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Dynamic provisioning: Some lessons from existing experiences

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**Dynamic Provisioning:
Some Lessons from Existing
Experiences**

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Abstract

After analyzing the different reasons why the financial system and also the regulatory framework induced procyclicality, this paper reviews the experiences of three countries which have introduced dynamic provisioning as a regulatory tool to limit procyclicality. The case of Spain—the country with the longest experience—is reviewed, as well as those of Colombia and Peru—countries that have recently adopted dynamic provisioning. A number of policy lessons are drawn from that comparison.

JEL Classification: E32, G21, G28, G32

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1. WHY IS THE FINANCIAL SYSTEM SO PROCYCLICAL?

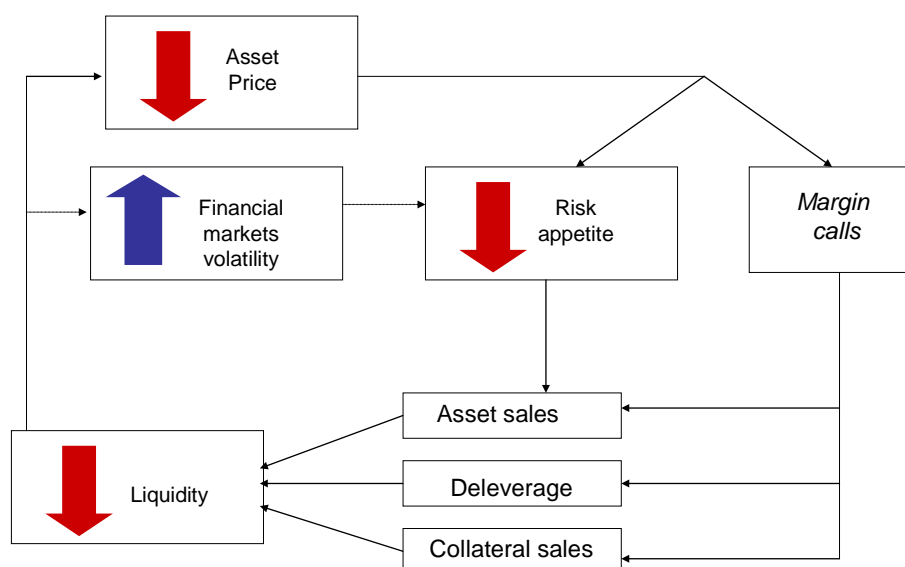
The global financial storm which hit the banking systems of major developed economies and also sent dangerous waves to the emerging world has shown clearly that the financial system exacerbates the cyclical movements of an economy.

The procyclicality of the financial system is not new. It is due to a number of different reasons, which need to be understood before assessing why some financial systems are more procyclical than others and how to best combat such procyclicality.

First of all, the financial system is prone to have a more lax assessment of risk in good times than in bad ones influenced by the economy’s general environment. The idea of short-sightedness in economic or financial decision making was introduced by Kahneman and Tversky (1973) and then developed more by Kindleberger (1978) and Minsky (1982), whose contribution was to explain why it is an inherent component of our financial system, branded as the “financial-instability hypothesis.” The “excess,” or overlending which takes place during good times is then corrected during recessions.

Second, borrowers’ net worth—as well as cash flow—is bound to be higher during upturns, facilitating their access to credit. This mechanism, introduced by Kiyotaki and Moore (1997), has been branded as “financial accelerator”. In the same vein, the value of collateral is bound to increase in the good times and fall in the bad times. Such asset price dynamics—and the related wealth effects—clearly increase borrowers’ capacity to obtain collateralized lending during booms. However, during the subsequent slowdown, it will become clear that the collateral backing the loans did not have the expected value. This crisis shows clearly how important the asset channel can be as a sudden fall in the value of collateral in the mortgage market can have enormous effects on banks’ balance sheets and the economy in general. In fact, asset price deflation has been exacerbated, as expected, by debtors’ trying to liquidate their collateral to cover their financial obligations, as summarized in the Figure 1 below.

Figure 1: Impact of Asset Prices on Banks



Source: Authors.

Third, banks may also be intermediating the procyclicality of other markets in so far as they depend on the funding they obtain and that is much scarcer in bad times. Such scarcity of funds (either equity or borrowing) will result in a diminished capacity to lend. This has actually been exacerbated by regulation as will be explained at the end of this section.

Fourth, investors—and thus financial institutions as intermediaries of savings—have a strong incentive to behave as their peers—the so-called herd behavior (Rajan 1994; Devenow and Welch 1996)—since their evaluation is done in relative and not absolute terms, which at an aggregate level fosters lending during booms and limits it during recessions. In fact, credit mistakes are generally judged more leniently if they are common to the whole industry. This crisis has definitely confirmed this idea.

Fifth, the classical principal-agency problem between bank shareholders and managers can also feed excessive volatility into loan growth rates. Managers, once they obtain a reasonable return on equity for their shareholders, may engage in other activities that depart from firm value maximization and focus more on managers' rewards. One of these strategies might be excessive credit growth in order to increase the social presence of the bank (and its managers) or the power of managers in a continuously enlarging organization (Williamson 1963).

Sixth, compensation policies are generally such that there is no need to have a classical principal-agency problem for managers of financial institutions to behave procyclically. Bonuses linked to business growth in good times and to business retrenchment in bad ones are a powerful reason for financial institutions to become very procyclical.

Seventh, human capital can not grow as fast as a financial institution does in good times. In fact, when the economy booms, loan officers need to grant loans faster and, probably, in a less rigorous way. Furthermore, the more time that has gone by since the last downturn, the less prepared are loan officers to realize that the economic environment can change very quickly. This is what Berger and Udell (2003) have called lack of institutional memory.

Eighth, the increasing sophistication, harmonization, and automaticization of risk management also add to procyclicality. If we take the example of Value at Risk (VaR) techniques, they basically transform large nominal amounts into much smaller values-at-risk. This reduces the perceived order of magnitude of risk exposures and gives a sense of comfort that may turn out to be wrong. In fact, the current crisis proved that nominal and notional amounts do matter when looking at risk exposures. Furthermore, network externalities also increase risk assumption in the good times and propagate financial distress in the downturn. These risk externalities will tend to be amplified when aggregated across the network as a whole. In order to address this problem, financial institutions should not look at unconditional VaR, but consider conditional VaRs (CoVaRs) (Haldane 2009).

Ninth, competition in the banking system, especially in the commercial banking system, is such that cross subsidization is more and more used to attract clients. An important aspect of cross-subsidization is offering credit access to clients so that they pay commissions for other products. In the good times, this can bring about a relaxation of credit standards for the sake of attracting new clients (Nys [2008] and Lepetit et al. [2008]).

Finally, and very importantly, financial regulation may be an additional source of procyclicality. In fact, traditional loan-loss provisions are tied to loan delinquency. That means that in the good times financial institutions hardly need to provision, while they need to step up provisioning as soon as delinquencies appear. This obviously reduces their available capital and, thus, their lending capacity when it is most needed. In addition, the traditional focus of risk sensitive capital adequacy requirements is not dependent on the macroeconomic situation but only on the type of asset in each bank's balance sheet. The way in which the Capital Adequacy Ratio (CAR) is defined, basically allowing for hybrid capital to be part of it, can also induce additional procyclicality. This is because hybrid capital, to the extent that it has a debt component, is subject to debt market swings. In this

regard, a frequently discussed issue is whether Basel II fosters procyclicality even further due to the increased risk sensitivity of CAR. Making capital more risk sensitive is not controversial, the real issue being the right timing for acknowledging this risk: at the time the loan is granted (expected loss approach) or at the time delinquency appears (incurred loss approach). Moreover, as Caruana and Narain (2008) argue, how much Basel II exacerbates procyclicality very much depends on the mitigating measures the local regulator is willing to introduce, basically under Pillar II¹. This is related to the rules versus discretion debate that will be dealt with in Section 2.1.

The increasingly homogeneous assessment of risk and common trading techniques may also exacerbate herd behavior. The same can be said about the introduction of fair value in accounting standards, which may create an illusion of very good solvency based on high market prices during boom periods and a sudden change of such solvency situation as soon as market prices change (Jimenez and Saurina 2006; Taylor and Goodhardt 2006).

Finally, a vicious circle could even be created by procyclical regulation feeding the asset price bubble. This point has recently been formalized by Aiyagari and Gertler (1999) and Gruss and Sgherri (2009).

2. HOW TO REDUCE THE PROCYCLICALITY OF THE FINANCIAL SYSTEM

After such a long list of reasons why excessive procyclicality can be harmful, it seems natural to focus on what to do about it.

The first important point to realize is that procyclicality cannot be eliminated but only mitigated. This is true for the behavior of the financial system as a whole but also for regulatory tools.

After limiting our expectations to what is achievable, it seems important to evaluate which is the most effective way to do it. One first question is whether measures taken should be rule based or discretionary. The second relates to which regulatory tool is better placed to mitigate procyclicality: provisioning or capital. We shall develop both questions in the next sections.

2.1 Rules versus Discretion²

Two key choices need to be made in designing the details of a countercyclical regime. The first is how the level of buffers is determined; the second is how the impact is presented. The level of buffer can be defined in either a discretionary or a formula-driven fashion.

Under a discretionary system, the bank regulator will need to judge the appropriate level of required capital ratios in the light of analysis of the macroeconomic cycle and of macroprudential concerns. The discretionary system would have the advantage of allowing a nuanced analysis of macroeconomic and macroprudential conditions to guide decisions: but it would depend crucially on the quality and independence of the judgment made.

Under a formula-driven system, the required level of capital would vary according to some predetermined metric such as the growth of the balance sheet or estimates of lending over the cycle. It would provide a preset discipline not dependent on judgment and not subject to the influence of lobbying, but depending crucially on the possibility of calibrating the business cycle *ex ante*, an issue to which we will return below. A rules-based system is superior to a discretionary mechanism in situations where the policy maker faces a problem

¹ On the possible procyclicality of Basel II, see Saurina and Trucharte (2007) and Repullo and Suarez (2008).

² See Turner (2009).

of lack of credibility of its commitment³. In dealing with procyclicality this may result from the expectation of widespread forbearance towards banking problems in the downturn. From this point of view, a rules-based system would be superior.

2.2 Capital versus Provisioning

While broad agreement exists on the procyclicality of the financial system much less is known as to how to reduce such procyclicality. According to one extreme view, booms and busts cannot be prevented; the opposite view is that they can be fully mitigated, while the truth is probably somewhere in between.

The key question is how to have an impact on the financial system without creating unwarranted distortions. In fact, it seems 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.

Given the importance and the difficulty of the matter, it seems quite obvious that one policy cannot possibly achieve that goal. In fact, financial regulation is only one of the many tools that policy makers can use to mitigate procyclicality. Monetary policy is another obvious candidate, which will not be explored in this article⁴.

For regulations that address procyclicality, there is heightened discussion as to which instrument (provisioning or capital) should be used to mitigate it. As a starting point, it is important to note that provisioning and capital have two different objectives: the former aims at covering expected losses while the latter intends to cover unexpected losses.

If we consider that excessive growth in credit is the best known early indicator of a banking crisis (or of a default in the micro sphere), one would tend to think that it would generate an expected loss that banks should try to cover once credit grows too fast. In other words, using provisioning as a tool to counteract procyclicality would look more natural.

On the other hand, provisions accumulated during the boom can be used to distribute higher profits in the bust, which is something the regulator may not be inclined to facilitate, whereas capital (or reserves) is not subject to this problem.

In any event, considering that the degree of procyclicality of the financial system is enormous and the difficulty in mitigating it by macroprudential tools according to the Spanish experience (see Section 3.1 below), one should probably think of capital and provisioning measures as complementary.

While provisioning measures are more developed (at least for the case of Spain and only recently by Colombia and Peru), measures to avoid procyclicality in banks' capital requirements are really embryonic or only proxies.

Of the embryonic proposals, a widely discussed one is to modify the current calculation of required capital by introducing a multiplying parameter based on macroprudential criteria (see details in Brunnermeier et al. [2009]).

The Financial Stability Forum (FSF, renamed Financial Stability Board, FSB, after the G-20 summit in April 2009) is focusing on the quality of capital and, therefore, on the composition between core capital, tier 1 capital, and tier 2 capital reserves. It also suggests that in the future less reliance would be placed on VaR measures and more on stress test techniques as determinants of capital adequacy. Finally, the FSB recommends that the monitoring and

³ One way of dealing with this problem, which has been discussed in some countries, is to set up an independent body to determine the business cycle.

⁴ This is related to the debate on whether monetary policy should react to asset price bubbles. For a recent contribution on the link between this issue and anti-cyclical financial regulation see Fernández de Lis and Ontiveros (2009).

adjustment of the cyclicity of Basel II should be a continuous task, but does not elaborate on a specific proposal.

With regard to other instruments to reduce procyclicality from the capital side, several possibilities exist. One is introducing limits on leverage, also supported by the FSB among others. Another is setting a capital charge on off-balance sheet credit. This is, again, the case of Spain. In fact, several years ago, when Spanish banks asked for permission to set up Structured Investment Vehicles (SIVs), the Bank of Spain imposed an 8% capital charge against assets in an SIV, since it was considered that banks retained a significant exposure to them, which effectively made these vehicles unattractive to Spanish banks.

Moving to the subject of provisions measures, experiences of their use are few but they do exist. Spain, where dynamic provisioning introduced was in 2000, has the longest experience, followed distantly by Colombia (2007) and Peru (2008). The next section reviews the three experiences and compares them.

In addition to existing experiences, the FSB has been supporting the introduction of dynamic provisioning in several ways. The first was trying to overcome the opposition of accountants to such a measure. In fact, the FSB has recommended international accounting bodies (International Accounting Standards Board [IASB], and Financial Accounting Standards Board [FASB]) to reconsider the incurred loss model, which is seen as the main obstacle against a general adoption of dynamic provisions regulations, and consider the adoption of an “expected loss model”, which would admit dynamic provisioning. In this regard, one of the implications of the financial crisis has been to “shift the balance” between strict application of fair value accounting and pragmatic acknowledgment of expected losses more in favor of the latter. The international consensus seems to be moving towards a generalized adoption of some form of dynamic provisions. More specific proposals concerning provisions are (i) consider the allocation of general provisions in banks’ regulatory capital, (ii) reconsider Basel II thresholds for reserves (1.25% in the standard approach and 0.6% in the internal ratings based [IRB] approach) that imply a disincentive for improved provisioning, and (iii) enhance the transparency of provisions in Pillar 3.

To sum up, recent debates in international forums seem to support the adoption of anti-cyclical mechanisms concerning both provisions and capital. While this approach is sensible, taking into account the different nature of expected and realized losses as well as the magnitude of the pro-cyclical forces that need to be counteracted, it is important to ensure the compatibility and coherence of all these measures, especially taking into account that other, related tools are also under discussion: such as leverage ratios, liquidity ratios, and limits to loan to value (LTV) ratios on mortgages. The risk of a series of related regulations having a distorting impact on incentives and resources allocation, thus requiring additional regulations, should be avoided.

3. EXISTING EXPERIENCES

3.1 Spain

The introduction of dynamic provisioning in Spain should be seen in the context of the profound impact of the euro adoption in the Spanish economy. Traditionally this economy was characterized by a certain propensity to instability, which implied ample cyclical swings, difficulties in maintaining price stability, chronic balance of payments problems, and periodic currency crises to restore competitiveness levels.

The Exchange Rate Mechanism (ERM) crisis of 1992–93 was an example of this type of recurrent crisis. After the crisis (and the restoration of the external balance) economic policies were oriented in the mid-1990s towards fulfilling the convergence criteria for euro adoption. This strategy was based on two pillars: (i) reducing the inflation differential vis-à-

vis Germany, and (ii) maintaining a sound fiscal policy. It was assumed by the authorities that the remaining convergence variables (long-term interest rates and exchange rates) would behave consistently with nominal stability and converge towards the reference values.

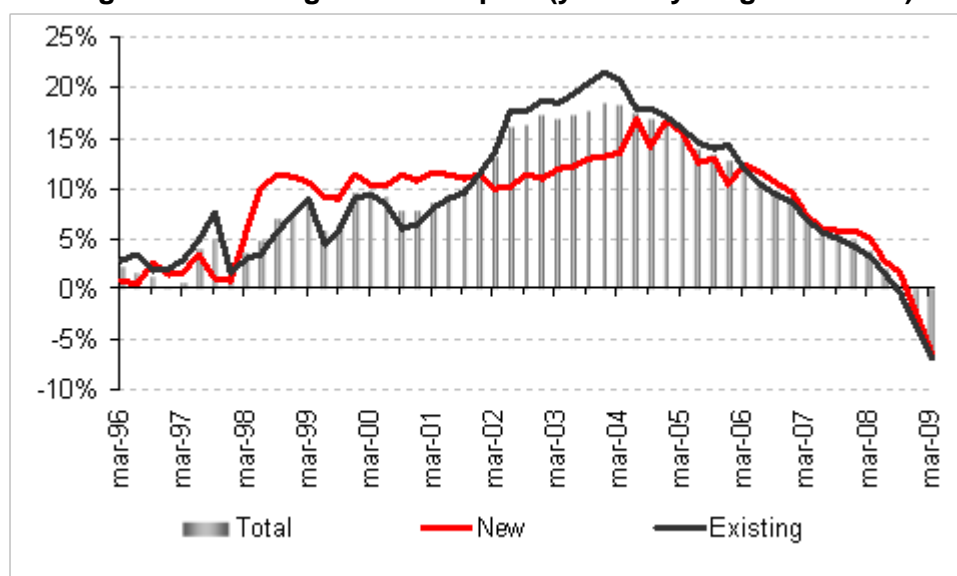
This strategy was successful and Spain joined the European Monetary Union (EMU) from the start, which implied the irrevocable fixing of the parities on 1 January 1999. As a result of this process, the Spanish economy benefited from a significant reduction of risk premia, in particular those related to inflation and currency risk. The real long-term interest rate (defined as the difference between nominal rates and contemporary inflation) moved from a level of 4–5% in the 1980s and first half of the 1990s to around zero in the aftermath of monetary union.

The expansionary impact of the reduction in real interest rates on the Spanish economy was very significant (see Figure 2). Domestic credit growth, which ranged between 5–10% in the mid-1990s, accelerated to rates above 15% in 1998–2000. House prices increased at an annual rate of around 10% in the same period. Inflation accelerated from 1.9% in 1997 to 2.2% in 1999 (3.5% in 2000). The differential in domestic demand growth between Spain and Germany in the early years of monetary union was around 3.6 percentage points, mostly related to the gains from price stability and policy credibility for Spain (and in general peripheral countries), whereas Germany, where credibility was already high, did not experience a similar effect.

The European Central Bank kept interest rates in the late 1990s around 4.0%, a level which was consistent with average conditions in the eurozone, but which implied very lax monetary conditions for the Spanish economy. This expansionary impact was compounded by the depreciation of the euro vis-à-vis the United States dollar in these years. It is interesting to note that the situation of Spain (and other peripheral countries) in the first years of EMU presented some similarity with what was anticipated a few years earlier by Allan Walters, economic advisor of the British Prime Minister Margaret Thatcher in the late 1980s. According to the “Walters’ Critique”, ERM membership (and by the same token EMU) would imply too lax [tight] monetary policies for countries with above-average [below-average] inflation rates, which would tend to perpetuate (or even amplify) inflation differentials⁵. It is true that convergence criteria for euro adoption limited the extent of these initial discrepancies. But a different mechanism—the asymmetric shock of the reduction of risk premia for peripheral countries—had a similar effect⁶.

⁵ See Miller, Marcus and Alan Sutherland (1990): The ‘Walters’ Critique of the EMS: A Case of Inconsistent Expectations, CEPR Discussion Papers No 480 The Current Account Puzzle.

⁶ Wyplosz, Charles (2008): The current account puzzle, panel discussion on “The First Ten Years of the Euro”, http://ec.europa.eu/economy_finance/pdf/2009/01/sanfran_wyplosz_en.pdf

Figure 2: Housing Prices in Spain (year on year growth in %)

Source: Ministerio de Vivienda.

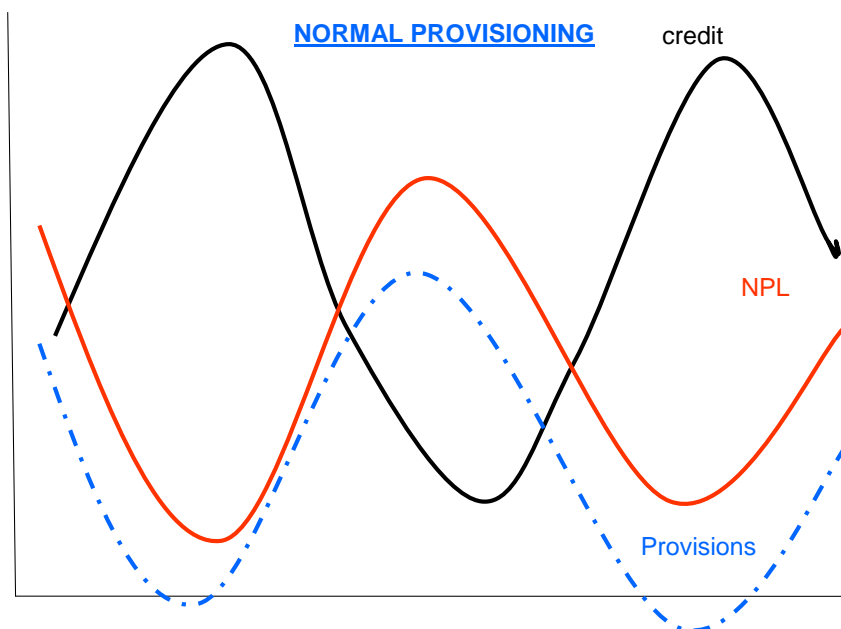
In the early years of the 2000s, therefore, the Spanish authorities saw with increasing anxiety the combination of high credit growth, inflation differentials with the Eurozone average, loss of competitiveness, and widening current account deficits. Monetary policy and the nominal exchange rate were no longer available as policy instruments. In this context, dynamic provisions (or statistical provisions, according to the denomination they received at the time) were seen as an instrument with a double objective: (i) to contain credit growth, by increasing the cost (in terms of provisioning effort) of the granting of new credit, and (ii) to protect Spanish banking institutions from future losses as a consequence of the relaxation of lending standards typical of the boom phase. While the first objective was probably more important at the time of adoption of this system, the results—as we will see below—were much more satisfactory in terms of the second objective.

Dynamic or statistical provisioning was therefore a truly macroprudential tool, in the sense that a prudential instrument (provisions) was used to achieve a systemic or macroeconomic goal (limiting credit growth). As concerns the second objective, it was mostly addressed at ensuring an adequate protection to individual institutions (and therefore could be seen as a microprudential tool), but to the extent that excessive risk assumption was partly a result of herd behavior and collective myopia by credit institutions, it had also a certain macroprudential aim.

3.1.1 How was the system expected to work?

As can be seen in Figure 3, under a normal provisioning system provisions are a function of contemporary nonperforming loans (NPLs), although this may be smoothed by the possibility of using “generic” provisions based on the credit stock. In the upturn, when gross domestic product (GDP) grows above potential, credit growth also accelerates. Since business conditions are favorable, collateral prices are increasing and optimism is pervasive, debtors have in general no problem in servicing the debt. The low provisioning effort fuels low risk aversion and credit growth, thus feeding back economic growth. In the downturn the opposite spiral operates: the difficult economic environment is accompanied by high NPLs, which require a bigger provisioning effort. This in turn decreases risk appetite and feeds credit contraction. Hence the pro-cyclical pattern of normal provisions.

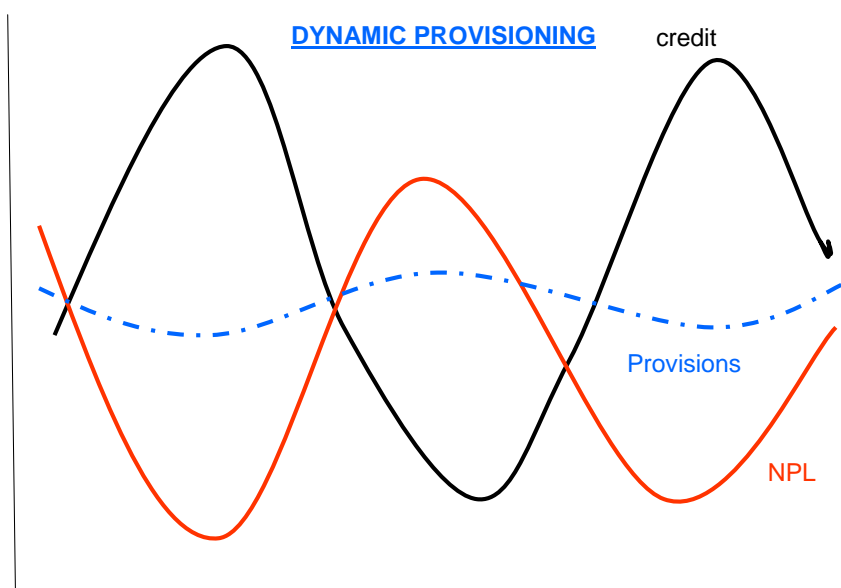
Figure 3: Normal Provisioning Cycle



Source: Authors.

The objective of dynamic provisions is to smooth the provisioning effort along the cycle, as shown in Figure 4 below. How much? This is an open question. While the idea is to avoid the pro-cyclical effect of the normal system, a regulator would hardly aim at an opposite pattern of provisions (i.e. increase in the good times and decrease in the bad times), since risk is cyclical and this reality should be reflected in provisions. A reference would be to try to obtain a flat provisioning effort along the cycle in terms of the ratio of provisions to credit. The chart above—which should be taken only as a reference—depicts provisions with a smoothed pro-cyclical pattern, which was more or less what was aimed at in Spain.

Figure 4: Dynamic Provisioning Cycle



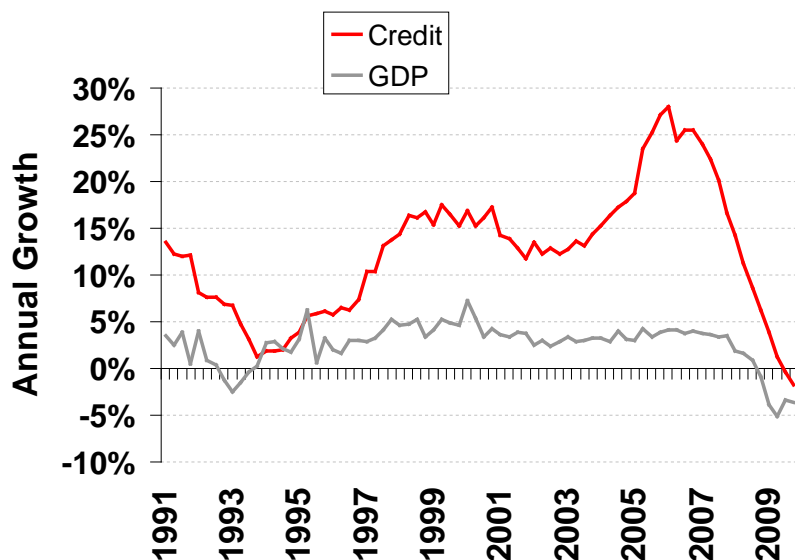
Source: Authors.

3.1.2 How did the system really work?

As can be seen in Figure 5, credit growth stabilized at around 15% annually after the introduction of dynamic provisioning in 2000, and decreased slightly between 2001 and 2004. It is difficult to assess however to what extent this was related to the new provisioning

system. Most probably the impact of the burst of the dotcom bubble was more relevant in this period. After 2004, however—coinciding with a reform of the provisioning system—credit accelerated sharply and reached rates of growth above 25% in 2006. The impact of the global financial crisis since mid-2007 implied a sharp contraction of both credit and GDP.

Figure 5: Spain: GDP Growth and Credit Growth (in %)



Source: Banco de España.

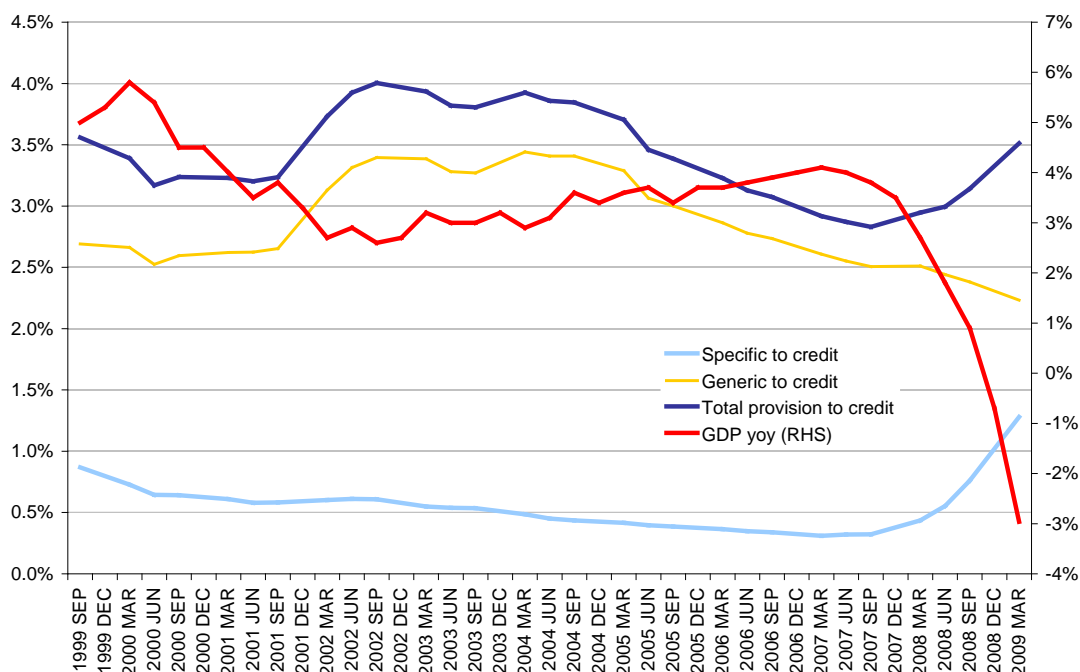
To understand these patterns it is useful to recall how the system was designed and how it was reformed in 2004.

Initially the system reform of 2000 was based on three types of provisions: specific, generic (both already existing), and statistical (introduced in 2000). Specific provisions depended on current bad loans, generic provisions were 1% of the credit stock, and statistical provisions were designed to offset specific provisions and depended on credit growth.

This mechanism was criticized on several grounds: First, by international accounting bodies, which argued that it implied profit smoothing along the cycle which masked the real situation of the banks. Second, Spanish financial institutions complained about being subject to higher provisioning requirements than their competitors, which was considered an important competitive disadvantage in the single European market for financial services.

By 2004 there was a sense that these provisions were excessive. By that time, they reached a level of more than 2.5% of credit (of which less than 0.5% was specific provisions, i.e., related to bad loans), as can be seen in Figure 6 below. Furthermore, the coverage of provisions over bad loans reached nearly 500% (Figure 7).

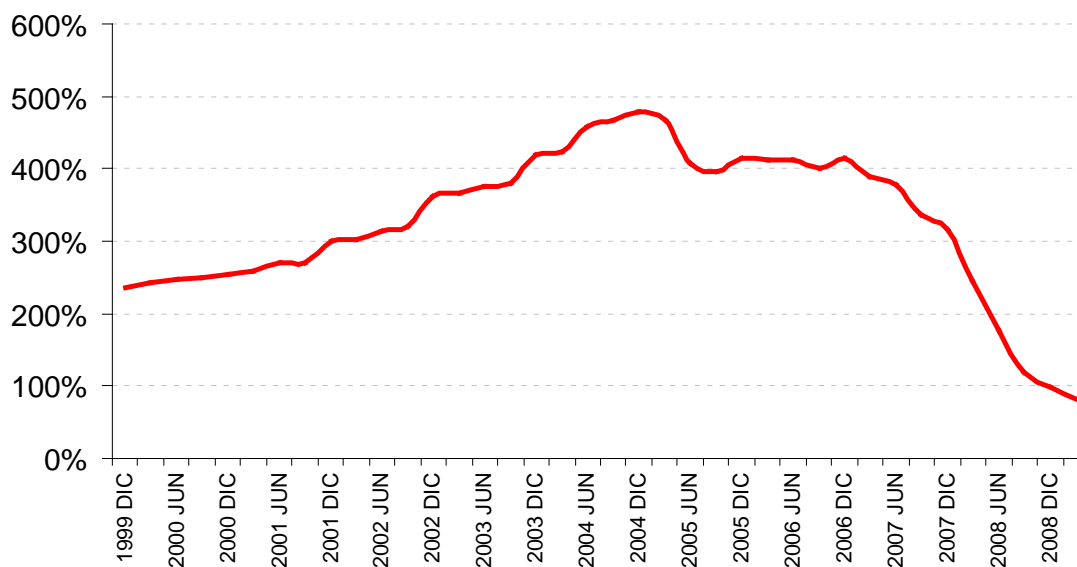
Figure 6: Spain: Provisioning to Credit and GDP (in %)



Note: Provisions are corrected for the impact of the new accounting regulation in 2004. yoy means year over year. RHS means right hand side (axis).

Source: Banco de España.

Figure 7: Spain: Provisions to Bad Loans (in %)



Source: Banco de España.

For this reason, and also to counteract the criticism by accountants, the system was reformed. The changes basically implied the integration of the generic and the statistical provisions and the establishment of limits to the accumulated fund. According to the formula:

Generic provisions = $\alpha \Delta \text{Credit} + \beta \text{Credit} - \text{Specific provisions}$

Where $0 \leq \alpha \leq 2.5\%$

and $0 \leq \beta \leq 1.64\%$

Δ stands for change

The coefficients of the different types of assets were as shown in Table 1 below.

Table 1: Coefficients Applied to Dynamic Provisioning

Type of risk	α	β
No apparent risk	0.0%	0.00%
Low risk	0.6%	0.11%
Low-medium risk	1.5%	0.44%
Medium risk	1.8%	0.65%
Medium-high risk	2.0%	1.10%
High risk	2.5%	1.64%

Source: Fernández de Lis, Martínez, and Saurina (2001).

The limits of the Generic Fund, which was the result of accumulated provisions, were set between 0.33% and 1.25% of the alpha. Since a number of institutions were at that time at or very close to the limit, this implied the liberation of €14 billion from the Generic Fund. These “liberated” provisions were, however, not distributed, but consolidated as reserves.⁷ In the subsequent quarters, as more institutions reached the upper limit of the Generic Fund, and credit accelerated over 25% annually, the ratio of provisions to credit went down, from 2.5% in 2004 to 2.2% in 2007.

To a certain extent, the 2004 reform can be assessed in retrospect as a “lack of faith” in the system. It was innovative, with no precedent and no similar system in any other country, contested by the banks and by the international accounting bodies. The Spanish authorities started wondering whether the system could be unsustainable and whether there would be limits in the accumulation process. Had the authorities knew the magnitude of the shock that was incubating—and that would erupt in 2007—they would probably not have changed it, or at least not set the limits so close to the then prevailing levels.

The events since 2007 show a dramatic turn. GDP and credit dropped rapidly, NPLs started rising swiftly, and specific provisions grew fivefold from the summer of 2007 to the spring of 2009. Generic provisions also decreased very quickly, but not sufficiently to compensate for the increase in specific provisions, so that total provisions to credit in early 2009 exceeded the maximum reached in 2004, also due to the rapidly decreasing credit growth as the global crisis hit Spain. This limited use of generic provisions in the downturn can be explained by the prudence of financial institutions (which were aware that the worst was yet to come) and the authorities’ guidelines (aimed at limiting profit distribution when the impact of the shock was starting).⁸ Our own estimates point to the exhaustion of the generic provision in 2009–2010.

Some preliminary lessons emerge from the Spanish case. First, dynamic provisions helped creating a cushion in the good times, but hardly discouraged credit growth or rises in house prices. When the size of the boom is big enough, the impact of an additional provision on credit supply is marginal. Second, the Spanish system—although being rule-based—allows for some discretion. Despite the fact that Spain has probably one of the most complete and

⁷ For this reason, and in order to avoid distortions in the figures, we have corrected the numbers and add this sum to the generic provisions for the remaining years.

⁸ The tax treatment of generic provisions is important in this regard. Although institutions are free to provision above the minimum (and this can limit the use of the Fund in the downturn), only 1% of credit (the level of the old generic provision) is tax-deductible.

reliable data set of credit and NPLs based on a long standing Credit Registry, the initial difficulty in calibrating the cycle “ex ante” led to doubts about the reliability of the estimates. This explains why the rules were changed in the middle of the game. Third, the treatment of off-balance sheet entities (OBSEs) also played an important role in the system. The issuance of covered bonds and securitization did not “save” capital for the institutions. The joint effect of dynamic provisions and treatment of OBSEs explains why the Spanish banking system confronted the crisis in a better initial situation than others in Europe.

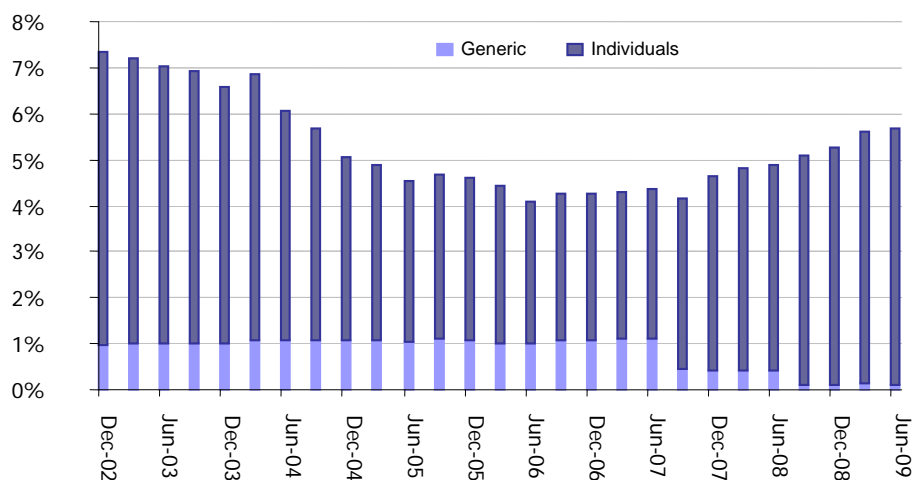
3.2 Colombia

In 2007 Colombia adopted a model of dynamic provision for commercial and consumer loans, which represent about 90% of the total outstanding loan portfolio. The banking regulator implemented reference models for commercial and consumption credit risk. Although each bank could use its own credit risk model, which must be approved by the regulator, at present all banks are using the reference model.

The reference model established three types of provisions which are tax deductible: Individual, countercyclical, and generic provisions. Individual provisions reflect the characteristic risk of every borrower and every type of loan, and can only be used if the loan becomes nonperforming. Countercyclical provisions seek to cover changes in borrower’s credit risk due to changes in the economic cycle and have the same characteristics as individual provisions. With the present regulation it is not easy to distinguish between individual and countercyclical provisions as both go to the same balance account. Finally, generic provisions are at least 1% of the total loan portfolio and this type of provisions can be used to meet countercyclical provision regulation requirements.

As one can see in Figure 8 once the model of countercyclical provisions was implemented there was a dramatic fall in generic provisions. In fact, the system was criticized since the rise in the increase in the individual provisions, through countercyclical, was compensated in part by the reduction in generic provisions.

Figure 8: Provisions in Colombia (% of Total Loans)



Source: Financial Superintendence of Colombia (SFC).

3.2.1 How is the System Designed?

The regulator, using historical data, calculates two risk scenarios, A and B (where B is a riskier scenario). The outputs of this calculation are two default probability matrixes which

contain default probabilities for every type of credit and borrower. Provisions are the result of:

$$P = OVL * DP * LOD$$

Where:

OVL = Outstanding Value of the Loan

DP = Default Probability

LOD = Lost Once Defaulted

Every year the regulator decides which matrix will be used to compute individual provisions. During years of high credit and economic growth, matrix A is used to determine the accumulation of individual provisions and matrix B will be used to calculate the riskier scenario provisions, so that countercyclical provisions will be the difference between the riskier scenario provisions and the individual provisions. During years of low growth matrix A will be used to calculate individual provisions and there will be no accumulation of countercyclical provisions.

The regulator can also exercise discretion in determining when banks can use countercyclical provisions to compensate the increase in individual provisions during an economic downturn. Once the regulator declares the change of state all banks can use countercyclical provisions, regardless of the financial health of individual institutions.

Such a discretionary model—with no rules determining the change of state (and thus of provisioning)—created a great uncertainty, which has led the Colombian regulator to announce a revision of the system in a direction that would make it more rules-based and more similar to the Spanish system.⁹

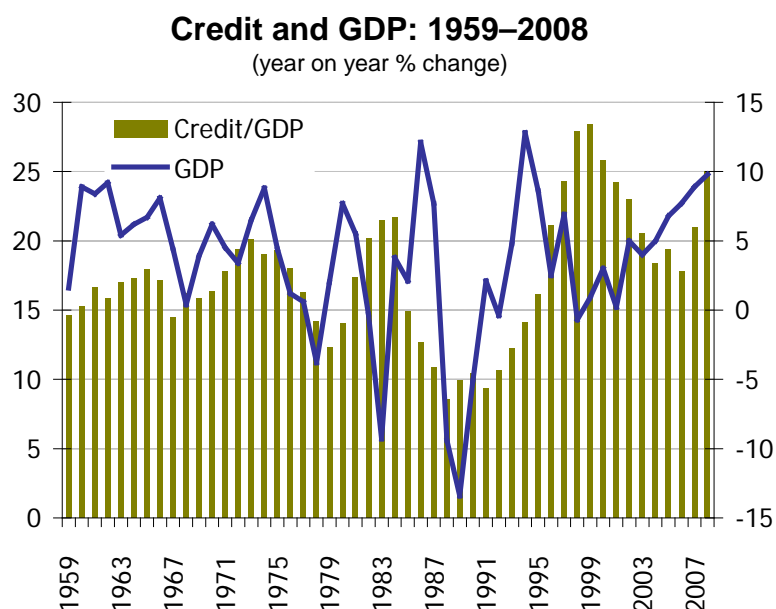
Although these changes have not yet been detailed, the new system will be based on the following principles. First, rules will be used instead of regulator's discretion in declaring the change of state. Second, the change of state will not be announced for the system as a whole but will be determined individually for each institution according to rules to be established. Third, clearer rules on the accumulation and drawing down of countercyclical provisions will be adopted. Fourth, dynamic provisioning will be used as generic ones—and not individual—in the downturn. Fifth, there will be differentiation between institutions for the building-up of the countercyclical provisions, so that banks with higher credit growth rates will accumulate higher countercyclical provisions.

3.3 Peru

After the emerging markets crisis of the late 1990s, which led to a credit crunch in Peru until 2003, the Peruvian economy began a period of fast economic expansion. Although initially fueled by exports, this boom was later related to private investment and consumption fueled by a credit boom, as shown in Figure 9 below.

⁹ The revision has been finalized but it is not yet public so we cannot incorporate details in this paper.

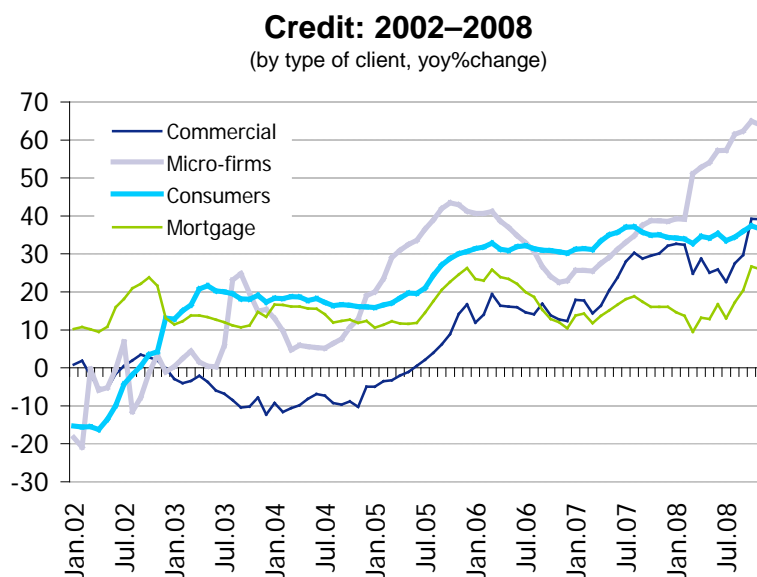
Figure 9: Credit and GDP



Source: Peruvian Central Bank (Banco Central de la Republica del Peru, BCRP).

Credit to all types of clients showed significant growth rates in this period, in particular that to higher-risk agents such as micro-firms and consumers (over 30% year on year [yoy] as shown in Figure 10). In this context, and even though credit over GDP was still relatively low (compared to other countries in the region); concerns grew on whether these rates could be unsustainable or could partly be related to a less rigorous banks risk assessment. This is when the idea of introducing business cycle-adjusted provisions as a tool both to moderate credit expansion and to generate buffer provisions should the cycle turn down became attractive to policy makers. In 2008, GDP grew 9.8% and credit 36%, changes in generic provisions were introduced. This change partly turned voluntary provisions banks had accumulated in the last two years into permanent provisions. Figures 11 and 12 show the evolution of credit, total, and voluntary provisions.

Figure 10: Credit Growth (in %)



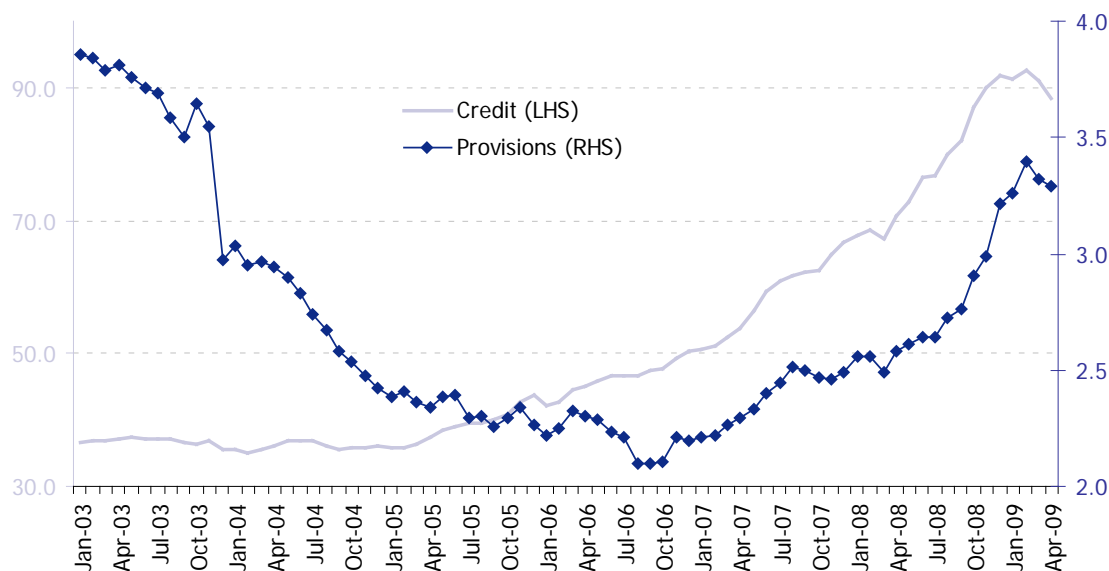
Source: Superintendencia de Banca, Seguros y AFP (SBS).

Before going into how these cyclical provisions were implemented, it is useful to describe first how the provisioning system worked before this. In Peru, loans are classified according to the type of debtor, which can be commercial, micro-firms, consumers, or mortgage.

Figures 11: Comparison Between Total and Voluntary Provisions: Total Provisions

Credit and provisions: 2003/09

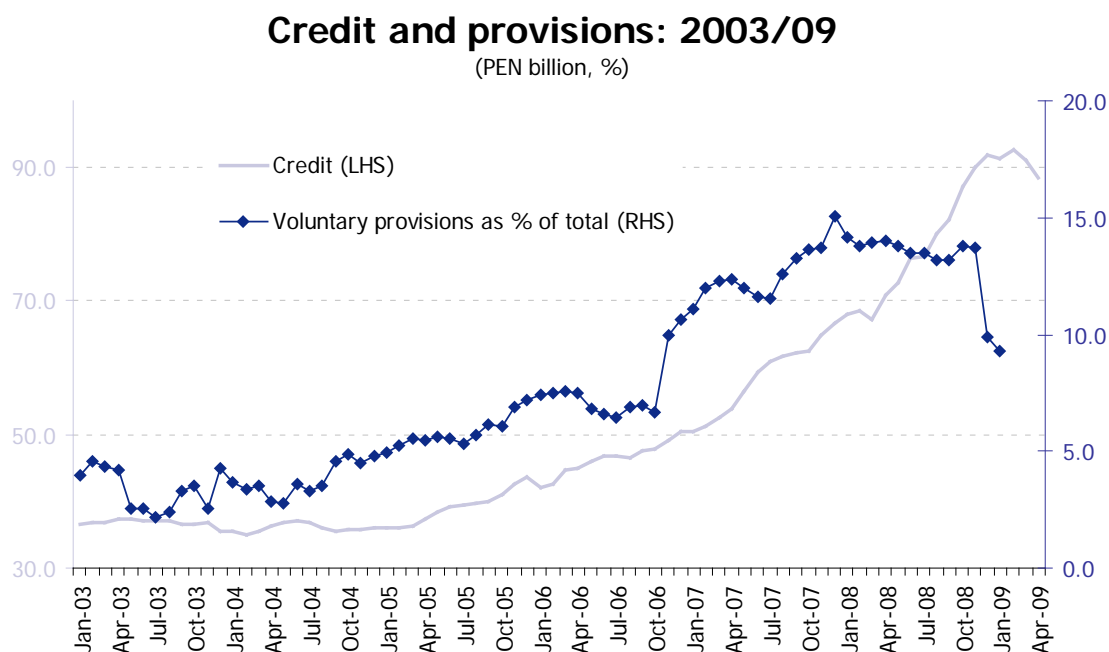
(PEN billion)



Notes: PEN = Peruvian currency- nuevo sol.

Source: BCRP.

Figure 12: Comparison Between Total and Voluntary Provisions: Voluntary Provisions



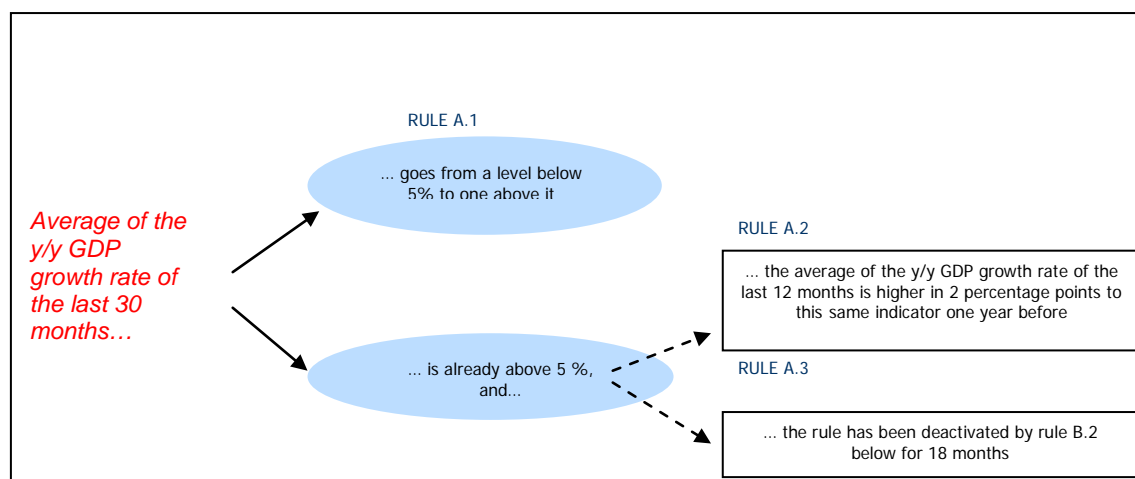
Source: BCRP.

Since December 2008, the generic rate depends on the type of debtor and is not homogeneous anymore: 0.7% in the case of all commercial and mortgage “normal” loans, and 1% in the case of all micro-firms and consumers “normal” loans. With this change, generic rates now penalize more those (riskier) loans that have historically shown a higher non-performance. Secondly, cyclical provisioning was introduced, primarily aiming at moderating credit growth rates and reducing the probability of eventual consumer over-indebtedness.

3.3.1 How is the system designed?

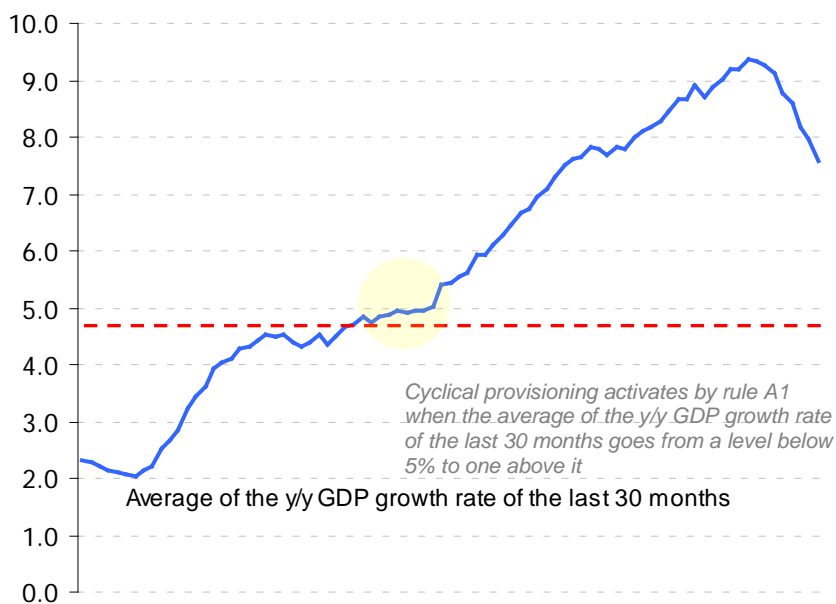
The Peruvian financial supervisor/regulator (Superintendencia de Banca, Seguros y AFP [SBS]) has set a rule based on GDP growth. In this way, cyclical provisioning is activated when the rate of growth of GDP exceeds a certain threshold (in boom periods), which is related to an estimation of potential output growth. Figure 13, as well as the three graphs below, illustrates the rule.

Figure 13: Cyclical Provisioning Activation

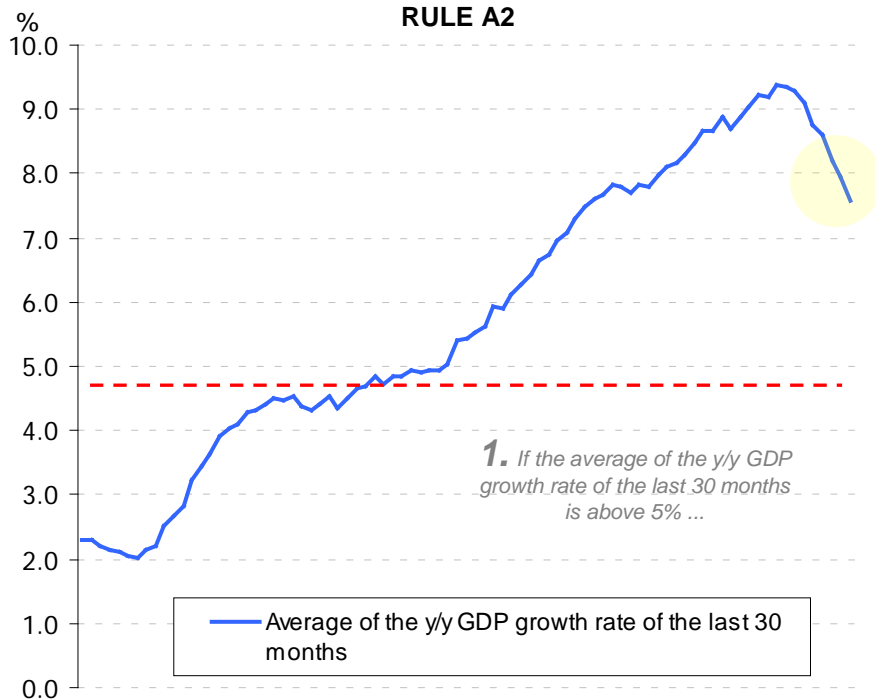


Source: SBS and authors.

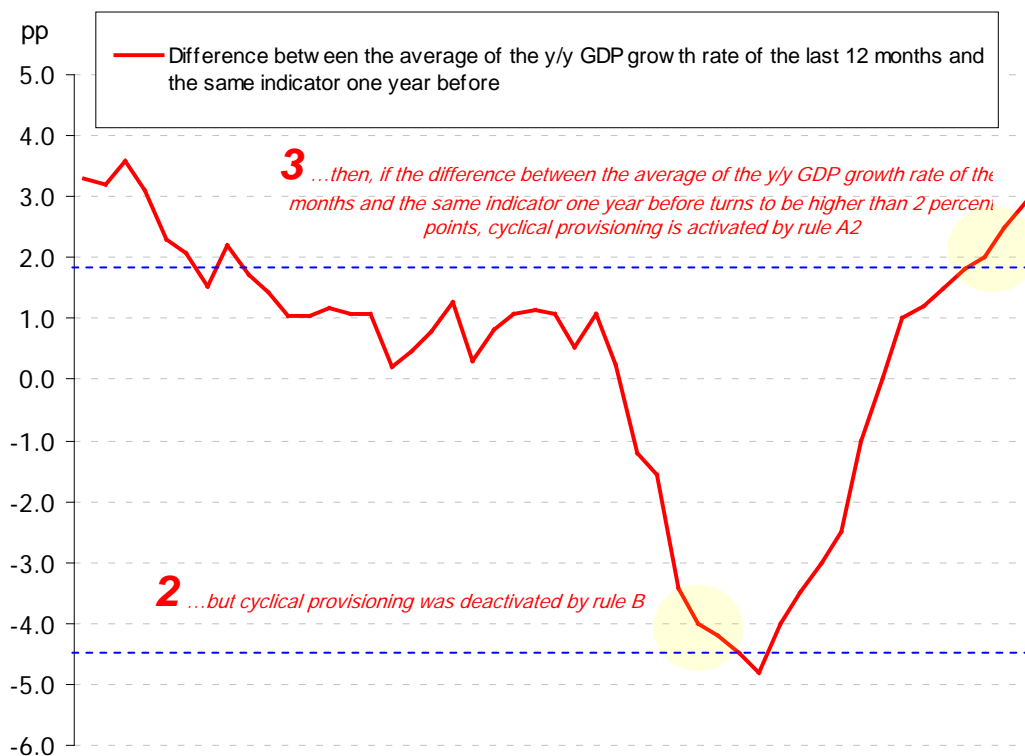
RULE A.1



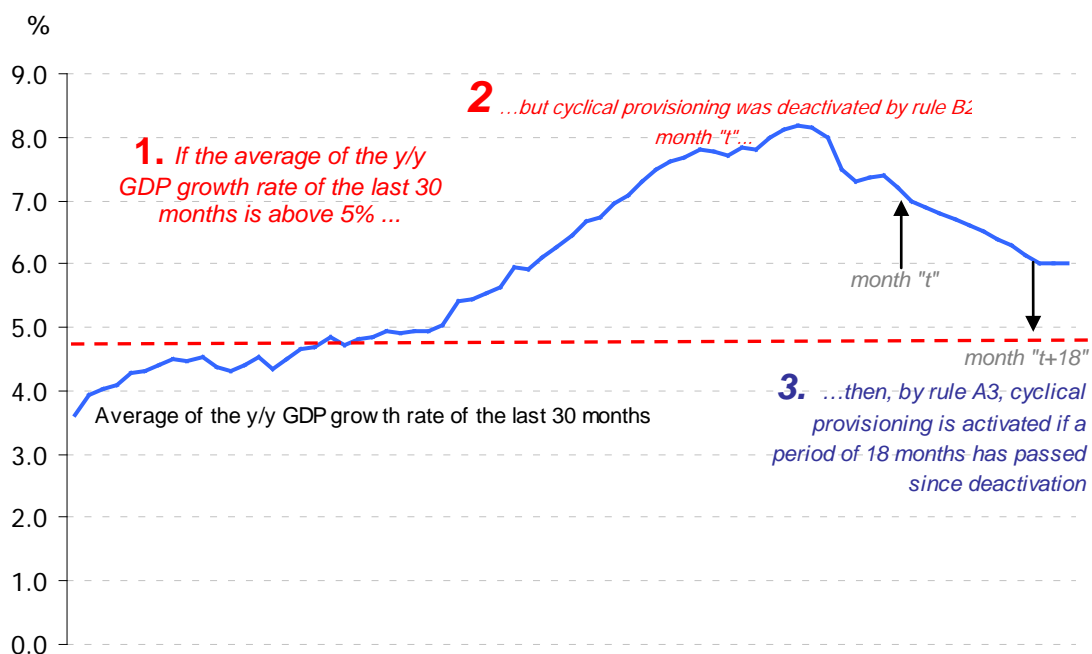
RULE A2



Source: BCRP.



Source: SBS and authors.



Source: SBS and authors.

These cyclical provisions are part of generic provisions. When cyclical provisioning is activated, generic provision charges increase (although this depends on the type of debtor). Table 2 below shows how these charges change.

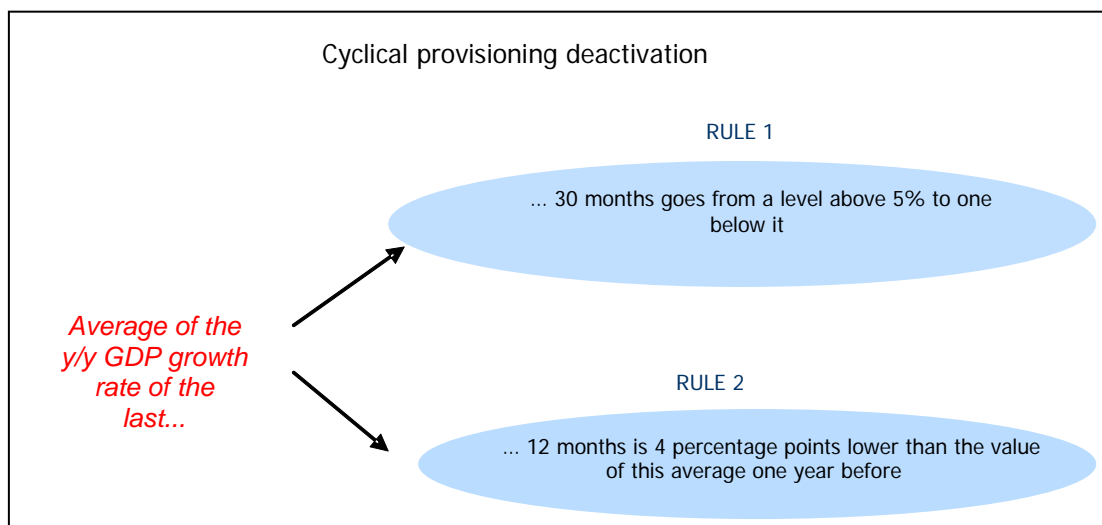
Table 2: Provisioning Rules

Type of debtor	Since December 2008	
	Generic rate (in %)	
	When the rule is not activated	Additional when the rule is activated (cyclical)
Commercial	0.7	0.5
Micro-firms	1.0	0.5
Consumers	1.0	1.0
Mortgage	0.7	0.4

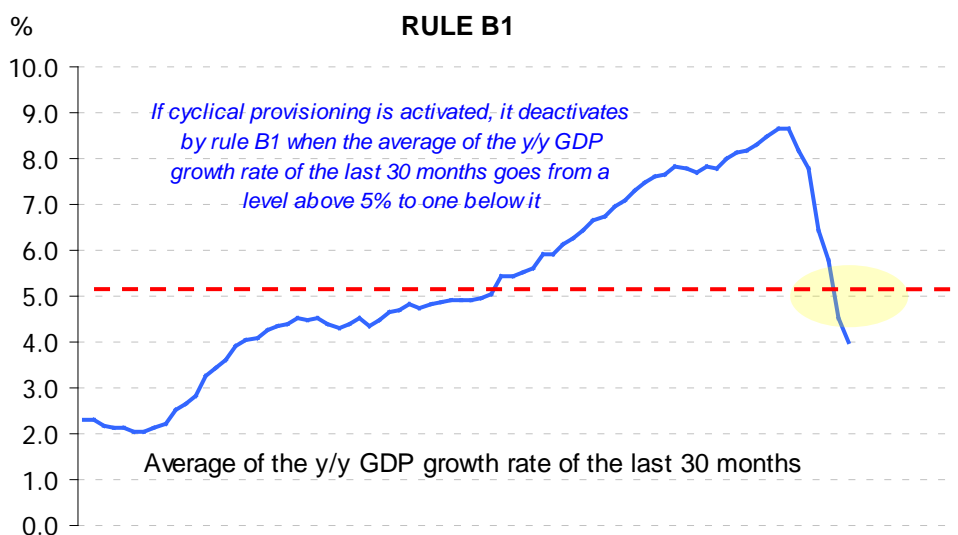
Source: SBS.

Rates on additional generic provisions were based on data from the last episode of financial crisis in the late 90s crisis. They were therefore calibrated for a stress situation. In times of economic slowdown, on the other hand, the rule is deactivated and generic rates are reduced. Diagram 3 and the two graphs below summarize the functioning in stress situations.

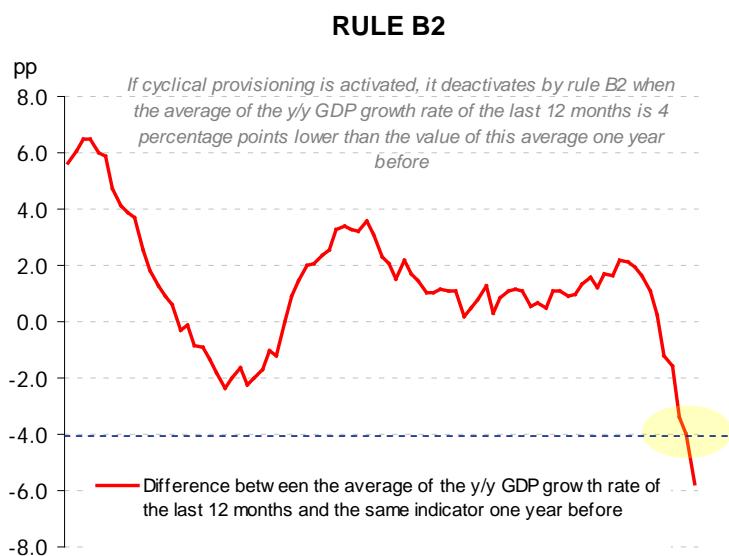
Figure 14: Cyclical Provisioning Deactivation



Source: SBS and authors.



SBS and authors.



Source: SBS and authors.

It should be noted, however, that although additional accumulated generic provisions cannot be directly allocated to profits, the possibility of using them to cover other required provisions reduces the provisioning effort banks need to make during the cycle's downturn. Thus, they indirectly benefit banks profits in bad times, smoothing them over the cycle.

Why is the rule based on GDP? Why not credit (a banking system variable)? According to the SBS, it is assumed that GDP precedes credit. In this sense, credit growth would not be a good variable to anticipate future bank losses and thus reduces the desirability to relate provisions to credit growth.

Another issue to consider is that a GDP based-rule is systemic. This means that its activation does not depend on a bank's behavior, but on the economy's (system) as a whole.

For this reason, the effect could be asymmetric on banks: it could be the case that a more prudent bank would have to increase generic provisions.¹⁰

Regulations state that since January 2010 instead of classifying loans into four groups (by debtor type), financial institutions will have to classify them into eight groups. This should increase the homogeneity of loans in each credit type, which favors the accuracy of the assessment that can be made and therefore enhances risk management. Provisioning charges will then be as shown on Table 3.

Table 3: New Provisioning Rules

Type of debtor	Generic rate (in %)	
	When the rule is not activated	Additional when the rule is activated (cyclical)
Corporate	0.7	0.40
Large firms	0.7	0.45
Medium firms	1.0	0.30
Small firms	1.0	0.50
Micro firms	1.0	0.50
Consumer revolving	1.0	1.50
Consumer Non-revolving	1.0	1.00
Mortgage	0.7	0.40

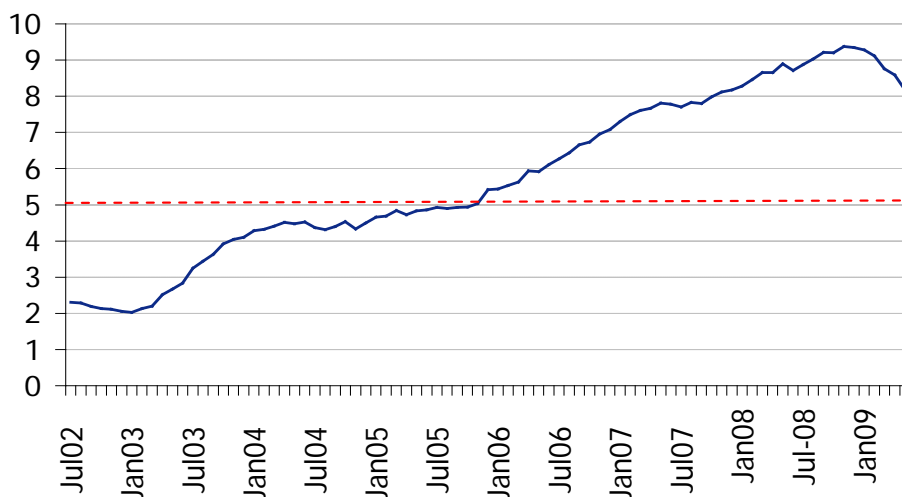
Source: SBS.

Cyclical provisioning¹¹ was activated in December 2008, at the very same time it was implemented. However, given the fast deceleration the Peruvian economy has experienced since the fourth quarter of 2008, it is expected to be deactivated by rule B2 in the coming one or two months as can be seen in Figures 15 and 16.

¹⁰ There is another regulation for consumer loans which makes generic provisions more institution-specific, forcing lenient banks to increase them if they lend to over-indebted clients.

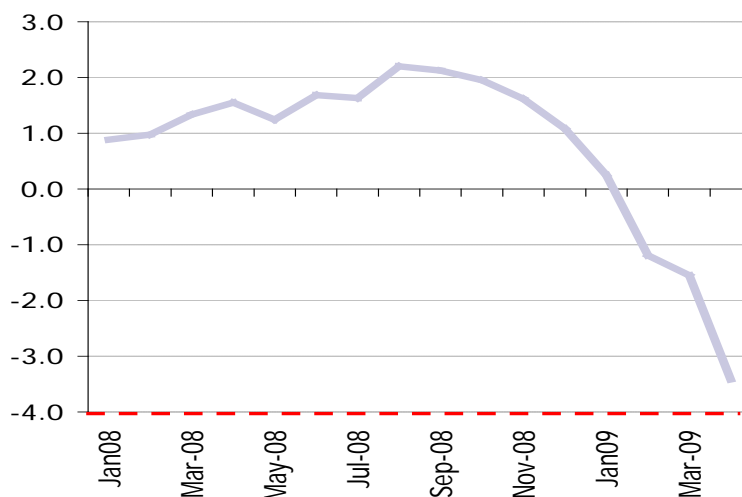
¹¹ There is a terminology problem, despite the fact that the three countries considered here share the same language: the Peruvian system is called "pro-cyclical" since the new provisions move with GDP. This is labelled "anti-cyclical" in the Spanish and Colombian systems (and in international discussions) since provisions contribute to smooth the cycle.

Figure 15: GDP Evolution (year on year % change 30-month moving average)



Source: Peruvian Central Bank (Banco Central de la Republica del Peru, BCRP).

Figure 16: Rule B2 criterion (in percentage points)



Source: BCRP.

4. COMPARISON BETWEEN SPAIN, PERU, AND COLOMBIA

The first important difference between the three systems is how are they activated or deactivated (see Table 4 below for a full comparison). The Spanish and the Peruvian system are both rules-based, whereas the Colombian system is discretionary, in the sense that the “state” of accumulation mechanism is decided by the banking supervisor. The Colombian authorities have announced however that they will reform the system in a rules-based direction¹².

¹² The rules-based nature of each system depends a lot, however, on its practical implementation. The Spanish system, for example, was adjusted in the upturn (2004) and again very recently in the downturn (July 2009).

Another important difference is the variable chosen to calculate the amount of provisioning required. The Spanish system is based in credit whereas the Peruvian system is based on GDP. In Colombia (given its discretionary nature) so far there is no explicit variable used, although the authorities have announced that credit will be taken into account. These differences have important implications. First, since credit is a banking variable and institution specific, provisions under the Spanish system are based on the performance of each institution, whereas in the Peruvian system the activation or deactivation of the mechanism is common to the whole system.

Choosing a path which is common for all banks may have different implications for institutions depending on their strategy, their geographical or client specialisation, or their efficiency and profitability. Some may be gaining market share and others may be shrinking their presence in the system, but a system that is not institution-specific will tend to treat banks similarly (although the size, variation, or riskiness of their portfolio will imply of course differences in provisions even in system-based mechanisms). Second, the choice of GDP as an aggregate variable, as opposed to domestic demand, also poses questions. In fact, with a current account deficit, a domestic demand objective would *ceteris paribus* introduce more pressure than a GDP objective and would facilitate an automatic correction mechanism for the deficit. On the other hand, with a current account surplus, a GDP objective would be more demanding than a domestic demand objective, and the automatic correction mechanism would operate symmetrically. The differences however would depend crucially in the calibration and the choice of parameters in each case.

Finally, even if one opted for an aggregate variable, credit would seem more naturally linked to banking activity than GDP and it is directly linked to banks' behavior (whereas GDP is not a variable to which the banking system has any direct impact). On the other hand, in countries in the process of financial deepening (like Peru or Colombia) a high credit growth could not be a signal of excess in the financial sector, but a result of a healthy financial inclusion process. From this point of view the Peruvian system could be more tailored to the needs of emerging market economies (EMEs) (whereas in the case of Spain it is not an issue and high credit growth can be considered more as a *prima facie* indicator of financial excess than of financial development).

Another important difference lies on the sources of the data. Credit is a banking statistic and, therefore, much easier to use by the central bank and/or supervisor, whereas GDP is an estimate normally calculated by the statistics agency. Interestingly, Peru's choice of GDP coincides with its exceptional division of labor in terms of statistics. More specifically, GDP is calculated by the central bank and this is done monthly (which is also exceptional, and raises some reliability issues.)

One more relevant distinction is whether the provisioning mechanism is system-wide or individual. The Spanish system is individual, whereas the Peruvian and the Colombian provisioning mechanisms are systemic, although the latter has been announced to change to institution-specific in the next reform. Under the Spanish system, some banks may be increasing generic provisions while others are reducing them (for instance because the former are gaining and the latter are losing market share, or because there is an asymmetric negative [positive] shock in the latter [former] geographical area). The Peruvian system is activated for the system as a whole, although its impact on each institution depends on the riskiness of its portfolio. This implies that an institution losing market share, or with a more prudent lending policy, or which is experiencing a negative shock in its area of activity will be forced to provision above the normal level, simply because GDP is growing above a certain threshold.

This later change reduced the provisioning effort of certain mortgage loans, taking into account the recovery expectation of the sale of the property. A lesson in this regard would be that even the rules-based systems would inevitably be applied in a discretionary way.

The implications of the above are interesting from a competition point of view. On the one hand, one possible criticism of the Spanish system is that it could penalize institutions that are gaining market share because they are more efficient. On the other hand, the Peruvian system can be criticised for penalizing institutions that are more prudent. It also treats differently small and big institutions. The bigger (more systemic) a firm is, and the more diversified geographically, the less likely it is that you face a rate of expansion very different from the average. In this regard, the Peruvian system could have a certain bias against smaller institutions.

Another difference lies in the fact that specific and generic provisions can net off. In the Spanish case this compensation is in principle automatic (although, as we are seeing now there is a certain room for discretion, both for the institution and for the supervisor, in the use of the generic provisioning in the downturn). The benchmark is to try to reach a constant total provisioning effort along the cycle¹³. Constant overall provisions along the cycle are arbitrary, but any other objective would probably be even more arbitrary. In the Peruvian case there is no benchmark. Banks are only required to provision more in the boom phase, without any real reference.

Finally, on the important issue of compatibility with international accounting standards (IAS), the Peruvian model seems even less compatible with IAS than the Spanish one. In fact, it is explicitly based on the expected loss model, which in IAS is only used for Off balance sheet items. The Spanish model, after the 2004 reform, tried to achieve a higher degree of compatibility with IAS. This is admittedly a secondary discussion at this stage, since IAS is expected to adopt (or at least admit) the expected loss model.

One interesting proposal is that of Restoy and Roldan (2009), formulated similarly also in Turner (2009), whereby, a transparent distinction between regular profits and distributable profits in public financial statements should be made, which would imply that, without undermining the discipline of accounting standards, the regulator could use an anti-cyclical tool along the cycle to smooth reserves. But these proposals belong to the family of capital rather than provisions (see the discussion in Section 2.2 above).

Accounting principles—including the chosen provisioning model—would govern, as at present, how the regular profit and loss account is prepared. Regulators would however set clear rules establishing which portion of income could actually be paid out as dividends. The difference between those two concepts of profit would therefore be a set of publicly-reported compulsory reserves that would not interfere with the determination of the regular profit and loss account. That set could include a (through-the-cycle) reserve that would be earmarked against future losses and crafted along the lines of the Spanish dynamic provision.

¹³ See the simulations included in Fernández de Lis, Martínez, and Saurina (2001).

Table 4: Dynamic provisioning in Spain, Peru, and Colombia

	Spain	Peru	Colombia
Introduced	July 2000	November 2008	June 2007 (commercial) June 2008 (consumer)
Based on:	Rule: Credit	Rule: GDP	Discretion of Supervisor. Credit will be taken into account (reform)
Discrete/continuous	Continuous	Discrete (on/off)	Discrete (on/off)
System vs. institutions:	Institution-specific	System-based	System-based (change to institutions specific announced)
Thresholds	Fund limits: 10%-125%	Potential GDP (5%) as a minimum threshold. Change in GDP growth also plays a role	No
Symmetry	Yes, generic provisions can increase or decrease	Yes, "pro-cyclical" provisions can increase or decrease	
Use: individual or general	General	General	Individual (change to general in the downturn announced)
Amount	Depends on (type of debtor) specific provisions, credit level, credit growth and riskiness of portfolio	Depends on riskiness of portfolio	Depends on riskiness of portfolio
Sensitivity to riskiness of portfolio	Yes, depends on coefficients	Yes, depends on coefficients	Yes, depends on coefficients
Tax deductibility	Yes (1% limit?)		
Inclusion in Capital Adequacy	Yes, Tier 2	Yes, Tier 2	

Source: Authors.

5. CONCLUSIONS

There is ample evidence that the financial system amplifies economic cycles. This crisis has illustrated that, even worse, this mechanism could be exacerbated by financial regulation. One key objective of the ongoing efforts towards reform of the international financial architecture is to reduce such pro-cyclicality, although a healthy starting point for such efforts is to assume that regulation cannot completely eliminate pro-cyclicality.

The adoption of dynamic provisions typically pursues a double objective: (i) to smooth credit growth and (ii) to allow for the creation of reserves in the good times that would serve as buffers in the bad times. The experiences so far indicate that, when the boom has a certain size, the usefulness of provisions for the first objective is very limited; their role from the viewpoint of the second objective is much more promising.

A key question in designing an anti-cyclical device is to decide whether it should be rules-based or discretionary. The problem of a credible commitment by the authorities argues in favor of rules. But this requires a very reliable calibration of the cycle “ex ante”, an assumption that is not realistic, especially taking into account that this crisis has highlighted that the usefulness of models depends inter alia on the length and quality of the data in which they are based. It seems therefore more realistic to assume that any system would require “ad hoc” adjustments and certain degree of discretion, as illustrated by the Spanish experience. This does not imply, however, that total discretion is a superior option as in the Colombian system. The Colombian authorities themselves acknowledged this by announcing recently a reform towards a more rules-based system.

One interesting comparison between the Spanish and Peruvian cases is the use of GDP vs credit as the key variable to determine the volume of provisions. In the case of EMEs, GDP would allow to accommodate financial deepening, whereas credit would need to deal explicitly with this problem. It has also the advantage, at least in some countries, of being a leading indicator of credit. On the other hand, it has the drawback of neither being a banking variable, nor one provisions have a direct impact on.

One implication of the use of GDP versus credit is that the former variable is systemic whereas the latter is institution-specific. A systemic mechanism would be coherent with the idea of having to deal with a systemic problem, but it has implications in terms of competition and equal treatment that need to be considered carefully. One may argue that, if the regulator wants a systemic variable, overall credit could also be used. But it follows that the anti-cyclical provisioning mechanism (based on credit) could be activated for the system as a whole, perhaps because only one or a few institutions are behaving more aggressively in its credit policy. If one accepts that this would be hardly acceptable, it follows that the choice of GDP could not be based exclusively on its virtues as a systemic variable.

To what extent should dynamic provisions be applied differently to industrial versus emerging countries? One key requirement for such a system is the availability of good quality data, ideally corresponding to more than one full economic cycle. This limits the possibilities in EMEs. Another important requirement for EMEs is that the system should allow for financial deepening to occur (in other words, it should be able to differentiate “ex ante” between an excessive credit boom and a legitimate financial deepening process, something that is indeed very complicated). From this point of view GDP is superior to credit.

The debate on whether to use provisions or capital/reserves to inject an anti-cyclical element in banks’ behavior has received a lot of attention recently. The arguments in favor of provisions are related to their link with expected losses, whereas the arguments in favour of capital point to the link with profits distributions (since provisions, but not capital, can be used to distribute more dividends in the downturn). The jury is still out, but international consensus seems to favor the use of both mechanisms. This seems sensible given the strong forces towards pro-cyclical behavior that need to be counteracted, insofar as the system does not become too complex.

Finally, any solution to the problem needs to maintain the equilibrium between making regulation more anti-cyclical while at the same time reinforcing transparency of banks’ accounting statements. It is important to keep in mind that this crisis has been the result of (i) pro-cyclical financial system behavior and regulation, but also of (ii) opaqueness of financial institutions, which implies that both aspects need to be addressed in the forthcoming reforms. Reinforcing anti-cyclical mechanisms at the expense of transparency is not a solution.

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