Financial Accounting Standards Board

401 Merritt 7, PO Box 5116, Norwalk, CT 06856, USA
Tel: +1 203 847 0700
Fax: +1 203 849 9714
Website: www.fasb.org

International Accounting Standards Board

30 Cannon Street, London EC4M 6XH, United Kingdom
Tel: +44 (0)20 7246 6410
Fax: +44 (0)20 7246 6411
Website: www.iasb.org

This document is provided as a convenience to observers at the joint IASB-FASB meeting, to assist them in following the Boards' discussion. It does not represent an official position of the IASB or the FASB. Board positions are set out in Standards (IASB) or Statements or other pronouncements (FASB).
These notes are based on the staff papers prepared for the IASB and FASB. Paragraph numbers correspond to paragraph numbers used in the joint IASB-FASB papers. However, because these notes are less detailed, some paragraph numbers are not used.

INFORMATION FOR OBSERVERS

IASB/FASB Meeting: **March 2009, London**

Subject: **Credit Growth, Problem Loans and Credit Risk Provisioning in Spain (Agenda paper 7D)**

CREDIT GROWTH, PROBLEM LOANS AND CREDIT RISK PROVISIONING IN SPAIN

Santiago Fernández de Lis,
Jorge Martínez Pagés
and Jesús Saurina

Banco de España

Banco de España — Servicio de Estudios
Documento de Trabajo n.º 0018

CREDIT GROWTH, PROBLEM LOANS AND CREDIT RISK PROVISIONING IN SPAIN (*)

Santiago Fernández de Lis, Jorge Martínez Pagés and Jesús Saurina

(*) Paper prepared for the BIS Autumn Central Bank Economists' Meeting, October 2000. We thank Alicia Sanchís for helpful research assistance. We thank Pilar Alvarez, Juan Ayuso, Anselmo Díaz, Juan González, Nieves Rodríguez, Luis Javier Rodríguez and participants in an internal seminar in the Banco de España for very helpful comments.

ABSTRACT

This paper analyses the cyclical behaviour of bank credit, loan losses and provisions for loan losses in Spain. These three variables are strongly cyclical in Spain -as in many other countries- and this poses some problems to bank supervisors and regulators. In a context of strong competitive pressures, there is a tendency for loose bank credit conditions in an upturn in view of the low level of contemporaneous non-performing loans. This may contribute to an over-extension of credit. The low quality of these loans will only become apparent with the *ex post* emergence of default problems, which will tend to appear during downturns, with an estimated lag of approximately three years in the case of Spain. On the other hand, loan loss provisions in Spain have traditionally had a pro-cyclical bias as they were largely linked to the volume of contemporaneous problem assets. Low provisioning in the upturn reveals that latent risks are not properly acknowledged and hence book profits are biased upwards during the upturn and downward during the downturn. The paper explains in detail the rationale and expected effects of the new loan loss provision –the so-called statistical provision- introduced recently by the Banco de España and aimed at an appropriate recording and recognition of expected losses.

1. INTRODUCTION

The purpose of this paper is to analyse the growth of bank credit and its prudential implications in Spain. This is an ever-present item on the agenda of banking supervisors, since most banking crises have had as a direct cause the inadequate management of credit risk by institutions.

Disaster myopia, herding behaviour, perverse incentives and principal-agent problems explain mistakes in bank credit policy in an expansionary phase. Banks could be forced into an excessive credit expansion as a result of an informational externality that makes bank credit policies interdependent. Short-term concerns of bank managers coupled with the fact that the market is more forgiving if mistakes are made by many players at the same time force bank managers into an overly expansionary credit policy that will increase borrowers' debt levels excessively and that will result in an increase in problem loans.

Bank supervisors are well aware of this problem. However, it is very difficult to persuade bank managers to follow more prudent credit policies during an economic upturn, especially in a highly competitive environment. Even conservative managers might find market pressure for higher profits very difficult to overcome. This is compounded by the fact that for many countries loan loss provisions are cyclical, increasing during the downturn and reaching their lowest level at the peak. To a large extent, this reflects an inadequate *ex post* accounting of credit risk. As a result, book profits follow the opposite pattern. Many credit risk mistakes are made during the expansionary phase of the economic cycle although they only become apparent *ex post* in the downturn. In the paper we present a regulatory device recently adopted in Spain that could contribute to correct this problem.

The new loan loss provision introduced by the Banco de España, the so-called statistical provision, is explained in detail in this paper. The statistical provision is aimed at a proper accounting recognition of *ex ante* credit risk. Expected loan losses exist from the moment a loan is granted. This should be reflected in the risk premium included in the price of credit and hence in the income stream coming from the loan since its very beginning. Therefore it seems logical to build up the corresponding provision for loan losses also at that time. This change is expected to reduce the cyclical behaviour of loan loss provisions, correcting the resulting bias in the profit and loss account, decreasing bank profit volatility and improving bank managers' awareness of credit risk. The statistical provision should also be regarded as a mechanism to overcome the co-ordination problems of individual banks at the peak of the cycle and to reinforce medium-term bank solvency.

The paper is organised as follows. The following section analyses the patterns of bank lending in Spain while section three looks into the determinants of *ex post* credit risk from an individual bank level perspective. Section four is devoted to the analysis of past

loan loss provisioning policies in Spain. Section five presents recent changes in provision requirements, in particular the introduction of the statistical provision. Its functioning is analysed and its expected effects explained. The last section makes some concluding remarks.

2. THE CYCLICAL PATTERN OF BANK LENDING IN SPAIN

As Chart 1A clearly shows, the growth of bank lending is characterised by alternate periods of expansion and stagnation. Despite the profound structural changes undergone by the Spanish economy over a period as long as that considered[1], bank lending has maintained its cyclical pattern. This growth cycle matches very precisely the business cycle.

Credit is not only pro-cyclical, but tends to grow faster than GDP during expansions and more slowly during recessions, which is reflected in the behaviour of the bank lending-to-GDP ratio (see Chart 1B). This ratio displays a tendency to grow over time, consistent with the progressive financial development of the economy, which is temporarily interrupted by periods of economic and credit stagnation.

This behaviour can be explained by demand and/or supply factors. On the demand side, the composition of expenditure is an important determinant of credit. Different types of household and firm expenditures are financed to a differing extent with bank loans. For example, business investment, residential investment and durable consumption are expenditure decisions requiring a higher resort to external finance than non-durable consumption. Moreover, debt can finance not only real expenditure but also financial acquisitions, which are not included in GDP and show a particularly intense cyclical pattern. On the other side, real interest rates are also an important determinant of credit demand. Finally, relative prices can also have an impact on credit demand. Thus, for example, demand for mortgages depends on housing prices. Since bank loans are deflated by CPI to obtain a measure of real credit, an increase in housing prices would lead to an increase in our measure of real credit.

[1] In particular, the Spanish financial system was characterised in the sixties by bank rates fixed administratively, mandatory investment ratios, restrictions on the opening of branches and on the setting up of new banks, poorly developed financial markets and the practical absence of an active monetary policy. It was gradually transformed into a liberalised, internationally integrated financial system in the early nineties. Some of the main landmarks in this process were: the implementation of an active monetary policy from 1973, the progressive liberalisation of bank interest rates throughout the period from 1974 to 1987, the elimination of mandatory ratios and restrictions on the opening of new branches or banks between 1974 and 1988, the creation of an efficient government debt secondary market in 1987 and the securities markets reform in 1988.

On the supply side, there is a growing literature on credit rationing that relates its level to borrowers' net wealth. Hence, the cyclical behaviour of net wealth is an essential element for explaining the cyclical behaviour of credit[2]. The effect on the business cycle is to increase cyclical fluctuations in what has been denominated the "financial accelerator effect"[3]. Apart from that, misalignments in asset prices may lead to inadequate lending and borrowing decisions and to financial fragility.

For our purposes the most important supply factor is banks' lending policy. If this is relaxed during the upturn, an accumulation of risk is built up and this potentially affects banks' solvency in the downturn. This is compatible with the financial-instability hypothesis of Kindleberger (1978) and Minsky (1982), according to which the financial system is inherently unstable. There is a tendency for "excessive" accumulation of debt in times of plenty, when borrowers appear able to bear higher levels of expenditure and debt. This "excess" is then corrected during recessions through deflation and economic crisis. The result is again an increase in business cycle fluctuations[4].

Table 1 summarises the available data on the behaviour of credit and its above-mentioned determinants in the Spanish economy during the period from 1963 to 1999[5]. All explanatory factors display a pro-cyclical behaviour, except the real interest rate on loans[6], thus contributing to explaining the pro-cyclical pattern of the credit-to-GDP ratio. Expenditure items more dependent on credit, such as residential and non-residential investment and durable-goods consumption, exhibit a stronger pro-cyclical behaviour than GDP; the same is true for financial acquisitions. Real and financial asset prices also tend to grow faster in periods of economic expansion[7], boosting private-sector wealth. Finally, net financial assets of non-financial firms and households, although showing a long-run upward trend, are comparatively higher at the beginning of the cyclical upturn, before deteriorating progressively over the expansionary phase. The absence of adequate information on banks' lending policy does not allow us to draw any conclusion in respect to this potential explanatory factor. Nevertheless, some anecdotal evidence can be drawn from the analysis of the various credit cycles in the period considered.

[2] See, for example, Kiyotaki and Moore (1997) or Suárez and Sussman (1999).

[3] See, for example, Bernanke et al (1998). However, net wealth not only affects credit supply, but also credit demand.

[4] This kind of behaviour has been explained by disaster myopia (Herring, 1999), herd behaviour (Rajan, 1994) or as a result of perverse incentives, e.g. the existence of a safety net.

[5] Although an appropriate indicator of total (real and financial) wealth of the non-financial private sector in Spain is not available, there are some incomplete but potentially useful indicators, which are presented in Table 1.

[6] Structural changes in the Spanish economy (essentially liberalisation in the early period and EMU in the late period) mask the cyclical pattern of real interest rates.

[7] In the case of share prices, they also tend to lead changes in GDP growth.

The first credit cycle is particularly remarkable. Before the mid-seventies oil crisis, the Spanish economy grew strongly and government-controlled interest rates were set at very low levels. The loose monetary environment, compounded by the absence of good incentives and management skills among bank managers, contributed to the strong growth of bank lending and to an excessive indebtedness on the part of Spanish non-financial firms. The total debt (bank loans, fixed-income securities, loans from non-residents and trade credit) of Spanish non-financial firms as a percentage of GDP reached a historical peak at the beginning of the 1980s (see Chart 2). This must have contributed to the impact of the oil price shocks of 1973 and 1979 on the Spanish economy and to the severe banking crisis that affected half of Spain's commercial banks (which accounted for around 25-30% of the total capital of the sector) between 1977 and 1985. This banking crisis is likely to have exacerbated the economic stagnation, pushing back economic recovery until the mid-eighties. Between 1976 and 1986, despite low real interest rates, average annual bank lending growth was just 0.3%. That is, the bubble pattern of non-financial firms' debt seems to point to banks' lending policies contributing to exacerbate the business cycle.

An important explanatory factor of the 1987-1991 boom in bank lending was the increase in housing prices, which rose more than 100% during the second half of the 1980s. Owing partly to the huge increase in housing prices and partly to the shift by commercial banks towards the business of lending to households, the volume of mortgage loans granted by Spanish banks grew strongly from 1985[8] (see Chart 3). In the stagnation period between 1992 and 1996 bank lending was almost flat, but this occurred against the background of a very tight monetary policy and without a generalised banking crisis.

The current bank lending expansion is not independent of the greater macroeconomic stability (low inflation and real interest rates) stemming from EMU. Other potentially important elements are the increase in asset prices and in the acquisitions of financial assets, particularly abroad, by Spanish non-financial firms and households (see Table 1). Also, growing competition among banks may be boosting credit growth. This growing competition is reflected in declining banks' margins, although not in bottom-line profits due to the very low level of loan loss provisions in recent years.

To sum up, bank lending in Spain is strongly pro-cyclical. There are several potential explanations for high credit growth during economic expansions, not all of them having the same implications. Since we are interested in credit growth as an indicator of risk, we are particularly concerned about the possibility of an excessive accumulation of debt resulting

[8] Mortgages were traditionally the niches of savings banks. Since the late eighties, commercial banks have competed intensively to gain a higher share of this market. While mortgages accounted for 20% of total loans in 1985, they now (first half of 2000) stand at around 45% of total loans.

from a systematic easing of bank credit conditions during periods of strong economic activity. Although some anecdotal evidence and some theoretical arguments point in that direction, the incomplete quantitative information available, the important structural changes the Spanish economy has undergone and the identification problems at an aggregate level render the estimation of the relative impact of each factor extremely difficult. One potential way of casting some light on this issue is to analyse the relationship between credit growth and problem loans at the level of individual institutions, which is the aim of the next section.

3. CREDIT POLICY OF INDIVIDUAL BANKS AND PROBLEM LOANS

There is a very close relationship between problem loans and the economic cycle. During recessions problem loans increase as a result of firms' and households' financial distress. When the economy grows strongly, the income of non-financial firms and households expands and they can repay loans easily, contributing to the decline in banks' problem loans ratios.

Chart 4 depicts the strong correlation between the problem loans ratio of Spanish deposit institutions and the GDP growth rate. Of course, this relationship has a negative sign as problem loans increase when GDP growth rates slow, and *vice versa*.

Different types of banks show a very similar relationship between bad loans and economic activity. Chart 5 plots the ratio of problem loans for Spanish commercial and savings banks, which represent more than 95% of the total assets of credit institutions. Although the level of the ratio differs, the cyclical pattern is very similar.

The ratio of problem loans also differs by type of loan. Households and firms have different levels of bad loans. On average, the former is lower than the latter. Among households, mortgages have very low delinquency levels compared to consumer loans, credit card loans or overdrafts. Among firms, there are substantial differences in problem loans ratios by economic sector: for instance, real estate developers show, on average during the cycle, more problem loans than extensions to public utilities as indicated by data from the Banco de España Credit Register (CIR).

In addition to these macroeconomic factors, the credit policy of each individual institution is crucial for understanding its level of problem loans. Chart 6 gives the number of banks (both commercial and savings banks) whose ratio of problem loans deviates from the simple annual average ratio by a certain amount of percentage points. It is shown that there

is a lot of dispersion among problem loans ratios for the same cyclical or macroeconomic position[9]. At the same point in the cycle, some banks have significantly below-average problem loans ratios while others have much more *ex post* credit risk.

Chart 7 shows the distribution of the ratio of problem loans in two different positions of the cycle: downturn (1992-1994) and strong growth (1997-1999). As expected, the mean and the dispersion of problem loan ratios are higher at the trough than at the peak of economic activity. The distribution of problem loans is asymmetric with a long tail on the right hand side, indicating that the number of banks with significantly above-average problem loans is larger than those significantly below average.

The above indicators underline that microeconomic variables at the level of each bank must play a determining role in explaining bank problem loans. Besides, the cyclical position of the economy affects the level and dispersion of the problem loans ratio.

A rapid credit expansion is deemed one of the most important causes of problem loans[10]. During economic expansions many banks are engaged in fierce competition for market share in loans, resulting in strong credit growth rates. The easiest way to gain market share is to lend to borrowers of lower credit quality. This market share strategy is even more dangerous if the bank is a new entrant in a product or regional market. Initially, banks selling new products will probably have more problem loans in their new business simply because they lack the necessary expertise. Banks entering a distinct regional market will be subject to adverse selection. Incumbents will allow the riskiest customers to leave the bank but will retain the best ones. The risk profile of a client becomes known only with time. The informational disadvantage of new entrants together with their appetite for market share might be a recipe for later loan portfolio problems[11].

Principal-agent problems could fuel credit expansion because bank managers focus more on gaining market share than on shareholder profitability. Managers poorly monitored by shareholders might be willing to increase risk in order to bolster short-term profitability. Therefore, managers could have incentives to overextend credit in order to maximise their

[9] The comparison is calculated with the simple average of **each** year. Although certain institutions have a regional basis, Spanish regions are not different enough to have independent economic cycles, and it can be concluded therefore that most of them share the same cyclical position.

[10] Clair (1992), Salas and Saurina (1999b) and Solttila and Vihriälä (1994) find evidence that past credit growth explains the current level of problem loans, after controlling for the composition of the bank loan portfolio.

[11] Shaffer (1998) shows that adverse selection has a persistent effect on new entrants.

utility[12]. It can take a long time to realise the danger of these risky strategies because managers may be engaged in income smoothing practices[13].

Shareholders of banks with very low solvency levels might be tempted to increase credit risk as a bet on resurrection. A subtler case of dangerous incentives appears in banks that are experiencing slow but steady declines in their charter values[14]. Crockett (1997) points out that increasing competition may encourage disaster myopia. Similarly, herd behaviour can fuel overly liberal credit policies because the penalties for being wrong in company are much lower than for being wrong in isolation[15].

Several additional factors could affect the level of bank problem loans. First of all, loan portfolio composition plays an important role as an indicator of bank risk profile[16]. Besides, risk concentration is an additional source of concern as many banking crises have pointed out. Secondly, inefficient banks performing poor screening and monitoring of borrowers will have lower portfolio quality[17]. Thirdly, the overall competitive environment in which banks operate could also affect the level of credit risk the bank is willing to take. If the bank has some degree of monopoly power, it has the possibility of charging higher interest rates in the future. Therefore, a higher number of firms of lower quality could obtain funds from the bank. This would not happen in a competitive market where it is not possible to recover in the future the present losses because the firm, after solving its difficulties, would not pay an interest rate above the market rate[18].

Salas and Saurina (1999b) have modelled the problem loans ratio of Spanish banks in order to gauge the impact of loan growth policy on bad loans. They were interested in capturing the lag between credit expansion and the emergence of problem loans.

[12] Gorton and Rosen (1995) show that when bank managers receive private benefits of control and are imperfectly monitored, managers will take on excessive risk if the industry is unhealthy.

[13] Fudenberg and Tirole (1995) analyse the theoretical foundations for income smoothing. The empirical literature has widely confirmed the existence of such practices among banks. Saurina (1998) contains a survey of the theoretical and empirical literature on earnings management.

[14] Keeley (1990) shows how the deregulation of the American banking industry brought about an increase in competition that eroded bank charter values, giving incentives to managers to shift to riskier policies (more credit risk and less capital). Salas and Saurina (1999a) find similar results for Spanish commercial banks.

[15] See for instance Rajan (1994).

[16] See Boyd and Gertler (1993), Davis (1993), Domowitz and Sartain (1999), Keeton and Morris (1987), Murto (1994), Pensala and Solttila (1993) and Randall (1993). Berger and Udell (1998) and Freixas and Rochet (1997) discuss, from a theoretical point of view, the role of collateral.

[17] Berger and DeYoung (1997) and Kwan and Eisenbeis (1997) find that inefficient banks are more prone to risk taking.

[18] Petersen and Rajan (1995) find that a higher percentage of young firms are financed in a concentrated banking market than in a competitive one.

Macroeconomic developments, regulatory changes and portfolio composition, size and the incentives bank managers and shareholders face were controlled[19].

Table 2 shows their empirical estimation results using a panel data of commercial and savings banks from 1985-1997. As expected, the cycle (measured through the current and lagged-one-year GDP growth rates) has a negative and significant impact on problem loans. The current impact is much more important. Additionally, increases in non-financial firms' indebtedness raise problem loans.

Regarding the bank specific variables, there is a strongly significant and positive impact of credit growth on problem loans but with a lag of around three years. Therefore, an increase in credit today will have a negative impact on problem loans three years hence. Branch growth also has a positive impact on problem loans with a three-year lag underlining the importance of adverse selection in bank expansion strategies.

Other results from the same paper confirm that inefficient banks hold riskier portfolios, collateralised loans are less risky and large banks have fewer problem loans probably as a result of their better portfolio diversification opportunities. These results are quite robust to many specification changes.

The finding that credit growth affects problem loans with a relatively long lag is a matter of concern for supervisors. If bank managers are interested in short-term targets they will not take proper measures to limit medium-term exposures to credit risk. Given that credit expansion occurs usually during favourable economic periods where optimism is widespread, it is easy to understand how difficult it is for supervisors to convince bank managers of the need to be cautious. Furthermore, conservative bank managers are under strong pressure to act like their riskier colleagues in order to reach higher short-term profits (based on increased volumes and riskier borrower profiles). Things are even more worrying when the book value of the loan portfolio and profits are not properly adjusted –through the related provision- by the expected future losses. Hence the importance of provisioning rules.

[19] The literature on problem loan determinants is scarce. Some authors (Brookes et al (1994) or Davis (1992)) have only focused on macro variables whereas others (Keeton and Morris (1988) or Solttila and Vihriälä (1994)) use only micro data. Very few papers analyse both macro and micro determinants of problem loans. Among these are Clair (1992) and González-Hermosillo et al (1997).

4. LOAN LOSS PROVISIONS

There is no harmonisation of asset classification rules at an international level. The definition of problem loans or asset impairment varies across countries. Some countries allow bank managers and/or external auditors to establish the amount of bad loans instead of having a definition of impaired assets. These practices differ from those of other countries where a precise definition of impaired assets is provided by regulators. However, even in this latter group of countries, asset classification criteria differ. 90 days overdue is a quite standard period to classify a loan as non-performing but some countries use different overdue dates depending on the credit product. Some national regulations classify as doubtful those credit exposures that, although not yet overdue, are already showing signs of a very low repayment probability.

The differences among countries increase when examining loan loss provisioning rules and practices. There are specific and general provisions with different requirements in each country, sometimes set by the regulators, sometimes left to the choice of bank managers (although reviewed by external auditors)[20]. Besides, tax treatment of loan loss provisions also differs widely.

There is a contrast between the considerable efforts made to harmonise capital requirements at an international level and the lack of such harmonisation in terms of asset classification and provisioning rules[21]. The issue is important, since some apparently safe capital ratios can suddenly disappear in a banking crisis when the loan portfolio has not been properly classified and provisioned.

Spain has a very detailed regulatory framework for asset classification and loan loss provisions, which limits bank managers' discretion. The accuracy of both is checked thoroughly by on-site inspections carried out regularly by the Banco de España. The traditional Spanish regulatory system distinguishes between specific and general provisions. A third category of provisions has recently been created, the so-called statistical provision. The general provision is a fixed one, while the specific provision aims at covering impaired assets (*ex post* credit risk). The statistical provision is intended to acknowledge expected losses, as explained below.

Before describing the characteristics of the statistical provision and the reasons for it being set, it is worth quickly reviewing the asset classification and “old” provisioning rules.

[20] The differences are highlighted in Beattie et al (1995).

[21] The European Union is currently focusing on the convergence of regulatory practices regarding loan loss provisioning rules.

Annex 1 contains a brief summary of asset classification criteria and loan loss provision requirements. Note that provisions calculated following Annex 1 criteria are generally treated as an expense from a tax perspective[22]. Banks are obviously free to provision above the legal requirements, but an excess over the minimum does not benefit from this tax advantage.

Chart 8 plots the loan loss provision ratio (provisions of the year over total loans). It can be seen that the loan loss provision in Spain shows a strong cyclical behaviour: the ratio of provisions to total loans falls during periods of economic growth and rises considerably during recessions.

Since 1994 the ratio of provisions has continuously decreased reaching an all-time low last year as a result of the economic expansion and the strong decline of problem loans. Loan portfolios have, at the same time, been showing strong rates of growth over the last two or three years. Given the positive (although considerably lagged) relationship between credit growth and problem loans, these developments are worrying. In the downturn, the increase in impaired assets and demanding pro-cyclical loan loss provisions could threaten the profits of the riskiest institutions.

From a conceptual standpoint, it is important to keep in mind that credit risk appears at the very beginning of the loan operation when the borrower receives the money. Of course the bank cannot know whether a particular loan will default, but it knows that a certain proportion of the loans in its portfolio will certainly default[23]. This should be reflected appropriately by the bank by charging the borrower with a risk premium. The income stemming from the risk premia should cover the expected losses resulting from problem loans. These are an *ex post* realisation of credit risk and tend to concentrate in the trough of the business cycle, resulting in a different accounting recognition pattern of income and costs along time.

As a result of the provisioning accounting rules discussed in Annex 1, the latent risk of loan portfolios was not properly recognised in the profit and loss account under the old system. In periods of economic expansion the fall in doubtful loans goes hand in hand with the decrease in provisions, which in turn allows bank managers to improve bottom-line profits. However, there is something wrong in the level of profits shown if the latent credit risk in the loan portfolio is not properly taken into account. Every loan intrinsically has an expected (or potential) loss that should be recognised as a cost by means of an early provision. Otherwise, the picture of the true profitability and solvency of the bank over time

[22] The only exception is the general provision for mortgages (0.5%) which is not considered as a tax-deductible expense.

[23] The situation is similar to that of insurance products.

could be distorted. More dangerously, the overvaluation of profits might lead to an increase in dividends that could undermine the solvency of the bank. Therefore, the acknowledgement of latent losses is a prudent valuation principle (similar to the mathematical reserves set aside by insurance companies) that contributes to correcting the cyclical bias that currently exists in the profit and loss account.

If the total cost of the loan is not properly recognised and accounted for, bank managers willing to gain market share may be tempted during economic expansions to underprice loans. More conservative managers will face strong incentives to follow this aggressive pricing behaviour in order to protect market shares. This herding behaviour is very dangerous for the stability of the whole banking system.

All these facts and potential or real problems seem to point at the same direction: there is a need for a statistical provision that covers the expected loss inherent to the loan portfolio. This statistical provision should be considered as a cost for the bank and should be taken into account in the pricing of the operation.

5. THE STATISTICAL PROVISION FOR INSOLVENCY

The new regulation on provisions was approved at the end of 1999 but came into effect on July 1st 2000. Poveda (2000) explains the rationale and the mechanism underlying the so-called statistical provision.

There are two approaches to comply with this provision that differ in the way the expected or latent loss is estimated. First, banks can use their *own internal models* in order to determine the statistical provision. Internal models use the bank own-loss experience to determine the provision. However, they must be integrated into a proper system of credit risk measurement and management, have to use the bank own historical database spanning at least an entire economic cycle and must be verified by the supervisor. The loan portfolio should be segmented in homogeneous groups. If the bank only has internal models for one or some of these groups, the inspectors of Banco de España will verify that the bank is not practising a cherry picking strategy. The internal model approach has been accepted by the regulator so as to stimulate banks to measure and manage their credit risk more in line with the new BIS proposal to reform the Capital Accord. Those banks that have started to use these models for their own internal purposes will be rewarded with its use for the statistical provision.

Alternatively, for those banks that have not developed yet their own internal models, there is a *standard approach* based on a set of coefficients established by the regulator.

The standard approach establishes six risk categories with the corresponding coefficients. Such coefficients are multiplied by the exposure[24].

1) Without risk (0%): those risks involving the public sector.

2) Low risk (0.1%): mortgages with outstanding risk below 80% of the property value as well as risks with firms whose long-term debts are rated at least A.

3) Medium-low risk (0.4%): financial leases and other collateralised risks (different from the former in point 2).

4) Medium risk (0.6%): risks not mentioned in other points.

5) Medium-high risk (1%): personal credits to finance purchases of durable consumer goods.

6) High risk (1.5%): credit card balances, current account overdrafts and credit account excesses.

These categories correspond roughly to the different levels of credit risk in the portfolio. Our historical experience shows that credit cards, overdrafts and consumer loans are far riskier than mortgages or public-sector loans. The coefficients reflect the average net specific provision over the economic cycle. They are based on figures for the period 1986-1998, but also take into account the improvements in credit risk measurement and management made by Spanish credit institutions during these years. The statistical provision is obviously intended to anticipate the next economic cycle rather than to reflect past ones.

The fund of the statistical provision for insolvency will be charged quarterly in the profit and loss account by the positive difference between one-quarter of the estimate of latent global losses in the different portfolios (using the standard or internal model approach) and the net charges for specific provisions in the quarter. If the difference is negative the amount will be written as income in the P & L account deducting the fund of the statistical provision for insolvency (as long as there is an available balance). The fund built in this way has an upper bound set equal to three times the result of multiplying the

[24] Loans to credit institutions are excluded.

coefficients by the exposure[25]. It should be borne in mind that the statistical provision is not a tax-deductible expense.

Some simple algebra will help illustrate the working of the old and new system of provisioning.

Old system:

General provision:

Balance: GF = g*L, where L stands for total loans and g for the parameter (between 0.5% and 1%).

Annual provision: GP = g*ΔL

Specific provision:

Balance: SF = e*M, where M stands for problem loans and e for the parameter (between 10% and 100%).

Annual provision: SP = e*ΔM

Annual total provision in the old system (general + specific):

AP = GP + SP = g*ΔL + e*ΔM

New system

General and specific provisions: as before.

Statistical provision:

Latent risk measure Lr = s*L, where s stands for the average coefficient (between 0% and 1.5% in the standard approach).

Annual provision: StP = Lr – SP

If SP < Lr (low problem loans) => StP > 0 (building up of the statistical fund)

[25] The limit takes into account the maximum non-specific deduction (4%) set by the European Union Directive (86/635/EEC).

If SP> Lr (high problem loans) => StP < 0 (depletion of the statistical fund)

Balance of the statistical fund: $StF = StP_t + StF_{t-1}$, with a limit: $0 \leq StF \leq 3*Lr$

Annual total provision in the new system (generic + specific + statistical), assuming that limits are not reached:

$$AP = GP + SP + StP = g*\Delta L + SP + (Lr - SP) = g*\Delta L + s*L$$

The expected effects of the new statistical provision

The statistical provision was designed not to substitute but to complement the specific provision. Hence it is expected to have a counterbalancing effect on the strong cyclical behaviour of loan loss provisions in Spain. The statistical provision increases precisely during the expansionary phase. During recessions the specific provisions increase while the use of the statistical fund smoothes its impact on the profit and loss account of the bank. The combined effect of both provisions will be a better accounting recognition of both income and costs stemming from bank loan portfolios and hence an improved measurement of bank profits.

The volatility of bank book profits will decrease. The extent to which this lower volatility would have real effects is a much more complex issue that goes beyond the aims of this paper[26]. The main stabilising effect of the statistical provision will be seen in the next recession when banks will be able to use the statistical fund to cover the specific loan loss provisions requirements[27]. Managers pursuing very aggressive credit growth strategies have to set aside more provisions.

From a theoretical point of view, the establishment of the statistical provision might be viewed as a device provided by the regulator to facilitate the co-ordination of individual banks to sidestep the trap indicated by Rajan (1994). Forcing a general increase in loan loss provisions during the expansionary period contributes to reinforcing medium-term bank solvency, to better match income and expenses from an accounting point of view, to decrease earnings volatility and probably to make bank managers more aware of credit risk. Without this "external" intervention, if loan loss provisions were left to the discretion of bank

[26] If bank stockholders perceive the lower profit volatility as a measure of lower risk, they could fund the bank at cheaper rates.

[27] Note that when the statistical provision requirement is below the specific one, the difference is credited to the profit and loss account and therefore has the net effect of decreasing the amount necessary to comply with the specific loan loss provision.

managers, we could end up *ex post* with an over-extension of credit and an excessive build-up of imbalances in the financial sector that might result in financial fragility and distress on the whole economy.

A simulation exercise

Table 3 shows a simulation of the impact of the new statistical provision and its interaction with the profit and loss account. For the sake of simplicity, the calculations have been made annually although the provision is required on a quarterly basis.

It is necessary to make hypotheses about the growth of the loan portfolio (normalised at 1000), the statistical provision parameter value (set at 0.5%)[28] and the ratio of specific loan loss provisions to total loans (for the general provision, a 0.75% parameter is set). Additionally, a hypothesis about profits before taxes is needed.

Chart 9 shows the impact of the old and new system of provisions. Under the old system the joint effect of the specific plus the general provisions was strongly cyclical. The introduction of the statistical provision has a counterbalancing effect as it has the opposite cycle profile. The joint effect of the old system plus the statistical provision is to smooth provisions during the cycle. As shown in Chart 10, the statistical fund builds up during the expansionary period (low problem loans) and decreases in the downturn.

The scenario depicted in Table 3 allows us to illustrate the impact of the statistical provision over time. Credit risk grows strongly during the first two years. From the third year a relatively abrupt economic landing starts, profits before provisions decline at the lowest point of the cycle (year 6) and resume thereafter in line with outstanding loans recovery. The statistical fund is built up during the first four years as long as the statistical provision is above the specific one. Two-thirds of the statistical fund limit are reached in year 4. As soon as the specific provision requirements outpace the statistical ones (year 5), the statistical fund is depleted reaching its lowest level in year 8 when it is almost exhausted. From year 9 onwards, the build-up resumes as the cyclical position of the economy improves.

Table 3 shows that the joint effect of the specific plus the general loan loss provisions (those existing in Spain until last year) was slightly below 15% of profits before provisions until the economy turned down. When economic conditions deteriorated profits decreased strongly. In year 6 almost three-quarters of profits before provisions were wiped out.

[28] The 0.5% is a rough average of the six risk category parameters (from 0% to 1.5%), weighted according to the share of each risk category in the portfolio.

Under the new system, the statistical provision represents more than 15% of profits up till the recession. Later on, it becomes negative as the statistical fund is used. When all the loan loss provisions are considered together, the picture is much more reassuring: during almost all the period simulated the joint impact of the three types of provisions on profits is around 35%, although it increases slightly over time as a result of the hypothesis made on the course of profits before provisions and total loans. Contrary to the "old system" scenario, in the recession there is no abrupt fall in profits after provisions.

Other scenarios changing one or several of the hypotheses used in Table 3 have been tested. For instance, if instead of using a 0.5% parameter for the statistical provision we set its value at 0.4%, the statistical fund is completely exhausted in year 6 and does not start to build up again until year 10. On the other hand, if we use 0.6% as the value of the parameter, the statistical fund never approaches the lower limit and the impact on the level of profits is higher.

The real impact of the statistical provision will depend on the coefficient applied by each bank (the standard one or the result of internal models), the course of profits before provisions and credit growth, and the future specific provisions that the bank will need. Loan portfolio composition affects the value of the standard coefficients used and, therefore, changes the amount of the statistical fund.

6. CONCLUDING REMARKS

In this paper the rationale for a proper accounting of provisions for bad loans is discussed and analysed. Bank lending is strongly pro-cyclical in Spain, as it is in many other countries. In a context of strong competitive pressures, there is a tendency for loose bank credit conditions in an upturn in view of the low level of contemporaneous non-performing loans. This may contribute to the build-up of financial imbalances in the non-financial sector. The low quality of these loans will only become apparent with the ex-post emergence of default problems, which will tend to appear during downturns, with an estimated lag of approximately three years in the case of Spain.

Provisions in Spain have traditionally had a pro-cyclical bias as they were largely linked to the volume of contemporaneous problem assets. The potential coincidence at the peak of loose credit policies and low provisions is an important concern for bank supervisors. Low provisioning reveals that latent risks are not properly acknowledged. As a result, book profits tend to overstate true profits in periods of low non-performing loans and high credit growth (upturn) and understate them in periods of high problem loans and low credit growth (downturn).

The new *statistical* provision introduced recently attempts to fill the gap, as it aims at covering expected losses. The statistical provision is an increasing function of portfolio risk. It is inversely related to the specific loan loss provision. When the later decreases the statistical provision increases, building up a statistical fund. When specific provisions rise again in the downturn, the statistical fund is progressively depleted and the impact on profits is smoothed. As a result, there is a better matching of income and expenses stemming from loan portfolios throughout the cycle and hence, a better measurement of bank profits.

From a theoretical point of view, the new provision could also be seen as a device that corrects the effects of certain inefficiencies that arise in the banking sector as a result of disaster myopia, herd behaviour, asymmetric information and short-term concerns of bank managers.

The introduction of the statistical provision is expected to improve bank managers' awareness of credit risk, leading to a proper recording and recognition of *ex ante* credit risk, reducing the pro-cyclical behaviour of loan loss provisions and correcting cyclical biases and volatility in banking profits as a result of the improved accounting acknowledgement of expected losses in bank loan portfolios.

ANNEX 1

Asset classification criteria

There are two main criteria for classifying an asset as doubtful:

1) Outstanding debts more than three months overdue. Additionally, in relation to a single risk: the accumulation of unrepaid matured sums for an amount of over 25% of the outstanding debt will entail the classification of the entire loan as doubtful. In relation to a customer: the accumulation of sums classified as doubtful of over 25% of the outstanding risks will classify the total risk with that customer as doubtful.

2) Debts, matured or not, which do not meet the first criteria are classified as doubtful if there are reasonable doubts concerning their repayment. There are some objective circumstances: if the borrower has negative equity, continuous losses, general delays in payment, an inadequate assets/liabilities or equity/liabilities ratio, cash-flow problems or the impossibility of obtaining additional financing. At the same time, debts that are in the process of legal recovery, debts of borrowers who are for the time being illiquid, etc[29].

A debt, matured or not, will be classified as very doubtful and written off when the borrower is declared bankrupt or if it has been classified as doubtful for 3 years (6 years for mortgages).

Provisioning criteria

Specific provisions:

1) For assets classified as doubtful because they are in arrears, the provisions will be provided according to percentages of their value based on the time elapsed since the maturity of the first quota.

[29] This is meant to further curtail managers' discretion.

1.1) In general:

Between 3 and 6 months: 10%

Between 6 and 12 months: 25%

Between 12 and 18 months: 50%

Between 18 and 21 months: 75%

Over 21 months: 100%

1.2) Mortgages:

Between 3 and 4 years: 25%

Between 4 and 5 years: 50%

Between 5 and 6 years: 75%

Over 6 years: 100%

While the amount of the outstanding risk is greater than 80% of the value of the property, the general percentages (1.1) shall be applied.

Risks with the public sector do not require provision.

In the case of assets classified as doubtful for reasons other than insolvency (existence of arrears), provisions should be created up to the estimated value of the non-recoverable amounts. In general they cannot be less than 25% of the balances classified as doubtful. Credits of over €25,000 which are not classified as doubtful, and are not adequately documented, will be provisioned at 10%.

General provisions:

Regardless of the funds considered for provision previously, credit exposures, contingent liabilities and doubtful assets for which there is no obligation to make specific insolvency provision (with the exception of public-sector exposures), will require funds to be set aside applying the following percentages:

0.5% for mortgages (with outstanding risk below 80% of the property value)

1% for all other risks

REFERENCES

Arellano, M. and S. Bond (1991): "Some Test of Specification for Panel Data: Monte Carlo Evidence and Application to Employment Equations", *Review of Economic Studies* 58, pp. 277-297.

Beattie, V. A.; P. D. Casson; R. S. Dale; G. W. McKenzie; C. M. S. Sutcliffe and M. J. Turner (1995): Banks and Bad Debts: Accounting for International Losses in International Banking. John Wiley & Sons.

Berger, A. N. and R. DeYoung (1997): "Problem Loans and Cost Efficiency in Commercial Banks", Journal of Banking and Finance Vol 21, no. 6, June, pp. 849-870

Berger, A. N. and G. F. Udell (1998): "The economics of small business finance: The roles of private equity and debt markets in the financial growth cycle", Journal of Banking and Finance 22, pp. 613-673.

Bernanke, B.S., M. Gertler and S. Gilchrist (1998): "The financial accelerator in a quantitative business cycle framework", NBER Working Paper 6455.

Boyd, J. and M. Gertler (1993): "U. S. Commercial Banking: Trends, Cycles, and Policy", National Bureau of Economic Research Working Paper 4404

Brookes, M., M. Dicks and M. Pradhan (1994): "An empirical model of mortgage arrears and repossessions", Economic Modelling 11 (2), pp. 134-144.

Clair, R. T. (1992): "Loan Growth and Loan Quality: Some Preliminary Evidence from Texas Banks", Economic Review, Federal Reserve Bank of Dallas, Third Quarter, pp. 9-22.

Crockett, A. (1997): "The theory and practice of financial stability". Essays in international finance 203, April. Princeton University.

Davis, E. P. (1993): "Bank Credit Risk", Working Paper Series No 8, Bank of England.

Davis, E. P. (1992): Debt, Financial Fragility, and Systemic Risk. Clarendon Press, Oxford.

Domowitz, I. and R. L. Sartain (1999): "Determinants of the Consumer Bankruptcy Decision". The Journal of Finance, Vol LIV, No 1, february, pp. 403-420.

Freixas, X. and J. C. Rochet (1997): Microeconomics of Banking. The MIT Press.

Fudenberg D. and Tirole, J. (1995): “A Theory of Income and Dividend Smoothing Based on Incumbency Rents”. Journal of Political Economy, vol 103, no. 1, pp. 75-93.

González-Hermosillo, B., C. Pazarbaçioglu and R. Billings (1997): “Determinants of Banking System Fragility: A Case Study of Mexico”, IMF Staff Papers Vol 44, n. 3, September.

Gorton, G. and R. Rosen. "Corporate Control, Portfolio Choice, and the Decline of Banking." The Journal of Finance Vol L, No 5, (December 1995), 1377-1418.

Herring, R. (1999): “Credit Risk and Financial Instability”, Oxford Review of Economic Policy, vol. 15, no. 3, Autumn, pp. 63-79.

Keeley, M. C. (1990): “Deposit insurance, risk, and market power in banking”. American Economic Review 5, 1183-1200.

Keeton, W. R. and Ch. S. Morris (1988): “Loan Losses and Bank Risk-Taking: Is There a Connection?”, Research Working Paper 88-04, Federal Reserve Bank of Kansas City.

Keeton, W. R. and Ch. S. Morris (1987): “Why Do Banks' Loan Losses Differ?”, Economic Review may, Federal Reserve Bank of Kansas City, pp. 3-21.

Kindleberger, C. (1978): “Manias, Panics and Crashes: A History of Financial Crises”, Basingstoke, Macmillan.

Kiyotaki. N. and J. Moore (1997): “Credit Cycles”, Journal of Political Economy, v. 105, n.2, April, pp. 211-248.

Kwan, S. and R A. Eisenbeis. "Bank risk, capitalization, and operating efficiency." Journal of Financial Services Research 12:2/3 (1997), 117-131.

Minsky, H. (1982): “The Financial-Instability Hypothesis: Capitalist Processes and the Behaviour of the Economy”, in C. Kindleberger (ed.), Financial Crises, Cambridge, Cambridge University Press.

Murto, R. (1994): "Finnish banking crisis: Can we blame bank management?", Finnish Economic Papers, Vol 7, No 1, Spring, pp. 56-68.

Pensala, J. and H. Solttila (1993): “Banks' Nonperforming Assets and Write-Offs in 1992”, Bank of Finland Discussion Papers 10/93.

Petersen, M. A. and R. Rajan (1995): “The Effect of Credit Market Competition on Lending relationships”, Quarterly Journal of Economics Vol CX No 2 May, pp. 407-443.

Poveda, R. (2000): “La reforma del sistema de provisiones de insolvencia”. Boletín Económico. Banco de España, pp 79-91.

Rajan, R. G. (1994): “Why bank credit policies fluctuate: a theory and some evidence”, Quarterly Journal of Economics Vol CIX No 2 May, pp. 399-441.

Randall, R. E. (1993): “Lessons from New England Bank Failures”, New England Economic Review May/June, pp.13-38.

Salas, V. and J. Saurina (1999a): “Deregulation, market power and risk behaviour in Spanish Banks”. Unpublished paper.

Salas, V. and J. Saurina (1999b): “Credit risk in two institutional settings: Spanish commercial and savings banks”. Unpublished paper.

Saurina, J. (1998): “Is there income smoothing in the Spanish savings banks?”. Unpublished paper.

Shaffer, S. (1998): "The Winner's Curse in Banking", Journal of Financial Intermediation, 7, pp. 359-392.

Solttila, H. and V. Vihriälä (1994): “Finnish Bank's Problem Assets: Result of Unfortunate Asset Structure or Too Rapid Growth?”, Bank of Finland Discussion Papers 23/94.

Suárez, J. and O. Sussman (1999): “Financial Distress and the Business Cycle”, Oxford Review of Economic Policy, vol. 15, no. 3, Autumn, pp. 39-51.

TABLE 1: SUMMARY OF THE BEHAVIOUR OF BANK LOANS AND THEIR MAIN DETERMINANTS

Variables	Average 1963-1975	Average 1976-1986	Average 1987-1991	Average 1992-1996	Average 1997-1999
*** Bank loans to non-financial resident sectors**					
(annual real growth rate)	11.4	0.3	9.2	0.5	13.1
- Mortgage loans (a)	13.7	1.2	15.8	8.1	16.4
- Other loans	10.9	0.0	7.1	-3.3	10.7
*** GDP**					
(annual real growth rate)	5.8(e)	1.8	4.3	1.4	3.8
- Residential investment	5.0(e)	-2.2	4.6	1.6	6.0
- Non-residential investment	9.2(e)	-0.6	11.2	0.3	8.5
- Durable-goods consumption	7.7(e)	0.7	6.5	0.0	11.6(f)
*** Net acquisition of financial assets** (% GDP)	---	18.2(i)	19.1	13.6	20.4
*** Average real interest rate of loans(b)**	-2.4(g)	0.0	10.1	7.6	3.9
*** Wealth indicators**					
- Housing price index (annual real growth rate)	---	---	13.0(h)	-4.4	4.9
- Stock Exchange price index (annual real growth rate)	-0.3	-7.9	-0.5	5.5	29.6
(lagged 1 year)	0.8	-14.1	11.6	1.4	29.2
- Net financial assets of Non-financial firms & Households (% GDP)	---	26.4(i)	47.6	54.7	85.9
MEMORANDUM ITEMS					
*** Annual inflation rate (CPI)**	8.9	14.5	5.9	4.4	2.1
*** 3-month interbank real interest rate(b)**	---	1.1(j)	8.3	5.3	2.1
*** Indicators of bank health**					
- Non-performing ratio(c)	0.9	3.8	3.7	6.2	2.2
- Indicator of banking crisis(d)	---	27.7	0.3	7.0	0.0
- Real profitability before taxes (over own funds)	7.8(g)	-0.5	13.2	8.2	13.3

Sources: Banco de España, INE, Ministerio de Obras Públicas, Transportes y Medio Ambiente.
(a) Loans secured with real assets.
(b) Nominal interest rate less current inflation rate.
(c) Doubtful and non-performing loans over total loans to non-financial residential sectors. This series is not homogeneous due to regulatory changes. Prior to 1982 there was no strict definition of doubtful or non-performing loans and since then, more regulatory changes have taken place, particularly in 1987.
(d) Sum of the percentages over total capital and reserves of capital and reserves of banks with solvency problems during the period considered. It refers only to commercial banks since they represent the bulk of entities with solvency problems.
(e) Data from 1965.
(f) Data to 1998.
(g) Data from 1971.
(h) Data from 1988.
(i) Data from 1980.
(j) Data from 1977.

TABLE 2

Estimation of the problem loans equation in first differences

(dependent variable $\ln(RM_{it}/(1-RM_{it})$, with RM the ratio of problem loans to total loans)

VARIABLES	PARAMETER VALUES
Dependent lagged 1 year ($\ln(RM_{it-1}/(1-RM_{it-1}))$	0.6681*** (13.64)
AGGREGATE	
GDP growth rate (ΔGDP_t)	-0.0799*** (-7.13)
GDP growth rate with 1 lag (ΔGDP_{t-1})	-0.0159** (-2.01)
Families' indebtedness ($DFAM_t$)	-0.0092** (-1.83)
Debt-equity ratio ($DEMP_t$)	0.0017*** (2.83)
1988 Regulation (REG88)	0.1482** (2,49)
INDIVIDUAL	
Loan growth rate with 2 lags ($\Delta LOAN_{it-2}$)	0.0005 (0.43)
Loan growth rate with 3 lags ($\Delta LOAN_{it-3}$)	0.0020** (2.14)
Loan growth rate with 4 lags ($\Delta LOAN_{it-4}$)	0.0002 (0.20)
Branch growth rate with 2 lags ($\Delta BRAN_{it-2}$)	-0.0007 (-1.17)
Branch growth rate with 3 lags ($\Delta BRAN_{it-3}$)	0.0007*** (2.60)
Branch growth rate with 4 lags ($\Delta BRAN_{it-4}$)	-0.0001 (-0.09)
Inefficiency ($INEF_{it}$)	0.0029* (1.64)
% Loans without collateral ($NCOL_{it}$)	0.0128** (2.51)
% Assets over total assets ($SIZE_{it}$)	-0.0811** (-2.38)
Net interest margin with 2 lags ($INTM_{it-2}$)	0.0422* (1.69)
Net interest margin with 3 lags ($INTM_{it-3}$)	0.0120 (0.38)
Capital to total assets with 2 lags ($SOLR_{it-2}$)	-0.0297 (-1.43)
Capital to total assets with 3 lags ($SOLR_{it-3}$)	-0.0012 (-0.14)
Market share ($MPOW_t$)	0.0275 (1.17)
No. of observations and time period	934; 1988-1997
Variance of residuals (σ^2)	0.0857
Sargan's Test (S)	45.61 (38)
Second order autocorrelation (m_2)	-1.430

The equation is estimated using the DPD package written by Arellano and Bond (1991). RM_{it-1} and $NCOL_{it}$ are treated as endogenous, using the Generalised Method of Moments with 2 and 3 lags to instrument these two variables. t-value in brackets, *** variable significant at the 1% level, ** at the 5% and * at the 10%. In the Sargan test (which follows a χ^2), the degrees of freedom are in brackets; its theoretical value at the 95% level for 38 degrees of freedom is 53.36. m_2 follows a N(0,1).
Source: Salas and Saurina (1999b).

TABLE 3: SIMULATION EXERCISE

ITEMS	y0	y1	y2	y3	y4	y5	y6	y7	y8	y9	y10	y11
1. Total loans												
Outstanding stock	1000.0	1160.0	1345.6	1507.1	1627.6	1725.3	1794.3	1902.0	2035.1	2197.9	2417.7	2707.8
Rate of growth (%)		16.0	16.0	12.0	8.0	6.0	4.0	6.0	7.0	8.0	10.0	12.0
2. Profits before provisions												
Level	21.5	23.2	25.0	26.0	26.5	26.5	26.0	26.5	27.6	29.3	31.6	34.8
Rate of growth		8.0	8.0	4.0	2.0	0.0	-2.0	2.0	4.0	6.0	8.0	10.0
3. Net loan loss provision												
Specific (a)		1.7	2.0	3.0	5.7	9.5	17.9	14.3	11.2	8.8	7.3	5.4
General (b)		1.2	1.4	1.2	0.9	0.7	0.5	0.8	1.0	1.2	1.6	2.2
Total		2.9	3.4	4.2	6.6	10.2	18.5	15.1	12.2	10.0	8.9	7.6
4. Statistical provision												
Parameter value (%)	0.5											
Estimated expected loss (c)		5.8	6.7	7.5	8.1	8.6	9.0	9.5	10.2	11.0	12.1	13.5
Actual statistical provision (d)		4.1	4.7	4.5	2.4	-0.9	-9.0	-4.8	-1.0	2.2	4.8	8.1
Statistical fund	0.0	4.1	8.8	13.3	15.7	14.9	5.9	1.1	0.1	2.3	7.2	15.3
Upper limit	15.0	17.4	20.2	22.6	24.4	25.9	26.9	28.5	30.5	33.0	36.3	40.6
5. Total loan loss provisions		7.0	8.1	8.7	9.0	9.4	9.5	10.3	11.2	12.2	13.7	15.7
6. Profits after provisions												
Without statistical provision		20.2	21.6	21.8	19.9	16.3	7.6	11.5	15.4	19.2	22.7	27.2
With statistical provision		16.2	16.9	17.3	17.5	17.2	16.5	16.2	16.4	17.0	17.9	19.0
% OVER TOTAL LOANS												
Net loan loss provision		0.25	0.25	0.28	0.41	0.59	1.03	0.79	0.60	0.46	0.37	0.28
Specific		0.15	0.15	0.20	0.35	0.55	1.00	0.75	0.55	0.40	0.30	0.20
General		0.10	0.10	0.08	0.06	0.04	0.03	0.04	0.05	0.06	0.07	0.08
Statistical provision		0.35	0.35	0.30	0.15	-0.05	-0.50	-0.25	-0.05	0.10	0.20	0.30
Statistical fund	0.00	0.35	0.65	0.88	0.97	0.86	0.33	0.06	0.01	0.11	0.30	0.56
Upper limit	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50	1.50
Total loan loss provisions		0.60	0.60	0.58	0.56	0.54	0.53	0.54	0.55	0.56	0.57	0.58
Profits after provisions												
Without statistical provision		1.74	1.61	1.45	1.23	0.95	0.42	0.60	0.76	0.88	0.94	1.00
With statistical provision		1.39	1.26	1.15	1.08	1.00	0.92	0.85	0.81	0.78	0.74	0.70
PROVISIONS OVER PROFITS BEFORE PROVISIONS (%)												
Specific + general provisions		12.7	13.6	16.2	24.9	38.5	71.0	56.8	44.2	34.2	28.2	21.8
Statistical provision		17.5	18.8	17.4	9.2	-3.2	-34.5	-17.9	-3.7	7.5	15.3	23.4
Total provisions		30.2	32.4	33.6	34.1	35.3	36.5	38.9	40.5	41.7	43.5	45.2

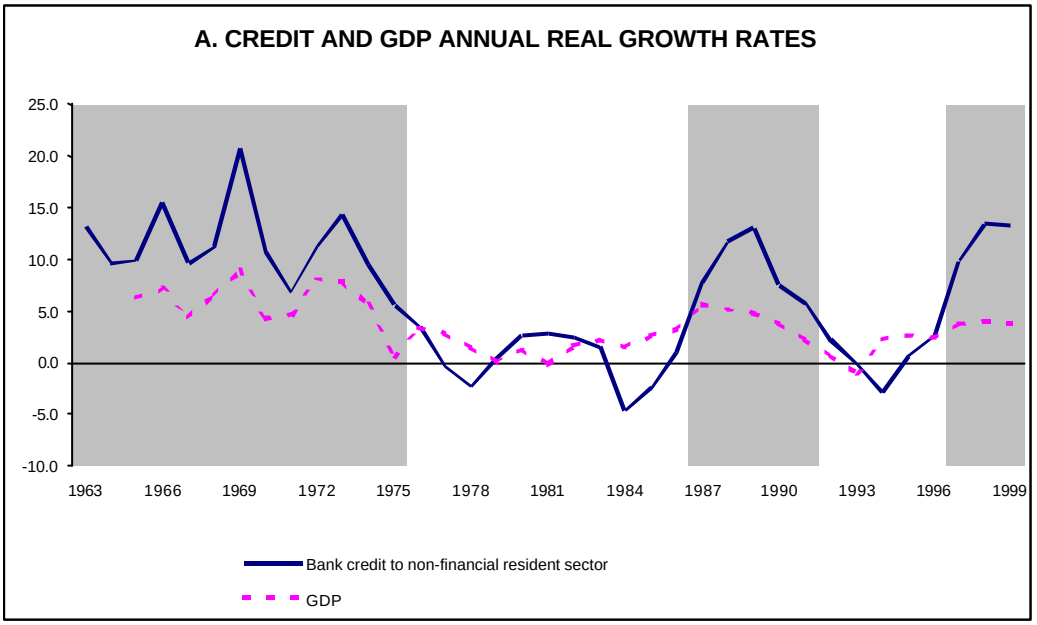
(a) The specific provision is linked to problem loans and hence cyclical. Here we make a hypothesis about its behaviour along a complete cycle.

(b) 0.0075*Change in outstanding loans. The parameter 0.0075 is a weighted average of the coefficients applied to mortgages and other risks.

(c) Parameter of the statistical provision multiplied by the outstanding stock of loans.

(d) Estimated expected loss minus the specific provision, unless the statistical fund reaches its upper or lower limit.

CHART 1. LONG-TERM BEHAVIOUR OF CREDIT



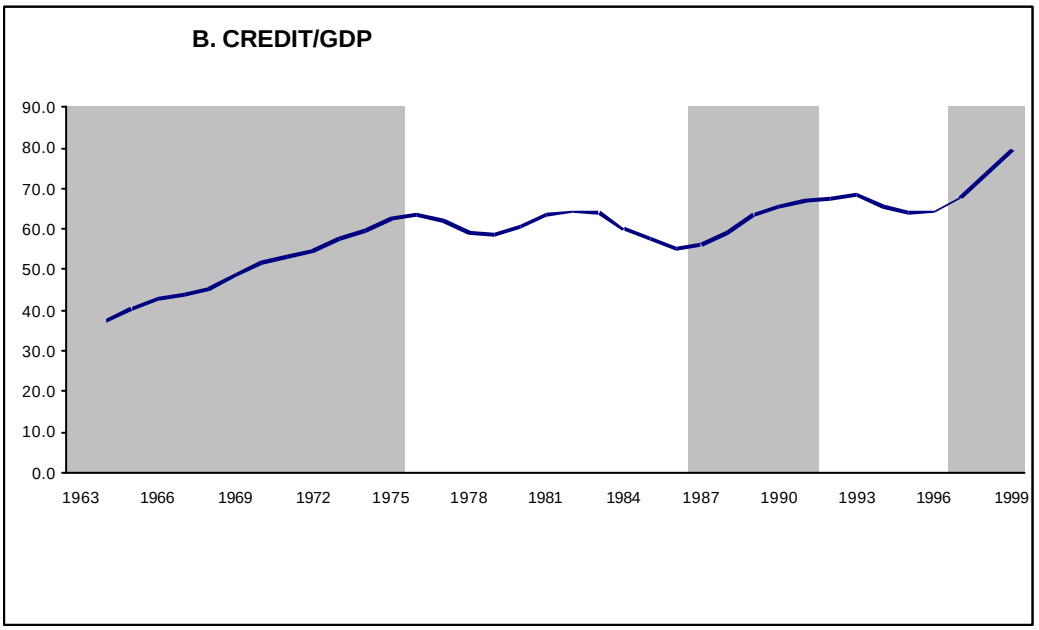


CHART 2. TOTAL DEBT/ GDP

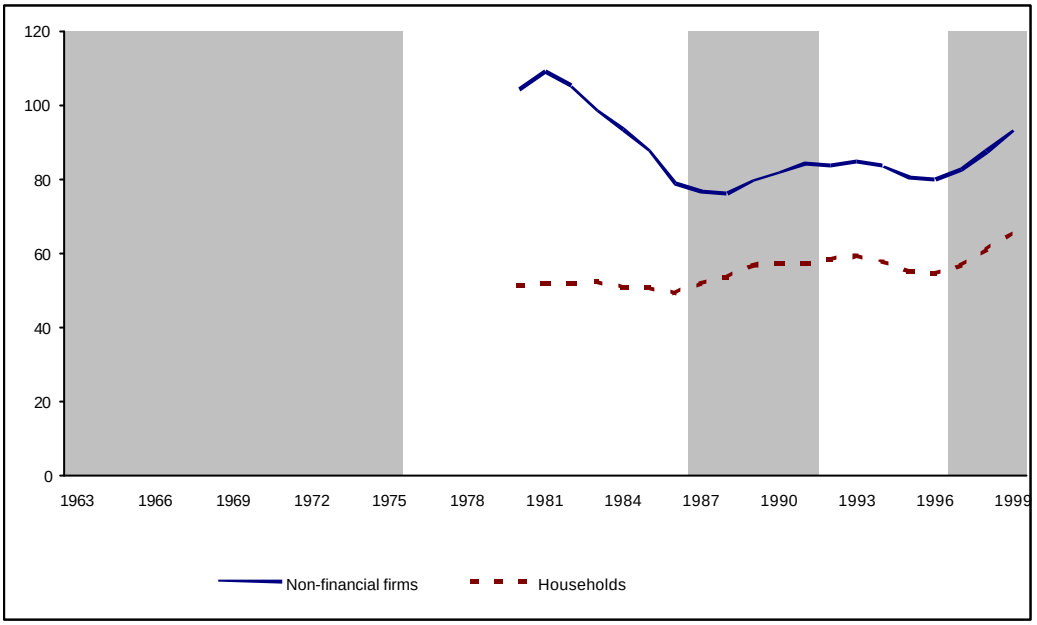


CHART 3. MORTGAGES AND HOUSING PRICES

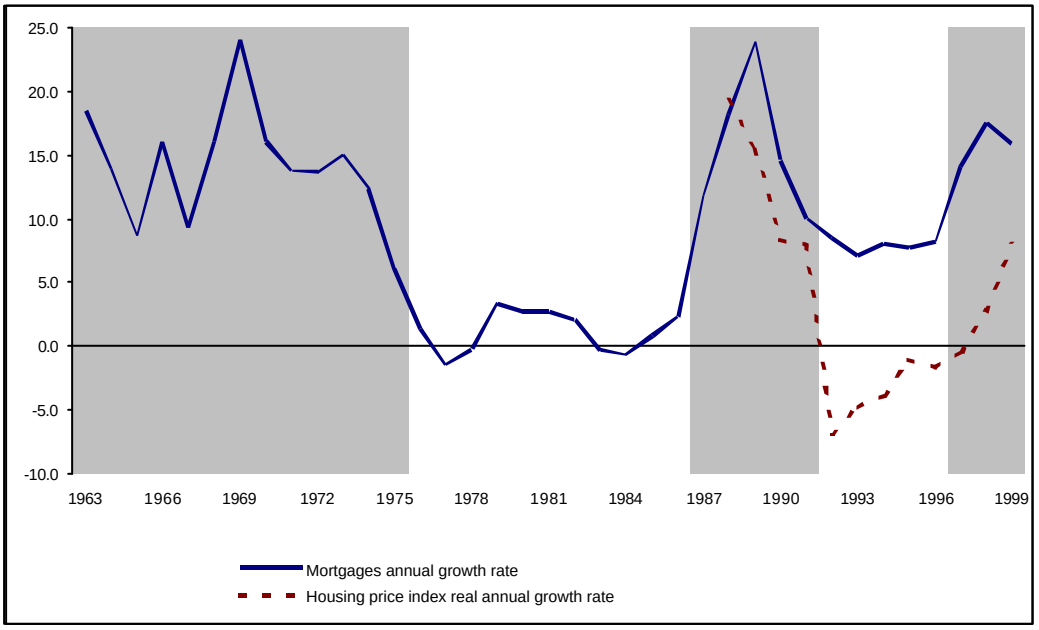


CHART 4. PROBLEM LOANS RATIO AND GDP RATE OF GROWTH DEPOSITORY INSTITUTIONS

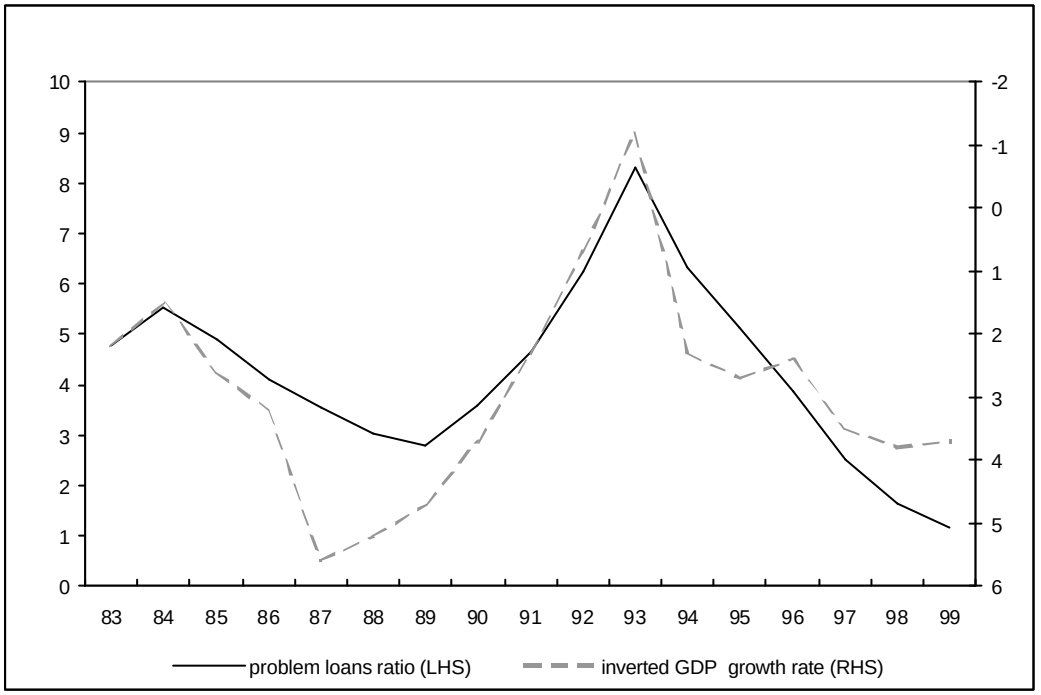


CHART 5. PROBLEM LOANS RATIO COMMERCIAL AND SAVINGS BANKS

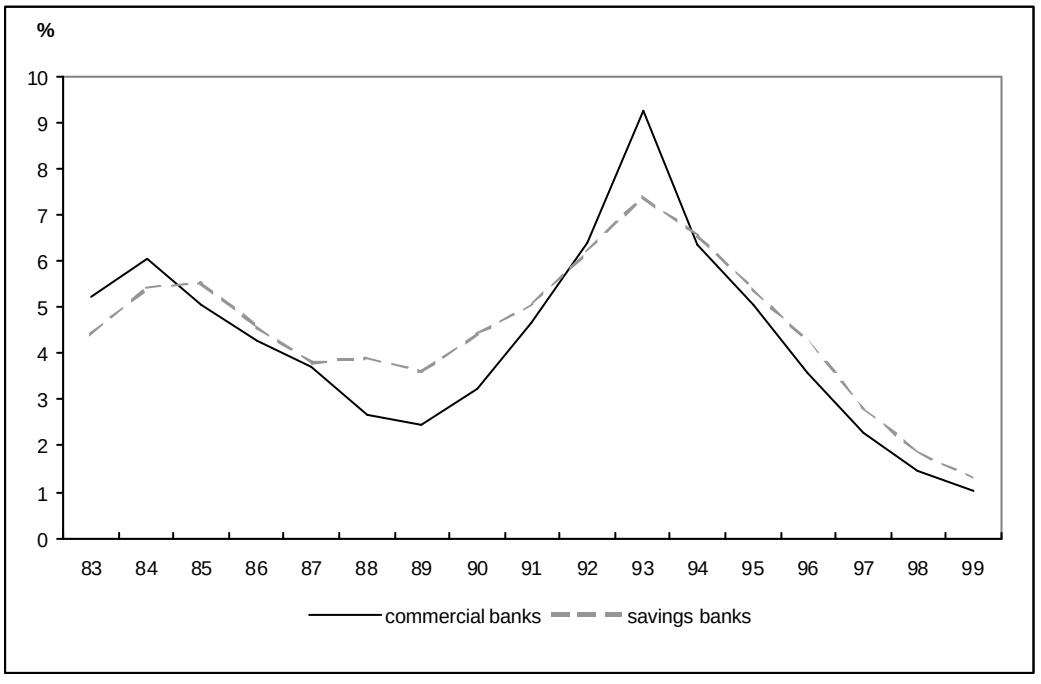


CHART 6. DISPERSION OF PROBLEM LOANS RATIO AROUND THE MEAN 1983-1999

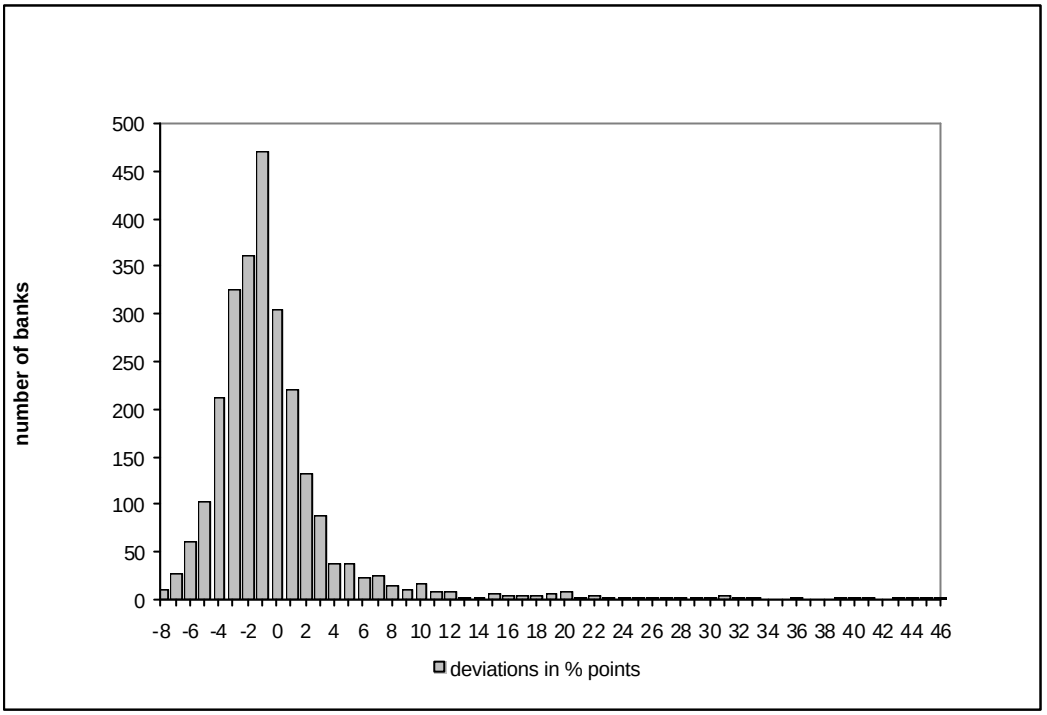


CHART 7. DISPERSION OF PROBLEM LOANS RATIO 1992-1994 AND 1997-1999

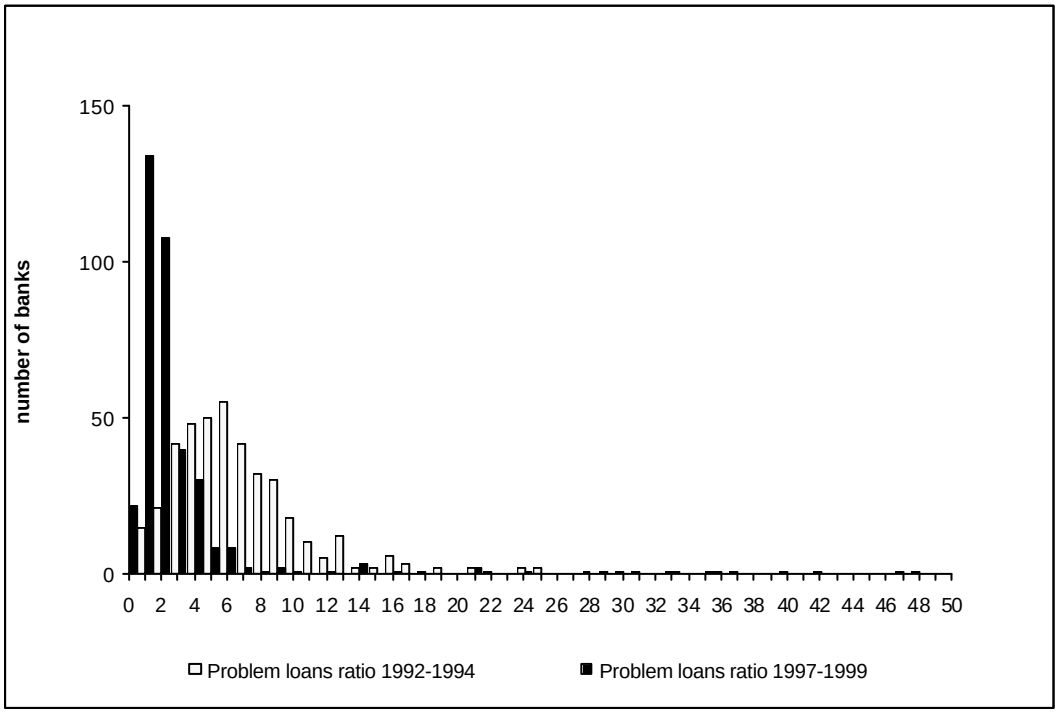


CHART 8. LOANS LOSS PROVISION RATIO AND GDP GROWTH RATE DEPOSITORY INSTITUTIONS

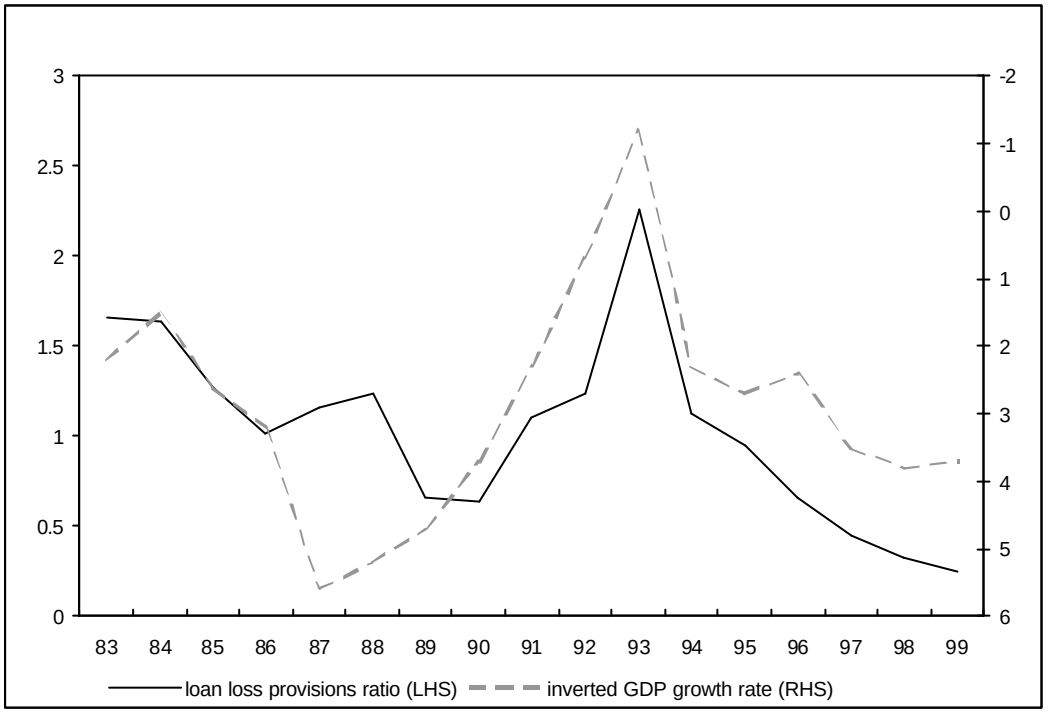


CHART 9. PROVISIONS OVER TOTAL LOANS (SIMULATIONS EXERCISE)

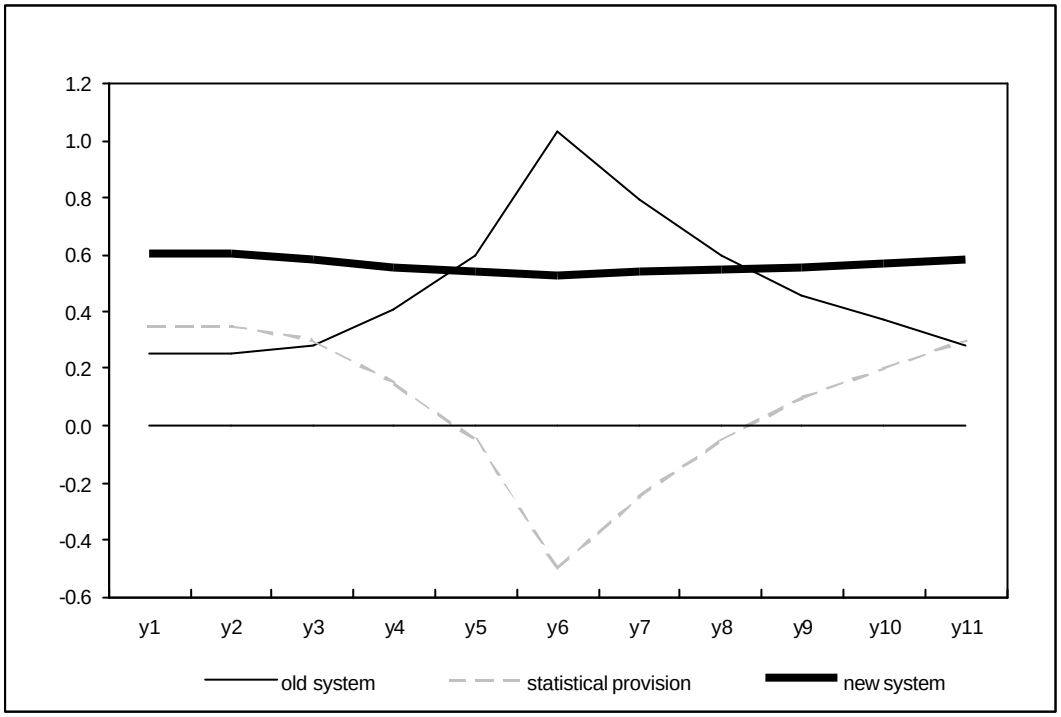


CHART 10. STATISTICAL FUND OVER TOTAL LOANS (SIMULATIONS EXERCISE)