THE SPANISH EXPERIENCE OF COUNTER-CYCLICAL REGULATION
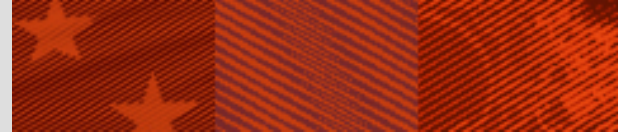
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Banco de España

Introducing counter-cyclicality into prudentoal regulation; its role in Basel II
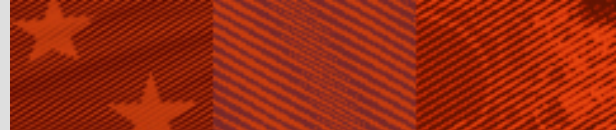
Prague, October 23, 2009
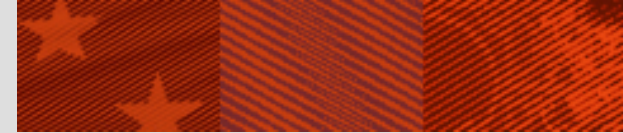
FINANCIAL STABILITY DEPARTMENT

The views expressed here are those of the author and not necessarily those of the Banco de España or the Eurosystem

Spanish approach to regulation/supervision

- **Huge banking crisis at the end of the 70's, beginning of the 80's**

- **Big losses for taxpayers, fraud, accounting manipulation, …**

- **Ley de Disciplina e Intervención (26/1988)**
    - Banco de España the key banking supervisor with strong powers

- **No preaching**

- **Supervisors' tasks are difficult and its assessment very biased**

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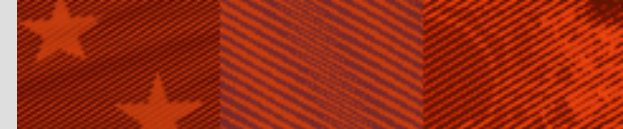Eurosistema

Strong powerful supervisor

- **Comprehensive coverage**

- **We can intervene a bank if there are solvency and/or liquidity problems or if those problems are thought to be**

- **Accounting powers (individual financial statements)**

- **On site supervision**

  - Large team of inspectors with vast experience

  - Own assessment

  - Intrusive (no arms-length supervision)

    - *Everything can be analyzed*

    - *Permanent teams in large banks*

    - *Visit schedules according to risk profile of the bank*

    - *Use of Credit Reguster information*

Evolving framework
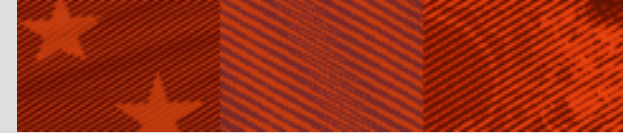
- **Financial landscape has changed significantly the last 20 years**

- **Different tactics to adapt to an evolving environment…**

- **…but same strategy**

- **Examples of changes in tactics**

  - Dynamic provisioning: countercyclical provisions

  - No conduits and no SIVs

  - No separation of supervision from the central bank

Dynamic provisions-Summary

- **Set aside in mid-2000; modified in 2004 (to be consistent with IFRS)**

- **Spanish LLP cover the increase in credit risk/losses during lending expansions**

- **Build up a buffer in good times to be used in bad times**

- **They are a macroprudential tool to decrease procyclicality**

- **Based on extensive research and statistics on historical loan loss experience for bank loan portfolios in Spain**

- **Transparent mechanism**

- **The crisis has shown they are very useful…but not a silver bullet**

Economic approach

- **Financial markets have imperfections**
- **Miss-pricing of risks**
  - Under-pricing of risks due to over-optimism
    - *(i.e. no more cycles, liquidity flooding,…)*
    - *difficult to deny it the years before the current crisis*
    - *search for yield*
  - Overpricing of risks due to over-pessimism
    - *collective failure: coordination problems*
- **Strong competition across banks and between banks and non-bank financial institutions enhances risk miss-pricing**

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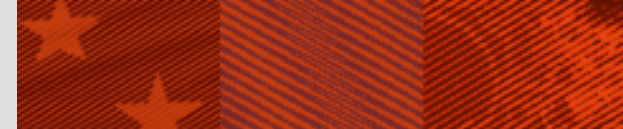Eurosistema

Economic approach

- **Banking supervisors know that banks' lending mistakes are more prevalent during upturns**
  - Borrowers and lenders are overconfident about investment projects
  - Banks' over optimism implies lower lending standards
- **During recessions, banks suddenly turn very conservative and tighten lending standards**
- **Lending cycle with impact on the real economy**
- **Too much competition makes things worse**
- **Monetary policy (i.e. long periods of low interest rates) increases bank risk taking**

Economic approach
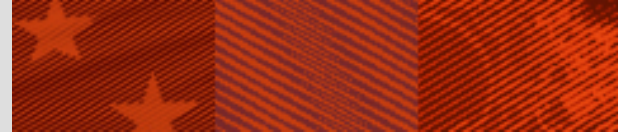
- **There is ample evidence of looser credit standards during expansions**
    - Riskier loans granted when credit expands fast
    - Under-pricing of credit risk
- **Banking supervisors' concerns are well rooted both in theoretical and empirical ground**
- **Need of a tool to cope with the potential problems due to rapid credit growth/under-pricing of risk**

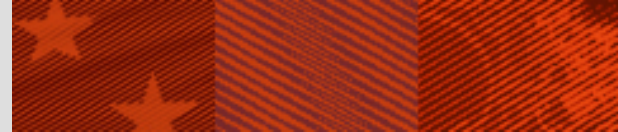- **One answer is dynamic provisions**

Loan loss provision ratio, problem loans ratio and GDP growth rate

**LOANS LOSS PROVISION RATIO, PROBLEM LOANS RATIO AND GDP GROWTH RATE**

GDP GROWTH RATE (RHS)

LOANS LOSS PROVISION RATIO (LHS)

PROBLEM LOANS RATIO (LHS)
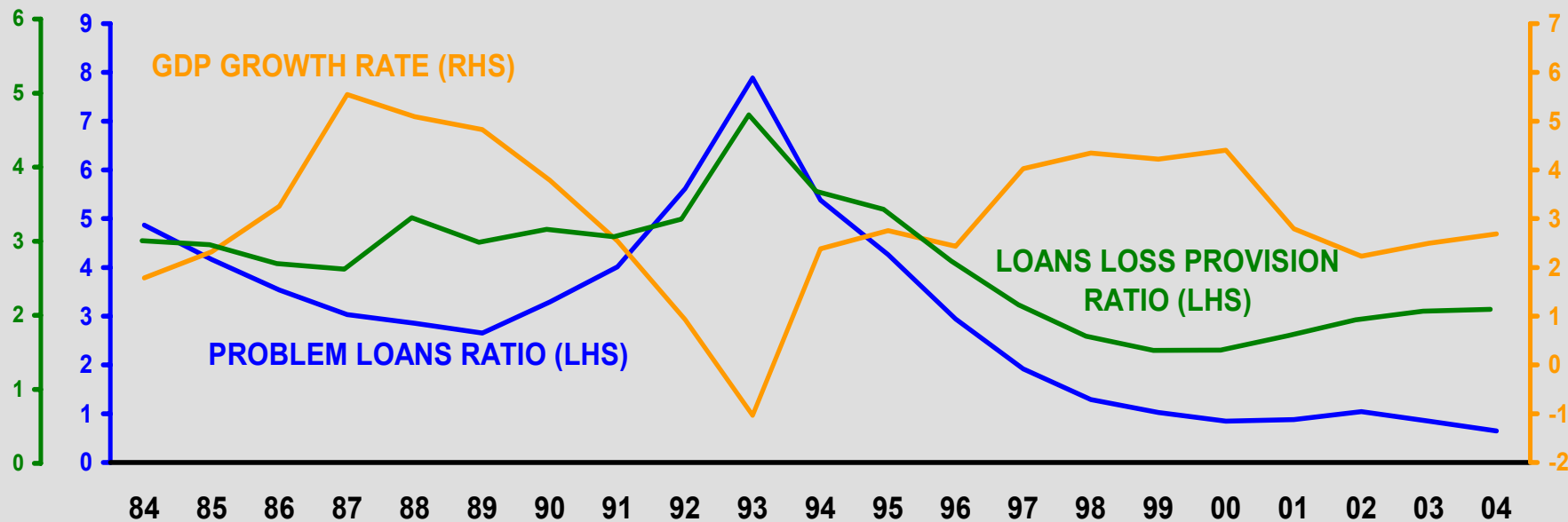
Accounting framework

- **The provisioning framework refers to the "collective assessment for impairment"**

- **Banco de España (BdE) provides a model based on the historical credit loss information obtained from our Credit Register**

  - *Information for homogenous groups of loans (credit cards, mortgages, loans to SMEs, loans to governments,…)*

- **BdE model applies to cover incurred losses only for credit activity in Spain**

  - not possible to apply Spanish parameters to loans granted abroad by Spanish banks

Accounting framework
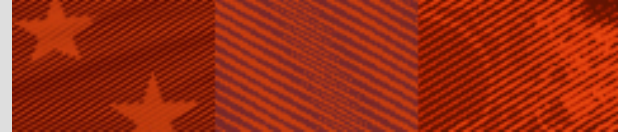
- **Banks must make provisions against the credit growth according to parameter α which is the average estimate of the credit loss ("collective assessment for impairment" in a year neutral from a cyclical perspective)**

- **α varies across six homogeneous groups of loans according to our historical information on credit losses**

- **As credit risk or incurred losses not yet identified in a specific loan translate into specific loan losses at a different speed depending on the business cycle, α is supplemented by a β parameter**

Accounting framework

- β **is the historical average specific provision of each group of loans. By comparing β with the current level of specific provisions, banks can assess the speed at which "unspecific" (collective) incurred losses evolve into specific losses for individual assets**

- **In periods of expanding credit risk/under-pricing of risk/increase in incurred collective losses the difference is positive, so is the second component of the general provision**

- **In periods when specific losses are much more easily identified in individual loans, the difference reverses and thus this component subtracts from the α component and may cause the generic provision fund to be drawn down**

- **The Spanish general provision also includes a cap in the amount of the general fund being build up**
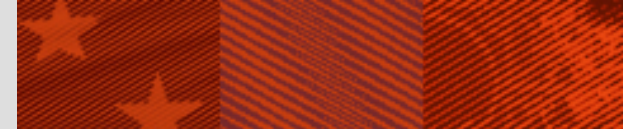 - to avoid excess provisioning

Specific mechanics

- **Currently, we have specific provisions and general provisions**
- **General provisions are set aside according to:**

$$dot.gen_t = \alpha \Delta C_t + (\beta - \frac{dot.espe_t}{C_t})C_t$$

- **Ct is the stock of loans and ΔCt its variation**
- **α which is the average estimate of the credit loss**
- **β is the historical average specific provision**

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Specific mechanics

- **The former formula is a simplified way of presenting things**
- **In fact, α and β are assigned according to the six risk buckets or six homogeneous risk categories**
- **The parameter vectors are:**

  (0%; 0.6%; 1.5%; 1.8%; 2%; 2.5%) for α

  (0%; 0.11%; 0.44%; 0.65%; 1.1% y 1.64%) for β
- **Six homogeneous groups:**

  1. zero risk (cash, public sector debt)

  2. home mortgages with LTV below 80%, corporates with rating A or above

  3. loans with real guarantees and home mortgages with LTV above 80%

  4. rest of loans, including corporates and SMEs

  5. consumer durables financing

  6. credit cards and overdrafts

Specific mechanism

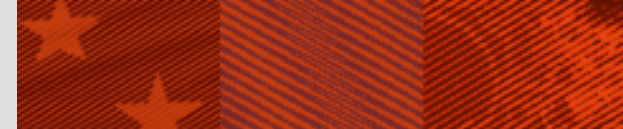- **The formula of the new general provision is:**

$$dot.gen_t = \sum_{i=1}^{6} \alpha_i \Delta C_{it} + \sum_{i=1}^{6} \left(\beta_i - \frac{dot.espe_{it}}{C_{it}} \right) C_{it} = \sum_{i=1}^{6} \alpha_i \Delta C_{it} + \left(\sum_{i=1}^{6} \beta_i C_{it} - dot.espe_t \right)$$

- **There is no need to know which is the exact position in the cycle. That is endogenously provided by current specific provisions that, by definition are closely tied to non-performing loans, a variable closely linked to the lending and the business cycle**

- **It is easy to look backwards and stablish the length of the last lending cycle and, therefore, the average of the cycle specific provision (the β)**

Transparency
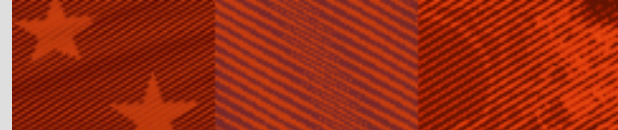
- **Banks are required to disclose the amount of the dynamic provision, apart from the specific provision**

- **Thus, users of accounting statements can "undo" the impact of the dynamic provision on the P&L**

- **Our aim is that financial statements (balance sheet and, in particular, the P&L) properly reflect the true financial situation on the bank**

  - To recognize the credit risk/losses when they appear

    - **Avoid biases in profits, dividends, and bonuses**

  - To deliver the proper incentives to investors
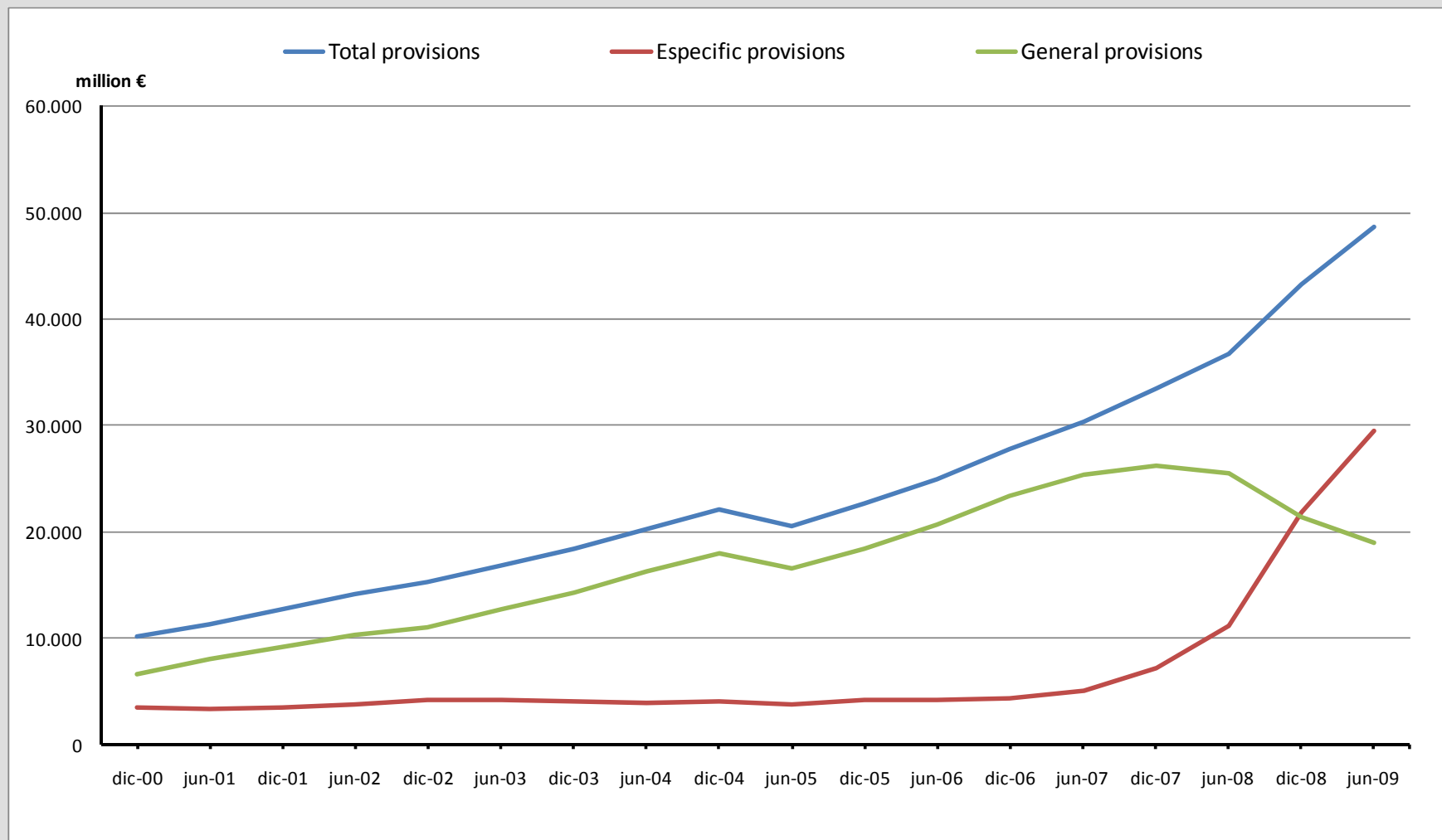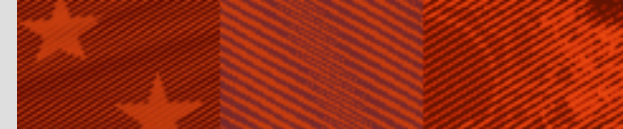
    - **As well as to bank managers**
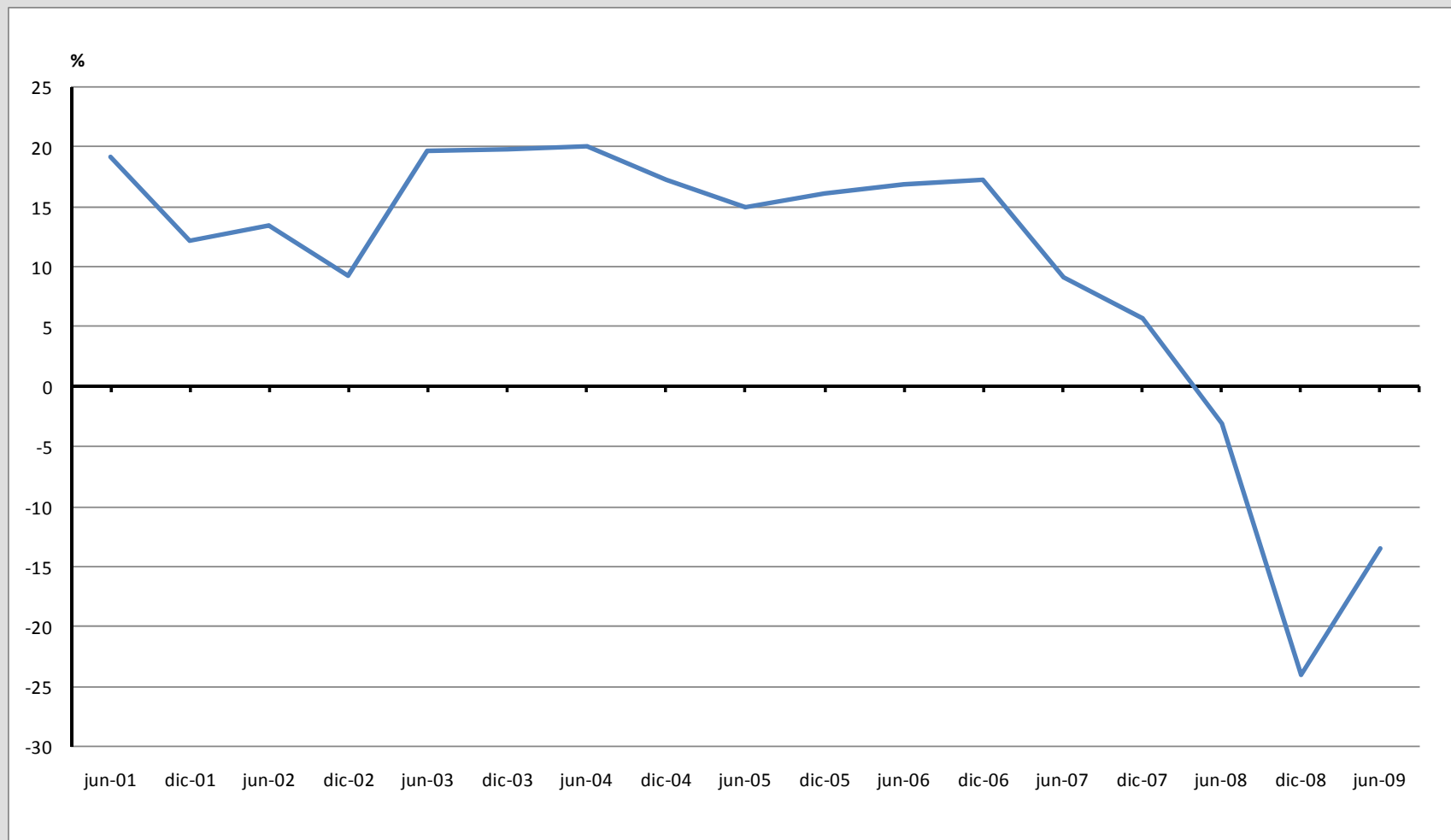
Lending cycle and NPL in Spain
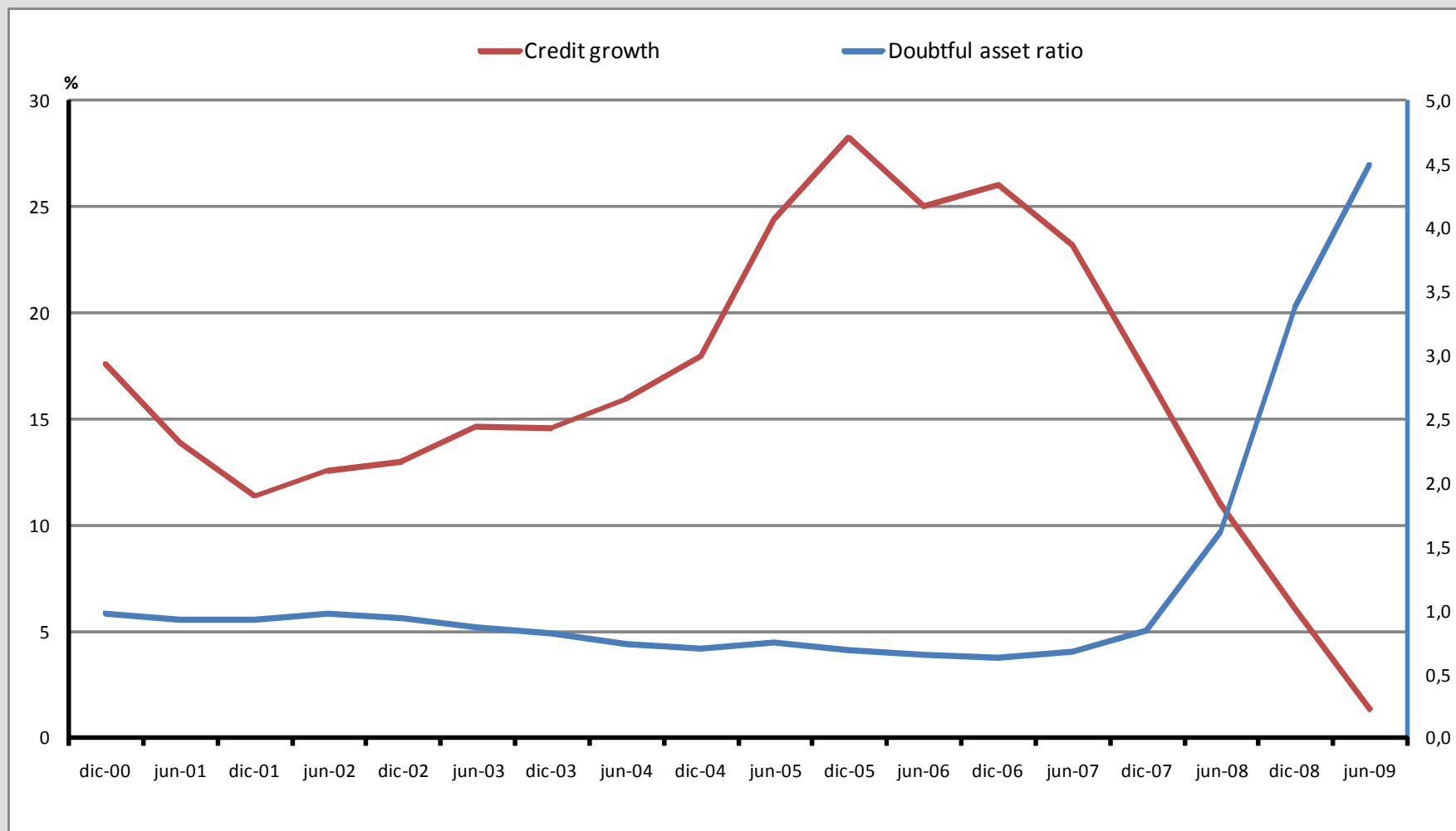
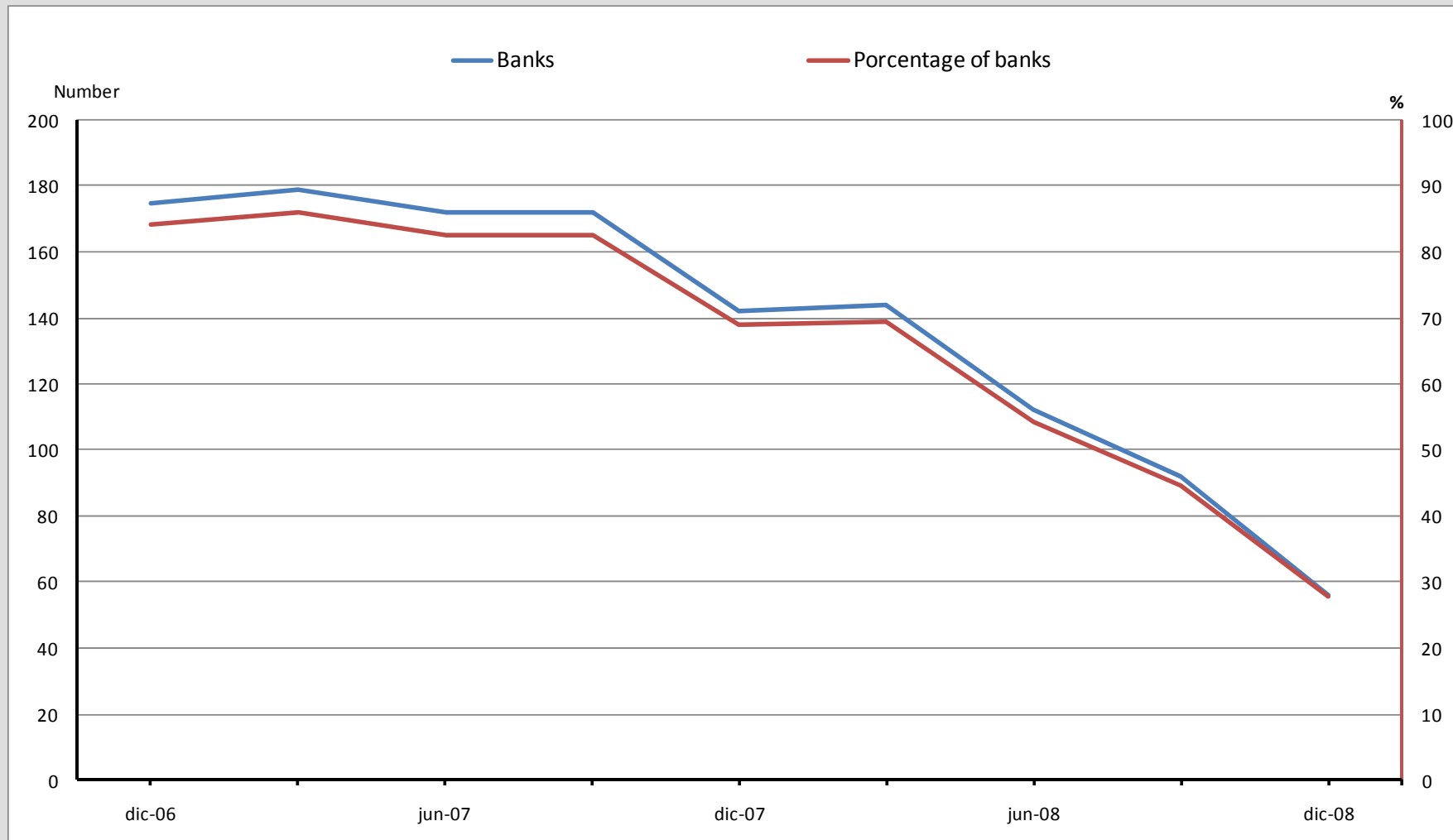# Flow of provisions as a %of total loans
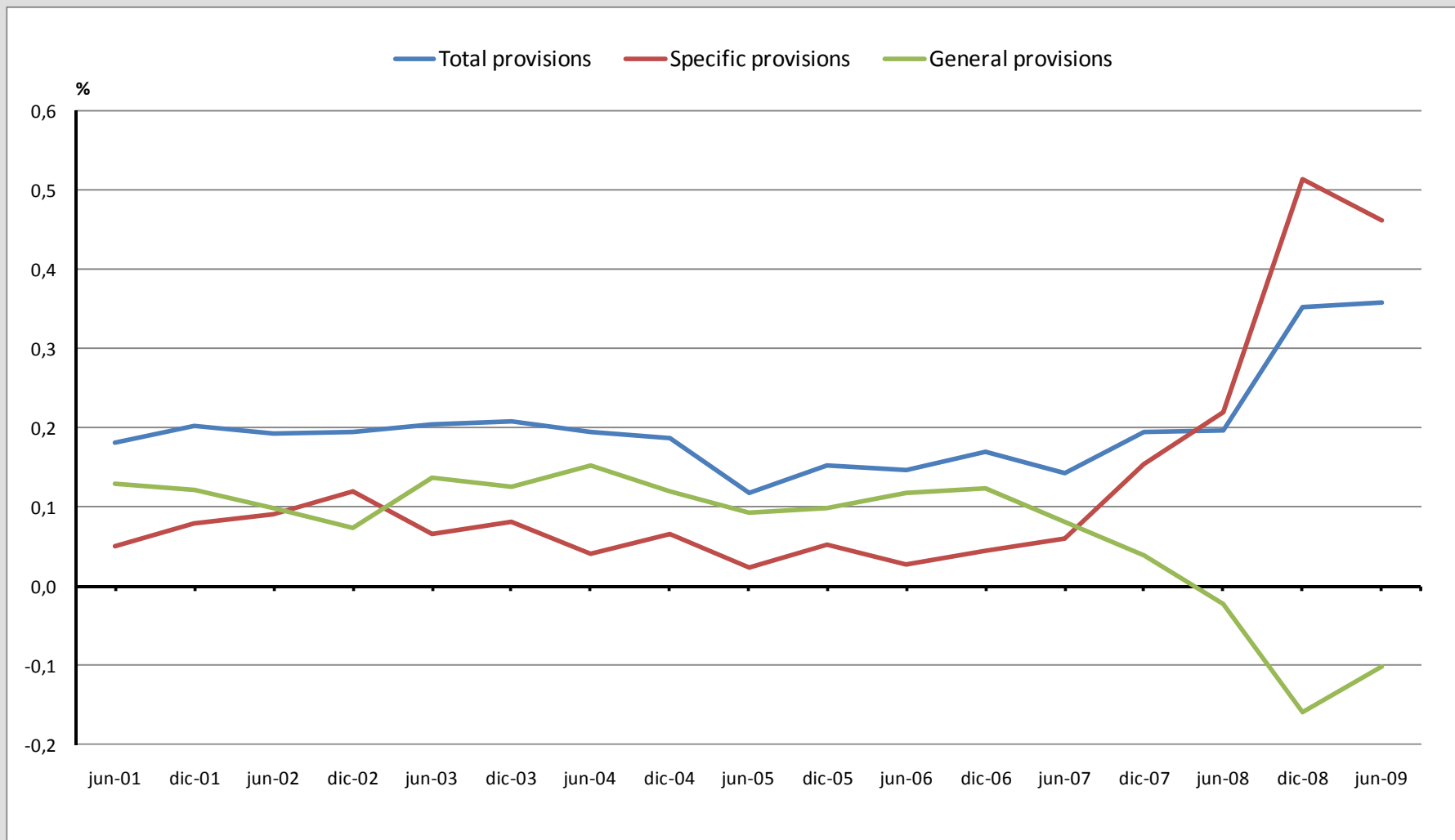
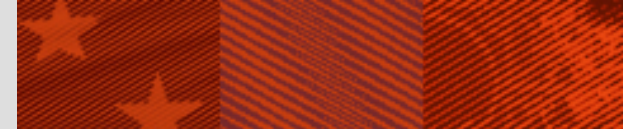# Provision funds: Specific, General and Total

General Loan Loss Provisions over Net Operating Income.

Number of banks (left) and % of them (right) that reach the limit of the statistical/general fund

Fact sheet

- **Total loan loss provisions at a consolidated level at the end of 2007 were 1.33% of total consolidated assets**

- **The ratio of bank capital and those total assets was 5.78%**

- **At the end of 2007, Spanish banks at a consolidated level had 1.20% of general provisions over total credit granted**

- **The ratio of general provisions to credit subject to** positive **dynamic provisioning requirements was 1.44% at the end of 2007 at a consolidated level**

- **The ratio of general provisions over total credit subject to the dynamic provision at the end of 2007 for** individual balance sheets **was 1.22%**

- **If we exclude those exposures with 0% weighting, the coverage ratio climbs to 1.59%**

- **For non-consolidated data in Spain, the generic provisions were78.9% of total provisions at the end of 2007**
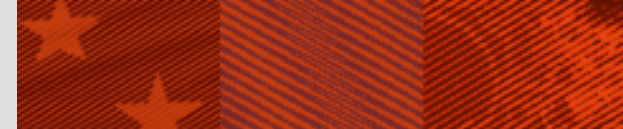
Accounting issues

- **Earnings management ("build up cookie jars"): NO**
  - Dynamic provisions are fully transparent
  - The system is rules-based: increases comparability across banks
  - There is a cap on the amount of the dynamic fund
- **Deliver accurate information to investors about firm's financial position in both income generation and risk taking: YES**
- **The G-20 Leaders' Statement at the London Summit in April 2009 called for accounting standard setters to work urgently with supervisors and regulators to improve standards on valuation and provisioning**
- **Currently, it is still unclear the final outcome of possible accounting changes for provisions**
- **Provisions do not apply to the trading book: valuation reserves**

Macroprudential tools
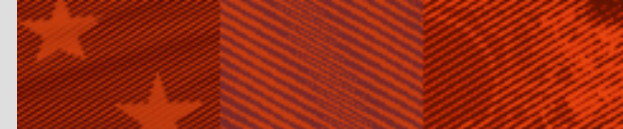
- **Dynamic provisions are part of the toolbox for macroprudential supervision**

- **The buffer banks build up through dynamic provisions in the upturn proves very useful when losses arrive in the recession**

- **Thus, dynamic provisions increase the resilience of each individual bank and that of the whole system**

- **However, it is not possible to ask dynamic provisions to play the role of other instruments**

- **A tool like dynamic provisions has not been able, apparently, to tame the lending cycle**

  - Counterfactuals are not possible in economics

  - We do not know what credit growth Spain would have had without them…but credit growth was strong

  - It is difficult, even *ex post* to argue for requiring more stringent parameters (15% of net operating income)

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Macroprudential tools

- **Dynamic provisions are basically a tool to enhance the solvency of banks through the proper coverage of inherent losses**
- **The management of the lending cycle should be done using other instruments**
  - the mixture of monetary and fiscal policies
- **You cannot ask too much to dynamic provisions**
- **If monetary policy leans more against the wind…**
  - taking into account developments in asset prices and credit
- **…lending cycles may be better tamed…**
- **…complementing any measure that could be taken from the regulatory or supervisory side**
  - control over lending standards, countercyclical provisions and capital

Data requirements for dynamic provisions

- **Spanish provisions are based on detailed information about credit losses from the Credit Register**

- **The better the information, the more accurate a system of provisions is**

- **But the lack of a credit register does not dismiss dynamic provisions**

- **Supervisors with no credit register can rely on private credit bureau information**

- **If there is no central source of information about credit losses, supervisors can use banks' own information**

Data requirements for dynamic provisions
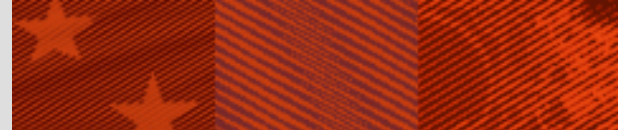
- **Even in the worst case, when banks have not stored information on losses…**
- **it should still be possible to collect data of the overall loan loss provisions figures over the business cycle**
- **With this information, a dynamic provisioning scheme can be simulated and adjusted to produce reasonable results:**
  - with regard to its impact on the P&L account and
  - on the amount of provisions to be raised
- **Even where supervisors have full information, this reality check is important**
- **The Spanish system is simple and can be easily replicated in jurisdictions with much less information**
- **Dynamic provisioning system should be created during a period of credit growth**

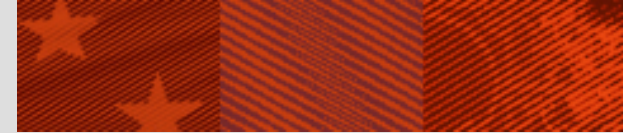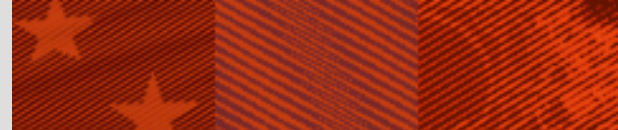BANCO DE **ESPAÑA**
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Conclusions

- **The Spanish system allows for an earlier detection of credit losses building up in the banks' loan portfolio**

- **It is a transparent system (rules-based, formula based, with disclosures)**

- **Early warning system for financial statement users**
  - it signals the build up of credit risk and credit losses
  - It delivers the proper information to investors to gauge the true financial condition of the firm

- **The proper recognition of the increase in credit risk/collective incurred losses since the inception of the dynamic provision, has been very useful for Spanish banks under the current crisis…**

- **… although it is not a silver bullet**

Procyclicality of Basel II
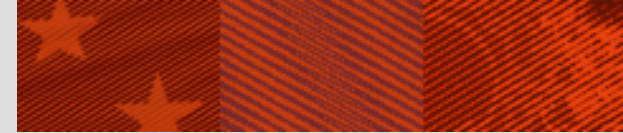
- **Concern: risk-sensitive bank capital regulation (i.e. Basel II) may amplify business cycles**

- **In particular, contraction in loan supply in downturns due to**

    - **Capital requirements under Basel II are an increasing function of PD, LGD and EAD, all likely to rise in a downturn**

- **Will capital buffers neutralize this effect?**

    - **Difficult to issue new equity or to increase earnings retention as well as to switch to other sources of funding**

- **Rationale for cyclical adjustment of capital requirements**

Procyclicality of Basel II

- **How should the cyclical adjustment of Basel II be made?**

  - **The devil is in the details**

- **Two basic alternatives:**

  - **Smooth the inputs of the Basel II formula**

    - **Through-the-cycle (TTC) ratings/PDs**

  - **Smooth the output with point-in-time (PIT) ratings/PDs**

    - **Using aggregate (i.e. macro variables) or individual bank information**

Strategy of the analysis

- **Repullo, Saurina, Trucharte (2009)**

- **Estimate a model of probabilities of default (PDs)**

  - **Data on Spanish firms' loans for the period 1984-2008**

  - **Credit Register of Banco de España (CIR)**

- **Compute corresponding Basel II capital requirements**

- **Smooth cyclical behavior using as a benchmark the Hodrick-Prescott (HP) filter**

  - **Still risk sensitive capital requirements along time**

- **Compare different smoothing procedures**

  - **Minimization of the distance to the HP benchmark**

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PIT Capital requirements

- **Using the parameters of the model, we obtain a yearly borrower PD estimate**

- **We plug the PD estimate into Basel II capital formula for corporate exposures, assuming a 45% LGD and 1 year maturity**

- **We add up PIT capital requirements per borrower for each year**

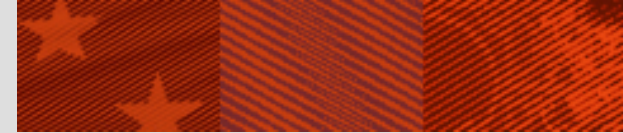# PIT capital requirements & GDP growth
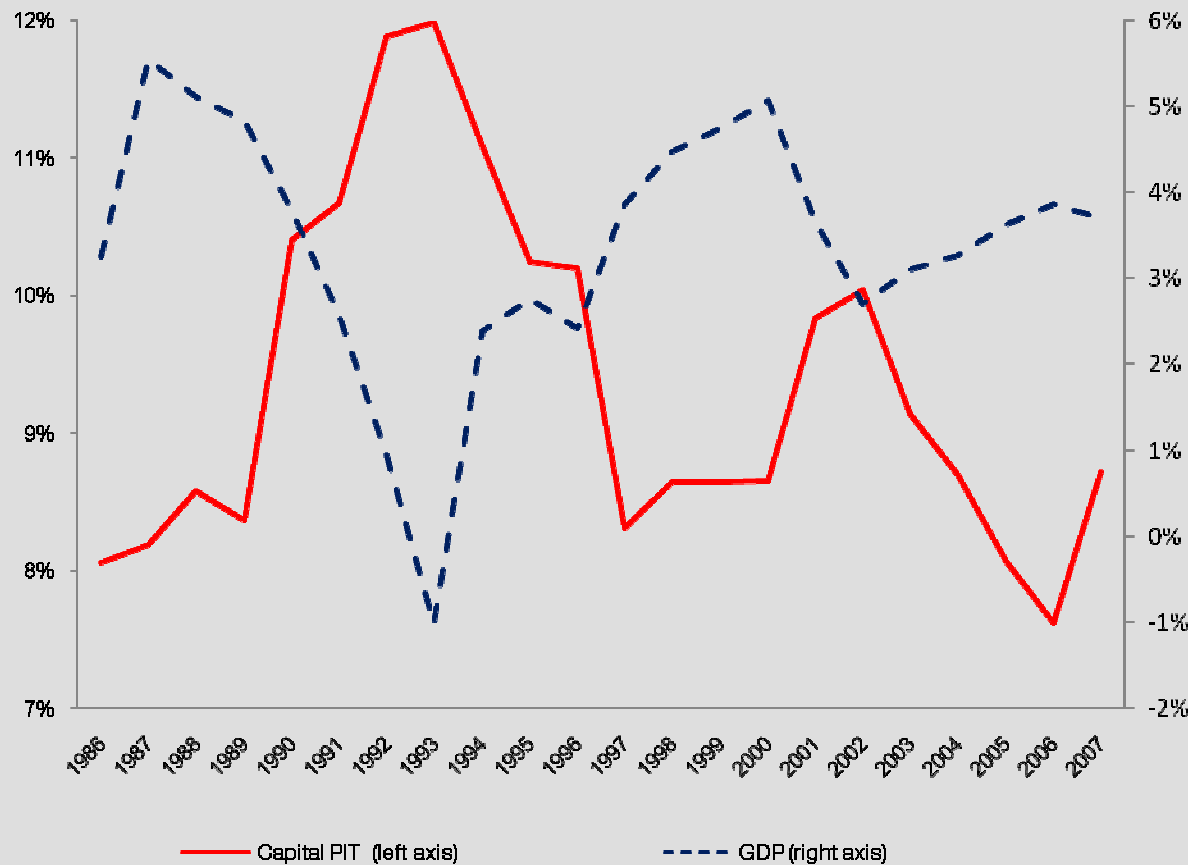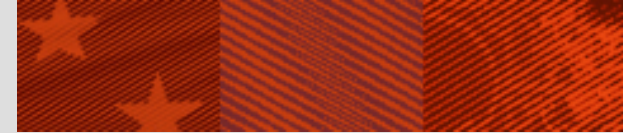
The Hodrick-Prescott (HP) benchmark
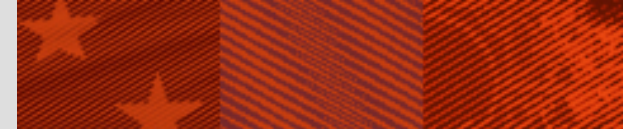
- **To identify a trend in the PIT capital requirements series we apply a Hodrick-Prescott (HP) filter**

- **The trend filters out the cyclical movements in the capital requirement series, being below the series in bad times and above the series in good times**

- **To provide a benchmark for the comparison of different alternatives to mitigate the cyclicality of Basel II requirements**

- **Standard filter for time series variables**

- **Capital requirements according to the HP filter are still risk-sensitive along time**

Smooth Basel II capital requirements
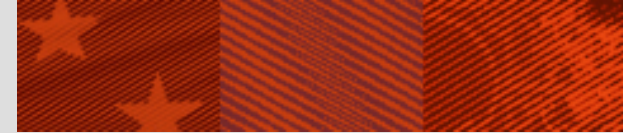
Smoothing the inputs: TTC approach
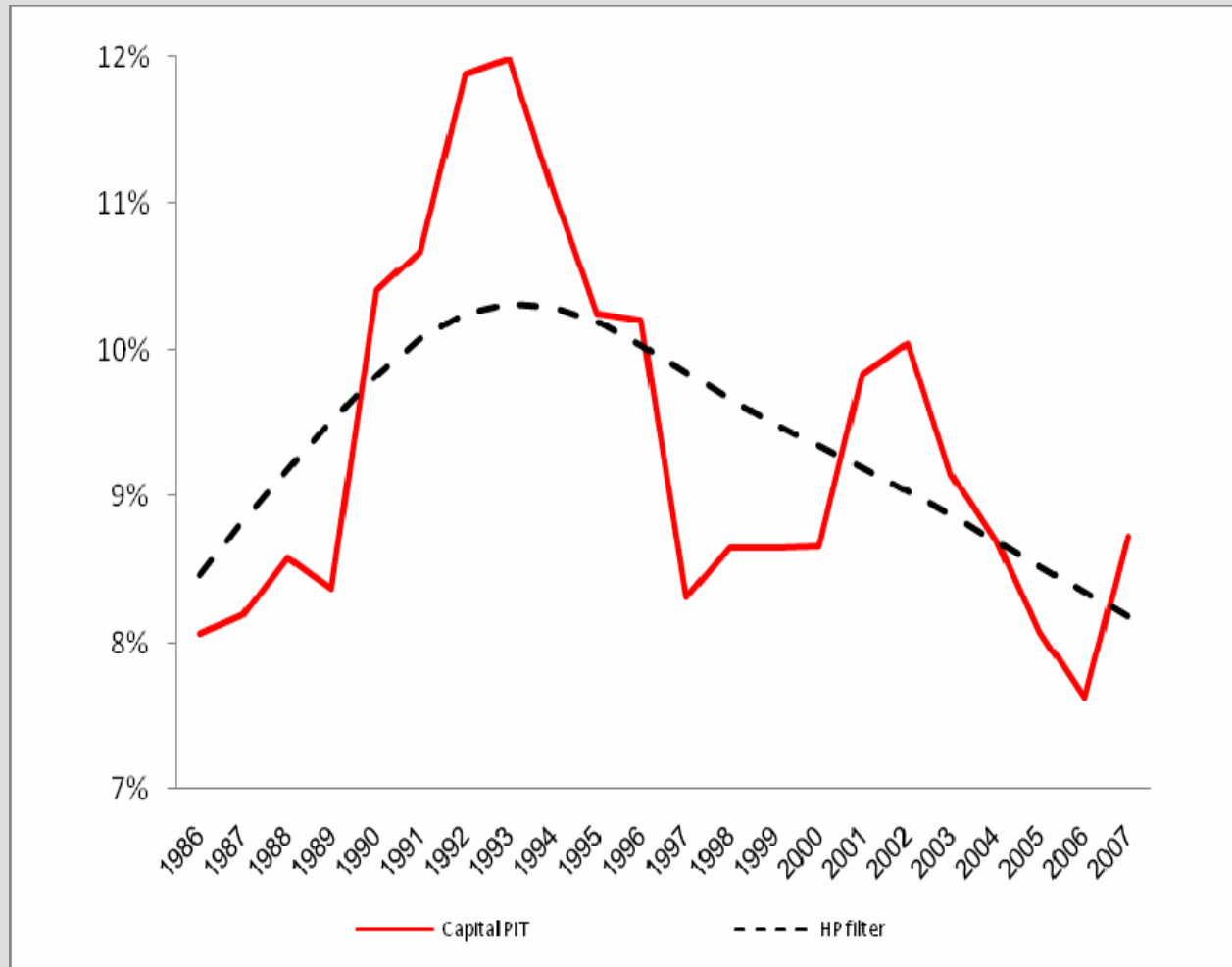
- **Use logit model to estimate through-the-cycle (TTC) PDs**

  - **Replace current macroeconomic controls by their average value over the sample period**

- **Compute Basel II capital requirements using**

  - **Basel II formula for corporate exposures**

  - **Estimated TTC PDs for each firm**

  - **LGD = 45%**

  - **Maturity = 1 year**

- **Obtain TTC capital requirements per unit of exposure**

Smoothing the inputs: TTC PDs

Mortgage portfolios; PIT vs TTC
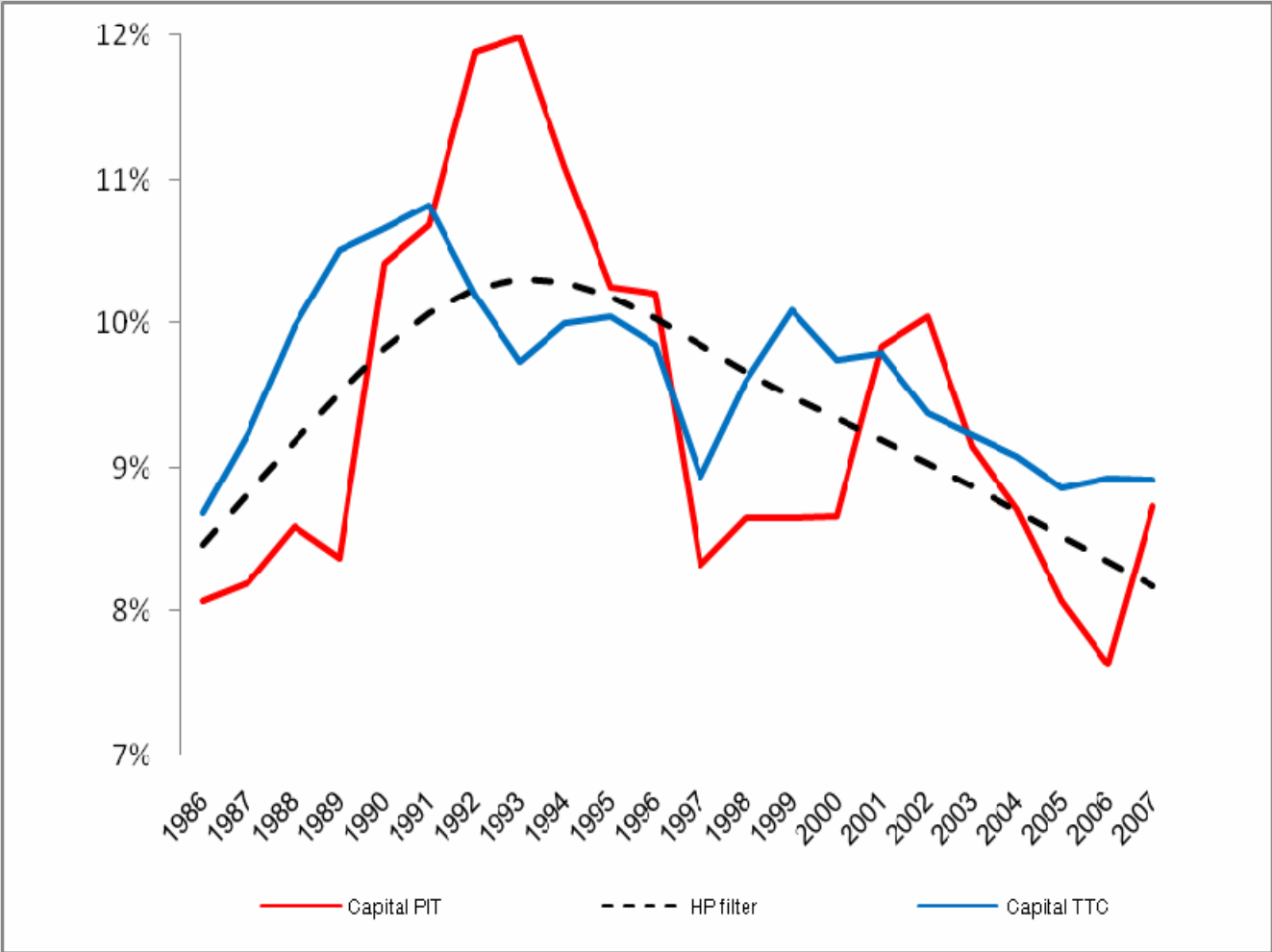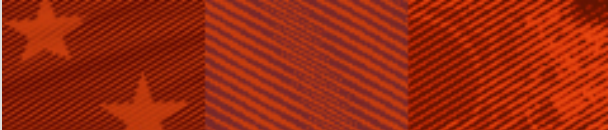
- **Saurina and Trucharte (2007, JFSR)**

Smoothing the output: multiplier approach
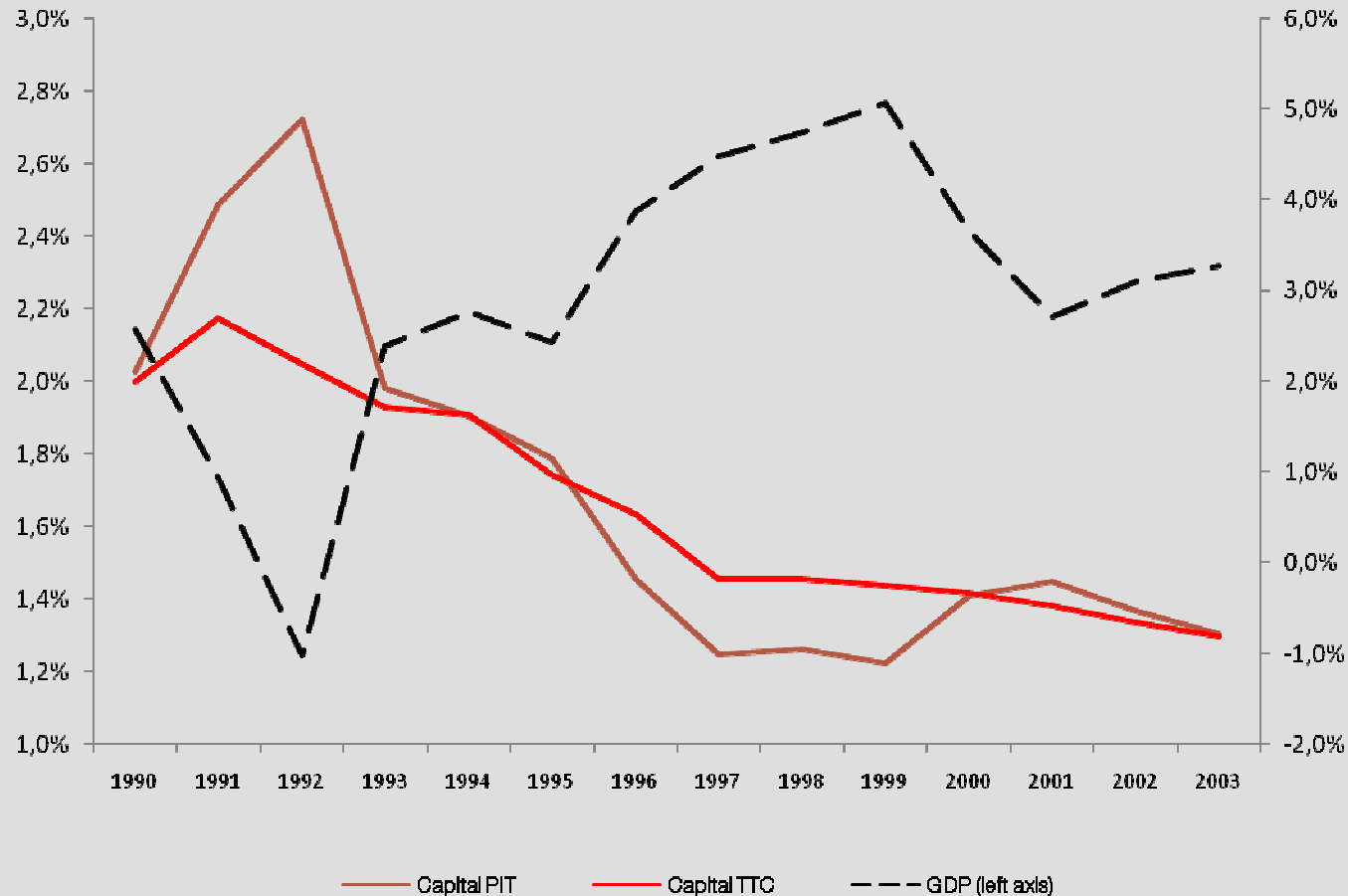
- **Smooth PIT capital requirements series by multiplier**

$$\hat{k}_t = \mu_t k_t$$

where k_t is the PIT capital series and $\hat{k}_t$ is the smoothed one

- **Proposed business cycle multiplier**

$$\mu_t = \mu(g_t, \alpha) = 2\Phi\left(\frac{\alpha(g_t - \overline{g})}{\sigma_g}\right)$$

If $g_t = \overline{g}$ then $\mu_t = 2\Phi(0) = 1$

If $g_t \to +\infty$ then $\mu_t \to 2$ and if $g_t \to -\infty$ then $\mu_t \to 0$

Smoothing the output: multiplier approach

- **Criterion for choice of α (for each proxy g of the business cycle)**

    - Minimize RMSD of adjusted series with respect to HP benchmark

- **Results**

GDP growth	RMSD= 0.00536
Bank credit growth	RMSD= 0.00657
Stock market returns	RMSD= 0.00813
TTC PDs	RMSD= 0.00553

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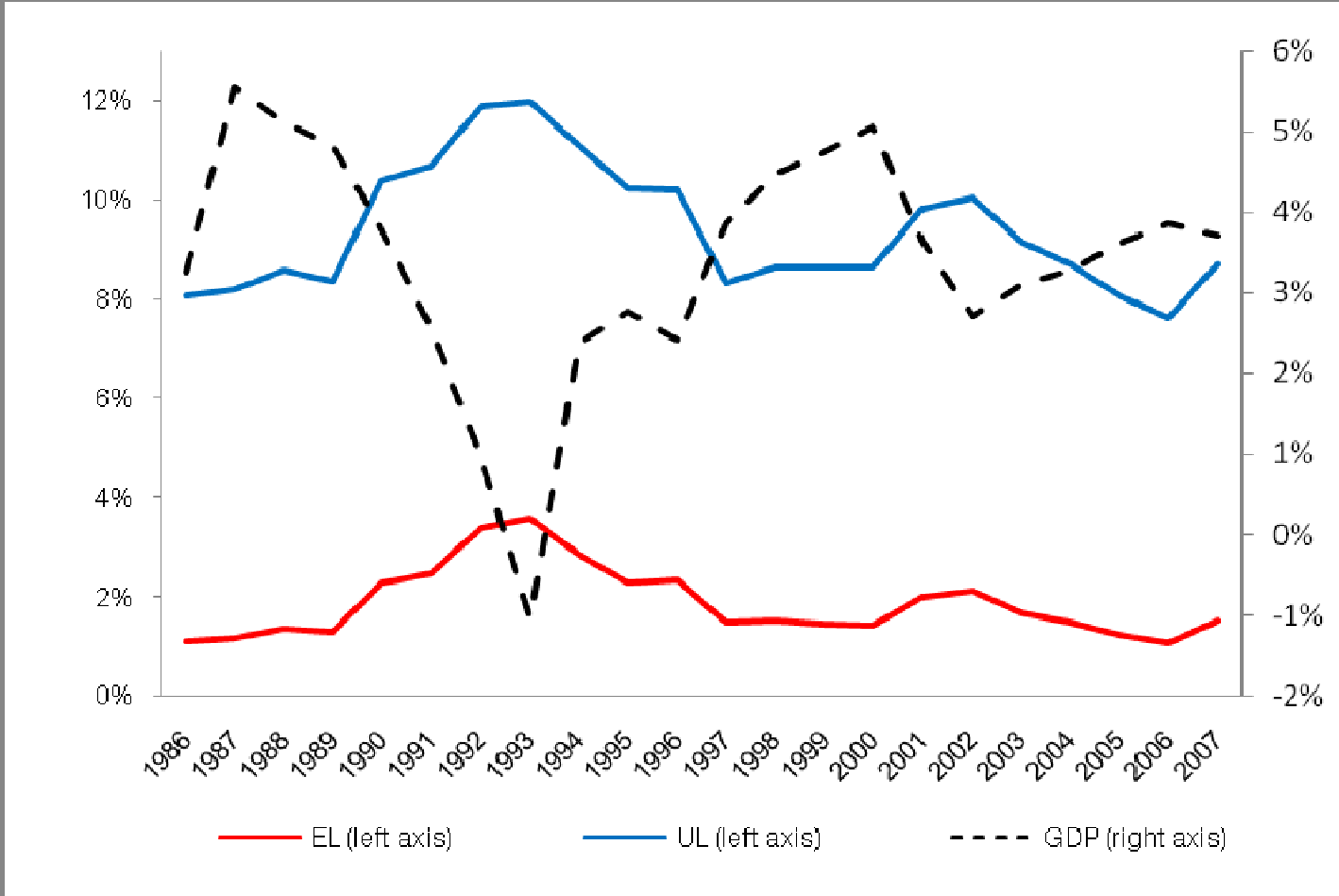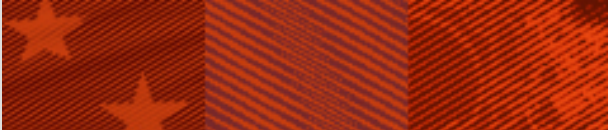# Smoothing the outputs: GDP adjustment
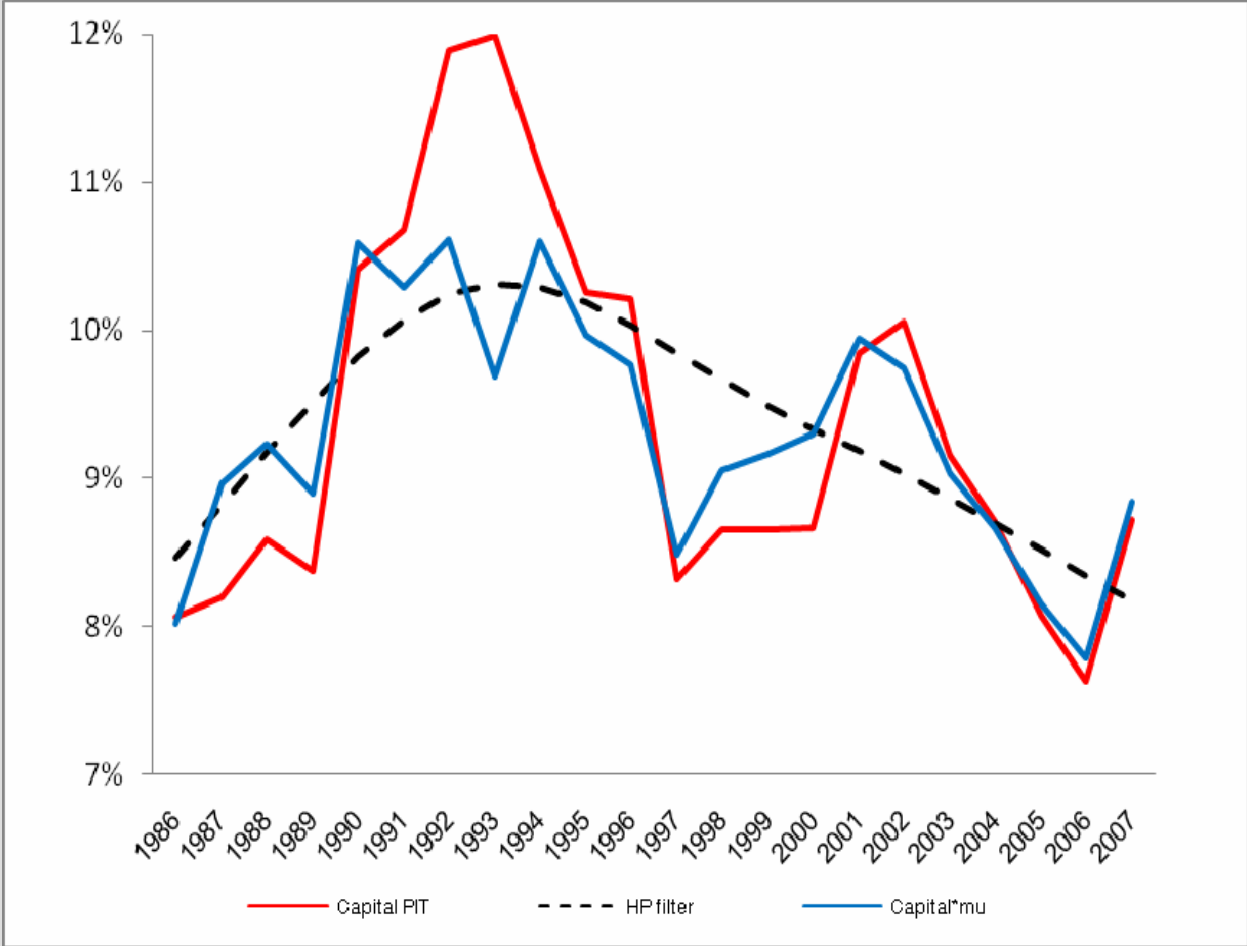
Other adjustments

- **There are many other proposals on the table:**

  - **Use LLP, profits, credit market information**

  - **Not a better adjustment and some problems:**

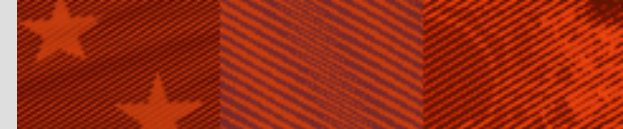   - **Ample evidence of earnings management**

- **Results**

LLP/total loans	**RMSD= 0.00766**
ROA	**RMSD= 0.00753**
ROE	**RMSD= 0.00701**
VIX	**RMSD= 0.00792**

Extensions-EL vs UL

Concluding remarks

- **Question: How should cyclical adjustment of Basel II be made?**

  - **Benchmark for comparing different procedures**

- **Use a TTC system/Use a simple multiplier based on GDP growth**

- **Use a downturn PD if risk-sensitivity along time is not a concern but you still want to have risk-sensitivity in the cross section**

- **Procedure could also be applied to expected losses**

  - **Rationale for (Spanish) dynamic provisioning mechanism**

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THANK YOU FOR YOUR ATTENTION

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