Education session by Bank of Spain Representatives (José María Roldan and Jesús Saurina):

Dynamic Provisioning in Spain

Dynamic provisioning in Spain

Dynamic provisions

- **Two approaches to dynamic provisions**
  - **Economic approach**
  - **Accounting approach**
- **Both are consistent and complementary, reinforcing each other**
- **Dynamic/statistical/general loan loss provisions**
  - **The substance much more important than the name**

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**
- **Take into account the transition from collective assessment of losses to individually identified losses**
- **Based on extensive research and statistics on historical loan loss experience for bank loan portfolios in Spain**
- **Transparent mechanism**

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**

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**

Economic approach

- **There is ample empirical 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**

Accounting framework

- **The provisioning framework in Spain refers to the "collective assessment for impairment"**
- **Regulation requires institutions to develop internal methodologies to estimate impairment in the loan portfolio (whether specific transactions or collective assessment)**
- **For banks which do not have their own model, Banco de España (BdE) provides a model based on the historical credit loss information obtained from the BdE's Central Credit Register**
- **Banks are developing their own models to calculate loan loss provisions, but they have not been verified by Banco de España yet**

Accounting framework

- **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**
- **BdE model is a statistical model**
- **BdE model uses historical information to set out provisioning levels at the balance sheet date**
- **The model uses historical loss data information for homogenous groups of loans**
  - **Credit cards, mortgages, loans to SMEs, loans to governments,…**
  - **Historical means a full lending cycle**

Spanish provisioning model vs the IFRS

- The Spanish dynamic provisioning model refers to the "collective assessment for impairment"
- The key assumption is the transition from the collective assessment to the individually impaired assets and specific provisions
- In the BdE model it is assumed that during periods of intensive credit risk increase (under-pricing of risk/increase in incurred losses), it takes longer for provisions to transit from collective assessment to specific provisions
- In other periods, the individually impaired assets are easily identified and the transition period from collective assessment to specific provision is shorter
- We believe that, although IAS 39 does not specifically address this issue, it does not rule out this assumption

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
- … as well as a floor
  - to cover incurred losses not yet individually identified even in a recession

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 in a year neutral from a cyclical perspective**
- **β is the historical average specific provision**

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**

Cohort example

- **We present a very simple exercise to show how loan loss provisisons work in Spain**
- **It is based on a set of restrictive assumptions**
- **With this exercise we try to respond to the following question:**
  - **"What happens to a cohort of 1,000 loans from the date they are granted to the day the last one is paid back or defaults?"**

The Cohort Model

- **Assumptions :**

  - At t=1 the Bank starts its business with a portfolio of 1,000 homogeneous loans with a nominal value of 100 currency units (CU) each. Thus, the bank begins with a value of its portfolio of 100,000 CU

  - All loans are classified in an homogeneous group of risk (uncollateralized loans to firms), with an associated α parameter of 1.80% and a β parameter of 0.65%

  - Every loan is amortized by a constant amount that derives from a French amortization system with a fixed interest rate (of 6%) and a fixed maturity (of 10 years)

  - This is a simple way to "close" the loan book in 10 years

The Cohort Model

- Dynamics for impairments: Every period a proportion of p_t loans becomes impaired. Of these loans, a proportion of q (fixed to 60%) remains impaired the next year. Of these impaired loans, again a proportion of q loans remains impaired. At the end of the second year impaired, the remaining amount is considered a loss, and it is dropped out of the balance sheet of the bank (i.e. it is not possible to recover any left amount of the impaired asset in the future)

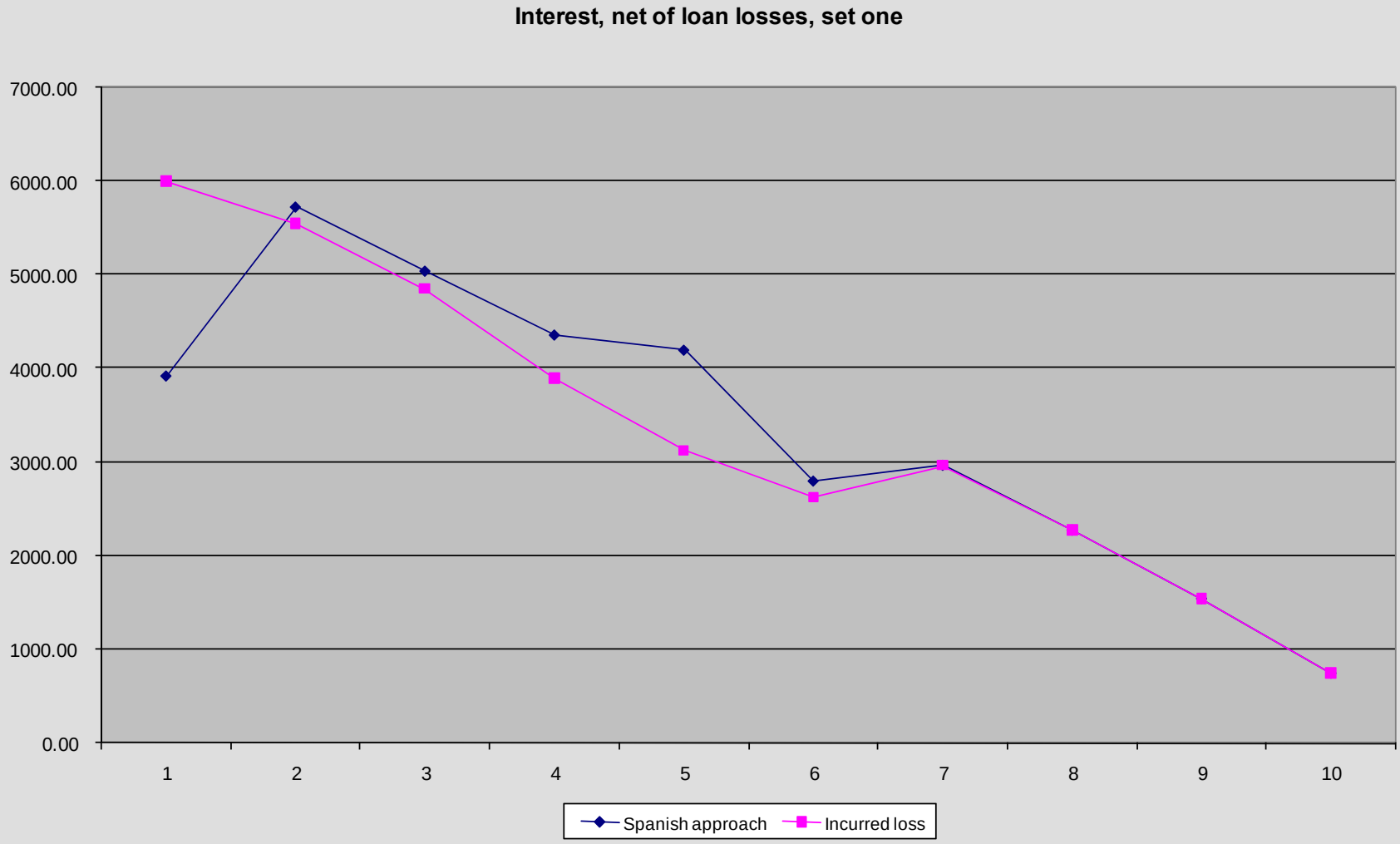
- The specific provision is assumed to be equal to 25% of the total amount of the impaired loan the first year that it is classified as doubtful. This proportion increases to 100% the second year

The Cohort Model

Year	Loans (Number)	Beginning Loans (CU)	Ending Loans (CU)	p	Cumulated Losses (CU)	NPL (%)	Specific Provision (CU)	Specific Fund (CU)	αΔLoans (CU)	βLoans (CU)	Theoret. General Prov. (CU)	Theoret. General Fund (CU)	αLoans (CU)	General Prov. (CU)	General Fund (CU)	(Spec.+Gen.Fund)/ Loans (%)
							Specific Provision							General Provision		
1	1,000	100,000.0	92,413	0	0	0.00	0	0	1,663	601	2,264	2,264	1,663	2,079	2,079	2.25
2	1,000	92,413.2	84,371	0	0	0.00	0	0	-145	548	404	2,483	1,519	-181	1,898	2.25
3	1,000	84,371.2	75,932	1	0	1.11	211	211	-152	494	131	2,029	1,367	-190	1,708	2.53
4	1,000	75,846.7	67,088	2	0	2.90	740	866	-159	436	-463	1,245	1,208	-463	1,245	3.15
5	997	66,810.7	57,639	4	277	5.97	1,277	1,486	-170	375	-1,073	173	1,038	-1,073	173	2.88
6	991	57,232.5	47,303	2	783	5.55	1,424	1,809	-186	307	-1,303	-1,130	851	-173	0	3.82
7	978	47,079.7	35,846	1	1,769	2.94	578	735	-206	233	-551	-551	645	0	0	2.05
8	972	36,317.7	24,323	0	2,170	0.97	177	235	-207	158	-226	-226	438	0	0	0.97
9	969	24,909.9	12,420	0	2,342	0.00	0	0	-214	81	-134	-134	224	0	0	0.00
10	969	12,817.7	0	0	2,342	-	0	0	-224	0	-224	-224	0	0	0	-

- **The cumulated final losses amount is close to the initial theoretical general provision set aside in year 1 and also to the effective general fund established in year 1**

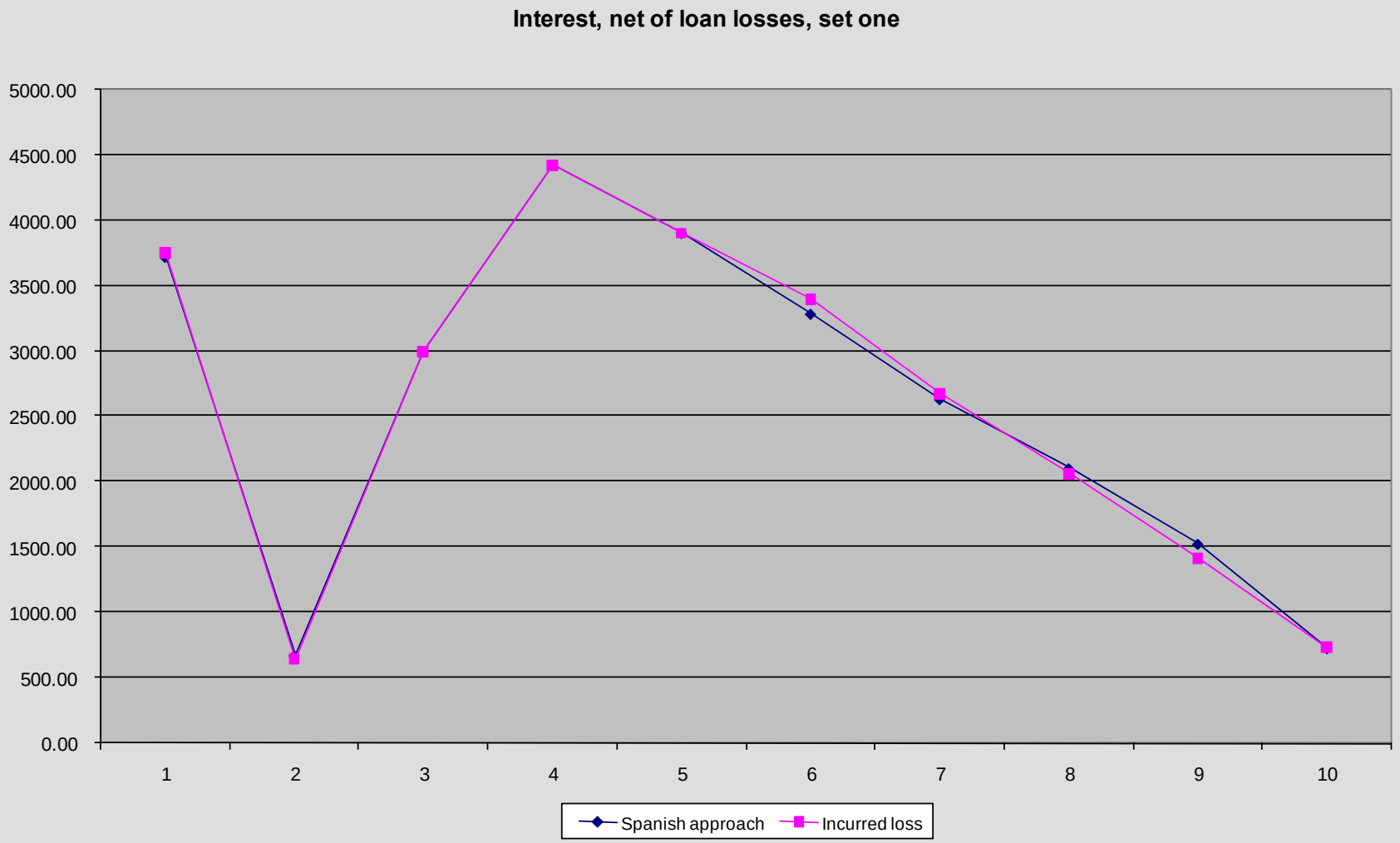
The Cohort Model



The Cohort Model

- The difference in the interest net of loan losses introduced by the Spanish approach is more important the first year
- The reason is that we are assuming that the bank starts from scratch without any previous general fund, thus, it is established the first year
- But it is also the result of the NPL profile assumed in the exercise
- If we start the loan portfolio in a less favorable environment, such as the current situation in many countries, the difference is much lower, if any
- Therefore, the difference in profits as a result of the introduction of a system of general provisions similar to the current one in Spain depends on the conditions of the lending cycle and, in any case, there seems to be a significant difference only in the first year

The Cohort Model-High initial NPLs



The Cycle Model

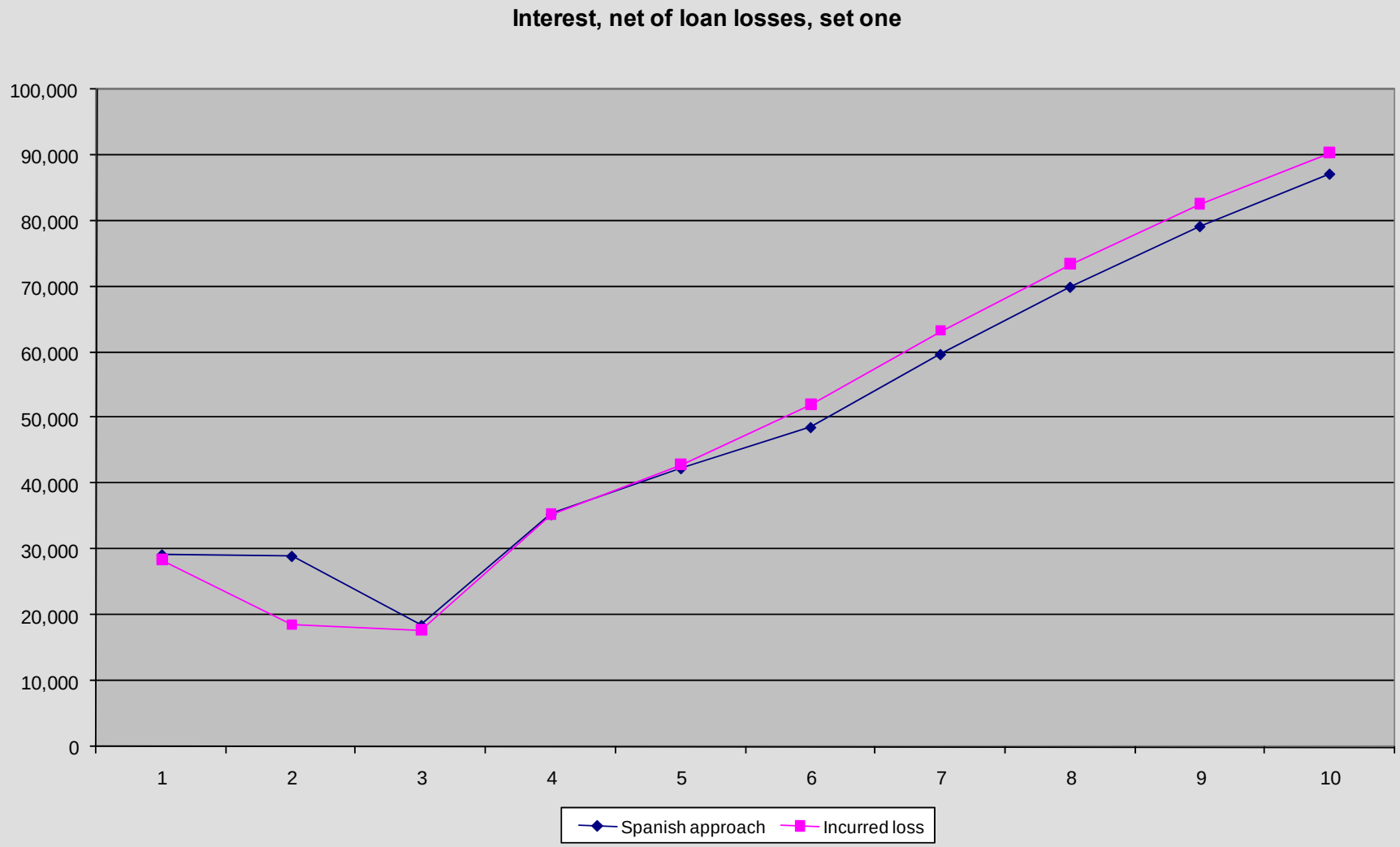
- **The cohort model is static. It is possible to introduce more dynamism in the loan portfolio, increasing its realism**
- **18 cohorts are considered, one by year. We have a kind of overlapping generation model where each generation is a cohort identical to the one described in the previous section**
- **The Bank starts its business at t=-6 with a portfolio of 1,000 homogeneous loans with a value of 100 currency units (CU) each. Until t=0 1,000 new homogeneous loans are granted every year. From year 1 onwards, the number of new loans granted is related to the economic conditions assumed**
  - **i.e. loans increase more in upturns than in downturns, thus, we have a lending cycle**

The Cycle Model

Year	Loans (Number)	Beginning Loans (CU)	Ending Loans (CU)	NPL (%)	Specific Provission		αΔLoans (CU)	βLoans (CU)	Theoretical General Prov. (CU)	Theoretical General Fund (CU)	αLoans (CU)	General Provission		(Spec.+Gen.Fund)/ Loans (%)
					Specific Provission (CU)	Specific Fund (CU)						General Prov. (CU)	General Fund (CU)	
0	6,997	523,754	525,298	1.38	2,321	4,681	855	3,414	1,948	12,699	9,455	1,068	11,819	3.14
1	7,988	560,072	563,040	3.41	5,100	8,288	679	3,660	-761	11,058	10,135	-761	11,058	3.44
2	8,776	564,982	571,967	7.48	14,234	19,453	161	3,718	-10,355	703	10,295	-10,355	703	3.52
3	9,761	579,317	587,876	5.83	16,005	27,684	286	3,821	-11,898	-11,195	10,582	-703	0	4.71
4	11,246	630,925	640,778	4.87	6,122	24,250	952	4,165	-1,005	-1,005	11,534	0	0	3.78
5	12,677	665,250	688,884	3.91	4,789	24,693	866	4,478	555	555	12,400	555	555	3.67
6	14,111	691,254	738,145	3.00	2,216	19,354	887	4,798	3,469	4,023	13,287	3,469	4,023	3.17
7	14,907	760,334	801,581	1.68	2,727	10,076	1,142	5,210	3,625	7,648	14,428	3,625	7,648	2.21
8	15,704	822,690	863,723	1.48	3,209	9,075	1,119	5,614	3,524	11,172	15,547	3,524	11,172	2.34
9	16,535	877,917	919,385	1.32	3,554	7,953	1,002	5,976	3,424	14,597	16,549	3,424	14,597	2.45
10	17,364	925,589	968,499	1.39	3,895	8,992	884	6,295	3,284	17,881	17,433	3,284	17,881	2.77

- **The general fund increases until year 0 but, starting in year 1, declines. The sudden and deep increase in specific provisions (i.e. a speed up of individually identified losses) explains the sharp decline in the general fund. The general fund starts to recover in year 6 when the recession is well behind and the portfolio growth resumes.**

The Cycle Model



Conclusions

- **The Spanish system allows for an earlier detection of credit losses building up in the banks' loan portfolio**
- **It is a transparent system (rule-based, formula based, with disclosures) and provides information that is comparable across banks**
- **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**

ANNEX

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

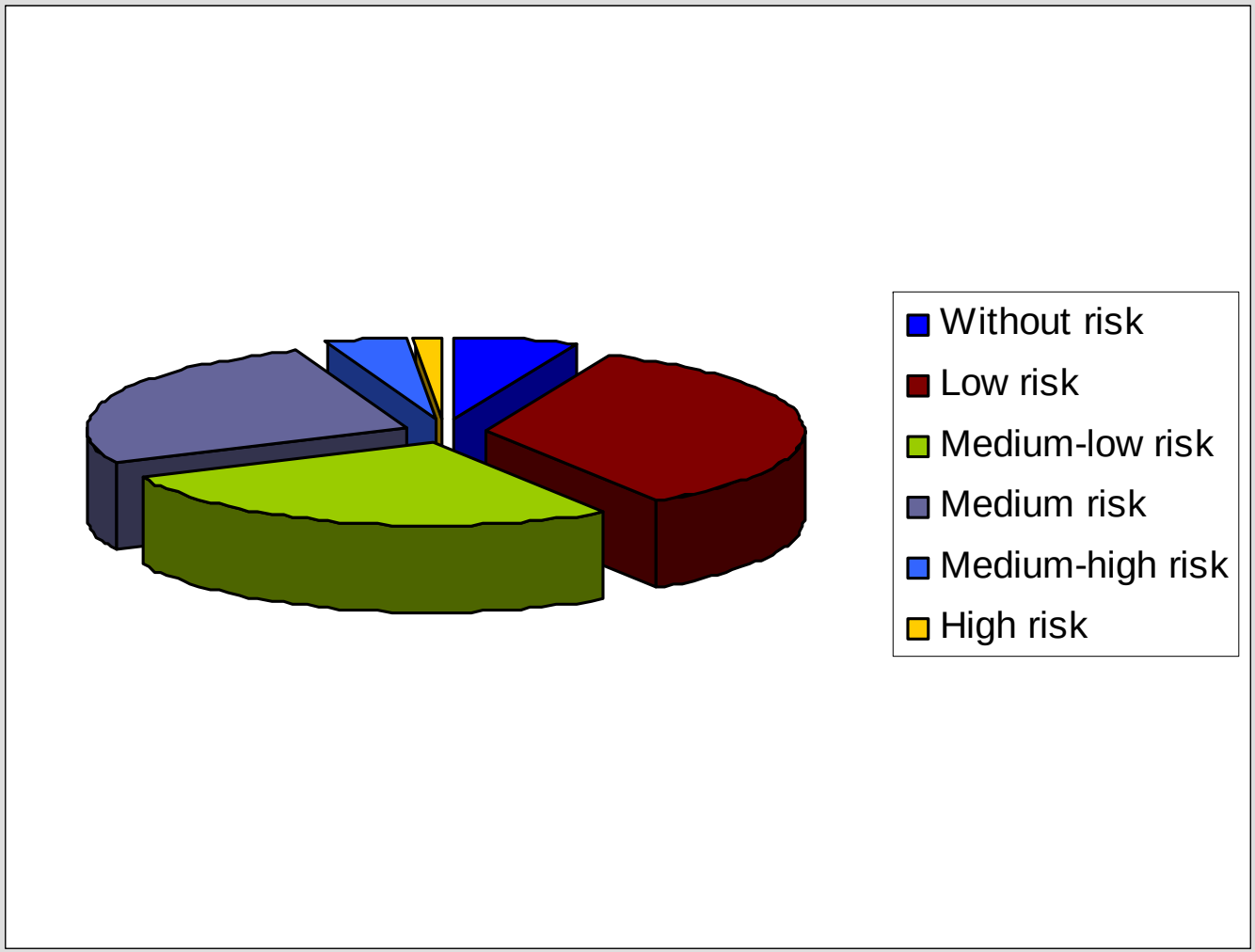
Specific mechanism

- **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)**

Credit across the six risk categories. Dec. 2004



Fact sheet (1)

- **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%**
  - **Spanish banks did not have conduits or SIVs, thus, the amount of off-balance sheet assets was very limited**
- **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**
- **General provisions were 73.2% of total loan loss provisions at that time**
- **Using June-08 data, for those banks applying IRB methods, total loan loss provisions exceeded expected losses by 57.8%, while the excess of general provisions was 22.36%**

Fact sheet (2)

- **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**

- **Parameters imply that for a new (traditional) mortgage (LTV up to 80%), the bank has to set aside 0.71% of its amount as a general provision that, assuming a 15% LGD, means that the effective coverage raised is up to a non-performing loan ratio of close to 4.75%, which compares with 3.85% NPL ratio for mortgages at the peak of the last recession in 1993, while the LGD was around 0%**

Recent developments

- **G20 Leaders' Statement at the London Summit in April 2009 calls for**
  - **"accounting standard setters to work urgently with supervisors and regulators to improve standards on valuation and provisioning"**
- **Turner Review**
  - **a non-distributable Economic Cycle Reserve…**
  - **… that should appear somewhere in the P&L**
- **Others (OCC) argue for more judgment to be used**
  - **By firms as well as by auditors**
- **Provisions based on expected losses is another possibility being discussed**

THANK YOU FOR YOUR ATTENTION

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