

## **Abstract**

The current debate about the pro-cyclicality caused by loan loss provisioning policies adopted by banks and the combined effects of the New Basel II Accord and the International Accounting Standards (IAS/IFRS), suggests a thorough analysis of the provisioning policies adopted by banks and their effects in terms of reducing/eliminating pro-cyclicality.

The main objective of this paper is to describe the relation that connects some loan loss provisioning models adopted by financial intermediaries in order to cover their credit losses, to the pro-cyclicality of their lending policies.

In particular, after showing the different existing provisioning accounting models, I focus my analysis on the rationale, the functioning and the prudential treatment of the “dynamic provisioning” system currently adopted by Spanish banks. Finally I verify if this provisioning system could reduce the pro-cyclicality of Italian banks lending behaviours. As a consequence the research question of this paper is: according to International Accounting Standards and Basle II Accord, could the Spanish dynamic-provisioning system reduce or eliminate the pro-cyclicality of Italian bank lending?

It is a useful research question because the biggest international crisis in financial banking that occurred during recent years which could be interpreted as an example of excess pro-cyclicality in banking, suggests some reflections about the correctness of the loan loss provisioning models adopted by banks and their impact on the economic cycle.

In order to reach this objective, this paper analyzes the impact of a simulated dynamic provisioning system for Italian banks.

The attempt to give an answer regarding the possibility of a particular loan loss provisioning approach, to eliminate the pro-cyclicality of banks effective provisions and the originality of the methodology used to find this answer distinguishes my work from the other contributions widely existing in this subject.

**JEL Classification:** G21, G28

**Keywords:** loan loss provisioning models, dynamic provisions, capital buffers, IAS/IFRS, Basel 2, credit risk, pro-cyclicality

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References

## 1) Introduction

During the last 10-15 years domestic and international literature have given wide theoretical and empirical description of income smoothing through provisioning policies and the pro-cyclicality of banking provisions (Funderberg and Tirole, 1995, Cavallo and Majnoni, 2002).

The analysis of this subject has been complicated by International Accounting Standards (IAS/IFRS) and the New Basle II Capital Accord (Basle II) introduction. IAS/IFRS became binding in 2006 for financial intermediaries adopting consolidated balances, and Basle II started between the 1st January 2007, and the 1st January 2008. According to Saurina (2009), the current financial crisis is a clear and painful example of pro-cyclicality excess in banking.

Pro-cyclical behaviour is so explained: lending mistakes are more prevalent during upturns; in fact borrowers and lenders become over confident about investment projects and tend to lower credit standards; on the other hand during recessions, banks suddenly turn conservative and tighten lending standards. This could cause a credit crunch.

As a consequence tools are needed to cope with the excess pro-cyclicality that the lending cycle injects into the real economy.

The loan loss provisioning model applied by Spanish banks over the past nine years (the so called “Spanish dynamic provisioning model”) could represent an effective counter-cyclical tool.

## 2 Literature review

According to De Lis and Herrero (2009), the amplification of the economic cycle by the financial sector has long been analysed in economic literature.

The potential role of loan loss provisions for capital stability and earnings management has been widely discussed both theoretically and empirically. (Ahmed et al, 1999).

Following the opinion of Fudenberg and Tirole (1995), three drivers cause income smoothing through provisioning policies: i) managers derive a non-monetary private benefit from running the firm, ii) poor performance implies the intervention of shareholders leading to manager dismissal, iii) recent profits carry more weight than past profits when the performance of managers is assessed. As a consequence managers

tend to save current income in good times by making higher provisions since they are not worried about being dismissed and by contrast, in bad times, they tend to boost reported profits by depleting accumulated provisions. It is clear that such behaviour is frequently considered an obstacle to the transparency of financial statements and market discipline; moreover fiscal authorities are also suspicious when income-smoothing strategies are adopted by firms. In addition this behaviour leads to pro-cyclicality.

Cavallo and Majnoni (2002) with empirical evidence have shown that banking loan-loss provisions follow a cycle, meaning that most banks tend to undervalue risk in good times and systematically under provision; on the contrary in subsequent bad times, losses emerge and deplete profits and, possibly capital. They analyse the policies adopted by large commercial banks in various countries in order to understand whether intermediaries use provisions for smoothing their income, which is considered an indicator of wise provisioning policies. They discovered that bankers smooth their income, but they do not create sufficient provisions in good macroeconomic times. The negative relationship between provisions and loan/GDP growth suggests that banks set aside provisions during and not before recessions, thus magnifying the effects of the downturns.

Similar evidence is reported by the European Central Bank (2001) for a sample of EU banks.

Arpa et al.(2001), estimating a distributed lag model covering the period between 1990 and 1999, concluded that provisions increase in a period of falling real GDP growth, confirming the pro-cyclicality of bank behaviour; however, consistently with the income-smoothing hypothesis, they also find some evidence that provisions are higher in times of rising bank profitability.

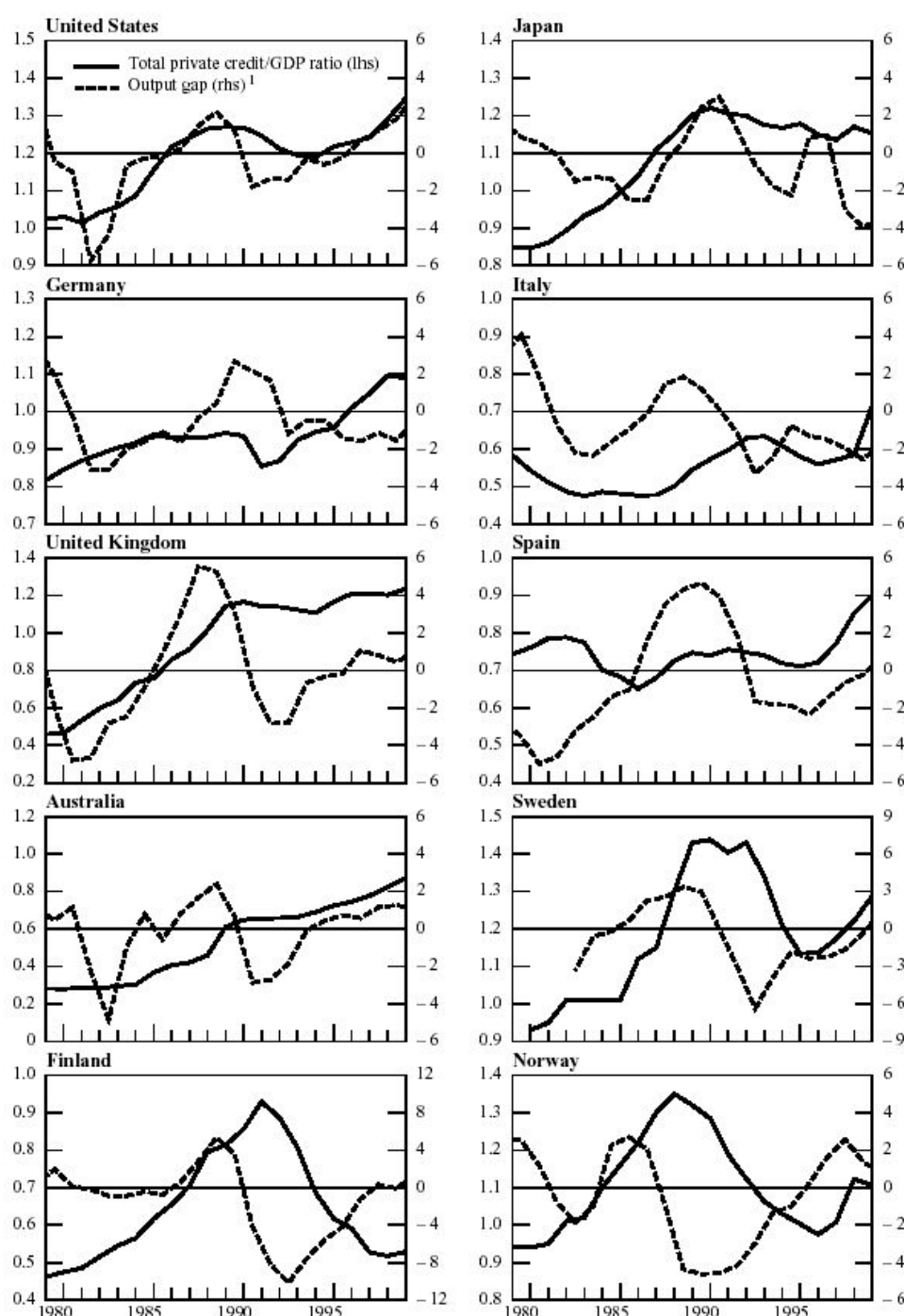
Analogous evidence is provided by Quagliariello (2007) for Italian banks.

Bikker and Hu (2002) have estimated an unbalanced fixed-effect panel model and evaluate the pro-cyclicality of banking provisions for a sample of 26 OECD countries between 1979 and 1999. They claim that even if provisions go down in favourable (macroeconomic) times, banks tend to reserve more in good years (i.e. when profits are higher); as a result banks are less pro-cyclical than it would appear just looking at their dependence on the business cycle.

Pain (2003), using a small panel dataset covering the period 1978-2000 shows that provisions exhibit some cyclical dependence.

Valckx (2003) considers the loan loss provisioning policy of EU banks using a sample of 15 European banking systems between 1979 and 2001, and their conclusions are that the positive relationship between income margin and provisions suggests that the income-smoothing hypothesis for EU banks applies.

Even the following panel elaborated by OECD (2000), that illustrates the correlation existing between the Total private credit GDP ratio and the Output Gap ratio within the period 1980-2000, shows that banking credit at an international level is pro-cyclical.



<sup>1</sup> As calculated by the OECD.

Sources: OECD Economic Outlook; national data.

As regards the New Basle 2 Capital Accord (2006), modifying proposals of this New Basle II Accord have contributed to focusing the provisions' functions on capital adequacy respect and on the protection of banks from loan losses.

Moreover, the current proposals regarding the Basle 3 Accord (2009) that should become effective in 2012 must be taken into account in terms of pro-cyclicality; in fact some of that relates to the treatment disparity of the different national current fiscal rules among the different countries interested by the accord, in particular the possibility to deduct the assets relating to anticipated taxes only for the amount that exceeds a certain proportion of the best quality capital in order to eliminate differences in national fiscal treatments, for instance national fiscal treatments for the loan loss provisions. The Basle 3 proposal is that "anticipated taxes (formally a presumed credit with the State) are totally deducted from the common equity, and this is because of more suspiciousness of the less "tangible" figures of the balance sheet<sup>1</sup>. As regards Italian banks a big role is played by the high amounts of fiscal credits accumulated in consequence of the national treatment of loan loss provisions. These, following the current Italian fiscal laws, are deductible just within 0,30% of the credit portfolio. The remaining amount is capitalized and it is split over a period of 18 years.

On the other hand, as regards International Accounting Standards (2006), an accounting principle regarding credit evaluations and related provisions has been developed (IAS 39). Moreover the Basel Committee on prudential banking supervising (2004) published guide lines on the accounting treatment of credits with the introduction for some countries of the methodology based on the statistical value adjustment and the Joint Working Group of standard setters (2001) made some proposals for the fair value methodology adoption for all kinds of financial instruments.

All of these statements present common elements and some significant differences.

In particular, the statements' divergence in relation to the measure of an objective deterioration of a single credit quality must be evaluated in order to create an appropriate provision along with the effects of the price conditions applied to the credit. Moreover differences exist about the temporal horizon on which supposed losses would be estimated and about the appropriate interest rate to discount the future financial flows. This is generally explicated in the following way: on one hand supervisory authorities tend to privilege the role of provisions to ensure adequate capital against a potential deterioration of loan quality; and on the other side, accounting authorities

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<sup>1</sup> Point 98 of the consulting document, "Strengthening the resilience of the banking sector", Issued for comment by 16 April 2010, Bank of International Settlements (December 2009)

underline the importance of provisions as a tool to obtain correct and truthful loans evaluations.

In the opinion of Boyer (2007), credit pro-cyclicality, could deteriorate with fair value diffusion; this is because it generates a further accounting accelerator rather than financial accelerator in the credit relation between banks and firms.

A different conclusion is the one given by Ciocca (2004) who believes that Basel 2 and IAS implementations, will carry out increased banking efficiency and stability because of the increased competitiveness that they will generate.

The current policy debate has renewed the interest for counter - cyclical (or at least less cyclical) provisioning policies. The dynamic provisioning approach adopted by the Spanish banks over the last nine years could be an effective device to pursue this goal.

Last July Ecofin (2009) suggested the introduction of forward looking provisioning, which consists of constituting provisions deducted from profits in good times for expected losses on loan portfolios, and which would contribute to limiting pro-cyclicality. In connection with the revision of the Capital Requirements Directive, the European Commission (2009) has very recently issued a consultation paper aiming at the introduction of the dynamic provisions in Europe. As regards the Italian case, the Bank of Italy (2009) has recently issued an occasional paper about dynamic provisioning which concludes that a model based on expected losses as suggested in the Turner review (FSA, 2009a, 2009b) with some amendments, may represent a sensible way forward.

In particular, although the most widely discussed mechanism for implementing dynamic provisioning is to align provisions to expected losses, the only concrete example of dynamic provisions, the one adopted by Spanish banks, is based on a different approach; but in general the divergence among different proposals is mainly lexical: in fact the philosophy underlying most of them is to require banks to provision for future losses that could emerge from events not yet materialized but expected to produce losses over the term of the loan<sup>2</sup>. In practice, the easiest way to do this is to look at the past experience of losses over an entire business cycle and in this respect the definition of “expected losses” is closer to the collective impairment assessment provided for by IAS 39 than to the concepts used in the Basel 2 prudential framework.

More in detail, accounting treatment of provisions that currently is based on the IAS/IFRS approach principle of “incurred losses”, can create distortions in measuring

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<sup>2</sup> A different approach which is based on the estimation of the expected cash flows of a loan at inception is proposed by IASB (2009).

bank profits because in good times, when incurred losses are generally lower, profits are large, while large losses are recorded in recessions; if profits are not sufficient to cover loan losses in downturns, these distortions also can affect capital levels and as a consequence banks' ability (or willingness) to supply adequate flows of lending to the real economy.

Banking policy and pricing strategies could take into account that a proportion of borrowers may not be able to pay their loans back. In that case it is necessary to think of a system of dynamic provisions based on the concept of "expected losses"; in particular, "the fundamental principle underpinning dynamic provisioning is that provisions are set against outstanding loans (...) in line with an estimate of long-run expected loss": this is the traditional dynamic provision based on expected loss explained by Mann and Michael (2002). This system implies that in good times, incurred losses are lower than long-term expected losses, the flow of specific provisions in the accounting period is less than expected and banks accumulate resources (in this way the stock of dynamic provisions increases); in bad times, by contrast, the flow of specific provisions is higher than the expected losses and the shortfall is deducted from the stock of dynamic provisions built up in upturns; net profits are not affected and no cyclical effect materializes.

An example could help to explain how this mechanism works.

Table 1 shows a simple Balance Sheet and Income Statement where the stock of loans increases by 100 currency units each year and net interest income is 16% of total loans; for simplicity this model assumes that the flows of new loans and interest income are not affected by the business cycle (it is an unrealistic hypothesis, but it allows focus on the mechanism of dynamic provisioning, under a ceteris paribus assumption). Moreover it is assumed that bad loans are never written off the balance sheet.

**Table 1**

	Year t	Year t+1	Year t+2	Year t+3	Year t+4
	(good)	(good)	(bad)	(neutral)	(good)
<b>Balance Sheet</b>					
Loans (L, nominal value)	100	200	300	400	500
Flow of loans	100	100	100	100	100
Stock of specific provisions	0	0	47	62	75
Loans net of provisions	100	200	253	338	425
<b>Income statement</b>					
Net interest income	16	32	48	64	80
Specific provisions (s, incurred losses)	0	0	47	15	13
Profits	16	32	1	49	67



Since banks adopt an incurred loss approach, they do not provision against future losses already embedded in their loan portfolio – rather they raise specific provisions only when losses actually occur. In good times (t, t+1), they don't record any losses and as a consequence do not make any provisions at all. The stock of provisions is not built up until it is too late (t+2), thus significantly affecting profits when things go very wrong. Table 2, starting from the same Balance Sheet and Income Statement, shows by contrast how a dynamic provisioning system would work: banks' provisions against expected losses – over a one-year horizon- rise from the flow of new loans:

$$\text{Dynamic provisions} = a * \text{Delta L} - s,$$

Where “a” is the average long-run expected losses, “Delta L” is the flow of new loans and “s” the flow of specific provisions. Each year, the flow of total provisions is the sum of dynamic and specific provisions, i.e. a\*Delta L, regardless of the cyclical conditions.

**Table 2**

	Year t	Year t+1	Year t+2	Year t+3	Year t+4
	(good)	(good)	(bad)	(neutral)	(good)
<b>Balance Sheet</b>					
Loans (L, nominal value)	100	200	300	400	500
Flow of loans	100	100	100	100	100
Stock of specific provisions	0	0	47	62	75
Stock of dynamic provisions	15	30	-2	-2	0
Stock of total provisions	15	30	45	60	75
Loans net of provisions	85	170	285	340	423
<b>Income statement</b>					
Net interest income	16	32	48	64	80
Specific provisions (s, incurred losses)	0	0	47	15	13
a*Delta L	15	15	15	15	15
Dynamic provisions (a*Delta L - s)	15	15	-30	0	2
Extra Losses	0	0	-2	0	0
Profits	1	17	31	49	65

Since we assumed a constant flow of loans (100 currency units) each year and a 15 per cent expected loss (a), the flow of total provisions is 15 currency units per year ,

regardless of cyclical conditions; at  $t$  and  $t+1$ , expected losses are higher than incurred losses (which are actually equal to zero) and they contribute to increasing the stock of dynamic provisions to be used in bad times. At time  $t+2$ , the boom period is over, incurred losses increase markedly, but can, to a large extent, be covered by the stock of dynamic provisions, which is run down. By construction, the stock of dynamic provisions can never exceed the stock of expected losses and the stock of total provisions is constantly equal to the stock of expected losses (precisely to the expected losses of the stock of loans).

In the above mentioned example, the stock of dynamic provisions built up in good times is not sufficient to cover the whole amount of losses at  $t+2$  and profits are affected  $(-2)^3$

This clearly depends on the pattern and timing of booms/recessions. Indeed, the amount of dynamic provisions that has been built up will depend upon the length of the positive phase of the business cycle. This issue would be particularly important for the first time application (since dynamic provisions have to be accumulated ahead of the downturn, they should be introduced in recovery periods).

The example shows how a simple dynamic provisioning system may work. However, it also makes it clear that this approach only allows for a relatively slow accumulation of resources (in fact at time  $t+2$  when a crisis materializes, the stock of provisions reveals itself to be inadequate). In addition assuming that loans continue to grow by 100 currency units per year after  $t+4$ : the banks will restart provisioning m15 per year. In terms of stocks, dynamic provisions will appear very small compared to the size of the loans (e.g. 15 against 600 at  $t+5$ ). This is consistent with the fact that expected losses related to a loan portfolio at  $t+4$  have already materialized and this part of the portfolio only bears unexpected losses. However, it would be difficult to make this distinction in a real balance sheet.

The final, but not less important, literature review issue is concerned with the following point: according to Burroni, Quagliariello, Sabatini and Tola (2009), the Spanish system for dynamic provisioning is not based on an expected loss model, but rather on banks' loan loss experiences.

One of the matters that supports the generally retrospective formulation of the rules about (loan loss) credit provisions is that it limits banks' management ability to manipulate accounting results in order to minimize taxes and to implement non-

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<sup>3</sup> For simplicity, it is allowed that the stock of dynamic provisions fall below zero at  $t+2$  and  $t+3$ .

objective earnings fluctuations policies. However, this formulation, as we have seen above, determinates financial system pro-cyclicality.

In particular, in order to explain this, we can distinguish between the “Historic cost accounting” and the “Dynamic provisioning”.

The Historic cost accounting model is based on the creation of provisions for loan losses recorded at the date of balance closing (for instance this happens under International accounting standards).

The dynamic provisioning model, on the other side, suggests provisions creation against loan losses in every period in line with a long period estimate of the expected losses. This provision is established in order to cover expected losses from when loans are given; it will increase in every year with effectively realized losses that are less than expected and it will decrease in years with effectively realized losses that are more than expected.

The debate regarding which is the best model and in which way it has to be implemented by financial intermediaries is now still open; in the course of my research work, as I said in the abstract, I will attempt to show advantages and disadvantages of these two alternative models and to verify empirically if the dynamic provisioning model adopted by Spanish Banks can reduce and even eliminate the pro-cyclicality of provisions. It results that the Historic cost accounting model is today followed in a similar way, but even if with specific differences by English banks, United States of America banks and by countries where IAS are adopted by banks while instead a Dynamic provisioning model has been adopted starting in 2000 by Spanish financial intermediaries.

As regards United Kingdom’s financial intermediaries, there are some formal rules they must follow the Statement of Recommended Practice (SORP) which recommends (in the 11th-18th paragraphs) that: 1) the specific provisions amount should correspond to the bank estimate of the amount necessary to reduce the carried out value into the limit of the expected values; 2) there doesn’t exist a specific “valve”, but provisions should be created every time when there are elements that suggest an impairment; 3) the evaluation for the “general provisioning” is inevitably subjective, but it should take into account past events and current economic conditions.

The system adopted in United States of America is similar to the one adopted by the United Kingdom banks that produces reserves just to cover loan losses in portfolios.

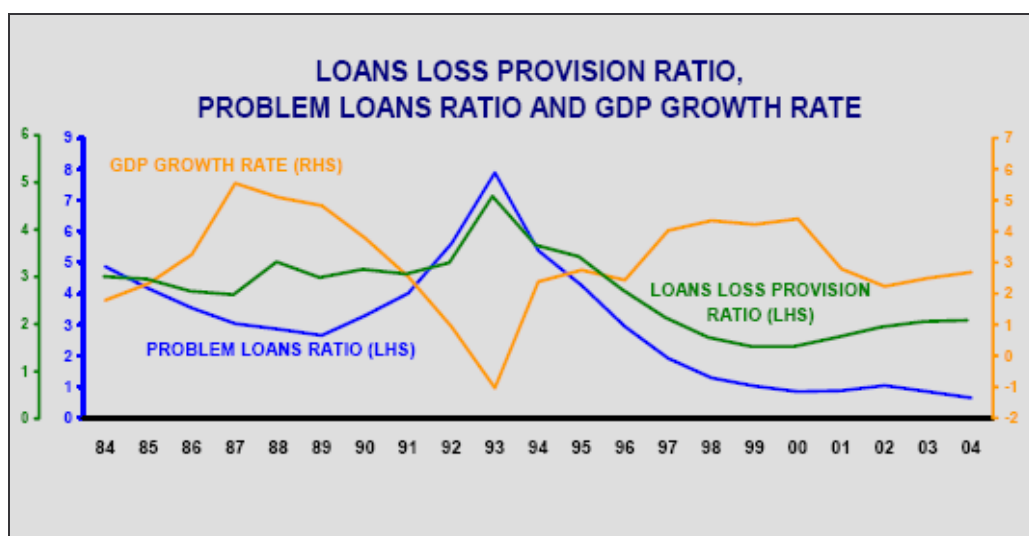
The Financial Accounting Standards Board (FASB, 1975) Statement 5 prescribes that a cover for losses should be made when it is likely that as an asset is depreciated or a liability is realized and the consequent loss can be estimated reasonably. FASB moreover has established that under Generally Accepted Accounting Practices (GAAP) rules, “losses should be recorded before it is likely they are realized, although it could be likely on the base of past experience.”

A statistical provisioning model is implemented by Spanish banks because the Central Spanish Bank introduced it in 2000. This is the basic principle: to record the expected losses that are incorporated into the interest margins on loans and to consider the loan losses along the loan durations so they are measured in the interest revenue of the Profit & Losses Account. A statistical provision is introduced (as part of general reserves<sup>4</sup>) and it is increased when specific provisions (for instance actual losses) are less than expected credit losses and it is utilized in periods when specific reserves are more than expected credit losses. Statistical provisioning is subject to the limit of three times the level of annual provisions and it is not fiscally deductible. Moreover statistical and generic reserves are not included in the banks’ regulatory capital.

The following figure (Spanish Central Bank, 2005), regarding the Spanish banking market in which the dynamic provisioning utilization is frequent, shows the relationship existing among three variables: 1) Loan loss provision ratio, 2) Problem loans ratio, 3) Gross Domestic Product (“GDP”) growth rate.

The period taken into account goes from the year 1983 to the year 2004 (Figure 1).

**Figure 1**



Source: Banco de Espana

<sup>4</sup> General reserves are defined as the sum of generic reserve plus statistical reserve

It shows the existence of a clear negative relation between loan loss provision ratio and the GDP increasing rate, from the year 1983 to the end of the year 1999.

But it is equally clear that starting from the year 2001 (I would remind again that Banco de Espana introduced dynamic provisioning for Spanish Banks in the year 2000) this negative relation became a positive one.

In other words it means that Spanish banks before 2001 show a pro-cyclical loan loss provisioning behaviour (I repeat that the European Central Bank achieved in 2001 a similar result for a sample of EU banks), and after 2001 they seem to be based on a counter-cyclical system.

## **2,1) The Spanish system: explanation and functioning**

The system adopted in Spain for dynamic provisioning is not based on an expected loss model, like traditional dynamic provisioning models; it runs using a “backward-looking” model and analyses historical information in order to set an adequate level of dynamic provisions. It is thus based on banks’ loan loss experiences.

As we have seen before, the expected loss model may be used to limit the impact of loss cyclicity on banking profits by aligning provisions to long term expected losses.

According to De Lis and Herrero (2009), the rationale behind mechanisms such as dynamic provisioning is basically to reduce the inherent pro-cyclicity of the banking system.

The following example (Mann and Michael, 2002), clearly shows the effectiveness of the dynamic provisioning in terms of profits. It is represented by three tables. First of all, starting hypothesis are presented (Table 3).

Table 4 shows how historic cost accounting works. And finally in table 5 dynamic provisioning mechanisms are shown.

**Table 3**

Portfolio: 100 units (for instance 100 individual loans each of 1 unit)	
Assumption: loan's maturity: 5 years	
Fixed interest rate	6%
Funding cost	4%
Net interest income	2%
<i>Expected Loss</i>	1% all'anno
% loan impairments-for which specific provision are made:	
0 Year 1 and 2	
1% Year 3	
3% Year 4	
1% Year 5	

Source: Bank of England

The following table shows how the historic cost accounting works:

**Table 4**

<b>HISTORIC COST ACCOUNTING</b>					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
<b>Balance sheet</b>					
Loans balance sheet value	100	100	100	100	100
Stock of specific provisions	0	0	1	4	5
Loans balance sheet value net of provisions <i>(end-year value)</i>	100	100	99	96	95
<b>Income statement</b>					
Net interest income	2	2	2	2	2
Specific provision charge	0	0	1	3	1
Total P&L	2	2	1	-1	1

Source: Bank of England

This table underlines the fact that historic cost provisioning can produce volatility: the total Profit & Loss result varies from a positive value of 2% (Year 1 and Year 2) to a negative one of -1% (Year 4).

Table number 2 instead shows how a dynamic provisioning model could in general be applied to the Balance Sheet. As regards the Assets & Liabilities Statement, a stock of expected loss provisions is provided during the first years, when actual losses are low, but they decrease when actual losses materialize. In the Profit & Losses Statement expected losses are counteracted to the net interest income.

**Table 5**

<b>DYNAMIC PROVISIONING</b>					
	<b>Year 1</b>	<b>Year 2</b>	<b>Year 3</b>	<b>Year 4</b>	<b>Year 5</b>
<b>Balance sheet</b>					
Loand balance sheet value	100	100	100	100	100
Stock of specific provisions	0	0	1	4	5
Stock of expected loss provisions	1	2	2	0	0
Stock of total provisions	1	2	3	4	5
Loans balance sheet value net of provisions	99	98	97	96	95
<b>Income statement</b>					
Net interest income	2	2	2	2	2
Expected loss provision charge	1	1	1	1	1
Total P&L	1	1	1	1	1

Source: Bank of England

In this last case the Total Profit & Loss result is much more stable than the historic cost accounting. As a consequence, the dynamic provisioning model that “better captures the economic substance” of bank lending rather than actual accounting rules (IAS). And that is the approach widely used by Spanish banks.

However as regards dynamic provisioning, it only allows for a relatively slow accumulation of resources in good times, but its effectiveness is very much dependent on the pattern of the business cycle (Burrone, Quagliariello, Sabatini and Tola, 2009).

Therefore, Banco de Espana established a system based on this philosophy: more counter-cyclical provisioning approaches, may be considered more adequate.

The Spanish approach works in the following way: banks are required to charge their Income Statement with 2 elements: 1) the flow of specific provisions (s) to cover incurred losses, 2) the flow of general provisions (g) based on historical credit loss information. Specific provisions are a percentage (y) of the flow of non-performing loans ( $\Delta P$ ) that emerged in a given year. As a consequence  $s = y * \Delta P$  and g is determined by each bank taking into account losses actually incurred.

General provisions are calculated according to the following formula:

$$g = \max(0, (\alpha * \Delta L + \beta * L - s))$$

where  $\alpha$  is the average estimate of the credit losses,  $\Delta L$  is the change in total loans,  $\beta$  is the historical average of specific provisions, and L is the stock of total loans. Both

parameters are estimated for six different risk classes (ranging in six groups: 1.negligible risk, 2.low risk, 3.medium-low risk, 4.medium risk, 5.medium high risk; 6.high risk). The parameter vectors are:

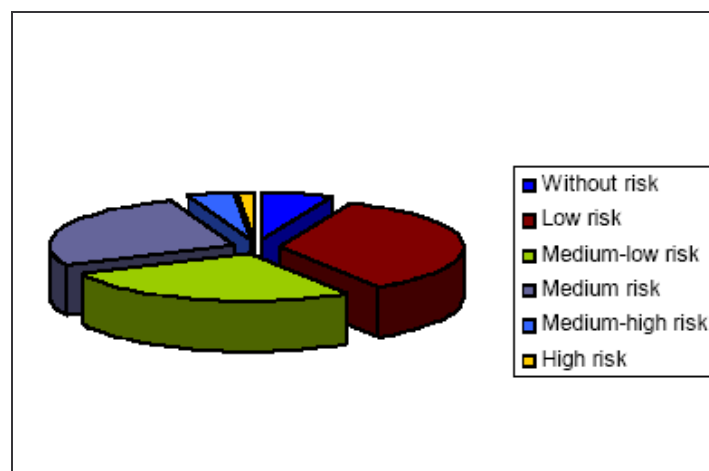
$$(0\%;0,6\%;1,5\%;1,8\%;2\%;2,5\%;) \text{ for } \alpha$$

$$(0\%;0,11\%;0,44\%;0,65\%;1,1\%;1,64\%) \text{ for } \beta$$

The six homogeneous groups should involve cash, public sector debt (group 1), home mortgages with Loan To Value (LTV) below 80%, firms with rating A or above (group 2), loans with real guarantees and home mortgages with LTV above 80% (group 3), the rest of loans including firms and SMEs (group 4), consumer durables financing (group 5), credit cards and overdrafts (group 6).

The following graph shows how the credit is split in Spain across the six risk categories (Figure 2):

**Figure 2**



Source: Banco de Espana (2004)

Thus, according to the above mentioned formulas, the Spanish system is not an expected loss model; neither it is intended to be this: even if  $\alpha$  could with some caution be interpreted as the expected loss arising from the flow of new loans ( $\Delta L$ ), and the first component of Spanish dynamic provisions ( $\alpha \Delta L$ ) can easily be brought back to the expected loss model, the second component ( $\beta L-s$ ), where  $\beta$  is estimated looking at the past flow of specific provisions for non-performing loans and is then adjusted and applied to the entire loan portfolio and  $s$  is a flow figure referring to new non-



performing assets, it should be considered as a pragmatic device for building up and running down the stock of general provisions.

By comparing  $\beta L$  with the current level of specific provisions, the bank can assess the speed at which incurred but not identified losses evolve into specific losses and as a consequence during upturns (when  $\beta L$  is higher than  $s$ ) banks tend to under-prize the actual risk they have in the portfolio, the latent risk not captured by specific provisions; on the other side during downturns (when  $\beta L$  is lower than  $s$ ) banks tend to over-prize the actual risk they have in portfolio.

In other words,  $s$  is lower than  $\alpha \Delta L + \beta L$  and the flow of general provisions, is positive; thus the stock of general provisions is built up; in downturns,  $s$  is higher than  $\alpha \Delta L + \beta L$ , the flow of general provisions is set to zero and general provisions run down. The Spanish rules also include upper and lower limits to the stock of general provisions. In particular, it is required to remain within the range:  $0.33 * \alpha L \leq \text{general provisions} \leq 1.25 * \alpha L$ ; in this way the cap tends to prevent the accumulation of disproportionately large resources with counter-cyclical purposes and the bottom tends to avoid such resources being entirely depleted.

In another way, but with exactly the same meaning, the Spanish dynamic provisioning formula could be drawn as follows:

$$\dot{gen}_t = \sum_{i=1}^6 \alpha_i \Delta C_{it} + \sum_{i=1}^6 \left( \beta_i - \frac{\dot{espe}_{it}}{C_{it}} \right) C_{it} = \sum_{i=1}^6 \alpha_i \Delta C_{it} + \left( \sum_{i=1}^6 \beta_i C_{it} - \dot{espe}_t \right)$$

OR

$$\dot{gen}_t = \alpha \Delta C_t + \left( \beta - \frac{\dot{espe}_t}{C_t} \right) C_t$$

where  $C_t$  is the stock of loans and  $\Delta C_t$  its variation, and as before  $\alpha$  is the average estimate of credit losses,  $\beta$  is the historical average specific provision.

From the accounting perspective general provisions are set to cover “inherent” losses (i.e. losses already incurred, but that cannot be allocated to specific borrowers) and

therefore the Banco de Espana considers them an application of IAS 39, which allows for “collective assessment for impairment”.

So the Spanish dynamic loan loss provisioning system could be summarized to be: counter-cyclical, back-ward looking and transparent rules-based.

As regards its advantages and disadvantages, according to Cicardo(2007) they can be synthesized saying that its main objective is to limit credit pro-cyclicality and not to reach a correcter banking income (Cicardo, 2007)

Moreover it must be taken into account its compatibility with IAS/IFRS and Basle II regulations (Saurina, 2009)

### **3) Methodology**

The international and national literature reviews allow us to underline that international banks' loan loss provisioning models are currently based in a major part on two approaches: the “historic cost accounting model” and the “dynamic provisioning model”, but with differences and particularities among different countries.

Regarding in particular Italian banks, they follow the historic cost accounting model based on incurred losses.

By through literature review, it is equally clear that there is a connection between loan loss provisioning and the economic cycle.

As a consequence, in order to investigate the effects in terms of pro-cyclicality of the different loan loss provisioning systems, I examine the existing relation among Italian banks' loan loss provisions for the period 2004-2008 and the Gross Domestic Product (GDP) growth rate for the same period.

The above mentioned research strategies have followed the criteria of the consistency between my final working paper objectives and structure.

In particular, the analysis phases could be summarized as follows:

At first I analyze the impact of a simulated dynamic provisioning system for Italian banks. More in detail, in order to obtain theoretical provisions, I used the simplification given by the A.Costi & G. Iannotta (2009) simplified formula of the Spanish dynamic provisioning, which assumes that the statistical provisioning is every year equal to the 6/1000 of the total stock of existing loans less the specific provisions until achieving three times the latent loss (i.e. the 1,8% of the loans stock).

Finally I analyze the existing relationship among the growth rates of

- i) effective loan loss provisions adopted by selected Italian Banks ;
- ii) theoretical loan loss provisions calculated according to the Spanish dynamic provisioning formulas of the same sample of banks;
- iii) Italian Gross Domestic Product.

I have selected the previous variables, according to the ones utilized in the principal national and international analogous studies about loan loss provisioning models (look at Paragraph 2).

I have taken the necessary Balance Sheet data (loan loss provisions, loans and impaired loans) from the Bankscope Data Base, on an annual basis and for the period 2004-2008.

I have taken the Gross Domestic Product growth rate from the *ISTAT Data Base*, on an annual basis and for the period 2004-2008.

#### 4) Sample

According to the above mentioned criteria, I have selected a sample of Italian banks with the following characteristics: listed and unlisted banks, consolidated and unconsolidated statements, specialization: commercial banks.

So I have found a sample of 97 Italian banks useful for my analysis.

The following table shows the banking intermediaries that have been object of my analysis (Table 6).

**Table 6**

1	UniCredit SpA
2	Intesa Sanpaolo
3	Cassa Depositi e Prestiti
4	Gruppo Monte dei Paschi di Siena-Banca Monte dei Paschi di Siena SpA
5	UBI Banca-Unione di Banche Italiane Scpa
6	Banco Popolare
7	UniCredit Corporate Banking SpA
8	Banca IMI SpA
9	Mediobanca SpA
10	Banca popolare dell'Emilia Romagna

- 11 Banca Popolare di Milano SCaRL
- 12 BIIS SpA-Banca Infrastrutture Innovazione e Sviluppo SpA (Proforma)
- 13 UniCredit Banca di Roma S.p.A. (old)
- 14 Banca CR Firenze SpA-Cassa di Risparmio di Firenze SpA
- 15 Cassa di Risparmio di Parma e Piacenza SpA
- 16 MPS Capital Services Banca per le Imprese SpA-Monte dei Paschi di Siena Capital Services
- 17 Banca Carige SpA
- 18 Banca Popolare di Verona-S Geminiano E S Prospero SpA
- 19 CREDEM-Credito Emiliano SpA
- 20 Banca Popolare di Vicenza Societa cooperativa per azioni
- 21 Banca Popolare di Bergamo SpA
- 22 Deutsche Bank SpA
- 23 Banca Aletti & C. SpA-Aletti & C. Banca di Investimento Mobiliare SpA
- 24 Credito Valtellinese Soc Coop
- 25 Banca Italease SpA
- 26 Cassa di Risparmio del Veneto SpA
- 27 Banca Popolare di Sondrio Societa Cooperativa per Azioni
- 28 Veneto Banca Holding scpa
- 29 Banco di Brescia SpA-Banco di Brescia San Paolo Cab SpA
- 30 Banca Popolare di Lodi SpA
- 31 Banca Popolare di Novara SpA
- 32 Banca delle Marche SpA
- 33 Iccrea Holding SpA
- 34 Agos SpA
- 35 FGA Capital SPA
- 36 Banco di Sicilia SpA - BdS
- 37 Credito Bergamasco
- 38 Banca Sella Holding SpA
- 39 Mediocredito Italiano SpA
- 40 Banco di Sardegna SpA
- 41 Banca Popolare Commercio e Industria SpA
- 42 Findomestic Banca SpA
- 43 UGF Banca Spa
- 44 Banca Regionale Europea SpA
- 45 Veneto Banca SpA
- 46 Banca Carime
- 47 Banca Popolare di Ancona SpA
- 48 Cassa di risparmio in Bologna SpA - CARISBO
- 49 Banca Agrileasing SpA
- 50 Centrobanca - Banca di credito Finanziario e Mobiliare SpA
- 51 Banca popolare dell'Etruria e del Lazio Soc. coop.
- 52 ICCREA Banca SpA - Istituto Centrale del Credito Cooperativo
- 53 Banca Sella SpA
- 54 Credito Artigiano
- 55 Cassa di risparmio di Ferrara SpA
- 56 Banca Popolare FriulAdria SpA
- 57 Suedtiroler Sparkasse-Cassa di Risparmio di Bolzano SpA
- 58 Santander Consumer Bank SpA
- 59 Banco Desio - Banco di Desio e della Brianza SpA
- 60 Monte dei Paschi di Siena Leasing & Factoring, Banca per i servizi finanziari alle imprese SpA-
- 61 Interbanca SpA
- 62 Intesa Mediofactoring SpA
- 63 Fidelity SpA
- 64 Compass SpA
- 65 Consum.it SpA
- 66 Banca Popolare di Bari Scarl
- 67 Fineco Leasing SpA
- 68 Cassa di risparmio di Asti SpA
- 69 Ifitalia SpA - International Factors Italia
- 70 Cassa di Risparmio di Ravenna SpA

71	Suedtiroler Volksbank-Banca Popolare dell'Alto Adige
72	Banca dell' Adriatico SpA
73	BANCA CARIM - Cassa di risparmio di Rimini SpA
74	Hypo Alpe-Adria-Bank Italia Spa
75	Unibanca SpA-Gruppo Bancario Unibanca
76	Efibanca SpA - Gruppo Bipielle
77	CARIROMAGNA SpA-Cassa dei Risparmi di Forli e della Romagna SpA
78	Centro Leasing Banca Spa
79	Banca Nuova SpA
80	Banca Agricola Popolare di Ragusa SCARL
81	Cassa di Risparmio di Prato SpA - CARIPRATO
82	Banca Popolare di Puglia e Basilicata
83	Banca Intermobiliare di Investimenti e Gestioni
84	Credito Siciliano SpA
85	Banca Popolare di Cividale Societa Cooperativa per azioni
86	Meliorbanca SpA-Meliorbanca Group
87	Banca Popolare di Lanciano e Sulmona SpA
88	Banca di Cividale SpA
89	La Valsabbina-Banca Valsabbina Societa cooperativa per azioni
90	BTB SpA-Banca di Trento e Bolzano Societa per Azioni - Bank Fuer Trient und Bozen
91	Banca di Piacenza
92	Banca Popolare di Spoleto SpA
93	Cassa di risparmio della provincia di Chieti SpA - CARICHIETI
94	Cassa di risparmio di San Miniato SpA
95	Banca di Credito Cooperativo dell'Alta Padovana
96	Cassa di risparmio di Fabriano e Cupramontana SpA
97	Banca di Credito Cooperativo Agrobresciano

The historical series observed regard a temporal horizon of 4 years: 2004 2008.

## 5) Empirical evidence

Table 7 shows the results of a simulated provisioning system for Italian banks compared to the effective one.

**Table 7**

Year 2008	Cases number	Min	Max	Average	Standard Dev.
Effective	97,00	0,00	3.681.800,00	168.273,20	423.550,14
Theoretical	97,00	0,00	1.230.534,00	23.068,21	133.893,21
Difference E-T				145.204,98	

Year 2007	Cases number	Min	Max	Average	Standard Dev.
Effective	97,00	0,00	2.311.200,00	99.904,12	259.248,70
Theoretical	97,00	0,00	1.577.638,00	47.044,52	201.438,35
Difference E-T				52.859,60	

Year 2006	Cases number	Min	Max	Average	Standard Dev.
Effective	97,00	0,00	2.294.700,00	81.236,08	245.880,97
Theoretical	97,00	0,00	1.602.860,00	39.304,22	172.842,18
Difference E-T				41.931,86	

Year 2005	Cases number	Min	Max	Average	Standard Dev.
Effective	97,00	0,00	920.700,00	48.523,71	111.883,34
Theoretical	97,00	0,00	1.733.556,00	45.952,44	240.202,79
Difference E-T				2.571,27	

Year 2004	Cases number	Min	Max	Average	Standard Dev.
Effective	97,00	0,00	888.000,00	38.803,48	110.954,16
Theoretical	97,00	0,00	120.117,60	8.430,47	19.837,61
Difference E-T				30.373,01	

*th. Euro*

Looking at the previous table, you can take the following conclusions: a) in each year the total sum of the differences registered between the effective and theoretical provisions is always positive (min: € 2.571,27 th, max € 145.204,98 th); b) the medium value of the effective provisions is in every year taken into consideration bigger then the medium value of the theoretical provisions.

Those results permit me to underline that Italian banks, using the Spanish dynamic provisioning system, could reduce their provision funds during the observed period, generating in this way more available funds to be lent to firms.

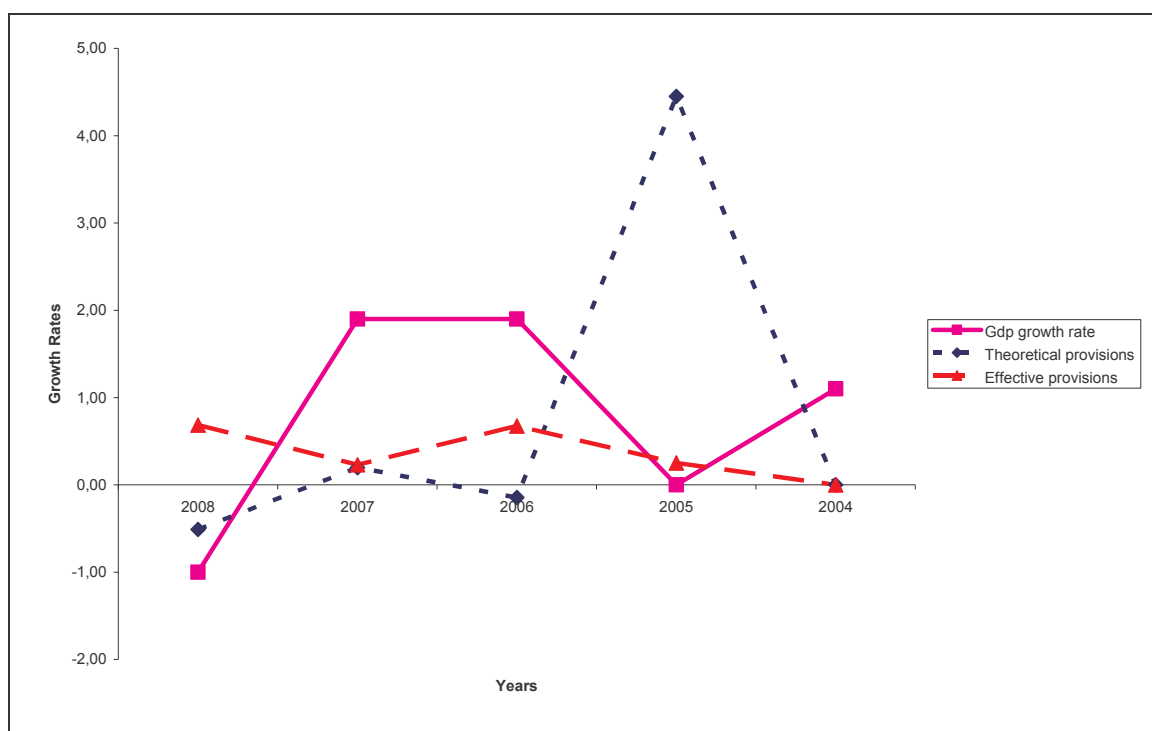
In this way they could avoid the lending mistakes typical of the traditional provisions.

Table 8 and Figure 3 show the relationship existing among Effective Provisions, Theoretical provisions and the Gross Domestic Product, for the years 2008, 2007, 2006 and 2005.

**Table 8**

	2008	2007	2006	2005
Average Effective Provisions (EP) <i>(Growth rate)</i>	0,68	0,23	0,67	0,25
Average Theoretical Provisions (TP) <i>(Growth rate)</i>	-0,51	0,20	-0,14	4,45
Gross Domestic Product (GDP) <i>(Growth rate)</i>	-1,00	1,90	1,90	0,00

**Figure 3**



These data demonstrate that the dynamic provisioning system adopted by Spanish banks is not so counter-cyclical for the sample of Italian selected banks.

In other words it means that by adopting the Spanish dynamic provisioning, Italian banks don't assume a more counter-cyclical behaviour with regards to their lending policies.

## 6) Conclusions

The above mentioned analysis underlines that the Spanish dynamic provisioning system does not reduce the pro-cyclicality of the Italian banks' provisions. This is because of the empirical evidence of this work doesn't show a positive relationship between theoretical provisions, calculated according to the Spanish dynamic provisioning model rules, and the Gross Domestic Product growth rate index. In other words, it means that following the Spanish dynamic provisioning model, Italian banks would not build "buffer-provisions" in good times to be used in bad times, when credit demand is higher and a reasonable cost of financing is required by potential borrowers.

Moreover, loan loss provisioning policies are affected by some other important exogenous variables, rather than certain accounting rules and models. In fact according to Fudenberg and Tirole (1995) they depend on three other important variables: the managers' behaviour that always tends to achieve reported profits as high as possible, the shareholders' performances control, and the income smoothing policies.

Moreover it must be taken into account that the national fiscal treatment of the loan loss provisions matters (Cavallo and Majnoni, 2001); in fact if statistical provisions are deductible they will be used more favourably by banks

As regards the tax treatment, until the end of 2004 the statistical provisions in the Spanish system were not tax deductible (Saurina, 2009), although they were treated as deferred tax assets; today general provisions are tax-deductible expenses up to a certain percentage and the non-deductible amounts are accounted as deferred tax assets, because they will become specific provisions in the future, and therefore deductible when the impairment is assigned to an individual loan. If dynamic provisions are tax deductible, they are more "palatable" for banks (but it must be said that even if they are not deductible, they can still be implemented, as the Spanish experience shows).

Then the Spanish dynamic provisioning system, even if it is a backward-looking and transparent rules-based system, can reduce, but does not eliminate the pro-cyclicality of bank lending.

Finally there are other two issues that must be taken into account.

Firstly, a problem that regulators could face in the introduction of dynamic provisioning is how to make it compatible with IAS/IFRS and Basle II rules. In particular the Bank of Spain was being increasingly criticised by international accounting regulators for applying a mechanism that appeared to favour profit smoothing, which was considered contrary to the "fair value" principle and International Accounting Standards. In this regard, the Bank of Spain had the advantage *vis-à-vis* other regulators of being the accounting standard setter for banks. It should be clarified in any case that dynamic provisioning does not aim at profit smoothing which is opposed by IAS/IFRS. On the contrary, genuine volatility in a bank's business (related to the cyclicality of risk) would continue to be recorded for many reasons, starting with the fact that pro-cyclicality is not fully eliminated. Moreover loan loss provisions apply just to the banking book.



Secondly besides being not counter-cyclical for the Italian banks, the Spanish system, as shown by the results, would require a lower level of provisions to the Italian banks. This can generate prudential regulatory problems.

## References

- Ahmed, A. S., Takeda, C., Thomas, S., 1999, “Bank loan loss provisions: a re-examination of capital management, earnings management and signaling effects”, *Journal of Accounting and Economics*, 28, 1-26;
- Arpa M., Giulini I., Itner A. and Pauer F. (2001), “The influence of macroeconomic developments on Austrian banks: implications for banking supervision”, *BIS Papers*;
- Bikker, J.A., Hu, H., 2002, “Cyclical patterns in profits, provisioning and lending of banks and procyclicality of the new Basel capital requirements”, *Banca Nazionale del Lavoro Quarterly Review* 55, 143–175 ([www.dnb.nl](http://www.dnb.nl));
- Basel Committee on Banking Supervision, “Basel II: International Convergence of Capital Measurement and Capital Standards: A Revised Framework”, November 2005;
- Boyer R. (2007), “Assessing the impact of fair value upon financial crises”, *Oxford Journals*, Socio-Economic Review;
- Burrioni M., Quagliariello M., Sabatini E. and Tola V. (2009), “Dynamic provisioning: rationale, functioning, and prudential treatment, Banca d’Italia, Eurosystema, *Questioni di Economia e Finanza*;
- Cavallo M. and Majnoni G. (2002), “Do banks Provision for Bad Loans in Good Times? Empirical Evidence and Policy Implications”, in R.M. Levich, G.Majnoni and C. Reinhart (eds.), *Ratings, Ratings Agencies and the Global Financial System*, Kluwer Academic Publishers, Boston;
- Cicardo G. (2007), “Basilea 2, Ias e rischio di credito: convergenza o doppio binario?”, Bancaria Editrice;
- Ciocca P. (2004), “Basilea 2 e IAS: più concorrenza, minori rischi,VIII Convention ABI, Intervento, 29 novembre, Roma;
- De Lis S. F. and Herrero A.G. (2009), “The Spanish Approach: Dynamic Provisioning and other tools”, *BBVA Working Papers*, Economic Department Research n. 0918;
- Economic and Financial Affairs Council – Ecofin (2009), *Council conclusions on pro-cyclicality*, 2954<sup>th</sup> meeting, 7 July;
- European Commission (2009), Public consultation regarding further possible changes to the Capital Requirements Directive (“CRD”), July;

- Financial Services Authority (2009a), “The Turner Review: A regulatory response to the global banking crisis”, March;
- Financial Services Authority (2009b), “A regulatory response to the global banking crisis”, *FSA Discussion Paper*, No. 09/02, March;
- Fudenberg D. and Tirole J. (1995), "A Theory of Income and Dividend Smoothing Based on Incumbency Rents," *Journal of Political Economy*, *University of Chicago Press*, vol. 103(1), pages 75-93, February;
- IASB (2009), *Request for Information (“Expected Loss Mode”) Impairment of Financial Assets: Expected Cash Flow Approach*, June;
- Mann F. and Michael I. (2002), “Dynamic provisions: issues and application”, *Bank of England Financial Stability Review*, December;
- Pain (2003), “An exploration of measures to assess a bank’s credit loss experience”, *Journal of International Finance & Economics*;
- Quagliariello M. (2007), “Banks’ Riskiness over the Business Cycle: a Panel Analysis on Italian Intermediaries”, *Applied Financial Economics*, Vol.17, No.2.;
- Saurina J. (2009), “Crisis response – Public policy for the private sector”, *The World Bank Group, Finance and Private sector development Vice-Presidency*, note number 7;
- Valckx N. (2003), “What determines loan loss provisioning in the EU?”, ECB, mimeo;

Web sites:

- [www.bancaditalia.it](http://www.bancaditalia.it)
- [www.bankofengland.co.uk](http://www.bankofengland.co.uk)
- [www.bde.es](http://www.bde.es)
- [www.bis.org](http://www.bis.org)
- [www.ecb.eu](http://www.ecb.eu)
- [www.iasb.org](http://www.iasb.org)
- [www.istat.it](http://www.istat.it)