

## INSTRUMENTS FOR CURBING FLUCTUATIONS IN LENDING OVER THE BUSINESS CYCLE

Jan Frait and Zlatuše Komárková

*This article sets out to discuss instruments for reducing procyclical bank lending behaviour. Special attention is given to how much the regulatory framework contributes to the procyclicality of the financial system. The main subject of the article is the dynamic provisioning regime currently under discussion as one of the possible regulatory responses to the ongoing global financial crisis. The analysis reveals that Czech banks are among those that provision in a procyclical manner. On the theoretical level, therefore, dynamic provisioning could in the Czech economy help create a buffer during good times which could then be used during recessions. On the practical level, however, dynamic provisioning would for numerous reasons be difficult to introduce and would first need to be aligned with the other components of the international framework for the regulation of financial institutions.*

### 1. INTRODUCTION

The financial crisis in progress since summer 2007 has greatly increased the interest of regulators – and economists generally – in the issue of procyclical lending behaviour. In the preceding decade, the discussion had been focused on the options for dampening growth in the loan supply in an upward phase of the business cycle, whereas in 2008 attention shifted to a sharp slowdown – or even freeze – in lending at a time of recession. In order to influence lending over the cycle, various countries have in the past tried either to use changes in monetary policy settings or to apply prudential, supervisory or even administrative measures. The bursting of the housing market bubble and the crisis in the residential mortgage market in the USA in 2007 and the subsequent global financial crisis have focused attention on how much the regulatory framework itself contributes to procyclicality. “Dynamic provisioning” is regarded as one of the instruments that might reduce the potential procyclicality of regulation.

This article analyses the cyclical behaviour of bank loans and loan loss provisioning in the Czech Republic in order to discuss the possibility of applying dynamic provisioning and the potential effects of such a step. Section 2 introduces possible instruments for curbing excess lending and discusses the position of dynamic provisioning in that set of instruments. Section 3 describes the main features of dynamic provisioning in detail. Section 4 examines bank loans and provisioning in relation to the business cycle in the Czech Republic in an attempt to identify whether these variables behave procyclically. Section 5 illustrates a simple dynamic provisioning method on data from the Czech economy. Section 6 evaluates the possibility of implementing dynamic provisioning in practice.

### 2. PROCYCLICALITY AND INSTRUMENTS FOR CURBING IT

Financial system procyclicality means the ability of the financial system to amplify fluctuations in economic activity over the business cycle via procyclicality in financial institutions’ lending and other activities. The procyclical behaviour of financial markets transmits to the real economy in amplified form through easy funding of expenditure and investment in good times and financial restrictions leading to declining demand in bad times.

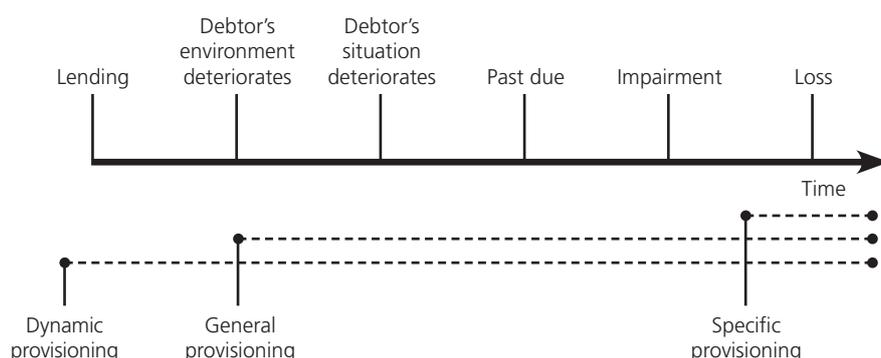
One of the most hotly debated subjects in the last ten years has been whether monetary policy instruments or regulatory and supervisory instruments should primarily be used to curb excessive lending. Previously, the prevailing view was that the central bank should focus its monetary policy instruments on achieving its macroeconomic goals while using its regulatory, supervisory, and lender-of-last resort powers to help ensure financial stability (Bernanke, 2002). The IMF has also examined the instruments available for curbing excessive credit growth in previous years in the spirit of this rule. In its World Economic Outlook (September 2005, p. 13),

for example, it stated that in cases where house price inflation remained robust, a combination of moral suasion and, if necessary, prudential measures could help limit potential risks. Over the longer term, according to the IMF, regulatory measures – including those that potentially constrain the supply of financing – could be used. Hilbers et al. (2005) provide a long list of possible measures.<sup>1</sup> The main prudential measures include higher/differentiated capital requirements, tighter loan classification and provisioning rules, the introduction of dynamic provisioning, tighter collateral rules and tighter eligibility criteria for certain categories of loans. The supervisory measures include increased disclosure requirements, more frequent and closer inspections and periodic stress testing. Some countries have introduced administrative measures such as bank-by-bank credit limits or mandatory allocation of loans. In reality, however, many of these measures have had a limited impact, for example because the activities of domestic banks subject to stricter regulation have been replaced by the activities of non-bank and foreign institutions. Some measures have of course also had negative side effects. For this reason, among others, an alternative solution – dynamic provisioning<sup>2</sup> – has started to be discussed. The remainder of this article is devoted to this topic.

### 3. SPECIFIC, GENERAL, AND DYNAMIC PROVISIONS

Banks set aside provisions to cover their expected losses. Their capital should primarily be used to cover unexpected losses. There generally exist several provisioning systems differing in either when the provisions are created and entered in the accounts or what event triggers provisioning (see Figure 1). The prevailing practice is “specific” provisioning. Specific provisions are fixed against losses on predominantly individually assessed loans and start at the moment an evident event occurs, i.e. in a situation where there is already verifiable evidence that losses will probably arise on the relevant loans. For this reason, specific provisioning is backward looking (i.e. it identifies risk ex post). General and dynamic provisions, where permitted by the authorities, are against losses from portfolios of loans and can be forward looking (i.e. they identify credit risk ex ante). Simplifying somewhat, we can say that the international accounting standards currently in force (IAS 39) allow banks to provision only for loans for which there is clear evidence of impairment (i.e. backward-looking provisioning).

**Figure 1: Potential events resulting in provisioning**



Source: Banque de France (2001), authors' changes

<sup>1</sup> Prudential measures should be aimed at fostering a forward-looking risk management approach and should generate a buffer to soften the impacts of an adverse phase of the cycle.  
<sup>2</sup> The Economist, for example, referred to dynamic provisioning as an important element that helped the Spanish banking system to prepare at least partially for the downside of an economic cycle (Spanish Steps. The Economist, 15 May 2008).

One can say – again simplifying somewhat – that specific provisions are created and entered in the accounts only after credit risk comes to light (which usually occurs in times of recession), whereas in the dynamic provisioning system provisions are created when credit risk comes into being (i.e. to a large degree in times of boom). So in the dynamic provisioning system, banks provision against existing loans in each accounting period in accordance with the assumption for expected losses. At times when actual losses are smaller than assumed a buffer is created which can then be used at times when losses exceed the estimated level.

Certain features of dynamic provisioning have been used by banks in some countries in the past on a voluntary basis. Likewise, certain regulators have used methods based on assessing expected or potential losses and provisioning for those losses. However, it was not until 2000 in Spain that a comprehensive and mandatory system for the application of dynamic provisioning was introduced in order to reduce procyclicality in bank behaviour.<sup>3</sup> In the period 2000–2004, in addition to specific and provisions general<sup>4</sup> against the profit-and-loss account, Spanish banks set aside “statistical provisions” (a statistical estimate of long-term expected losses) to cover the latent risks on the different homogeneous asset portfolios. The statistical provisions had the nature of dynamic provisions, as they rose when the actual losses in a given year were lower than statistically predicted and fell when the actual losses were higher. The statistical provisions had a fixed upper limit and were not tax deductible. The system was introduced at a good time, i.e. well before the onset of the recession and financial crisis. This allowed a buffer to accumulate to cover future losses. The expected and desired result of this system was a reduction in the year-on-year volatility of bank profits.

The introduction of dynamic provisioning in Spain in 2000 was not easy. Banks had major reservations at first. Nor was it welcomed by the setters of international accounting standards, who argued that it allowed manipulative adjustment of profits and thereby limited investors’ ability to assess the true financial condition of the bank. The counter-argument was that investors had information on both specific and statistical provisions and were also aware of the relatively simple rules according to which the statistical provisions were created. As a result, they could easily discount the impact of the statistical provisions on the bank’s financial results in any given year and thus had enough information on the bank’s true financial condition. In response to the introduction of International Financial Reporting Standards (IFRS), the provisioning system in Spain was modified in 2005, although even the new system retained certain features of dynamic provisioning. Statistical provisions were “concealed” in the general provisions through comparison of the specific provisions actually set aside in a given period with the historical average of the specific provisions in each group of homogeneous loans. However, even this modification failed to lead to agreement between the creators of international accounting standards and the Spanish authorities.<sup>5</sup>

The application of elements of dynamic provisioning enabled Spanish banks to build up quite a large buffer in the form of accumulated provisions in just a few years. Even after the 2005 reform, banks maintained a high level of provisions in accordance with the regulations previously in force and entered the financial crisis at the end of 2007 with a fairly sizeable buffer in the form of a general provision fund. At the start of 2008, non-performing loans were 200% covered in Spain, while the EU average was around 60%. At the time of writing, Spanish banks were – thanks to this buffer – not exposed to the same kind of difficulties as banks in some other European countries. It is reasonable to assume that without this buffer of accumulated provisions Spanish banks would have been in a far worse position in the present phase of the crisis, especially given the slump in property prices and the potential depth of the recession. Whether these accumulated provisions are sufficient to maintain the stability of the banking system will only become clear as the recession unfolds.

3 One of the primary reasons was the Spanish central bank’s concerns that amid rapid credit growth supported by declining interest rates connected with the introduction of the euro, the existing provisions greatly underestimated the extent of the potential credit risk. The fact is, however, that although in the early years the system absorbed a significant proportion of banks’ pre-tax profits (around 20%), bank loans still grew at very high rates in this period (Caruana, 2005). This supports the hypothesis that credit booms are highly complex events that are difficult to influence with standard instruments.

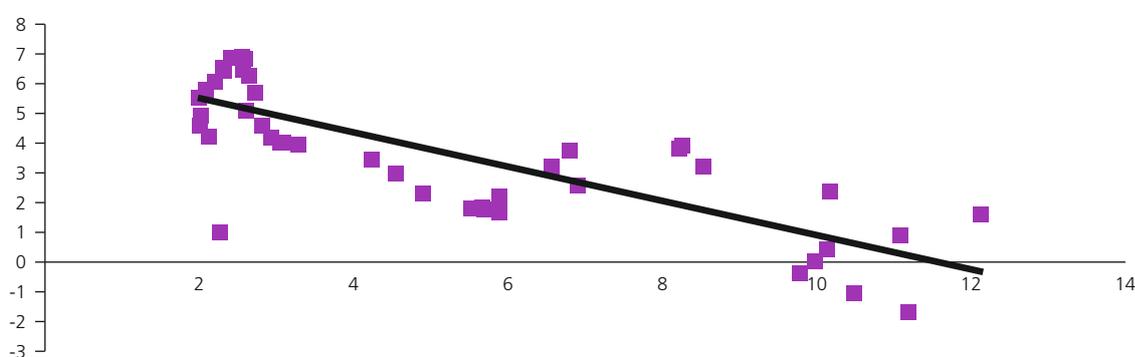
4 General provisions were set as a fixed percentage of the specific asset class and were tax deductible.

5 The Spanish authorities regard the new system as being IFRS compatible. Referring to IAS 39 (point 64), they argue that the general provisions are the result of collective assessment for impairment, capturing incurred losses that have not yet been assigned to individual loans. They thus cover loans whose losses have not yet been individually assessed and loans that have been assessed but not identified as impaired.

#### 4. DO CZECH BANKS BEHAVE PROCYCLICALLY WHEN PROVISIONING?

One of the instruments for analysing the degree of procyclicality in banks' behaviour is analysis of provisioning over the business cycle. Chart 1 shows that there is a negative relationship between GDP growth and the ratio of loan loss provisions to total loans in the Czech Republic for the period 1998–2008. This relationship, which should be a logical consequence of the prevailing IFRS-based provisioning system, will be subjected to an empirical analysis. The results should reveal the extent to which other factors affecting banks' behaviour constrain the aforementioned negative relationship.

**Chart 1: Loan loss provisions/total loans and GDP growth (Czech Republic, 1998–2008)**



Source: CNB, CZSO

Note: y-axis: GDP growth in %; x-axis: ratio of provisions to loans in %

The creation of provisions – especially those directly linked to impaired loans (“specific provisions”) – can be affected by changes in the macroeconomic environment, the solvency of counterparties to lending transactions, the regulatory and taxation rules in force and, last but not least, by the actual behaviour of a particular bank in a given environment.<sup>6</sup> Consequently, to examine bank provisioning over the economic cycle, one needs to use a model with variables that accurately reflect the changing quality of the loan portfolio. To reveal the potential procyclical behaviour of Czech banks, we applied the model developed by Bikker and Metzmakers (2003), modified slightly in order to analyse the behaviour of the banking sector of a single country. The model has the following form:

$$\begin{aligned} (LLP/TA)_{i,t} = & \alpha_1 + \alpha_2 \cdot \Delta \ln GDP_t + \alpha_3 \cdot UNEMPL\_gap_t + \alpha_4 \cdot (EARN/TA)_{i,t} + \alpha_5 \cdot \Delta \ln LOANS_{i,t} + \\ & + \alpha_6 \cdot (LOANS/TA)_{i,t} + \alpha_7 \cdot (CAP/TA)_{i,t} + \varepsilon_{i,t} \end{aligned} \quad (1)$$

Using this equation we try in a simplified way to determine banks' dependence on the business cycle when provisioning. In other words, we determine whether there is a significant relationship between bank provisioning (the left-hand side of the equation) and proxies for the business cycle (the right-hand side of the equation). An important aspect when looking at this dependence is the timing of provisioning with respect to the business cycle and the related issue of procyclicality.

<sup>6</sup> A profit-maximising bank will clearly behave differently from a market-share-maximising bank, even if they operate in the same environment.

The variables in the equation can be divided into (i) macroeconomic variables – the growth rate of real GDP ( $\Delta \ln \text{GDP}$ ) and the unemployment gap ( $\text{UNEMPL\_gap}^7$ ), and (ii) bank-specific variables – the ratio of loan loss provisions to average total assets<sup>8</sup> ( $\text{LLP/TA}$ ), loan growth ( $\Delta \ln \text{LOANS}$ ), the ratio of total loans to average total assets ( $\text{LOANS/TA}$ ), pre-tax earnings ( $\text{EARN}$ ) and the ratio of equity capital to average total assets ( $\text{CAP/TA}$ ). Subscript “t” denotes time, “TA” stands for the average total assets for the two periods ( $0.5(\text{TA}_t + \text{TA}_{t-1})$ ), and subscript “i” denotes the individual banks.

The growth rate of real GDP and the level of unemployment are used in the equation to proxy the business cycle. If banks behave procyclically, the rate of economic growth will be negatively correlated with provisioning, because an economic downturn is usually followed by growth in the volume of provisions. In our model, economic growth is regarded as the main indicator of demand for banking services (including loans) and is thus a direct determinant of banks’ earnings. The unemployment rate should logically be positively correlated with provisioning. At a time of economic growth unemployment falls and the number of creditworthy borrowers increases. Conversely, at a time of economic recession, unemployment rises and the probability of default increases. The unemployment rate follows GDP growth with a lag and affects banks’ earnings indirectly. It was included in the model because unlike GDP, which “only” indicates the degree of change in the business cycle, the level of unemployment shows the actual phase of the cycle.

The other factors in the equation are loan growth and the ratio of total loans to total assets, which we included in order to capture credit risk. Both these variables should tend to be negatively correlated with provisioning. An increase in the loan growth rate (indirectly growth in credit risk) usually reflects over-optimistic expectations about future economic developments and future earnings.<sup>9</sup> Over-optimistic expectations and misestimation of credit risk, in turn, usually result in a low growth rate of provisions relative to loan growth. In other words, as credit risk increases the level of hedging against it de facto decreases. However, the relationship between these factors might also be positive. If banks behaved prudently, as the dynamic provisioning model assumes, as credit exposures rose the rate of growth of provisions would also increase due to the probably growing credit risk. This model of behaviour is considered less likely, though.

Another variable in the model is pre-tax profit, which should be positively correlated with provisioning. Provisioning increases with rising profits. The main reasons for this can be smoothing of income over time or tax optimisation. Banks may also try to win credibility by posting almost constant profits over several years. Banks with less volatile income tend to be regarded as good performers, which then influences their share prices, external ratings and external funding costs and ultimately also management incomes. The declared profit subsequently determines the amount of tax levied. Banks can influence their profit to some extent by adjusting the amount of provisions they set aside.<sup>10</sup> If a bank smooths its income (or optimises its taxes), it will reduce its “excessive” profits, which rise at times of economic growth, by means of increased provisioning, and vice versa.

The final variable included is the ratio of equity capital to total assets. Loan losses are generally divided into expected losses and unexpected losses. Expected losses are assumed to be covered by provisions, whereas unexpected losses are assumed to be covered by capital. The equity capital to total assets ratio is therefore an important indicator of the capacity of a bank to absorb unexpected shocks. The relationship between provisioning and capital can be either negative or positive. If a bank takes into account its equity ratio when provisioning, the relationship between the variables is negative. The amount of provisions thus depends to some

7 The gap was used for the purposes of the model because the trend was too encumbered by the sizeable growth in long-term unemployment that began to emerge in the 1990s. The calculation was performed using the Hodrick-Prescott filter.

8 We chose the ratio to total assets (the sum of the assets of all the banks under review) to allow for comparison across banks of different sizes.

9 Assessing developments can be more difficult in transforming economies, as the credit growth rate can be particularly high at the start of the transformation process owing to a low base, financial system development and real convergence. In specific cases, therefore, it may be better to consider deviations of the credit growth rate from the trend.

10 Uniform application of international accounting standards should prevent this practice.

extent on the size of its capital buffer. If the bank decides that its capital buffer is large enough to cover any loan losses arising, as is usual at times of credit (economic) expansion, its provisioning may be excessively low. When the business cycle changes, or if an unexpected shock occurs, the excessively low level of provisions may not be enough to cover the bank's expected losses and it will be forced to cover them from its capital buffer. Its capital will thus be covering not only unexpected losses, but also expected losses, which may ultimately have an adverse effect on its capital adequacy compliance. By contrast, a positive relationship would suggest that provisions and capital are more or less independent of each other. The bank thus sets aside loan loss provisions no matter how large its capital buffer is. If we observe procyclicality in provisioning, a negative correlation can be presumed for the capital-provisioning relationship. As the economy grows, the capital buffer of the bank expands and provisioning decreases.

To estimate the procyclicality in provisioning, we used quarterly data for the period 1997–2008 from the balance sheets of large banks operating in the Czech Republic at the end of 2008. We realise that the results may have been partially influenced by the fact that the time period is not sufficiently long<sup>11</sup> to represent the recommended two complete business cycles. The initial phase of the chosen period was additionally accompanied by structural problems in the banking system. However, the time period should be sufficient to test the behaviour of the banking system over the cycle. The macroeconomic variables entering the model were taken from official CZSO figures, and data specific to individual commercial banks were obtained from internal CNB sources. The regression model was estimated as a panel regression. To illustrate dynamic provisioning (section 5) we shortened the time period further because of the aforementioned structural problems in the 1990s and we performed the illustration for 2001 onwards. Table 1 presents the estimated results of equation (1) for the chosen sample.

**Table 1: Results of panel regression for loan loss provisions<sup>12</sup>**

Variables	Coefficients	Std. deviations	t
LLP/TA, lagged by 1Q	0.3390	0.5084	6.67***
GDP growth	-0.0003	0.0020	-1.74**
Unemployment gap	0.0012	0.0006	1.84**
Pre-tax profit	0.6565	0.0567	11.57***
Loans growth	-0.0022	0.0022	-1.00
Loans/TA	0.0118	0.0048	2.46***
Capital/TA	-0.2230	0.0319	-6.98***
No. of observations	172		
R <sup>2</sup> – within (between banks)	0.942	R <sup>2</sup> – overall	0.947
R <sup>2</sup> – between (over time)	0.993	rho	0.102
F (7, 161)	375.46	Prob > F	0.000
F test of equality of constants for banks (FE)			
F (3,161)	2.24	Prob > F	0.0857

Note: The data were statistically significant at the \*\*\*1%, \*\*5% or \*10% level.

<sup>11</sup> De Lis et al. (2001), for example, used Spanish data covering a 16-year period, representing two full business cycles.

<sup>12</sup> Given the nature of the variables under review, a fixed-effects model was used. The F-test of equality of the constants for fixed effects rejects the hypothesis of equality at the 9% level of significance and thus partly confirms some small degree of specificity across banks. We tested the panel data for non-stationarity using the Hadri panel unit root test.

Almost all the variables, macroeconomic and bank-specific, had a statistically significant effect on the size of the loan loss provisions. Only the coefficient on loan growth was insignificant. As expected, the coefficient on GDP growth was negative (see Table 1, GDP growth), indicating that provisioning is higher during economic downturns and lower during upswings. The positive coefficient on the unemployment gap (see Table 1, unemployment gap) also suggests that provisioning is significantly procyclical and lacks forward-looking assessment of cycle-related risk.

The procyclicality in banks' provisioning behaviour may be partly offset by the evolution of gross profit. Given its positive, and relatively high, coefficient (see Table 1, pre-tax profit) it is apparent that banks provisioned more as profits rose and less as they fell. The results thus suggest that banks tried to smooth their income (or optimise their taxes) in the period under review by provisioning. This behaviour thus partially reduces the procyclicality expressed by the coefficient on GDP growth.

The resulting positive coefficient for the relationship between provisioning and the ratio of total loans to total assets (see Table 1, loans/TA) confirms a generally positive effect of credit risk. The coefficient indicates that Czech banks tend to behave prudently. If a bank has a relatively large open credit position, for which there is a higher probability of rising credit risk, it sets aside more provisions.

The final relationship under review is that between the equity capital to total assets ratio and provisioning. These variables are negatively correlated (see Table 1, capital/TA), supporting the assumption discussed above that banks are influenced in their provisioning by their capital ratio. In other words, banks set aside fewer provisions to cover their expected losses when their capital buffer is larger.

To sum up, the results confirmed the assumptions regarding the procyclical provisioning behaviour of banks. It is clear, therefore, that the provisioning performed by Czech banks contains a cyclical component which might be smoothed to some extent by the introduction of dynamic provisioning, for example.

### 5. ILLUSTRATION OF DYNAMIC PROVISIONING

This section contains an illustration of a simplified dynamic provisioning method for the Czech banking system. The illustration is performed on historical data from the start of 2001 to the end of 2008. The input variables are the actual total loans that banks provided to their customers and the actual provisions set aside for those loans.

In section 3 we described the main difference between the standard provisioning system, where, in simplified terms, total provisions (TP) created by banks equal specific provisions (actual provisions, AP), and the dynamic provisioning system, where total provisions comprise both specific provisions and "statistical" provisions (SP). For the purposes of our simple illustration of the dynamic provisioning system, we also subdivide total provisions into two parts – specific provisions and statistically estimated provisions, as shown in equation (2)<sup>13</sup>:

$$TP = AP + SP \tag{2}$$

$$SP = 0.54 (3.95 - AP) \tag{3}$$

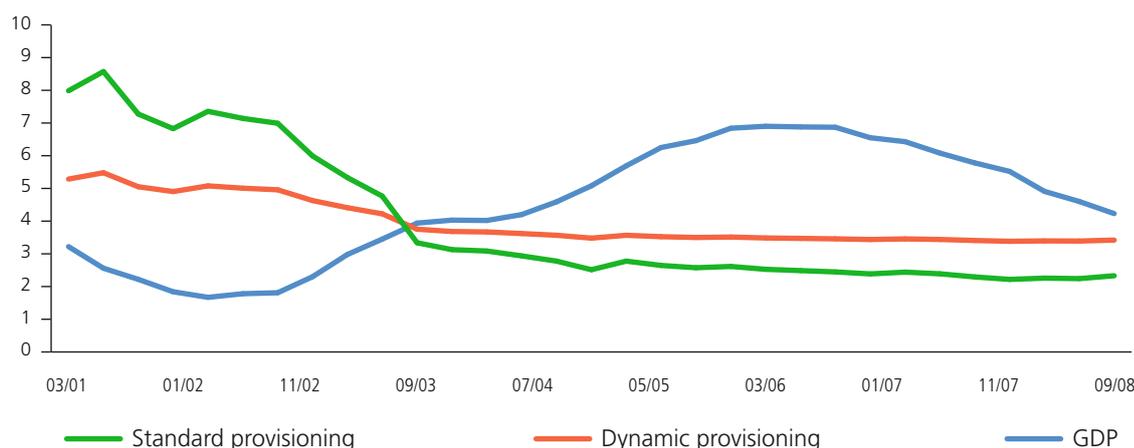
<sup>13</sup> Provisions are expressed as a share of total credit claims against non-credit institutions.

Specific provisions for loans provided by banks are generally created at the moment the losses on such loans come to light and it becomes evident that the loans are “at risk” of default. In the equation we used the actual provisions created by Czech banks as specific provisions. Statistical loan loss provisions (equation (3)) are understood to mean an additional fund created to cover the probable future loss on loans provided. In our simple illustration, we calculated statistical provisions as the difference between the statistically estimated component of the provisions (3.95) and the specific provisions. As in the Spanish model of dynamic provisioning (de Lis et al., 2001) we obtained the value of 3.95 by averaging the ratio of specific provisions to loans provided over the business cycle (2001–2008).<sup>14</sup>

Equation (3) implies that if the statistical provisions in the dynamic provisioning system are positive ( $SP > 0$ ), banks create an additional fund of provisions on top of their specific provisions and so total provisions can exceed specific provisions (equation (2),  $TP > AP$ ). This differentiates the dynamic provisioning system from the standard provisioning system, where total provisions equal specific provisions ( $TP = AP$ , because  $SP$  do not exist). This situation is typical of a period of economic growth, when specific provisions have a tendency to decline. Statistical provisions thus ensure that the total provisions set aside by banks do not fall too much at times of economic growth. Conversely, if the statistical provisions are negative ( $SP < 0$ ), banks can draw on the fund created earlier and so their specific provisions need not grow significantly. Hence, total provisions need not rise, as they would have to in the standard provisioning system. The factor of 0.54 was calculated as the ratio of the standard deviation to average actual provisions ( $AP$ ). The average for actual provisions was roughly twice as high during a downswing than during an upswing. By using this factor we reproduced the different volatility of the time series in the business cycle under review.

Chart 2 compares the evolution of provisions over time in the standard provisioning system and in the hypothetical dynamic provisioning system. It shows that in the illustration there was a decrease in the cyclical component (the difference between the red line and the green line) contained by the provisions in the standard provisioning system.

**Chart 2: Comparison of standard and dynamic provisioning systems (percentages)**



Source: Authors' calculations based on CNB and CZSO data

<sup>14</sup> Our illustration is somewhat simplified. The Spanish system first of all classifies loans by credit risk into six categories and only then computes the average net specific provisions over the business cycle.

In the dynamic provisioning system, assuming unchanged bank behaviour, the need to set aside total provisions would have decreased during the downswing and trough phases (until 2002 Q3; use of fund) and increased during the upswing and peak phases (creation of fund).

### 6. BARRIERS TO THE PRACTICAL IMPLEMENTATION OF DYNAMIC PROVISIONING

The results of the above illustration do not in themselves represent a strong argument for putting dynamic provisioning into regulatory practice. It is important to realise that there is currently no “best practice” for a system of this sort. Any country seeking to introduce it would have to address a whole range of difficult questions.<sup>15</sup> Current international accounting standards constitute a major barrier to dynamic provisioning, as the latter is not compatible with the former. Efforts towards isolated application at the national level would have many negative consequences. What is more, the introduction of dynamic provisioning is not a practical option for many advanced countries, including the Czech Republic, in the next few years owing to the current phase of the credit cycle. It is impossible to create a fund of dynamic provisions in a situation where the quality of bank portfolios is deteriorating as a result of declining economic activity.

A key item for discussion is the true influence of dynamic provisioning on credit growth and bank stability. It is likely that during a strong boom the system would not provide a sufficiently strong negative incentive for banks as regards lending. Although it would help to create a buffer for worse times, this buffer might prove to be inadequate in a deep recession anyway. In other words, dynamic provisioning can hardly alone prevent the negative impacts of strong booms followed by strong recessions.

Other instruments besides dynamic provisioning can be used to curb the procyclicality of banking activities. A natural candidate is a modification of the method of setting capital requirements derived from Basel II so that a capital buffer is effectively created during a boom. This buffer could then be used at times of weaker growth or recession. Both instruments could be applied complementarily. In addition, they could be supplemented with simple mechanisms such as the setting of upper limits on leverage ratios for individual banks.

### 7. CONCLUSIONS

The main subject of this article was the dynamic provisioning regime currently under discussion as one of the possible regulatory responses to the ongoing global financial crisis. The analysis revealed that Czech banks provision in a procyclical manner. Theoretically, therefore, dynamic provisioning could in the Czech economy help to create a buffer during good times which could then be used during recessions. From the practical perspective, though, the uncoordinated introduction of dynamic provisioning at national level is hard to envisage for many reasons. However, a whole range of possible measures and combinations thereof can be expected to be discussed in the years ahead with a view to reducing the procyclical effects of the regulation of financial institutions. Dynamic provisioning will probably form part of this discussion, as was the case years ago during the preparation of the Basel II capital accord.

<sup>15</sup> One of the critical points is the method of estimation of the expected future loss. The first option is to let banks perform such estimates themselves on the basis of data on past losses and to have the regulator verify the models used. For numerous practical reasons, however, it might be more appropriate to base such estimates on standard assumptions set by the regulator, who would set risk weights for the individual asset classes. Mann and Michael (2002) discuss a whole range of such practical aspects.

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