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## Dynamic Provisioning: A Buffer Rather Than a Countercyclical Tool?

**T**he global financial storm that started in 2007 is one of the very best examples in recent economic history of how much the financial system can exacerbate real economic cycles. This procyclicality has triggered a lively debate on which tools can be used to smooth the pattern, with a focus on macroprudential policies.

There was limited experience in the use of macroprudential instruments before the crisis. The most prominent examples are the use of loan-to-value (LTV) ratios in some Asian countries and dynamic provisions in Spain.<sup>1</sup> The latter received a lot of attention and in the early stages of the crisis were seen as a model for the then-incipient international regulatory reform.

The debate shifted rapidly from provisions to capital, and the reform soon crystallized in the adoption of a capital buffer in the context of the Basel III Accord.<sup>2</sup> The discussion on provisions languished and is now in a deadlock. Two reasons explain this declining interest: the difficulties for accounting harmonization between the Americans and the Europeans, which partly explains why the Basel Committee took the easier route of capital; and the evidence, as the crisis deepened, that dynamic provisions did not prevent serious problems in certain segments of the Spanish banking system.<sup>3</sup>

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We would like to acknowledge the useful comments and input provided by Augusto de la Torre, Tito Cordella, Juan Carlos Bejarano, Hugo Perea, Ana Rubio, Juana Téllez, and Victoria Santillana.

1. See Caruana (2010).
2. FSB (2011).
3. FSB, IMF, and BIS (2011); Restoy and Roldán (2009).

The analysis of the Spanish case raises several complex issues. Why was dynamic provisioning insufficient to protect the banking system in the wake of the crisis? Was it a problem of design or application? Or were the bubble and the crisis too big to be addressed by this tool? Did dynamic provisioning have unintended consequences? In particular, did it delay the solution of the problems of savings banks? Was it a useful buffer, but not a genuine countercyclical tool?

This paper focuses in the latter issue, but all the questions are very much interlinked. The question of whether dynamic provisioning was a buffer or a dampener is closely related to the debate on rules versus discretion. Under a formula-driven system, the required level of provisions would vary according to some predetermined metric. It would provide a preset discipline independent of judgment, but its success will depend crucially on the possibility of calibrating the business cycle *ex ante*. A rules-based system is superior to a discretionary mechanism in situations where the policymaker lacks credibility of commitment.

However, a rules-based system may face constraints that ultimately lead to discretionary adjustments. In particular, asymmetric market discipline (that is, the fact that markets are too lenient in good times and too strict in bad times) may preclude the use of the accumulated buffer in the downturn, thus impeding the anticyclical compensation. We provide some evidence that this was a factor in the case of Spain: when liquidity dried up and funding in the interbank market disappeared, markets required a higher level of own funds, limiting the anticyclical impact of dynamic provisions. To be fair, the sheer size of the crisis also limited the compensation of rising nonperforming loans (NPLs), with the final effect that total provisions rose considerably in the bust, contrary to what was intended.

Spain is not the only country that adopted dynamic provisions, but it was the pioneer and it is the only system for which there is experience on a boom-and-bust cycle. To obtain more general conclusions, we compare the Spanish case with two Latin American countries that adopted dynamic provisions in the late 2000s: Colombia and Peru. The comparison with these countries supports more general conclusions on the pros and cons of alternative designs and provides insight into whether particular aspects need to be taken into account in applying this tool to emerging market economies.<sup>4</sup>

4. Wezel (2010).

## Literature Review

There are many reasons for the procyclicality of the financial system. A quick review is warranted to better understand which instruments could be most efficient for limiting it.

First, the financial system is prone to having a more lax assessment of risk in good times than in bad ones, influenced by the economy's general environment. The idea of shortsightedness in economic or financial decisionmaking was introduced by Kahneman and Tversky and then developed by Kindleberger and Minsky, whose contribution was to explain why it is an inherent component of our financial system, branded as the financial-instability hypothesis.<sup>5</sup> The excess lending that 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.<sup>6</sup> In the same vein, the value of collateral is bound to increase in good times and fall in 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.

Third, banks may also be intermediating the procyclicality of other markets insofar as their funding is more expensive or even scarce in bad times, which translates into more expensive credit and possibly a smaller supply.

Fourth, investors—and thus financial institutions as intermediaries of savings—tend to show herd behavior, as mistakes are generally judged more leniently if they are common to the whole industry.<sup>7</sup> This crisis has done nothing but confirm this idea.

Fifth, the classical principal-agency problem between bank shareholders and managers can also feed excessive volatility into loan growth rates. Once managers obtain a reasonable return on equity for their shareholders, they may engage in other activities that depart from firm value maximization and instead bolster managers' rewards. One of these strategies might be excessive credit growth in order to increase the social presence of the bank or expand the managers' power in a continuously enlarging organization.<sup>8</sup>

5. Kahneman and Tversky (1973); Kindleberger (1978); Minsky (1982).

6. Kiyotaki and Moore (1997).

7. Rajan (1994); Devenov and Welch (1996).

8. Williamson (1963).

Sixth, compensation policies are generally such that managers of financial institutions may behave procyclically even in the absence of a classical principal-agency problem. Bonuses linked to business growth in good times and to business retrenchment in bad ones are probably a good enough reason for financial institutions to become very procyclical.

Seventh, human capital cannot grow as fast as a financial institution does in good times. When the economy booms, loan officers need to grant loans faster and, probably, less rigorously. Furthermore, the more time that has passed 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 call a lack of institutional memory.<sup>9</sup>

Eighth, the increasing sophistication, harmonization, and automation of risk management also add to procyclicality. For example, value-at-risk (VaR) techniques basically transform large nominal amounts into much smaller values at risk. This reduces the perceived order of magnitude of risk exposures and induces a false sense of comfort. The current crisis proved that nominal and notional amounts do matter when looking at risk exposures. Furthermore, network externalities also increase risk assumption in good times and propagate financial distress in the downturn.

Ninth, competition in the banking system leads to cross-subsidization to attract clients, an important aspect of which is credit access even at the cost of relaxing credit standards.<sup>10</sup>

Finally, financial regulation may be an additional source of procyclicality.<sup>11</sup> Traditional loan-loss provisions are tied to loan delinquency. Consequently, financial institutions hardly need to provision in good times, 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.<sup>12</sup>

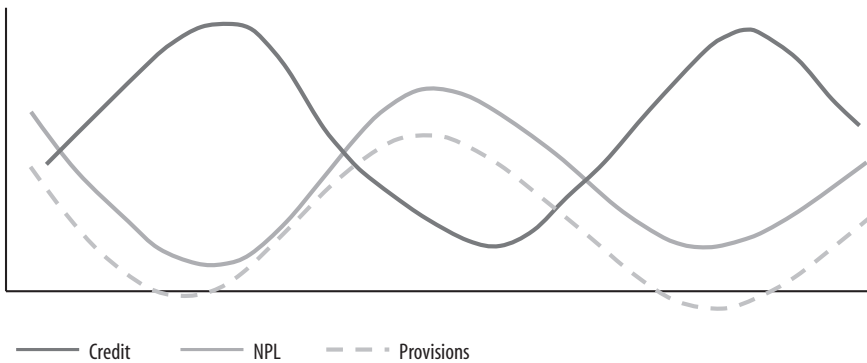
Given this long list of reasons behind the procyclicality of financial systems, it is likely that the trend can only be mitigated, rather than fully eliminated. In the same vein, one single tool may not be able to address all of the sources of procyclicality. After limiting our expectations to what is achievable, we turn to the issue of the most effective way to do it. One first question is whether to use a buffer or a dampener. A second question is whether measures to be taken should be rule-based or discretionary. A third question

9. Berger and Udell (2003).

10. Nys (2008); Lepetit and others (2008).

11. Fernández de Lis and Ontiveros (2009).

12. Taylor and Goodhart (2006).

**FIGURE 1. Normal Provisioning Cycle**

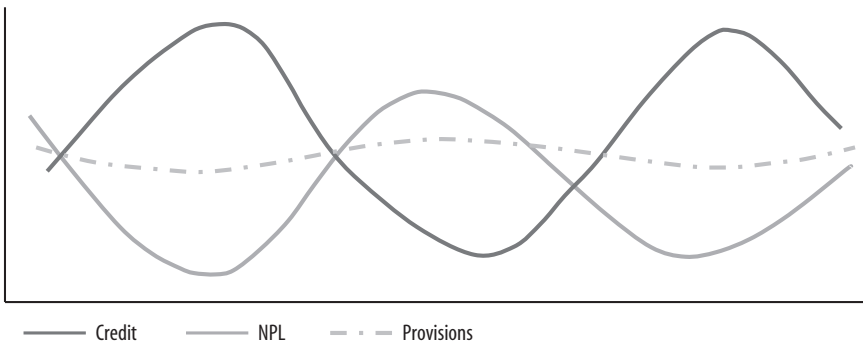
Source: Authors' elaboration.

relates to which regulatory tool is best placed to mitigate procyclicality: provisioning or capital. We develop these questions in the next section.

### The Goals and Design of Dynamic Provisioning: A Buffer or a Dampener?

Under a normal provisioning system, provisions are a function of contemporary nonperforming loans (NPLs), although the possibility of using generic provisions based on the credit stock may provide a smoothing mechanism (see figure 1). 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 generally have no problem servicing their debt, which is reflected in low nonperforming loans (NPLs) and provisions. The low provisioning effort fuels low risk aversion and credit growth, thus feeding back into 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. Normal provisions thus follow a procyclical pattern.

The objective of dynamic provisions is to smooth the provisioning effort along the cycle, as shown in figure 2. The degree of smoothing, however, is an open question. While the idea is to avoid the procyclical effect of the normal system, a regulator would hardly aim at an opposite pattern of provisions (that

**FIGURE 2. Dynamic Provisioning Cycle**

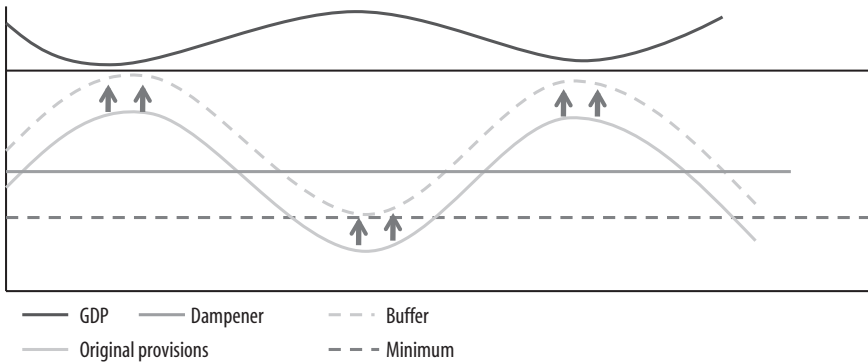
Source: Authors' elaboration.

is, increase in good times and decrease in bad times), since risk is cyclical and this reality should be reflected at least partially in provisions. The regulator might thus aim for an approximately flat provisioning effort along the cycle in terms of the ratio of provisions to credit. The figure—which should be taken only as a reference—depicts provisions with a smoothed procyclical pattern, although the degree of smoothing is in practice open to judgment.

There are two possible approaches in which a regulatory tool such as dynamic provisioning can be useful. First, it can create a buffer that would provide protection if systemic risk materializes. Second, it can help distribute the regulatory burden more evenly along the economic cycle, reducing (or dampening) the inherent procyclicality of the financial system. In the former case, the objective is to set an absolute minimum, increasing the overall level of provisions. In the latter case, the objective would be a better distribution along the cycle, without altering the overall level of protection in the long term.

While the two objectives may be complementary, their effect on credit and thus on economic growth should, in principle, be very different. Figure 3 depicts how provisions would behave as a buffer versus a countercyclical tool. As mentioned, a dampener would aim at a relatively flat provisioning effort along the cycle. However, if the objective is to obtain a buffer that protects the financial system, then the objective would be to increase overall provisions along the cycle, but not necessarily to smooth their cyclical pattern.

Dynamic provisioning is designed, in theory, to smooth provisions along the cycle (and therefore to act as a dampener). In this paper, we argue that under certain conditions its impact could be more akin to a buffer.

**FIGURE 3. Provisions: Buffer versus Dampener**

Source: Authors' elaboration.

## Existing Experiences

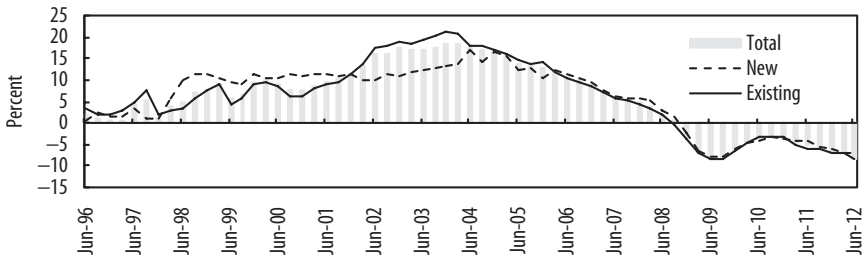
To get a better handle on how dynamic provisioning can work, we compare three countries that have implemented this type of system: Spain (the pioneer, which started in 2000), Colombia (2007), and Peru (2008). Of these countries, Spain is the only one that has gone through a boom-and-bust cycle. The comparison of these systems allows us to assess alternative designs and identify key aspects for applying this tool to emerging market economies.

### *Spain*

The introduction of dynamic provisioning in Spain should be seen in the context of the profound impact of the adoption of the euro on the Spanish economy. In the first ten years of the euro, the Spanish economy benefited from a significant reduction of risk premiums, 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 percent in the 1980s and early 1990s to around zero after the monetary union.<sup>13</sup>

The expansionary impact of the reduction in real interest rates on the Spanish economy was very significant. Domestic credit growth, which ranged

13. Fernández de Lis and García-Herrero (2009).

**FIGURE 4. Spain: Housing Prices**

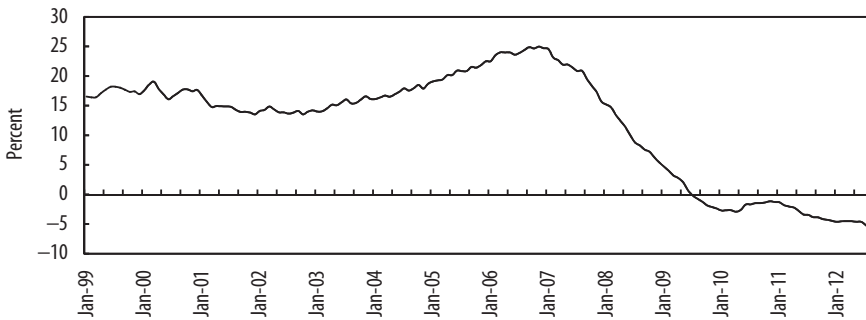
Source: Ministry of Public Works and Transport, Spain.

between 5–10 percent in the mid-1990s, accelerated to rates above 15 percent in 1998–2000. House prices increased at an annual rate of around 10 percent in the same period (see figure 4). Inflation accelerated from 1.9 percent in 1997 to 2.2 percent in 1999 and 3.5 percent in 2000. The differential in domestic demand growth between Spain and Germany in the early years of monetary union was around 3.5 percentage points. This differential reflected, in particular on the investment side, gains from price stability and policy credibility for Spain (and the peripheral countries in general), whereas Germany did not experience a similar effect since credibility was already high.

The boom in domestic demand in Spain also reflected very lax monetary conditions for Spain, which fueled consumption growth. The European Central Bank kept interest rates around 4 percent in the late 1990s, a level which was consistent with average conditions in the euro area, but which was too low for the Spanish economy. This expansionary impact was compounded by the depreciation of the euro vis-à-vis the U.S. dollar in the first years of the monetary union.

In the early 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, as they were called at the time) were seen as an instrument with a double objective: to contain credit growth by increasing the cost (in terms of provisions) of granting new credit; and to protect Spanish banking institutions from future losses stemming from the relaxation of lending standards typical of a boom phase. The first objective was related



**FIGURE 5. Spain: Year-on-Year Credit Growth**

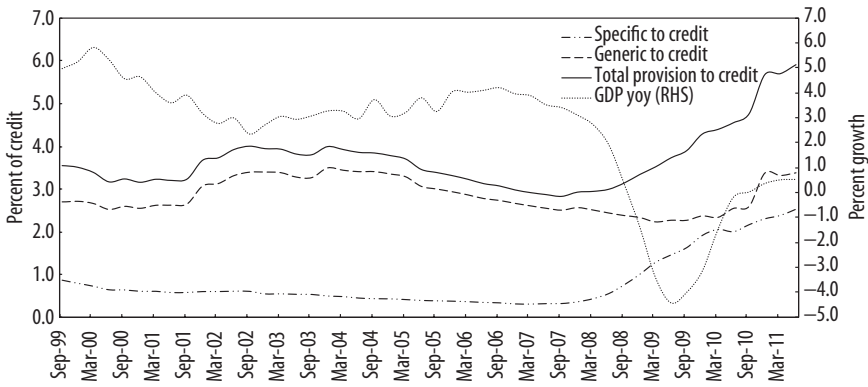
Source: Bank of Spain.

to the dampener function, whereas the latter was closer to the buffer function. While the former was probably more important when the system was adopted, the results 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). The second objective was mostly aimed at ensuring adequate protection for 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 also had a macroprudential component.

**SYSTEM DESIGN AND FUNCTIONING.** Credit growth stabilized at around 15 percent annually after the introduction of dynamic provisioning in 2000, and it decreased slightly between 2001 and 2003. It is difficult, however, to assess the extent to which this was related to the new provisioning system. Most probably, the burst of the dotcom bubble was more relevant in this period. In 2004, the provisioning system was reformed toward more laxity, and credit accelerated sharply to growth rates of nearly 25 percent in 2006 (see figure 5). The impact of the global financial crisis that started in mid-2007 implied a sharp contraction of both GDP and credit, which recorded negative growth rates since 2009 in the context of a deleveraging process. To understand these patterns, it is useful to recall how the system was designed and how it was reformed in 2004.

**FIGURE 6. Spain: Provisioning to Credit and GDP**



Source: Bank of Spain.

The initial 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 percent 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. International accounting bodies argued that it implied profit smoothing along the cycle and masked the real situation of the banks. Spanish financial institutions complained about being subject to higher provisioning requirements than their competitors, which put them at a disadvantage in the single European market for financial services.

By 2004 there was a sense that the accumulation of provisions was excessive. They had reached a level of more than 2.5 percent of credit, of which less than 0.5 percent was specific provisions tied to contemporary bad loans (see figure 6). Furthermore, the coverage of provisions over bad loans reached nearly 500 percent.

To reduce this excess, and also to counteract the criticism by international accounting bodies, the system was reformed in 2004. The changes basically implied the integration of the generic and statistical provisions and the reduction of the limits on the accumulated fund. The new provisioning formula was as follows:

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

**TABLE 1. Spain: Coefficients Applied to Dynamic Provisioning**  
Percent

<i>Type of risk</i>	$\alpha$	$\beta$
No apparent risk	0.00	0.00
Low risk	0.60	0.11
Low-medium risk	1.50	0.44
Medium risk	1.80	0.65
Medium-high risk	2.00	1.10
High risk	2.50	1.64

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

where  $0 \leq \alpha \leq 2.5$  percent and  $0 \leq \beta \leq 1.64$  percent and where  $\Delta$  stands for change. The coefficients of the different types of assets were as shown in table 1 below.

The limits on the generic fund, which reflected accumulated provisions, were set between 0.33 percent and 1.25 percent of the alpha. Since a number of institutions were at or very close to the upper limit, this implied the liberation of €14 billion from the generic fund. These liberated provisions were not distributed as profits, however, but rather were consolidated as reserves. In the subsequent quarters, as more institutions reached the upper limit of the generic fund and as credit accelerated over 25 percent annually, the ratio of total provisions to credit fell from 2.5 percent in 2004 to 2.2 percent in 2007.

To a certain extent, the 2004 reform represents a lack of faith in the dynamic provisioning system, which was innovative, unprecedented, and contested by the banks and the international accounting bodies. The Spanish authorities started wondering whether the system could be explosive and whether there would be limits in the accumulation process. Had the authorities known the magnitude of the shock that was incubating, they would probably not have changed the system, or at least not set the limits so close to the prevailing levels.<sup>14</sup>

Events took a dramatic turn in 2007. GDP and credit dropped rapidly to negative rates, NPLs spiked, and specific provisions grew tenfold from the summer of 2007 to the end of 2010. As expected with an anticyclical mechanism, the accumulated fund was used to compensate for the increase in specific provisions, so that generic provisions decreased initially, but not sufficiently to compensate for the increase in specific provisions. Total provisions to credit in early 2009 exceeded the maximum reached in 2004, which also reflected

14. Fernández de Lis and García-Herrero (2008).

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 prudential behavior 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).

A reform introduced in 2009 shortened the period for recognition of expected losses in NPLs and allowed for a more proper use of collateral to measure the severity of the losses. The first measure implied a more demanding loss recognition, whereas the second reduced the provisioning effort, depending on the net effect of the features of each financial institution.

A rapid deterioration was observed in 2010, as the Eurozone crisis spread to peripheral countries and wholesale financing dried up except for the most solvent institutions. Spanish savings banks were particularly affected by this rapid worsening of financing conditions, which implied that most of the smaller institutions were not able to renew the substantial maturities of bonds, covered bonds, and other paper. Under the auspices of the Bank of Spain, a series of mergers between savings banks took place, to strengthen their balance sheets and facilitate a restructuring of the sector, in some cases using public money to facilitate the process. These mergers helped to break the link with regional governments in the corporate governance of Spanish savings banks and provided a catalyst for capacity adjustment. In some cases, however, the mergers exacerbated the problems by combining institutions that had serious problems of rising NPLs and huge funding needs. The mergers also allowed for some capital gains, which were used to recapitalize the new institution and increase generic provisions.

Under these circumstances, when market discipline required a capital increase, it would not have been prudent to use the generic provision to distribute more profits. Total provisions therefore increased from 3.4 percent of credit to 5.7 percent in 2010, a rise that was not foreseen under an anticyclical mechanism.

As the crisis deepened, the nature of provisions changed dramatically. In 2012, special provisions were approved for real estate assets, including a new generic provisions fund for the healthy real estate portfolio. The old generic provisions were used to cover new requirements, disappearing in practice. This period is not covered in this paper.

Some preliminary lessons emerge from the Spanish case. First, dynamic provisions helped create a cushion in good times, but they did not discourage credit growth or rising house prices in the boom. When the size of a boom is big enough, the impact of additional provisions on credit supply is

marginal. Second, the Spanish system—although rule-based—allowed for some discretion. While the Bank of Spain has a very complete and reliable data set of credit and NPLs, based on a long-standing credit registry, the difficulty in calibrating the cycle *ex ante* is clear from the comparison of the expected and actual functioning of the system. This explains why the rules were changed in the middle of the game. Third, when the crisis hit, accumulated provisions were initially used to smooth the impact of total provisions, as expected. However, as the markets (whose discipline was absent during the good years) required higher capital ratios, it became evident that excess profits distribution was not appropriate (nor possible for some institutions), implying a steep increase in provisions that was compounded by the impact of savings bank mergers. This upward pattern in the upturn throws into question the supposedly anticyclical features of the system.

The aggravation of the Eurozone crisis in 2011 led to intense market pressures for the recapitalization of European banks, which finally led European Union authorities to increase capital requirements significantly, to 9 percent. In this exercise, dynamic provisions were not recognized as capital by the European Banking Authority (EBA), on grounds of harmonized European definition. This further raises the question of the usefulness of the Spanish anticyclical regulation.

The increase in capital in the middle of a profound crisis, as a result of market pressures, is at odds with anticyclical policies. To assess the impact of asymmetric market discipline, we conduct a simulation exercise in the next section, with an update of the initial simulations done in 2000, when the system was designed.

**THE IMPACT OF ASYMMETRIC MARKET DISCIPLINE IN THE DOWNTURN: A SIMULATION EXERCISE.** To extract lessons from the Spanish experience with dynamic provisions, it is important to analyze the extent to which the differences between the functioning of the system and the initial expectations were due to general flaws in the design of the mechanism or to specific factors related to the recent Spanish boom and bust. The simulations conducted by Fernández de Lis, Martínez, and Saurina are a good proxy for what the Bank of Spain expected from the system.<sup>15</sup> In this section we compare these simulations with what actually happened, and we also include an alternative simulation on the asymmetric functioning of market discipline to illustrate the impact it would have on dynamic provisions over the cycle.

15. Fernández de Lis, Martínez, and Saurina (2001).

**TABLE 2. Spanish Boom Phases and Crises: Expectations versus Actual Developments<sup>a</sup>**

<i>Type of data</i>	<i>Boom phase</i>		<i>Crisis</i>	
	<i>No. years</i>	<i>Average annual credit growth (percent)</i>	<i>No. years</i>	<i>Average annual credit growth (percent)</i>
Expected	4	13	4	6
Observed	8	16	4+	1

a. Expectations are from Fernández de Lis, Martínez, and Saurina (2001).

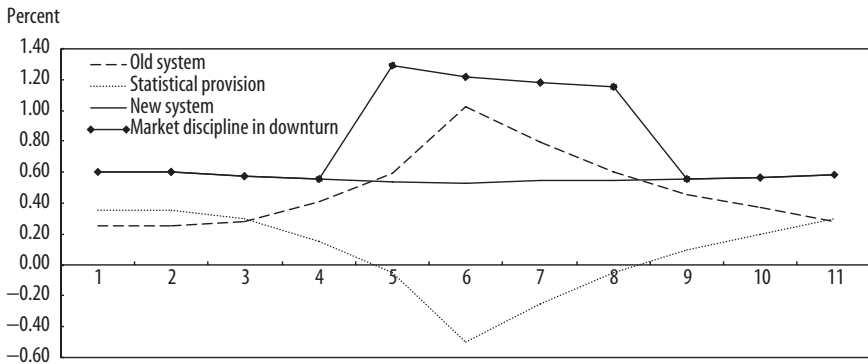
With the benefit of hindsight (and despite the fact that the downturn has not yet finished), three features of the recent credit cycle in Spain stand out. First, the boom was longer and more intense than expected. This led to an accumulation of provisions far above initial expectations. Given the doubts about the end of the boom (those were the days of “the great moderation”) and criticism of the system both domestically and internationally, Spain opted to reform the provisioning system in 2004, which reduced the pace of provisions accumulation (see figure 6). Whereas in the simulations by Fernández de Lis, Martínez, and Saurina the length of the initial boom was four years and the average annual credit growth was 13 percent, in reality it lasted 8 years and the average annual credit growth was 16 percent (see table 2). This implies that accumulated credit growth in the boom phase was 76 points above initial estimates.

Second, the bust was also much sharper than expected. In the initial estimates made in 2000, the crisis period would last four years and the average annual credit growth would be 6 percent. At the time of writing, in the fourth quarter of 2011, the crisis had already lasted four years and the credit crunch was considerably sharper than expected, with almost stagnant credit.

Third, as explained earlier, market discipline avoided the use of the accumulated provisions in the downturn. This implied that dynamic provisions worked asymmetrically, with little or no anticyclical effects in the downturn.

One interesting exercise is to introduce asymmetric market discipline into the simulation carried out by Fernández de Lis, Martínez, and Saurina. We do this by limiting profits distribution in the downturn: during the four-year recession period (from year five to year eight in figure 7) profits distribution is reduced to 25 percent of what it would have been if the full use of generic provisions had been allowed.<sup>16</sup> This constraint in profits distribution can be seen as the result of several forces. In the early stages of the crisis, a prudential

16. This is an arbitrary level, just to illustrate the effect.

**FIGURE 7. Spanish Provisions over Credit: The Impact of Market Discipline in the Downturn<sup>a</sup>**

a. Old system, statistical provisions, and new system are based on Fernández de Lis, Martínez, and Saurina (2001). Market discipline in downturn is based on our own calculations, with a limit on profit distribution in years four to eight (25 percent of the initial assumption).

use of the accumulated fund by the banks, which were aware that the crisis was going to be long and intense, was reinforced by moral suasion from the Bank of Spain, which did not want to see the accumulated fund be used to increase dividends at a time when capital increases were necessary. In a later phase, international financial markets demanded higher capital to provide access to funds (in the form of equity, hybrid capital, or bonds) and the renewal of maturing debt, especially for institutions seen as weaker. This forced the banks and especially the savings banks to retain profits and to make a less generous use of the generic fund than foreseen in the original system. This impact was exacerbated by the savings bank mergers, which permitted some capital gains.

Figure 7 includes the original simulation realized in 2000, in which the newly introduced statistical provision was designed to smooth the procyclical pattern of the old system to obtain an approximately constant provisioning effort along the cycle, together with a new simulation based on limits on profits distribution in the crisis. The line “market discipline in the downturn” illustrates how the use of the accumulated fund in bad times was partly precluded by market discipline. The result is that the profile of provisions over credit is relatively similar to the old system, but with a higher level.

Our conclusion is that dynamic provisions, as originally designed, did not prevent procyclicality, but they did provide a cushion (buffer) that was useful in bad times. If dynamic provisions were meant to generate a constant level of provisions over credit along the cycle, the constraints on profits distribution in the downturn would need to be factored into the system.

It is unclear, however, to what extent these results are generally applicable or were a consequence of the specific features of this crisis or the Spanish specificities. The recent cycle has certainly been characterized by a particularly myopic lack of market discipline in the euro area in good times and an especially harsh market discipline in the downturn, exacerbated by the lack of transparency on the true situation of financial institutions in the European Union and the drying up of certain segments of the interbank markets. More research needs to be done on the asymmetric working of market discipline and its impact on the design of anticyclical tools like dynamic provisions.

### *Colombia*

In 2007 Colombia adopted a dynamic provisioning model for commercial and consumer loans, which represent about 90 percent of the total outstanding loan portfolio. The banking regulator implemented reference models for commercial and consumer credit risk. Although each bank can use its own credit risk model, which must be approved by the regulator, at present all banks are using the reference model. This model was reformed in 2010.

The 2007 reference model established three types of provisions: individual, countercyclical, and generic provisions. Individual provisions reflected the characteristic risk of every borrower and every type of loan, and they could only be used if the loan became nonperforming. Countercyclical provisions covered changes in a borrower's credit risk due to changes in the economic cycle and had the same characteristics as individual provisions (both were included in the same balance account). This treatment of countercyclical provisions as a special type of specific provisions was crucial for its tax deductibility, according to international accounting standards. Finally, generic provisions were at least 1 percent of the total loan portfolio and could be used to meet countercyclical provision regulation requirements.

Once the model of countercyclical provisions was implemented, there was a dramatic fall in generic provisions. The system was criticized because the increase in individual provisions, through the countercyclical component, was partly offset by the reduction in generic provisions.

The system, which was initially highly discretionary, was reformed in April 2010 to move toward a rules-based mechanism. The reform implied two main changes: for commercial and consumer loans, individual provisions were broken down into two components, one procyclical and another countercyclical, with no generic requirement; the remainder of the loan portfolio (concentrated in housing) continued to be governed by the old system



of individual provisions (with no countercyclical component) and generic provisions, with the latter set at 1 percent of the credit stock.

**SYSTEM DESIGN AND FUNCTIONING.** The regulator uses historical data to calculate two risk scenarios, A and B (where B is a riskier scenario). The outputs of this calculation are two default probability matrices that contain default probabilities for every type of credit and borrower. Provisions, based on expected losses, are the result of the following calculation:

$$P = OVL * PD * LGD,$$

where OVL is the outstanding value of the loan, PD is the probability of default, and LGD is the loss given default.

Under the original system, the regulator decided each year which matrix should be used to compute individual provisions. During years of high credit and economic growth, matrix A was used to determine the accumulation of individual provisions, matrix B was used to calculate the riskier scenario provisions, and countercyclical provisions were the difference between the riskier scenario provisions and the individual provisions. During years of low growth, matrix A was used to calculate individual provisions, and there was no accumulation of countercyclical provisions. In the system applied from 2007 to 2010, the regulator could also exercise discretion in determining when banks could use countercyclical provisions to compensate for the increase in individual provisions during an economic downturn. Since there were no rules determining the change of state or the use of the provisions, which depended on the regulator's discretion, the system was criticized for introducing great uncertainty.

The reform of April 2010 introduced clear rules in response to this criticism. The countercyclical provisions can be subject to two situations (activation or depletion), based on four indicators:

- (1) Deterioration of the portfolio, based on the variation of individual provisions:

$$\Delta \text{Provisions} = (\text{Provisions}_t / \text{Provisions}_{t-3}) - 1 \geq 9 \text{ percent};$$

- (2) Efficiency, based on the ratio between provisions net of recoveries and interest income:

$$\text{PNR} / \text{IxC} \geq 17 \text{ percent},$$

where PNR is provisions net of recoveries and IxC is interest income;

- (3) Stability, based on the ratio between provisions net of recoveries and the gross financial margin:

$$0 \leq (\text{PNR}/\text{MFB}_a) \geq 42 \text{ percent,}$$

where PNR is provisions net of recoveries and  $\text{MFB}_a$  is the operational margin before depreciation and amortizations plus provisions net of recoveries of the credit and leasing portfolio; and

- (4) Growth of the credit portfolio:

$$\Delta \text{CB} = (\text{CB}_t/\text{CB}_{t-1}) - 1 < 23 \text{ percent.}$$

The indicators are defined in such a way as to indicate the downturn of the cycle. Each indicator includes precise reference values that trigger the suspension of the accumulation mode. In the default situation, if any of the four indicators is not met, the entity will be subject to accumulation of anti-cyclical provisions (this corresponds to the cyclical upturn). If the four indicators are met for three consecutive months, the entity will enter the depletion phase, where the accumulated provisions are run down (this corresponds to the downturn of the cycle).

The fourth indicator roughly corresponds to the same concept as the Spanish system (namely, credit growth). In this regard, the Colombian system is more demanding than the Spanish regime, since the normal situation (by default) will be the accumulation mode. In particular, the third indicator (stability) is so demanding that the perception of the institutions is that only banks that are in real difficulties will be allowed to use their provisions.

In contrast to the Spanish case, there are no precise limits on the accumulation of funds. There are implicit limits, however, in the values of the coefficients of matrices A and B for each type of loan.

As in the system introduced in 2007, in good times, when both types of provisions are activated (procyclical and anticyclical), the coefficients used for the overall provisioning effort will be those of matrix B. The difference introduced in 2010 is that the countercyclical component is now subject to a minimum, which is the product of the provisions of the previous period (quarter) and the exposure of that particular loan.

When the depletion mode is activated, the use of existing provisions is based on a formula that calculates the procyclical component (in this phase, the countercyclical component is in off mode). This formula applies the coefficients of matrix A only to the best credit quality loans, whereas the more demanding matrix B is used for loans with a lower credit quality. The implica-

tion is that even in bad times, the provisioning requirements for lower credit quality loans are also relatively stringent.

All in all, the 2010 reform implied a profound change in the Colombian provisioning rules, which moved from a discretionary to a rules-based system. The system is complex and demanding, having established by default the activation of the countercyclical component, which is meant for good times. The complexity of the system is partly related to the fact that the countercyclical component is linked to each loan, rather than being included in generic provisions (as in the Spanish and Peruvian systems), in order to maintain the tax deductibility of specific provisions. One open question is whether this system, introduced at a time of relatively strong economic growth, will be appropriate for a crisis period.

### *Peru*

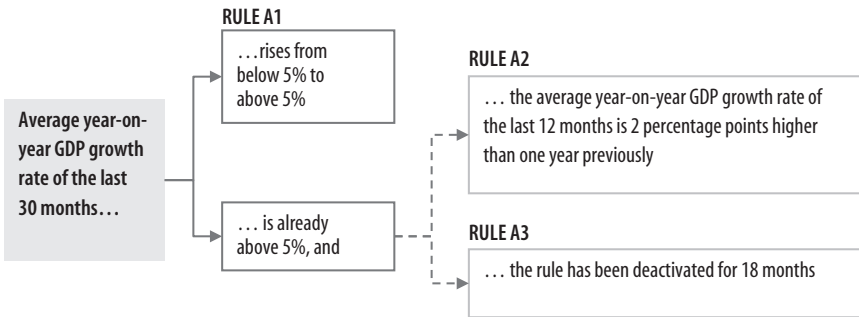
The emerging markets crisis of the late 1990s led to a credit crunch in Peru that lasted until 2003. The Peruvian economy then began a period of rapid economic expansion. Although initially fueled by exports, this boom was later related to private investment and consumption fueled by a credit boom.

Credit to all types of clients grew significantly in this period. Higher-risk agents, such as micro-firms and consumers, recorded year-on-year growth rates of over 30 percent. Because Peru is characterized by limited access to banking services, credit over GDP remained relatively low (compared with other countries in the region) despite the spike in credit growth. Concerns grew as to whether these rates were unsustainable or could reflect a less rigorous risk assessment by the banks. The authorities therefore started considering the introduction of business-cycle-adjusted provisions as a tool both to moderate credit expansion and to generate a buffer. Changes in generic provisions were introduced in 2008, in the context of very high growth rates of GDP (9.8 percent) and credit (36 percent). This change partly turned voluntary provisions that banks had accumulated in the last two years into permanent provisions.

Cyclical provisions are activated and deactivated according to an automatic mechanism described below. The system was activated in November 2008 for ten months (through September 2009, when it was deactivated) and again in September 2010 for twelve months (until mid-2012).

Since December 2008, the generic rate depends on the type of debtor (commercial, micro-firms, consumers, or mortgage) and is no longer homogeneous: 0.7 percent in the case of all “normal” commercial and mortgage loans and 1.0 percent for all “normal” micro-firm and consumer loans. With this change,

**FIGURE 8. Peru: Cyclical Provisioning Activation**



Source: Authors' elaboration, based on information from the Superintendence of Banking, Insurance, and Pension Funds (SBS).

generic rates now penalize riskier loans that have historically shown a higher nonperformance rate. Cyclical provisioning is primarily aimed at moderating credit growth rates and reducing the probability of consumer overindebtedness.

**SYSTEM DESIGN AND FUNCTIONING.** The Peruvian financial regulator (the Superintendence of Banking, Insurance, and Pension Funds, or SBS) has set a rule based on GDP growth. Cyclical provisioning is activated when the GDP growth rate exceeds a certain threshold (in boom periods), which is related to an estimation of potential output growth. Figure 8 above illustrates the rule.

The cyclical provisions are part of generic provisions (and therefore not related to individual loans, in contrast to the Colombian system). When cyclical provisioning is activated, generic provision charges increase, based on the type of debtor. Table 3 shows how these charges changed when the cyclical provisions were launched in 2008.

**TABLE 3. Peru: Provisioning Rules, December 2008 to January 2010**  
Percent

Type of loan	Generic rate (December 2008 to January 2010)	
	When the rule is not activated	Additional provisions when the rule is activated (cyclical)
Commercial	0.7	0.5
Micro-firms	1.0	0.5
Consumer	1.0	1.0
Mortgage	0.7	0.4

Source: SBS.

The rates on additional generic provisions were based on data from the last episode of financial crisis in the late 1990s. They were therefore calibrated for a stress situation. In times of economic slowdown, the rule is deactivated, and generic rates are reduced.

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 bank profits in bad times, smoothing them over the cycle.

According to the SBS, the rule is based on GDP rather than credit (a banking system variable) because GDP precedes credit. (This assumption is confirmed by BBVA Research estimates, which indicate that GDP leads credit by three quarters.) In this sense, credit growth would not be a good variable for anticipating future bank losses, which reduces the suitability of this variable as a leading indicator.

Another issue to consider is that a GDP-based-rule is systemic. Its activation depends not on a bank's behavior, but on the economy as a whole. Consequently, the effect could be asymmetric on banks: a more prudent bank might have to increase generic provisions.<sup>17</sup>

Since January 2010, financial institutions must classify loans into eight groups (by debtor type), instead of the former four groups. The aim of this regulatory change was to 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. Current provisioning charges are as shown in table 4.

## Comparison of Colombia, Peru, and Spain

The first important difference between the three systems is how they are activated or deactivated (see table 5 for a full comparison). The three systems are all rules based, but the definition of the rules is very different, as is their practical implementation. The Spanish system, for example, was adjusted in the upturn (2004) to make it more lenient; it was reformed again in the downturn (July 2009), but the effect was ambiguous: some aspects of the reform imply a harsher treatment, whereas others were relaxed, and the net impact varies

17. A separate regulation for consumer loans makes generic provisions more institution specific, forcing lenient banks to increase them if they lend to overindebted clients.

**TABLE 4. Peru: New Provisioning Rules, January 2010 to Present**  
Percent

<i>Type of debtor</i>	<i>Generic rate</i>	
	<i>When the rule is not activated</i>	<i>Additional provisions when the rule is activated (cyclical)</i>
Corporate	0.70	0.40
Large firms	0.70	0.45
Medium-sized firms	1.00	0.30
Small firms	1.00	0.50
Micro-firms	1.00	0.50
Consumer, revolving	1.00	1.50
Consumer, nonrevolving	1.00	1.00
Mortgage	0.70	0.40

Source: SBS.

**TABLE 5. Dynamic Provisioning in Colombia, Peru, and Spain**

<i>Program characteristic</i>	<i>Colombia</i>	<i>Peru</i>	<i>Spain</i>
Date of introduction	June 2007 (commercial) June 2008 (consumer)	November 2008	July 2000
Basis	Rule based on 4 indicators	Rule based on GDP	Rule based on credit (stock and growth)
Discrete/continuous	Continuous	Discrete (on/off)	Continuous
System versus institutions	Institution-specific	System-based	Institution-specific
Thresholds	Implicit threshold in the provisioning coefficients set by the authorities	Potential GDP (5%) is the implicit minimum threshold. Change in GDP growth also plays a role	Fund limits: 10–125%
Symmetry	The use of provisions in the downturn is subject to considerable constraints	Yes, procyclical provisions can increase or decrease	Yes, generic provisions can increase or decrease
Use: individual versus general	Individual	General. Can smooth profits in the downturn	General. Can smooth profits in the downturn
Amount	Depends on specific (individual) provisions and riskiness of portfolio	Depends on riskiness of portfolio	Depends on specific provisions, credit level, credit growth, and riskiness of portfolio
Tax deductibility	Yes	No	Yes (1% limit)

Source: Authors' elaboration.

by institution. A lesson in this regard would be that even rules-based systems are inevitably applied with discretion.

One important difference between the three systems is the variable chosen to calculate the amount of provisioning. The Spanish system is based on credit, the Peruvian system uses GDP, and the Colombian system incorporates a complex set of indicators, including changes in NPLs, credit growth, efficiency, and stability. As a result, provisions under the Spanish and Colombian systems 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 that is common for all banks may have different implications for institutions depending on their strategy, their geographical or client specialization, or their efficiency and profitability. Some may be gaining market share and others may be shrinking, but a system that does not incorporate institution-specific mechanisms will tend to treat banks similarly (although the size, variation, or riskiness of their portfolios will imply differences in provisions even under system-based mechanisms). Under the Spanish and Colombian systems, 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 that is losing market share or that has a more prudent lending policy or that 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.

The implications of the above are interesting from the perspective of competition. One possible criticism of the Spanish system is that it could penalize institutions that are gaining market share because they are more efficient. The opposite could occur under the Peruvian system, which might penalize institutions that are more prudent. It also treats small and large institutions differently. The bigger (more systemic) a firm is, and the more diversified geographically, the less likely it is to face a rate of expansion very different from the average. In this regard, the Peruvian system could have a certain bias against smaller and local institutions.

The choice of GDP as an aggregate variable also raises some questions. Credit would seem more naturally linked to banking activity than GDP, and it is directly linked to banks' behavior (whereas banks have no direct impact on

GDP). On the other hand, in countries in the process of financial deepening (like Peru or Colombia), a high credit growth rate is not necessarily a signal of excess in the financial sector, but may be 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. In Spain, however, financial inclusion is not an issue, and high credit growth can be considered a *prima facie* indicator of financial excess.

Another important difference lies with the data sources. Credit is a banking statistic and is thus easy for the central bank or supervisor to use, whereas GDP is normally calculated by the statistics agency. Interestingly, Peru's choice of GDP coincides with its exceptional division of labor in terms of statistics: GDP is calculated monthly by the central bank (the frequency is also exceptional and raises some reliability issues).

The netting of specific and generic provisions is another source of divergence among the systems. In Spain, this compensation is, in principle, automatic (although both the institution and the supervisor have some room for discretion in using generic provisioning in the downturn). The benchmark is to aim for a constant total provisioning effort along the cycle. Constant overall provisions along the cycle are arbitrary, but any other objective would probably be even more arbitrary. The Peruvian and Colombian systems have no such benchmark. Banks are only required to provision more in the boom phase, without any real point of reference. In the case of Colombia, the default situation is established in the accumulation mode, which, together with the strict definition of the four indicators that determine the change of state (to depletion mode), implies a certain asymmetry and raises some issues about the suitability of the mechanism during bad times.

A final issue is tax deductibility. Peruvian provisions are not tax deductible, in line with their generic nature, whereas in Colombia countercyclical provisions are a special type of specific provision, which permits their tax deductibility according to international accounting standards. In Spain, generic provisions are deductible with a limit of one percent of credit (based on the old generic definition before 2000).

## Conclusions

In the case of Spain (the only country that experienced both a boom and a bust under this system), the adoption of dynamic provisions was related to two objectives: to smooth credit growth and to create a buffer that provides



additional security. The first objective (to act as a dampener) was probably more important at the time of adoption, but the results *ex post* were more satisfactory as regards the second objective (to provide a buffer). Although the stock of dynamic provisions that had been accumulated since the system was introduced in 2001 provided some leeway when the crisis started, the size of the shock was so big that the buffer was exhausted before the crisis ended. After the initial phase of the crisis, banks increased their provisions substantially, which seriously limited the anticyclical effect in the downturn. The accumulated fund provided some margin for policy action, but it might have contributed to extending the period of inaction, thereby increasing the duration of the crisis and its related costs.

A key question related to the design of an anticyclical device is whether a rules-based or discretionary mechanism is most effective. The inherent risk that the authorities will lack a credible commitment is a point in favor of rules. Rules, however, require a very reliable calibration of the cycle *ex ante*, an assumption that has proved unrealistic with this crisis. Mistakes are inevitable in crisis forecasting and in adapting the forecasts to new information. Consequently, the authorities tend to incur the same biases as in a discretionary system: excessive complacency in good times and excessive harshness in bad times.

This is compounded by asymmetric market discipline, which tends to preclude the use of accumulated funds in the downturn: since markets are extremely sensitive to capital levels in a crisis, they introduce powerful incentives not to use the accumulated fund. These incentives are more powerful the more dependent banks are on funding in global markets (as was the case in Spain). The accumulation of reserves in good times that are not fully used in bad times pushes the old provisioning cycle to a higher level, thereby creating a buffer.

In general, rules fit better with the buffering function, while discretion fits better with the dampening function. This is because deciding the level of a buffer and maintaining it under different business cycle conditions seems easier than designing *ex ante* anticyclical policies that are robust to changes in the cyclical patterns.

The comparison of the Spanish system with those of Peru and Colombia highlights three policy conclusions on the extent to which dynamic provisioning should be applied differently to industrial versus emerging countries. First, the Peruvian system, which was more rules-based than the other two, was also more stable. The Colombian system evolved from a totally discretionary mechanism to a more rules-based one. The implication is that all regulators

prefer to commit to predictable behavior, but not all systems are equally resistant to the temptation of adjustment. Second, the fact that Peru opted for GDP instead of credit as the key variable implies that the system allows for financial deepening. GDP also has the advantage, at least in some countries, of being a leading indicator of credit. On the other hand, it has the drawback of not being a banking variable and not being directly affected by provisions. Third, GDP is an aggregate variable, whereas credit is a bank-specific one. A systemwide mechanism (like the Peruvian one) would be consistent with the idea of having to deal with a systemic problem, but the implications in terms of competition and equal treatment need to be considered carefully. Institution-specific mechanisms, like the Spanish and Colombian ones, introduce better incentives for the behavior of individual banks.

Finally, any solution to the procyclicality problem needs to maintain the equilibrium between making regulation more anticyclical while at the same time reinforcing the transparency of banks' accounting statements. This crisis was the result of not only procyclical financial system behavior and regulation, but also the opaqueness of financial institutions, which implies that both aspects need to be addressed in the ongoing reforms. Reinforcing anticyclical mechanisms at the expense of transparency is not a solution.

## Comment

**Augusto de la Torre:** Fernández de Lis and García-Herrero focus on a novel form of prudential regulation—namely, countercyclical (or dynamic) provisioning requirements. These were first introduced more than a decade ago in Spain, in July 2000. At the time, they were strongly opposed by the affected banks, international accounting bodies, and free-market advocates, but such measures are now seen as a valid regulatory option within the rapidly emerging and still fluid macroprudential policy agenda.<sup>1</sup>

The paper discusses issues in the design and implementation of the dynamic provisioning regimes in Spain (the oldest system), Colombia and Peru (newer systems, introduced in 2007 and 2008, respectively). While the authors explore the implementation of the Spanish regulations in greater depth because of the longer application period, in all three cases the analysis covers the relevant issues, including the choice between system-based versus institution-specific criteria, the degree of reliance on rules versus discretion, the allowable uses of accumulated dynamic provisions, their accounting treatment, and their tax deductibility. The comparative discussion clearly illustrates that while the differences across the three regimes are numerous and nontrivial, important general lessons can still be extracted. The paper does not attempt a quantitative analysis of impact, but it does provide a rich qualitative examination of comparative policy experiences. The paper is an important contribution to the macroprudential policy debate and provides an informative and balanced assessment of some of the key issues at stake in the field of countercyclical prudential norms.

I concentrate my comments on alternative rationales for countercyclical provisions, their implications for regulatory design, and some of the associated tensions and trade-offs. According to the paper, the rationale for countercyclical

1. However, for purely practical rather than theoretical reasons, the ongoing Basel III discussion has moved in favor of countercyclical capital instead of countercyclical provisions.

provisions stems from the systematic procyclical bias observed in financial systems. Accordingly, the draft paper reviewed reasons behind such bias, highlighting the distortions from remuneration systems (bonuses) and competition pressures, both of which lead to the underpricing of risk during good times. The revised version of the paper provides a more extensive literature review, pointing to ten possible reasons for procyclicality, which range from short-sightedness to collateral constraints, herd behavior, and financial regulation itself. Useful as this review is, it falls short of providing a satisfactory rationale. To be sure, a careful, solid grounding of macroprudential policy on economic first principles is still a pending task and goes beyond the scope of the paper.<sup>2</sup> Nonetheless, it is hard to see why procyclicality per se warrants a regulatory response, especially considering that financial fluctuations may well reflect fundamental factors that are themselves procyclical. For example, authentic investment opportunities rise in the upswing of the business cycle, leading to a concomitant procyclical rise in credit demand. Similarly, financial activity is likely to follow the cycles associated with the Schumpeterian process of creative destruction. Moreover, as the authors themselves recognize, a rapid expansion of credit during the upswing phase of the business cycle can simply reflect sustainable financial deepening, rather than socially undesirable financial procyclicality.

In sum, financial procyclicality per se does not logically justify the introduction of dynamic provisions. Such a policy response would need to be justified by the joint existence of two conditions: a clear identification of the market failures that lead to procyclical financial trajectories that deviate from fundamentals; and a well-argued case that the resulting market equilibrium is constrained inefficient, that is, that the state has a comparative advantage over the market to improve the equilibrium. The second condition is as crucial as the first—determining that the market equilibrium is inefficient is a separate issue from assessing whether the state faces the same constraints as the private sector or, instead, has a special capacity that the market lacks to effect a Pareto-improving move via policy.

Firming up the rationale for macroprudential regulation is essential for appropriate policy design in general and for dynamic provisions design in particular. Research that I am jointly conducting with Alain Ize suggests that high payoffs can be obtained in exploring the policy rationale by distinguishing between three analytical lenses (or paradigms) that depend on the type of frictions and associated market failures that are emphasized. In all three cases,

2. See de la Torre and Ize (2013).

aggregate risk has to be a central part of the picture, for it is arguably impossible to justify macroprudential policy in a world of purely idiosyncratic risk.

The first paradigm (called the agency paradigm) emphasizes principal-agent incentives, which can be thrown out of equilibrium by an aggregate shock. In this case, regulatory authorities, acting on behalf of small and unsophisticated investors, are called to recalibrate capital or provisioning requirements as needed in order to realign principal-agent incentives and prevent sophisticated investors from making one-sided bets that take advantage of (and use the money of) the unsophisticated agents. In this case, “excessive” financial procyclicality would reflect the failure of the regulator to adequately represent unsophisticated investors. Under these circumstances, dynamic provisions aimed at realigning incentives (and thus at reinforcing market discipline) would be justified under the traditional theory of delegated supervision.<sup>3</sup>

The second paradigm (the collective action paradigm) emphasizes collective action problems (such as uninternalized externalities, coordination failures, and free riding) that typically interact with agency constraints (such as collateral constraints or asymmetric information). To the extent that financial intermediaries do not take into account the systemic impact of their individual actions, institutions can reach an “excessive” size (from the social perspective) or take on “excessive” credit risk in good times, followed by “excessive” deleveraging and fire sales in bad times. This type of market failure provides a new and powerful rationale for macroprudential intervention—that of inducing the internalization of externalities. This can be done, say, via price-based interventions (for example, Pigovian taxes on credit, dynamic provisioning requirements aimed at dampening the amplitude of cyclical fluctuations, or capital charges proportional to the systemic footprint of the intermediary) or quantity-based interventions (such as caps on size or functional segmentations to limit interconnectedness). In this case, regulators act on behalf not of the unsophisticated market participants, but rather of society at large, and macroprudential policy is aimed at correcting (rather than boosting) market forces.

The third paradigm (the collective cognition paradigm) emphasizes collective cognition limitations (or bounded rationality) interacting with Knightian uncertainty. They can lead to mood swings, that is, to bouts of exuberant optimism followed by bouts of panic and extreme risk and uncertainty aversion. Mood swings provide yet another and much more challenging role for macroprudential policy—that of guiding markets so that they evolve along sustainable trajectories. Whether the state is able to do so is, of course, a tough

3. Dewatripont and Tirole (1994).

question, given that the state itself is an agent that can fall prey to principal-agent distortions, coordination problems, and irrational exuberance. But if there is any scope for the state to improve the market equilibrium in the face of mood swings, it would be not because the state knows better than the market, but because it has a comparative advantage over the market in resolving collective action problems—that is, because of the traditional public-good considerations for policy.

The objectives and design of dynamic provisions are not independent of the paradigm through which finance is seen. The discussion in the paper by Fernández de Lis and García-Herrero makes it clear that the authorities in Spain, Colombia, and Peru had different and often muddled rationales in mind when setting up their respective dynamic provisioning regimes. However, the predominant thinking seems to have been more akin to the agency paradigm, especially in Spain and Colombia. This can be gleaned from the fact that, despite their ostensible intention of dampening the amplitude of the credit cycle, the authorities in both countries based much of the design of their dynamic provisioning regimes on bank-specific characteristics (that is, the credit behavior and the risk composition of the credit portfolios of individual banks). Dynamic provisions in these two cases aimed more at buffering than at dampening—that is, at ensuring that the banking boats were better built to resist financial waves, rather than at reducing the size of the waves. Congruently with the buffering function and institution-specific focus, the authorities in Spain and Colombia implemented (or evolved toward) completely rules-based systems. Peru, by contrast, seems to have been more concerned about uninternalized externalities, given that the criterion to activate or deactivate dynamic provisions was linked to a systemic variable—namely, the rate of GDP growth. Despite its system-based trigger, the Peruvian regime was rules based and left no room for discretion. To be sure, both Colombia and Peru used another macroprudential tool alongside dynamic provisions, namely, the legal reserve requirement. This tool relied more on central bank discretion and was thus more suited to the dampening objective, especially where mood swings are a key source of policy concern.<sup>4</sup>

The authors highlight the interesting asymmetry in market behavior, which they label asymmetric market discipline. By that, they mean the tendency of financial markets to be “too lenient in good times and too strict in bad times.” One wonders, however, whether market discipline is the right term to use,

4. See Federico, Végh, and Vuletin (2013a, 2013b); de la Torre and Ize (2013).

for it conjures images of market forces leading to efficient market outcomes. Again, the answer depends on the paradigm. If uninternalized externalities or mood swings are the driving forces behind procyclicality, market discipline is really not a part of the story, neither in good times nor in bad times. Hence, under the collective action and collective cognitions paradigms, what the authors call asymmetric market discipline is simply a manifestation of market under- and overreaction relative to what is warranted by fundamentals.

Finally, the authors insightfully assess some of the pros and cons of the three dynamic provisioning regimes. They note, in particular, that the institution-specific focus of dynamic provisions in Spain and Colombia tended to penalize the institutions that gained market share because they were more efficient. By contrast, the systemwide focus of the Peruvian regime tended to penalize the more prudent institutions. In doing so, the authors are actually hinting at a much deeper issue in macroprudential policy, namely, that tensions and trade-offs are virtually unavoidable because, first, macroprudential regulations aimed at addressing the market frictions and failures under one paradigm often exacerbate the frictions and failures under another paradigm and, second, macroprudential policies often create or boost microprudential distortions.<sup>5</sup> The implication is that rather than trying to achieve a perfect combination of macroprudential policies, authorities should seek to achieve a reasonable balance of macro- and microprudential policies, given the inherent tensions and trade-offs.

5. On market frictions, see de la Torre and Ize (2010a, 2010b); on distortions, see Cordella and Pienknagura (2013).

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