

FINANCIAL INTEGRATION AND STRUCTURAL CHANGES IN SPANISH BANKS
DURING THE PRE-CRISIS PERIOD

Alfredo Martín-Oliver (*)

(*) Alfredo Martín-Oliver, Universitat de les Illes Balears. The author thanks Vicente Salas-Fumás for his comments and insights. The author acknowledges financial support from project MCI-ECO2010-18567.

This article is the exclusive responsibility of the author and does not necessarily reflect the opinion of the Banco de España or the Eurosystem.

FINANCIAL INTEGRATION AND STRUCTURAL CHANGES IN SPANISH BANKS DURING THE PRE-CRISIS PERIOD

This paper presents a descriptive analysis about how financial integration into the Euro zone could have affected the business model, capital structure and solvency of Spanish banks. Using data from Dealogic and from public reports of Banco de España, the paper explores three main changes in the composition of assets and liabilities of Spanish banks during the years 1998-2007 that preceded the financial crisis: (i) Spanish banks get funds from international financial markets and increasingly substitute deposits for wholesale instruments to finance their activity, becoming increasingly dependent on foreign wholesale markets; (ii) Spanish banks use the new funding sources to finance the exponential growth of their lending activity, especially real-estate loans; (iii) Spanish banks fulfill Basel capital ratios loosely, but the weight of core equity capital within regulatory capital decreases in favor of hybrid securities at the time that the average risk of the assets in their balance sheet increases.

1 Introduction

This paper studies structural changes of Spanish banks during the pre-crisis period which were possible due to their financial integration into the Euro and foreign financial markets. These changes affected banks in different aspects: growth, business model, capital structure and solvency. We present descriptive evidence that some of these changes reduce the liquidity position and core capital solvency ratios of Spanish banks and increase their fragility in front of the financial and economic crisis.

During the period from 1998 to 2007, financial markets around the globe undergo through an impressive development: the volume of assets traded in financial markets increase exponentially, enhanced by a surge of financial innovations in the form of new products whose functions are not only restricted to raise funds, but to transfer risk, hedge risks or arbitrage capital. The dependencies and interconnections among financial markets rise as a natural consequence of their development, increasing the degree of financial integration among financial markets around the world.

In Europe, countries have aimed at achieving a higher degree of politic and economic integration and one of its main targets is the financial and banking integration of the European Union (EU) members. Indeed, the European Central bank (ECB) follows closely this process, and it publishes an annual report¹ that analyzes a large list of indicators of the degree of financial integration among EU members. In the 2012 report, the ECB argues that banking and financial integration in the EU is desirable because (i) it strengthens the mechanism of transmission of the monetary policy, (ii) it contributes to achieve a higher efficiency in the allocation of resources and capital, (iii) contributes to productivity gains that increase competition within national markets of member states and (iv) reduces the financial barriers among member states and facilitates the access to financial markets, instruments and services.

In this paper, we provide some evidence that financial integration could have also entangled other consequences, in terms of liquidity imbalances and risk exposure, not so desirable as those listed above and that Diamond and Rajan (2009) have pointed out as the proximate causes of the crisis. More concretely, we explore how the reduction of financial barriers among markets, which is in the ECB's list of the positive contributions

1 *Annual Report on Financial Integration*, ECB.

of financial integration,² has turned into a lower level of solvency ratios for Spanish banks.³ The reasons that we identify in this paper are basically three: First, international markets have financed a large part of the high growth of banks focused on real-estate activities. The joining of Spain into the European Monetary Union (EMU) grants Spanish banks the access to cheap and almost unlimited financing from Euro and foreign markets, which absorb more than 70% of the debt instruments that they issue from 1998 to 2007. The destination of these funds to finance real-estate loans contributed to enhance the housing bubble in Spain, whose worst effects could have been not so devastating (evictions, credit crunch, losses of billions of euros,...), provided that banks had rationed their growth policy and the recourse to international wholesale financing.

Second, banks end up with a large dependence on wholesale financing while the importance of traditional, more stable sources of funds (i.e., deposits) dwindles in banks' balance sheets. As a consequence, Spanish banks have become directly exposed to the shutdown of international financial markets with the outburst of the financial crisis and they have undergone through serious liquidity problems due to difficulties to refinance debt instruments reaching maturity. Third, Spanish banks' risk-weighted assets increase as a result of the lending expansion and they are obliged to raise fresh regulatory capital in order to comply with Basel regulation. It happens that banks choose hybrid capital instruments to cover the main bulk of their regulatory capital needs and, hence, the quality of regulatory capital worsenes: the core capital (equity and reserves) loses weight in favor of debt-like instruments and, thus, the capacity of regulatory capital to absorb loan losses dwindles. This result has been more evident when holders of subordinated debt and preferred stock had to share the burden of losses, claiming that they bought those securities misguided by banks themselves. The experience alerts on the limitations of hybrid regulatory capital instruments as a true loss absorbing regulatory capital and it justifies the new core capital standards set by Basel III.

The rest of the paper is organized as follows. Section 2 describes the data that is used in the paper. Section 3 explores the consequences of financial integration on the banks' balance sheets in terms of assets and liabilities. Section 4 analyzes the change in the composition of regulatory capital during the period under study. Section 5 presents the conclusions and summarizes the main results of the paper.

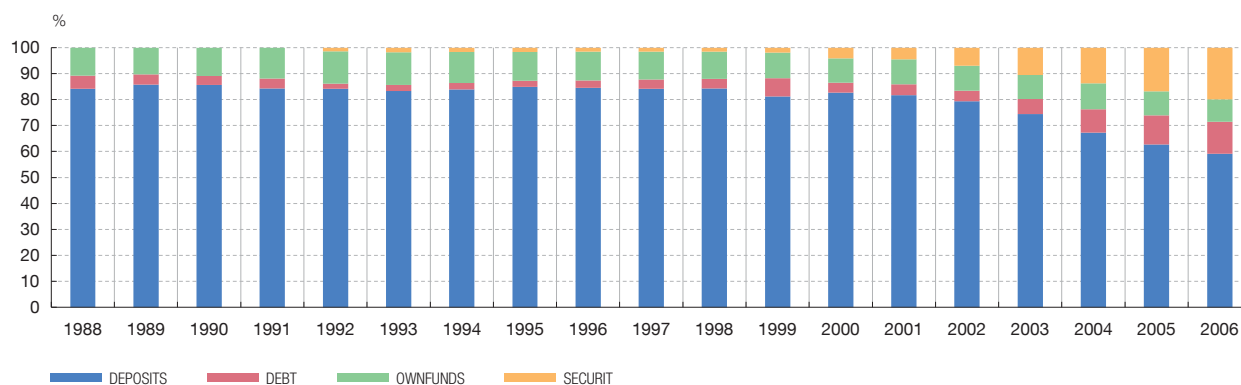
2 Data

This paper gathers information of Spanish banks during the period 1998-2007 from different sources of data. The database of issuances of financial instruments has been constructed with individual data from Dealogic; the aggregate information from assets and volume of credit comes from the Statistical Bulletin of the Banco de España and the regulatory capital data has been drawn from the Annual Report on Supervision of the Banco de España

The issuances of financial instruments from Dealogic gather information of all the issuances of Spanish banks in financial markets during the period from 1998 to 2007. We do not consider later years because in 2008 financial markets stop operating normally for Spanish banks. The issuances are classified into two groups, debt issuances and regulatory capital issuances, following the criteria of whether the corresponding instrument can absorb losses without risking the viability of the bank. Under this notion of capital, ordinary shares, convertible debt, preferred shares and subordinated debt have the capacity of absorbing

² The list of positive contribution can be found in Chapter IIA "The benefits of the EU's single financial market revisited in the light of the crisis" of the report *Financial Integration in Europe*, April 2012, European Central Bank.

³ Martín-Oliver, Ruano and Salas-Fumás (2012) analyze the impact of financial integration on the productivity of Spanish banks. They show that around 2/3 of the productivity gains were attributed to change of the business model of Spanish banks during the pre-crisis period.



SOURCE: Almazán, Martín-Oliver and Saurina (2013), mimeo.

losses because it is the ultimate stakeholder the one that assumes the loss of value. On the other hand, we group the issuances of senior debt, covered bonds and securitization as debt issuances because their value and proceeds do absorb losses of the bank only in the event of severe instability and bankruptcy. This is one of the two notions of capital in Acharya *et al.* (2011) that coincides with the list of eligible capital of Basel I and II.

The section that analyzes the evolution of the asset side of banks is based on aggregate data of assets and the balance of credit by categories published in the Statistical Bulletin of the Banco de España during the period from 1998 to 2011. Here we extend the sample period to the latest year available to analyze the change in the composition of assets as a result of the crisis. Further, the analysis of regulatory capital uses data from the annual *Report on Banking Supervision in Spain* by the Banco de España for the variables risk-weighted assets (RWA), total regulatory capital and core regulatory capital of all Spanish banks, also during the period 1998-2011.

3 The evolution of banks' balance sheets with financial integration

The traditional activity of a bank is the intermediation between investors and savers, that is, the collection of funds from the savers of an economy, with short- and medium-term inter-temporal consumption preferences, and the transformation into loans of different maturity that match the needs of the investors of that economy. In traditional banking, deposits constitute the basic source of funding of banks' lending activity. This is the business model of the Spanish banking industry until the end of the 90s: Chart 1 shows that during those years, the average composition of the liability side is made up of 84% deposits and around 11% own funds (capital, reserves and accumulated loans loss provisions). Only a marginal 5% of the banks' balance sheet is financed with debt instruments, thus, banks do not consider debt as a close substitute of deposits prior 2000. However, during the next years the traditional intermediation model begins to fade: Chart 1 shows that the weight of deposits decreases from 84.28% in 1998 to 59.11% in 2006 in favor of debt (from 3.67% in 1998 to 12.34% in 2006) and, specially, securitization⁴ (from 1.54% in 1998 to 19.84% in 2006). Banks no longer base their growth and financing only on deposits because they can access to alternative sources to finance their banking activity.

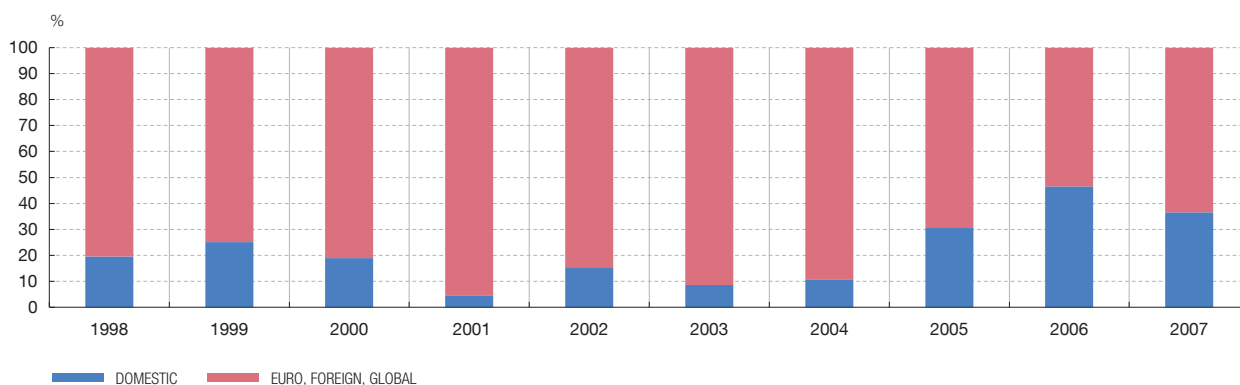
3.1 FINANCIAL MARKETS AND THE LEVERAGING PROCESS OF SPANISH BANKS

The explanation of this breaking point, from which debt and securitization become a real alternative to banks' deposits, can be located around the introduction of Spain in the EMU and the consequent access of banks to the European and international capital markets.

⁴ Almazán, Martín-Oliver and Saurina include covered bonds in their definition of securitization and so do we in the comments of Figure 1, following the source of reference.

ISSUANCE OF DEBT, BY MARKET TYPE

CHART 2



SOURCE: Dealogic and own elaboration.

ISSUANCE OF DEBT, BY MARKET TYPE

CHART 3



SOURCE: Own elaboration with Dealogic.

The access to new sources of funding is accompanied with the fall of the cost of funds, in part because of the translation of the lowering Spanish sovereign risk premium to the funding cost of Spanish firms. Additionally, the huge increase in the volume of assets traded in global markets, enhanced by financial engineering, also contributes to explain the exponential raise of wholesale financing of Spanish banks.

Chart 2 provides evidence of the importance of international markets in the issuances of debt of Spanish banks during the period 1998-2007: Euro and foreign markets concentrated more than 60% of the total issuances (versus less than 40% from domestic market), except in 2006 when the volume amounted to 53.4%. Adding up the volumes of all the years under study, the issuances in euro and foreign markets amounts to 71.12%. In absolute values, Chart 3 illustrates that the issuances of debt-like instruments increases exponentially during the 2000s, consistent with the increasing weight of debt and securitization observed in Chart 1. Comparing the beginning and the end of the period analyzed, the volume of total debt-like instruments issued in 2007 is multiplied by a factor of 18 compared to 1998; the highest contributor to this growth is securitization.

The high surge of securitization in Spain, especially from 2005 to 2007, coincides with the high demand from financial markets towards this type of products, as well as with other factors that contributed to its growth (i.e., growth of bank credit, housing bubble,...). During these years, financial engineering generates a wide range of financial products related to

securitization, risk transfer and tranching and markets are eager to absorb large volumes of these instruments issued by banks around the globe. Part of this interest is justified by the low-risk perception that investors have towards securitization bonds because they are backed by an a priori diversified loan portfolio and credit agencies rate the main part of the issuance with top grades. During the period analyzed, Spanish banks realize that securitization represents an opportunity to obtain funds at costs at least as low as other alternatives, since some tranches could have even better ratings than the senior debt of the issuer.

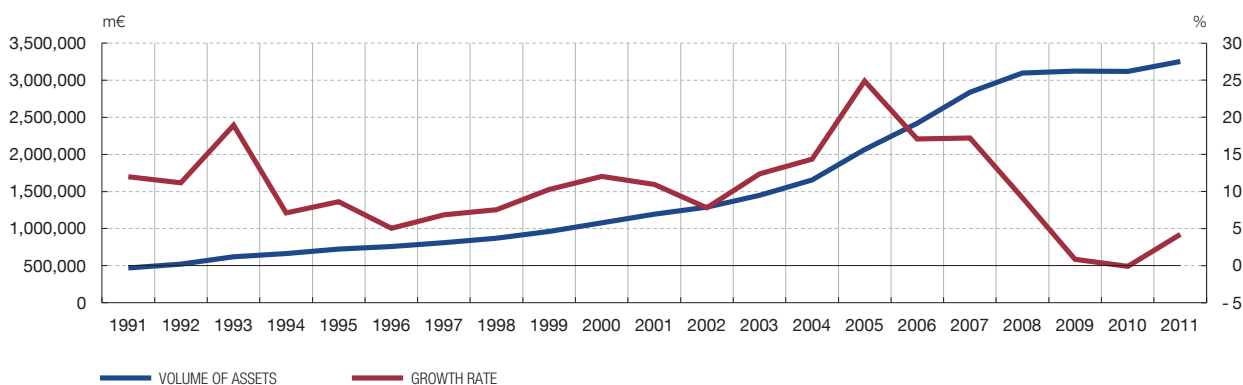
Compared to traditional deposits, securitization has the advantage that banks do not have to compete with other banks to collect funds in branches because there is a large demand willing to buy both the issuances of a particular bank and those from the competitors'. As well as this, securitization represents a gate to enter international financial markets for small- and medium-size banks. These banks did not have the opportunity to issue securities in wholesale markets due to asymmetric information problems [Almazán *et al.* (2013)], but thanks to financial innovation they could issue asset back securities (ABS) bonds that the markets were eager to buy at a cost similar to that of big, well-known banks. The strategy is that a group of banks, usually from different regions of Spain, put in common mortgages and real-estate loans from their balance sheet and issue securitized bonds backed by this common portfolio. In this way, markets understand that the geographical risk of loans granted by a single regional bank is diversified with the rest of loans backing the issuance. Thereby, small and medium banks could also become less dependent of the traditional deposits to fund their lending activity.

As said, the increasing recourse to securitization and debt is translated into a higher weight of wholesale funding in banks' balance sheet, whereas deposits become less important to finance banks' activities. A positive consequence is that Spanish banks no longer depend on the collection of deposits to finance loans and projects with positive net present value. The drawback is that Spanish banks become more dependent on wholesale funding to refinance debt issuances reaching maturity and to the conditions of foreign markets, given that 71.12% of the total volume have been issued in non-domestic markets. Deposits might limit the capacity to growth, but they constitute a sounder and more stable source of funds not so dependent on external factors of the bank. With the outburst of the crisis in 2008, international markets shut down and banks around the globe have difficulties to refinance debt. For Spanish banks, the situation becomes even worse because the Euro sovereign crisis makes the access to foreign refinancing even more difficult, aggravating their liquidity problems. The only exit for Spanish banks during these years has been the recourse to the ECB that has provided the liquidity that financial markets do not grant.

Summing up, financial integration allowed Spanish banks to access sources of funds alternative to deposits from international financial markets. However, they have become structurally dependent on the conditions affecting international wholesale markets. The outburst of the crisis has entangled liquidity problems for Spanish banks due to difficulties to refinance past debt issuances. A more limited recourse to foreign wholesale funding during the pre-crisis period could have limited the liquidity problems faced by Spanish banks during the crisis.

3.2 THE USE OF THE FINANCIAL RESOURCES IN THE ASSET SIDE

In this section we comment that the real-estate bubble that burst during the economic crisis is in part a consequence of financial integration. The access to international financial markets allows Spanish banks to finance the high credit growth rates in their balance sheets concentrated on the lending to the real-estate sector, something recurrent in the idiosyncrasy of Spanish crisis over time.



SOURCES: Banco de España, *Boletín Estadístico*, and own elaboration.

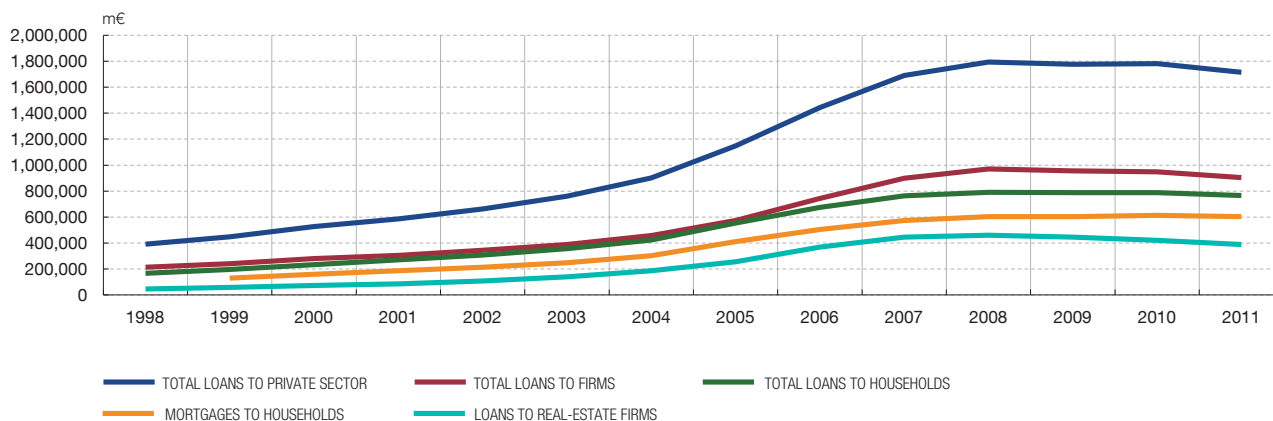
Chart 4 shows that total assets of Spanish banks increase at a constant rate of around 10% during the pre-euro years. After the entrance of Spain in the EMU (especially from 2003, coinciding with the largest debt issuances in international markets) the slope of total assets becomes steeper and the average growth rates amount to 13.84%, peaking in 2005 with a growth rate of 24.9%. If we analyze the evolution of the lending activity in Chart 5.1 and Chart 5.2, we also observe that the growth rates soar during the years of higher increase of wholesale financing. The yearly average growth rate of banks' loans to the private sector amounts to 16.67% during the Euro period from 2000 to 2007, a figure that results from the growth of mortgages (18.42%) and, especially, loans to real-estate firms (25.91%). These high figures contrast with the more modest growth rates of the previous years: during the (pre-euro) period 1992-1999, the yearly average growth rate of loans to private sector, real-estate firms and mortgages amounts to 5.95%, 5.96% and 2.59%, respectively.

During the expansion years preceding the crisis, the Banco de España repeatedly warns banks of the potential risks embedded in their strategy of excessive loan growth and concentration in real-estate sector⁵ (i.e., reduction of lending standards, enhancement of housing bubble, etc). This happens while banks' credit indicators give a very different and more positive view of the situation: non-performing loans (NPL) ratios are around 1% (Chart 5.3) and that of real-estate firms amounts to 0.37% in 2006, one of the lowest ratios in these series. It is the outburst of the global crisis and the deterioration of the Spanish economy what uncovers the unbalances of the previous period: loans begin to default and NPL ratios start an increasing trend that beat previous historic peaks of the series, especially in the case of real-estate firms whose NPL ratio amounted to 20.63% in 2011. The deterioration of the loan portfolio has resulted in billions of losses, public capital injections, bailouts and the restructuring of the whole Spanish banking sector, still under way in 2013.

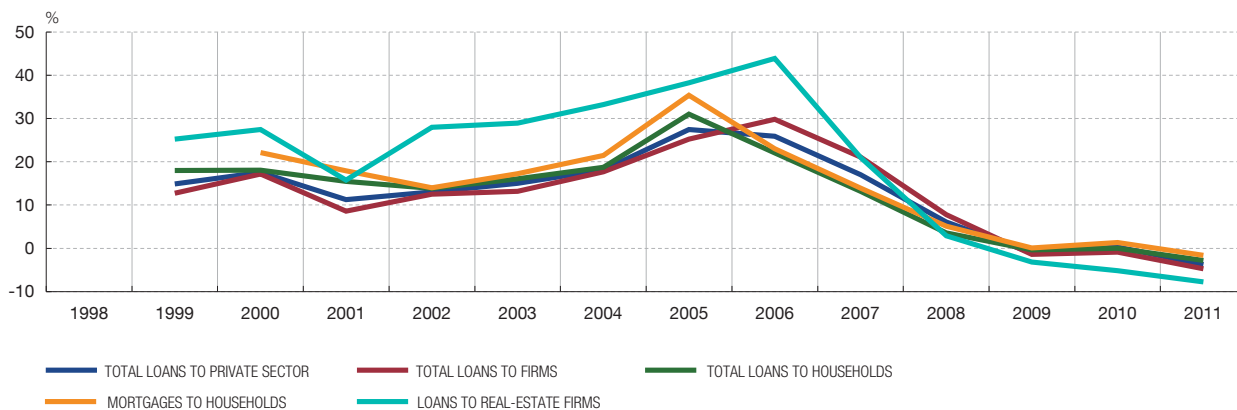
To a large extent, the almost inelastic demand of international markets for bonds issued by Spanish banks has enhanced the growing housing bubble financed by Spanish banks. Back to Charts 2 and 3, we have inferred that if Spanish banks had not had access to international markets they could only have raised 28.88% of the total volume issued during the years 2000-2007. This does not mean that raising funds from foreign markets is negative and/or should be controlled. Rather, we claim that the fact of banks not having a

⁵ See for example the introduction of the *Financial Stability Report*, November 2006 and November 2004, Banco de España.

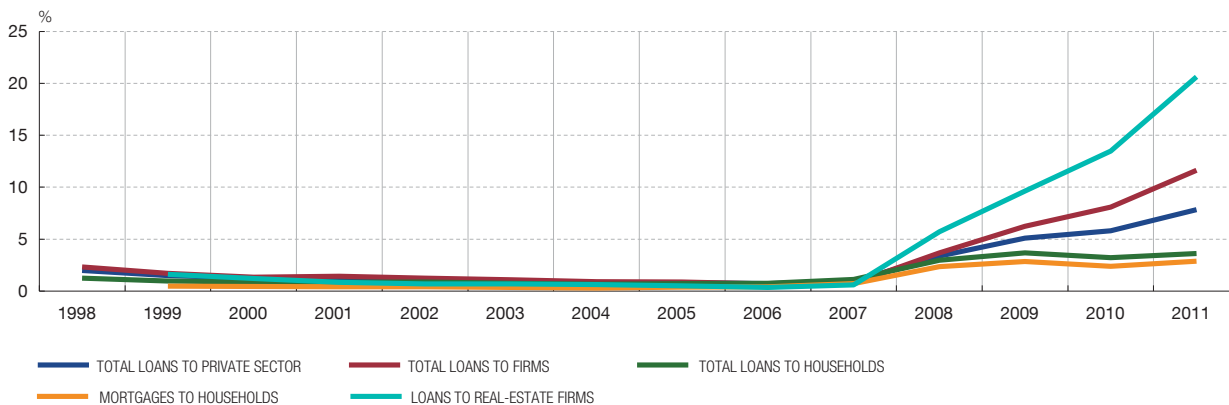
A. VOLUME OF CREDIT



B. GROWTH RATE



C. NON-PERFORMING LOANS

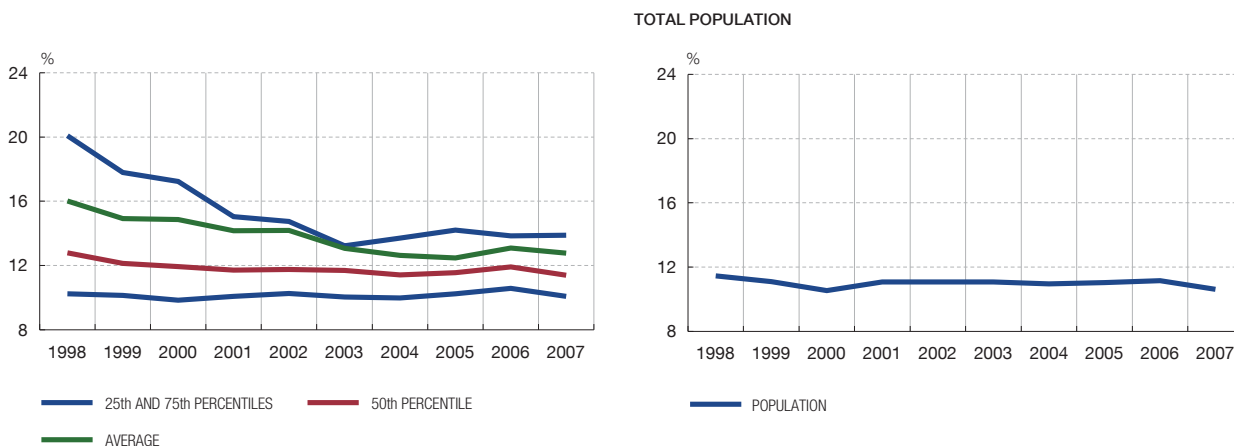


SOURCE: Almazán, Martín-Oliver and Saurina (2013), mimeo.

limited amount of resources that obliged them to screen and select across potential borrowers probably resulted in incentives to lower credit standards and expand their business granting risky loans.

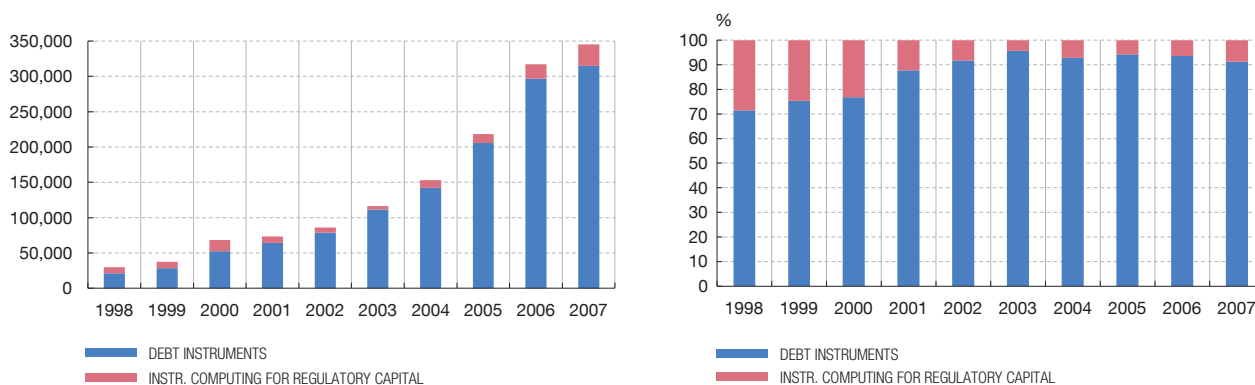
4 Financial integration and the quality of capital

This section studies how the structural changes of Spanish banks during the pre-crisis period which are possible due to financial integration are also related with changes in the quantity and quality of banks' capital. During the period under study, Spanish banks have to fulfill the regulatory capital requirements set by the Basel Accord in 8% of the risk-weighted



SOURCE: Martín-Oliver, Ruano and Salas-Fumás (2012) and own elaboration with *Report on Banking Supervision in Spain*, Banco de España.

COMPOSITION OF ISSUANCES

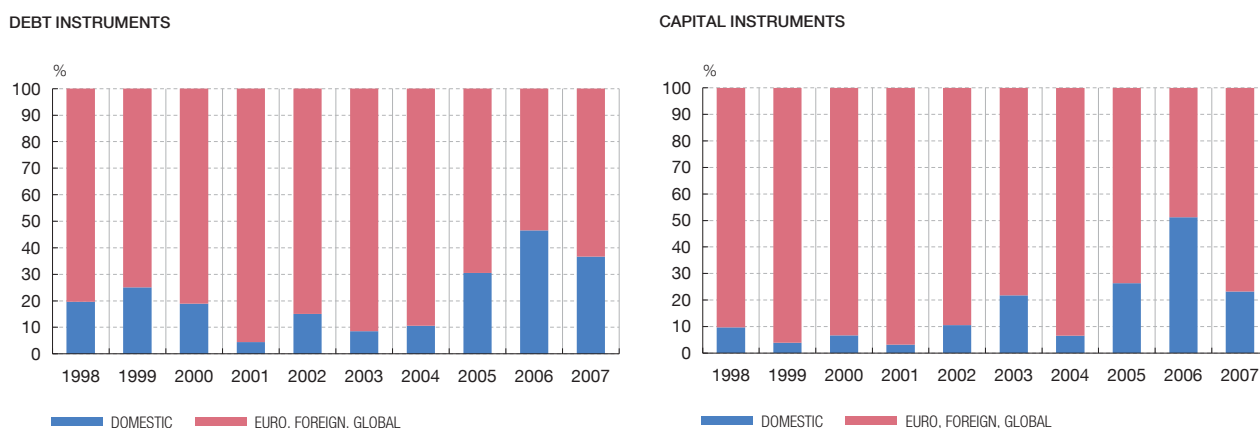


SOURCE: Own elaboration with Dealogic.

assets (RWA). The growth in volume of assets (Section 3) is parallel to a higher risk embedded in the granted loans and, thus, the level of RWA increases during the period under study. Banks could have responded either by absorbing the higher RWA with the buffer of regulatory capital accumulated during previous years (with a reduction of the Basel capital ratio), or they could have offset the rise in RWA by increasing the volume of regulatory capital (numerator of the regulatory capital ratio). Chart 6 shows that Spanish banks opt for the second option. The level of regulatory capital remains constant over time around values quite above the regulatory minimum: both the average of the population of banks and the median of the distribution of regulatory capital remain stable around 12% during the whole sample period. The simple average of the Basel ratio across banks decreases from 16% to levels around 14%, which in part can be explained by the reduction of the buffer held by banks in the highest percentiles.

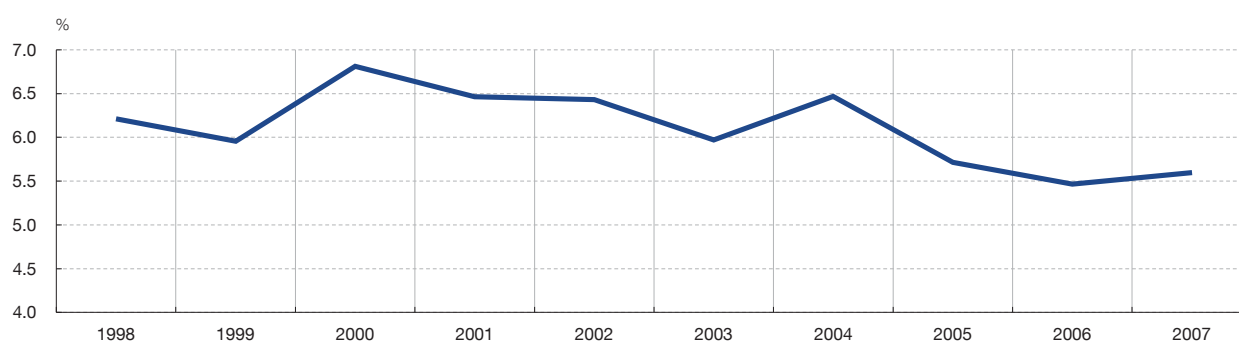
Therefore, the coefficient of regulatory capital does not decrease due to the growth of its denominator; rather it remains well above the level of the regulatory minimum obliged by Basel I. To do so, they need to raise fresh regulatory capital.⁶ Chart 7 shows that banks issue instruments computing as regulatory capital, amounting to 8.91% of the total

6 There is a literature focused on the use of different instruments, especially loan loss provisions, to manage the capital ratios. Examples of these papers are Pérez, Salas-Fumás and Saurina (2008); Bikker and Metzmakers (2005); Ahmed, Takeda, and Thomas (1999); Kim and Kross (1998).



SOURCE: Own elaboration with Dealogic.

CAPITAL RATIO OF SPANISH BANKS

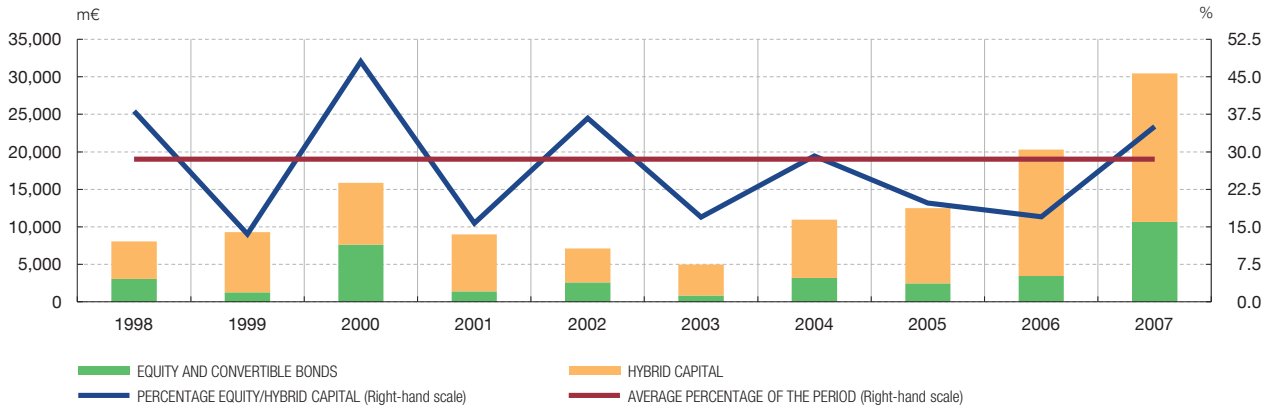


SOURCES: Banco de España, *Boletín Estadístico*, and own elaboration.

issuances during the period 1998-2007. Again, Chart 8 shows this has been possible due to the access of Spanish banks into the international financial markets. More concretely, the percentage of capital issuances in international markets amounted to 79.1% from 1998 to 2007, a proportion even higher than that of debt instruments, 71.4%

So far, we have shown that, in terms of the amount of regulatory capital, banks' solvency has not been affected by banks' growth. Now we turn our attention to the composition of regulatory capital during this time period and study. Recent papers provide descriptive evidence of a deterioration of bank capital in US banks prior and during the crisis that reduces the capacity of capital to act as a corporate governance mechanism, since the participation of owners in potential losses has become smaller [Acharya *et al.* (2009) and Mehran, Morrison and Shapiro (2011)]. According to Acharya, Gujral, Kulkarni and Shin (2011) this dwindling weight of common capital could also explain the difficulties of banks to raise new funds, since creditors will only lend if common shareholders are bearing a significant part of the risk. We study whether this has been the case for Spanish banks and the high ratio of the Basel coefficient is hiding a deterioration of the quality of regulatory capital.

First, we study the evolution of the common capital, defined as the sum of capital and reserves (core capital), which is the capital of highest quality to absorb losses. Chart 9 shows that the capital ratio of the banking system has decreased from its peak of 6.81% in 2000 to 5.59% in 2007, implying a reduction of 1.22 percentage points of the weight of



SOURCE: Own elaboration with Dealogic.

core capital with respect to total assets. Even though the accounting capital ratio does not adjust by risk measures, we appreciate a fall of the weight of top-quality capital in the balance sheet of Spanish banks. We find that the main cause of the decreasing trend of the equity capital ratio is that the issuances of regulatory capital are mainly in form of hybrid capital, that is, preferred shares and subordinated debt.

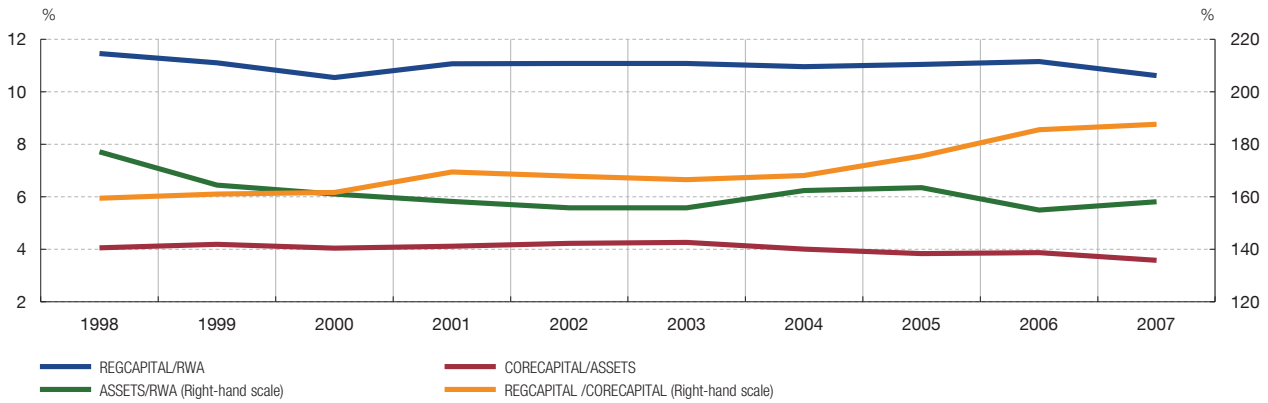
Basel I and II consider preferred shares as a component of Tier 1 capital, within certain limits, and Spanish banks use them to fulfill regulation taking advantage of their benefits as a debt-like instrument (i.e., tax-deductible interest rates, lower cost of capital). Nonetheless, the recent financial crisis has shown, especially in the Spanish case, that preferred shares are not as good as equity to absorb losses. To analyze capital deterioration, we take the current criterion of Basel III that does not include preferred shares in the list of capital instruments that compute as core Tier 1 capital, and we consider them as hybrid instruments in the same terms as subordinated debt.

Chart 10 shows the composition of the capital issuances of Spanish banks during the sample period, differentiating between hybrid capital and equity and convertible bonds. For all the years, hybrid capital represents more than 50% of the total issuances of regulatory capital and, for the whole period, the average proportion (dashed line) amounts to 71.5%. That is, banks manage their regulatory capital ratios to maintain the levels above the regulatory minimum, but the strategy consists on issuing only 3 units of core capital out of 10 units issued of regulatory capital instruments. In doing so, banks are taking advantage, on the one hand, of the high demand of international markets during the pre-crisis years and, on the other hand, of the advantages of the debt-like capital instruments that compute as regulatory capital, both Tier 1 (preferred shares) and Tier 2 (subordinated debt). As a result, the quality of capital deteriorates and loses capacity to absorb losses.

Decomposition of the regulatory capital

So far, we have seen that banks issue hybrid capital to maintain the regulatory capital ratio constant and this action results in a decreasing trend of the accounting capital ratio. Now, we decompose the regulatory capital ratio into three components to understand how this ratio was kept constant at the same time that the equity capital ratio decreased:

$$\frac{\text{Regulatory Capital}}{\text{RWA}} = \frac{\text{Regulatory Capital}}{\text{Core Capital}} \cdot \frac{\text{Core Capital}}{\text{Assets}} \cdot \frac{\text{Assets}}{\text{RWA}}$$

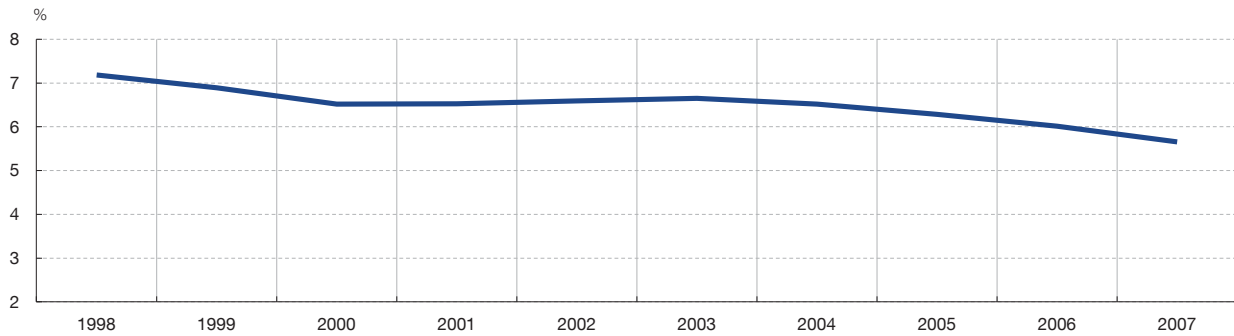


SOURCES: Own elaboration with *Report on Banking Supervision in Spain*, Banco de España.

The first ratio, $\frac{\text{Regulatory Capital}}{\text{Core Capital}}$, is the inverse of the weight of the core capital within the regulatory capital. The definition of core capital has been constructed with data of the regulatory statements drawn from the annual *Report on Banking Supervision in Spain* and, thus, it does not coincide with the accounting concepts of capital and reserves used in Chart 9. Here, we define core capital as the Tier 1 capital once we remove the preferred shares⁷ and the part of the deductions from Tier 1 and Tier 2 funds that corresponds to original own funds.⁸ The second ratio, $\frac{\text{Core Capital}}{\text{Assets}}$, informs of the weight of the core capital computed with regulatory statements with respect to accounting assets. As said, this ratio is not the same than the ratio presented in Chart 9 because there we only used accounting data. Next, the third ratio is $\frac{\text{Assets}}{\text{RWA}}$ equal to the total accounting assets divided by the risk-weighted assets of Spanish banks and it informs of the evolution of the risks of the banks' assets.

Chart 11 shows the flat trend of the regulatory capital ratio occurs at the same time that there are time variations of different sign in each of its components that compensate each other. The time evolution of $\frac{\text{Core Capital}}{\text{Assets}}$ confirms the negative trend of the core capital with respect to assets observed in Chart 9 from accounting data; here the ratio decreases 0.5 percentage points, from 3.58% in 1998 to 4.06% in 2007. More importantly, we observe that the weight of core capital also decreases in terms of total regulatory capital (the ratio $\frac{\text{Regulatory Capital}}{\text{Core Capital}}$ increases over time) and by 2007 it has fallen to 85% of its value in 1998. These Figures confirm that regulatory capital in Spanish banks has deteriorated as in US banks, [Acharya *et al.* (2011), Acharya *et al.* (2009) and Mehran *et al.* (2011)]. Thus, the higher proportion of hybrid capital in banks' capital is not compensated with retained earnings or other sources of common capital. On the contrary, banks are substituting core capital with hybrid capital, probably because it has a lower cost and, thus, profits increase.

7 Regulation establishes that the volume of preferred shares that can compute as Tier 1 cannot exceed 30% of total Tier 1 capital. According to the data of the annual *Report on Banking Supervision in Spain*, preferred shares are below this limit during the period under study and, thus, we assume that there is no deduction in Tier 1 for exceeding the 30%.
 8 From 2008 onwards, the deductions of regulatory capital are divided in deductions corresponding to Tier 1 capital and deductions corresponding to Tier 2 capital, each of them representing around 50% of total deductions during the period 2008-2011. For the previous years, the information of capital deductions is aggregated and we cannot obtain the exact figure that corresponds to Tier 1 capital. As an approximation, we take the weight of deductions of Tier 1 capital during the period 2008-2011, that is, 50%.



SOURCE: Own elaboration with *Report on Banking Supervision in Spain*, Banco de España.

Further, the weight of core capital dwindles at the same time that the risk of the banks' assets increases, since $\frac{\text{Assets}}{\text{RWA}}$ shows a decreasing trend in Chart 11. In 2007, the average risk per unit of asset has increased in 12.85% with respect that of 1998, according to the Basel I methodology to compute risk-weighted assets. This implies that the quality of the regulatory capital to absorb losses is worsening at the same time that the assets of the banks become riskier; Chart 12 shows that the ratio of core capital with respect to risk-weighted assets decreases from 7.19% in 1998 to 5.66% in 2007.

Summing up, during the years previous to the crisis, the quality of regulatory capital of Spanish banks deteriorates as the weight of core capital decreases in favor of debt-like instruments, which computed as Tier 2 and Tier 1 (up to a limit) under Basel I and II. The consequences have been the lower capacity of regulatory capital to absorb the loan losses arisen during the crisis and the higher difficulty of Spanish banks to obtain external funding in international markets since the beginning of the crisis.

5 Conclusion

The entrance of Spain into the EMU has been a breaking point in the financial structure and lending activities of Spanish banks. Funds are no longer limited to domestic deposits because banks can issue debt instruments at low cost that attract international investors. Adding up all the issuances of debt-like instruments, the funds obtained from international markets represent the 71.12% of the total issuances of Spanish banks from 2000 to 2007. A great deal of the large volume of issuances responds to the enrollment of Spanish banks in the list of entities issuing tranching products related to securitization; by 2007 they become the second largest issuer of ABS in Europe, after British banks. At the same time, real-estate prices increase at exponential rates due to the combination of the higher economic value of the generated rents, discounted at lower interest rates, and the unlimited supply of credit granted to firms and households.

There are sound arguments about the potential benefits of financial integration, but the recent experience of Spanish banks alerts about potential social costs that should be taken into account as lessons for the future: (i) wholesale funding of loans creates a liquidity gap that increases the exposure of banks to the business cycle and poses systemic risks, especially when these funds are channeled towards long-term maturity assets such as real-estate assets; (ii) the situation is aggravated by the fact that the providers of funds are international wholesale markets where investors have strong pressures of short-term financial returns; (iii) the expansion of the assets and liabilities of Spanish banks takes place under a capital regulation that keeps the minimum of equity-core capital at low levels

and gives a lot of room for meeting the capital requirements with debt-like instruments. The experience has proved that the loss-absorption capacity of these hybrids is smaller than anticipated, which contributes to explain the solvency problems faced by Spanish banks during the crisis. As well as this, the low ratio of equity capital fuels the liquidity gap because creditors only lend if common shareholders bear a significant part of the risk [Acharya *et al.* (2011)]. The revealed superior quality of equity capital justifies the stricter definition of core Tier 1 capital included in Basel III.

The structural dependence on international wholesale markets, built during the period 2000-2007, has resulted in liquidity problems with the outburst of the crisis and in the stagnation of the bank credit and the economy activity. Though we are not blaming financial integration for this situation, we claim that during the period of high growth preceding the crisis, financial integration is not backed by mechanisms of crisis resolution in concordance with the potential liquidity and solvency problems that are being generated. The end of the story about the banking crisis in Spain has not been written yet. Meanwhile, the restructuring process has entangled the reduction of the number of banks operating in Spain through mergers and acquisitions, the conversion of savings banks into commercial banks, the bailout of banks, the injection of public capital in banks, the revision of the mechanisms of supervision of the Bank of Spain, the creation of a “bad bank” to absorb toxic assets and the drastic reduction of the number of branches and workers, among others.

REFERENCES

- ACHARYA, V., I. GUJRAL, N. KULKARNI and H. S. SHIN (2011). *Dividends and bank capital in the financial crisis of 2007-2009*, NBER Working Paper 16896.
- ACHARYA, V., J. N. CARPENTER, X. GABAIX, K. JOHN, M. RICHARDSON, M. G. SUBRAHMANYAM, R. K. SUNDARAM, and E. ZEMEL (2009). “Corporate governance in the modern financial sector”, in V. Acharya and M. Richardson (eds.), *Restoring Financial Stability*, pp. 185-196, Hoboken, Wiley Finance.
- AHMED, A. S., C. TAKEDA, and S. THOMAS (1999). “Bank loan provisions: a re-examination of capital management, earnings management and signaling effects”, *Journal of Accounting and Economics*, 28, pp. 1-25.
- ALMAZÁN, A., A. MARTÍN-OLIVER and J. SAURINA (2013). *Loan securitization, access to funds and banks' capital structures*, mimeo.
- BANCO DE ESPAÑA (2006). *Estabilidad Financiera*, November.
- (2004). *Estabilidad Financiera*, November.
- BIKKER, J. A., and P. A. J. METZEMAKERS (2005). “Bank provisioning behaviour and procyclicality”, *Journal of International Financial Markets, Institutions and Money*, 15, pp. 141-157.
- DIAMOND, D. W., and R. G. RAJAN (2009). “The credit crisis; conjectures about causes and remedies”, *American Economic Review Papers and Proceedings*, 99, 2, pp. 606-610.
- EUROPEAN CENTRAL BANK (2012). *Financial Integration in Europe*, April.
- KIM, M. S., and W. KROSS (1998). “The impact of the 1989 change in bank capital standards on loan loss provisioning and loan write-offs”, *Journal of Accounting and Economics*, 25, pp. 69-99.
- MARTÍN-OLIVER, A., S. RUANO, and V. SALAS-FUMÁS (2013). “Banks' Equity Capital Frictions, Capital Ratios, and Interest Rates: Evidence from Spanish Banks”, *International Journal of Central Banking*, forthcoming.
- (2012). *Why Did High Productivity Growth of Banks Precede the Financial Crisis?*, Banco de España, Documentos de Trabajo, no. 1239.
- MEHRAN, H., A. MORRISON and J. SHAPIRO (2011). *Corporate governance and banks: What have we learned from the financial crisis?*, Federal Reserve Bank of New York, Staff Report 502.
- PÉREZ, D., V. SALAS-FUMÁS, and J. SAURINA (2008). “Earnings and capital management in alternative loan loss provision regulatory regimes”, *European Accounting Review*, 17, pp. 423-445.