

Regulating Systemic Risk  
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FEDERAL RESERVE BANK *of* ATLANTA

# **Financial Stability, Systemic Risk, and Dynamic Provisioning: The Case of Spain**

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# Summary

- 1. Financial crises and financial stability: some key questions**
- 2. Housing bubbles and credit risk in Spain: causes and consequences**
- 3. Dynamic provisioning, lending and asset impairment**
- 4. Conclusions: current regulatory actions and further debate**

# 1. Financial crises and financial stability: some key questions and the Spanish case

- **Financial crises and financial instability:**
  - The crisis has made financial stability to become a primary goal that evidences:
    - Regulation needs to be reformed/enhanced/put in practice and it should be effective (supervision).
    - Importance of coordination of monetary and financial stability: should inflation be the only objective?
    - Need of international coordination to identify common mechanisms to control systemic risk.
    - In the medium term, some national financial sectors need to be restructured.

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- **Systemic risk, economic cycles and dynamic provisioning:**
    - Central topic of debate among economists: reasons for economic cycles, the factors that may amplify or smooth them, whether the authorities should aim to iron them out and, if so, how this can be done.
    - The role of financial stability and systemic risk in the dynamics of economic cycles has emerged as a key question in this debate with the current global crisis.
    - As far as the banking sector is concerned: is there a role for the so-called forward-looking (dynamic or statistical) provisioning to deal with some of these problems?
    - **Spain** is an interesting case study: asset bubbles, assets impairment and dynamic provisioning rules.

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- **Asset impairment, solvency and control of systemic risk are the major challenges. Spain is no exception:**
    - High private sector indebtedness
    - Most of assets' deterioration coming from the real estate sector.
    - The crisis has hit later than in other countries due to:
      - No exposure to structured investment vehicles.
      - Bank of Spain preventive policy with dynamic provisioning (mechanism vs. discretion).
    - However, in Spain the impact of the “real estate cycle” and its effects could be long-lasting. There is historical evidence on this likely impact.

## Diagram 1. Real state and unemployment cycles in Spain: historical evidence



### Real estate cycles

- **Cumulative decline in housing prices:**
  - Spain: 34%
  - World average: 35.4%
- **Years to reach equilibrium:**
  - Spain: 5
  - World average: 6



### Unemployment cycles

- **Cumulative fall in employment:**
  - Spain: 12%
  - World average: 7%
- **Years to reach previous levels of employment:**
  - Spain: 6
  - World average: 4.8

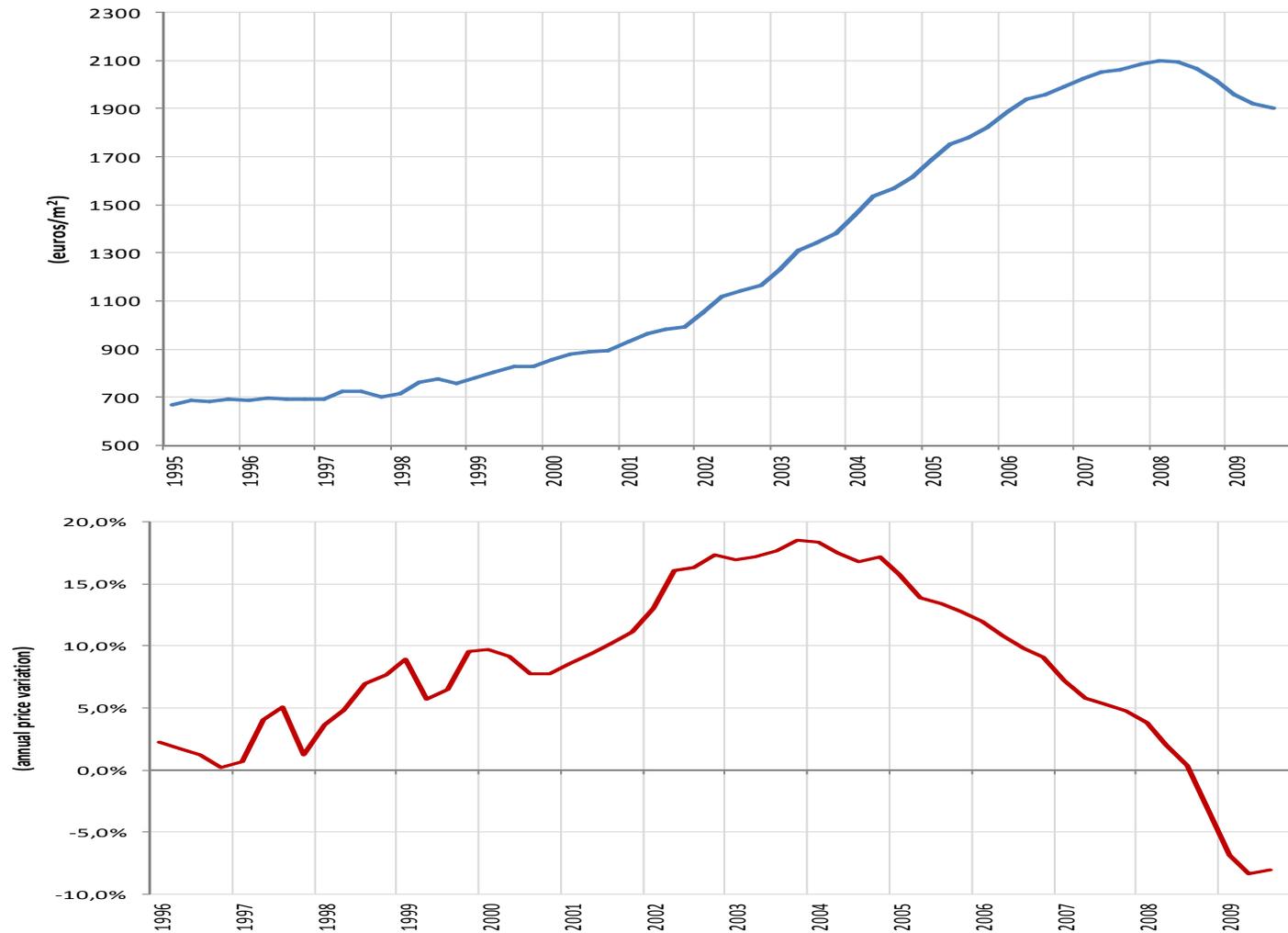
Source: Reinhart, C. and K. Rogoff (2009): "The aftermath of financial crises" (with Carmen M. Reinhart), *American Economic Review* 99: 466-472.

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- **Some key questions:**
    - How important is asset impairment?
    - Housing bubble, house prices and lending: how are they related?
    - Too much lending in recent years?
    - What has been the role (and limitations) of dynamic provisioning?
    - Why were not the problems detected earlier in Spain?
    - How is Spain dealing with asset impairment and bank capital needs?

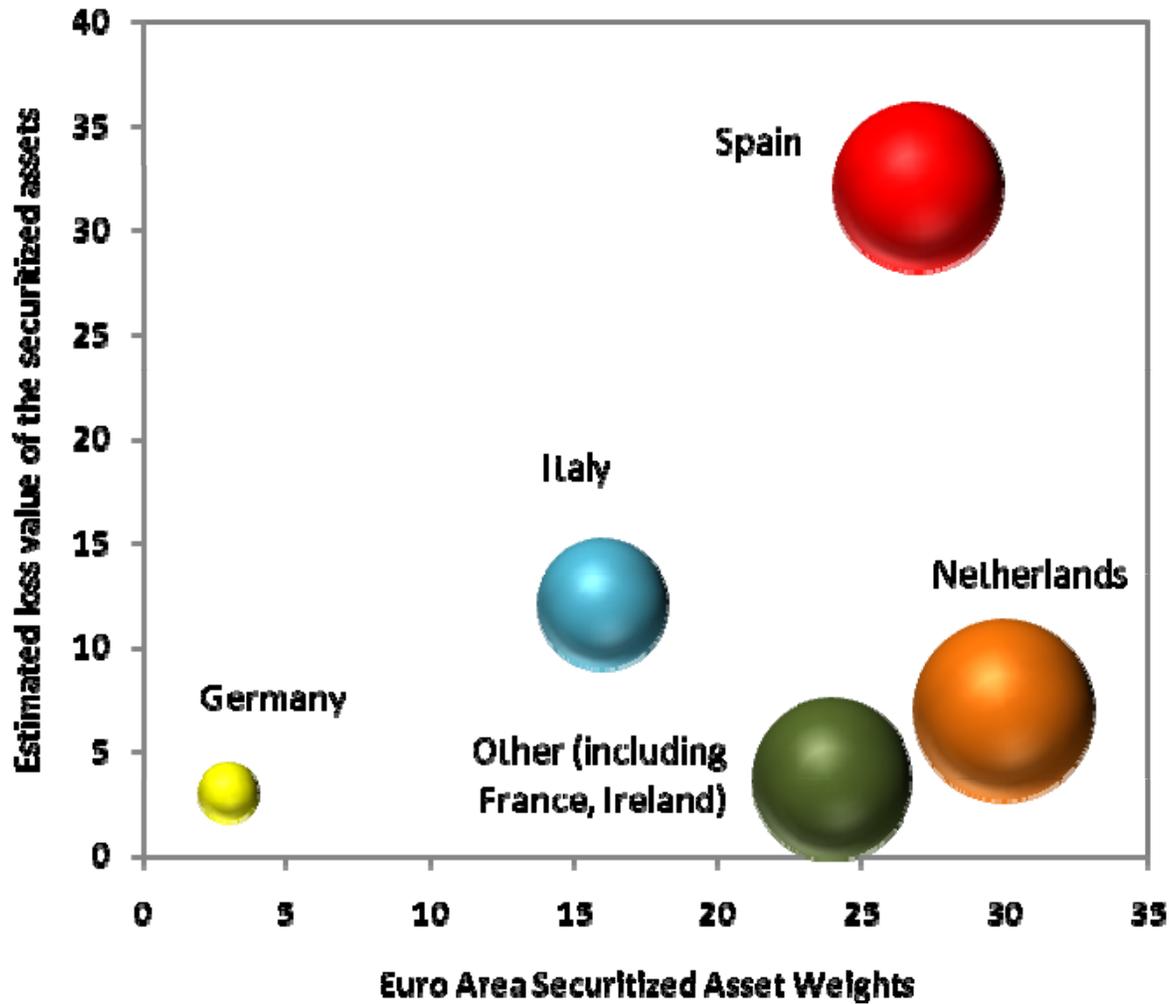
## 2. Housing bubbles and credit risk in Spain: causes and consequences

- In Spain, the exposure to the real state investments and securities deserves special attention:
  - House prices have declined by 25% from Q3-2008 to Q3-2009.
  - Spain concentrates 27% of the securitized real estate assets in the Euro Zone (Figure 2).
  - The loss of value of these securitized assets in Spain, according to sources cited in Figure 2, reach 33,000 million Euros. As in other European countries, most of these losses are related to residential mortgage loans (Figure 3).

**FIGURE 1. HOUSE PRICES IN SPAIN: EUROS/M2 AND QUARTERLY GROWTH RATES (1995:1-2009:3)**

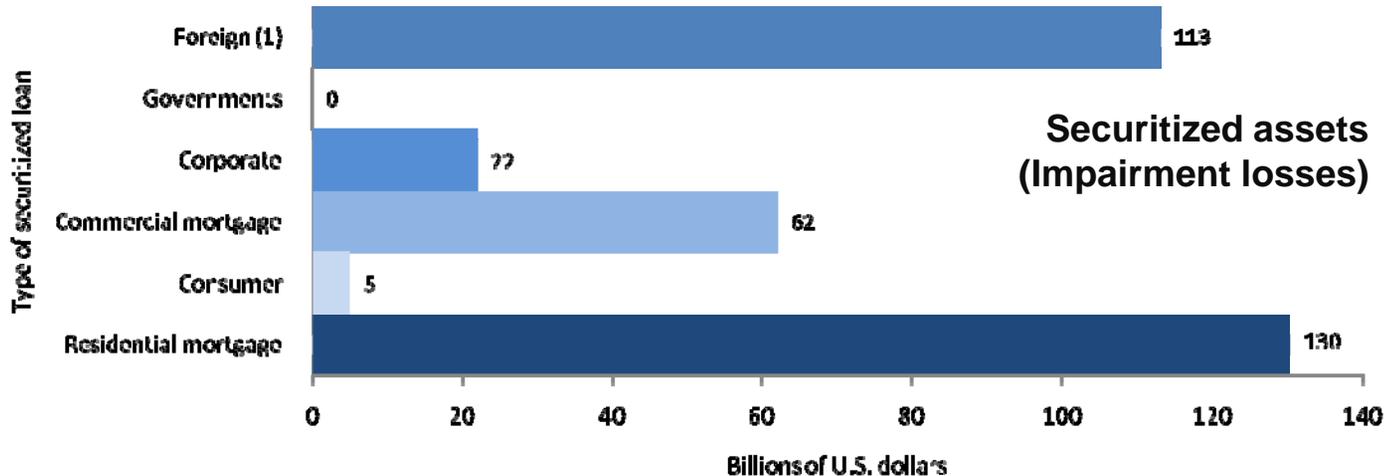
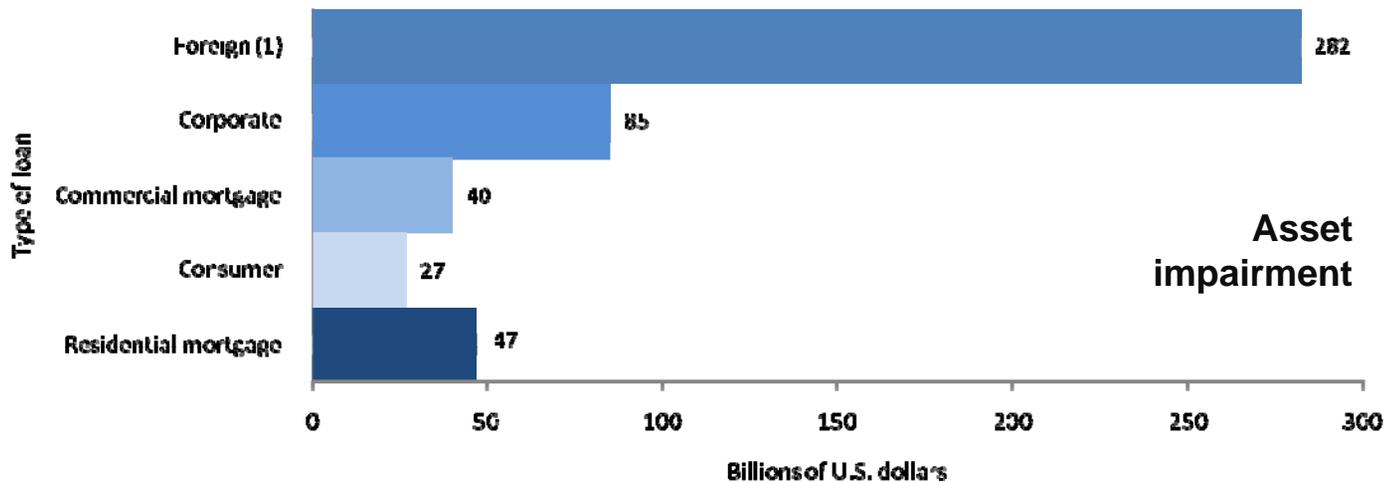


**FIGURE 2. ESTIMATED LOSS IN SECURITIZED ASSETS (est. 2009)**



**SIZE OF THE BUBBLE:** Outstanding Amounts of the securitized assets in the Euro zone

**FIGURE 3. ASSETS IMPAIRMENT LOSSES IN EURO AREA: LOANS AND SECURITIZED LOANS (est. 2009)**



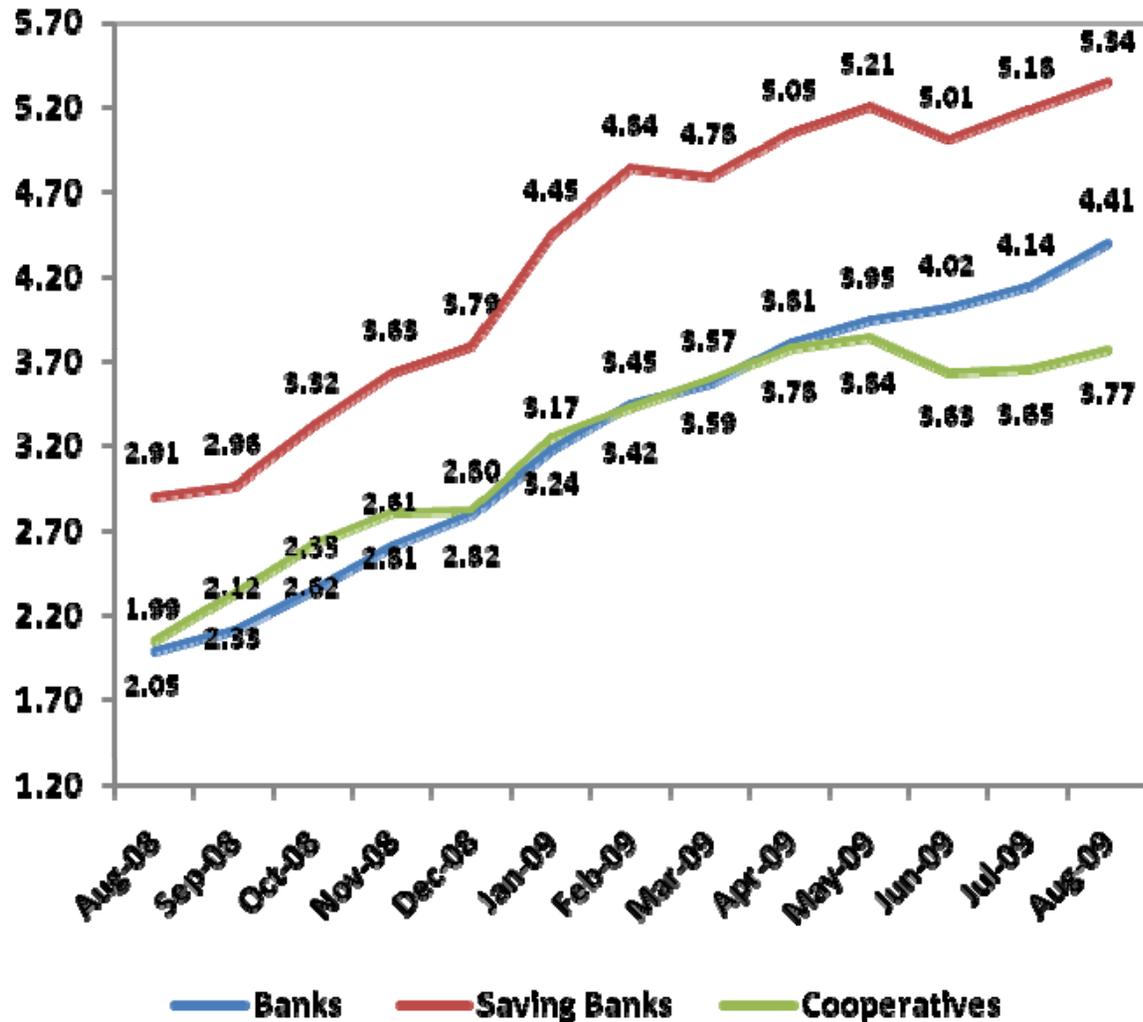
In the Euro Area, the exposure of large bank holdings to international bank debt markets has also been important.

As far as securitized assets are concern, the greatest loss of value is given in residential mortgages.<sup>11</sup>

Source: European Securitization Forum, IMF and own calculation.

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- As shown in some recent studies, it is unclear that only mortgage credit is what causes the housing bubbles. Rather the contrary, **housing price increases are related to factors such as, inter alia, the inelastic supplies of owner-occupied housing** (as shown by Goodman and Thibodeau, 2009 for the U.S).
  - Mortgage credit and credit to real state and construction firms have increased significantly following real state prices. **This significant increase in lending has resulted in an increase in credit default rates in subsequent years.**
  - Default rates have increased significantly (Figure 4) while the risk coverage ratio has decreased dramatically (Figure 5). The case of credit to construction and real state firms is particularly relevant (Figure 6). There may be corporate governance issues since default rates are different across commercial, savings and cooperative banks.

**FIGURE 4. CREDIT DEFAULT RATES IN SPAIN (AUG08-AUG09)**

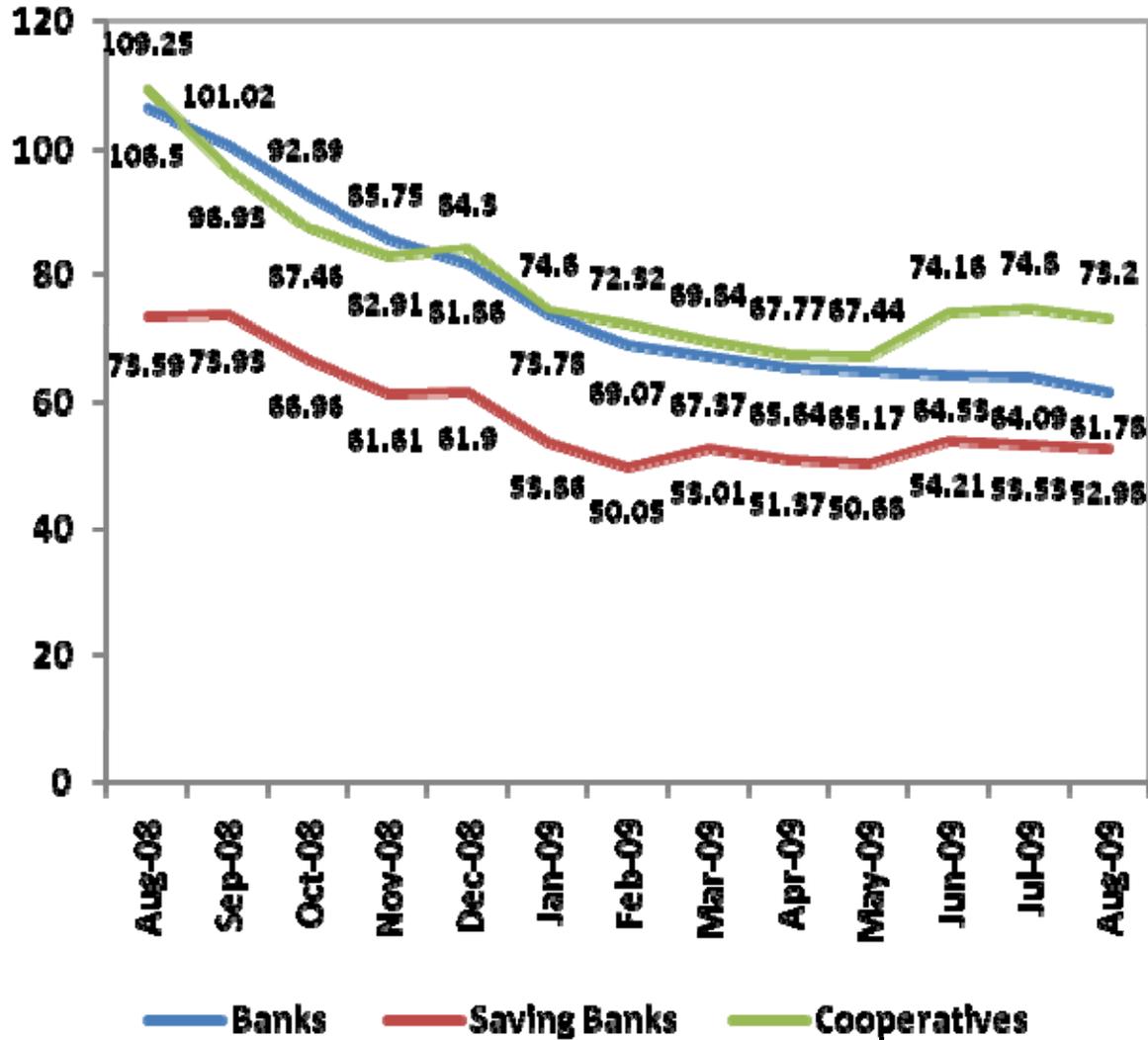


Default rates (Aug09):

- Saving banks: 5.34%
- Banks: 4.41%.
- Credit cooperatives: 3.77%

Average: 4,45%

**FIGURE 5. RISK COVERAGE RATIO IN SPAIN (AUG08-AUG09) (%)**

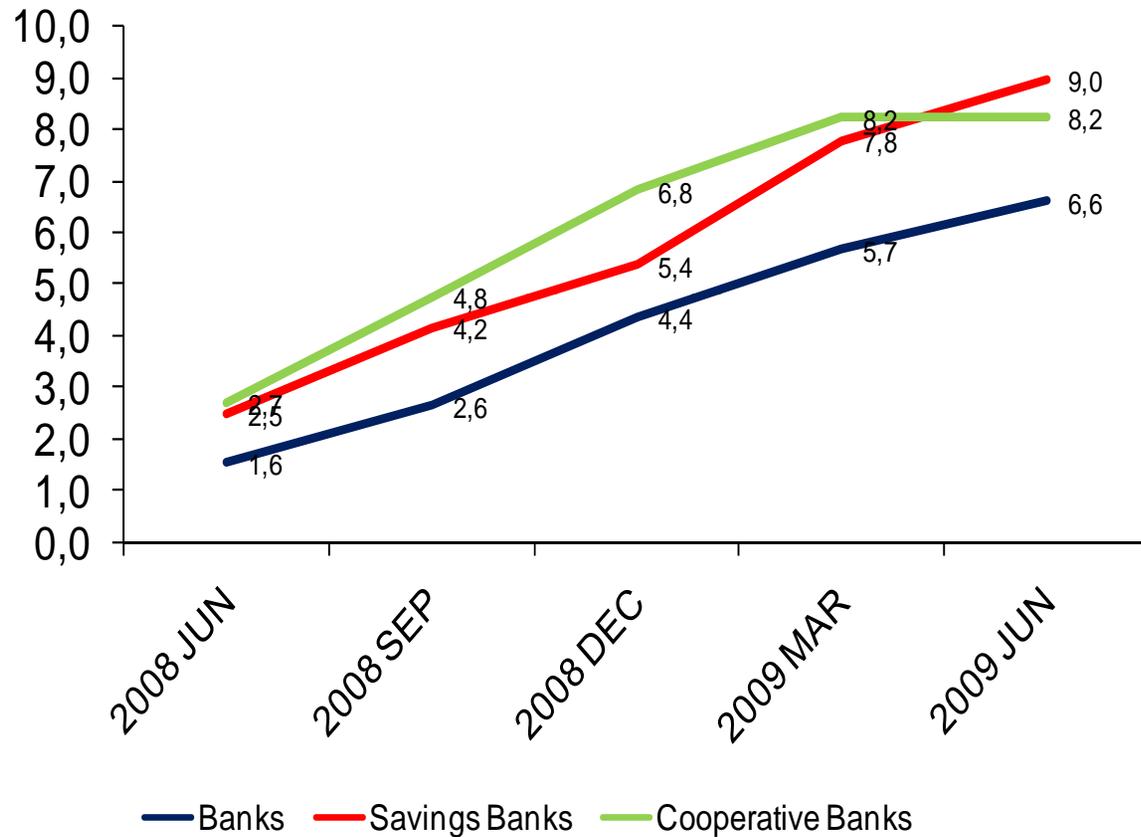


Risk coverage ratio (Aug09):

- Savings banks: 52.98%
- Banks: 61.78%.
- Credit cooperatives: 73.20%

Average: 59.82%.

**FIGURE 6. DEFAULT RATES IN CREDIT TO CONSTRUCTION AND REAL ESTATE FIRMS (JUN08-JUN09) (%)**



Default rates (Jun09):

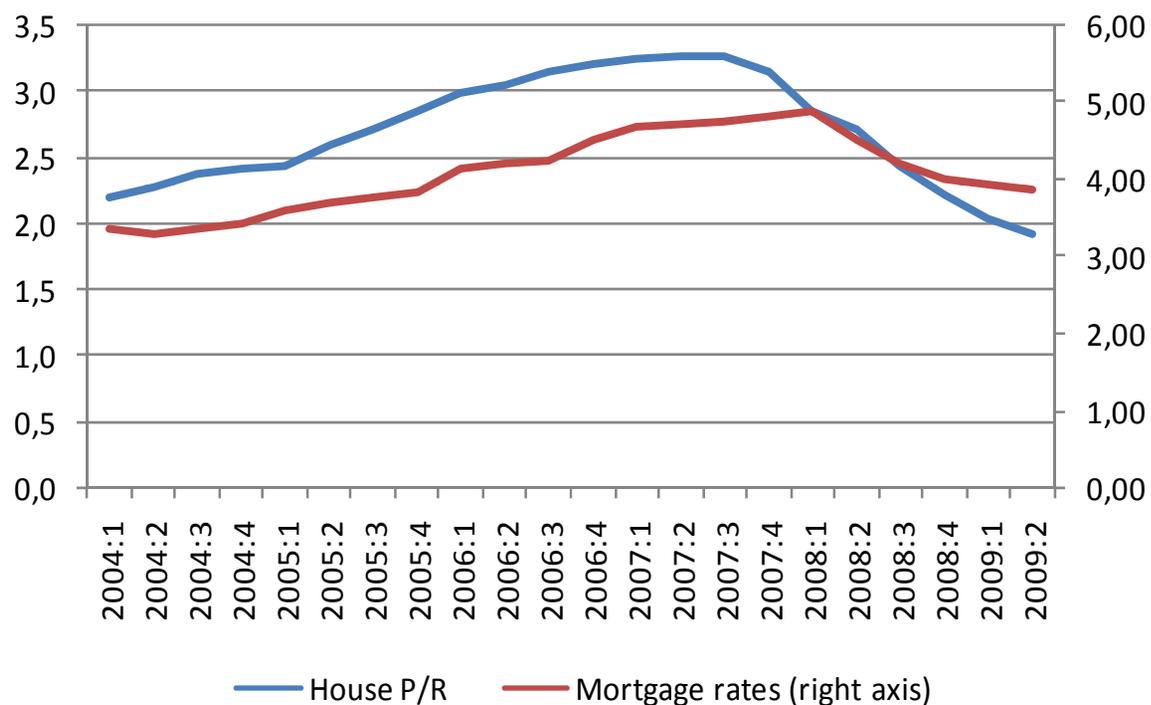
- Saving banks: 9.0%
- Banks: 6.6%.
- Credit cooperatives: 8.2%

Average: 8.5%

Source: Bank of Spain and own calculation.

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- The evolution of the house price-to-rent (P/R) index and average mortgage interest rates are shown in Figure 7.
    - During the first half of the period considered, the house P/R followed a similar path to housing prices.
    - However, **between 2001 and 2007, the P/R ratio increased considerably**, suggesting a significant overvaluation of housing prices above market fundamentals.
    - The house P/R and **has only fallen from 2007Q3 onwards** when the housing bubble in Spain has progressively burst.

**FIGURE 7. HOUSE PRICE-TO-RENT (P/R) INDEX AND MORTGAGE RATES IN SPAIN (Q1-2004-Q2-2009)**



The house P/R declined significantly from Q3-2007.

It was an early evidence of the end of the housing bubble in Spain.

Source: Bank of Spain and own calculation.

- **Why we did not anticipate these changes? Several explanations/problems:**
  - **Information asymmetries play an important role** as home owners do not have all the information that they would like with regard to the availability of credit and house prices (Bernanke and Gertler, 1989). This friction confers great significance to expectations in interaction between mortgage credit and housing prices (Spain is an example). Myopic mortgage holders in Spain?
  - **Another important factor** to study the interaction between housing prices and mortgage financing is **the cyclical behaviour of both variables, which usually determines the use of time trends and the identification of cointegration relationships** [Goodhart (1995) for the United Kingdom, Borio and Lowe (2002) for a broad sample of industrialized countries, Coleman et al. (2009) for the US or Oikarinen (2009) for Finland]

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- As far as the Spanish case is concerned, Ayuso and Restoy (2006, 2007) suggest that part of the rise in housing prices in Spain since 1998 may be attributed to a correction for an earlier underpricing, although in recent years the growth in house prices appears to be mainly due to substantial demand shocks.
  - Using similar methodologies, Carbó and Rodríguez (2009) estimate that when the mortgage credit per inhabitant lies above its long-term equilibrium level, its return to equilibrium takes place by way of three sources:
    - Reductions of 11.2% per year in the growth rate of mortgage loans.
    - Reductions of 4.3% per year in house prices.
    - Reductions of 1.8% per year in nominal interest rates.

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- All things considered, **is Spain a typical case of “a disaster waiting to happen”?**: The evolution of house prices and lending in a context of a significant dependence on external savings (i.e. Spanish banks had to borrow abroad through interbank and debt markets to fund all the “extra lending” to mortgage holders and builders/constructors during 1999-2007) was a very risky combination.
  - No official report predicted any of the problems the Spanish housing sector and the Spanish financial system were about to come across from 2007 onwards? Need to enhance macroprudential policies? Role of Financial Stability Reports?

### 3. Dynamic provisioning, lending and assets' impairment

- **What can the authorities do to counter these trends?** Debate among academics, policymakers and market participants has been intense, and is far from settled. This is an area particularly open to discussion, where new ideas and new evidence are forthcoming.  
**What is the role for dynamic provisioning?**
- **In Spain, until 2000, loan loss provisions were strongly procyclical** (as in many other countries), because they were largely linked to the volume of contemporaneous problem assets. These static provisions were backward-looking, they were based on past events and they only were accounted for loan by loan when borrowers fail to repay or in some cases when the situation of the borrower deteriorates significantly.

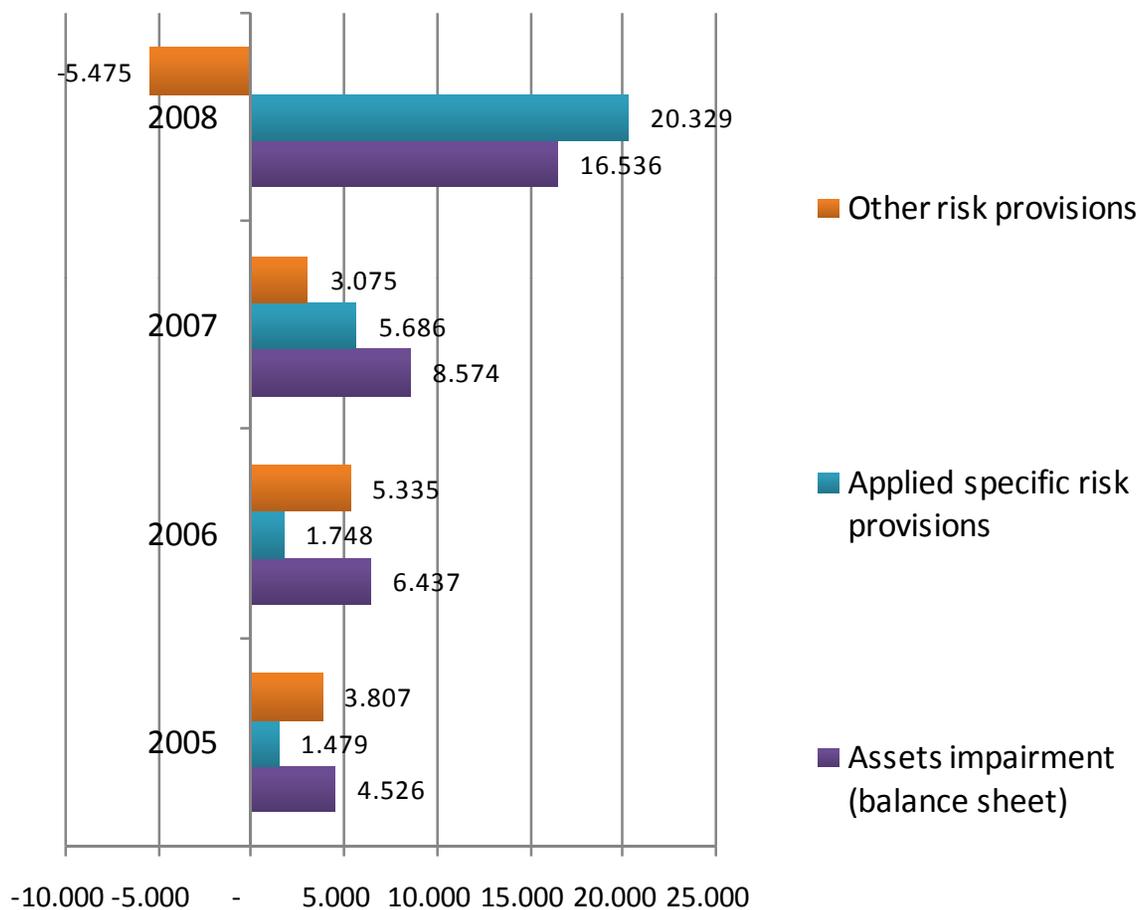
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- **The idea behind dynamic provisioning:** latent credit risk in the loan portfolio is not properly taken into account and this may “artificially” alter profits.
  - **Intrinsically every loan has an expected (or potential) loss that should be recognized as a cost by means of an early provision.** Otherwise, the picture of the true profitability and solvency of the bank over time could be distorted.
  - **The acknowledgement of latent losses is a prudent valuation principle** (similar to the mathematical reserves set aside by insurance companies) that contributes to correcting the cyclical bias that currently exists in the profit and loss account.

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- In December 1999, the Bank of Spain introduced a new solvency provision, the so-called **statistical or dynamic provision**, focusing on the statistical risk embedded in the unimpaired portfolio. It came into effect in July 2000.
  - The main idea behind this provision is to try to capture, together with the other provisions of the Spanish system, expected losses.
    - From the very moment that a loan is granted, and before any impairment on this specific loan appears, there is a positive default probability (no matter how low it might be) following a statistical distribution with an expected loss.
    - The expected loss is known in a statistical sense but not yet identified in a specific loan operation or borrower. As the risk appears at the beginning of the operation, so does the statistical provision requirement.
    - **With this system, provisions run in parallel to revenues and are, therefore, distributed through the cycle allowing for a better mapping between income and costs in the profit and loss account.**

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- The statistical provision works in practice as an addition to the "old" existing provisions:
    - When "old" provisions are well below expected losses, the "new" dynamic provision is added.
    - **In good years the net "specific" provisions are very low** (or even negative, if there are substantial recoveries), so the new provision accumulates. But in bad years the "specific" provisions increase sharply, eventually exceeding the gross burden of the statistical provision. **The net result is that with this system provisions are distributed over the cycle, providing a better recognition of expected losses.**

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- More specifically, the amount of the statistical provision is the difference between the measure of latent risk (i. e. expected losses) and the specific provision (that covering impaired assets).
  - In good times the specific provision is low and the statistical provision is positive. However, in a slowdown, as the impaired assets rise, the specific provision requirements increase and the statistical provision becomes negative.
  - Spain: provisions and asset impairment (Figure 8), and asset structure and solvency (Figure 9)

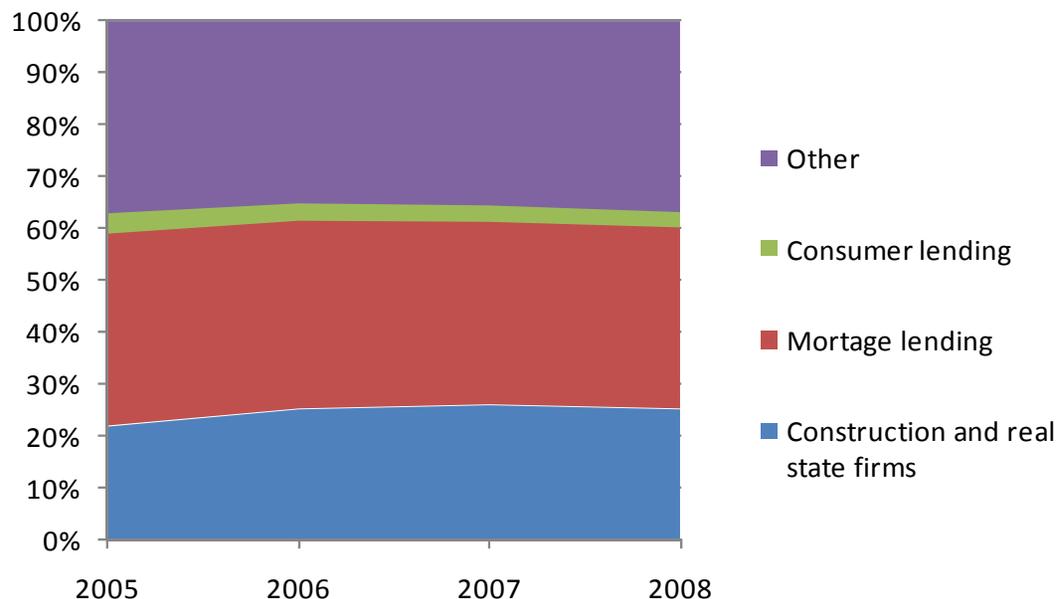
## FIGURE 8. SECURITIZED BANK ASSETS AND LOAN-LOSS PROVISIONS IN SPAIN (2005-2008)



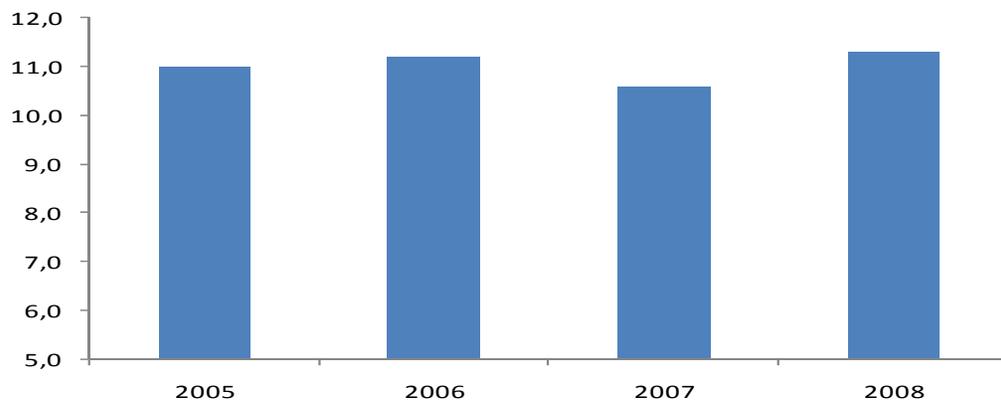
Banks have increase provisions significantly to deal with asset impairment in 2007 and, in particular, in 2008.

Source: Bank of Spain and own calculations.

**FIGURE 9. BANK LENDING STRUCTURE AND BIS SOLVENCY RATIOS IN SPAIN (2005-2008)**



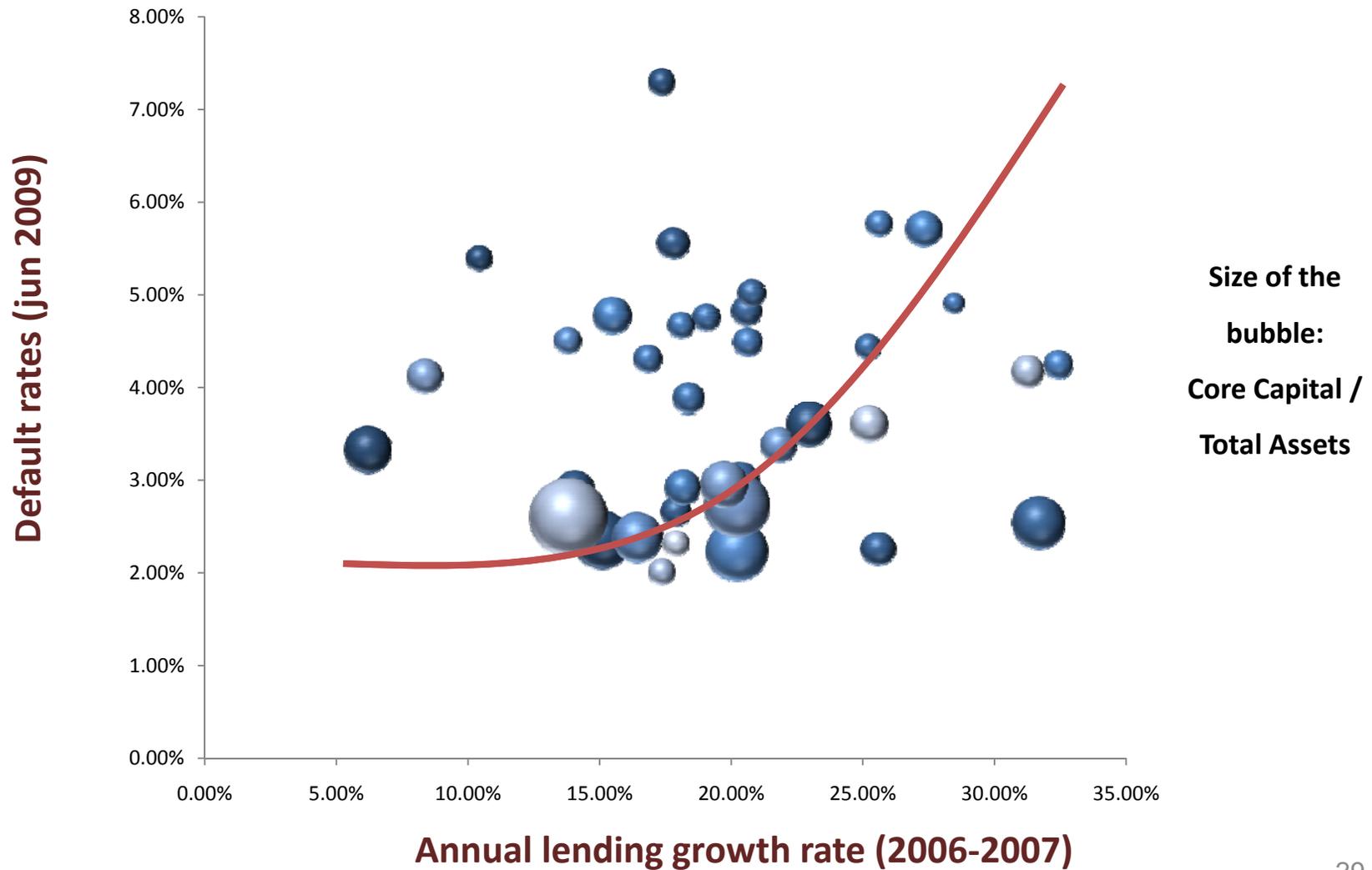
Surprisingly, the structure of bank lending portfolios has not changed significantly. Many refinancing operations (gambling for resurrection?)



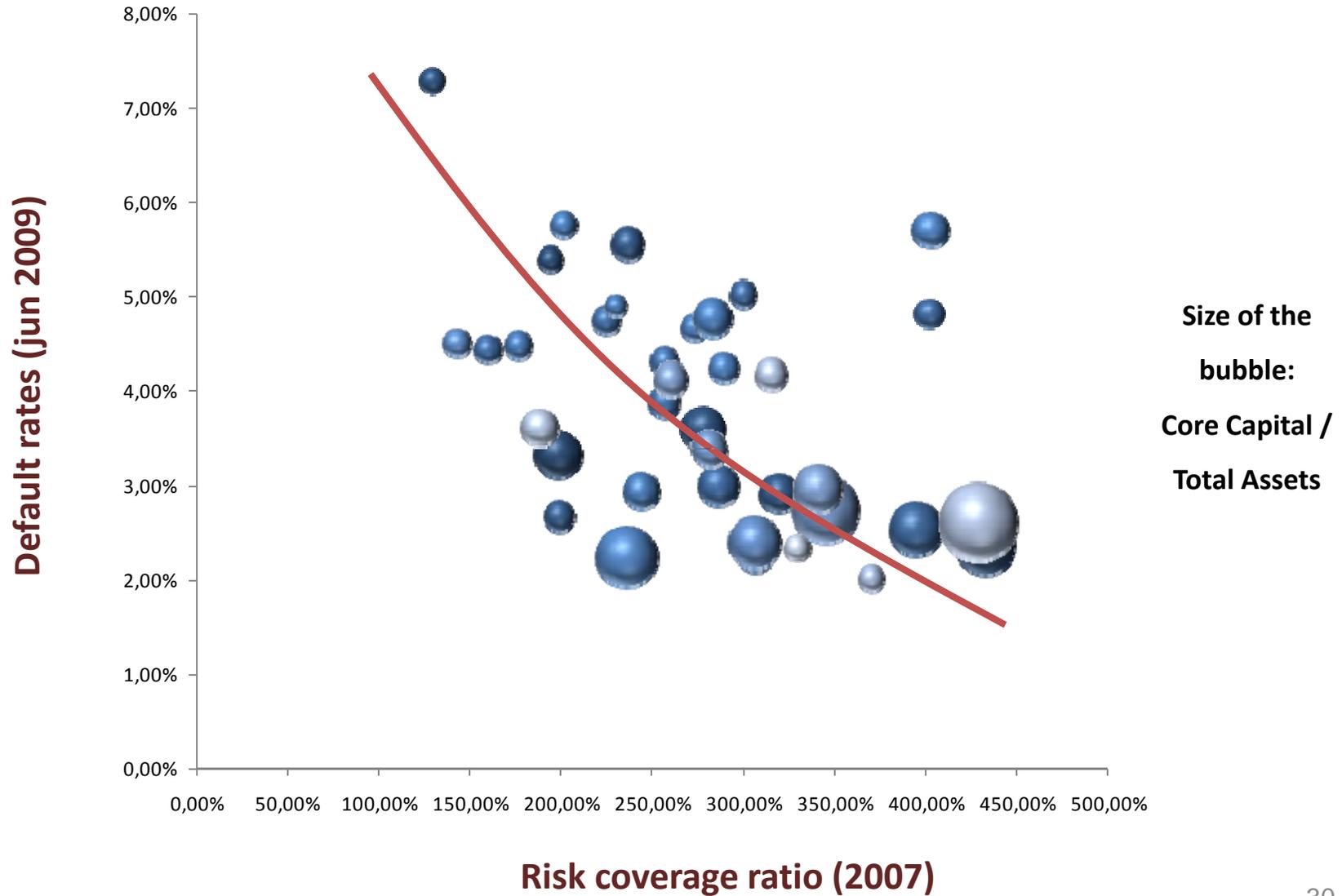
In any event, there is not yet a reason to worry about solvency levels.

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- **Let us take now a microprudential look. To what extent is the asset impairment today due to excessive lending in the past?** A simple empirical exercise of a sample of the main Spanish commercial and savings banks reveals that:
    - **There is a positive relationship between lagged lending growth and current default rates (Figure 10).**
    - **There seems to be a threshold effect from certain levels of lending growth rates (15-20% yearly). Over this threshold, credit risk seems to increase substantially.**
    - **Prudential valuation rules (such as dynamic provisioning) may have reduced the impact of excessive lending practices and banks with past higher coverage ratios appear to be those with lower current default rates (Figure 11).**
    - **Other related problems: incentives resulted in overcapacity of the banking sector.**

**FIGURE 10. NON-LINEAR BANK-LEVEL ADJUSTMENT OF THE RELATIONSHIP BETWEEN LENDING GROWHT RATES IN 2006-07 AND DEFAULT RATES IN JUNE 2009 IN SPAIN**



**FIGURE 11. NON-LINEAR BANK-LEVEL ADJUSTMENT OF THE RELATIONSHIP BETWEEN THE RISK COVERAGE RATIO IN 2007 AND DEFAULT RATES IN JUNE 2009 IN SPAIN**



## 4. Conclusions: current regulatory actions and further debate

- Asset impairment has been found to be significant and potentially even more relevant issue to prevent systemic risk in Spain.
- Dynamic provisioning was a useful tool and a step in the right direction but it was not sufficient. Discretionary vs. mechanistic tools?
- Three final questions:
  - How are the Spanish supervisory authorities and regulatory bodies dealing with these changes?
  - Is the mark-to-market appropriate in Spain?
  - Other alternatives to dynamic provisioning.

- **The regulatory and supervision response in Spain:** banking sector restructuring:
  - June 2009: Bank Restructuring Plan (*Plan de Reestructuración Ordenada Bancaria*). This plans include funding up to 99.000 million Euros. **Four possible scenarios** for financial institutions:



The restructuring measures only affect those **institutions whose viability is clearly threatened.**

Still far away from Prompt Corrective Action

Many consolidation initiatives are taken place and will take place in the next few years. They should enhance solvency and reduce overcapacity

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- **The mark-to-market accounting:**
    - Some analysts conclude that this kind of market price accountancy is largely responsible for the crisis, because it forced to register significant valuation changes too rapidly.
  - Two problems may arise with mark-to-market valuations:
    - Many assets are unique and are not regularly traded in markets. There is no real market price available to value them.
    - Market prices are highly volatile and may overreact with bubbles.
    - In Spain, the supervisor have used other prudential regulation rules (calendar for loan-loss provisions).

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- **Alternatives to dynamic provisioning:**
  - The most obvious criticism to dynamic provisioning is that it smoothes bank profits.
    - It is true that the statistical provision tends to smooth profits over the course of the cycle. **But it is no less true that an ex post provisioning system (i.e. setting aside a specific provision when the impaired asset appears) artificially increases the volatility of banks' profits.**
    - **This increased volatility in the latter case has less to do with economic fundamentals (i. e. expected losses) than with accounting rules.** If expected losses appear from the beginning of the operation, banks should start to provision them at the very outset.
    - **New proposals for countercyclical bank regulation**

## CAPITAL AND CDS

(Luigi Zingales - Univ. Chicago)

- For larger institutions.
- Keep a cushion of capital in order to keep Credit-Default-Swap below a certain level.
- If exceeded, capital should increase until CDS decreases .

## CONTINGENT CAPITAL AND CAPITAL INSURANCE

(Raghuram Rajan - University of Chicago)

- Convert debt into capital when two conditions are met: i) the banking sector is in crisis; ii) the capital ratios tend to decrease.
- It mainly affects troubled institutions.
- It forces them to assess their capital at market prices.

## CAPITAL INSURANCES

- Create an “insurance” fund for institutions considered as "systemic" that provides them capital in the event of systemic crises.