LISBOA SCHOOL OF ECONOMICS & MANAGEMENT

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DISSERTAÇÃO

THE POST-2007 FINANCIAL CRISIS AND THE PORTUGUESE BANKING INDUSTRY: A CASE STUDY.

RUI DIOGO VIEIRA BAPTISTA

JANEIRO – 2014

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ORIENTAÇÃO:

PROFESSOR DOUTOR TIAGO CARDÃO-PITO

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Resumo

O presente estudo de caso tem como objectivo analisar o papel do sistema bancário Português na actual crise económica Portuguesa. Os factos revelam a existência de uma crise bancária Portuguesa, com início em 2008 e que precedeu a grave crise económica, marcada pelo programa de resgate a Portugal, iniciado em Abril de 2011.

Sugere-se que a crise bancária Portuguesa pode estar relacionada com a adesão de Portugal ao Euro, que eliminou o risco cambial, na zona Euro. No entanto, os riscos de crédito e de liquidez não desapareceram. De facto, as evidências indicam que após a adesão ao Euro, os bancos Portugueses intensificaram o seu endividamento junto do exterior, atingindo no final de 2007, um total de 82,0% de passivo junto de instituições financeiras estrangeiras, em relação ao PIB nominal. Esta situação contribuiu para uma bonança de fluxo de capitais, injectando liquidez na economia e, desta forma, sustentando uma fase expansionista de empréstimo e de aumento do consumo pelo crédito. Após esta fase, Portugal entrou numa fase de contracção e posteriormente de falha, em linha com estudos publicados anteriormente e originando uma crise bancária e económica. Ambas as crises foram amplificadas devido à crise das dívidas soberanas na Europa e ao programa de resgate a Portugal.

Considerando indicadores utilizados para estudar crises bancárias noutros países, esta tese identifica uma crise bancária Portuguesa, marcada por quatro episódios distintos. Nomeadamente, 1) corrida aos depósitos de dois bancos e a nacionalização de um desses bancos em 2008; b) a dissolução e falência do outro banco em 2010; c) garantias públicas de aproximadamente 6,9% do PIB nominal aos principais bancos Portugueses, em 2011; d) custos públicos de recapitalização dos principais bancos Portugueses, de aproximadamente 4,0% do PIB nominal, em 2012. Durante este período de tempo, o Governo Português aumentou a dívida soberana Portuguesa e solicitou um programa de resgate financeiro à Troika, em Abril de 2011.

Palavras-chave: crise bancária Portuguesa, ciclo expansão-falha, crise financeira, bonança fluxo capital, bancos, performance bancária

Abstract

This case study intends to investigate the role of the Portuguese banking industry in the great economic crisis that Portugal is currently experiencing. The evidence shows the existence of a Portuguese banking crisis starting in 2008, and preceding the great economic crisis, marked by the Portuguese bailout program, initiated in April 2011.

It is suggested that the Portuguese banking crisis may be related with the behavior of the Portuguese banking industry upon Portugal has joined the Euro Currency, which eliminated the exchange rate risk within the Euro Area. Though, the credit and liquidity risks were not completely vanished. In fact, the evidence seems to indicate that upon joining the Euro, the Portuguese banks started a process of intensive borrowing from foreign financial institutions, reaching total outstanding liabilities of 82,0% over the Portuguese nominal GDP, in 2007. This has contributed to a capital flow bonanza, pumping liquidity into the local economy, and thus sustaining both lending and credit-driven consumption booms. After the boom, Portugal entered a bust phase, in line with the published literature and originating a banking and economic crisis. Both crises were amplified due to the European sovereign debts and the Portuguese bailout program.

Using published indicators referred to study banking crises in other countries, a Portuguese banking crisis is identified, marked by four episodes. Namely, 1) two bank runs and a Government takeover of one of the banks in 2008; 2) the bankruptcy of the other bank in 2010; 3) Government guarantees of approximately 6,9% of the nominal GDP to the major Portuguese banks, in 2011; and 4) Government recapitalization costs of approximately 4,0% of the nominal GDP to the major Portuguese banks, in 2012. During this time period, the Portuguese government increased the level of its sovereign debt, and has requested for the bailout assistance from Troika, in April 2011.

Keywords: Portuguese banking crisis, financial crisis, boom-bust cycle, capital flow bonanza, banks, banking performance

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My sincere gratitude to all of my family and friends, including Luís. Especially to *Si*. To my Father.

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1. INTRODUCTION

Banking crises remain a recurring phenomenon that cannot yet be prevented even by countries considered as being highly developed. According to Reinhart & Rogoff (2009) one characteristic of banking crises is that they seem to be "an equal-opportunity menace, affecting rich and poor countries alike". Therefore, banking crises are also quite an interesting subject of research, and an actual thematic where academic studies can contribute to an important understanding of a contemporary issue in societies.

One can, for instance, refer the case of the United States' economy, which is commonly considered as being one of the most sophisticated in the World. Yet, it was not able to avoid a serious and recent banking crisis after 2007, marked by the bankruptcy of Lehman Brothers in September 2008, and the bailout of AIG in the following day. This recent crisis may have resulted in the largest realization of risk since the Great Depression post 1929. In addition to the great amount of public money used to do what was commonly referred to as banks' "bailouts", and throughout 2009, more than 3 trillion euros were erased from the market capitalization of banks in Europe and in the United States. This corresponded to a decrease of 82% of these banks' market value, between May 2007 and March 2009 (Gambacorta & Marques-Ibanez, 2011).

Banking crises are not entirely understood. However, they seem to be associated with known empirical cycles. Unfortunately, crises demonstrate a renewal capacity larger than the preventive response, thus maintaining the study dynamics. By comparing several banking crises events in different countries and for an extended period of time, Reinhart & Rogoff (2009), pp. 169-170, concluded that after a banking crisis has occurred in a country, the sovereign debt of that country will tend to increase 186,3% on average, in the following three years. Hence, banking crisis dramatically increase the likelihood of a country to default on its internal or external debt.

Due to a deep economic crisis and difficulties in fulfilling its financial obligations, Portugal is currently under the intervention of a Troika bailout program, representing

the European Commission, European Central Bank (ECB), and International Monetary Fund (IMF). However, it is rarely referred that the difficulties with the Portuguese sovereign debt may also be related to a banking crisis identifiable through published indicators that have been used to investigate other banking crisis, in other countries.

Therefore, the first objective of this thesis is to demonstrate the existence of a Portuguese banking crisis according to previous criteria published elsewhere. After 1945 and until 2008, Portugal did not experience any other banking crisis (Reinhart & Rogoff, 2009). However, two banks have experienced bank runs in 2008, when customers have tried to unsuccessfully recover all of their money back. One of these banks, Banco Português de Negócios (BPN), was taken-over by the Portuguese Government in 2008 and the other one, Banco Privado Português (BPP), was later declared insolvent (went bankrupt) in 2010. Furthermore, the other major Portuguese banks have also been significantly affected, and needed major recapitalization plans using Governmental funds and guarantees. These facts seem to allow demonstrating the existence of a banking crisis in Portugal, post 2008. Moreover, these facts may be crucial in explaining why the country would face so many difficulties in meeting its obligations towards creditors in the subsequent years.

A second objective is to better understand this possible Portuguese banking crisis, relating its causes with a phenomenon referred in the literature as boom-bust cycles, both in economic and lending natures, and capital flow bonanza episodes. By assessing the role of the Portuguese banking industry, this study will try to systematize facts relating it to the Portuguese economic crisis. Indeed, it seems that if a Portuguese banking crisis can be demonstrated, then it needs to be linked to Portugal joining the Euro currency, which eliminated the exchange rate risk within the Euro Area, in 1999. As a result, all the major Portuguese banks started borrowing money from financial institutions abroad, thereby pumping an enormous amount of liquidity into the Portuguese economy, contributing to a capital flow bonanza, and also sustaining both

lending and to some extent, credit-driven consumption booms. This may have later resulted in a bust, when the Portuguese banks were no longer able to meet their obligations towards their creditors abroad and turning their main financing source towards the ECB. The financial soundness of the Portuguese banks may have continued eroding with and during the Portuguese financial and economic crisis. As in other economic crisis in other countries, the need for public funds may have led to a large increase of the national sovereign debt, and therefore, to an increased likelihood of both external and internal defaults. This has culminated in the request of a bailout assistance program, by Troika. This sequence of facts associated to an increased exposure of the Portuguese banks to the national debt, may have led the banks towards the need for Governmental assistance and intervention.

For this matter and due to the complexity of the phenomenon, where the border lines may not be completely clear, the approach will be in the form of a case study, while trying to link a sequence of chronological events, described above.

The thesis is structured in five main sections. First, a literature review is presented to review existing definitions, characteristics and thresholds of banking crises, including the Portuguese historical episodes. The reviewing scope also includes characterizing and measuring economic boom-bust cycles, capital flow bonanzas, and lending booms. Second, the methodology section outlines and justifies the option for using a case study approach, formulates the main thesis objectives and indicates the types and sources of data used. A fourth section is dedicated to the data analysis and discussion of results, oriented to the postulated sequence of chronological events. The thesis then continues to a fifth section, elucidating the limitations to the discussion and finally, a sixth section, presenting the main conclusions and recommendations.

A complementary analysis is also presented, based on the major Portuguese banks performance indicators, in the Appendix C section. The objective is to assess the existence of early signals and trends, prior to the crisis, while measuring the crisis impacts on the banks' performance.

2. LITERATURE REVIEW: CHARACTERIZING FINANCIAL CRISES, BANKING CRISES, AND BOOM-BUST CYCLE CRISES

2.1. Financial Crises

2.1.1 Typology of Financial Crises

Reinhart & Rogoff (2009), suggest that financial crises can be identified by two methods. The first method is through a quantitative threshold and the second method is the demonstration of specific events. The quantitative thresholds suggested are a) inflation, b) currency crashes, and c) debasement of the currency. On the other hand, three major events can be used to demonstrate a financial crisis, namely, i) default and/or failure to meet obligations towards external creditors, ii) default and/or failure to meet obligations towards internal creditors and iii) banking crises. As explained earlier, the current thesis is focused in studying a possible banking crisis, and therefore it will dedicate more attention to this issue. However, banking crisis are not necessarily unrelated to default and/or failure to meet obligations toward creditors, or also inflation and problems with the currency exchange rate. According to Reinhart & Rogoff (2009), pp. 169-170, and for the three years immediately after a banking crisis occurring in a country, the sovereign debt of that country increases on average 186,3% and thus, also increases the likelihood of that same country not being capable to meet its financial commitments.

2.1.2. Looking more into detail to Banking Crises

One of the earliest records of a banking crisis goes back to 33 A.D., when a confluence of factors and a bout of domestic and international contagion, shut down several banking houses in Rome (Calomiris, 1989). Tiberius Caesar resolved the crisis by providing government funds to reliable bankers and certain debtors, forgiving some interest, and suspending government policies that had temporarily drained liquidity. As a result, most of the institutions recovered.

The identification, anticipation and prevention of a banking crisis is more complex than a crisis of a non-financial corporation. Banks differ from non-financial firms because of a combination of information imperfections and inter-temporal contracting (Caprio & Klingebiel, 1996). Not only can banks have trouble evaluating borrowers, but the health of a bank (or a banking system) is difficult to discern because depositors, supervisors, and other outsiders are unable to see through the veil surrounding banks' balance sheets until it is too late (Simons & Cross, 1991).

In order to define a bank failure one also needs to distinguish between different types of bank insolvency (Caprio & Klingebiel, 1996): i) those limited to a single bank or a small number of banks, which clearly are not systemic; ii) overt banking system runs; and iii) a more silent form of silent distress. Overt runs happen suddenly and end quickly. Financial distress of the banking system, when a significant portion of the system is insolvent but remains open, is perhaps the most pernicious type of insolvency.

The work by Holló et al (2012) has provided a composite indicator of systemic stress (CISS) in the financial system. This indicator is applicable for existing stresses in the financial system and as an *ex post* measure of systemic risk, i.e. risk that has already materialized. CISS comprises five segments of an economy's financial system: 1) the sector of banks, 2) non-bank financial intermediaries, 3) money markets, 4) securities (equities and bonds) markets, and 5) foreign exchange markets. The methodological CISS approach is the application of standard portfolio theory to the aggregation of the five segment-specific stress measures into the composite indicator.

Caprio & Klingebiel (1996) found that both macroeconomic and microeconomic factors have figured in banking crises and that, based on the criteria developed in their study, few governments have responded well to these episodes. The authors have shown that the common link between different types of bank failures is that initial losses, whatever their cause, often multiply when prompt corrective action is not taken. Rapid credit growth often leads to or reflects a decline in the credit standards of individual banks.

When a banking system grows rapidly, it is difficult for supervisors (or even bankers) to keep abreast of loan quality, since their information usually arrives late. Their study has also identified that the primary causes of bank insolvency are considered to be deficient management, faulty supervision and regulation, government intervention, or some degree of connected or politically motivated lending.

Reinhart & Rogoff (2009), on the other hand, point out that banking problems do not often arise from the liability side, but from a protracted deterioration in asset quality, be it from a collapse in real-estate prices or increased bankruptcies in the non-financial sector. Indeed, the conditional probability of a banking crisis (beginning) when financial liberalization has taken place is higher than the unconditional probability of a banking crisis. The study suggests that the twin crises (currency and banking) may have common origins in the deregulation of the financial system, the boom-bust cycles and asset bubbles that, all too often, accompany financial liberalization. Moreover, the authors mark a banking crisis by two types of events: 1) bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions, and 2) if there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution.

According to Patrick Honohan (1997), a typical kind of individual banking failure can often be traced to poor lending decisions based on an over-optimistic assessment of creditworthiness, willingness to repay, or the recoverability of delinquent loans; undue concentration of lending in readily available or "hot" sectors, or to particular borrowers; overly rapid credit expansion exceeding the technical capacity of the bank's lending function or (if generalized) even exceeding the economy's potential to generate bankable projects. Moreover, indicators for macroeconomic epidemics include growth in aggregate lending, the loan-to-deposit or transformation ratio, and the reliance on foreign borrowing. In terms of banking accounting, aggregate balance-sheet and operating account data suggesting unsound banking include growth in aggregate lending

(in real terms), loan-to-deposit ratio, and reliance on foreign borrowing, gross interest margin as a percentage of total assets and the share of non-interest income in total income. A high share of non-interest income is sometimes taken as indicative of potential weakness in core business, and potential over-reliance on volatile or contestable sources of revenue.

Measuring success and failure in finance is difficult because no single indicator reflects how well a financial system performs its various functions. Table A1 in the Appendix section presents the main published criteria and indicators used to identify a banking crisis.

2.1.3. Portuguese Banking Crises

Throughout its history, Portugal has experienced several banking crises (Reinhart & Rogoff, 2009), indicated in Table I. Nevertheless and for the period between 1945 and 2007, Portugal has performed better than the European average, as shown in Table II.

Table I – Portuguese Banking Crises (1800-1932).

Year	Episode
1828	The Bank of Lisbon suspended payments; it had experience a consistently troubled career because of its ties to the Portuguese government.
1846-1847	The Bank of Lisbon lost all credit, could not redeem its notes, and reorganized into the Bank of Portugal.
1890	Large budget deficits, the Barings crisis, and the Brazilian revolution led to currency depreciation. The government reneged on some domestic debt and renegotiated foreign debt to reduce interest payments. The crisis had a large impact on growth.
1920	Bank failures were common in the postwar economy.
1923	Multiple bank failures occurred.
1931-1932	Portugal abandoned the gold standard.

Table II – Comparison of banking crises between Portugal and average Europe (1800-2007).

	Share of years in a banking crisis since independence or 1800	Number of banking crises	Number of banking crisis since independence or 1800	Number of banking crisis since 1945 - 2007
Portugal	2,4	5	5	0
Europe (avg)	6,3	5,9	5,9	1,4

Source: Adapted from Reinhart & Rogoff (2009).

However, after 2007 Portugal started facing a serious banking crisis. The work by Laeven & Valencia (2010) considered Portugal as a borderline case in banking crisis between 2007-2009, due to extensive liquidity support and significant guarantees on liabilities. Demirgüç-Kunt & Detragiache (2005) also indicate one Portuguese banking crisis, between 1986 and 1989. Bordo et al (2001) report an average duration of banking crises between a minimum of 2,3 to a maximum of 3,1 years, between 1880 and 1997, for 56 nations, worldwide. In that study, Portugal has still performed better than average, as shown in Table II.

2.2. Economic cycles associated to crises

Previous research has identified that many financial and banking crises are associated to some apparently common empirical patterns of economic cycles, which may occur in the form of boom-bust cycles, and can be associated to capital flow bonanzas (e.g. Reinhart & Reinhart, 2008a). This section describes these cycles.

In a broader scope, a boom-bust cycle can be seen as an economic cycle, where there is an expansionist growth of the economy (boom) followed by a contraction (bust), as explained by Brzoza-Brezezina et al (2010). This bust can be abrupt, in the form of recession or crash, or it can have a soft landing, where there is still marginal growth, the economy adapts and finds new ways of gaining back the growth dynamics. On the other hand, it can also correspond to a credit-driven consumption boom (McKinnon & Pill, 1996) or commodity prices boom (Reinhart & Reinhart, 2008a)

In a focused perspective, the boom-bust cycle can be seen from the "lending" point of view, having a similar rational, with different measures (e.g. Tornell & Westermann, 2002). This lending cycle can usually correspond to an overborrowing cycle of the banking system, where the banks finance themselves abroad and then make the credit available for the local economy.

2.2.1. Economic Boom-Bust Cycles

Brzoza-Brezezina et al (2010) have considered that the Euro Area accession might have caused boom-bust cycles in several catching-up economies (Portugal included), where declining interest rates and easier financing conditions fueled spending and worsened the current account balance. This generated an economic boom, corresponding to an expansion of consumption, investment, and credit. Over time, inflation deteriorated external competitiveness and lowered domestic demand, turning the boom into a bust.

For a country with catching-up economy, such as Portugal, entering a monetary union as the Euro Area, means eliminating the exchange rate risk which, along with increased credibility, augments the access to low interest rates, thus allowing the economy to enter a boom phase, characterized by the expansion of consumption, investment and credit. On the other hand, booms may have a limited duration. Hence a decline might be forecasted to occur, either softly or abruptly. Following the boom phase, one might expect that higher demand raise the domestic price level, lowering the purchasing power of agents and contributing to a fall in demand. Moreover, if there is a growing external debt (private and sovereign), the credit risk, perceived by external investors, will also increase, thus increasing interest rates. As a result, consumption, investment and exports decline and the boom turns into bust.

Works by Blanchard (2007) and Almeida et al (2009) have studied the case of Portugal and have related its boom-bust pattern to the drop in interest rates related to the Euro Area accession. Namely, Olivier Blanchard (2007) indicates that the convergence process for Portugal entering the Euro currency, has led to an output boom in the second

half of 1990's, with a large current account deficit. Since then, the boom has turned into a bust period, more in a form of slump. The private spending, measured by consumption, and investment were the main drivers of the Portuguese boom. Both were fueled by the reduction of inflation, the reduction of the country risk, and access to the euro bond market. As a result, the Portuguese nominal interest rates declined from 16% in 1992 to 4% in 2001. At the same time, real interest rates declined from 6% to roughly 0%. These low interest rates may have induced financial imbalances as a result of a reduction in risk aversion and a more intensive search for yields by banks and other investors, at the same time that it can boost lending (Gambacorta & Marques-Ibanez, 2011). On the other hand, the labor productivity did not follow and the boom came to an end. With high-accumulated debt and worse future prospects, household saving increased, which sustained the banking liquidity but did not compensate the economy, in terms of growth and investment.

Almeida et al (2009) presented an analysis of the Portuguese economy during the period of 1980's until 2008, based on a Dynamic Stochastic General Equilibrium (GSGE) framework. According to the authors, Portugal had a boom phase in its economy in the 1990's, corresponding to the convergence process towards the average income levels in the euro area. Two main factors (shocks) associated with the boom phase were the reduction of exports non-price competiveness and a short-lived fiscal boom, with a subsequent fiscal consolidation process and following the 2001 and 2005 non-compliance with the Stability and Growth Pact. Thus leading to the opening of two excessive deficit procedures by the European Commission. This fiscal cycle has largely contributed to expanding (boom) and then contracting (bust) private expenditure.

Two additional shocks indicated by Almeida et al (2009), included the decline in interest rates and a reduction in liquidity constrains, both related to the participation in the Euro Area and the consequent elimination of the exchange rate premium. This elimination implied a reduction of domestic real interest rates and led to a significant

boom in domestic demand, namely in particular household's consumption. Under these circumstances and because demand conditions adjusted faster than output, some inflationary pressure arises in the short-run, thus generating a temporary decline in the real interest rate. This decline has also translated into a fall in the real cost of capital, which resulted in a shift of the relative price of primary factors. This implied an increase in the demand for capital goods, which, in association with the increase in the demand for consumer goods, resulted in a permanent increase on the demand for imports and for intermediate goods, both tradable and non-tradable.

This boom phase has shifted around the 2000's to a period of poor economic performance (bust phase), which implied an interruption in the real convergence process. From 1998 to 2008, and compared to the period between 1986 and 1997, the cumulated growth of the output per worker has significantly reduced while the output per unit capital has become negative. In short, the productivity per worker was not able to follow and compensate the increase in the cost per worker, which as led to the economic decline. This was also one main conclusion from Olivier Blanchard (2007).

2.2.2. Capital Flow Bonanzas and Lending Boom

One common feature of the run-up to banking crises is a sustained surge in capital inflows, designated as "capital flow bonanza" (Reinhart & Reinhart, 2008a). Their study shows that the probability of a banking crisis conditional on a capital flow bonanza (18,4) is statistically higher than the unconditional probability (13,2), at 1 percent confidence level.

Despite the fact of not existing a standardized definition of "a capital inflow episode" or bonanza, their study uses the current account balance as a percentage of real GDP as the benchmark indicator, identifying three episodes of Portuguese Bonanzas, in 1981-1982, 2000-2001, and 2005 (p. 20). According to the authors, when there is a capital inflow episode, the average path of the current account balance to real GDP is distinctly "V-shaped", with the current account deteriorating into the bonanza year and improving

steadily thereafter. Within three years of the bonanza, the authors have also identified, for Portugal, three currency crash episodes (1976-1977, 1981-1984, 2005) and two inflation crises (1974, 1982-1984). Still regarding Portugal, there are no records of a sovereign debt crisis (external default) and of a banking crisis, within the period of data analysis (Reinhart & Reinhart, 2008b). Though, the governmental takeover of BPN was not considered at the time of their study because it was known at the time of its publication.

Another study by Kaminsky & Reinhart (1999) shows that crises (external or domestic) are typically preceded by a multitude of weak and deteriorating economic fundamentals. During the economic expansion, the boom is usually financed by a surge in bank credit, as banks borrow abroad. Later, the capital inflows become outflows and the asset markets crashes, while the banking system caves in. Economic indicators include international reserves, a measure of excess money balances, domestic and foreign interest rates, and other external shocks, such as the terms of trade.

The study by Tornell & Westermann (2002) shows that many countries have liberalized their financial markets and have witnessed the development of lending booms. Most of the times, the boom gradually decelerates but sometimes the boom ends in a twin (currency and banking) crisis being followed by a protracted credit crunch, that outlives a short-lived recession. During the bust, the credit falls more sharply than GDP, and the gap widens over time, even after economic growth has resumed. Moreover, there is a sustained increase in the spread between lending and deposit rates.

Amongst the several indicators used to measure financial liberalization, the M2 money aggregate or multiplier, is oftenly used[1]. Kaminsky & Reinhart (1999) noted that the

[1] A monetary aggregate can be defined as the sum of currency in circulation plus the outstanding amounts of certain liabilities of financial institutions which have defined a high degree of "moneyness" or liquidity in a broad sense. The Eurosystem has defined a narrow (M1), an "intermediate" (M2) and a broad aggregate (M3). M2 comprises M1 (includes currency and balances that can immediately be converted into currency or used for cashless payments) and deposits with maturities of up to two years plus deposits

growth in the M2 multiplier rises steadily up to nine months prior to the currency crisis and the onset of the banking crisis. For banking crises, the multiplier grows at above normal rate in the entire 18 months prior to the crisis. The authors have also considered the ratio of domestic credit to nominal GDP, the real interest rate on deposits, and the ratio of lending-to-deposit interest rates. Calvo & Mendoza (1996) have also used M2 over international reserves as a key indicator, because M2 to reserves captures to what extent the liabilities of the banking system are backed by international reserves.

Still according to Tornell & Westermann (2002), and during lending booms, there is a real exchange rate appreciation, and the non-tradable sector grows faster than the tradable sector, where construction is considered to be non-tradable, by default. An asymmetry of financing opportunities across non-tradable and tradable sectors, and systemic bailout guarantees, also strengthened the characterization of what follows a typical capital flow bonanza. The study also emphasizes that "almost every crisis has been preceded by a lending boom, although not all lending booms end in crisis" (p. 117). The typical lending boom ends with a soft landing (soft bust), suggesting that not all lending booms reflect excessive risk taking.

In particular and prior to a crisis, the non-tradable (N) sector grows faster than the tradable (T) sector. On the other hand and in the aftermath of a crisis, the tradable sector experiences an acceleration of growth after a mild recession, while the non-tradable sector experiences a sharp fall and a sluggish recuperation. Moreover, investment is the component of GDP that exhibits by far the largest (and statistically significant) deviations from tranquil times.

According to McKinnon & Pill (1996), many liberalizing economies have suffered episodes of boom-time "overborrowing" – with the domestic banking system being the main intermediary between foreign lenders (depositors) and domestic borrowers –

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redeemable at notice of up to three months. See ECB Monthly Bulletin, February 1999 and Table A2 in the Appendix section for a more detailed explanation.

followed by financial crisis and bust. However, overborrowing has typically financed increased expenditure on non-traded goods. In many cases, the industries most dramatically affected by the "boom-bust" cycle were construction (and in particular public infra structures contracted with the government) and real estate, considered to be the quintessential non-tradable sectors.

To understand how capital inflows affect the solvency of banks, the work by McKinnon & Pill (1996) also describes the role of capital inflows in the creation of credit-driven consumption booms and in changing the risks faced by the banking sector. When large inflows of foreign financial capital enter the newly liberalized domestic banking system, risk is likely to multiply rapidly. Main risks include:

- Credit risk – exposure to the failure of a borrower to repay a loan – will increase as bank lending rises. A sudden increase in the availability of loanable funds through capital inflows may encourage greater investment in risky prospects such as lending to real estate or securities market participants.
- Foreign exchange exposure is dramatically increased if the inflows are foreign currency denominated while the banks enjoy a comparative advantage (informational or otherwise) in domestic lending in local currency.
- Liquidity risk will rise if the size of the capital inflows is large relative to that of domestic securities markets. If banks attempt to invest the inflows in domestic markets (e.g. real estate) they may simply bid up the price of housing, helping to create bubbles in real estate and equity prices, thus destabilizing "herding" or "fad" behavior among market agents.

3. METHODOLOGY

3.1. The case-study approach

This thesis aims at researching whether one can identify a Portuguese banking crisis impacting the Portuguese economic crisis through criteria published in previous literature. Furthermore, one intends to study whether, to some extent, such a Portuguese banking crises could be linked to empirical phenomena observed in previous banking crisis in other countries, such as economic boom-bust cycles, capital flow bonanzas and lending booms.

Banking crises are nonetheless, quite complex events. For instance, Bordo et al (2001) considered very unlikely that a banking crisis can be described and studied as a simple mapping from simple fundamentals. Kaminsky & Reinhart (1999) analyzed stress events, due to the lack of high frequency data capturing an emergent financial crisis. On the other hand, banking crises are heterogeneous and its analysis ends up being a combination of both theoretical and empirical reasoning. In this context, the current thesis adopted the case study research methodology in trying to demonstrate the potential existence of a Portuguese banking crisis. A case, where the boundaries between phenomenon and context are not clearly evident and where the after-crisis period has not yet been reached, to be able to compare the before and after periods and conditions and, therefore, to define thresholds allowing for a more controlled and robust experimental analysis, based on quantitative data.

Robert Yin (2009) indicates using the case study approach for investigating a contemporary phenomenon in depth and within its real-life context. In the particular scope of this thesis, the boundaries between phenomenon and context are not clearly evident, which sustains the choice for a case study approach, as opposed to an experimental strategy, where the research is undertaken within a highly controlled environment. According Saunders et al (2009), the main approach of a case study methodology is using empirical investigation of a particular contemporary phenomenon,

within the real life context and using multiple sources of evidence. In this way, the case study strategy is often used in explanatory and exploratory research. The data collection techniques employed may be various and are likely to be used in combination. Sekaran and Bougie (2011) compare the case study approach to a problem solving technique, in trying to understand the reasoning supporting a set of decisions or phenomena.

3.2. Data range and sources

For the current study, both quantitative and qualitative data have been used, from various sources, including Banco de Portugal (BdP), European Central Bank (ECB), Bank for International Settlements (BIS), International Monetary Fund (IMF), Portuguese Bureau of Statistics (INE), the Portuguese Banking Association (APB) and banks' balance sheets and income statements. A complete list of definitions, indicators, sources and periods of data extraction is available on Tables A3a through A3d, in the Appendix section.

In terms of quantitative data, various time series are shown with different inter-temporal time frames, because not all data series are available for the same time period. As a result, the data analysis is always made on the most extended period available, for any given data series and source. Regarding the Portuguese banks, the data is available since 1993 and is only available for a small number of banks, when compared to other publications and using much larger samples (e.g. Caprio & Klingebiel, 1996; Reinhart & Rogoff, 2009 and 2010; Laeven & Valencia, 2010; Nunes, 2011).

A particular aspect in studying the banking crises is both the duration of a crisis and the corresponding before and after periods. For this matter, different studies indicate different time periods, which is also related with the indicators or variables used to define a banking crises. For this thesis purpose, no consideration is made either on the duration of a crisis or on the before and after periods, because Portugal is just coming out of the crisis peak in 2012, as demonstrated in the following sections.

4. DATA ANALYSIS AND DISCUSSION

This section is dedicated to the data analysis and results discussion, considering the objective postulated in the previous section. A complementary analysis regarding early signals, impacts and inferring the role of the major Portuguese banks in the overall Portuguese banking crisis is also available, in Appendix C.

4.1. The post-2007 financial and banking crisis in Portugal

The analysis of the 2007 financial crisis is done is two steps, being 1) the demonstration of the financial crisis using the composite indicator of systemic stress (CISS), from the ECB data source, and the stock market evolution for Portugal (PSI-20) and United States of America (Dow Jones and S&P 500); and 2) the assessment of the effects of the 2007 financial crisis in the Portuguese economy, namely considering the evolution of the 2.1.) real GDP components, 2.2.) employment indexes for industry, construction and services, and 2.3.) cumulative balance of new corporations startup's minus closures.

The first part of the financial crisis is illustrated in Figure B1 and Figure B2 of the Appendix B section, for CISS and the stock market evolution, respectively. Figure B1 shows a significant CISS increase in August 2007, associated with the subprime crisis and when BNP Paribas suspended three investment funds, which became totally illiquid. A second peak appears in March 2008, when Bear Sterns collapsed, followed by the failure of IndyMac and emerging signs of substantial trouble of Fannie Mae and Freddie Mac. Later, in September 15th 2008, it was the bankruptcy of Lehman Brothers and the rescue of AIG, the day after. Around mid-April 2010, serious concerns started to arise regarding the sovereign debt risk in the Euro area, namely with Greece. These peaks are well explained in Holló et al (2012). Figure B2, shows the daily evolution of the Portuguese and U.S. stock markets from 1993 to 2012. The graph shows the abrupt fall of these stock markets in 2007 until 2009, after which they started to recover. Though, while the US stock market has recovered its performance for both the Dow Jones and S&P 500 indexes, reaching performance levels prior to the crisis, the

Portuguese stock market (PSI-20) has declined again in 2011, mainly associated with the bailout program to Portugal, in April 2011.

Considering the GDP evolution, Figure B3 shows a declining trend of its annual growth rate, in both nominal and real terms, corresponding to a small accumulated growth rate in the Portuguese nominal GDP (3,7%) and almost a null accumulated growth rate in the real GDP (1,2%) between 1997 and 2012, considering the period just before Portugal started to join the Euro. The information also indicates that Portugal has been facing a recession period between 2011 and 2012 which, being coincident with a financial and banking crisis, may become more severe and therefore, fuel ongoing financial crises (Bordo et al, 2001). Earlier in 1983, 1992 and 2002, the real GDP growth rates were also negative, despite its positive values in nominal terms. Moreover, Figure B4 shows an overall stability in the proportion of consumption (private and public) in the Portuguese real GDP, averaging 84,9%, between 1997 and 2012, and calculated as percentage of private and public consumption, over investment plus net exports. The results presented seem to indicate the absence of an overall economic boom.

Figure B5 complements the analysis of the financial crisis in the Portuguese economy with the evolution of the Portuguese real GDP components, using an index, basis 100 in December 1978. Both public and private consumptions have been steadily growing since 1978 until 2010, after which, they have declined. In the case of private consumption, there was already a bump in 2009, which can be mainly associated with the recession and initial austerity measures imposed by the Portuguese stability pact. Nevertheless, the key analysis is on the investment component of the GDP, showing an overall increase between 1993 and 2001, after which starts to decline, reaching a period of stagnation between 2003 and 2008, and thereafter declining further and sharply, showing the effect of the 2007 financial crisis and confirming the bust part of the boom-bust cycle on the Portuguese economy. This cycle in the private component along with

the previous growth of both the private and public consumption are also in line with the work by Brzoza-Brzezina et al (2010). The fourth component of the analysis is the net imports, calculated as the difference between imports and exports of goods and services. The higher the index value, the higher the net imports. The graph shows a significant increase in the net imports starting in 1989 until 1998, which can be associated to an increased capital inflow and consumption of non-tradable goods. After 1998, it reaches a plateau zone at high values until 2010. Until then, Portugal had always more imports than exports, which has also impacted negatively the current account balance. Considering that, on average and between 1977 and 2012, the imports of goods-to-services ratio is approximately 5:1, one can identify a potential credit-driven consumption boom, as reported by McKinnon & Pill (1996). The net imports only started to decrease significantly in 2011, mainly associated with the bailout program, economic recession and economic adjustment measures, that have reduced consumption (and therefore imports), and fostered exports.

The analysis of the financial crisis is now directed towards the main activity sectors that can impact the Portuguese banking system, namely on its credit stock quality. For this matter, the focus is on the effects in both tradable (industry) and non-tradable sectors (construction and services). The economic performance of these economic branches can be indirectly assessed by the respective employment indexes, because when the activity is performing well, the employment is also rising and vice-versa. Figure B6 shows a decrease in the employment indexes for the Portuguese industry, construction and services branches, where construction has more than doubled its decline, decreasing from 111,0 in 2000 to 50,5 in 2012.

Figure B7 shows that the financial crisis has also impacted the economy, measured by an average balance of new corporations startup's minus closures of –3.627,8 between 2008 and 2012. This also impacts the Portuguese banking system because a significant part of the credit is dedicated to the non-financial corporations (43,0% in December

2007 and 35,8% in December 2012 – Figure B12) that, if bankrupt, won't be able to payback their loans. This impacts the soundness of the Portuguese banking system, because weaker companies cannot access credit in the same way as before and also because they may have aggravated difficulties in paying back the existing financial compromises with the banks, thus increasing their non-performing loans.

4.2 Looking for evidence of a Portuguese banking crisis

This sub-section reports empirical evidence of a Portuguese banking crisis, following criteria employed in previous literature, and considering: 1) the importance of the Portuguese banking system in the Portuguese economy, 2) the impacts of the 2007 financial crisis in the banks, namely in reducing the banking financing capacity, in the credit stock quality, and in the potential existence of a real estate bubble, and 3) the capitalization needs of the Portuguese banking industry.

The importance of the Portuguese banking system, i.e. all banks operating in Portugal and registered within the Portuguese Central Bank (Banco de Portugal), is expressed in Figure B8 where the total banking asset weight over the Portuguese nominal GDP has almost doubled from 172,6% in 1998 to 300,2% in 2012.

The amount of credit that the banks give to the economy is usually measured by the loan-to-deposit ratio, or transformation ratio. The higher the ratio, the lower the loans are backed by the deposits and, therefore, higher is the risk in case loaners don't payback their loans. The transformation ratio for the Portuguese banks has been growing since 1998, until it reached a maximum of 162,0% in December 2009 (Figure B9), which also corresponded to an overborrowing / overlending period, characterizing a lending boom. After this date, the ratio has been decreasing, reaching 127,7% in December 2012 and it needs to be 120% until 2014[2]. The demonstrated loan growth is

[2] According to Communication 30/09 by Banco de Portugal, from September 29th 2011, and available in http://www.bportugal.pt/pt-PT/OBancoeoEurosistema/ComunicadoseNotasdeInformacao/Paginas/combp20110930.aspx

usually a very good leading indicator of bank risk (Altunbas et al, 2011) because it is generally associated with a relaxation of credit standards and a deterioration in the quality of the asset side in the balance sheet. Tornell & Westermann (2002) have found that after a banking crisis, the credit falls more than the GDP, which is also the Portugal case. Namely, for the period between 2010 and 2012 when the decrease of the transformation ratio (-19,2%) and of the total credit granted (-5,5%) surpassed the decrease of the nominal GDP (-4,4%).

The continuous increase in the transformation ratio was mainly sustained through foreign sources of financing, which is also a signal of a banking crisis (Honohan, 1997). Figure 1 shows that after 1999, the Portuguese banks increased significantly their debt over foreign banks, including central banks. The negative balance of the continuous grey line after 1999, corresponds to a net inflow to the Portuguese banks. This has increased until 2003, after which it stabilized until 2005.

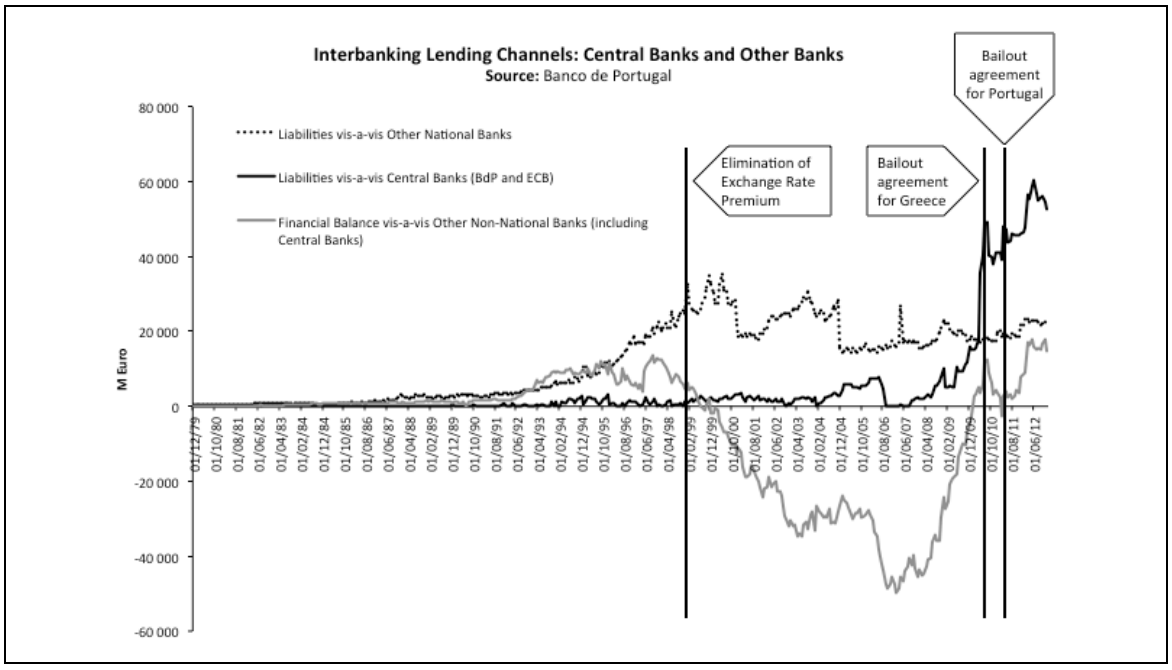

Figure 1 – Interbanking lending channels for the Portuguese banking system.

Starting in 2007 and with the financial crisis, the Portuguese banks and corporations were also affected by the Portuguese situation in terms of accessing the financial

markets, either because they were linked to the credit ratings for the Portuguese Republic or associated to its financing yields. Figure B10, shows this association when, after the Greek crisis in 2010, it became harder for the banks to finance themselves in the market (measured by the credit default swaps) and even harder than the Portuguese corporations. Later in 2011, and following the Portuguese bailout program, it became almost "impossible" for the national banks and corporations to access liquidity in the international financial system. As a result of the European sovereign debt crisis and namely the Greek one, Figure 1 shows that Portuguese banks then turned to the central banks, by increasing their liabilities over the European Central Bank (ECB) and Banco de Portugal (BdP), which had an exponential peak in 2009 and kept rising until May 2012. This high level of exposure to the ECB is also coincident with the Portuguese bailout program. The graph also shows that the financing through the ECB and BdP was used to payout the liabilities over the non-resident banks. Essentially, there was a stop point for the Portuguese banks to finance themselves in the foreign banking market. As a result, they had to turn to the ECB and BdP, to cover their liabilities and keep funding the Portuguese economy, namely the Portuguese Government. Essentially, the Portuguese banks lost their financing capacity, other than through the ECB, which can, somehow, correspond to an overborrowing "exhaust" point.

This combination of facts, between the Portuguese bailout program (equivalent to a sovereign debt crisis) and the need for the Portuguese banks to finance themselves through the ECB, is in line with the Reinhart & Rogoff (2010), where banking crises often precede or accompany sovereign debt crises.

The analysis now proceeds towards the credit evolution by destination. Figure 2 shows the evolution of the credit granted by the Portuguese banks to the different destinations, using an index basis 100 in December 1997. Overall, the credit has been growing continuously for all destinations, except for the central government. In this case, there has been an overall stagnant period between 2000 and 2009, where it was possible for

the Portuguese Republic to obtain liquidity through the primary market. Though and arising from the 2007 financial crisis and the Greek bailout program, the Portuguese central government started to finance itself through the Portuguese banking system and concentrating the ECB funding. The graph also shows four milestones for this case. The two triangles correspond to the bailout programs in May 2010 (Greece) and in April 2011 (Portugal), with the yields on the 10-year Portuguese bonds reaching 4,681% and 9,643%, respectively. The dots correspond to two other peaks, also associated with the spike in the yields for the 10-year Portuguese bonds. Namely 5,193% in July 2010 and 6,601% in December 2010.

This is supported by the information in Figure B11 while showing the impacts of the Greek crisis in 2007 and the Portuguese bailout program in April 2011 on the evolution of the spreads between the Portuguese and German bonds, for 5 and 10 years. This evolution is in line with Reinhart & Rogoff (2010), where public borrowing accelerates markedly ahead of a sovereign debt crisis because governments often have "hidden debts" that far exceed the better documented levels of external debt.

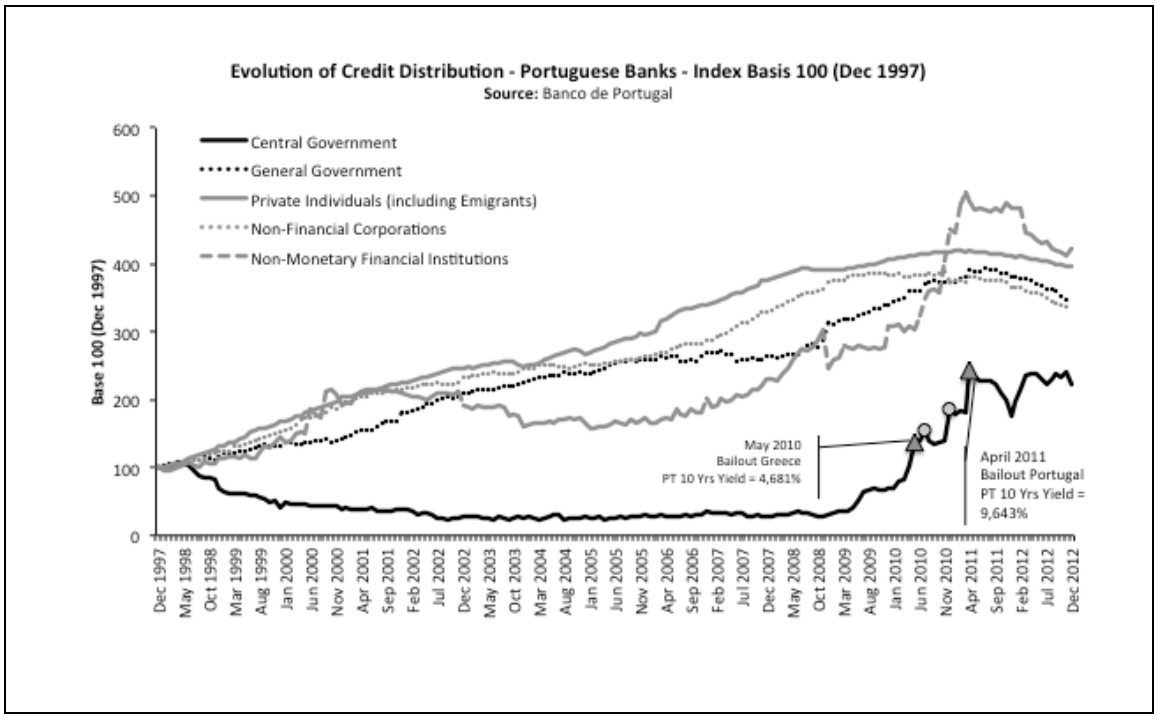

Figure 2 – Evolution of credit distribution by the Portuguese banks, by destination.

The analysis now addresses the impact of the post-2007 financial crisis in the credit stock quality. Figure B12 illustrates the credit distribution by destination. The two main destinations were the private individuals and non-financial corporations, amounting respectively 38,9% and 35,8% of the total outstanding credit, in December 2012. On the other hand, Figure B13 shows that with the 2007 financial crisis, the percentage of the total number of non-financial corporations with overdue loans (loans that have not been paid after 30 days and before 90 days) has also increased significantly, from 15,1% in December 2007 to 28,6% in December 2012. Moreover, the non-performing loans (NPL), i.e. loans that have not been paid after 90 days, have augmented for the non-financial corporations, reaching 10,4% in the end of 2012, which is a high value, considering that non-financial corporations account for 35,8% of the total outstanding credit, in December 2012. More in detail, Figure 3 shows that after 2008, the biggest increase in the NPL ratio comes from construction and real estate activities, where both combined represent 30,3% of NPL, in December 2012. Furthermore, these activities represented 32,8% of the total outstanding credit to non-financial corporations, by the end of December 2012.

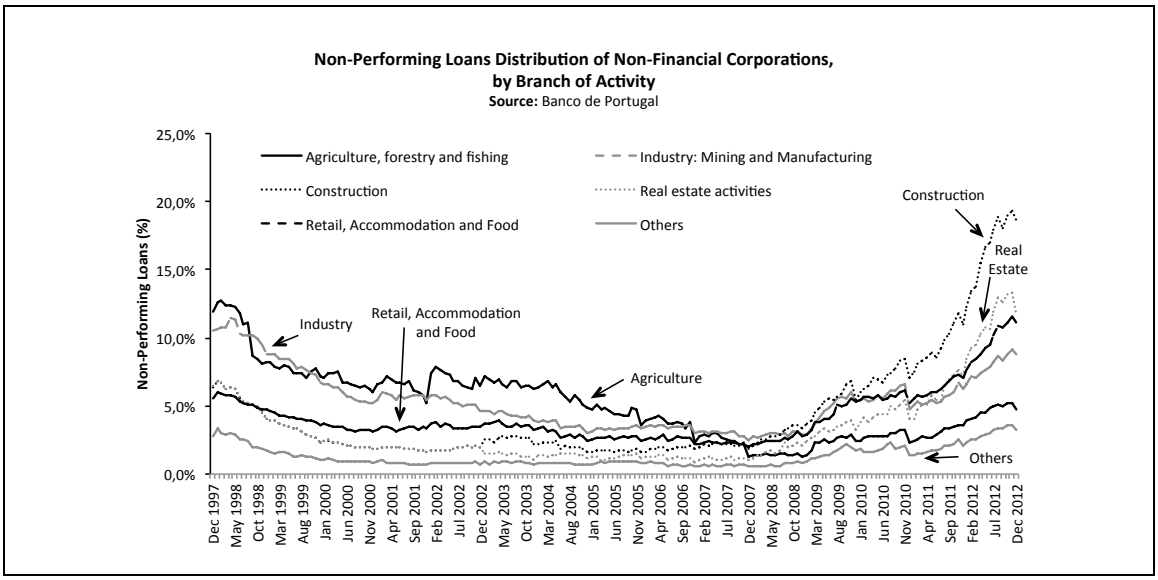

Figure 3 – Evolution of the non-performing loans of non-financial corporations, by branch of activity.

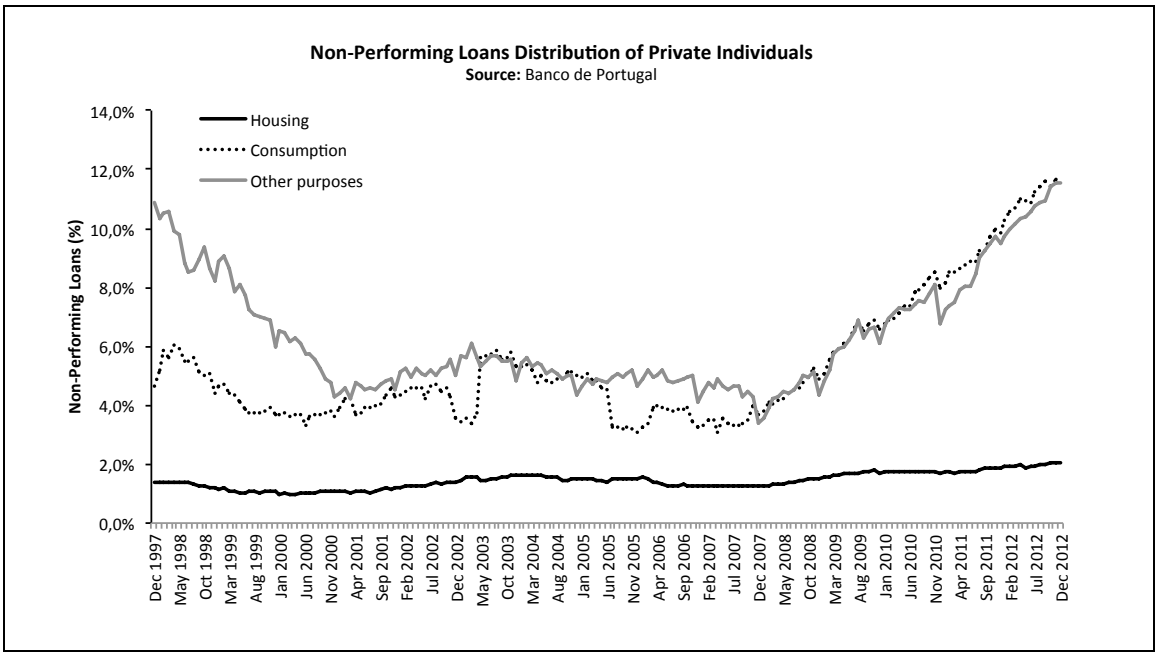

Figure 4 – Evolution of the non-performing loans for private individuals, by purpose.

Private individuals, on the other hand, kept their non-performing loans ratio relatively low and stable, between 1,8% in December 2007 to 4,0% in December 2012 (Figure B13). The credit granted to private individuals represented 38,9% of the total outstanding credit, in December 2012, being 81,8% allocated to housing, 10,0% to consumption and 8,2% to other purposes (Figure B14). Figure 4 presents the detailed evolution of NPL for the private individuals, showing an increase of the NPL associated to consumption and other purposes, that started in 2008 with the financial crisis, and reached, respectively, 11,8% and 11,6%, in December 2012. These categories represented a total of 18,2% from the total outstanding credit to private individuals in December 2012. Furthermore, the NPL from housing credit has been stable over time and at low values (2,1% in December 2012). Antão et al (2009) considered that the Portuguese families make all possible efforts to keep paying their housing mortgages, using support from their own families and cutting on all other expenses.

One of the major factors indicated to be responsible for the global 2007 financial and banking crisis was the real estate bubble. Over the decade prior to the 2007-2009 global crisis, the United States and several other advanced economies experienced an uninterrupted upward trend in real estate prices, which was particularly pronounced in the residential property markets (Laeven & Valencia, 2010). Deeper analyses can be found in the literature (Gorton, 2008, Brunnermeier, 2009 and Acharya & Richardson, 2009), explaining the origins and their relation to banking management practices.

The effect of a potential real estate bubble is assessed for the Portuguese case, with data in Figure 5 and Figure 6. According to Figure 5 there is no significant increase in the Portuguese housing prices evolution. While Spain, on the other hand, shows a continuous upward trend between 2001 and 2008, which created a bubble that burst in 2008. A deeper analysis was made by measuring the impact of a potential housing price depreciation, with a corresponding impact in the banking asset quality. Figure 6 shows that after 2007, the banks started to decrease the average housing evaluation, from 106,1 in June 2007 to 88,1 in December 2012, despite the information from the Bank for International Settlements (BIS) not showing this effect in the housing pricing[3].

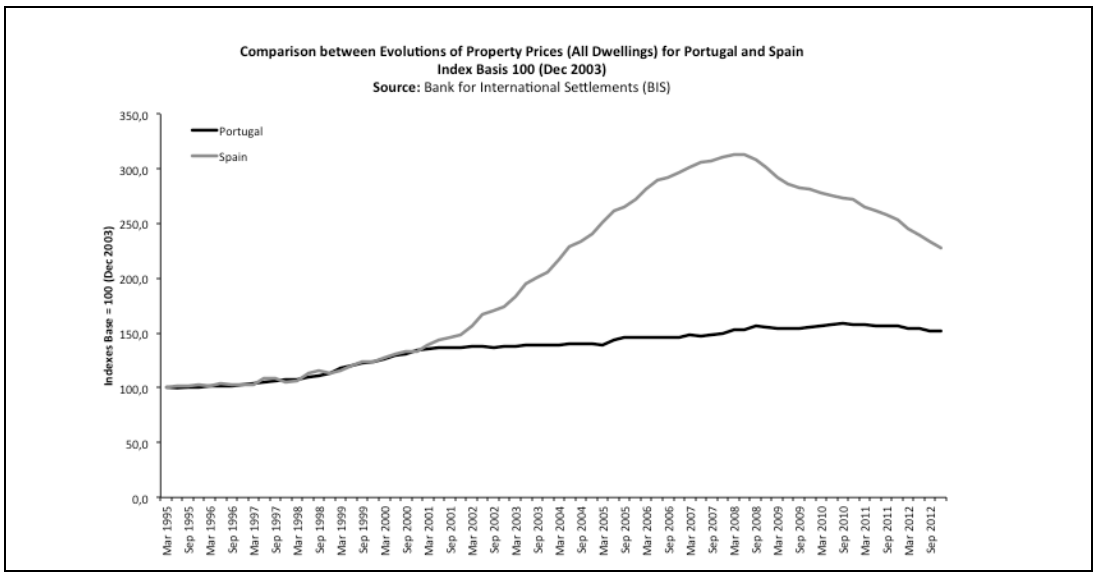

Figure 5 – Evolution of the property prices (all dwellings) for Portugal and Spain.

[3] BIS is also the pricing data source used by the European Central Bank and Altunbas et al (2011).

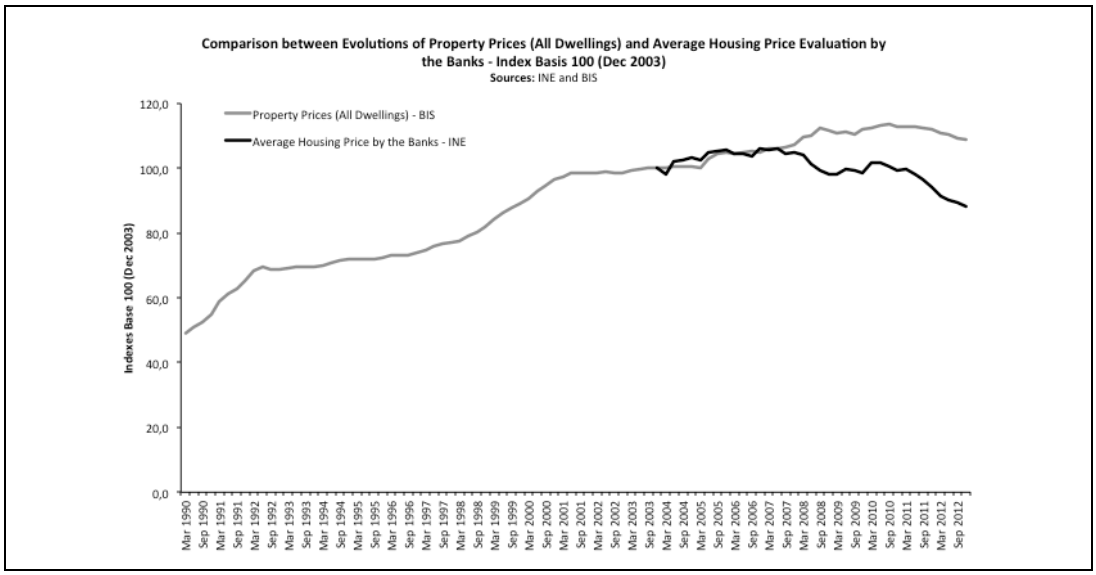

Figure 6 – Comparison between the evolution of the property prices and average housing evaluation, by the Portuguese banks.

The 2007 financial crisis impacted the sovereign debts of Portugal and Greece, and the overall European and Portuguese economies, as described above. As a result, the Portuguese banks have also been affected and facing continuous difficulties and challenges. Following the Basel III accord, the European Banking Authority (EBA) implemented stress tests, assessing the quality of the banking credit stock. Moreover, there was also an increase of the capital adequacy ratios, to maintain a sound financial system and thus avoiding a systemic failure of the banking system. The banks with low levels of capitalization are more exposed to asymmetric information problems and have less capacity to shield their credit relationships (Gambacorta & Marques-Ibanez, 2011). The Third Basel Accord has revised capital adequacy ratios, in 2010 and 2011, to increase the resilience of banks against liquidity risks. This implied reviewing impairments and the risk weighted assets. EBA has required the European banking system to reach a core tier 1 capital ratio of 9,0% by the end of 2011[4]. In April 2011,

[4] Notice 12/05 by Banco de Portugal, from May 12th 2011, and available in http://www.bportugal.pt/pt-PT/OBancoeoEurosistema/ComunicadoseNotasdeInformacao/Paginas/default.aspx

and following the Portuguese bailout program, EBA and BdP demanded the Portuguese banks to further increase their core tier 1 capital ratio to 10%, by the end of 2012[5].

The stress tests ran by EBA in 2011 analyzed the credit quality of four major Portuguese banks (Caixa Geral de Depósitos – CGD, Banco BPI, Millennium bcp, and Banco Espírito Santo – BES, via its owner Espírito Santo Financial Group – ESFG). This resulted in a recapitalization exercise, namely regarding exposures to sovereign debts and other shortfalls to the required adequacy ratios, defined by the Basel III accord. Table A4 shows the EBA exercise for these four banks. The exercise resulted in the need for 6,950 Billion Euro in September 2011, which was then decreased to 3,976 Billion Euro in December 2011.

At this point in time and facing the deterioration of their capital adequacy ratios, the Portuguese banks had the need for a significant capitalization initiative. They also had a very limited or almost null access to the international financial market (Figure 1), while having to provide liquidity to the Portuguese central government (Figure 2). The consequence was that Banco BPI, CGD and Millennium bcp had to use governmental capitalization plans in 2012 and Banco International do Funchal (Banif) in 2013, to accomplish the required capital adequacy ratios. BES, here indicated by its owner ESFG, accomplished its capitalization plan by raising capital directly in the financial market. In June 2012, another capitalization exercise was performed (EBA, 2013), showing that the Portuguese banks were well capitalized, with a capital surplus of 1,318 Billion Euro, and following their capitalization programs.

Table A5 presents the summary of the government guarantees and capitalization plans, implemented after 2008. In 2011, the government guarantees to the Portuguese banks reached 6,9% of the Portuguese nominal GDP, which is considered expressive and thus

[5] Communication 29/06 by Banco de Portugal, from June 29th 2012, and available in http://www.bportugal.pt/pt-PT/OBancoeoEurosistema/ComunicadoseNotasdeInformacao/Paginas/combp20120629.aspx

fulfilling one criterion by Laeven & Valencia (2010) for identifying a banking crisis. The costs of these capitalization program represented 4,0% of the Portuguese nominal GDP in 2012, which is over the 3% threshold, also indicated by Laeven & Valencia (2010) and over 2% indicated by James Bell (2000) as being a condition for having a banking crisis. Along the way, there was also the bank run of Banco Privado Português (BPP) in December 2008, which generated the need for a government guarantee of 450 Million Euro and the appointment of a managerial board to contain the systemic risk due to its eminent collapse and following its bank run[6]. This bank was later declared insolvent (i.e. bankrupted) in April 2010[7]. In November 2008, there was also the Government takeover of Banco Português de Negócios (BPN), which demanded an extra governmental capitalization scheme of 3,406 Billion Euro, between 2010 and 2012, plus government guarantees fulfilling a total of 5,214 Billion Euro, between 2009 and 2012[8].

This way, one can conclude that Portugal is going through a banking crisis, with four episodes, so far:

1. 2008 – The bank runs of BPP and BPN, plus the government takeover of BPN, fulfilling the criteria by Reinhart & Rogoff (2009).
2. 2010 – Bankruptcy of BPP following its bank run in 2008 and incapacity to repay its creditors, fulfilling the criteria by Reinhart & Rogoff (2009).
3. 2011 – Government guarantees of 6,9% of the nominal GDP, which is over 5% indicated by Laeven & Valencia (2010).

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[6] According to Communication 01/12 by Banco de Portugal, from December 1st 2008, available in http://www.bportugal.pt/pt-PT/OBancoeoEurosistema/ComunicadoseNotasdeInformacao/Paginas/combp20081201.aspx

[7] According to Communication 16/04 by Banco de Portugal, from April 16th 2010, available in http://www.bportugal.pt/pt-PT/OBancoeoEurosistema/ComunicadoseNotasdeInformacao/Paginas/combp20100416-1.aspx

[8] All financial data concerning the takeover of Banco Português de Negócios (BPN) are based on the final report elaborated by the Parliamentary Inquiry Commission of the Portuguese National Assembly, in June 2012, available in http://www.parlamento.pt/sites/COM/XIILEG/CPIBPN/Paginas/Relatorios.aspx

4. 2012 – Government recapitalization costs of 4,0% of the nominal GDP, which is over 3% indicated by Laeven & Valencia (2010) and Reinhart & Rogoff (2009), and over 2%, indicated by James Bell (2000) to become eligible for a banking crisis.

Additional information is also provided by the Portuguese deposit insurance system, which registered 89,2 Million Euro of payments to depositors in 2010 and 8,20 Million Euro in 2011 (Table A6), mainly associated to the BPP case. These values, *per si*, don't make it eligible for a banking crisis but are certainly a reinforcement indicator, because this insurance had not been used since its creation, in 1992.

Nevertheless, the Portuguese banking crisis may have further episodes, because there are still pending potential losses arising from financial funds associated to BPN (3,104 Billion Euro) that, if accounted in 2013, may add to the governmental capitalization cost of Banif (1,100 Billion Euro), and thus potentially generating a fifth episode. Despite the increased performance of the Portuguese banks in terms of the capital adequacy ratios over time (Figure B15), the return-on-equities (ROE's) and return-on-assets (ROA's) were still negative at the end of 2012 (Figure 7). This means that, although the Portuguese banks have overall sound capital ratios, there might be the need to revaluate the banks' capital needs. Namely, if the economic conditions continue to deteriorate and if Portugal faces additional bailout programs, which will impact the exposure of the Portuguese banks to the Portuguese sovereign debt, and also limit their access liquidity and credit in the international financial market.

Figure 8 also reinforces that the Portuguese banking crisis may not be over yet, because the total credit overdue plus impairments is well above the banks' capital, reaching a value of 116,7% in December 2012. The graph shows that the situation started to become critical after 2008, kept more or less stable until 2011, but then it went over 100%, with the EBA assessment on the credit at risk. Thus meaning that the banks' capital would not be enough to cover potential losses arising from both the erosion of

the quality of the credit stock and the incapacity of the loaners to payback their loans. A second variable in Figure 8 shows that 51% of the total outstanding gross credit was at risk in December 2012, due to impairments and overdue loans. Thus strengthening the fragile continuity of the Portuguese banking situation.

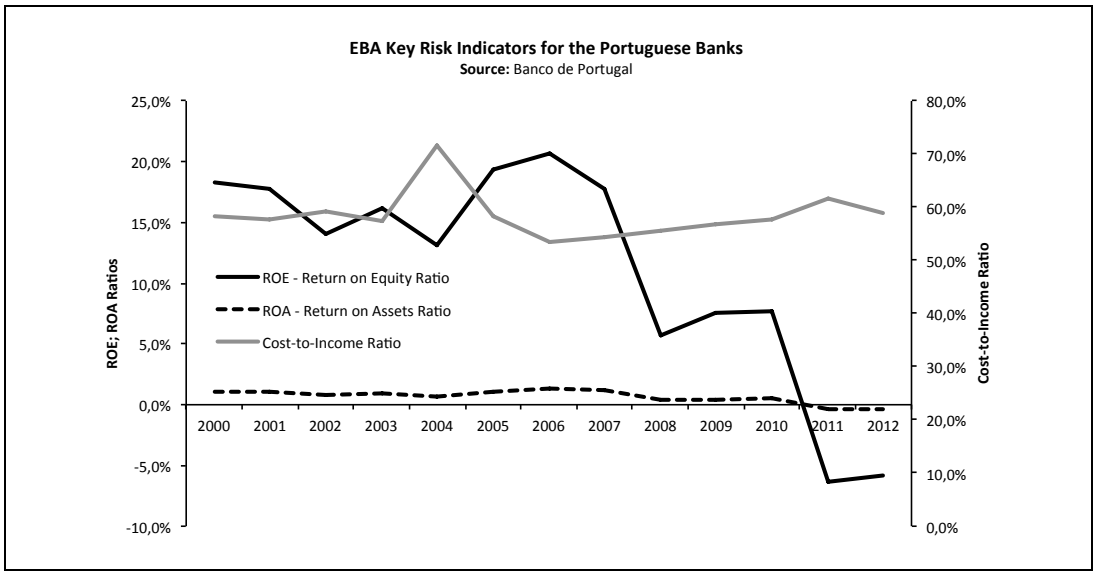


Figure 7 – Evolution of the EBA key risk indicators for the Portuguese banks.

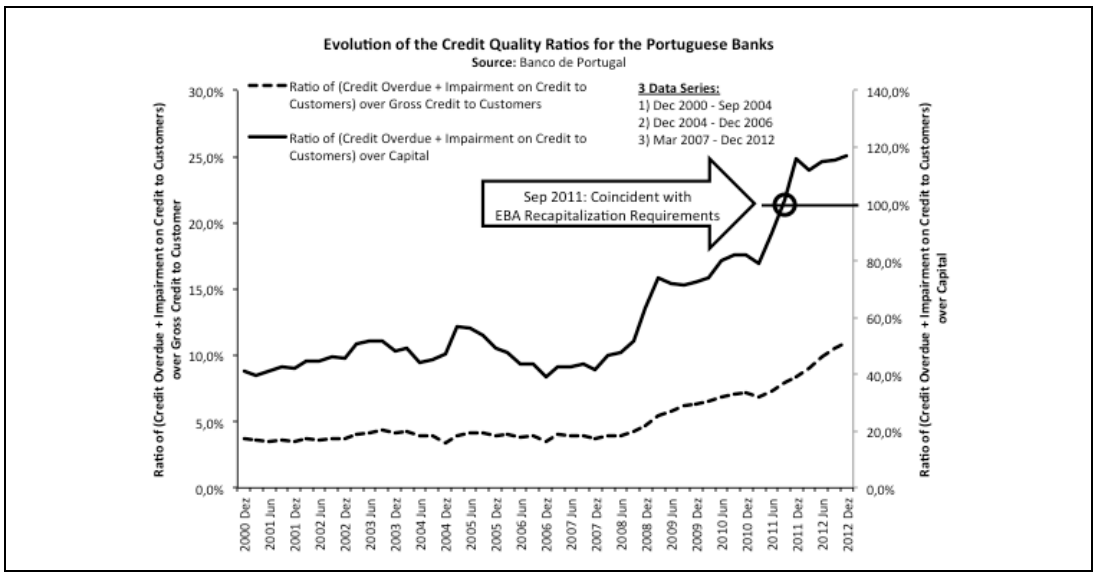


Figure 8 – Evolution of the credit quality ratios for the Portuguese banks.

4.3. Boom-Bust Cycle and Capital Flow Bonanza when Portugal has joined the Euro: the Contribution from the Portuguese Banking Industry

This section provides evidence of four empirical cycles that were associated to other banking crisis in other countries, and which were also present in the Portuguese case. Namely, an overall boom-bust cycle in the Portuguese economy, a capital flow bonanza and both a lending and credit-driven consumption booms. Moreover, it depicts the role of the Portuguese banking industry throughout these cycles.

Figure 9 shows the existence of a boom-bust cycle, represented by the cyclical evolution of the M2 money aggregate over the Portuguese nominal GDP. The definition of M2 reflects the particular interest in analyzing and monitoring a monetary aggregate that, in addition to currency (M1), consists of deposits that are liquid. The M2 multiplier rose steadily between 2002 and until 2008, corresponding to a boom phase and prior to the financial crisis and as indicated by Kaminsky & Reinhart (1999). After 2008 and following the bust phase, the ratio M2 / Nominal GDP starts to fall, indicating problems in the banking sector, as expressed by Caprio & Klingebiel (1996). This analysis contradicts, somehow, the previous discussion when it was mentioned that there was an absence of an economic boom, due to the low growth rate of both nominal and real Portuguese GDP. Indeed, the analysis on the M2 multiplier is coincident to the one published by Kaminsky & Reinhart (1999). Though, in this case, the authors refer their work to a boom in imports, which is also confirmed for the Portuguese economy, namely by the results in Figure B5.

The rise of the M2 money aggregate can be explained by an increase in the capital inflow, which can also contribute to a capital flow bonanza. Figure 10 is used to demonstrate the existence of capital flow bonanza episodes in Portugal, measured by the percentage of the current account balance over the real GDP. The graph shows two data lines. One continuous dark line, matching the study by Reinhart & Reinhart (2008a), based on IMF data and showing five dot points in 1981, 1982, 2000, 2001 and 2005,

considered as being capital flow bonanza episodes. The dashed horizontal line considers an empirical threshold value of 10% to identify a bonanza episode, which is additional to the "V-shaped" criterion indicated by the authors. Though, and for the period between 2008 and 2012, the IMF data is only estimated. To overcome the analysis constrain for this time period, a second data line (in continuous grey) was introduced, using data from Banco de Portugal. The corresponding data series ranges from 1996 to 2012 and shows some deviation from the study by the referred authors, which can be associated with differences in the deflators and current account components, between the two data sources. Between 2008 and 2012 and using both the empirical threshold of 10% and "V-shape" on the continuous grey line, there were two additional Portuguese bonanza episodes (triangle points), in 2006 and 2008, and thus fulfilling a total of seven bonanza episodes. Bordo et al (2001) have also shown that the current account to GDP ratio was a statistically significant determinant in financial crises.

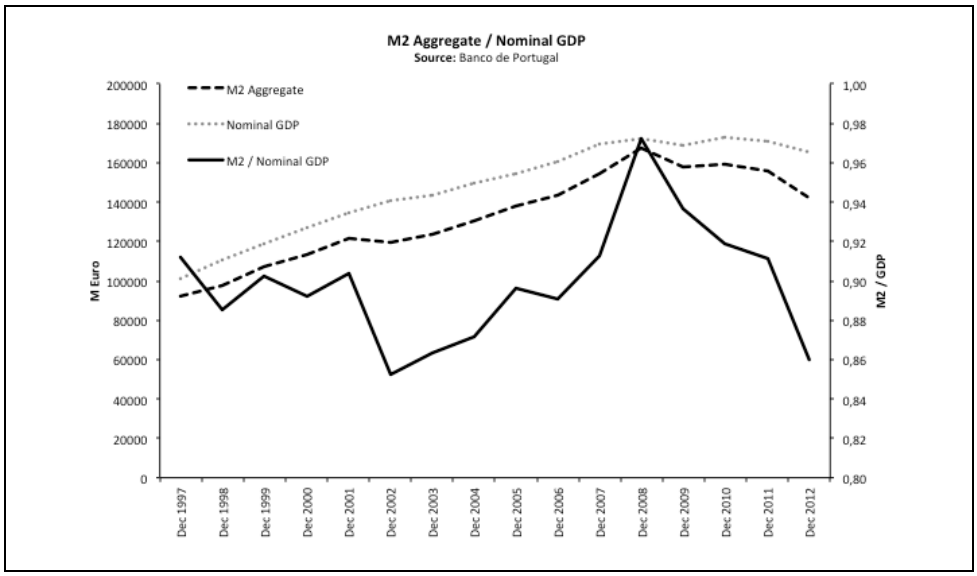


Figure 9 – Portuguese M2 Aggregate / Nominal GDP.

Figure 11 supports the existence of a capital inflow in the Portuguese economy, by showing a comparison between a capital inflow cycle (increasing until 2008 and then decreasing), with the symmetric pattern on the current balance account. The capital inflow is calculated as the difference between the reserves minus the current account

balance, using data from Banco de Portugal. Both indicators calculated as percentage of real GDP, while linking the information between Figure 9 and Figure 10.

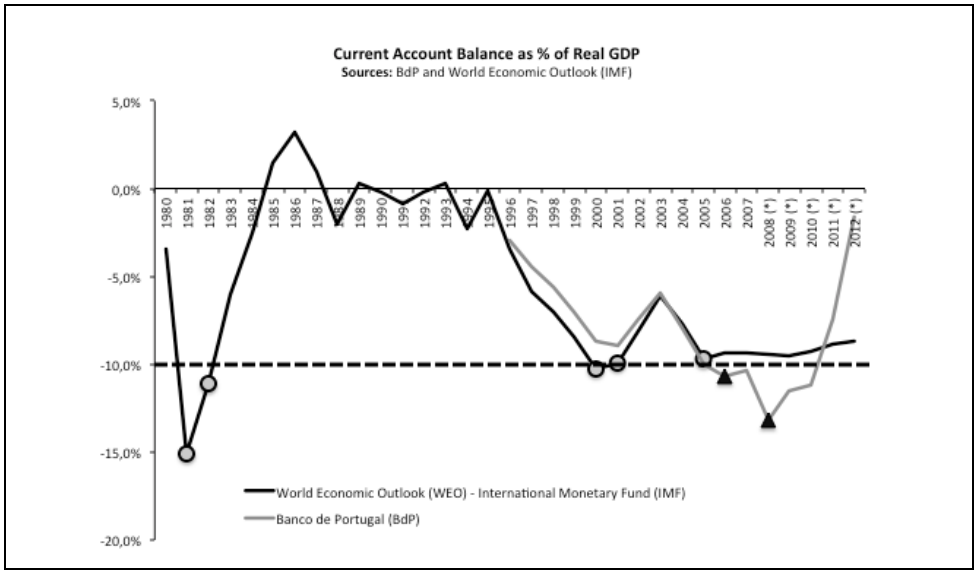


Figure 10 – Portuguese capital bonanza episodes and the evolution of current account balance, as percentage of real GDP.

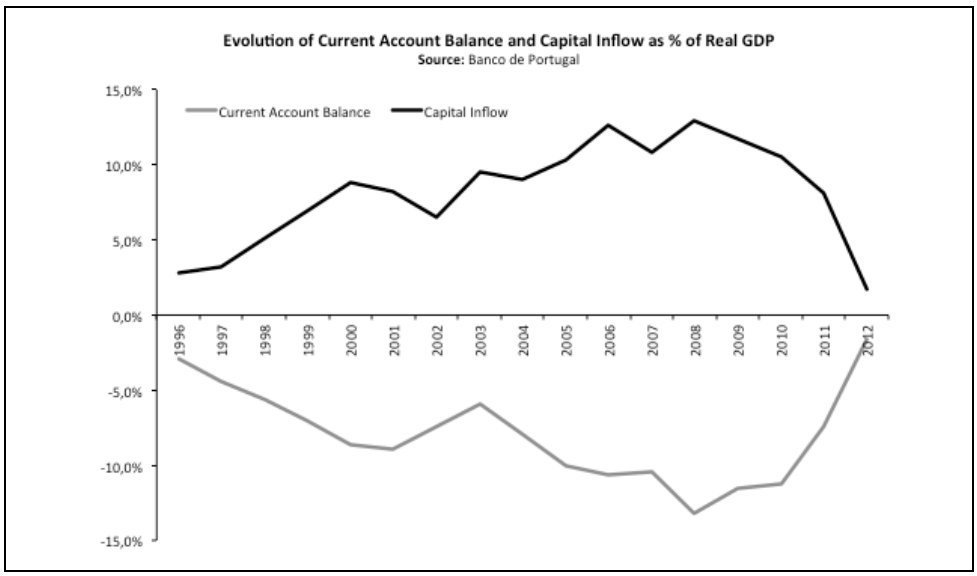


Figure 11 – Evolution of Portuguese current account balance and capital inflow, as percentage of real GDP.

Associated with the capital inflow, the non-financial Portuguese debt as a percentage of the nominal GDP also grew, along with the net imports, as indicated in Figure B5. The debt by the general government, public and private corporations and private individuals

grew from 346,4% to 444,4% between December 2007 and 2012. These values are indicated in Table A7 and in Figure B16, where it is noticed that the major increase occurs for the general government. The combination of the increased lending trend with the corresponding increase in imports, and mostly in goods, support the existence of a lending boom sustaining a credit-driven consumption boom. The debt value of 444,4%, in 2012, is very close to Iceland, which is known as being the major forefront European country impacted by the 2007 financial crisis, and that had an external debt over GDP of 522,8% in 2007 (Reinhart & Rogoff, 2010). Also in 2012, Portugal had a debt ratio over nominal GDP of 185,5% for private corporations and 100,6% for the private individuals. This can also be considered high, namely when compared with Norway, which had three banking crisis episodes between 1900 and 2004, and were associated with a ratio of domestic private credit over GDP above 140% (Reinhart & Rogoff, 2010). These ratios may be considered as a signal of the Portuguese economic fragility, namely if Portugal faces further economic erosion and therefore, increased risk over its finances and banking credit assets. As the Portuguese economy increases its debt, the main financing channel becomes the Portuguese banking system, with an average value of 49,4% between 2007 and 2013 (Figure B17), and therefore showing a key role of the Portuguese banking industry. The foreign sources represent an average of 24,4% and other sources 26,2%.

Figure B12 reinforces the lending boom observed after 1999, when joining the Euro eliminated the Portuguese exchange rate risk. As a result, the graph shows that there was a boom phase in 1999 and in 2005, corresponding to two jump levels on the total credit over the nominal GDP. For the first jump and in December 1998, the value was 104,4% while in December 2001 was 140,2%. For the second jump, in December 2002 the value was 141,6% while in December 2011, it reached 211,9%. A surge in the private lending and therefore in private debt is known as being a recurring antecedent to banking crises (Reinhart & Rogoff, 2010). The access to very low interest financial markets and to an excess of liquidity, mainly financed by foreign banks, might have

contributed to an increased credit risk in the Portuguese economy, as the credit information becomes more asymmetric and there is a trend to relax on credit standards. This phenomenon can, somehow, relate to banking management practices. The fact is that with the Portuguese revolution in 1974, most of the resident banking industry was nationalized in 1975 and only in the end of 1980 and early 90's, the banks started to become again private (Antão et al, 2009). In this way, when Portugal started the process of joining the Euro currency, the majority of the Portuguese banks had limited self-experience in dealing with a liberalized financial market. This may have led them to follow a more traditional management of retail banking, by borrowing in an easy-access market and lending to construction and real estate.

The graph in Figure 12 illustrates the evolution of the credit distribution to non-financial corporations, by branch of activity. Further detail on the category "Others" is available in Figure B18. According to Figure 12, the real estate and construction, both considered to be non-tradable (Tornell & Westermann, 2002), had the largest increase after 2002 and until 2009-2010, when they started to decline, which is also in line with the decline of the Portuguese economy. This trend, combined with the data in Figure B19, shows that not only real estate and construction outgrew the non-tradables in credit growth but also that these two sectors together, represent the majority of the total credit distribution, in million Euro. According to Tornell & Westermann (2002), this credit growth concentration confirms a boom phase while expressing the non sustainable growth of the Portuguese economy. On the other hand, this high exposure to construction and real estate, combined with their decreased economic performance (shown earlier in Figure 3) is considered to be a signal of a boom-bust cycle reaching its bust phase and following an overborrowing episode (McKinnon & Pill, 1996).

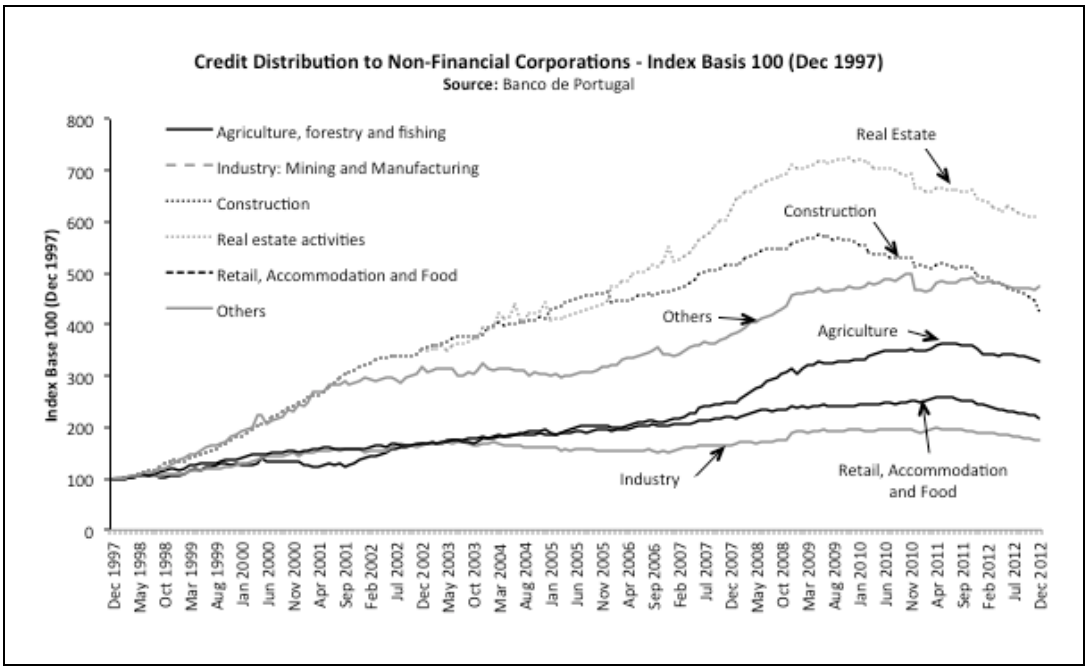


Figure 12 – Evolution of credit distribution by the Portuguese banks, by destination.

5. LIMITATIONS IN THIS CASE STUDY

The current subject of study is complex and usually involves understanding multiple factors and effects, including their interactions. The literature review indicates that banking crises can be associated to both macro- and micro-economical factors (e.g. Hononan, 1997), to different political and regulatory policies (e.g. Laeven & Valencia, 2010), and also to the monetary policy (e.g. European Central Bank, 2010). The dispersion of both signaling and performance indicators is also a good measure of the subject complexity (Bell, 2000). On the other hand, banks are also corporations, intended to make profit and, therefore, to maintain competitive advantages and management practices (e.g. Caprio & Klingebiel, 1996). Despite the high level of management information available, there is always information and insights that, if were publicly available, could better sustain the discussion.

In the case of the current thesis, elements from different sources were gathered. Using the case study methodology, the presented work focused on maintaining a sound approach in explaining the crisis puzzle. Nevertheless, some limitations are usually associated with a case study addressing a complex subject. Such limitations need to be considered when presenting the findings. It is the case when the same data vary between sources, as it was the example illustrated in Figure 10, thus limiting triangulation and cross referencing. Furthermore, the lack of high frequency data for the major Portuguese banks, along with the reduced number of cases, has also limited the use of statistical tools.

Essentially, two main limitations can de identified in this thesis:

1) The limitation of a more clear understanding of the causal relationship between the Portuguese banking crisis and the ongoing economic crisis, because both crises overlapped in time and are not over yet. However, and as shown before, the Portuguese banking industry crisis seems to be clearly identifiable through the publicly available data and to start before the economic crisis. Furthermore,

the evidence seems to allow observing empirical cycles associated to other banking crises that have occurred in other countries, namely lending boom-bust, and capital flow bonanza episodes.

2) The impossibility of inferring the role of each specific Portuguese bank in the crisis, mainly due to the lack of publically available historical accounting data. Namely, regarding exposures to sovereign debts and credit at risk, by branch of economical activity. When publicly presented by each Portuguese bank, these items are aggregated with many other rubrics and vary along the time, with different accounting and regulatory rules.

6. CONCLUSIONS AND RECOMMENDATIONS

The results presented and discussed throughout this thesis allow concluding that there was a Portuguese banking crisis with four distinct episodes throughout 2012, and following the literature definition and criteria, as follows:

- 2008 – Bank runs of both Banco Privado Português (BPP) and Banco Português de Negócios (BPN), plus the additional Governmental takeover of BPN.
- 2010 – Bankruptcy and dissolution of Banco Privado Português.
- 2011 – Government guarantees of approximately 6,9% of the nominal GDP to the major Portuguese banks.
- 2012 – Government recapitalization costs of approximately 4,0% of the nominal GDP to the major Portuguese banks.

The Portuguese banking crisis has been the result of the post-2007 financial crisis, because it has deteriorated the banking asset quality, both due to the increased non-performing sovereign debts and loans, and impairments. At the same time and associated to an overborrowing of the Portuguese economy, the financing capacity of the Portuguese banks in the foreign financial market became very limited. In addition, the Portuguese bailout program has also deteriorated the Portuguese economy and had, therefore, a negative impact on the quality of the credit stock of the Portuguese banking industry. The simultaneous combination of these factors along with a more demandable regulatory measures, have pushed the major Portuguese banks towards the need to increase their capital adequacy ratios, using governmental guarantees and capitalization programs.

Historically though, there have been prospective trends that help explaining the described situation. Namely, and while accessing the Euro Area, Portugal experienced a lending and credit-driven consumption boom-bust cycle, associated with capital flow bonanza episodes. These were supported by an easier access to liquidity, due to the elimination of the exchange rate risk and access to the Euro bond area. The Portuguese

banking system has then played a major role, while being the main lending channel of an intensive overborrowing cycle from foreign financial institutions. This happened in a context of low privately owned banking experience and in a liberalized market, as if the credit and liquidity risks had also been eliminated. Though, this was not the case. Furthermore, the credit granted was mainly directed towards non-tradable sectors, such as construction and real estate activities, which ended-up being the most affected ones during the ongoing economic downfall, arising from the post-2007 financial crisis.

In the aftermath, there was the Governmental takeover of one bank to avoid the systemic failure of the Portuguese banking system, and another one went bankrupt. Moreover, the other major Portuguese banks required guarantees and monetary recapitalizations from the Portuguese State. During this time period, the Portuguese government needed to increase its debt towards external creditors, therefore increasing the likelihood of default on its sovereign debt.

In terms of future work, it is recommended that this line of approach can be improved by continuing measuring the major Portuguese banks' performance, with a deeper research on their accounts, in order to identify levels of exposure to sovereign debts and to the most affected branches of activity during the crisis. Additional work is also suggested in terms of assessing the impacts on the capital adequacy ratios and banks' capital, when the economy recovers. Comparison wise and following an economical recovery, one may assess if banks' will regain their performance with an updated business model, either with or without an European banking union.

A final suggestion is proposed for recovering the analysis when the banking crisis ends, in order to compare the before and after period, thus putting this subject in line with the main published literature addressing banking crises and to allow completing this case study with a more quantitative analysis.

REFERENCES

Acharya, V., and Richardson, M. (2009). *Restoring Financial Stability: How to Repair a Failed System*. John Wiley and Sons Inc., Hoboken, New Jersey.

Almeida, V., Castro, G., and Félix, R. (2009). The Portuguese economy in the European context: structure, shocks and policy. The Portuguese Economy in the Context of Economic, Financial and Monetary Integration, pp 65-152, Banco de Portugal.

Altunbas, Y., Manganelli, S., and Marques-Ibanez, D. (2011). Bank Risk During The Financial Crisis. Do Business Models Matter? Working Paper Series No. 1394, European Central Bank.

Antão, P., Boucinha, M., Farinha, L., Lacerda, A., Leal, A. C., and Ribeiro, N. (2009). Financial integration, financial structures and the decisions of households and firms. The Portuguese Economy in the Context of Economic, Financial and Monetary Integration, pp 415-545, Banco de Portugal.

Associação de Bancos Portugueses – APB (2012). Portuguese banking balance sheets and income statements [database]. Accessed in http://www.apb.pt/estudos_e_publicacoes/estatisticas

Bell, James (2000). Leading indicator models of banking crises – a critical review. Financial Stability Review, December 2000, 113-129, Bank of England.

Blanchard, Olivier (2007). Adjustment within the euro. The difficult case of Portugal. *Portuguese Economic Journal* 6 (1), 1-21.

Bank for International Settlements – BIS (2012). Property price statistics [database]. Accessed in http://www.bis.org/statistics/pp.htm

Banco de Portugal – BdP (2012). BP Stat [database]. Accessed in http://www.bportugal.pt/EstatisticasWEB/(S(zbhjd245ejmcvp555nl4eoz1))/Default.aspx

Bloomberg (2013). Financial indicators and stock market indexes. Bloomberg terminal. Retrieved 2013.

Bordo, M., Eichengreen, B., Klingebiel, D., and Martinez-Peria, M. S. (2001). Is the Crisis Problem Growing More Severe? *Economic Policy* 16 (32), 53-82.

Brock, Philip (1995). High Real Interest Rates and Bank Recapitalizations. University of Washington, Department of Economics, Seattle.

Brunnermeier, Markus (2009). Deciphering the Liquidity and Credit Crunch 2007-2008. *Journal of Economic Perspectives* 23, 77-100.

Brzoza-Brzezina, M., Jacquinot, P., and Kolasa, M. (2010). Can we prevent boom-bust cycles during euro area accession? Working Paper Series No. 1280, European Central Bank.

Calomiris, Charles W. (1989). Deposit Insurance: Lessons from the Record. *Economic Perspectives* (May/June), Federal Reserve Bank of Chicago, 10-30.

Calvo, Guillermo A., and Mendoza, E. (1996). Petty Crime and Cruel Punishment: Lessons from the Mexican Debacle. *The American Economic Review* 86 (2), 170-175.

Caprio, G., and Klingebiel, D. (1996). Bank insolvency: Bad Luck, Bad Policy, or Bad Banking? Annual World Bank Conference on Development Economics.

Demirgüç-Kunt, A., and Detragiache, E. (2005). Cross-Country Empirical Studies of Systemic Bank Distress: A Survey. Working Paper, International Monetary Fund

European Banking Authority – EBA (2011). EU Capital exercise 2011 [Database]. Accessed in http://www.eba.europa.eu/risk-analysis-and-data/eu-capital-exercise/2011

European Banking Authority – EBA (2013). EU Capital exercise final results [Database]. Accessed in http://www.eba.europa.eu/risk-analysis-and-data/eu-capital-exercise/final-results

European Central Bank – ECB (1999). Euro area monetary aggregates and their role in the Eurosystem's monetary policy strategy. Monthly Bulletin, February 1999, pp. 29-46.

European Central Bank – ECB (2010). The ECB's response to the financial crisis. Monthly Bulletin, October 2010, pp 59-74.

European Central Bank – ECB (2012). [Database]. Accessed in http://sdw.ecb.europa.eu/home.do

European Central Bank – ECB (2012). Money and credit growth after economic and financial crises – A historical global perspective. Monthly Bulletin, February 2012, pp 69-85.

Gambacorta, L. and Marques-Ibanez, D. (2011). The Bank Lending Channel. Lessons from The Crisis. Working Paper Series No. 1335, European Central Bank.

Gorton, Gary (2008). The Panic of 2007. National Bureau of Economic Research (NBER) Working Paper No. 14358.

Holló, D., Kremer, M., and Lo Duca, M. (2012). CISS – A Composite Indicator of Systemic Stress In The Financial System. Working Paper Series No. 1426, European Central Bank.

Honohan, Patrick (1997). Banking System Failures in Developing and Transition Countries: Diagnosis and Prediction. Working Papers No. 39, Bank for International Settlements.

Instituto Nacional de Estatística – INE (2012). [Database]. Accessed in http://www.ine.pt/xportal/xmain?xpid=INE&xpgid=ine_main

International Monetary Fund – IMF (2012). World Economic Outlook Database [Database]. Accessed in http://www.imf.org/external/pubs/ft/weo/2013/01/weodata/index.aspx

Kaminsky, G., and Reinhart, C. (1999). The Twin Crises: The Causes of Banking and Balance-of-Payments Problems. *The American Economic Review* 89 (3), 473-500.

Laeven, L., and Valencia, F. (2010). Resolution of Banking Crises: The Good, the Bad, and the Ugly. Working Paper, International Monetary Fund.

McKinnon, R., and Pill, H. (1996). Credible Liberalizations and International Capital Flows: The Overborrowing Syndrome. In: Ito, T. and Krueger A., (Eds.) *Financial*

Deregulation and Integration in East Asia. NBER-EASE 5, University of Chicago Press, pp. 7-50.

Nunes, Anne-Sophie (2011). Os Determinantes da Performance Bancária Durante a Crise financeira: o Caso dos Países do Eurosistema. Masters Thesis, Instituto de Economia e Gestão, Lisboa.

Portuguese National Assembly (2012). Parliamentary Inquiry Commission on the Government Takeover, Management and Alienation of Banco Português de Negócios, SA. Final Report. Available in http://www.parlamento.pt/sites/COM/XIILEG/CPIBPN/Paginas/Relatorios.aspx (accessed in August 2012)

Reinhart, C., and Reinhart, V. (2008a). Capital Flow Bonanzas: An Encompassing View of the Past and Present. *NBER International Seminar on Macroeconomics* 5 (1), 9-62.

Reinhart, C., and Reinhart, V. (2008b). From Capital Flow Bonanza to Financial Crash. Munich Personal RePEc Archive (MPRA) Paper No. 11866, University Library of Munich, Germany.

Reinhart, C., and Rogoff, K. (2009). *This time is different: eight years of financial folly*. Princeton, New Jersey: Princeton University Press.

Reinhart, C., and Rogoff, K. (2010). From financial crash to debt crisis. Working Paper 15795, National Bureau of Economic Research Paper Series.

Saunders, M., Lewis, P., and Thornhill, A. (2009). Research methods for business students, 5th Edition. Pearson Education Limited, Edinburgh Gate, England.

Sekaran, U., and Bougie, R. (2011). Research Methods for Business, 5th Edition. John Wiley and Sons Ltd, West Sussex, United Kingdom.

Simons, K., and Cross, S. (1991). Do Capital Markets Predict Problems in Large Commercial Banks? *New England Economic Review* (May/June), 51-56.

Tornell, A., and Westermann, F. (2002). Boom-Bust Cycles in Middle Income Countries: Facts and Explanation. IMF Staff Papers 49, International Monetary Fund, 111-155.

Yin, Robert K. (2009). Case study Research: Design and Methods, 4th Edition. SAGE Publications Inc., Thousand Oaks, California, USA.

APPENDIX A – TABLES

Table A1 – Criteria to define a banking crisis.

Authors (Year)	Indicator / Criteria
Reinhart & Rogoff (2009)	• Bank runs that lead to the closure, merging, or takeover by the public sector of one or more financial institutions. • If there are no runs, the closure, merging, takeover, or large-scale government assistance of an important financial institution (or group of institutions) that marks the start of a string of similar outcomes for other financial institutions.
Caprio & Klingebiel (1996)	• Financial deepening: rising ratio of M2 (or a broader monetary aggregate) to GDP, indicates that the banking system has stabilized in the aftermath of the crisis. A flat or falling ratio shows that problems remain in the banking sector. • Moderate growth of real credit indicates that the crisis has passed. Negative real credit growth may reflect a credit crunch, while exploding credit growth (well in excess of twice real GDP growth and sustained for several years) may reflect distress borrowing from those in default. • The ratio of nonperforming loans to total loans should have fall in the aftermath of a banking crisis.
Brock (1995)	• Real deposit interest rates above 10 percent are a strong indicator that banks are bidding up rates in order to stay afloat and signal that there is financial distress in the banking system. On the other hand significantly negative real rates on a sustained basis often signify a credit crunch or government intervention.
Bordo et al (2001)	• Observe financial distress resulting in the erosion of most or all of aggregate banking system capital.
Laeven & Valencia (2010)	• Three out of the following six measures: 1. Extensive liquidity support (5% of deposits and liabilities to non-residents) 2. Bank restructuring costs (at least 3% of GDP) 3. Significant bank nationalizations 4. Significant guarantees put in place (at least 5% of GDP) 5. Significant asset purchase 6. Deposit freezes and bank holidays

Table A2 – Definition of Money Aggregates.

Aggregate	Definition
M1 – Narrow money	Includes currency, i.e. banknotes and coins, as well as balances that can immediately be converted into currency or used for cashless payments, i.e. overnight deposits.
M2 – "Intermediate" money	Comprises narrow money (M1) and, in addition, deposits with maturities of up to two years and deposits redeemable at notice of up to three months. The definition of M2 reflects the particular interest in analyzing and monitoring a monetary aggregate that, in addition to currency, consists of deposits which are liquid.
M3 – Broad money	Comprises M2 and marketable instruments issued by the Monetary Financial Institutions' sector.

Liabilities	M1	M2	M3
Currency in circulation	X	X	X
Overnight deposits	X	X	X
Deposits with agreed maturity up to 2 years		X	X
Deposits redeemable at notice up to 3 months		X	X
Repurchase agreements			X
Money market fund shares/units and money market paper			X
Debt securities up to 2 years			X

Source: ECB Monthly Bulletin, February 1999

Table A3a – Definitions, indicators and data sources.

Indicator	Thesis Reference	Definition / Calculation	Time Period	Frequency	Source
CISS - Composite Indicator of Systemic Stress	Figure B1	Direct extraction	08-Jan-1999 to 28-Dec-2012	Weekly	European Central Bank Data Warehouse: CISS.D.U2.Z0Z.4F.EC.SS_CI.IDX
PSI-20 Basis 100 Dow Jones Basis 100 S&P 500 Basis 100	Figure B2	Data extraction and then make Index Base 100 on 04-Jan-1993	04-Jan-1993 to 31-Dec-2012	Daily	Bloomberg: PSI20 Index; INDU Index; SPX Index
Gross Domestic Product (GDP) in Nominal terms Gross Domestic Product (GDP), in Real terms	Figure B3	Nominal GDP = Direct extraction Real GDP = Nominal GDP / Deflator (Basis 2006 = 1)	Dec-1977 to Dec-2012	Yearly	Banco de Portugal: Historical time series "CN Anuais (preços correntes) - PIB"; "CN Anuais (deflatores - base 2006=1) - PIB"
Gross Domestic Product (GDP) Components, in Real terms	Figure B4	Real GDP = Nominal GDP Component / Component Deflators (Basis 2006 = 1)	Dec-1978 to Dec-2012	Yearly	Banco de Portugal: Historical time series "CN Anuais (preços correntes) -" & " By Component" "CN Anuais (deflatores - base 2006=1) -" & "By Component"
Real GDP components, Basis Index 100 (Dec-1997)	Figure B5	Real GDP = Nominal GDP Component / Component Deflators (Basis 2006 = 1), adjusted and considering 100 in Dec 1977	Dec-1978 to Dec-2012	Yearly	Banco de Portugal: Historical time series "CN Anuais (preços correntes) -" & " By Component" "CN Anuais (deflatores - base 2006=1) -" & "By Component"
Employment Index - Services Employment Index - Construction Employment Index - Industry	Figure B6	Direct extraction	Jan-2000 to Dec-2012	Montlhy	Portuguese Bureau of Statistics (INE) Historical time series: "Índice de emprego nos serviços - bruto (Base 2005) por Actividade económica (CAE Rev. 3); Mensal" "Índice de emprego na construção e obras públicas - bruto (Base 2005); Mensal" "Índice de emprego na indústria - bruto (Base 2005) por Actividade económica (CAE Rev. 3); Mensal"
Corporate Startup's minus Closures	Figure B7	Balance = (1) - (2)	Jan-2008 to Dec-2012	Montlhy	Portuguese Bureau of Statistics (INE) Historical time series: (1) "Constituição de pessoas coletivas e entidades equiparadas (N.º) por Localização geográfica (NUTS - 2002) e Atividade económica (CAE Rev. 3); Mensal" (2) "Dissolução de pessoas coletivas e entidades equiparadas (N.º) por Localização geográfica (NUTS - 2002) e Atividade económica (CAE Rev. 3); Mensal"
Total Portuguese banking assets as percentage of nominal GDP	Figure B8	Indicator = (1) / Nominal GDP * 100	Dec-1998 to Dec-2012	Yearly	(1) Banco de Portugal: Historical time series 1998 to 2003: "Total do activo - actividade consolidada" 2004 to 2006: "Total Activo" 2007 to 2012: "Total Activo"
Transformation ratio	Figure B9	Transformation ratio = (1) / (2) * 100	Dec-1998 to Dec-2012	Yearly	Banco de Portugal: Historical time series (1) 1998 to 2003: "Crédito sobre clientes (líquido de provisões) - actividade consolidada" 2004 to 2012: "ASSETS - Loans and receivables - Credit to customers (gross)" *Minus* "ASSETS - Loans and receivables - Credit to customers (gross) - of which: Credit overdue" *Plus* "ASSETS - Securitised non-derecognised assets - of which: credit to customers" (2) 1998 to 2003: "Recursos de clientes - actividade consolidada" 2004 to 2012: "LIABILITIES AND EQUITY - Resources from customers and other loans"
Liabilities vis-a-vis Other national banks	Figure 1	Liabilities vis-a-vis Other National Banks = (1) - (2) Liabilities vis-a-vis Central Banks = (2) Financial Balance vis-a-vis Other Non-National Banks (including Central Banks) = (3) - (4+5+6)	31-Dec-1979 to 31-Dec-2012	Montlhy	Banco de Portugal: Historical time series (1) Passivos das OIFM face a IFM --> Activos e passivos das outras instituições financeiras monetárias face a instituições financeiras monetárias - Passivos - Total (2) Balanço BP - Activos face a residentes - SF - Cedência de liquidez --> Balanço do Banco de Portugal - Activo - Residentes - Sociedades financeiras (3) Activos das OIFM face a não residentes --> Activos das outras instituições financeiras monetárias face a não residentes - Total (4) Passivos das OIFM face a bancos centrais não residentes --> Passivos das outras instituições financeiras monetárias face a não residentes - Instituições financeiras monetárias - Bancos centrais (5) Passivos das OIFM face a OIFM-NR - Sede e sucursais --> Passivos das outras instituições financeiras monetárias face a não residentes - Instituições financeiras monetárias - Outras instituições financeiras monetárias - Sede e sucursais da própria instituição (6) Passivos das OIFM face a OIFM-NR - Outras que não sede e sucursais --> Passivos das outras instituições financeiras monetárias face a não residentes - Instituições financeiras monetárias - Outras instituições financeiras monetárias - Outras que não sede e sucursais da própria instituição
Credit distribution components	Figure 2	Data extraction and then make Index Basis 100 on Dec-1997	Dec-1997 to Dec-2012	Montlhy	Banco de Portugal Statistical Bulletin December 2012: B.1.1 (1) Crédito às administrações públicas - Crédito à administração central --> Central Government (2) Crédito às administrações públicas - Crédito às administrações públicas (exceto administração central) --> General Government (3) Crédito interno (exceto administrações públicas) - Particulares (incluindo emigrantes) --> Private Individuals (including Emigrants) (4) Crédito interno (exceto administrações públicas) - Sociedades não financeiras --> Non-Financial Corporations (5) Crédito interno (exceto administrações públicas) - Instituições financeiras não monetárias - Total --> Non-Monetary Financial Institutions

Table A3b – Definitions, indicators and data sources.

Indicator	Thesis Reference	Definition / Calculation	Time Period	Frequency	Source
Financing spreads for Portuguese banks	Figure B10	Average of Credit Default Swaps for 10 Yrs and for 4 Portuguese banks (BCP, BES, CGD, BPI) / 10.000	15-Mar-2004 to 28-Dec-2012	Daily	Bloomberg: BCPPL CDS EUR SR 10Y Corp; BESPL CDS EUR SR 10Y Corp; CXGD CDS EUR SR 10Y Corp; BPIPL CDS EUR SR 10Y Corp
Financing spreads for Portuguese corporations		Average of Credit Default Swaps for 10 Yrs and for 3 Portuguese Corporations (Brisa, Portugal Telecom, EDP) / 10.000	20-July-2007 to 28-Dec-2012	Daily	Bloomberg: BRIPL CDS EUR SR 10Y Corp; PORTEL CDS EUR SR 10Y Corp; EDP CDS EUR SR 10Y Corp
Spreads on sovereign debt, for 5 and 10 years bonds	Figure B11	Direct extraction and subtraction: Portugal OT 5 Yrs - Germany OT 5 Yrs Portugal OT 10 Yrs - Germany OT 10 Yrs	22-Aug-1997 to 28-Dec-2012	Daily	Bloomberg: GSPT5YR Index; GDBR5 Index; GSPT10YR Index; GDBR10 Index
(A) Total credit distribution by destination (B) Total credit granted as percentage of nominal GDP	Figure B12	Direct extraction	Dec-1979 to Dec-2012	(A) Monthly (B) Yearly	Banco de Portugal Statistical Bulletin December 2012: B.1.1 SÍNTESE MONETÁRIA - Ativo (A) Total credit distribution by destination (1) Crédito às administrações públicas - Crédito à administração central --> Central Government (2) Crédito às administrações públicas - Crédito às administrações públicas (exceto administração central) --> General Government (3) Crédito interno (exceto administrações públicas) - Particulares (incluindo emigrantes) --> Private Individuals (including Emigrants) (4) Crédito interno (exceto administrações públicas) - Sociedades não financeiras --> Non-Financial Corporations (5) Crédito interno (exceto administrações públicas) - Instituições financeiras não monetárias - Total --> Non-Monetary Financial Institutions (B) Total credit granted as percentage of nominal GDP (1+2+3+4+5) / Nominal GDP * 100
(A) % of NPL for Non-Financial Corporations (B) % of NPL for Private Individuals (C) % of Total Number Non-Financial Corporations (Overdue Loans) (D) % of Total Number Private Individuals (Overdue Loans)	Figure B13	(A) = (1) / (2) * 100 (B) = (3) / (4) * 100 (C) = Direct extraction of (5) (D) = Direct extraction of (6)	(A) & (B) Sep-1997 to Dec-2012 (C) Dec-2002 to Dec-2012 (D) May-2009 - Dec-2012	(A) & (B) Monthly (C) & (D) Quarterly	(A) Banco de Portugal Statistical Bulletin December 2012: B.3.4 ASSETS AND LIABILITIES OF OTHER MONETARY FINANCIAL INSTITUTIONS VIS-À-VIS NON-FINANCIAL CORPORATIONS (1) Assets - Non-performing loans (2) Assets - Loans and other assets (B) Banco de Portugal Statistical Bulletin December 2012: B.3.5 ASSETS AND LIABILITIES OF OTHER MONETARY FINANCIAL INSTITUTIONS VIS-À-VIS PRIVATE INDIVIDUALS (3) Assets - Non-performing loans (4) Assets - Loans and other assets (C) Banco de Portugal Statistical Bulletin December 2012: B.9.1.9 BREAKDOWN OF THE PERCENTAGE OF NON-FINANCIAL CORPORATIONS WITH OVERDUE LOANS BY BRACKET OF CREDIT AMOUNT (5) Total (D) Banco de Portugal Statistical Bulletin December 2012: B.9.2.2 OVERDUE LOANS RATIO OF PRIVATE INDIVIDUALS (6) Total
Non-performing loans for non-financial corporations, by branch of activity	Figure 3	For each branch: Agriculture, forestry and fishing = (1) / (2) * 100 Industry = (3) / (4) * 100 Construction = (5) / (6) * 100 Real estate = (7) / (8) * 100 Retail, Accommodation and Food = (9) / (10) * 100 Other: all branches indicated in Figure B18	Dec-1997 to Dec-2012	Monthly	Banco de Portugal Statistical Bulletin December 2012: B.4.2.1 LOANS OF OTHER MONETARY FINANCIAL INSTITUTIONS TO NON-FINANCIAL CORPORATIONS --> By branch of activity (1) Agriculture, forestry and fishing - of which: Non-performing loans (2) Agriculture, forestry and fishing - Total (3) Industry: Mining and Manufacturing - of which: Non-performing loans (4) Industry: Mining and Manufacturing - Total (5) Construction - of which: Non-performing loans (6) Construction - Total (7) Real estate activities - of which: Non-performing loans (8) Real estate activities - Total (9) Retail, Accommodation and Food - of which: Non-performing loans (10) Retail, Accommodation and Food - Total (11) Others include all branches indicated in Figure B18
Outstanding loans to private individuals, by purpose	Figure B14	Relative percentage of each "Purpose" over the Total amount (Total Purposes): Direct extraction of (1), (2), and (3)	Dec-1997 to Dec-2012	Monthly	Banco de Portugal Statistical Bulletin December 2012: B.4.1.4 LOANS OF OTHER MONETARY FINANCIAL INSTITUTIONS TO PRIVATE INDIVIDUALS --> By purpose and maturity (1) Housing - Total (2) Consumption - Total (3) Other purposes - Total
Non-performing loans for private individuals, by purpose	Figure 4	For each purpose: Housing = (1) / (2) * 100 Consumption = (3) / (4) * 100 Other purposes = (5) / (6) * 100	Dec-1997 to Dec-2012	Monthly	Banco de Portugal Statistical Bulletin December 2012: B.4.1.4 LOANS OF OTHER MONETARY FINANCIAL INSTITUTIONS TO PRIVATE INDIVIDUALS --> By purpose and maturity (1) Housing - of which: Non-performing loans (2) Housing - Total (3) Consumption - of which: Non-performing loans (4) Consumption - Total (5) Other purposes - of which: Non-performing loans (6) Other purposes - Total
Property prices (all dwellings) for Portugal and Spain	Figure 5	Portugal and Spain: Direct index adjusted and considering 100 in March 1995	Mar-1995 to Dec-2012	Monthly	Bank for International Settlements: RESIDENTIAL PROPERTY PRICES, ALL DWELLINGS, PER SQUARE METER,M-ALL NSA Portugal: M:PT:0:1:0:2:1:0 Index, 2005 = 100 (Units) Spain: Q:ES:0:1:0:1:1:0 Euro (Units)
Average housing evaluation, by the Portuguese banks	Figure 6	BIS: Direct index adjusted and considering 100 in Dec-2003 INE: Direct value adjusted and considering 100 in Dec-2003	Dec-2003 to Dec-2012	Quarterly	Bank for International Settlements (BIS): RESIDENTIAL PROPERTY PRICES, ALL DWELLINGS, PER SQUARE METER,M-ALL NSA M:PT:0:1:0:2:1:0 Index, 2005 = 100 (Units) Portuguese Bureau of Statistics (INE): Valores médios de avaliação bancária (€/ m²) dos alojamentos por Localização geográfica (NUTS II - 2001), Tipo de construção e Tipologia do fogo; Trimestral
(A) Core Tier 1 Ratio (B) Tier 1 Ratio (C) Overall Solvency Ratio	Figure B15	(A) = ((1) - (2)) / (5) * 100 (B) = ((1) - (3)) / (5) * 100 (C) = (4) / (5) * 100	Dec-2007 to Dec-2012	Yearly	Banco de Portugal Statistical Bulletin December 2012: Table A9 (1) Original own funds (gross) (2) Original own funds (gross), of which: Non-core elements (3) Deductions to the original own funds (4) Total own funds (5) Risk Weighted Assets (RWA) = Total capital requirements * 12,5

Table A3c – Definitions, indicators and data sources.

Indicator	Thesis Reference	Definition / Calculation	Time Period	Frequency	Source
EBA key risk indicators for the Portuguese banks	Figure 7	Direct extraction	Dec-2000 to Dec-2012	Yearly	Banco de Portugal Statistical Bulletin December 2012: Table A1
Credit quality ratios for the Portuguese banks	Figure 8	Ratio of (Credit Overdue + Impairment on Credit to Customers) over Capital = ((6+7) / 34) * 100 Ratio of (Credit Overdue + Impairment on Credit to Customers) over Gross Credit to Customers = ((6+7) / (5+19)) * 100	Dec-2000 to Dec-2012	Quarterly	Banco de Portugal Statistical Bulletin December 2012: B.3.9.3 (5) ASSETS - Loans and receivables - Credit to customers (gross) (6) ASSETS - Loans and receivables - Credit to customers (gross) - of which: Credit overdue (7) ASSETS - Loans and receivables - Impaiment on credit to customers (19) ASSETS - Securitised non-derecognised assets - of which: credit to customers (34) LIABILITIES AND EQUITY - Capital
M2 Aggregate	Figure 9	M2 Aggregate = (1) Nominal GDP = (2) M2 / Nominal GDP = (1) / (2)	Dec-1997 to Dec-2012	Yearly	Banco de Portugal: Historical time series (1) Contribuição nacional para o M2, excluindo circulação monetária --> Contribuição nacional para os agregados monetários da área do euro - M2, excluindo circulação monetária - Total (2) Nominal GDP
Current account balance (IMF)	Figure 10	Current account balance as % of Real GDP = Direct extraction	Dec-1980 to Dec- 2012	Yearly	World Economic Outlook (WEO) - International Monetary Fund (IMF) (1) Current Account Balance as % of Real GDP
Current account balance (BdP)		Current account balance as % of Real GDP = ((1) - (2)) / (3) * 100	Dec-1996 to Dec-2012	Yearly	Banco de Portugal Statistical Bulletin: C.1.1.1 CURRENT AND CAPITAL ACCOUNTS --> Main items (1) Current Account - Ouflow (Exports) = (Current account - Total - Credit) / 1000 (2) Current Account - Inflow (Imports) = (Current account - Total - Debit) / 1000 (3) Real GDP
Capital inflow as percentage of real GDP	Figure 11	Current account balance as % of Real GDP = ((1) - (2)) / (3) * 100 Capital Inflow as % of Real GDP = (4) / (3) * 100	Dec-1996 to Dec-2012	Yearly	Banco de Portugal Statistical Bulletin: C.1.1.1 CURRENT AND CAPITAL ACCOUNTS --> Main items (1) Current Account - Ouflow (Exports) = (Current account - Total - Credit) / 1000 (2) Current Account - Inflow (Imports) = (Current account - Total - Debit) / 1000 (3) Real GDP (4) Capital Inflow (Reserves - Current Account Balance) = Reserve assets - Current Account Balance
Portuguese non-financial debt as percentage of nominal GDP	Figure B16	Each destination / Nominal GDP * 100	Dec-2007 to Dec-2012	Yearly	Banco de Portugal Statistical Bulletin: K.1.2 DEBT BY SECTOR, ACTIVITY AND DIMENSION (1) General government (2) Public corporations not included in the general government (3) Private corporations (4) Private individuals
Total Portuguese debt by financing channel	Figure B17	Each channel / (4) * 100	Dec-2007 to Dec-2012	Monthly	Banco de Portugal Statistical Bulletin: K.1.2 DEBT BY SECTOR, ACTIVITY AND DIMENSION (1) Channel: Portuguese Financial Sector (2) Channel: Foreign Sources (3) Channel: Others: Private Individuals, General Government, Non Financial Corporations (4) Total = General government + Public corporations not included in the general government + Private corporations + Private individuals
Aggregated credit distribution of the Portuguese banks index, by destination	Figure 12	For each branch: direct extraction adjusted and considering 100 in Dec-1997	Dec-1997 to Dec-2012	Monthly	Banco de Portugal Statistical Bulletin December 2012: B.4.2.1 LOANS OF OTHER MONETARY FINANCIAL INSTITUTIONS TO NON-FINANCIAL CORPORATIONS --> By branch of activity (1) Agriculture, forestry and fishing - Total (2) Industry: Mining and Manufacturing - Total (3) Construction - Total (4) Real estate activities - Total (5) Retail, Accommodation and Food - Total (6) Others include all branches indicated in Figure B18
Distribution and description of "Others", by activity sector	Figure B18	The amount of each activity sector / (8) * 100	Dec-1997 to Dec-2012	Monthly	Banco de Portugal Statistical Bulletin December 2012: B.4.2.1 LOANS OF OTHER MONETARY FINANCIAL INSTITUTIONS TO NON-FINANCIAL CORPORATIONS --> By branch of activity (1) Electricity, gas steam and air conditioning supply; water supply; sewerage, waste management and remediation activities (2) Transportation and storage (3) Information and communication (4) Non financial holdings (5) Professional, scientific and technical services; administrative and support service activities (6) Education, human health and social work activities; arts, entertainment and recreation (7) Other activities (8) Total = 1+2+3+4+5+6+7+8
Total credit granted to non-financial corporations and its distribution by activity sector	Figure B19	For each branch: direct extraction	Dec-1997 to Dec-2012	Monthly	Banco de Portugal Statistical Bulletin December 2012: B.4.2.1 LOANS OF OTHER MONETARY FINANCIAL INSTITUTIONS TO NON-FINANCIAL CORPORATIONS --> By branch of activity (1) Agriculture, forestry and fishing - Total (2) Industry: Mining and Manufacturing - Total (3) Construction - Total (4) Real estate activities - Total (5) Retail, Accommodation and Food - Total (6) Others include all branches indicated in Figure B18

Table A3d – Definitions, indicators and data sources.

Indicator	Thesis Reference	Definition / Calculation	Time Period	Frequency	Source
Non-performing loans (NPL) Client transformation ratio (CTR) Credit risk / Share Capital (CRSC)	Figure C1	NPL = ((1) + (2)) / ((3) + (4)) * 100 CTR = ((5) + (2)) / (6) * 100 CRSC = (7) / (8) * 100	A) Dec-1992 to Dec-2011 B) Jun-2012	A) Yearly B) Half-Yearly	Sources: A) Portuguese Banking Association - Aggregated Balance sheets and Income statements B) For BES, Banco BPI and Millennium bcp: Banks' Balance sheets and Income statements. All others: Portuguese Banking Association Indicators: (1) Impairments (2) Provisions (3) Total oustanding credit over Customers (4) Total oustanding credit over Financial Institutions (5) Loans and advances to customers (6) Deposits from customers (7) Total impairments + Total provisions + Overdue loans and interest + Total provisions, impairments and depreciation (8) Share capital
Operating margin Financial margin	Figure C2a	Operating margin = (1) / (3) * 100 Financial margin = (2) / (3) * 100	A) Dec-1992 to Dec-2011 B) Jun-2012	A) Yearly B) Half-Yearly	Sources: A) Portuguese Banking Association - Aggregated Balance sheets and Income statements B) For BES, Banco BPI and Millennium bcp: Banks' Balance sheets and Income statements. All others: Portuguese Banking Association Indicators: (1) Operating income (2) Net interest income (3) Financial assets
Cost-to-income ratio (CIR) Net services & Commission ratio (NSCR)	Figure C2b	CIR = ((1) + (2)) / (3) * 100 NSCR = ((4) - (5)) / (6) * 100	A) Dec-1992 to Dec-2011 B) Jun-2012	A) Yearly B) Half-Yearly	Sources: A) Portuguese Banking Association - Aggregated Balance sheets and Income statements B) For BES, Banco BPI and Millennium bcp: Banks' Balance sheets and Income statements. All others: Portuguese Banking Association Indicators: (1) Personnel costs (2) General administrative expenses (3) Operating income (4) Fee and commission income (5) Fee and commission expenses (6) All income: Interest and similar income + Income from equity instruments + Fee and commission income + Net gains from assets and liabilities at fair value through profit or loss + Net gains from available-for-sale financial assets + Net gains from foreign exchange differences + Net gains from sale of other assets + Other operating income and expense
Overall solvency ratio (OSR) Return-On-Assets (ROA) Return-On-Equity (ROE)	Figure C3	OSR = ((1) + (2) + (3)) / (4) * 100 ROA = (5) / (4) * 100 ROE = ROA * ((4) / (3)) * 100	A) Dec-1992 to Dec-2011 B) Jun-2012	A) Yearly B) Half-Yearly	Sources: A) Portuguese Banking Association - Aggregated Balance sheets and Income statements B) For BES, Banco BPI and Millennium bcp: Banks' Balance sheets and Income statements. All others: Portuguese Banking Association Indicators: (1) Equity instruments (2) Other subordinated liabilities (3) Total equity (4) Total assets (5) Net income before tax

Table A4 – European Banking Authority Recapitalization Exercise on the Portuguese Banking System.

		Banco BPI	Millennium bcp	CGD	ESFG	Total
Sep-2011	EBA - Composition of Capital (M€) (*)					
	Sovereign capital buffer for exposures in EEA	1 359	1 165	1 073	121	3 718
	Shortfall to 9% before application of sovereign capital buffer	30	965	762	1 476	3 232
	Overall Shortfall after including sovereign capital buffer	1 389	2 130	1 834	1 597	6 950
	Core Tier 1 Ratio	8,9%	7,3%	8,0%	6,8%	
	Tier 1 Ratio	9,8%	9,0%	8,1%	8,5%	
Dec-2011	EBA - Capital Position CRD3 Rules (M€) (**) / Before Recapitalization					
	Sovereign capital buffer for exposures in EEA	1 359	1 165	1 073	121	3 718
	Shortfall to 9% before application of sovereign capital buffer	45	377	79	249	750
	Overall Shortfall after including sovereign capital buffer	1 228	1 226	1 152	371	3 976
	Core Tier 1 Ratio (Target = 9%)	8,8%	8,3%	8,9%	8,6%	
	Tier 1 Ratio	9,0%	8,6%	9,0%	9,1%	
Jun-2012	EBA - Capital Position CRD3 Rules (**) / After Recapitalization					
	Sovereign capital buffer for exposures in EEA	1 359	1 165	1 073	121	3 718
	Shortfall to 9% before application of sovereign capital buffer	-1 282	-1 215	-1 520	-527	-4 544
	Overall Shortfall after including sovereign capital buffer	-99	-367	-448	-405	-1 318
	Core Tier 1 Ratio (Target = 10%)	14,1%	11,2%	11,2%	9,8%	
	Tier 1 Ratio	14,3%	11,5%	11,3%	10,2%	

Sources:

(*) EBA - European Banking Authority (2012). EU Capital exercise 2011.

(**) EBA - European Banking Authority (2013). EU Capital exercise final results.

Legend:

Millennium bcp - Banco Comercial Português (BCP)

CGD - Caixa Geral de Depósitos

ESFG - Espírito Santo Financial Group (BES - Banco Espírito Santo)

Table A5 – Government guarantees and recapitalization programs to the Portuguese banking system.

Units: *Million Euro*	Bank	Public Guarantees (*)	Public Recapitalization + Nationalization Costs (**)	Nominal GDP
2008	Banif	50	0	
	BPP	450	0	
	CGD	1 250	0	
	Total	1 750	0	171 983
	% of GDP	**1,0%**	**0,0%**	
2009	Banif	500	0	
	BES	1 500	0	
	BPN	3 000	0	
	Finantia	100	0	
	Invest	50	0	
	Millennium bcp	1 500	0	
	Total	6 650	0	168 529
	% of GDP	**3,9%**	**0,0%**	
2010	BPN	1 000	1 803	
	Total	1 000	1 803	172 860
	% of GDP	**0,6%**	**1,0%**	
2011	Banco Mais	25		
	Banif	700		
	Banif Investimento	150		
	BES	2 250		
	BPN	1 000	1 145	
	CGD	4 600		
	Millennium bcp	3 100		
	Total	11 825	1 145	171 053
	% of GDP	**6,9%**	**0,7%**	
2012	Banco BPI		1 500	
	Banif	300		
	BES	2 500		
	BPN	214	458	
	CGD		1 650	
	Millennium bcp	2 900	3 000	
	Total	5 914	6 608	165 247
	% of GDP	**3,6%**	**4,0%**	
2013	Banif	0	1 100	
	Total	0	1 100	TBD
	% of GDP	**TBD**	**TBD**	

Sources:

(*) BPN: Parliamentary Inquiry Commission - Portuguese Republic Assembly (2012)
BPP: Banco de Portugal - Communication 01/12, from December 1st 2008
All others: Portuguese Banking Association data file

(**) **BPN:** Parliamentary Inquiry Commission - Portuguese Republic Assembly
Banif: Banco de Portugal - Communication 16/01, from January 1st 2013
All others: Banco de Portugal - Communication 03/10, from October 3rd 2012

Legend:
Banif - Banco Internacional do Funchal
BES - Banco Espírito Santo
BPN - Banco Português de Negócios
BPP - Banco Privado Português
CGD - Caixa Geral de Depósitos
ESFG - Espírito Santo Financial Group (BES - Banco Espírito Santo)
Millennium bcp - Banco Comercial Português (BCP)

Table A6 – Evolution of the Portuguese Deposit Insurance Fund.

End-of-Period

Year	Periodic Contributions (M€)	Own Resources (M€)	Elegible Deposits (M€)	Payments to Depositors by the Insurance Fund (€)
2000	85,76	699,11	102 049,00	0,00
2001	94,81	812,50	110 567,40	0,00
2002	97,76	928,31	109 939,00	0,00
2003	102,97	1 047,45	111 270,00	0,00
2004	52,92	1 118,42	111 671,00	0,00
2005	41,08	1 170,84	119 630,00	0,00
2006	33,16	1 220,64	123 478,00	0,00
2007	34,04	1 282,65	130 120,00	0,00
2008	36,72	1 356,61	144 679,92	0,00
2009	39,81	1 407,51	146 987,45	0,00
2010	39,01	1 354,06	154 130,70	89,20
2011	39,37	1 397,01	158 154,04	8,20
2012	44,39	N.A.	N.A.	N.A.

Source: Fundo de Garantia de Depósitos.

Table A7 – Evolution of the Portuguese non-financial debt as percentage of nominal GDP.

Date	Portuguese Non-Financial Debt as % of nominal GDP				
	Total	General government	Public corporations	Private corporations	Private individuals
31-12-2007	346,4%	77,6%	10,7%	159,6%	98,5%
31-12-2008	365,7%	81,4%	12,1%	171,5%	100,8%
31-12-2009	391,0%	94,1%	13,6%	177,4%	105,9%
31-12-2010	402,1%	107,5%	14,1%	177,5%	103,1%
31-12-2011	421,7%	125,3%	14,9%	179,9%	101,5%
31-12-2012	444,4%	145,9%	12,5%	185,5%	100,6%

Source: Banco de Portugal

APPENDIX B – FIGURES

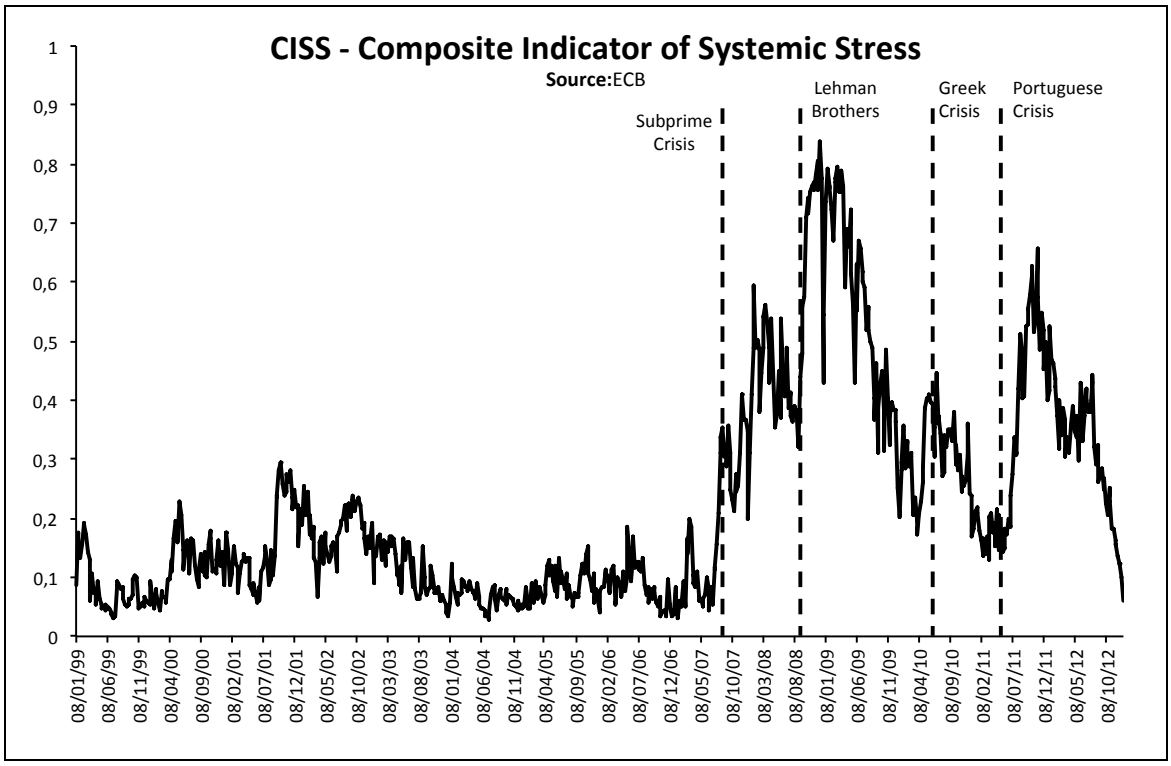


Figure B1 – Evolution of the Composite Indicator of Systemic Stress (CISS).

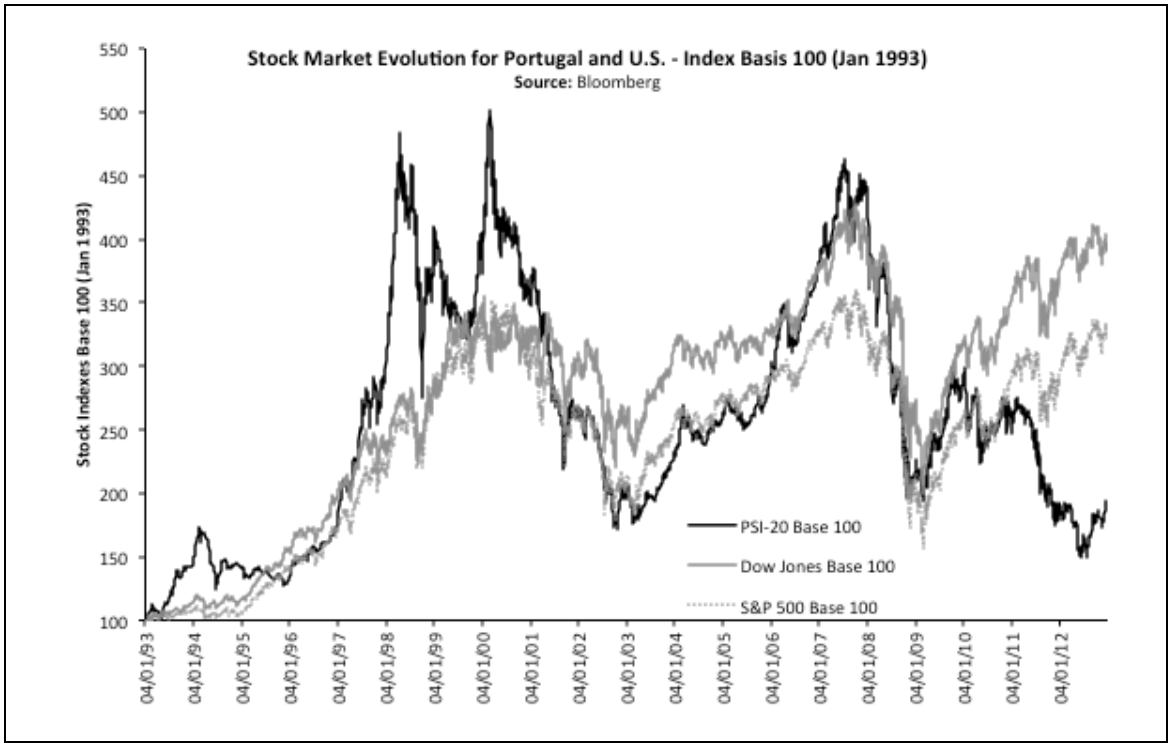


Figure B2 – Stock market evolution for Portugal and United States of America.

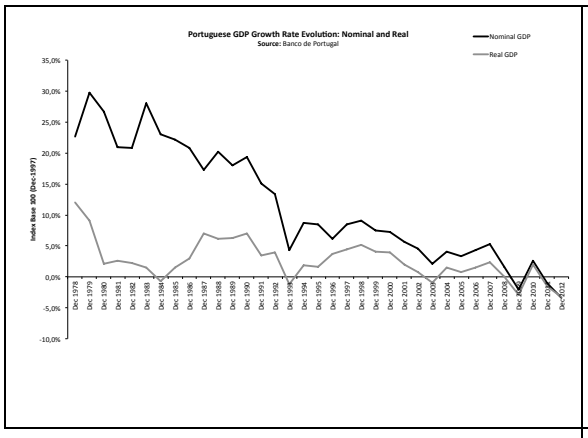


Figure B3 – Portuguese GDP Growth Rate Evolution (YoY), for both Nominal and Real terms.

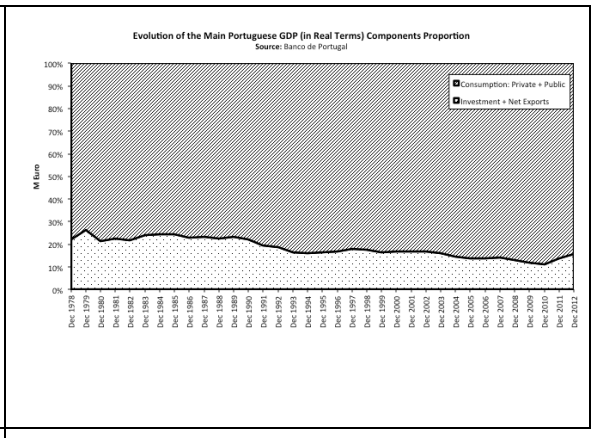


Figure B4 – Evolution of the main Portuguese real GDP components.

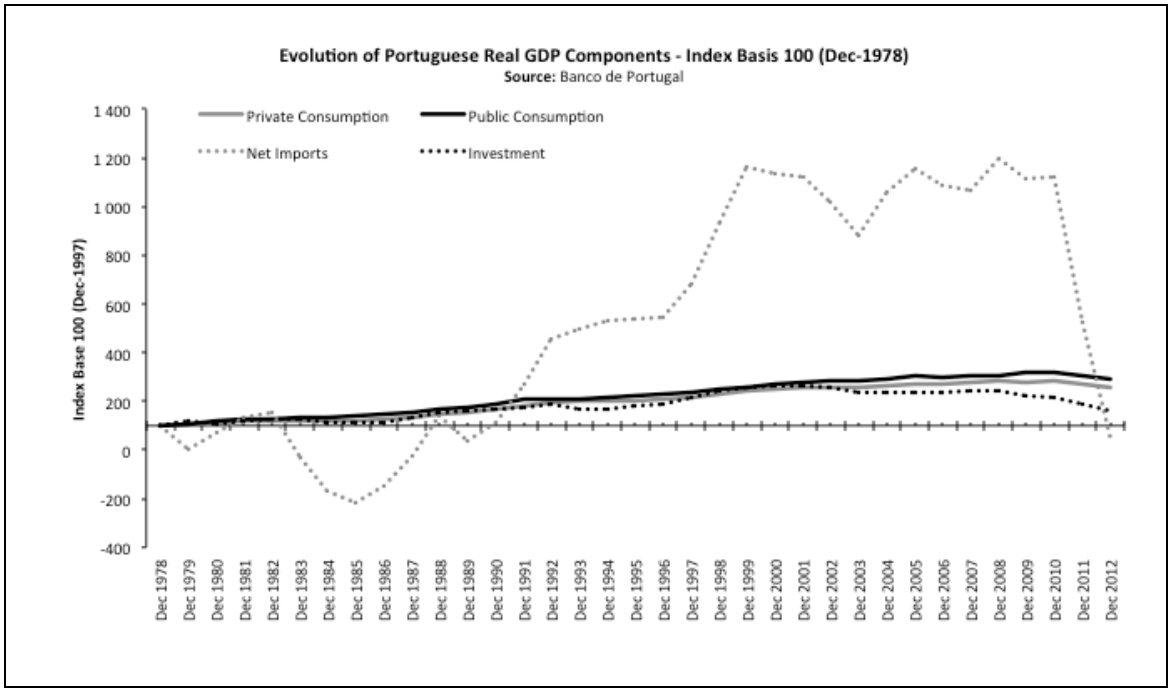


Figure B5 – Evolution of the Portuguese real GDP components, Index Basis 100 (Dec-1978).

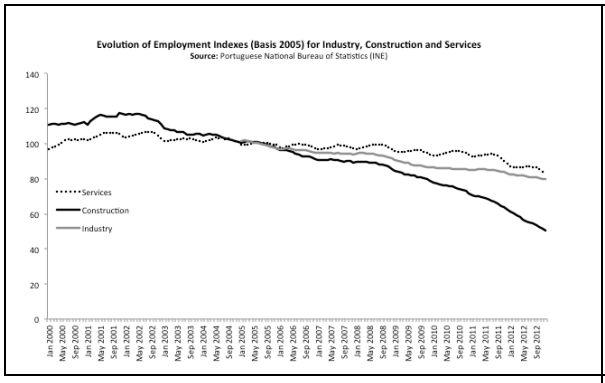


Figure B6 – Evolution of employment indexes for industry, construction and services (basis 2005).

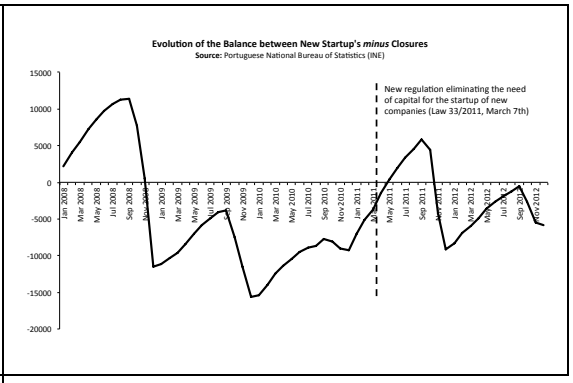


Figure B7 – Balance of corporations new startup's minus closures.

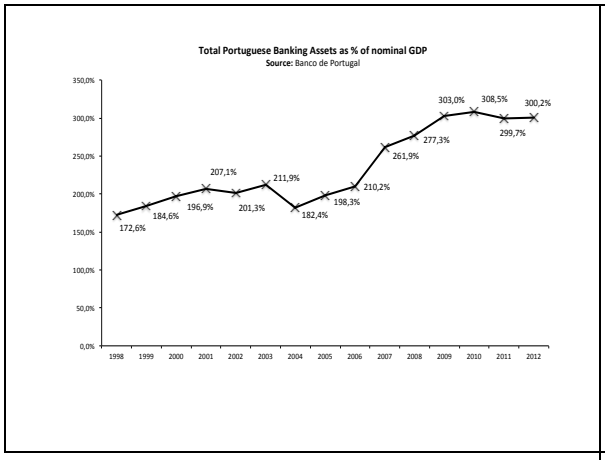


Figure B8 – Evolution of the total Portuguese banking assets as a percentage of nominal GDP.

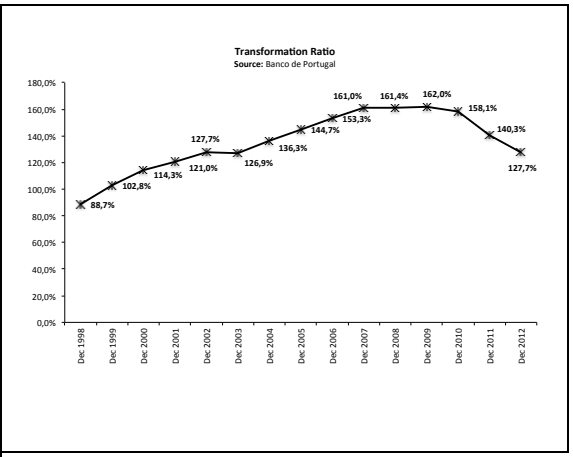


Figure B9 – Evolution of the transformation ratio for the Portuguese banks.

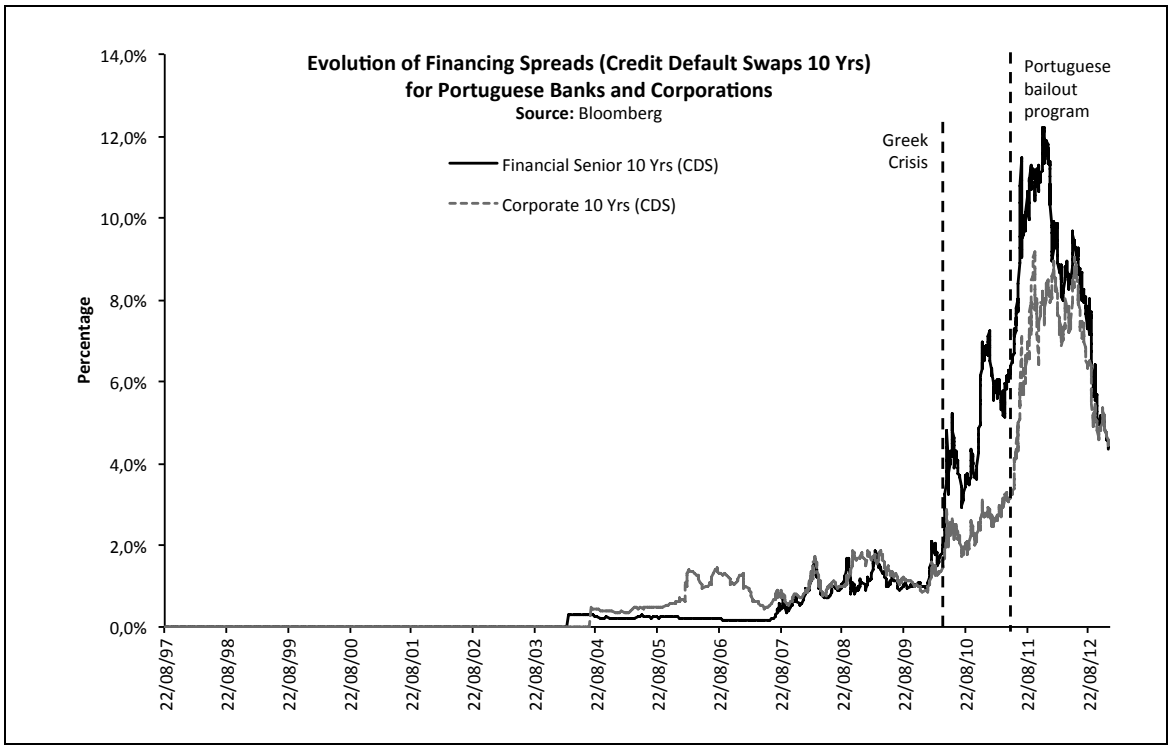


Figure B10 – Evolution of the financing spreads (10 years credit default swaps) for the Portuguese banks and corporations.

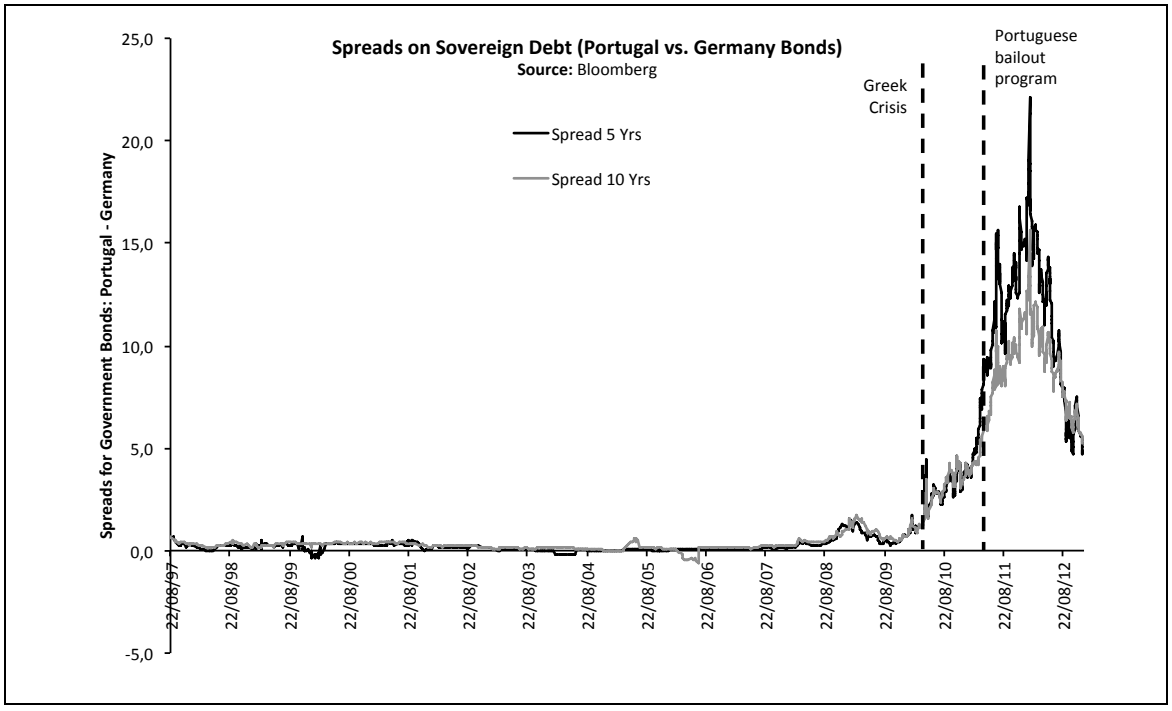


Figure B11 – Evolution of sovereign debt spreads between Portugal and Germany, for 5 and 10 years bonds.

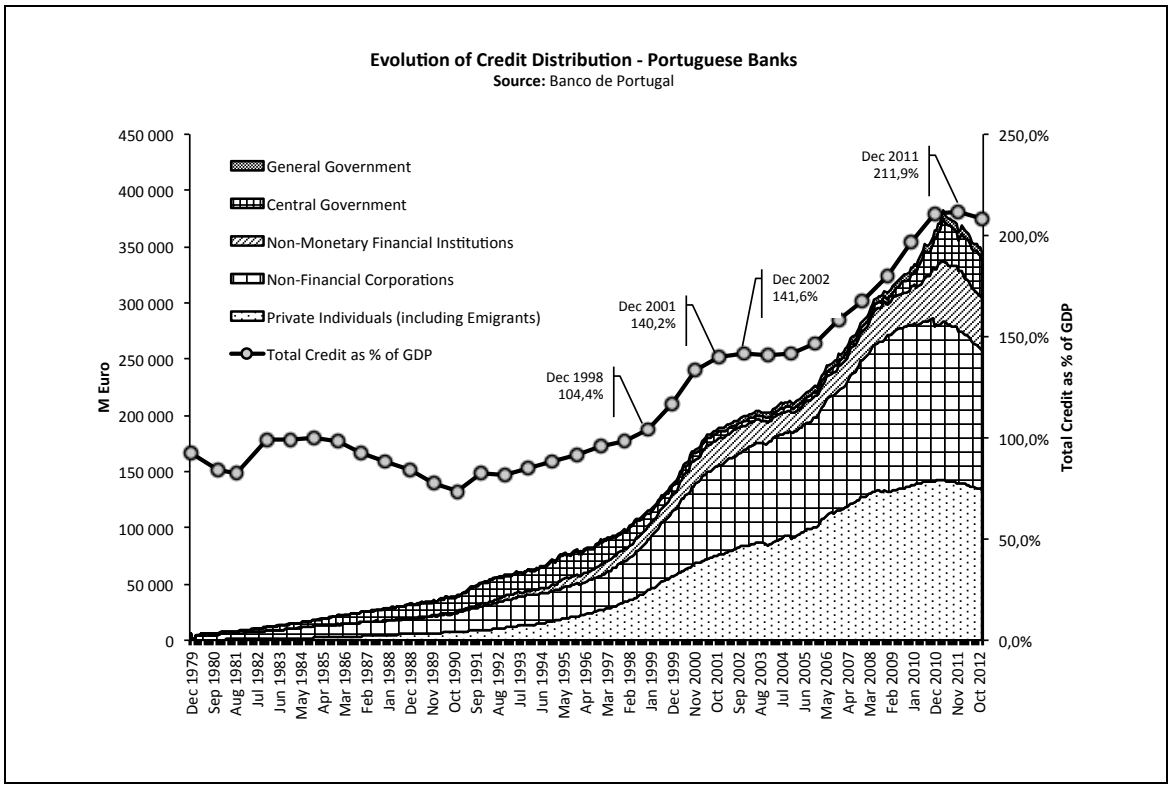


Figure B12 – Evolution of credit distribution, by destination and of total credit as a percentage of the Portuguese nominal GDP.

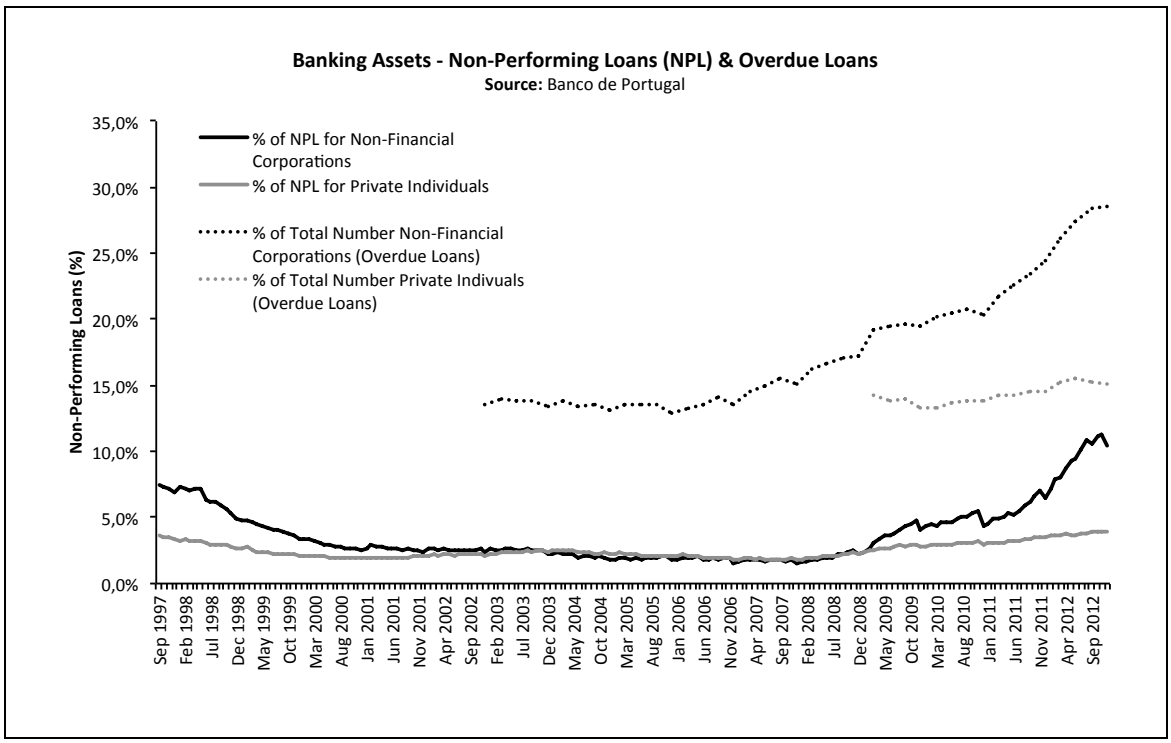


Figure B13 – Evolution of both overdue and non-performing loans.

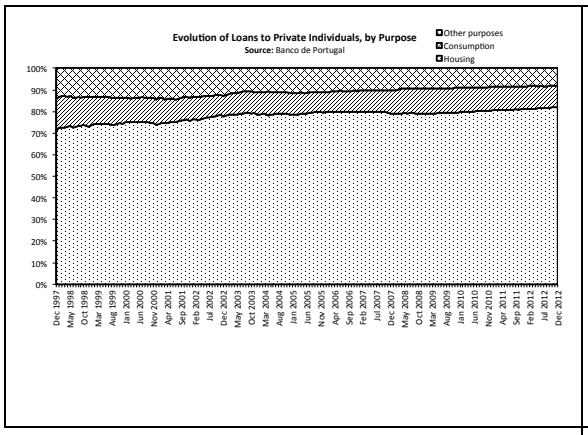


Figure B14 – Evolution of the outstanding loans to private individuals, by purpose.

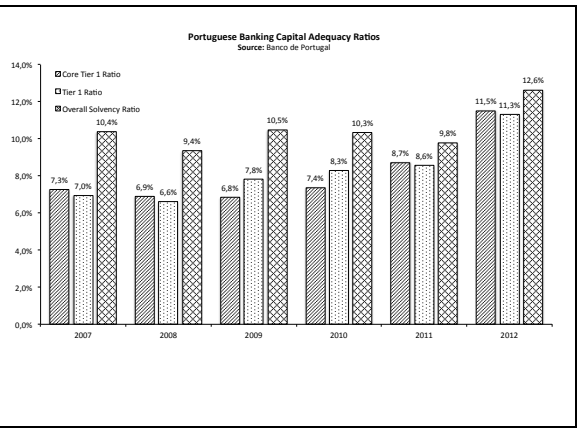


Figure B15 – Evolution of the Portuguese banks' capital adequacy ratios.

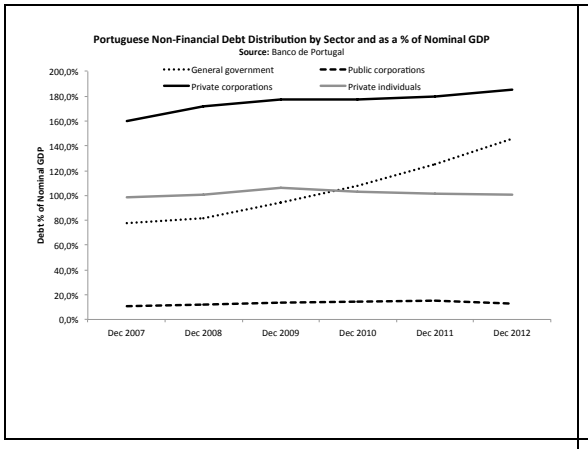


Figure B16 – Evolution of the Portuguese non-financial debt, as percentage of nominal GDP.

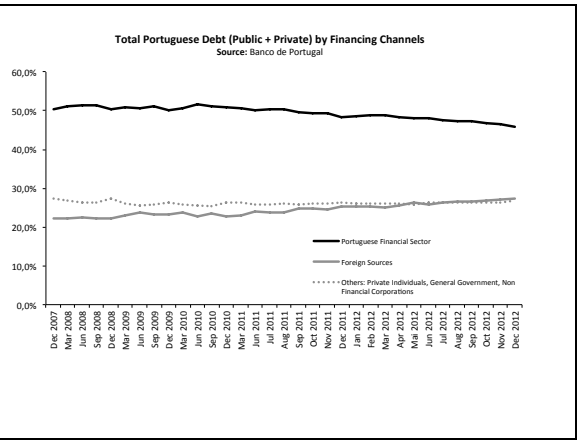
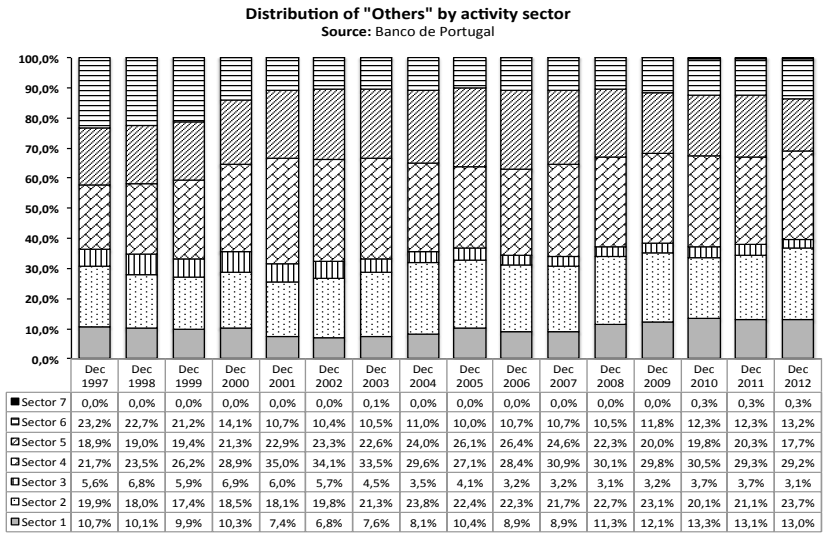


Figure B17 – Total Portuguese debt by financing channel.



	Dec 1997	Dec 1998	Dec 1999	Dec 2000	Dec 2001	Dec 2002	Dec 2003	Dec 2004	Dec 2005	Dec 2006	Dec 2007	Dec 2008	Dec 2009	Dec 2010	Dec 2011	Dec 2012
Sector 7	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,1%	0,0%	0,0%	0,0%	0,0%	0,0%	0,0%	0,3%	0,3%	0,3%
Sector 6	23,2%	22,7%	21,2%	14,1%	10,7%	10,4%	10,5%	11,0%	10,0%	10,7%	10,7%	10,5%	11,8%	12,3%	12,3%	13,2%
Sector 5	18,9%	19,0%	19,4%	21,3%	22,9%	23,3%	22,6%	24,0%	26,1%	26,4%	24,6%	22,3%	20,0%	19,8%	20,3%	17,7%
Sector 4	21,7%	23,5%	26,2%	28,9%	35,0%	34,1%	33,5%	29,6%	27,1%	28,4%	30,9%	30,1%	29,8%	30,5%	29,3%	29,2%
Sector 3	5,6%	6,8%	5,9%	6,9%	6,0%	5,7%	4,5%	3,5%	4,1%	3,2%	3,2%	3,1%	3,2%	3,7%	3,7%	3,1%
Sector 2	19,9%	18,0%	17,4%	18,5%	18,1%	19,8%	21,3%	23,8%	22,4%	22,3%	21,7%	22,7%	23,1%	20,1%	21,1%	23,7%
Sector 1	10,7%	10,1%	9,9%	10,3%	7,4%	6,8%	7,6%	8,1%	10,4%	8,9%	8,9%	11,3%	12,1%	13,3%	13,1%	13,0%

Sector	Activity Description
Sector 1	Electricity, gas steam and air conditioning supply; water supply; sewerage, waste management and remediation activities
Sector 2	Transportation and storage
Sector 3	Information and communication
Sector 4	Non financial holdings
Sector 5	Professional, scientific and technical services; administrative and support service activities
Sector 6	Education, human health and social work activities; arts, entertainment and recreation
Sector 7	Other activities

Figure B18 – Distribution and description of "Others", by activity sector.

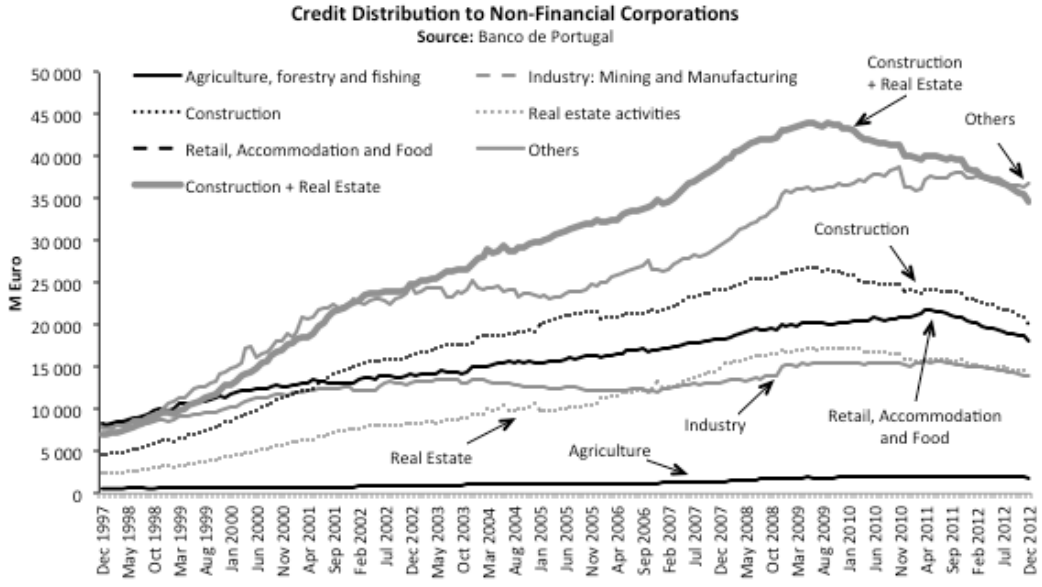


Figure B19 – Total credit granted to non-financial corporations and its distribution, by activity sector.

APPENDIX C – MEASURING THE SIGNALS, IMPACTS AND INFERRING THE ROLE OF THE MAJOR PORTUGUESE BANKS

This appendix section analysis the Portuguese banks' main indicators, based on their balance and income statement sheets and following suggestions from the cited literature to complement the aggregated analysis with an individual bank analysis (e.g. Gambacorta & Marques-Ibanez, 2011). The included banks are Millennium bcp, CGD, Banco BPI, BES and Banif, all of which went under recapitalization programs between 2012 and 2013. The objective is to identify historical trends, while looking to detect either early signals or effects of the 2007 financial crisis. This way, it also becomes possible to infer on the potential role of each bank onto the Portuguese banking crisis. Following the Portuguese Banking Association criteria, three levels of indicators are used, including 1) credit weight and quality indicators, 2) operational indicators, and 3) profitability indicators. Nevertheless, some indicators have been calculated specifically for this work, while trying to minimize the limitations in the analysis, mainly arising from discontinuity on the time series, due to the changing in the accounting system, between 2005 and 2006, and also to further aggregation criteria at an accounting level and rules, amongst different fiscal years. The main approach was to use values at the highest aggregation level and, therefore, some indicators may differ from others published elsewhere and having the same designation. All definitions are available in Table A3.

The credit weight and quality indicators include the customer transformation ratio, non-performing loans and the credit at risk over total bank equity (capital) and are illustrated in Figure C1. The results show a wide variety of trends and time moments among the five banks. What is common, though, is the increase in the ratio of credit at risk over the bank total equity after 2009, at the same time that the customer transformation ratio started to decrease between 2009 and 2010. The non-performing loans have also increased after 2008, except for Banco BPI, where this indicator has been overall stable,

along the time. Though and for Banco BPI, the credit at risk over the total bank equity had a spike in 2011, which also motivated the need for a recapitalization program. These trends and milestones show the impact of the financial crisis. On the other hand, all included banks have reached a high peak in the transformation ratio, ranging the maximums between 130,6% (CGD in 2010) and 198,6% (BES in 2009), thus contributing to a probable excessive lending with a corresponding credit risk. This risk, measured by the non-performing loans, had the highest value of 5,4% for Millennium bcp, in June 2012. A second measure is the total NPL and credit at risk, over the share Capital, which reached the value of 4.347,5% for Banco BPI in 2011 and has contributed decisively for its recapitalization program with government funding.

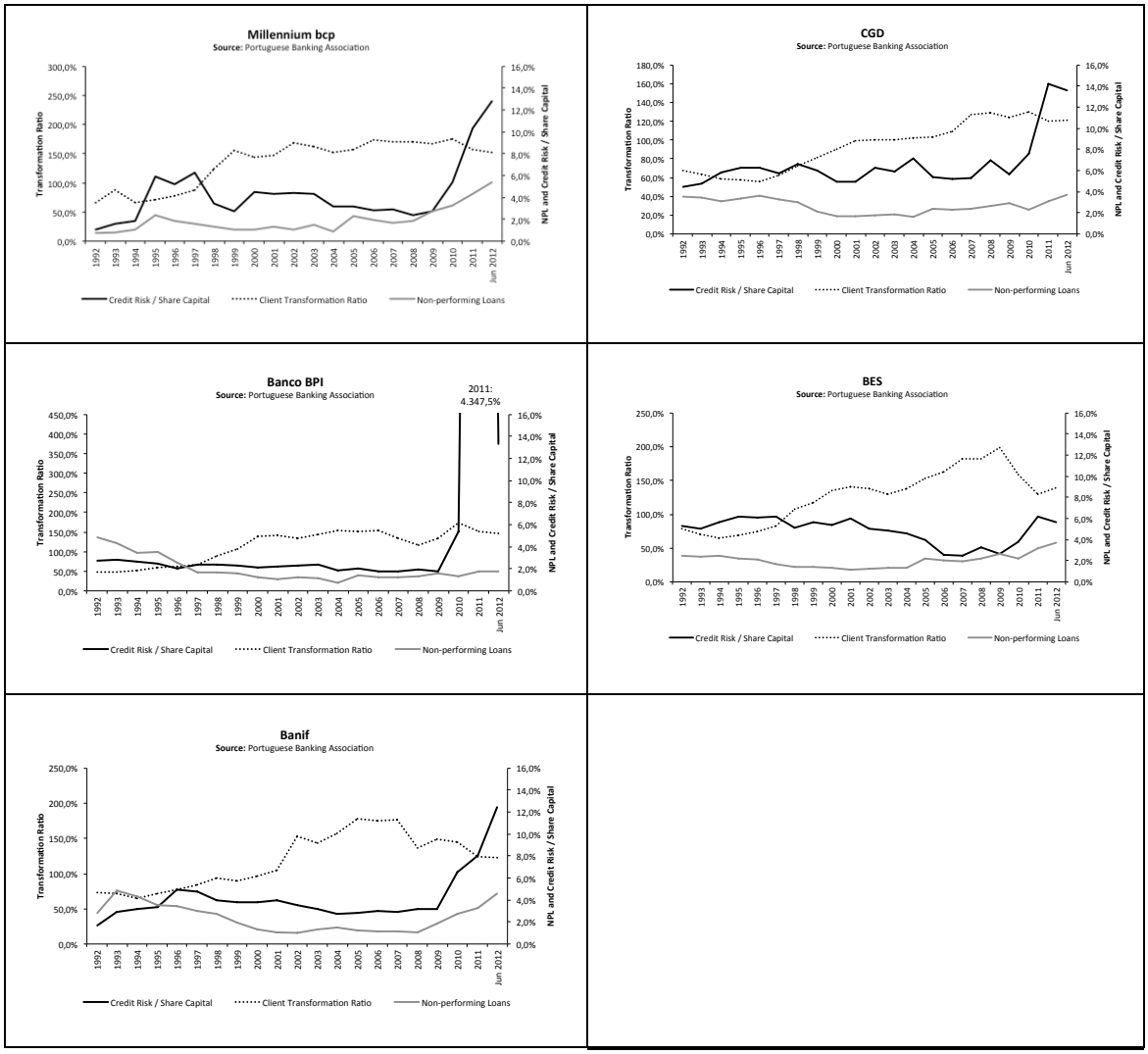


Figure C1 – Credit weight and quality indicators for the major Portuguese banks.

Regarding the operational indicators, Figure C2a shows a continuous decreasing trend in both operating and financial margins, for all banks, with the financial margin reaching almost zero value in the first half of 2012. This trend shows the deterioration of the operating performance of these main Portuguese banks, which seems to be independent from the 2007 financial crisis and all succeeding impacts. It also raises the potential explanation of why the banks have increased their lending to the economy, in order to gain business volume while keeping total low gross margins (operating margin) and low percentage of financial result arising from the financial applications (financial margin). On the other hand, the low operational performance increases the pressure for other sources of results, which can lead towards financial innovation and, therefore, to an increased risk.

Still for operational indicators, Figure C2b indicates that the cost-to-income ratio has been varying throughout the time but there is also a decreasing trend after 2010, which may indicate that the banks are adjusting their cost structure to their income, namely after the 2007 financial crisis. On the other hand, the net services and commissions ratio shows 2 peaks in 2007 and 2009, which can be associated with the financial crisis and, eventually, to some financial operations. According to Gambacorta & Marques-Ibanez (2011), during a financial and banking crisis, banks with higher proportions of more profitable, but more volatile, non-interest income activities, have limited their credit to borrowers to a greater extent. The period between 2007 and 2009, where the volatility of the net services and commissions ratio was higher than all other years, is also the starting point for decreasing the customer transformation ratio and, therefore to decrease the amount of credit granted. Moreover, this was also a period where financial transactions were at a high peak, which was also the result of a higher integration of the banks with the financial market (Altunbas et al, 2011). This is mainly applicable to 2007, the peak year of the stock market (Figure B2) and at the starting point of the crisis.

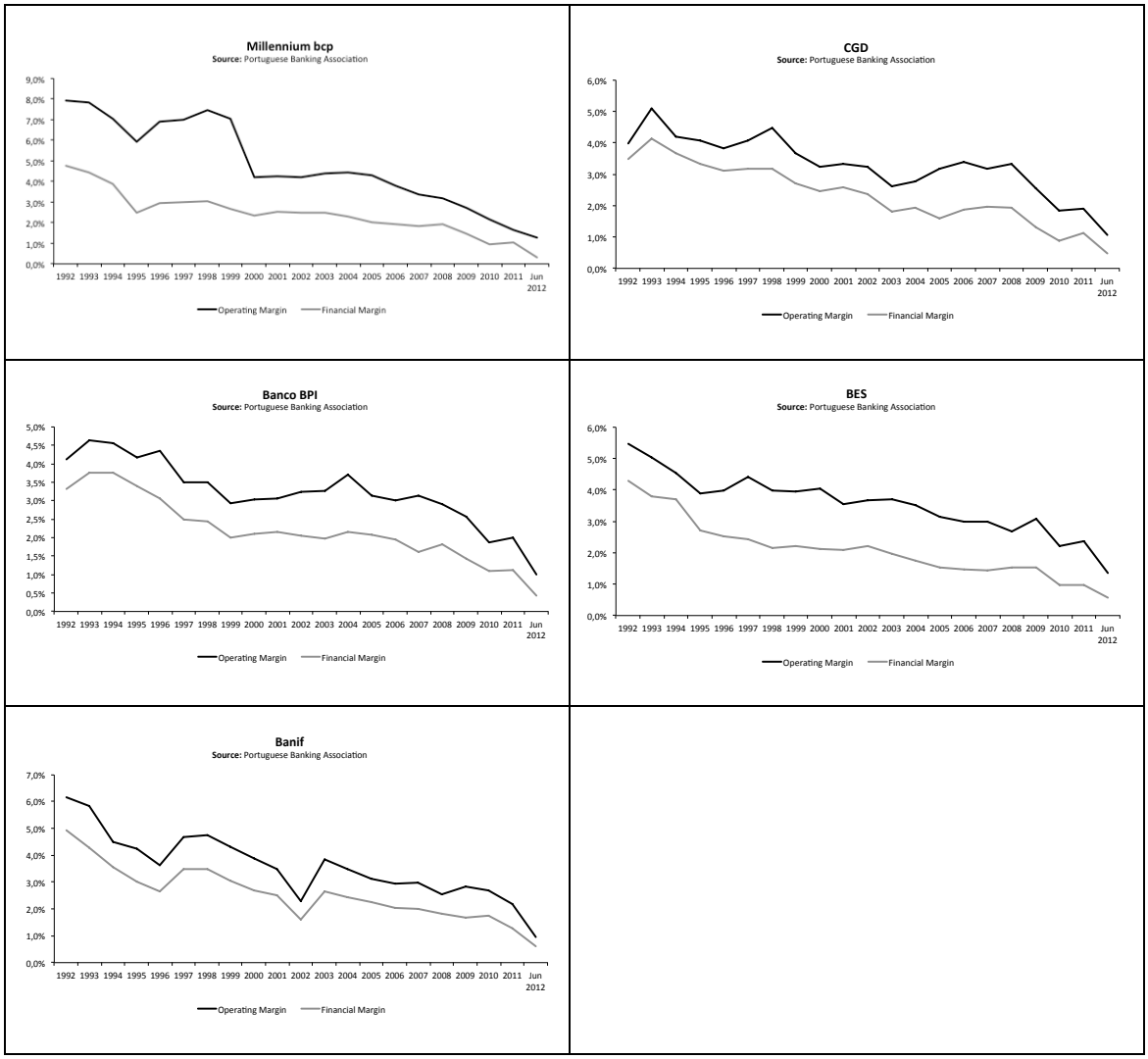


Figure C2a – Operational indicators for the major Portuguese banks.

Regarding the profitability indicators, Figure C3 shows a continuous decline in Return-On-Equity (ROE), being negative after 2011, which is mainly explained by the negative value of Return-On-Assets (ROA), because the ROE is calculated as the product between ROA and the financial leverage (total assets over total share capital). According to the graphs, different banks had different moments in time where the ROE started to decrease. This shows that the capacity of the banks to turn equity (shareholders capital) into profit has been independent from the 2007 financial crisis, even though, the situation was aggravated at that point in time, but mainly by the crisis impact on the capacity of the bank to generate profit based on their assets (ROA).

Furthermore, the overall solvency ratio has been kept smoother before the 2007 crisis, indicating that, probably, the banks were able to take on risk by expanding in certain riskier areas where capital charges were lower (Gambacorta & Marques-Ibanez, 2011), even though, they may have reduced the financial leverage because the ROA increased while the ROE decreased. This can also reinforce the need for other sources of income, namely when associated to a continuous decrease in the operating and financial margins, as stated before.

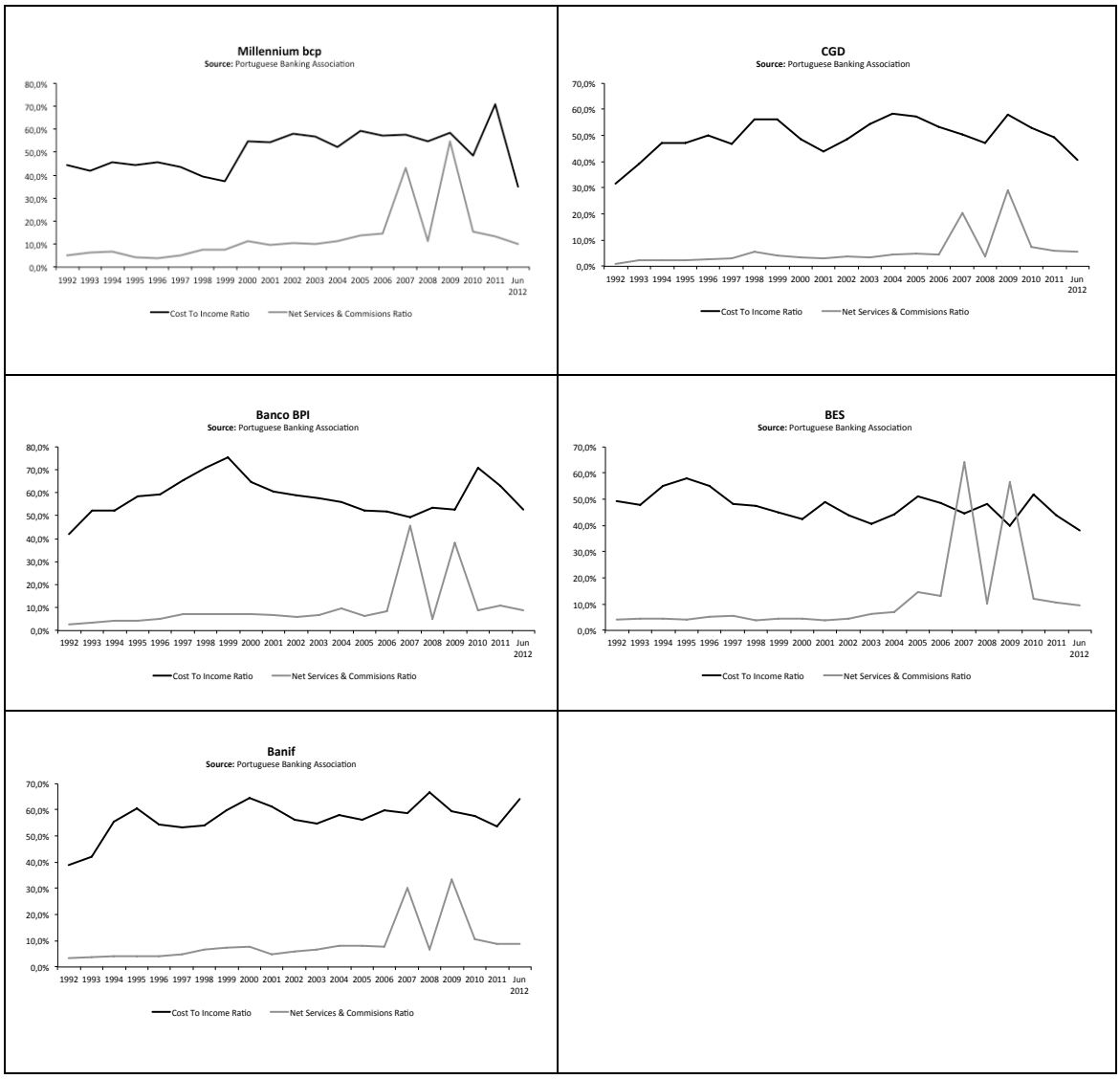


Figure C2b – Operational indicators for the major Portuguese banks.

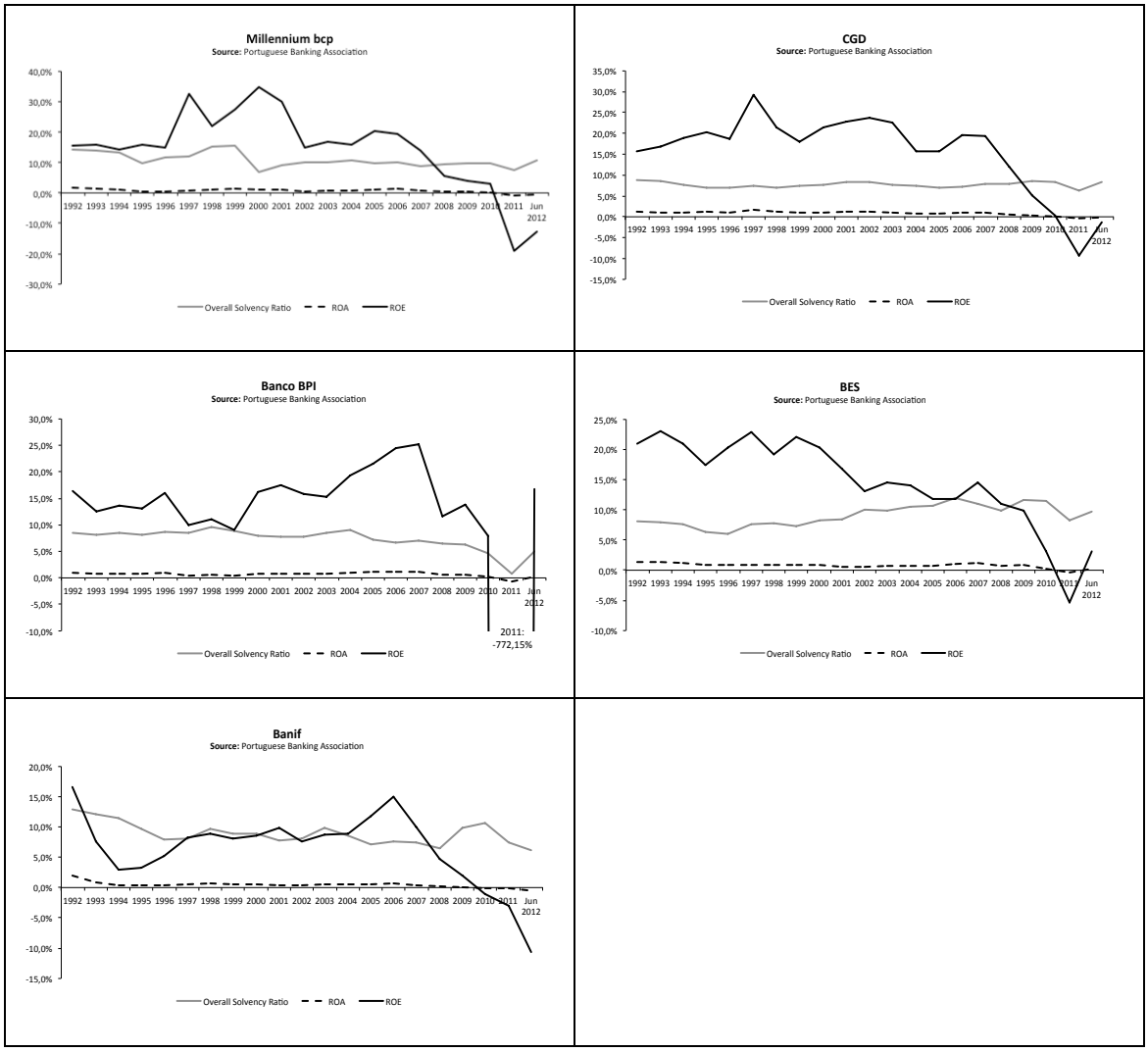


Figure C3 – Profitability indicators for the major Portuguese banks.

All together, these banking indicators show a continuous and decreasing trend in the main banking performance. This becomes more important if the Portuguese economy continues to deteriorate, thus affecting negatively the capacity of the loaners to payback their loans to the banks, which can increase the non-performing loans. It also seems clear that the 2007 financial crisis had a decisive impact on the studied banks soundness, namely on the ROE. Even though it's not clear that they wouldn't be in trouble, even without the financial crisis and if the Portuguese economy wouldn't find alternative pillars of development and dynamics, others that construction and real estate, for example.