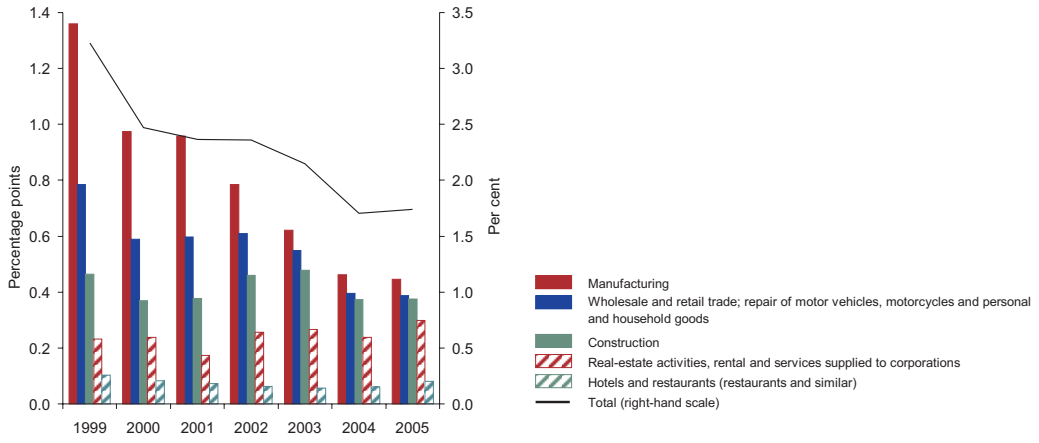
(21) Defined by the ratio of credit overdue and other non-performing loans to total credit granted to this sector.

(22) It is worth recalling that this sectoral analysis is hampered by the fact that the services supplied to corporations sub-sector includes non-financial holdings that often operate as an entity channelling funds to semi-public undertakings (meaning sectors) belonging to different activity sectors.

Chart 6.3.8

DEFAULT RATIO OF NON-FINANCIAL CORPORATIONS

Sectoral contribution



Source: Banco de Portugal.

Moreover, this rise in the flow of new default credit took place against a background of an increase in demand for credit by SMEs. Behind this demand were, on the one hand, financing needs for inventories and working capital and, on the other hand, debt restructuring processes. In combination with information available on the activity and profitability of SMEs, this trend suggests that the increase in default may be associated with the absence of sustained recovery of the Portuguese economy after the 2003 recession and with the end of a cycle of interest rate (significant) reductions. Should a scenario of a continued period of subdued growth of the Portuguese economy be confirmed, it would have an impact on the materialisation of credit risk of non-financial corporations, especially if market expectations of an increase in key ECB interest rates are confirmed (which will bring as a result an increase in bank borrowing rates).

6.4. International Exposure of the Domestic Banking System

Most Portuguese banking groups and institutions have maintained a scope of action limited to Portugal (Table 6.4.1). In effect, when evaluated vis-à-vis the claims (on a consolidated basis) of domestic institutions as a whole considered in the present report, the international exposure of the Portuguese banking system stands at approximately 30 per cent (clearly below that observed for most Western European countries[23]). Moreover, a large part of such exposure consists of international claims,[24] whereas in 2005 local claims in local currency corresponded to only some 6 per cent of the claims of domestic institutions as a whole considered in the present report. Nevertheless, and as mentioned in Chapter 3 – Activity, profitability and risk coverage, in 2005 some of major Portuguese banking groups

(23) See "Chart 5.4.1 *Structure of the international exposure of domestic banking systems*" in the 2004 *Financial Stability Report*. Note that the figures now presented for Portugal differ slightly from those reported in the 2004 Financial Stability Report, because a new reporting system was adopted, based on a direct survey to institutions (it was previously based on estimates). The new reporting makes it possible to examine not only the immediate risk of the exposure but also last resort risk. However, the results obtained under the latest approach do not differ significantly from those obtained from the analysis of exposures in terms of immediate risk.

(24) Defined as the claims on non-residents in the economy where the institutions have their head office, excluding those held by branches and subsidiaries abroad on residents in the economies where these carry on their activity, when expressed in the local currency of those economies. For a more detained explanation of the concepts in this section, see "Box 5.3. *International exposure of the banking system*" in the 2004 *Financial Stability Report*.

Table 6.4.1

CONSOLIDATED FOREIGN CLAIMS FROM THE PERSPECTIVE OF IMMEDIATE RISK - STRUCTURE

	2004	2005
Total - 10^6 EUR	76.898	77.164
Structure (percentage of the total)		
International claims	76.6	76.7
Maturity		
up to 1 year	46.3	44.5
from 1 to 2 years	3.1	3.1
more than 2 years	23.2	21.1
Other	3.9	8.0
Institutional borrower		
Banks	44.8	46.1
Public sector	3.9	3.5
Non-banking private sector	27.8	27.1
Other	0.0	0.0
Geographical borrower		
Developed economies	52.7	55.4
Offshore centres	14.4	10.8
Developing Europe	2.7	3.3
Other	6.8	7.2
By type of sovereign rating		
AAA and AA+	59.1	57.5
AA to A	6.2	7.5
A- to BB+	4.8	4.4
Other	6.4	7.3
Local claims in local currency	23.4	23.3
Geographical borrower		
Developed economies	15.7	15.2
Offshore centres	0.8	0.6
Developing Europe	5.3	5.0
Other	1.7	2.5
By type of sovereign rating		
AAA and AA+	13.4	12.6
AA to A	3.0	3.3
A- to BB+	5.5	5.0
Other	1.5	2.5
Memo:		
Local claims in local currency - EUR 10^6	14.959	16.896

Source: Banco de Portugal.

recorded significant changes in this segment of the international component of their activity, at the level of raising resources and granting credit as well as generating income.

International claims are centred around a relatively small number of countries (ten major international counterparts account for approximately 71 per cent of total claims), most of which are countries or territories classified as developed economies and with a high sovereign rating, wherefore risk associated with such claims is probably relatively limited.

Box 6.1. Housing Prices in Portugal and Macroeconomic Fundamentals: Evidence of Quantile Regression

This box shows the results of a quantile regression model related to housing prices in Portugal and macroeconomic variables according to the methodology presented in Machado and Sousa (2005)[1]. This approach consists in estimating the probability distribution of housing prices on the basis of macroeconomic variables. The basic hypothesis is that the probability distribution of asset prices is not constant over time but changes as a function of the macroeconomic environment. Hence, a given housing price may be considered to be too high, "normal" or excessively low depending on the prevailing macroeconomic conditions. For example, in periods of strong growth in disposable income it is only natural that real asset prices may also grow significantly without this implying a speculative bubble. Thus, the probability of higher housing prices is expected to increase.

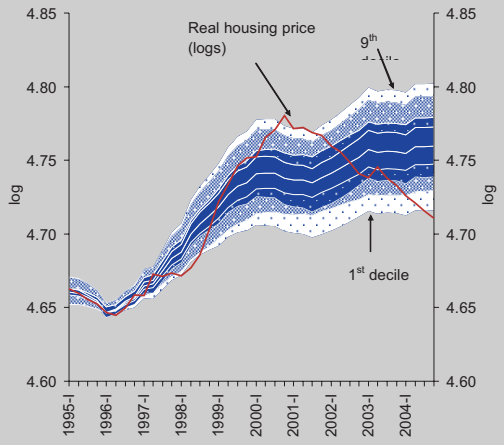
The model used relates housing prices in real terms (in logarithms) with disposable income (in logarithms) and the real short-term interest rate (in percentage points). Use was made of the consumption deflator to obtain real variables and the sample considered covers the 1994-2004 period. Data for housing prices correspond to the index of the Confidencial Imobiliário newsletter; disposable income and the consumption deflator are obtained from INE; the interest rate on housing loans derives from the Monetary and Financial Statistics of Banco de Portugal.

Estimation results in national aggregate terms point to a positive relationship between disposable income and real housing prices and to a negative relationship between the housing price and the real interest rate. However, the interest rate coefficient is estimated with a certain degree of uncertainty and in statistical terms it is not significant for some of the quantiles. Chart 1 shows the conditional distribution of housing prices. The darker areas represent the central deciles of the distribution and the lighter areas the extremes of the distribution. According to the model, a value of the real housing price above (below) the 9th decile (1st decile) can be interpreted as indicating an overvaluation (undervaluation), given that the probability of these occurrences is lower than 10% when taking into account macroeconomic conditions.

According to the results, housing price growth between 1995 and the first quarter of 2000 was, in general, accounted for by macroeconomic fundamentals. In fact, according to estimates the real housing price in this period remained below or close to the central quantiles of the distribution. However, in the second half of 2000 and in 2001

Chart 1

REAL HOUSING PRICE AND RESPECTIVE CONDITIONAL DISTRIBUTION



Sources: *INE*, Newsletter Confidencial Imobiliário and Banco de Portugal.

(1) Machado, J. and Sousa, J., "Asset prices and macroeconomic fundamentals in the euro area", in the autumn 2005 issue of the Economic Bulletin of Banco de Portugal.

the housing price rose to levels higher than justified by macroeconomic fundamentals, which suggests an episode of price overvaluation in the housing market. The subsequent sharp correction of housing prices (in real terms) resulted at an early stage in values for the real housing price more in line with macroeconomic fundamentals, although from mid-2004 onwards it evolved to values that can be considered low vis-à-vis these fundamentals.

PART II – **ARTICLES**

The Survival of New Firms: Impact of Idiosyncratic and Environmental Factors

Luísa Farinha

Estimating Probabilities of Default under Macroeconomic Scenarios

António Antunes, Nuno Ribeiro e Paula Antão

Interest Rate Risk in the Banking Book

Sara Noorali e Carlos Santos

THE SURVIVAL OF NEW FIRMS: IMPACT OF IDIOSYNCRATIC AND ENVIRONMENTAL FACTORS*

*Luísa Farinha***

1. INTRODUCTION

The evidence that new firms fail at an outstanding rate has led many researchers to investigate the factors that affect their performance and survival. In this context, industrial organization literature has recently switched its focus from questions related to entry towards post entry performance.

This literature aims at explaining why some firms survive and grow healthy while others stagnate and die[1]. Some researchers mainly focus on the effect of environmental factors upon firm performance and survival. Environmental factors mostly relate to macroeconomic conditions or to industry characteristics such as the stage of development of the market or the degree of industry competition. Some others emphasize the impact of firms' strategic decisions in order to strengthen their position in the market and guarantee their survival. These decisions concern for example firm size, investment in R&D or in human capital.

The hypothesis that conditions prevailing at birth affect firms' survival, at least early in their lives, is consensual in the literature. Nevertheless, the relative importance of initial and current conditions has been motivating an interesting debate among researchers. Some advocate that initial characteristics are definitely "imprint" and condition firms' decisions and performance during their lives[2]. Some of the others base their research on a life cycle model for firms in order to analyse their performance and survival. They do not ignore the importance of founding conditions but emphasise the effect of the changes occurring during firms' lives on their probability of success. The persistence of the effect of initial conditions upon firms' post-entry performance and survival has been debated in the literature. As a matter of fact, the empirical evidence has not been consensual. Some results suggest that this effect is persistent and can even amplify while others, such as presented in a paper by Bamford *et al.* (1999), show that it fades away after a few years (despite being still significant six years after birth. Mata et al. (2003), using data on a large set of Portuguese firms, found that the effect of initial conditions on firms' survival persists without much attenuation for at least several years after their birth.

Firms' performance and survival has also been motivating finance literature which provides new insights on the factors that explain why some firms exit from the market and others don't. The hypothesis that due to information asymmetries firms' real and financial decisions are not independent led to an important branch of literature where the paper by S. Fazzari *et al.* (1988) has had a seminal role. The results of this literature are very relevant to improve the understanding of firms' entry and survival. In particular, according to these models firms' access to financial markets, which depends on their size, transparency or even liquidity helps to explain their performance. Furthermore, the fact that banks are

* The views expressed in this article are those of the author and do not necessarily reflect those of Banco de Portugal. Any errors and omissions remain of the author.

** Banco de Portugal . Economic Research Department.

(1) See Audrecht e Mata (1995) that summarises the contents of a special issue of the International Journal of Industrial Organization on firms post-entry performance.

(2) Cooper et al. (1994), for example, developed a model that predicts the performance of new firms based on measures of human and financial capital at birth.

the dominant source of financing, especially for the younger and smaller firms, suggests that relationship lending may play an important role in explaining firms' survival. This argument is certainly more relevant in economies, like the Portuguese one, where the market for venture capital is still very incipient.

Empirical analysis on these issues lagged behind theoretical analysis both because of the difficulties in formulating empirically testable hypothesis and the lack of adequate data to test them. As a matter of fact, longitudinal data on a set of relevant characteristics for a large sample of firms is needed. These characteristics should preferably be observed since the very beginning of firms' lives. The stage of development of the empirical analysis is also dependent on the development of the methodologies to study these phenomena and the software to deal with these data.

The study presented in this article was made possible by the availability of a unique data set that combines information on birth and death dates for a longitudinal sample of firms with balance sheet data and data on the structure of relationships between firms and the banks that provide them financing.

The objective of this study is to empirically test some of the implications of theoretical hypotheses from both of the industrial organisation and the finance literature concerning the factors that explain differences in the probability of survival across firms. In particular, this study aims at providing an answer to the following questions:

- What is the relative importance of environmental conditions (macroeconomic and industry conditions) versus firms' specific characteristics?
- Are current environmental and specific conditions relevant?
- Are initial conditions and decisions taken at founding relevant?
- Does the effect of initial conditions and decisions affect the probability of survival at birth or does it have a continuing (or even permanent) impact on performance and survival?

In sum, the purpose of this study is to improve the understanding of the factors affecting firms' performance and ultimately their survival. This understanding is crucial to the assessment of financial stability since anything which potentially worsens the performance of firms increases the risks that their creditors, namely the banks, make losses.

Anticipating the main results one can state that they suggest, as expected, that smaller, less transparent, more leveraged firms and those with more bank lending relationships have a larger probability of survival. Less intuitive results were obtained on the relationship between the economic cycle and the pattern of firm survival. According to these results, the probability of survival is larger in periods of higher GDP growth. Finally the results also suggest that that initial size, leverage ratio and number of bank lending relationships affect significantly and continually their chances of survival.

The remainder of the article is organised as follows. Section 2 below elaborates on the hypotheses to be tested. Section 3 presents the methodology and the data is described in section 4. Section 5 analyses the results and section 6 concludes.

2. HYPOTHESES

Most research on firms' of survival asserts that, other things equal, larger firms are less likely to fail. Industrial organization literature argues that larger firms operate in a scale that is closer to the efficient scale in a given market and are more diversified[3]. From the perspective of the finance literature, larger firms are relatively less affected by information asymmetries and therefore pay a lower risk premium to obtain external financing. Superior efficiency and greater diversification in the product market combined with an easier access to financing justify the argument that, other things equal, larger firms are more able to resist to adverse shocks. C. Lennox (1999), for example, using a sample of UK quoted firms, shows empirically that size affects significantly firms' likelihood of failure.

Firm size at founding may be an indicator of entrepreneurs' expectations concerning firm's success. In firms that are born larger, entrepreneurs tend to be more confident upon their ability to compete. This argument is used to justify the hypothesis that initial and current values of size are expected to have differentiated effects upon survival. In addition, for very young firms, size is expected to be particularly relevant because it can mitigate the information problems due to lack of reputation.

Balance sheet composition, namely the proportion of tangibles/intangibles in firm's total assets also relates to information issues. In general, the higher is the proportion of intangibles, such as patents or non-observable technology, more opaque is the firm and therefore more subject to information asymmetries. On the contrary, firms with relatively more tangibles that can be used as collateral are, in principle, more able to obtain external financing at better terms. Therefore, the hypothesis to test is that, other things equal, firms with a larger (smaller) proportion of tangibles (intangibles) have a larger probability of survival. It can also be argued that, soon after birth, when information problems are more acute, this effect is expected to be stronger.

The relative amount of liquid assets that a firm holds can affect how quickly and efficiently it responds in the case of a shock. Thus, more liquid firms are expectedly less likely to fail.

Firms' probability of survival is also expected to depend on their financing structure, namely on the relative proportion between capital and debt. In theory, a higher proportion of capital relative to debt can be interpreted as a buffer that can make the access to external financing easier in the case of an adverse shock. On the other hand, highly leveraged firms may be close to the point where liquidity constraints become active. It is also sensible to assume that the frictions derived from a high leverage ratio are more acute for firms early on in their lives when they usually can place relatively less collateral.

In the same sense, a high proportion of short term debt is more likely to induce a larger probability of failure, in particular in the early years of firms' lives.

The role played by the number of firms' bank lending relationships is also expected to affect their chances of survival. According to the relationship lending literature in an exclusive relationship the bank gets privileged information on the firm's prospects so that it can lend to the firm at more favourable conditions in terms of price and guarantees. Therefore the hypothesis that a unique relationship has a positive impact on the probability of survival is investigated[4]. This effect is expected to be particularly important during the first years of firms' lives because the benefits they can obtain outweigh the costs associated to the monopolistic power that the exclusive bank can exercise after some time.

Finally, this study also investigates the role played by the environmental conditions, both macroeconomic and industry conditions (such as market concentration or innovative capabilities) on firms' per-

(3) See, for example, D. Audrecht e T. Mahmood (1994).

(4) See, for example M. Petersen and R. Rajan (1994 and 1995) and A. Berger and G. Udell (1995). The results obtained by L. Farinha and J. Santos (2002) with a sample of Portuguese firms suggest that firms that maintain an exclusive bank lending relationship perform better in terms of profitability ad growth.

formance and chances of survival. Specificities of the region where the firm is located are also expected to influence their likelihood of success. The potential impact of industry related factors on firms' probability of survival is largely documented in the literature, but the results are not always consistent[5].

The effect of the macroeconomic cycle upon firms' probability of survival is more difficult to assess empirically mainly due to the shortness of the time dimension of the available longitudinal datasets (usually less than one cycle). According to the standard approach, during recessions, the contraction of aggregate demand broadly affects all firms' sales and profits and can lead some of them to failure. However, in the empirical literature, some results suggest that this effect is less important than the aggregate approach predicts[6]. A more recent approach that emphasises firm heterogeneity and adjustment costs (e.g. sunk costs) asserts that recessions induce a restructuring process (characterised by labour lay-off and productivity increases). It is also plausible that under recessions the competitive pressure exerted upon established units by new comers is alleviated.

Macroeconomic conditions prevailing at the time of founding can be even more relevant to explain firms' post entry performance and survival than current conditions. Empirical evidence suggests that booms are characterised by high firm creation but most of these firms are likely to fail when the trend upturns. On the contrary, during recessions the risks of entry are larger, demanding more discipline and inducing firms with a lower probability of success to remain out of the market.

The same kind of arguments can also be given to justify the hypothesis that the industries or regions where entry is easier the probability of exit is also expected to be larger.

3. METHODOLOGY

The main objective of this study is to analyse the impact of environmental and firm specific conditions upon their probability of survival. The methodology that is adequate to cope with this kind of problem is known in the literature as duration analysis. In duration analysis the variable to explain is the time evolved before a certain event occurs which is, in this case, firm failure. Duration analysis enables us to characterize the process of firm failure more rigorously than with a binary dependent variable approach, that is, through the estimation of logit or probit regression models. These models can only deal with the dichotomy occurrence/non occurrence of the event. Furthermore, duration analysis is more adequate to accommodate data censoring. As a matter of fact, survival times are frequently right censored, that is, at the period of observation the relevant event has not yet occurred. Duration models are able to handle incomplete durations.

An important concept in duration analysis is the hazard rate, $\lambda(t)$, defined as the rate at which spells are completed after duration *t*, given that they lasted at least until time *t*. In some duration models the inclusion of explanatory variables is very straightforward and the interpretation of the coefficients, though in general less so, in the case of a few distributions also gets a regression like interpretation. We can also estimate the relationship between the hazard rate and explanatory variables without having to make specific assumptions about the underlying distribution. This approach results in models usually referred as semi-parametric[7]. Cox (1972) proposed semi-parametric model satisfying a separability condition, that is, the hazard rate can be given by the expression:

(5) The results in D. Audrecht and T. Mahmood (1994), for example, show a negative and significant effect of market concentration upon the survival of new firms. On the contrary, Mata and Portugal (1994) do not obtain a significant result for the effect of the same variable.

(6) T. Boeri e L. Bellmann (1995), for example, do not find a significant relation between the economic cycle and firms' survival.

(7) For a rigorous exposition of duration analysis see Lancaster (1990). For more practical issues see also M. Cleves *et al.* (2002).

$$h\left(t \setminus x_t\right) = h_0\left(t\right)\exp\left(\beta' x_t\right) \tag{1}$$

where $h_0\left(t\right)$ is the baseline hazard, which is common to all units of observation, x is a vector of time-varying explanatory variables and β is the vector of parameters. Cox proposed a partial likelihood method (rather than a maximum likelihood as in parametric analysis) for estimating the slope coefficients β.

Taking logs to both sides of equation (1) we have:

$$\log h\left(t \setminus x_t\right) = \log h_0\left(t\right) + \beta' x_t \tag{2}$$

that is linear in x_t.

Several specifications for equation (2) can be written depending on the hypothesis on how x affects the survival of new firms. Considering that:

$$x_t = x_0 + \Delta x_t \tag{3}$$

where x_0 is the vector of the explanatory variables measured at the moment of founding and Δx_t measures the changes in these variables from founding to the current period, the more general specification may be taken into account:

$$\log h\left(t\right) = \log h_0\left(t\right) + \beta_1' x_0 + \beta_2' \Delta x_t \tag{4}$$

by allowing the effect of founding conditions upon failure at the moment of founding differ from the effect of founding conditions upon failure at subsequent periods.

With this formulation the hypothesis that initial conditions are important to explain firms' probability of survival can easily be tested. With the convenient reparameterisation:

$$\log h\left(t\right) = \log h_0\left(t\right) + \left(\beta_2 - \beta_1\right)' x_0 + \beta_1' x_t \tag{5}$$

the significance of the estimated coefficient in x_0 gives a direct test for the equality of β_1 and β_2.

Finally, to assess if the effect of initial conditions is temporary or, on the contrary, persists along several periods the following specification was also estimated:

$$\log h\left(t\right) = \log h_0\left(t\right) + \beta_1 \Delta x_t + \left(\beta_{20} + \beta_{21} t\right) x_0 \tag{6}$$

which results from replacing β_2 by a simple linear function of time.

4. DATA

The data used in this study comes mainly from three databases. The first is the balance sheet survey conducted by the Banco de Portugal on a yearly basis since 1986 on a large sample of firms. It covers mainly balance sheet data but is also informative on the firm's start-up date, number of workers or activity sector. It is possible to follow a significant part of these firms for several years. However, firms' participation in the survey is voluntary. Therefore exiting this sample does not mean that the firm has failed. Consequently data on firms' exits from the market were obtained from a different source that is Quadros de Pessoal. These data are collected through a survey yearly conducted by the Ministry of Employment since 1982. This survey is compulsory to all firms employing paid labour. Therefore if a firm stops to reply it is classified as a closure. Data on firms' lending relationships was obtained from the monthly reports on credit filed by banks operating in Portugal with the central bank. Credit reports

detail amounts outstanding vis-à-vis each debtor at the end of the month. Each claim is broken down according to original maturity (short or long term). There is also information on the amount that is past due.

Using the CB database is possible to follow, since birth, a sample of 6485 firms[8]. From these a sub-sample of 3354 firms appears in the credit register database since start-up. Approximately 17 per cent of the firms exited the market until 1998[9]. Note that the use of CB leads to an underestimation of exits because in this database larger and in better shape firms are over-represented[10].

Chart 1 depicts the distribution of firm failures according to the age of the firms at the time of failure (as a percentage of total number of failures in the sample). It is in line with a stylised fact of firm survival analysis, that is, most failures occur during the first years of firms' lives. Of the unsuccessful firms in this sample, 78 per cent of failures occur during their first 5 years.

Chart 2 relates firms' survival rates and economic activity. This chart shows the distribution of the percentage of firms that survived at least 4 years according to start-up year and the real GDP growth rate in that year. These figures suggest that firms created in boom years are more likely to exit early in their lives. At first sight, this is not an intuitive result. However, it is in accordance with the view that under the optimistic atmosphere of boom years a large number of firms are created many of which have low chances of survival. In recession years these firms would not have entered the market. In addition, note that, in the recession of 1993-1994, firms that were created during the expansion years 1989-1990 attain the precise age at which failure rates are higher.

Table 1 characterises the sample in terms of average values, measured at founding, for a set of variables potentially related to firms' chances of survival: size, asset composition, leverage and its composition, legal form, sector of activity, region and bank lending relationship measures. The sample has been broken down into the two sub-samples of successful and unsuccessful firms.

Chart 1

PERCENTAGE OF FAILURES (%)

According to the age of the firm at the time of failure

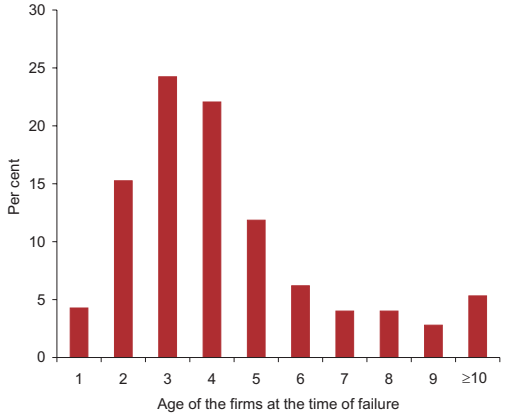
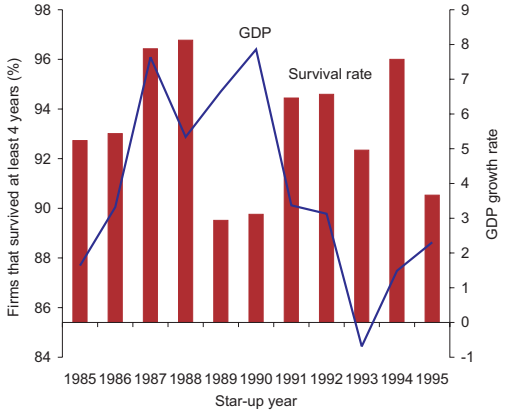


Chart 2

PERCENTAGE OF FIRMS THAT SURVIVED AT LEAST 4 YEARS AND ECONOMIC ACTIVITY



(8) The start-up year is the first full year of activity for firms in the CB database.

(9) 1998 is the last year for which data on failures is available.

(10) In this sample approximately 90 per cent of firms survived at least 4 years. This figure is larger than that reported by J. Mata and P. Portugal (1994) (around 50 per cent) obtained with QP data for manufacturing in the period 1983-1987 (reflecting partly the weight of the recession of 1983-1984).

Table 1

SUMMARY STATISTICS

	1	2	3	4 [(a)]
	All firms	**Firms that survived**	**Firms that failed**	**t-statistic H0:(3)-(2)=0**
Number of firms	3354	2772	582	
Size				
Sales (10^3 euro)	2484	2757	1183	-1.09
Composition of assets				
Tangibles/total assets	30.6	30.7	29.9	-0.73
Intangibles/ total assets	1	1.1	0.8	-1.21
Liquid assets/ total assets	11.7	11.8	11.2	-0.77
Trade credit extended/ total assets	26.1	26.7	23.3	-3.18***
Leverage				
Total debt/ total assets	82	81.3	85.5	3.63***
Composition of debt				
Short-term debt/ total assets	64.5	65.4	60.6	-3.12***
Medium/long-term debt/ total assets	17.4	15.9	24.7	6.69***
Profitability				
ROA	-0.6	0.2	-4.3	-6.71***
Sector of activity				
Manufacturing	0.438	0.413	0.56	6.56***
Construction	0.126	0.135	0.082	-3.47***
Commerce	0.333	0.344	0.28	-2.99***
Transportation	0.064	0.067	0.05	-1.55
Corporation legal form				
Stock firms	0.075	0.078	0.062	-1.36
Location				
Located in a local capital	0.236	0.229	0.268	2.03**
Bank-lending relationships				
Number of bank-lending relationships	1.543	1.530	1.605	1.64
Unique bank-lending relationship	0.654	0.663	0.615	-2.20**

Note: (a) H_0 rejected at ***1%, **5%, *10%.

The average initial size of firms is 2.5 million euro, being lower in the case of firms that fail. However, size presents a high variability so that the difference between the means for the two samples is not significant according to the t-statistic of the test for the difference of means (reported in column 4). Asset composition (proportions of tangibles, intangibles and liquid assets) at founding does not differ significantly between the two sub-samples. The initial proportion of trade credit extended is significantly lower in the case of firms that fail.

The average leverage ratio (debt over assets) at start-up is approximately 82 per cent, being significantly higher for the unsuccessful firms. Most initial debt is short-term debt. The proportion of short-term debt is significantly higher in the case of successful firms. On the contrary the proportion of long-term debt is significantly larger for those that fail. Profitability at start-up is significantly lower for the unsuccessful firms.

Most firms in this sample are manufacturing firms. This sector is more represented in the case of firms that fail. Only 7.5 per cent of all firms in the sample are stock firms.

In addition, the figures in Table 1 show that, at start-up, the average number of bank-lending relationships is 1.5. In this sample, 65 per cent of firms start up with an exclusive relationship. The proportion is significantly higher in the case of successful firms.

These results provide a first clue to the relation between the probability of survival and some relevant firm characteristics but they are not conclusive. Only regression analysis can test for the effect of each variable controlling simultaneously for the effect of all other variables included in the estimated model.

5. ESTIMATION RESULTS

5.1 Effect of Idiosyncratic and Environmental Conditions

The first objective of this study is to identify the main factors that explain why longevity differs across firms. Thus, the variable of interest is the time elapsed between the firm's start up and failure so that the appropriate methodology to address the issue is, as referred above, the estimation of a duration model.

In the first estimated model the set of explanatory variables includes the current levels of firm specific characteristics such as size (measured by the logarithm of sales), the proportion of tangibles and intangibles in total assets, liquidity (measured by cash and bank accounts plus tradable securities over total assets), trade credit extended and debt (as a percentage of total assets) and the number of bank-lending relationships. Environmental current conditions (macro and industry level) are controlled through the inclusion of the real GDP growth rate and industry dummies. The results of the estimation of this model, which corresponds to equation (2), are shown in Table 2. The models in columns 2, 3, and 4 exclude the explanatory variables for which non-significant estimated coefficients were obtained in the model of column 1 (according to the usual significance levels).

Table 2 shows the results of estimating equation 2. The interpretation of β is as follows. When $\beta_k > 0$, for example, an increase in x_k leads to an increase in the probability of failure. It is also useful to look at the exponentiated coefficients, $\exp(\beta_k)$, that have the interpretation of the ratio of the hazard for one unit change in x_k. For instance, according to the results in column (2) of Table 2 a one unit change in the logarithm of sales (corresponding approximately to multiply sales by 3) leads to an hazard rate that is equal to 82 per cent of the baseline hazard $h_0(t)$ (given that exp(-0.193)=0.82). An increase of 1 percentage point in the leverage ratio corresponds to an hazard rate 1.4 per cent higher (as exp(0.0143)=1.0145). The rise in the hazard rate is 1.6 and 1 per cent in the case of 1 percentage points increments in short-term and medium/long term debt, respectively (as exp(0.0158)=1.059 and exp(0.0097)=1.097 in the results presented in column 4). Firms with an exclusive credit relationship with a bank have a 20 per cent lower hazard rate (since exp(-0.223)=0.800 in column 3).

In summary, the results from Table 2 presented so far, suggest that smaller firms, those that are less able to pledge collateral, that are more leveraged or have a large number of relationships have lower chances of survival[11].

The evidence on the effect of GDP growth is less intuitive and must be interpreted with special caution. As a matter of fact, somehow surprisingly, firms' probability of survival is higher when GDP growth is lower. According to the results in column 2, a increase of 1 percentage point in GDP growth rate leads to an increase of 16.7 per cent in the hazard rate. At first sight, this result is surprising, but it may be due to the effect of stronger competitive pressure during booms which could also intensify exit. In addi-

(11) The results also sugest that firms' chances of survival depends significantly on the industry where the firm operates.

Table 2

DURATION MODELS: ESTIMATION OF EQUATION 2

	1	2	3	4
Size				
logarithm of sales	-0.198	-0.193	-0.173	-0.182
	(-4.81***)	(-4.73***)	(-4.50***)	(-4.41***)
Composition of assets				
Tangibles/total assets	-0.00242			
	(-0.97)			
Intangibles/ total assets	0.0173	0.0178	0.0181	0.0188
	(1.91*)	(1.99**)	(2.01**)	(2.14**)
Liquid assets/ total assets	0.00249			
	(0.73)			
Trade credit extended/ total assets	0.00601	0.00667	0.00635	0.00511
	(2.75***)	(3.45**)	(3.29***)	(2.57**)
Leverage				
Total debt/ total assets	0.0145	0.0143	0.014	
	(7.72***)	(7.67***)	(7.71***)	
Short-term debt/ total assets				0.0158
				(8.40***)
Medium/long-term debt/ total assets				0.0097
				(4.07***)
Bank-lending relationships				
Number of bank-lending relationships	0.115	0.117		0.112
	(3.09**)	(3.21***)		(3.04***)
Unique bank-lending relationship			-0.223	
			(-2.40**)	
Macroeconomic conditions				
GDP growth rate	0.156	0.155	0.153	0.183
	(4.67***)	(4.62***)	(4.56***)	(5.16***)
N. observ.	16917	16917	16917	16897
Pseudo LL	-4009.8994	-4011.0906	-4013.1724	-3996.5722
Wald test(p-value)	0.0000	0.0000	0.0000	0.0000

Notas: **(a)** t-ratios in parenthesis; the null hypothesis rejected at ***1%, **5%, *10% ***1%, **5%, *10%. **(b)** The estimated models also include the following control variables: sector of activity dummies, corporation legal form dummy (model of column 1) and location dummy.

tion, it is in line with the conjecture that firms do not effectively leave the market when they get into financial distress, but only a few years later[12].

5.2 Effect of the initial conditions and decisions

One of the objectives of this study is to investigate if firms' founding choices and conditions have persistent effects on their chances of survival. This corresponds to estimate equation (4) the results of which are presented in Table 3. In column (2) the leverage ratio is broken down between short and long-term. Column (3) shows the results of the t statistic of the test for the equality of β_1 and β_2 in equation (4) (see the reparameterization given by equation (5)).

According to these results, initial firms' size, leverage ratio and number of bank-lending relationships have a significant impact upon their probability of survival. However, the effect of current size is more important than the effect of initial size. On the contrary, the effect of the number of bank relationships at founding is larger than the effect of the current number.

(12) This conjecture is corroborated by the results of the estimation of a model (not shown) in which the variable GDP growth is included with a 3 year lag. In this case the sign of the estimated coefficient is the opposite and significant.

Table 3

DURATION MODELS: ESTIMATION OF EQUATION 4

			t-statistic $(H_0: \beta_2 - \beta_1 = 0)$	
	1	2	1	2
Size				
Current logarithm of sales	-0.408	-0.388		
	(-5.51***)	(-5.24***)		
Initial size	-0.163	-0.154	2.99***	2.87***
	(-3.79***)	(-3.55***)		
Assets composition				
Current intangibles/total assets ratio (change)	0.063	-0.0652		
	(5.49***)	(5.41***)		
Initial intangibles/total assets ratio	0.00808	-0.00955376	-3.69***	-3.69***
	(0.71)	(0.87)		
Current trade credit extended/ total assets ratio (change)	0.00976	0.00817		
	(3.36***)	(2.75***)		
Initial trade credit extended/total assets ratio	0.00501	0.00365	-1.59	-1.51
	(2.43**)	(1.73*)		
Leverage				
Current debt/total assets ratio (change)	0.0156			
	(6.51***)			
Initial debt/total assets ratio	0.0125		-1.21	
	(6.32***)			
Current short-term debt/total assets ratio (change)		0.0173		
		(7.19***)		
Initial short-term debt/total assets ratio		0.0139		-1.35
		(6.86***)		
Current medium/long-term debt/total assets ratio (change)		0.0100		
		(3.33***)		
Initial medium-long-term debt/total assets ratio		0.00845		-0.52
		(3.27***)		
Bank-lending relationships				
Current number of bank-lending relationships (change)	0.0624	0.0682		
	(1.23)	(1.33)		
Initial number of bank-lending relationships	0.127	0.116	2.95***	2.62***
	(2.94***)	(2.62***)		
Macroeconomic conditions	0.156	0.173		
Current GDP growth (change)				
	(4.30***)	(4.46***)		
Initial GDP growth rate	0.157	0.18		
	(4.27***)	(4.51***)		
N. observ.	16917	16897		
Pseudo LL	-3996.8279	-39282.8383		
Wald test(p-value)	0.0000	0.0000		

Nota: t-ratios in parenthesis; the null hypothesis rejected at ***1%, **5%, *10% ***1%, **5%, *10%. The estimated models also include the following control variables: sector of activity dummies, corporation legal form dummy (model of column 1) and location dummy.

In the case of the leverage ratio, the results suggest that the effects of the initial and current levels are both relevant to explain firms' chances of survival. According to the results of the t-statistic, these effects are equally important.

The estimated results also indicate that macroeconomic conditions prevailing at the time of founding are relevant to explain firms' survival, suggesting that firms created during periods of high GDP growth are more likely to fail. This result is consistent with the conjecture that in booms a huge number of firms are created but most of these firms have a low probability of success.

Finally, Table 4 shows the results of the estimation of equation (6), which investigates if the effect of firms' initial leverage ratio on the probability of survival persists in time. According to the sign of the estimated coefficient associated to the multiplicative variable $x_0 * t$, the effect of the initial short-term debt

Table 4

DURATION MODELS: ESTIMATION OF EQUATION 6

	1	2	3
Size			
Current logarithm of sales	-0.191	-0.184	-0.184
	(-4.72***)	(-4.51***)	(-4.46***)
Assets composition			
Current intangibles/total assets ratio	0.0182	0.0185	0.0188
	(2.03**)	(2.11**)	(2.15**)
Current trade credit extended/ total assets ratio	0.00661	0.00538	0.00512
	(3.44***)	(2.72***)	(2.59***)
Leverage			
Current debt/total assets ratio (change)	0.0169		
	(6.93***)		
Initial debt/total assets ratio	0.0100		
	(3.44***)		
Initial debt/total assets ratio * t	0.000967		
	(1.11)		
Current short-term debt/total assets ratio			0.0156
			(8.33***)
Current short-term debt/total assets ratio (change)		0.0161	
		(7.23***)	
Initial short-term debt/total assets ratio		0.0202	
		(7.28***)	
Initial short-term debt/total assets ratio * t		-0.00215	
		(-2.52**)	
Current medium long-term debt/total assets ratio		0.00987	
		(4.18***)	
Current medium long-term debt/total assets ratio (change)			0.0117
			(4.40***)
Initial medium long-term debt/total assets ratio			0.00283
			(0.83)
Initial medium long-term debt/total assets ratio * t			0.00267
			(3.46***)
Bank-lending relationships			
Current number of bank-lending relationships	0.117	0.108	0.111
	(3.16***)	(2.91***)	(3.02***)
Macroeconomic conditions			
Current GDP growth	0.157	0.171	0.181
	(4.69***)	(4.74***)	(4.83***)
N. observ.	16917	16897	16897
Pseudo LL	-4009.1015	-3990.2171	-3989.1377
Wald test(p-value)	0.0000	0.0000	0.0000

Notas: (a) t-ratios in parenthesis; the null hypothesis rejected at ***1%, **5%, *10%. (b) The estimated models also include the following control variables: sector of activity dummies, corporation legal form dummy (model of column 1) and location dummy.

ratio declines over time. However, in the case of both the total debt ratio and of the medium/long term debt ratio, the results do not show a similar declining effect.

6. CONCLUSIONS

The aim of this study is to identify the factors that explain why the probability of survival differs across firms. A longitudinal set of data on a sample of Portuguese firms observed since birth is used. This dataset combines data on firms' start-up and failure dates, balance sheet information and data on the structure of bank lending relationships.

The hypotheses to test are based on the conclusions of some relevant industrial organisation and finance models. Thus, it was expected that size, assets composition, financing structure and number of bank-lending relationships (reflecting firms' strategic decisions and their ability to raise external financing) would have a significant impact on firms' chances of survival.

The results of duration analysis suggest, as expected, that the probability of survival is lower for firms that are smaller, have a lower ability to pledge collateral (and consequently to raise external financing), are more leveraged and have a larger number of bank-lending relationships.

Less intuitively, the results also suggest that firms' chances of survival are lower in periods of higher GDP growth. These results should be interpreted with special caution given the characteristics of balance sheet survey data (covering firms that typically have a performance above the population average) and the shortness of the time dimension (that covers only one economic cycle). In addition, this result seems to be in line with the conjecture that firms effectively leave the market only several years after getting into financial distress.

This study also addresses the question of the relative importance of the impact of initial and current conditions on firms' probability of survival. The results indicate that firms' size, leverage ratio and number of bank relationships at start-up have a persistent and significant impact on their chances of survival. In addition, the empirical evidence suggests that firms that are created during periods of expansion are more likely to fail.

The issues investigated in this study are particularly relevant to the assessment of financial stability. The incidence of failure in the corporate non-financial sector has important macroeconomic implications on investment and economic growth. But it also affects the stability of the financial system because when firms fail, their creditors, namely banks, usually also suffer losses. So, anything that affects the probability of firms' failure also affects the risks faced by the banking system.

The evidence that initial conditions have long lasting effects on survival has also some implications. It suggests, in particular, that the criteria for granting credit should not only be based on contemporary indicators but should also, as much as possible, go back in firms' history.

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ESTIMATING PROBABILITIES OF DEFAULT UNDER MACROECONOMIC SCENARIOS*

*António Antunes***
*Nuno Ribeiro***
*Paula Antão***

INTRODUCTION

The assessment of the creditworthiness of current and prospective counterparts in loan operations is pivotal in the banking business, in particular the estimation of the propensity of non-financial corporations to fail their financial obligations in due time. This measure can be assessed in probabilistic terms over some predefined future horizon, conditional on the observable characteristics of the debtor. The implementation of reliable statistical methods to measure and forecast these probabilities implies the consideration of an observation period. In other words, the identification of default events implies monitoring each debtor over time and the identification of a transition from non-default to a default state. The obtained statistics are useful for credit institutions in many ways, spanning from the credit approval process (for instance to implement cut-off points to screen credit applications), to the establishment of risk-sensitive pricing, the decision on whether collateral is required or not, the estimation of provisioning requirements or impairment losses, and the assessment of capital adequacy.

Furthermore, the incorporation of macroeconomic factors in models estimating probabilities of default allows practitioners to stress-test the financial standing of financial institutions and the financial system at large. These stress-tests imply the design of macroeconomic scenarios resulting from large unfavourable shocks, with low probability but still plausible and internally consistent, and have been widely used in the context of the Financial Stability Assessment Program (FSAP) carried out by the International Monetary Fund.

Comprehensive databases with information from companies' financial statements are generally not available, making it difficult to develop complete and reliable models of default. One of the main problems in readily available databases is their bias towards large corporations and the low coverage of small- and medium-sized enterprises.[1] Another relevant issue is the fact that companies in relatively good financial conditions are more likely to transmit their accounting information to institutions collecting data than the others, which may be reluctant to reveal their weak financial standing in order to preserve their ability to get credit and carry on with their regular activity. Both situations have consequences in terms of the accuracy of model estimations, due to the scarcity of relevant observations for an appropriate model adjustment.

This limitation does not apply when information from universal credit registers is used, because all non-financial corporations with debts outstanding *vis-à-vis* the financial system are covered. This is the case of the *Central de Responsabilidades de Crédito (CRC*), the credit register managed by Banco de Portugal, which contains information on any natural or legal person with debts *vis-à-vis* each resi-

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** Banco de Portugal, Economic Research Department.

(1) Banco de Portugal is responsible for one of those databases, the *Central de Balanços (CB)*, which includes detailed information on domestic non-financial firms (see Banco de Portugal, 2005).

dent credit institution (named CRC participant).[2] The main goal of the CRC is to provide financial institutions useful information for the loan approval process, such as the debt position and the existence of delinquencies of firms with respect to the set of all participants in the CRC.

Among non-financial corporations filed in the CRC, only a very small fraction is present in other readily available statistical or commercial databases with, for instance, accounting information. For that reason, data from financial statements available in the *Central de Balanços* was not used in this study, even though other information available for statistical purposes on other databases covering the universe of all existing and extinct corporations was used to characterise each company.

The aim of this paper is to present an approach to estimate the probability of default of non-financial corporations using data from the CRC, complemented with data about the debtor's economic sector from another statistical database covering the universe of non-financial corporations. The statistical model also incorporates macroeconomic variables for the period under consideration. In this way, common cyclical factors are taken into account in the probability of default estimation, in a way that allows for the simulation of the impact of adverse shocks on the expected losses of credit institutions.

Two distinct macroeconomic scenarios are used. The first scenario is called "baseline", according to which the Portuguese economy evolves in line with the December 2005 Banco de Portugal's projections undertaken in the context of the Eurosystem's macroeconomic projection exercise. In the second scenario, the "stress scenario", an abrupt correction of global economic imbalances is assumed in early 2006.[3] In both cases probabilities of default are calculated for loans characterised by economic sector and company size in terms of credit. This procedure allows for the computation of aggregate probabilities of default for any structure of portfolio characterised in terms of these two dimensions, even though the figures reported in this paper correspond only to the financial system's aggregate portfolio of loans to non-financial corporations.

Data used and the estimated model allow for the conclusion that smaller enterprises are more prone to default. For instance, non-financial corporations with total debt in CRC ranging from 1 thousand euros to fifty thousand euros have a probability of default around four times larger than those with aggregate debt of over 1 million euros.

Nonetheless, average aggregate probability of default is relatively low, given the relatively high concentration of the system's loan portfolio in large-sized enterprises, which have a low probability of default.

METHODOLOGY

Data

The goal of the model is to estimate the probability of non-repayment in due course of a financial obligation by a particular debtor. In this sense, the unit under observation is the loan (and not the enterprise), implying that at least three different types of variables must be considered. The first set of variables characterises each loan; for instance, a variable denoting the existence of loans in default of the same debtor (other than the loan under observation) is used. The second set characterises the non-financial corporation, which is the counterpart to the financial system in the loan under observation; examples include the total debt of the corporation and its economic sector. The third set of vari-

(2) See Banco de Portugal (2003). Notification is mandatory for exposures above 50 euros.

(3) The macroeconomic scenarios are mere illustrations and do not represent Banco de Portugal's forecast of the evolution of the Portuguese economy during the period under study. For a more detailed description of the macroeconomic unbalances referred to in this study and possible consequences of their correction at a global level, see "Chapter 2 – *Macroeconomic Environment*" of this Report.

ables measures factors that impact all non-financial corporations under study, such as the level of interest rates and a business cycle indicator. This establishes a link between the macroeconomic context and the financial standing of each non-financial corporation.

Two different data sources are used. The first is the CRC, with monthly data about all the non-financial corporations with loans *vis-à-vis* credit institutions participating in the CRC. All loans granted with amount outstanding higher than 50 euros are reported to Banco de Portugal. This information is then centralised and made available on-line to financial institutions. The total amount of loans outstanding is broken down by type of loan[4] and the status of the debtor in the loan (for instance if there is a sole debtor of the loan or more debtors liable for it). The data sample covers the period January 1995 to December 2004 and comprises around 6 million records in 1995 (concerning around 336 thousand enterprises) and more than 11 million of records in 2004 (corresponding to 474 thousand enterprises).

The second data source is a registry of all existing and extinct resident legal persons and includes, along with other information, the economic sector of the enterprise, its legal status and statutory capital. Each company is assigned an economic sector based on the *Classificação das Actividades Económicas Rev.2 (CAE)*, in a total of 15 sectors: agriculture and fishing; wholesale and retail trade; construction; domestic activities; education; real estate development; mining and quarrying; financial services; health services; manufacturing; public services; social services; tourism and transports.

Stratified sampling by economic sector and class of total debt was used to reduce the amount of information involved and keep the dataset manageable in computational terms. The categories used in sampling are depicted in Table 1; companies with total debt under 50 euros were neglected.

All large companies (i.e. companies classified in size class 4), 70 percent of those classified in class 3 and 5 percent of companies in classes 1 and 2 were selected. Company size, proxied by total debt, was used in the econometric procedure in order to ensure that the sampling filter applied would not bias the results.

Table1

CREDIT DIMENSION CLASSES
All figures in euros

Class	1	2	3	4
Definition	$d < 10^3$	$10^3 \leq d < 5 \times 10^4$	$5 \times 10^4 \leq d < 10^6$	$d \geq 10^6$

Table 2

NUMBER OF LOANS AND FIRMS IN THE SAMPLE

	Credit dimension class				
	1	2	3	4	Total
Loans	9021	57922	102330	28031	197304
Firms	5632	18671	13207	1941	39451

(4) Types include, among others, commercial liabilities (type 1), finance at discount (type 2), other short-run liabilities (type 3), and medium- and long-run liabilities (type 4). Impaired credits are registered as defaulted credit (type 7) and credit under litigation (type 8), as well as write-offs (type 9).

As mentioned above, one is interested in analysing the likelihood of a default *vis-à-vis* a credit institution. Taking the information available in CRC, a loan was defined as a bilateral credit relationship between a debtor and a credit institution, meaning that multiple loans of a single firm in a given credit institution count as a single loan. Table 2 presents the number of loans and firms used in the estimation. Data were transformed into quarterly data. The final sample includes around 6 million observations.

One striking feature from the data in Table 2 is the lower number of relationships with different credit institutions exhibited by smaller enterprises. For instance, enterprises with total debt ranging from 1 thousand and 50 thousand euros have, on average 3.1 loans, which compares with 14.4 loans for those enterprises with total debt in excess of 1 million euros.

Statistical Model

The default event was defined as the occurrence of three consecutive months of a positive overdue amount in a loan after a month without any overdue amount. The loan relationship is then removed from the sample and will be considered again only after no overdue amount is booked in the CRC. This means that a default event is counted only the first time it occurs, but the same bilateral loan relationship can display more than one default event in the sample, provided that a period of default is followed by a period in which the full amount outstanding in a loan relationship is in a regular status (i.e., no overdue amounts are booked in the CRC).

Ex-post empirical default rates for a given period can be obtained by contrasting the fraction of new loans in default with the total loans outstanding at the beginning of the period. Figure 1 presents the ex-post annual default rates observed in the period 1995-2004, in each company size class (proxied by total debt booked in CRC). In general, default rates for larger companies are lower than average: the default rate of companies with debt in excess of 1 million euros in 2004, corresponding to class 4, hardly exceeded 1 percent, which compares to 4.3 percent for enterprises with total debt ranging from 1 thousand to 50 thousand euros (class 3). In the time series dimension, in general, default rates decline from 1995 to 2000 and then increase, in line with the stylised facts about the macroeconomic business cycle.[5]

A binary response model with a *probit* specification was used, with default in a credit relationship as the event of interest. A latent variable y was defined as a function of a set of regressors represented by the vector x, as follows:

$$y = x\beta + \varepsilon, \tag{1}$$

where ε is an independent and identically distributed normal error. The observed variable is defined as:

$$y^* = \begin{cases} 1 \text{ if } y \geq 0 \\ 0 \text{ if } y < 0 \end{cases}$$

with 1 the event of interest (default). The conditional probability of default is going to be given by

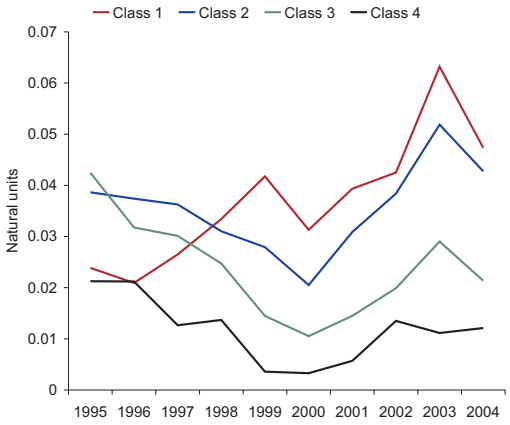
$$\Pr\left(y^* = 1 | x\right) = \Phi\left(x\beta\right),$$

where Φ is the normal cumulative distribution function.

(5) The evolution of default rates for class 1 firms (with total liabilities between 50 and 1000 euros) does not observe this rule, but their weight in the entire Portuguese portfolio is very small (less than 1 percent of total).

Figure 1

YEARLY DEFAULT RATES



The statistical model used in this approach incorporates variables (included in vector *x*) at the loan and debtor level, as well as variables that account for the macroeconomic environment. At the loan level, we used two dichotomous variables. The first is an indicator of default in other loans of the same debtor. The second is a dummy for default in more than 50 percent of the debtor's loans (not counting the loan under observation) during the current quarter. For example, if the debtor has, beyond the loan under observation, two additional loans and defaulted in both of them for two months of the current quarter, then the dummy is 1. If the debtor defaulted in both loans for only one month of the current quarter, then the dummy is 0.

At the firm level we use categorical variables for the activity sector and the credit dimension, according to the classes defined in Table 1. These variables control for the firm's dimension and the specificities of their activity sector. We also use a categorical variable for the number of loans of the firm top coded to 5 loans. It would be useful to include, at the firm level, balance sheet data, but this was not done for the reasons discussed above.

At the macroeconomic level we use the unemployment rate, the short-term interest rate and the GDP deviation from trend. We also included lags of these variables up to 4 quarters. Note that the data cover an entire business cycle, allowing us to take into account periods of economic expansion and contraction.

To accommodate the possible impact of the euro introduction in 1999, we included an indicator equal to 1 prior to 1999, and 0 thereafter. This variable was also interacted with the interest rate, because, in a high inflation context, interest rates were typically high up to 1999.

Also included in the model were interactions between the activity sector and the macroeconomic variables, as well as the credit dimension class and the macroeconomic variables, since different economic sectors and firms of different dimension might respond differently to macroeconomic changes.

Finally, we also included seasonal dummies.

Results

We estimated the model using maximum likelihood, so as to obtain β. The model fit can be ascertained using Figure 2 for two credit dimension classes (class 2, between one thousand an fifty thousand euros; class 4, above 1 million euros). The figure indicates a reasonable fit in both classes.[6] While no exhaustive out-of-sample tests were performed and the model is experimental, measures of the predictive power of the model suggest an adequate performance.[7] Let us evaluate that fit in a more rigorous way.

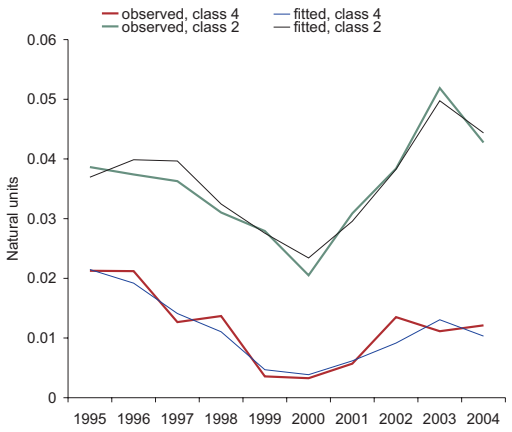
Although using only data on the credit of firms and the activity sector, the model allows a credit institution with access to the debtor's characteristics – especially the detailed repayment status *vis-à-vis* other credit institutions – to calculate with relative reliability the probability of a default event. For example, if in a given quarter a credit institution knows that a particular debtor defaulted in all its other loans in the previous quarter, the probability of default estimate will be high. If a credit request is at stake, this might entail a refusal; if there is already a credit relationship, the credit institution might provision the loan.

Since the model is a binary response one, we can define a cut-off value a for the expected value of variable y (given by equation (1) with $\varepsilon = 0$), which we shall designate by Ey, in such a way that when Ey is higher than a the loan is "bad" (which might entail the refusal of a credit request or the provisioning of an existing loan); otherwise, the loan is "good". This procedure defines, for each a, a classification for each loan in the sample. Notice that we know if a loan is "good" or "bad" based on what actually happened to each loan of the sample. Naturally, a perfect model would classify correctly all loans. This does not happen in practice.

As a matter of fact, a very negative value for a means that a lot of loans that are good are going to be classified by the model as bad (this is the so-called type I error, and we can think of it as a "false alarm"). As we increase a, more and more good loans are going to be classified as such by the model,

Figure 2

OBSERVED AND FITTED DEFAULT RATES
Annualised mean values



(6) The adjustment quality for other classes is comparable to that observed in this figure.

(7) Partial results suggest that the out-of-sample performance of the model is comparable to the one we have just described. On the other hand, the time horizon is limited to one economic cycle, and this renders it inadequate to simulate the model outside the sample period, that is, estimate the model using data until, say, 2000, and then analyse its performance in the ensuing years.

but some loans that actually are bad are going to be classified as good (this is the type II error, or a "wolf in a sheep's clothing"). When *a* is really high, all loans are classified as good – and so all bad loans will be classified as good by the model. We call specificity to the fraction of good loans which are classified as good by the model, and sensitivity to the fraction of bad loans that are classified as bad by the model. When *a* is minus infinity, all loans are classified as bad by the loan; therefore, sensitivity is 1 and specificity is 0. When *a* is plus infinity, sensitivity is 0 and specificity is 1. By varying *a* we obtain a set of values for these two measures.

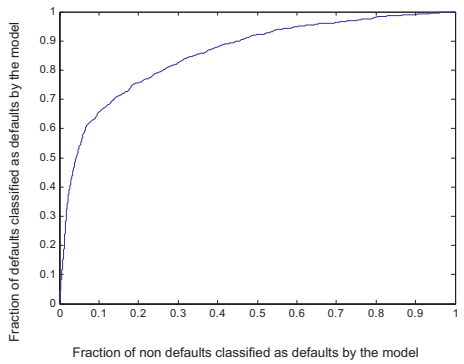
A possible representation of the model's performance is its ROC curve, which we can see in Figure 3.[8] In the horizontal axis we represent 1 minus specificity, that is, the percentage of good loans classified as bad by the model. In the vertical axis we represent sensitivity, that is, the fraction of bad loans classified as bad by the model. A given point (x, y) in the curve answers the following question: What percentage *x* of good loans will be rejected by the model in order to classify a percentage *y* of bad loans as bad? For instance, we can see in the figure that the model will reject 25 percent of the good loans if we want to make sure that about 80 percent of the bad loans are rejected.

As previously said, in a perfect model we would have to reject 0 percent of the good loans in order to reject 100 percent of the bad ones. This means that the perfect model's ROC curve would be the line segment between points (0,1) and (1,1). On the other hand, a model taking the good/bad decision randomly will have an ROC curve given by the line segment between points (0,0) and (1,1). In other words, the model would reject 25 percent of the good loans to reject 25 percent of the bad, or reject 50 percent of the good loans in order to reject 50 percent of the bad, and so forth. This fact suggests that an adequate measure for the performance of the model is the area below the ROC curve, which we designate by *A*.

This area is 1 for a perfect model and 0.5 for the random choice model. In our case, the value of *A* is 0.86, which suggests a robust performance. Additionally, this value is high even when we consider defaults in only one quarter. For example, in the 4th quarter of 1995 *A* is 0.84, while in the 4th quarter of 2004 its value is 0.86.

Figure 3

ROC CURVE



(8) ROC means Receiver Operating Characteristic. See the Internet site http://www.anaesthetist.com/mnm/stats/roc/ for an intuitive introduction to this topic. Stein (2002) presents a summary of the validation methods of credit default models, including the ROC curve.

In possession of a model with a reasonable ability to discriminate loans in terms of defaults, we can use it to predict the evolution of defaults under given macroeconomic conditions and assuming a particular behaviour for the credit portfolio. This exercise is carried out in the next section.

CREDIT DEFAULT: A STRESS TEST EXAMPLE

In this section we use the model to predict the default probability in each loan under a baseline and a stress macroeconomic scenario. Next, we use that information to calculate the evolution of the default probability for each credit dimension class and activity sector. Finally, we use the Portuguese credit portfolio to non-financial firms to calculate the evolution of the average default rate under each macroeconomic scenario.

Macroeconomic Scenarios

The baseline scenario is in line with Banco de Portugal's projections in the context of the Eurosystem's macroeconomic projection exercise, carried out in December 2005. Table 3 presents a summary of that scenario. We see that GDP growth increases by a small amount and the interest rates remain stable.

The stress scenario builds on the following premises: (i) a sudden decline in the demand for dollar-denominated assets; (ii) a simultaneous and significant appreciation of the euro *vis-à-vis* the dollar; (iii) a marked increase of the long-run dollar interest rates; (iv) global stock markets fall substantially in 2006; (v) the recession then affecting the United States spreads to the world economy. In this scenario, there is in 2006 a strong deceleration of growth in Portugal, and a recession occurs in 2006 and 2007. The euro short-run interest rate decreases, in line with the evolution of economic activity in the euro area.

Default Probabilities

Table 4 presents the model estimates for the default probability by credit dimension class. These estimates are obtained using a credit portfolio to non-financial firms equal to that of end-2004, but with the macroeconomic regressors replaced according to the scenarios. The hypothesis that the credit portfo-

Table 3

MACROECONOMIC SCENARIOS
All values in percentage

	2005	2006	2007
Baseline scenario			
Short-run interest rate	2.2	2.2	2.3
GDP growth rate	0.3	0.8	1.0
Stress scenario			
Short-run interest rate	2.2	1.0	0.8
GDP growth rate	0.3	-1.0	-0.7

Table 4

ESTIMATES OF DEFAULT PROBABILITIES
Yearly values

	Credit dimension class			
Year	1	2	3	4
	Baseline scenario			
2005	6.3%	5.1%	2.6%	1.2%
2006	6.3%	5.1%	2.6%	1.3%
2007	5.8%	4.7%	2.3%	1.1%
	Stress scenario			
2005	6.3%	5.1%	2.6%	1.2%
2006	7.9%	6.4%	3.3%	1.7%
2007	9.0%	7.3%	3.9%	2.0%

Table 5

ESTIMATES OF THE AVERAGE DEFAULT PROBABILITIES OF THE ENTIRE PORTFOLIO
Yearly values

	2005	2006	2007
Baseline scenario	2.20%	2.30%	2.00%
Stress scenario	2.20%	2.90%	3.40%

lio does not change significantly over the simulation horizon is naturally subject to criticism. On the one hand, if defaults increase, bad firms cease to present new defaults because they shut down. Everything else constant, this would improve the average quality of the portfolio. On the other hand, continuing adverse macroeconomic conditions have the opposite sign in the average quality of the portfolio due to the accumulated damage imposed on firms. Finally, the characteristics of entering firms are unknown. In the absence of a model describing these effects, we adopted a static portfolio during the simulation period. In fact, an exploratory analysis of the main characteristics of the credit portfolio suggests that they remain fairly stable, namely in terms of the distribution by credit dimension class and activity sector.

To calculate the average default rate of the entire portfolio of credit to non-financial firms (that is, the probability which multiplied by total exposure is equal to the expected value of defaulted credit), we resort to the estimated default probability of each loan (given by $\Phi(x\beta)$). We perform that calculation for the entire portfolio weighting the default probability of each loan by its amount.

Table 5 presents the average default probability of the credit portfolio for the simulation horizon. For instance, in 2005 the model suggests of value of 2.2 percent, which means that 2.2 percent of total exposure is expected to become overdue. Naturally, the effective loss will be lower since some overdue amounts will be partially or totally repaid, and, even if the debtor shuts down, some credits might be recovered by lenders.

We can observe that, for both scenarios, the weighted values are larger than the default probability of credit class 4 and lower than that of class 3 (see Table 4). This stems from the fact that these two classes account for the largest chunk of the portfolio of credit to non-financial firms (representing around 80 percent of total). The default rate will stay relatively small, since the credit portfolio is concentrated in large firms, which typically present low default rates.

CONCLUSION

This study presents a possible approach to the problem of determining the propensity of a given firm to default a loan. The statistical model incorporates variables at the loan, firm and general macroeconomic level. This work departs from other models by emphasizing the credit information contained in the Banco de Portugal's *Central de Riscos de Crédito* database, as well as its relationship with macroeconomic variables. Some adjustment measures suggest an adequate performance of the model in terms of its capacity to discern "good" from "bad" loans.

As an illustration, we present estimates of a loan's default probability by credit dimension class, and the average default probability of the Portuguese portfolio of credit to non-financial firms, given two different macroeconomic scenarios. Under a scenario featuring relatively moderate economic growth

and stable interest rates, the probability of default remains approximately constant. Under a scenario with a strong economic deceleration, the probability of default tends to increase, possibly from 2% to 3.4% at the end of the simulation horizon, that is, after 2 years. The average default rate would still be relatively low given the characteristics of the credit portfolio, which is concentrated in large firms with a typical low default rate.

Naturally, these results should be interpreted cautiously. The econometric model omits important characteristics of firms which may be important in explaining the default event. Their inclusion would better describe the firm and perhaps improve the model's performance. Some hypotheses needed to ensure that our estimates are unbiased might be violated (although some adjustment measures suggest that this might not be serious).[9] In this type of model an over-fitting problem might also occur. This consists of using variables that, by construction or some peculiarity of the way data are generated, induce a good performance but do not account for the real behaviour of firms; the discerning capacity of the model is thus lower than the usual performance measures suggest (Dwyer, 2005). Finally, the results of the simulations under the baseline and the stress macroeconomic scenarios are central values and could be subject to high variability.

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(9) One of the potential problems of this approach is the so-called "neglected heterogeneity", which consists of the non-inclusion in x of independent regressors that are relevant for the default event. However, it can be shown that this problem does not affect, for instance, measure A, since neglected heterogeneity tends to attenuate the magnitude of the coefficients, but not the sorting of the propensity to default (Wooldridge, 2002).

INTEREST RATE RISK IN THE BANKING BOOK*

*Sara Noorali***
*Carlos Santos***

1. INTRODUCTION

In general, banks' financial situation is sensitive to fluctuations in market interest rates. On the one hand, the portfolio of tradable financial instruments, in particular bonds and derivatives, is subject to continuous valuation according to the respective market value and this is a function of the current interest rates. On the other hand, asset and liability positions in non-traded financial instruments are susceptible to valuation according to the best estimate of the market value that would prevail if they were traded or settled at the moment of valuation. The traditional approach is the one generally accepted to measure these positions at market values: it consists in calculating the present value of expected cash flows on overall assets and liabilities,[1] using as discount rates the market rates for similar maturities. The simulation of changes in the level of the discount rates used allows for an approximation to the magnitude of the variation in net worth, assessed at market values, caused by changes in the interest rates.

In these terms, interest rate risk, which results from changes in the value of financial instruments induced by changes in interest rates, is included in the broadest category of market risks. It should not, however, be associated to any kind of default. The bank, therefore, does not consider situations where, as a result of changes in the level of interest rates, default on contractual terms takes place (the most significant example being the non payment of principal and interests in pre-defined periods). In these situations credit risk is at issue.[2]

Most assets and liabilities have a high degree of permanence on the balance sheet, in particular the instruments of the banking book, where credits and deposits stand out. Assuming there is no liquid secondary market for these instruments and that most of them are not held for negotiation and profit-taking purposes, the changes in the value of these instruments are interpreted as temporary, and this explains why they are not valued at market prices.

In terms of tradable assets not designed as held-to-maturity only the changes in value lead to the accounting record of potential gains or losses with impact in the net worth of banks, but the consideration of total balance sheet items in the measurement of interest rate risk aims at recognizing this, because if there is a need to sell some assets to obtain liquidity or to allow for an earlier settlement of liabilities, existing potential losses, may well turn out to be definitive, with subsequent impact on the bank's capital.

In addition, it must be borne in mind that this approach to interest rate risk, i.e. through the valuation at market prices of the interest rate sensitive set of assets and liabilities, even if it is assumed that they

* The views expressed in this article are those of the authors and do not necessarily reflect those of Banco de Portugal. The authors would like to thank Fátima Silva and Nuno Ribeiro for helpful comments and suggestions. Any errors and omissions remain our own.

** Banco de Portugal.Economic Research Department.

(1) Whether they are tradable or non-tradable and whatever their degree of permanence or continuity in the balance sheet.

(2) Nevertheless, it should be borne in mind that the boundary between market and credit risk is difficult to establish. As Chris Marrison refers in The Fundamentals of Risk Measurement, Mc-Graw Hill, 2002 (page 5), "The aspect of risk before the default happens is generally considered to be market risk. The actual default is considered credit risk".

are not all tradable, allows for identification of existing mismatches in the timings of assets and liabilities' interest rate repricing. These will translate, in the long term, into asymmetric oscillations in interest streams (income and expenses) and, as a consequence, in the banks' net interest income. From this perspective, the management and control of the interest rate risk aims at protecting net income related to intermediation and its importance will depend on the relevance of this activity in a bank's total income generation.

It has long been recognized that the monitoring of the bank's exposure to this risk by the supervision authorities must follow a set of principles. In this context, a 1997 recommendation of the Basel Committee,[3] laid down a set of qualitative principles. The most recent version of this document dates from July 2004 and considers a more systemic and quantitative approach to interest rate risk in the banking book, in particular under Pillar 2 of the new Capital Accord. Supervisors are expected to work pro-actively with banks. These developments are also visible in the European Directive which embodies the changes in own funds requirements in line with the new Capital Accord.

The regulatory framework in Portugal evolved in line with international developments. Through Instruction no. 72/1996, regarding the definition of internal control systems by institutions, the Banco de Portugal asked the institutions to verify a set of procedures which aimed, among other things, at an accurate management of interest rate risk. Later, in 2005, the Banco de Portugal started asking banks for information concerning the banking book[4] (in the context of the Instruction no. 19/2005). This required a standardized report designed to estimate the impacts of a 200 basis points (b.p.) change in the interest rate on net worth and on net income. The qualitative nature of the prudential approach to interest rate risk in the banking book also justifies an assessment of the consistency and robustness of the banks' internal models used to measure and control the risk. Thus, in the context of the report defined in the above-mentioned instruction, banks must also remit to the Banco de Portugal a report with the characteristics of the interest rate risk control systems, up-dated whenever relevant modifications are introduced.

In contrast to the banking book, interest rate risk in the trading book has been an explicit part of the Portuguese regulatory framework since 1996, with Notice no. 7/1996 reflecting the Second Capital Adequacy Directive (CAD II) and, more generally, the Capital Accord revision.[5] In this framework, institutions must assure minimum capital levels to cover explicit quantitative requirements, in the scope of the prudential treatment of global market risks. In the terminology of the new Capital Accord this means that these risks are approached within the scope of Pillar 1.

The rest of this article is organised as follows. Section 2 summarises the typologies and measurement techniques of interest rate risk. Section 3 presents the Portuguese and international legal framework. Section 4 presents the results obtained for Portugal in the context of Instruction no. 19/2005. Section 5 presents the conclusions.

(3) "Principles for the management and supervision of interest rate risk".

(4) The banking book includes all the instruments not included in the trading book. The trading book is defined in the Notice no 7/1996, which can be found in the site of Banco de Portugal.

(5) "Amendment to the Capital Accord to Incorporate Market Risks", January 1996.

2. APPROACHES TO INTEREST RATE RISK

2.1. Types of risk

In analytic terms, it is useful to distinguish different typologies of interest rate risk. This gives us more accuracy when isolating the source of this risk on the balance sheet structure of the institution. The types of interest rate risk most frequently analysed are repricing risk, yield curve risk, basis risk and optionality.

Repricing risk arises from timing differences in the financial instruments' interest rate residual maturity and/or repricing. The transformation of maturities is at the heart of traditional bank activities: borrow short, lend long. Assuming as a typical situation a positive slope in the yield curve, this transformation, when assets and liabilities pay fixed rates, tends to be a relevant source of income for banks. In this context, in the case of sharp repricing mismatches, the banks' income and economic value are exposed to adverse movements as a result of interest rate changes and may compromise the profitability of the institutions and their stability. Consider, for instance, a portfolio consisting of a long-term fixed-rate loan funded by a short-term deposit (duration mismatch). This portfolio decreases in value in a rising interest rate scenario, since the cash flows associated to the loan are fixed over its lifetime, while interest paid is changeable and increases after the short-term deposits reach maturity.

Analysis of the yield curve risk constitutes a refinement of the repricing risk approach and is different in the sense that it allows for the possibility of non-parallel shifts in the yield curve. For instance, a sharper rise in short than in long-term rates may compromise the profitability of funding long-term loans with short-term deposits. Similarly, and as an example, though a long position in 10-year government bonds covered by a short position in 5-year government bonds is hedged against parallel shifts in the yield curve, its economic value is sensitive to changes in the yield curve shape.

Basis risk is related to the lack of perfect correlation between rates received and paid on different instruments. Even on the assumption that the other characteristics of the financial instruments are similar, in particular repricing, movements in interest rates lead to non-anticipated changes in cash flows and in the income of assets, liabilities and off-balance sheet (OBS) elements. For example, a strategy of funding a one-year loan that reprices monthly based on the three-month Euribor, with a one-year deposit that reprices monthly based on the six-month Euribor, exposes the institution to the risk that the spread of these two index rates may change.

Optionality results from the option embedded in balance sheet or OBS instruments. Formally, an option provides the owner the right, but not the obligation, to buy, sell or in some manner alter the financial flow of an instrument. Many times this option is exercised as a response to changes in interest rates, with impact on the amount of interest rate risk to which a bank is exposed. For example, at an international level there are experiences of debtors initiating significant early liquidations of fixed rate long-term mortgage credit in the context of significant reductions in interest rates. In these situations, there is a divergence between the financial flows expected up to contract maturity and the financial flows effectively received by the bank.

It is possible to conceive an approach to interest rate risk that takes into consideration the changes in all financial flows related directly or indirectly to intermediation stemming from changes in market interest rates, including non-interest income, where the aggregate amount depends on the interest rate level to the extent that it influences clients' behaviour. This income includes commissions related to the management of assets for third parties, such as investment funds and commissions related to the

early liquidation of assets and liabilities on client initiative. However, these changes in financial flows, as well as those related to optionality, are much more difficult to estimate. This leads to the traditional and more generally accepted interest flow approach being exclusively used.

In operational terms, the impact of interest rate changes in the banks' financial situation is usually assessed from two perspectives. The first, known as the earnings perspective, consists in the simulation of interest flow' changes in a short-term horizon, typically less than one year, bearing in mind repricing moments in that horizon. The second, known as the economic value perspective, consists in the simulation of changes in net worth, assuming that all assets and liabilities equalized to debt are assessed at market prices.

2.2. Interest rate risk measurement techniques

This section summarizes the various techniques used by banks to measure the exposure of earnings and economic value to interest rate changes. The simplest techniques can be summed up as the construction of maturity and repricing schedules. The more complex techniques develop from the utilization of static or dynamic models that incorporate assumptions about the behaviour of the bank and its customers in reaction to changes in the interest rate. Some of these approaches can be used to measure interest rate exposure from both an earnings and an economic value perspective, while others are more typically associated with just one of these two perspectives. In addition, the degree of complexity affects the ability to pinpoint the different sources of interest rate risk. The simplest techniques, of the maturity/repricing type, are intended primarily to pinpoint the risks arising from maturity and repricing gaps. Those more complex, of the simulation type, mean that the vast majority of interest rate risk sources can be pinpointed.

The simplest techniques to measure a bank's interest rate risk exposure begin with a maturity/repricing schedule that distributes interest-sensitive balance sheet and OBS positions into a number of predefined time bands according to their residual maturity (if fixed rate) or time remaining to their next repricing (if floating-rate). Those positions lacking definitive repricing intervals (e.g. sight deposits) or actual maturities that could vary from contractual maturities (e.g. mortgages with an option for early repayment) should be assigned to time bands according to the past experience of the bank. Among the maturity/repricing techniques, gap analysis tends to be used for earnings and duration for economic value.

Simple maturity/repricing schedules can be used to generate simple indicators of the interest rate risk sensitivity of both earnings and economic value. When this approach is used to assess the interest rate risk in current earnings, it is typically referred to as gap analysis. Gap analysis was one of the first techniques developed to measure interest rate risk, and continues to be widely used by banks, given its simplicity. In operational terms, this technique results from the calculation of what is commonly referred to as the repricing gap, i.e., the difference between assets, liabilities and OBS elements sensitive to interest rate in each time band. This repricing gap can be multiplied by a change in the interest rate to obtain an estimate of the change in net interest income in each time band that would result from such an interest rate movement. The size of the interest rate movement used in the analysis can be based on a variety of factors, including historical experience or future expectations.

A negative gap occurs when liabilities exceed assets (including OBS elements) in a given time band. This means that an increase in market interest rates could cause a decline in net interest income. Conversely, a positive gap implies that the bank's net interest income could decline as a result of a decrease in the level of interest rates.

Although gap analysis is the most frequently used technique to assess the exposition to interest rate risk, it has some limitations. First, it ignores the characteristics of the different positions within a time band. In particular, all positions within a given time band are assumed to mature or reprice simultaneously, a simplification that is likely to have impact on the accuracy of an estimate, in particular, if there are bands with large time horizons. Second, gap analysis ignores differences in spreads between market interest rates and rates applied (basis risk). Third, it does not contemplate the possibility that the timing of instrument redemption may suffer changes as a result of changes in interest rates. Finally, most gap analyses fail to capture the variability in non-interest revenue and expenses,[6] a potential source of risk to current income.

A maturity/repricing schedule can also be used to evaluate the effects of changing interest rates on a bank's economic value by applying sensitivity weights to each time band. Typically, these weights are based on estimates of the duration of assets and liabilities that fall into each time band. This measure is known as duration, which, as can be seen by the formula, corresponds to average time weighted by the realization of portfolio cash flows:

$$D = \frac{\sum_{t=1}^{N} \frac{t * C_t}{(1+r)^t}}{P}$$

Where D is the duration, C_t is the cash flow at time t, r is the interest rate for each period, P is the portfolio market value and N the number of periods until maturity.

Duration reflects the timing and size of cash flows that occur before the instrument's contractual maturity. In absolute value, the longer the maturity or next repricing date and the smaller the payments that occur before maturity, the higher the duration. A higher duration is associated to a significant impact in the economic value as a result of an interest rate change.

The relation between market value and maturity becomes clearer if we evaluate the sensitivity of this value to changes in the interest rate. Given that

$$P = \sum_{t=1}^{N} \frac{C_t}{(1+r)^t}$$

then,

$$\frac{dP}{dr} = -\frac{D}{1+r} * P$$

or,

$$\frac{dP}{P} = \frac{D}{1+r} * dr$$

From these two expressions it is easy to prove that a higher duration is associated with a higher sensitivity of the value to a change in the interest rate.

Considering D/(1+r)=DM, modified duration, finally we have

$$\frac{dP}{P} = -DM * dr$$

(6) For example, commissions that are also sensitive to interest rate changes and can have repercussions on the profit and loss account.

i.e., the percentage change in the market value is a function of interest rate change and of modified duration, which points to the sensitivity of the economic value to a change in the market interest rate.

The duration technique does, however, have some limitations. On the one hand, it is a linear approximation, therefore it does not suffice to rigorously explain the relation between instrument value and interest rate, which is characterised as non-linear (Chart 1). In these terms, the use of duration to measure the sensitivity of the change in value to changes in the interest rate is more reasonable the lower the interest rate changes under consideration.[7]

Moreover, this measure only contemplates risks that result from factors related to repricing. It does not consider, for example, the yield curve risk (i.e., only parallel shifts in the yield curve are considered, an infrequent situation) and the option risk (the typical and simplest cases are the option to prepay a loan or withdraw a deposit as a response to changes in the interest rate). Finally, the use of an average duration for each time band implies that estimates do not reflect the differences in the current sensitivity of the positions, which can emerge from differences in the coupon rates or in the time that payments take place.

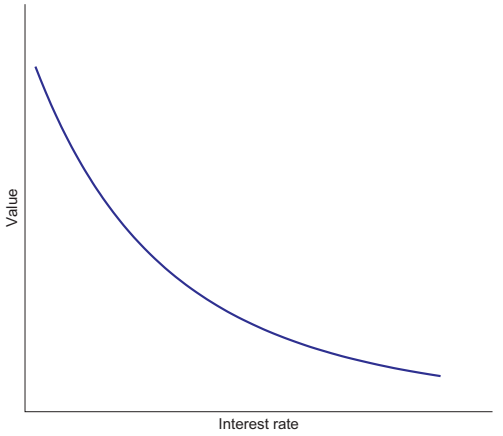
Simulation techniques are usually associated with more advanced interest rate measurement techniques. In general, they involve assessments of the interest rate effects on the profit and loss account and on economic value, through the simulation of future interest rate trajectory and its impact on cash flows. To some extent, they can be seen as an extension and refinement of the maturity/repricing schedules. However, these techniques involve a more detailed coverage of the different positions on and off the balance sheet, such as through the incorporation of a specific hypothesis on the payment of interest and principal and on the non-interest component of profits and losses. In this sense, the simulation approaches, as they allow changes in the slope and shape to be incorporated, are more demanding in technical terms.

In static simulations, the assessment is only made for cash flows resulting from balance sheet and OBS positions. To assess the impact on the profit and loss account, cash flows and resulting income

Chart 1

CONVEXITY

Relation between the value of a financial instrument and the interest rate



(7) For higher interest rate changes, the concept of convexity can be used. This is based on the second derivative of the asset value function to the interest rate, and permits a more accurate approximation to changes in the value of instruments from changes in the interest rate.

streams are estimated, based on interest rate scenarios. In general, these scenarios comprise changes in the yield curve, or changes in spreads of the different interest rates. Finally, it is possible to obtain an estimate of the impact on economic value, if the cash flows resulting from the simulation cover the banks' expected life time positions and are properly discounted.

The dynamic simulation comprises more detailed assumptions about the future course of interest rates, including the expected changes in a bank's business activity. For instance, the simulation can involve assumptions at the level of operation pricing strategy (spreads), about the behaviour of clients and/or about the future evolution of loans. Given its greater complexity in technical terms, it is more capable of pinning down and thus covering most interest rate risk sources. As with other approaches, the usefulness of dynamic simulation as a measure of interest rate risk depends on the validity of the underlying hypothesis and the accuracy of the basic methodology.

3. REGULATORY FRAMEWORK

At an international level, the interest rate risk legal framework is based on the "Principles for the Management and Supervision of Interest Rate Risk", issued by the Basel Committee on Banking Supervision (BCBS). The aim of this document, the last version of which dates from July 2004, is to buttress the approaches to interest rate risk in the context of the new Capital Accord.[8]

Though the new Capital Accord considers the interest rate risk in the banking book as potentially significant, therefore recommending its adequate coverage by capital, it does not impose explicit capital requirements within the scope of Pillar 1 (minimum capital requirements). This approach clearly contrasts with that adopted for the trading book (which led to the adoption in Portugal of a regime set out in Notice no. 7/1996).

The non-adoption of explicit requirements relative to the banking book derives from the heterogeneity in the range of operations and internal control processes covering risks of this nature in banking institutions. This applies above all to banks with considerable international operations, a situation that makes it more difficult to impose harmonised requirements.[9] The option chosen was to define a set of principles considered fundamental for good management of interest rate risk by banking institutions and for its accurate assessment by supervisory authorities. From the 15 stated principles, 13 have a general application to interest rate risk management, independently of the type of balance sheet item to which they apply. The other two are specific to the management of interest rate risk in the banking book. In general terms, the principles refer to 1) the role played by administration in the supervision of interest rate risk management, 2) the need to clearly define policies and management procedures that allow for the gathering of all interest rate risk sources and that ensure an adequate assignment of responsibilities, 3) the importance of establishing and confirming adequate limits, to conduct exercises comprising extreme but plausible scenarios (stress test) and to have information systems adequate to evaluate, monitor, control and regularly report on the exposure to interest rate risk and 4) the need to have well-defined internal control systems, regularly subject to independent appraisal. Institutions must have the ability to evaluate interest rate risk from an earnings as well as an economic value perspective, adopting the analysis that, depending on their respective balance sheet positions and activity complexity, allow them to pinpoint all materially relevant risk, both in balance and OBS accounts.

(8) A presentation of the new Capital Accord can be found in chapter 7 (section 7.2 – The new Capital Accord: current situation) of the Financial Stability Report – 2004, Banco de Portugal.

(9) Supervisory national authorities are, however, allowed to establish minimum capital requirements, if there is sufficient homogeneity between institutions supervised in terms of risk and its control and assessment methods. In addition, supervisory authorities must have the ability to demand on an occasional basis, that institutions reduce their exposure to risk and/or increase their coverage, when the impact exceeds certain requirements.

The legal framework covering interest rate risk in the banking book in Portugal is defined in Instruction no. 19/2005. Based on internationally established principles, banks are required to furnish information that permits the evaluation of the impact of an interest rate change of 200 b.p. either on net worth and on the financial margin.[10] This information must include the results of models internally used to measure and evaluate the interest rate risk in the banking book, and a detailed description of the respective methodologies. A simplified report is also required with a time-based breakdown of assets, liabilities and OBS positions included in the banking book and sensitive to the interest rate.[11] The exposure reported must be compared with the financial margin as well as with own funds of each institution, so as to evaluate its importance. The report must permit monitoring of the exposure to interest rate risk in the banking book and must supply the basis for any corrective measures undertaken by the Banco de Portugal, within its prudencial monitoring remit. The central bank will take into account any interest rate risks taken on and the specific nature of institutions or banking groups.

Assessment of the impact on net worth is based on a simplified analytical framework, with several assumptions, including the classification of financial instruments into time bands according to the residual maturity, weights are assigned to reflect the modified duration in each band and the interest rate change applied to simulate the impact. The weights are based on average maturity of each time band and on the assumption that all balance sheet and OBS items yield and are discounted at a common 5 per cent rate, independently of maturity and type of instrument. It is also assumed that each instrument's cash flow profile is equivalent to an annual coupon bond with the same maturity (Table 1).

Similarly, the evaluation of the impact on the financial margin is based on an array of weighting factors, which must now reflect the impact on interest gains and losses, in a one year horizon, associated to a 200 b.p. change in the interest rate (Table 2). As can be seen, the weights are inversely proportional to the period between the simulation date and the respective temporal horizon, which is 12 months.

Table 1

IMPACT ON OWN FUNDS

Time band	Maturity (1)	Proxy for modified duration *(2)*	Change in interest rate (3)	Weighting facto (%) (4) = (2)*(3)
Sight - 1 month	0.5 months	0.04	+/- 200 bp	+/- 0.08
1 - 3 months	2 months	0.16	+/- 200 bp	+/- 0.32
3 - 6 months	4.5 months	0.36	+/- 200 bp	+/- 0.72
6 - 12 months	9 months	0.71	+/- 200 bp	+/- 1.43
1 - 2 years	1.5 years	1.38	+/- 200 bp	+/- 2.77
2 - 3 years	2.5 years	2.25	+/- 200 bp	+/- 4.49
3 - 4 years	3.5 years	3.07	+/- 200 bp	+/- 6.14
4 - 5 years	4.5 years	3.85	+/- 200 bp	+/- 7.71
5 - 7 years	6 years	5.08	+/- 200 bp	+/- 10.15
7 - 10 years	8.5 years	6.63	+/- 200 bp	+/- 13.26
10 - 15 years	12.5 years	8.92	+/- 200 bp	+/- 17.84
15 - 20 years	17.5 years	11.21	+/- 200 bp	+/- 22.43
> 20 years	22.5 years	13.01	+/- 200 bp	+/- 26.03

(10) The magnitude of the interest rate change was determined with reference to the historical volatility observed in G10 countries' interest rates (corresponding, fundamentally, to an event with 1 per cent probability of occurring in a 1 year horizon). A similar methodology should be adopted in the determination of an interest rate shock relative to other currencies, wherever exposure to these exchange values is materially significant (over 5 per cent of the banking book, either on the assets or liabilities side).

(11) The time bands considered refer to residual maturity in the case of fixed interest instruments, and to repricing in the case of floating rate instruments.

Table 2

IMPACT ON FINANCIAL MARGIN

Time band	Maturity (1)	Residual term up to 1year (2) = (12 − (1)) / 12	Change in interest (3)	Weighting factor (%) (4) = (2)*(3)
Sight	0	1.00	+/- 200 bp	+/- 2.00
Sight - 1 month	0.5 months	0.96	+/- 200 bp	+/- 1.92
1 - 2 months	1.5 months	0.88	+/- 200 bp	+/- 1.75
2 - 3 months	2.5 months	0.79	+/- 200 bp	+/- 1.58
3 - 4 months	3.5 months	0.71	+/- 200 bp	+/- 1.42
4 - 5 months	4.5 months	0.63	+/- 200 bp	+/- 1.25
5 - 6 months	5.5 months	0.54	+/- 200 bp	+/- 1.08
6 - 7 months	6.5 months	0.46	+/- 200 bp	+/- 0.92
7 - 8 months	7.5 months	0.38	+/- 200 bp	+/- 0.75
8 - 9 months	8.5 months	0.29	+/- 200 bp	+/- 0.58
9 - 10 months	9.5 months	0.21	+/- 200 bp	+/- 0.42
10 - 11 months	10.5 months	0.13	+/- 200 bp	+/- 0.25
11 - 12 months	11.5 months	0.04	+/- 200 bp	+/- 0.08

4. EXPOSURE IN THE MAIN BANKING INSTITUTIONS – AGGREGATE MEASURES AND EMPIRICAL DISTRIBUTION

For a quantitative assessment of the importance of the interest rate risk in the banking book we next resort to data from a set of 13 banking groups,[12] collected within the terms of Instruction no. 19/2005.

Assuming a 200 b.p. interest rate rise, which is extremely unlikely in current circumstances, results point to a low level of overall exposure, evaluated both in terms of the impact on own funds (5.2 per cent increase) and in terms of the impact on the financial margin (3.8 per cent increase). They reveal, on the other hand, that the total impacts (on net worth and on financial margin) reflect (in general and on aggregated terms) positive impacts on the balance sheet items (8.2 and 10.5 per cent, respectively on net worth and financial margin) and negative in the case of OBS elements. This offsetting seems to imply that banks are, to varying degrees, adopting active policies of interest rate risk coverage.

The impacts on net worth and on financial margin assume a variable importance between the institutions under review (Charts 2 and 3). This relative dispersion may reflect not only differences in the balance sheet structure but it may also result from the hypothesis used by the institutions to affect the instruments to time bands, mostly in the case of non-contractual fixed maturities.

Despite the relative dispersion, it can be concluded that for the whole set of institutions under review, and for most of them, the impact of an increase in the interest rates will be positive in terms of interest rate risk, both on a net worth level and in terms of the interest margin. Therefore, Portuguese institutions seem well positioned, at this level of risk, to face increases in key European Central Bank interest rates.

It should be noted that, according to the Parliament and European Council Directive regarding access to credit institution operations, analysis and evaluation by the competent authorities must include the exposure of credit institutions to interest rate risk arising from their banking book operations. Measures are likely to be needed for institutions that lose more than 20 per cent of own funds, following a sudden and unexpected change in interest rates. The scope of this must be determined by the competent au-

(12) Set of institutions that, on a consolidated basis, adopted the new International Accounting Standards in the beginning of 2005

thorities and be equal for all institutions. In December 2005, none of the institutions under review were in this situation.

As far the impact on net worth derived from balance sheet items, it can be observed that differentiation between institutions occurs significantly for more than one year horizons, suggesting that in short-term periods institutions have a similar temporal pattern of interest rate repricing. In fact, most credit granted by Portuguese banks have interest rate repricing schedules of up to one year horizons or have short maturities. On the other hand, the majority of customer deposits are concentrated in interest rate repricing horizons of less than one year. In addition, the majority of securities issued have floating interest rates. It is therefore easy to deduce that if significant liquidity gaps exist they are, in general, concentrated in short maturity classes. They are thus less weighted and hence with typically low exposure to interest rate risk. Available information therefore suggests that, for over one year periods, differentiation between institutions most probably reflects different levels of resource application to financing at medium and long-term fixed rates, and, in some way, different hypotheses in the classification of financial instruments where contractual maturity differs, in general, from "behaviour maturity" (i.e., from options assumed by the depositor or the borrower).

The positive impact on the financial margin associated to balance sheet items is explained by the tendency towards excessive asset positions over liability positions in the repricing horizon of up to one year. This situation is likely to reflect, to a large extent, the proportion of credit to total bank assets.

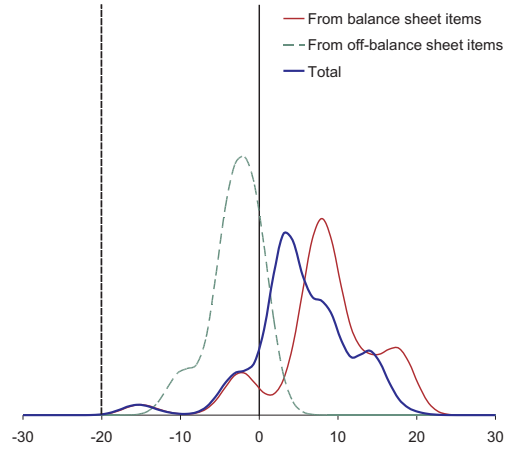
The impact on net worth and on the financial margin deriving from OBS items, is particularly noticeable in the case of one specific non-domestic institution.[13] In fact, in terms of the financial margin impact there is a larger effect than that of the balance sheet items.

Lastly, it should be noted that these results must be analysed with some caution. As previous referred, they are sensitive to the special nature of each institution and to the hypotheses that they work with.

Chart 2

CUMULATED IMPACT ON NET WORTH FROM INTEREST RATE SENSITIVE INSTRUMENTS

As a percentage of own funds

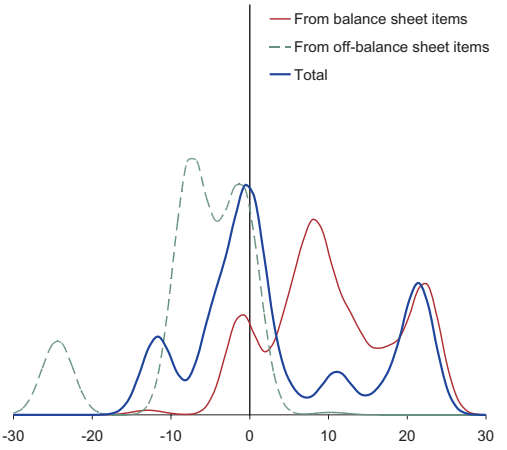


Source: Banco de Portugal.
Note: Empirical distribution obtained through by recourse to a gaussian Kernel that weights institutions by their own funds.

Chart 3

CUMULATED IMPACT ON FINANCIAL MARGIN FROM INTEREST RATE SENSITIVE INSTRUMENTS

As a percentage of own funds



Source: Banco de Portugal.
Note: Empirical distribution obtained through by recourse to a gaussian Kernel that weights institutions by their financial margin.

(13) Account is thus taken of institutions managed by non-resident institutions, whether these are governed by Portuguese law, subsidiaries of non-resident banking groups (subject to the supervision of the Banco de Portugal) or branches of credit institutions with head office abroad.

Nevertheless, specific features, as well as the interest rate risk control systems considered, overall, are subject to qualitative scrutiny by the Banco de Portugal.

5. CONCLUSION

The aim of this work is to present the concept of interest rate risk in the banking book and its application in Portugal. Even though the approach used is subject to some limitations, the results obtained allow us to conclude that the Portuguese banking system has limited exposure to interest rate risk in the banking book.

It can be concluded therefore, that interest rate risk does not seem significant for the Portuguese banking system. This stems from low gross exposure and also from the hedging instruments used.

Specifically in terms of balance sheet items, this results from the fact that most interest rate sensitive items are typically indexed to short-term money market interest rates. Some 90 per cent of total new loans to households and non-financial corporations fit into this bracket. Furthermore, debt securities only account for some 7 to 8 per cent of total assets (on a consolidated basis) and only 3 per cent are issued by public sector entities at a fixed rate. In turn, some 90 per cent of total deposits have term between 6 months and 1 year (deposits with a 6 month term account for more than 50 per cent). In addition, by the end of 2005, some 70 per cent of securities issued by subsidiaries and branches abroad were at a variable rate. However, interest rate risk assessment remains an important topic, specially if fixed rate credit contracts gain extra importance as a response to recent interest rate hikes.

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ANNEX

A.1 Financial Markets III

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Table A.1

FINANCIAL MARKETS

End-of-year figures, percentage	2000	2001	2002	2003	2004	2005
Short-term interest rates						
3-month Euribor	4.86	3.29	2.87	2.12	2.16	2.49
USD 3-month Libor	6.40	1.88	1.38	1.15	2.56	4.54
Yields on (10-year) Government bonds						
Euro area	5.02	5.13	4.26	4.33	3.72	3.36
US	5.11	5.05	3.82	4.25	4.22	4.39
Implied volatility of 10-year Government bond yields						
Euro area	4.65	6.23	5.16	5.44	5.01	4.25
US	6.75	9.14	8.05	9.02	6.02	4.82
Implied volatility of stock indices						
S&P 500	23.15	20.25	27.10	15.70	12.18	11.47
DJES 50	24.09	25.16	35.12	19.35	11.77	11.99
Spreads of non-financial corporate bonds[(a)] (in percentage points)						
Euro area						
AA rating	0.51	0.59	0.51	0.23	0.16	0.18
A rating	1.03	0.79	0.59	0.38	0.29	0.38
BBB rating	1.61	1.52	1.57	0.56	0.47	0.68
US						
AA rating	1.30	1.02	0.85	0.32	0.31	0.47
A rating	1.87	1.69	1.68	1.09	0.86	0.82
BBB rating	2.60	2.50	2.76	1.64	1.26	1.14
Debt flows of non-financial corporations						
Euro area - Total (annual rate of change)	81.6	-30.8	-51.8	13.6	-25.5	121.8
Contributions (in percentage points)						
Loans	75.1	-38.2	-28.0	-12.7	2.8	116.5
Securities other than shares	6.5	7.4	-23.8	26.3	-28.3	5.2
US - Total (annual rate of change)	-7.2	-36.1	-88.7	237.1	106.1	65.8
Contributions (in percentage points)						
Loans	6.8	-50.7	-2.0	35.9	133.3	88.2
Securities other than shares	-14.0	14.7	-86.6	201.2	-27.2	-22.4

Sources: Bloomberg, ECB, Federal Reserve and Merrill Lynch.
Note: (a) Spreads derived from the EMU Direct Government index and the US Treasury Master Index.

Table A.2

DEVELOPMENTS IN THE PORTUGUESE GENERAL INDEX AND IN SECTORAL INDICES

Annual rate of change

Per cent

	2001	2002	2003	2004	2005
PSI Geral	-19.0	-20.7	17.4	18.0	17.2
PSI 20	-24.7	-25.6	15.8	12.6	13.4
PSI Basic Materials	-9.7	-14.2	15.1	15.6	16.7
PSI Industrials	-29.1	13.4	26.4	31.1	68.3
PSI Consumer Goods	-10.8	-13.1	-0.5	-6.7	21.2
PSI Consumer Services	-27.8	17.0	23.7	29.3	11.6
PSI Telecommunications	-17.7	-24.6	27.1	20.6	12.0
PSI Utilities	-27.2	-31.4	38.0	15.5	21.7
PSI Financials	-14.6	-24.8	4.0	12.0	24.4
PSI Technology	-58.9	-37.9	4.5	24.0	-9.5

Sources: Bloomberg and Euronext.

Table A.3

BALANCE SHEET OF THE BANKING SYSTEM

On a consolidated basis

EUR millions

	1998	1999	2000	2001	2002	2003	2004
	Dec.	Dec.	Dec.	Dec.	Dec.	Dec.	Dec.
Cash and claims on central banks	8 867	10 829	9 642	10 063	8 762	15 430	8 637
of which: cash and claims on Banco de Portugal	8 608	10 026	8 592	8 987	7 857	14 327	7 657
Investment in other credit institutions	30 984	27 254	28 596	33 887	30 293	32 837	36 119
in the country	n.a.	n.a.	10 952	12 768	9 570	7 968	9 232
abroad	n.a.	n.a.	17 644	21 119	20 723	24 868	26 887
Claims on customers (net of provisions)	103 523	131 213	160 235	181 468	194 219	199 477	206 631
credit overdue	n.a.	n.a.	3 553	3 903	4 462	4 881	4 164
provisions	2 577	2 377	2 406	2 609	2 802	3 561	3 471
Provisions and financial fixed assets (net of provisions)	33 594	31 843	36 984	35 951	32 149	37 485	44 349
of which: securities of public issuers (gross)	n.a.	n.a.	10 793	10 742	9 697	9 853	10 636
Non-financial fixed assets	4 468	4 631	4 600	4 735	4 578	4 551	4 315
Other assets	9 092	13 249	10 661	12 361	12 995	14 288	15 499
Total assets	190 527	219 019	250 719	278 464	282 996	304 067	315 550
Central bank resources	1 690	3 158	3 462	2 766	1 284	3 147	3 899
of which: Banco de Portugal	1 383	2 658	3 300	2 258	1 031	2 766	3 195
Other credit institutions resources	41 748	44 920	51 834	57 017	54 503	54 546	49 184
in the country	n.a.	n.a.	10 024	11 099	7 767	5 569	7 129
abroad	n.a.	n.a.	41 810	45 918	46 736	48 977	42 055
Customer resources	116 729	127 606	140 205	150 033	152 136	157 236	163 761
By residence of customer:							
Deposits of resident customers	n.a.	n.a.	109 976	113 870	116 485	117 673	122 667
Deposits of non-resident customers	n.a.	n.a.	30 181	36 101	35 538	39 440	41 006
By type of deposit:							
Demand deposits	37 659	44 363	47 188	53 033	54 649	55 709	57 350
Time and savings deposits	78 975	83 195	92 969	96 938	97 374	101 404	106 323
Liabilities represented by securities	6 606	13 225	23 106	32 973	38 686	49 814	56 206
of which: bonds	5 239	10 072	18 214	27 309	30 921	37 444	42 307
Subordinated liabilities	3 892	4 521	5 392	8 076	8 721	8 883	9 207
Provisions	1 847	2 263	3 119	3 354	3 510	3 365	3 484
Other liabilities	6 217	9 487	9 015	8 810	8 326	9 490	10 409
Equity capital	11 798	13 840	14 587	15 436	15 830	17 586	19 398
Net profit/loss for the year	1 241	1 431	1 672	1 829	1 488	1 914	1 910
Total liabilities and own funds	190 527	219 019	250 719	278 464	282 996	304 067	315 550

Note: Prepared in accordance with the accounting rules in force until December 2004.

Table A.4

PROFIT AND LOSS ACCOUNT

On a consolidated basis

EUR millions

	1998	1999	2000	2001	2002	2003	2004
1. Interest income	12 974	12 629	14 633	17 181	15 026	14 508	14 477
2. Interest expenses	8 164	7 622	9 401	11 246	9 077	8 606	8538
3. Financial margin (1-2)	4 809	5 007	5 231	5 935	5 949	5 902	5 939
4. Income from securities	140	113	166	213	191	160	176
5. Net commissions	1 414	1 548	1 662	1 670	1 758	2 037	2 320
6. Income from financial operations	610	549	625	417	437	529	481
7. Income from affiliated companies and branches excluded from consolidation (net)[a]	102	62	228	147	112	370	361
8. Other operating profits (net)	425	442	408	641	707	842	945
9. Other current income (4+5+6+7+8)	2 691	2 714	3 090	3 089	3 206	3 937	4 283
10. Gross income (3+9)	7 500	7 721	8 321	9 024	9 154	9 839	10 222
11. Staff costs	2 525	2 608	2 626	2 722	2 812	2 949	3 025
12. Other administrative costs	1 531	1 626	1 625	1 849	1 929	2 021	2 135
13. Administrative costs (11+12)	4 056	4 234	4 251	4 571	4 740	4 970	5 160
14. Overall gross income (10-13)	3 444	3 487	4 070	4 453	4 414	4 869	5 062
15. Extraordinary gains	327	813	643	30	163	184	-20
16. Depreciation for the year	613	640	590	625	667	677	685
17. Net provisions	1 081	1 356	1 501	1 191	1 713	1 683	1 699
18. Income before taxes and minority interests (14+15-16-17)	2 078	2 303	2 623	2 666	2 197	2 693	2 657
19. Taxes on profit for the year	473	418	457	427	369	389	321
20. Income before minority interest[b] (18-19)	1 605	1 885	2 166	2 240	1 828	2 304	2 336
21. Minority interests (net)	364	454	494	410	340	390	426
22. Profit/loss for the year (20-21)	1 241	1 431	1 672	1 829	1 488	1 914	1 910
Memo:							
Average assets	190 527	204 773	237 223	264 753	280 795	294 640	306 275

Notes: **(a)** The item "Income from affiliated companies and subsidiaries excluded from consolidation" registers income generated by affiliated companies excluded from the consolidation of the banking groups considered, which is attributable to the group according to the percentage of shares held in these companies. Affiliated companies are companies whose management is under a significant influence, assuming that this situation occurs when the shares held correspond to at least 20 per cent of the voting rights. In turn, subsidiaries excluded from the consolidation are those whose management is under a relevant influence, carries on activities which are incompatible with the objective of consolidated accounts, namely commercial, industrial, agricultural and insurance corporations. **(b)** Income before minority interests enables a more accurate measure of income generated by all consolidated assets and, therefore, it should be used in order to compare income with profitability on an individual basis.

Table A.5

BALANCE SHEET OF THE BANKING SYSTEM (DOMESTIC INSTITUTIONS)

On a consolidated basis

EUR millions

	1998	1999	2000	2001	2002	2003	2004
	Dec.	Dec.	Dec.	Dec.	Dec.	Dec.	Dec.
Cash and claims on central banks	8 090	10 127	7 996	8 911	7 795	14 651	7 803
of which: cash and claims on Banco de Portugal	7 903	9 378	7 270	7 899	6 957	13 613	6 853
Investment in other credit institutions	24 436	21 464	20 470	21 495	22 020	23 029	25 401
in the country	n.a.	n.a.	8 539	10 013	7 583	6 246	7 528
abroad	n.a.	n.a.	11 931	11 482	14 437	16 783	17 873
Claims on customers (net of provisions)	95 878	120 529	134 819	150 840	160 391	164 170	172 314
credit overdue	n.a.	n.a.	2 933	3 268	3 835	4 247	3 564
provisions	2 451	2 241	2 038	2 252	2 451	2 994	2 815
Provisions and financial fixed assets (net of provisions)	31 320	29 870	33 778	32 895	28 573	29 992	32 408
of which: securities of public issuers (gross)	n.a.	n.a.	9 185	9 471	8 393	8 340	9 124
Non-financial fixed assets	4 252	4 401	3 976	4 105	3 961	3 839	3 571
Other assets	8 403	9 317	9 475	10 772	11 140	12 417	12 763
Total assets	172 379	195 708	210 514	229 019	233 880	248 099	254 258
Central bank resources	1 596	2 979	3 133	2 611	1 272	2 923	1 326
of which: Banco de Portugal	1 383	2 658	3 300	2 258	1 031	2 766	3 195
Other credit institutions resources	32 756	35 502	40 223	40 107	37 360	34 233	29 725
in the country	n.a.	n.a.	7 812	9 857	6 564	4 660	6 248
abroad	n.a.	n.a.	32 411	30 250	30 796	29 574	23 477
Customer resources	110 268	120 976	119 381	126 449	129 669	133 938	137 732
By residence of customer:							
Deposits of resident customers	n.a.	n.a.	95 144	98 779	101 630	102 175	106 339
Deposits of non-resident customers	n.a.	n.a.	24 237	27 670	28 038	31 762	31 392
By type of deposit:							
Demand deposits	35 655	42 062	41 040	44 603	47 708	47 931	49 753
Time and savings deposits	74 561	78 911	78 341	81 845	81 960	86 006	87 978
Liabilities represented by securities	5 970	11 589	20 632	29 635	34 608	43 629	49 764
of which: bonds	4 808	9 370	16 746	25 611	28 952	35 676	40 198
Subordinated liabilities	3 625	4 233	4 808	7 126	7 835	8 042	8 422
Provisions	1 740	2 153	2 412	2 601	2 751	2 685	2 940
Other liabilities	5 429	5 302	7 417	7 048	6 730	7 731	7 942
Equity capital	10 996	12 975	12 508	13 442	13 654	14 917	16 409
Net profit/loss for the year	1 241	1 431	1 672	1 829	1 488	1 914	1 910
Total liabilities and own funds	172 379	195 708	210 514	229 019	233 880	248 099	254 258

Note: Prepared in accordance with the accounting rules in force until December 2004.

Table A.6

PROFIT AND LOSS ACCOUNT (DOMESTIC INSTITUTIONS)

On a consolidated basis

EUR millions

	1998	1999	2000	2001	2002	2003	2004
1. Interest income	11 761	11 414	12 336	14 101	12 275	11 322	11 225
2. Interest expenses	7 196	6 691	7 815	9 035	7 172	6 383	6 283
3. Financial margin (1-2)	4 565	4 722	4 521	5 066	5 103	4 939	4 942
4. Income from securities	132	98	161	180	159	127	141
5. Net commissions	1 312	1 443	1 479	1 427	1 494	1 691	1 918
6. Income from financial operations	595	534	573	338	363	488	434
7. Income from affiliated companies and branches excluded from consolidation (net)[(a)]	88	48	205	123	97	336	318
8. Other operating profits (net)	408	422	359	558	618	742	847
9. Other current income (4+5+6+7+8)	2 536	2 545	2 777	2 626	2 731	3 384	3 657
10. Gross income (3+9)	7 101	7 268	7 298	7 692	7 834	8 323	8 600
11. Staff costs	2 385	2 456	2 264	2 292	2 430	2 527	2 596
12. Other administrative costs	1 419	1 501	1 392	1 584	1 659	1 717	1 812
13. Administrative costs (11+12)	3 804	3 957	3 656	3 877	4 089	4 244	4 408
14. Overall gross income (10-13)	3 297	3 311	3 642	3 816	3 745	4 079	4 192
15. Extraordinary gains	335	744	384	65	188	202	17
16. Depreciation for the year	582	611	518	538	584	589	592
17. Net provisions	1 059	1 318	1 094	1 030	1 521	1 457	1 513
18. Income before taxes and minority interests (14+15-16-17)	1 990	2 125	2 414	2 312	1 827	2 234	2 104
19. Taxes on profit for the year	454	397	421	372	311	311	227
20. Income before minority interest[(b)] (18-19)	1 537	1 728	1 993	1 940	1 516	1 923	1 877
21. Minority interests (net)	364	454	452	365	302	352	384
22. Profit/loss for the year (20-21)	1 173	1 275	1 541	1 575	1 215	1 571	1 493
Memo:							
Average assets	172 379	184 044	200 744	218 879	230 577	242 094	246 779

Notes: **(a)** The item "Income from affiliated companies and subsidiaries excluded from consolidation" registers income generated by affiliated companies excluded from the consolidation of the banking groups considered, which is attributable to the group according to the percentage of shares held in these companies. Affiliated companies are companies whose management is under a significant influence, assuming that this situation occurs when the shares held correspond to at least 20 per cent of the voting rights. In turn, subsidiaries excluded from the consolidation are those whose management is under a relevant influence, carries on activities which are incompatible with the objective of consolidated accounts, namely commercial, industrial, agricultural and insurance corporations. **(b)** Income before minority interests enables a more accurate measure of income generated by all consolidated assets and, therefore, it should be used in order to compare income with profitability on an individual basis.

Table A.7

CAPITAL ADEQUACY

On a consolidated basis

EUR millions

	1998 Dec.	1999 Dec.	2000 Dec.	2001 Dec.	2002 Dec.	2003 Dec.	2004 Dec.
1. Own funds							
1.1. Original own funds	9 714.8	11 025.9	12 991.0	13 237.7	13 351.2	13 965.8	14 950.3
1.2. Additional own funds	3 834.1	4 268.9	5 026.3	7 030.1	7 808.6	8 313.3	8 567.0
1.3. Deductions	821.1	512.7	2 272.6	2 998.8	2 829.1	2 616.6	2 318.9
1.4. Supplementary own funds	12.7	27.3	0.4	1.2	0.0	1.6	2.1
Total own funds	12 740.4	14 809.5	15 745.1	17 270.1	18 330.7	19 664.1	21 200.5
2. Own funds requirements							
2.1. Solvency ratio	8 747.5	10 651.8	13 184.5	14 094.3	14 687.0	15 304.5	15 747.5
2.2. Position risks	234.3	180.6	284.2	289.1	219.6	365.5	530.9
2.3. Settlement and counterparty risks	37.5	47.8	30.7	40.8	41.3	45.3	53.2
2.4. Foreign exchange risks	134.5	79.2	134.9	87.3	87.2	86.5	44.5
2.5. Other requirements	0.1	0.0	20.7	1.5	0.1	0.1	0.9
Total own funds requirements	9 153.9	10 959.4	13 655.1	14 513.1	15 035.1	15 801.8	16 376.9
3. Ratios							
3.1. Own funds/Total requirements	139.2	135.1	115.3	119.0	121.9	124.4	129.5
3.2. Own funds/(Total requirements x 12.5)	11.1	10.8	9.2	9.5	9.8	10.0	10.4
3.3. Base own funds/(Total requirements x 12.5)	8.5	8.0	7.6	7.3	7.1	7.1	7.3

Note: Prepared in accordance with the accounting rules in force until December 2004.