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Loan Loss Provisioning in Selected European Banking Sectors: Do Banks Really Behave in a Procyclical Way?*

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Abstract

This paper sets out to discuss the extent of procyclicality in European banks' lending behavior and how much the regulatory and accounting framework may contribute to it. The main focus is the behavior of banks regarding provisioning against impaired financial assets. It also discusses whether a through-the-cycle provisioning regime could serve as one of the possible regulatory responses to the ongoing financial crisis. Our applied analysis reveals that European banks are among those that provision in a procyclical manner. On the theoretical level, therefore, through-the-cycle provisioning could be helpful in creating a buffer during good times which could then be used during recessions. On the practical level, however, through-the-cycle provisioning would for numerous reasons be difficult to introduce soon and would first need to be aligned with the other components of the international framework for accounting and 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 behavior of banks. 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 also turned 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 housing market bubbles leading to the crisis in the residential mortgage market and the sovereign debt crisis opened the question of how much the regulatory and accounting framework itself contributes to procyclicality and credit risk myopia. The loss of confidence in the reported state of bank balance sheets in the euro area that escalated in 1H 2012 brought to attention not only the quality of loans, but also the adequacy of provisions against loans classified as non-performing (at default) over the cycle. Even though the issue is sometimes downplayed by "it's

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only accounting" statements, it has crucial importance for the resilience of the banking sector in particular. Provisioning is important not only because the provisions serve as a buffer against expected loan losses, but also because they provide significant information on how banks price credit risk. Procyclicality in provisioning may therefore mean that during good times credit risk is underpriced, creating conditions for a credit boom followed by a costly bust during which credit risk is overpriced, thus contributing to negative developments in the real economy.

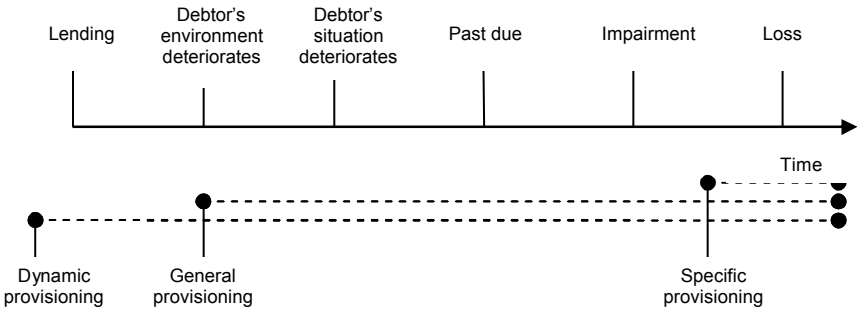
A number of studies focus on provisioning in Asian and emerging economies (Craig et al., 2006; Angklomkliew et al., 2009; Fernández de Lis and Garcia-Herrero, 2010; Floro, 2010). In the most recent study, Packer and Zhu (2012) found mixed evidence for countercyclicality in the provisioning of Asian banks. They show that countercyclical loan loss provisioning has dominated throughout emerging Asia. Loan loss provisioning did not simply become more conservative at all points in time subsequent to the Asian financial crisis, but actively leaned in a fashion that moderated swings in earnings and the macroeconomy. On the other hand, Japanese banks showed procyclical provisioning. Evidence is also available on advanced economies prior to the adoption of the IFRS and the crisis (Borio et al., 2001; Cavallo and Majnoni, 2002; Laeven and Majnoni, 2003; Bikker and Metzemakers, 2005; Bouvatier and Lepetit, 2008). However, there is limited information on banks' provisioning in European countries after IRFS adoption, including the period of the crisis. We try to fill the gap to some extent by looking empirically at the level of procyclicality in banks' provisioning in the Czech Republic using supervisory data on the Czech banking sector. In addition, the findings for the Czech Republic are cross-checked by estimation of the same equation for selected European economies using publicly available data.

This paper thus analyzes the cyclical behavior of bank loans and loan loss provisioning in the Czech Republic and selected European economies in order to discuss the possibility of applying through-the-cycle provisioning and the potential effects of such a step. Section 2 introduces the issues of procyclicality and through-the-cycle provisioning as one of the instruments that might reduce the potential procyclicality of regulation. Section 3 examines bank loans and provisioning in relation to the business cycle in an attempt to identify whether these variables behave procyclically. Data for banks in the Czech Republic and for large commercial banks in selected European countries are used for separate analyses. Section 4 discusses the possibility of implementing through-the-cycle provisioning in practice and comments on the debate between accounting standard setters and financial market regulators. Section 5 then concludes.

2. Procyclicality and Provisioning Regimes

Financial system procyclicality means the ability of the financial system to amplify fluctuations of economic activity over the business cycle via procyclicality in financial institutions' lending and other activities. The procyclical behavior of financial markets transmits to the real economy in amplified form through easy funding of expenditure and investment in good times and through financial restrictions leading to declining demand in bad times. In the search for potential remedies for procyclicality, or at least for tools for coping with its after-effects, regulators have opened

Figure 1 Potential Events Resulting in Provisioning



Sources: Banque de France (2001); authors' modifications.

a debate on through-the-cycle provisioning. The remainder of this paper is devoted to this topic.

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) and should not be considered a buffer against future losses. General and through-the-cycle (dynamic) provisions, where permitted by the authorities, can be forward looking (i.e., they identify credit risk ex ante). However, 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).

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 through-the-cycle provisioning system provisions are created when credit risk comes into being (i.e., to a large degree in times of boom). So, in the through-the-cycle 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 through-the-cycle provisioning have been used by banks in some countries in the past on a voluntary basis (Frait and Komárková, 2009). 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 behavior (for details see Saurina, 2009; Balla and McKenna, 2009; or Wezel et al., 2012).[1]

A similar approach was used in some Latin American countries (Ren, 2011). In the period 2000–2004, in addition to specific and general[2] provisions 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.[3]

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%. Clearly, the accumulated provisions were not sufficient to maintain the stability of the banking system, as the developments in 2011

[1] 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.

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

[3] 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.

and 2012 revealed. This is sometimes interpreted as a failure of dynamic provisioning in Spain and as evidence that through-the-cycle accounting is not a viable concept. In our view this is not a correct argument. Spanish dynamic provisioning has to be assessed having in mind that Spain went through an exceptionally large boom and bust cycle which was macroeconomically determined (the effects of the euro adoption in a booming economy and a favorable external environment) and politically driven (fiscal policy not sufficiently tight and local support of large construction projects). The correct interpretation is that without the buffer of accumulated provisions Spanish banks would have been in a much worse position during crisis, especially given the slump in property prices and the potential depth and length of the recession (Jiménez et al., 2012). The pressure exerted on banks by the regulator to provision more was justified and should have been applied with greater boldness on a larger scale. But one cannot expect an economy to cope with dynamic cyclical upsurges like the one in Spain with just a single instrument. Such upsurges require a concerted set of instruments coordinated with macroprudential policies with some political support.

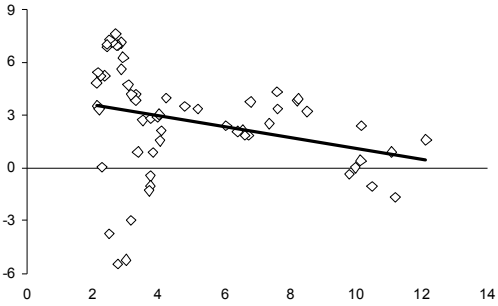
3. Do Banks Behave Procyclically when Provisioning?

The goal of this paper is to look at the extent of procyclicality in bank lending and at the motives the banks may have to behave procyclically in pricing credit risk. One of the instruments for analyzing the degree of procyclicality in banks' behavior is analysis of provisioning over the business cycle. Such analysis offers one of the best ways of studying the extent of procyclicality since, unlike the data on the quality of bank loans, the data on provisions are available in a standardized and comparable form. This section thus analyzes the cyclical behavior of bank loans and loan loss provisioning in the Czech Republic and selected European economies in order to discuss the true scope of procyclicality and the room for applying through-the-cycle provisioning as a potential remedy for procyclicality, or at least for applying tools for coping with its after-effects. This is because if the analysis confirms that banks have a tendency to provision in a highly procyclical way, there is a case for a policy reaction, i.e., for setting a through-the-cycle provisioning regime (for a proposal, see, for example, Wezel et al., 2012). We believe that understanding the true extent of procyclicality in provisioning is a crucial factor in designing any regime of this sort. We therefore examine bank loans and provisioning in relation to the business cycle in an attempt to identify whether these variables behave procyclically. Data for the banks in the Czech Republic and for large commercial banks in selected European countries are used for separate analyses.

Could a through-the-cycle provisioning regime be useful in small European economies like the Czech one? The answer may be conditional upon the level of procyclicality in provisioning. *Figure 2* 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 1998–2012. 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' behavior constrain the aforementioned negative relationship.

The creation of provisions—especially those directly linked to impaired loans ("specific provisions")—can be affected by changes in the macroeconomic environ-

Figure 2 Loan Loss Provisions/Total Loans and GDP Growth (Czech Republic, 1Q1998–3Q2012)



Notes: *y*-axis: GDP growth in %, *x*-axis: ratio of provisions to loans in %; only loans provided to real economy are included.

Sources: CNB; CZSO.

ment, the solvency of counterparties to lending transactions, the regulatory and taxation rules in force, and, last but not least, by the actual behavior of a particular bank in a given environment.[4] Consequently, to examine bank provisioning over the economic cycle, one needs to use a model with variables that sufficiently reflect the changing quality of the loan portfolio. Studies that document a strong negative correlation of bank provisioning with the business cycle include Borio et al. (2001), Cavallo and Majnoni (2002), Laeven and Majnoni (2003), Bikker and Metzemakers (2003), and Craig et al. (2006).

To examine the potential procyclical behavior of Czech banks and banks from some selected European countries, we applied the following model for loan loss provisions:

$$(LLP/TA)_{i,j,t} = \alpha_{1,i} + \alpha_2 (LLP/TA)_{i,j,t-1} + \alpha_3 \Delta \ln GDP_{j,t} + \alpha_4 UNEMPL\_gap_{j,t} +$$
$$+ \alpha_5 (EARN/TA)_{i,j,t} + \alpha_6 \Delta \ln LOANS_{i,j,t} + \alpha_7 (CAP/TA)_{i,j,t} + \varepsilon_{i,t}$$

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, which is generally associated with risk-based capital regulation.

The variables in the equation can be divided into (i) macroeconomic variables—the growth rate of real GDP per capita ($\Delta \ln GDP$) and the unemployment gap ($UNEMPL\_gap$[5])—and (ii) bank-specific variables—the ratio of loan loss provisions to average total assets[6] (LLP/TA), real loan growth ($\Delta \ln LOANS$), pre-tax earnings

[4] A low-market-share bank will clearly behave differently from a systematically important bank, even if they operate in the same environment.

[5] The gap was used for the purposes of the model because the trend was too encumbered by sizeable growth in long-term unemployment. Using the Eurostat database, the long-term unemployment rate was deducted from the overall unemployment rate.

(*EARN/TA*), defined as the sum of pre-tax profit and loan loss provisions, and the ratio of equity capital to average total assets (*CAP/TA*). *TA* stands for average total assets for the current and previous year $(0.5(TA_t + TA_{t-1}))$. Some bank-specific variables are divided by total assets (*TA*) to allow for comparison across banks of different sizes. Subscript "*t*" denotes time, subscript "*i*" denotes an individual bank, and subscript "*j*" denotes an individual country. Lags of the dependent variable are included in the set of regressors to capture the effect of omitted explanatory variables and the persistence of *LLP*.

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 variable in the equation is real loan growth, which we included in order to capture credit risk. Credit growth should tend to be positively associated with loan loss provisions (lower credit quality, i.e., higher credit risk, higher risk absorber). However, in some studies (e.g., Laeven and Majnoni, 2003) provisioning expenses vary negatively with loan growth, which is consistent with provisions declining even though surges in new loans might indicate increased riskiness. An increase in the loan growth rate (indirectly growth in credit risk) usually reflects over-optimistic expectations about future economic developments and future earnings.[7] Over-optimistic expectations and mis-estimation 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 provisions would also increase at least proportionally due to the elevated credit risk associated with tapping potentially risky borrowers. This model of behavior is considered less likely, though.

Another variable in the model is pre-tax earnings. Regulatory constraints on capital can motivate the bank manager to smooth earnings over time. In addition to meeting capital requirements, bank managers may smooth their income with a view to (i) positively affecting risk perceptions of the bank by reducing earnings vari-

[6] 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.

[7] 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.

ability (Greenwald and Sinkey, 1988), (ii) optimizing tax expenditure (Rozycky, 1997), (iii) minimizing the chance of being fired (Fudenberg and Tirole, 1995), (iv) pursuing managerial self-interest, especially if their compensation packages are tied to income stability (Lambert, 1984) and other things (Laeven and Majnoni, 2003). In general, 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.[8] If a bank smooths its income (or optimizes its taxes), it will reduce its "excessive" profits, which rise at times of economic growth, by means of increased provisioning, and vice versa. Given income smoothing, provisioning should be positively correlated with profits. With perfect income smoothing, earnings are either not affected or less affected by fluctuations in credit losses over the cycle. Loan loss provisions would increase in good times and decrease in bad times (Kim and Santomero, 1993)—they would be countercyclical. There is some evidence of the existence of earnings smoothing through provisions, at least for advanced countries (Pérez et al., 2008; Bikker and Metzemakers, 2003), whereas studies on emerging markets, especially in emerging Asia, have not found evidence of earnings smoothing (Leaven and Majnoni, 2003).

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 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. Regardless of their correlation, if both categories of shock absorbers (loan loss provisions and capital) are procyclical (more capital or provisions are required during recessions exactly because credit risks in banks' portfolios increase in cyclical downturns) there might be an increased like-

[8] It is worth noting that income smoothing is considered a violation of internationally accepted accounting standards (IFRS or IAS 39). There is a widely shared view within the accounting profession that income smoothing has negative connotations because it introduces judgmental modifications to a firm's earnings and tends to reduce the comparability of results across firms and may impair shareholder' equity.

lihood of capital shortages during a recession potentially reducing the supply of credit to the economy (a so-called "capital crunch").

We estimated the equation shown above with the generalized method-of-moments estimator (GMM) developed by Arellano and Bover (1995) and Blundell and Bond (1998). As we assumed that all the independent variables are weakly exogenous, we instrumented them all. However, we are aware that from an econometric point of view, the limited number of cross-sectional units in the sample poses additional limitations on the number of instruments that can be used in the estimation and subsequently on the number of exogenous variables that can be added to the equation. We have tried to keep to the suggested rule of thumb that the number of instruments should be less than the number of groups (only 15 in the case of the Czech Republic). The reason is that otherwise both the standard errors and the Sargan test are downward-biased and as a consequence the asymptotic inference maybe misleading. We cope with this problem by adding just three bank-specific variables at a time, reducing the need for extra instruments. The Sargan test of validity of instruments reached a satisfactory level, not robust but not weakened by too many instruments.

It is worth noting that the correlations between key explanatory variables, namely, GDP growth and bank earnings and GDP growth and growth of loans, might cause a multicollinearity problem in the econometric analysis, as they are in general expected to be positively correlated. However, our investigation into the data suggests that the correlation between real GDP growth per capita and bank earnings and even between GDP and lending is not very high. There are substantial differences across banks even within the same economy, but multicollinearity is not a big issue in our analysis (see *Appendix*, *Tables A2* and *A4*).

To estimate the procyclicality in provisioning in the case of the Czech Republic, we used quarterly data for the period 1Q2001–4Q2011 from the balance sheets and income statements of 15 banks operating in the Czech Republic at the end of 2011.[9] We realize that the results may have been partially influenced by the fact that the time period is not sufficiently long[10] 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 behavior of the banking system over at least one cycle. The macroeconomic variables entering the model were taken from official Eurostat figures, and data specific to individual commercial banks were obtained from internal CNB sources.

We hypothesize that a bank shows imprudent provisioning behavior if loan loss provisions are negatively associated with (i) GDP growth ($\Delta \ln GDP$), or (ii) loan growth ($\Delta \ln LOANS$), or (iii) banks' earnings ($EARN/TA$). Thus, the key results of

[9] We cleaned up the available data by removing banks/years with outlier observations so as to minimize the bias related to measurement errors. We calculated the 1st and 99th percentile values (see the Appendix) of the variables. For bank-specific variables, if banks had an outlier observation that was smaller than the 1st or larger than the 99th percentile value, the whole record was removed from the sample. In order to ensure consistency, we also eliminated those banks which had less than four consecutive years of balance sheet observations over the sample.

[10] Fernándes de Lis et al. (2001), for example, used Spanish data covering a 16-year period, representing two full business cycles.

Table 1 Loan Loss Provisions: GMM

	CZ	Other countries
LLP/TA(-1)	0,5456	0,2558
	(0.0226)***	(0.1314)**
Δ ln GDP	-0,0020	-0,0003
	(0.0006)***	(0.0000)***
UNEMPL_GAP	0,0031	0,0002
	(0.0020)*	(0.0002)
Δ ln LOANS	0,0001	0,0001
	(0.0000)**	(0.0000)
CAP/TA	0,0134	-0,1845
	(0.0143)	(0.0469)***
EARN/TA	0,4542	0,1670
	(0.0285)***	(0.0571)***
# of obs	585	348
# of groups	15	36
# of instruments	13	13
Wald $chi^2(6)$	7763,84	138,77
Prob>chi^2	0,000	0,000
AR(1):z	-7,90	-3,78
AR(1):Pr>z	0,000	0,000
AR(2):z	-0,61	0,56
AR(2):Pr>z	0,542	0,577
Sargan test of overid. restrictions		
$chi^2(6)$	77,39	30,51
Prob>chi^2	0,000	0,000

Note: ***, **, * denote significance at 1, 5, or 10%.

interest in our analysis are the coefficients on GDP growth, pre-tax earnings, and loan growth. *Table 1* presents the estimated results of the equation for the chosen sample.

As expected, the coefficient on GDP growth was negative, indicating that provisioning is higher during economic downswings and lower during upswings. The positive coefficient on the unemployment gap also indicates that provisioning is procyclical and lacks forward-looking assessment of cycle-related risk.

The procyclicality in banks' provisioning behavior may be partly offset by the evolution of gross profit. Given its positive coefficient 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 optimize their taxes) in the period under review by provisioning. This behavior thus partially reduces the procyclicality expressed by the coefficient on GDP growth.

The positive coefficient for the relationship between provisioning and loan growth confirms a generally positive effect of credit risk. The coefficient indicates

that Czech banks tend to behave prudently to some extent. 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. In our model, the estimated coefficient on equity capital is insignificant.

To sum up, the results confirmed the assumptions regarding the procyclical provisioning behavior of banks. This may indicate that the provisioning performed by Czech banks contains a cyclical component which might be smoothed to some extent by the introduction of through-the-cycle provisioning, for example.

For comparison the paper analyzes the cyclical patterns of bank loan loss provisions followed by large commercial banks from selected countries of Europe.[11] The empirical panel analysis covers eight economies, namely, Austria, Belgium, Germany, Denmark, France, Hungary, Sweden, and Slovakia. The data for the eight foreign countries and 36 banks come from two sources: bank-level data are taken from the Bankscope database (loan growth, equity capital/total assets, loan loss provisions/total assets, and earnings before taxes) and macroeconomic data from the Eurostat database (real GDP growth per capita, the unemployment rate, and inflation). The data are available on an annual basis for a period of 12 years (from 1999 to 2010). One may discuss whether it is appropriate to mix post-transitional countries and developed economies in one sample. As a matter of fact, the period selected covers only the post-transitional period for banks operating in the New Member States. Therefore, the banks in all countries in the sample operate in the same regulatory and accounting environment and use similar risk-management approaches.[12] In addition, the sample is dominated by German, Denmark, French, and Swedish banks (see the *Appendix*).[13]

We expected some of the results (*Table 1*) to be analogous with previous ones for the Czech banks. The results suggest that bankers from the other selected countries create on average lower provisions in good times and are then forced to increase them during cyclical downturns (see the significant negative coefficient on the real GDP growth rate). We also find a positive relationship between the ratio of loan loss provisions and bank earnings. This suggests that the European banks in our sample have followed an income-smoothing pattern on average. However, the coefficient on the real loan growth rate is insignificant. The relationship between the equity capital to total assets ratio and provisioning is negatively correlated,

[11] This exercise is of secondary importance. It is more a cross-check of the evidence from the Czech banking sector. The reason is that while we are able to use detailed quarterly bank-to-bank information of supervisory quality for Czech banks, the Bankscope database allows to use only yearly data with a coverage which is far from complete.

[12] The same applies to Hungary, Slovakia, and the Czech Republic. Since the subsidiary banks in these countries are owned by parents from advanced Europe, they use the models and approaches their parents apply in the home country. What is also very important is that there were major differences in the credit cycles in the period concerned, but these were not developing alongside the "GDP per capita" line. In other words, some advanced and converging economies went through credit booms, while some did not.

[13] Out of the 36 banks included, ten were from Germany, eight from Denmark, six from Sweden, and five from France. The weight of banks from other economies in the sample is thus minor. As with the Czech banks, we cleaned up the data for the other countries by removing banks/years with outlier observations to minimize the bias related to measurement errors.

supporting the assumption discussed above that European 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. The selected European banks appear to have increased the amount of provisions during periods of positive profits, but have been less prudent during periods of economic growth.

4. Potential Implementation of through-the-Cycle Provisioning and Its Barriers

The results of the above illustration represent a meaningful argument for putting through-the-cycle provisioning into accounting and regulatory practice. The lessons from the crisis were taken seriously by accounting standard setters, who acknowledged the shortcomings of the impaired loss approach. Facing criticism of the existing framework and the conclusions of a report produced by the Financial Stability Forum's Working Group on Provisioning, the International Accounting Standards Board (IASB) suggested a move to the expected loss (EL) approach in June 2009 as part of the IASB's project on replacing IAS 39 Financial Instruments Measurement and Recognition. The EL approach represents a major deviation from the incurred loss approach, since no trigger for an impairment test is required. The IASB's objective is to maintain a link between the pricing of loans and expected credit losses. In this respect, the EL approach should better reflect the economic reality of banks' lending activities than the incurred loss approach, in that it requires earlier recognition of expected credit losses and should help avoid "incurred but not reported losses". The EL approach appears to be rather simple. The present value of the expected future cash flows is measured using an initial internal rate of return calculated on the basis of cash flows actually expected at inception (taking into account expected credit losses), and not on the basis of contractually agreed cash flows. The initial internal rate of return is thus lower than the contractual rate, with the difference representing the risk premium charged to the borrower in order to cover the statistically foreseeable risk of non-recovery. Any difference between cash flows received that represent contractual interest and interest calculated as revenues on the basis of the (lower) internal rate of return would be recognized in the balance sheet as a credit expected loss provision. Subsequent or additional impairment loss is recognized through continuous re-estimation of credit loss expectations. Reversal of impairment loss is entered as profit when there is a favorable change in credit risk expectations. In reality, the EL approach may be quite complex and could generate excessive subjectivity and credibility issues. Any expected loss model has to rely on judgment supported by a set of indicators. But the quest for a precise model of this sort can give rise to undue complexity.

In addition, the debate on impairment accounting subsequently became dominated by an initiative of the IASB and the U.S. Financial Accounting Standard Board (FASB) aimed at reaching a common approach based on expected losses and amortized costs. Initially, there were major differences in the preferences of the two boards regarding a revised impairment model, and especially regarding the timing of recognition of estimated losses. Nevertheless, they issued a joint proposal in January 2011 (IASB, 2011) as a "supplementary document" to their original proposals. This can be viewed as a step toward a common approach. The proposal would require an entity to determine an impairment allowance based on internal risk management

decisions to split financial assets into a "bad book" or "good book," depending on the degree of uncertainty about the collectibility of the assets' cash flows. An entity would be required to immediately recognize lifetime expected losses for assets in the "bad book." For assets in the "good book," an entity would recognize the higher of: a portion of lifetime expected credit losses determined under a time-proportional approach; and credit losses expected to occur within the foreseeable future (not less than 12 months). Later on, the IASB and FASB's deliberations moved to a three bucket approach to capture the pattern of deterioration in credit quality. In this approach, loans are classified into three categories depending upon their credit risk characteristics and any change in credit risk since origination. The level of provisions recorded would be expected to increase as credit deteriorates over time. Assets will begin in Bucket 1 and the measurement of impairment will be based on 12 months of expected losses. Assets will shift to either Bucket 2 or Bucket 3 if and when credit deteriorates. The measurement of impairment in Buckets 2 and 3 will be based on lifetime expected losses. Where there are no events with a direct relation to possible future defaults, loans will be placed in Bucket 1. Financial assets with insignificant deterioration in credit since origination or purchase for which entities expect to recover substantially all contractual cash flows may qualify for Bucket 1 measurement. Assets will need to be grouped in pools with similar risk characteristics or analyzed at the individual level to evaluate if they meet the Bucket 1 criteria. Bucket 2 or Bucket 3 is used for loans affected by events that have a relationship to possible future defaults, i.e., to a trigger event to which the default possibility of a portfolio of loans is sensitive. In Bucket 2, expected credit losses are not identifiable for individual loans, whereas in Bucket 3 expected credit losses are individually identifiable. The boards have agreed that the impairment model will allow for migration of credit in both directions. In addition, they have agreed that the probability of default should be the predominant characteristic for determining the collectibility of cash flows.[14]

The IASB and FASB joint proposal thus better addresses prudential regulators' concerns about provisioning and brings accounting rules more into line with the proposal put forward by the Basel Committee on Banking Supervision in June 2010 (BCBS, 2010). In this proposal, provisions are based on best estimates of expected credit losses built over the life of the loan at the balance sheet date considering the loss experience over the complete economic cycle. Provisions are generally built up progressively by allocating a share of the interest income over the life of the loan or loan portfolio to an allowance account at the time interest income is recognized. The BCBS also argued for the use of a simplified average loss rate, which would represent expected credit losses by loan type derived from historical experience based on some measure of actual losses and adjusted for current conditions. In an updated reaction to the boards' new proposal, the Basel Committee on Banking Supervision (BCBS, 2011) expressed its support for an approach that requires the recognition of adequate levels of provisions on the balance sheet to absorb all expected credit losses. Not reflecting an adequate level of an allowance for expected credit losses on the balance sheet could result in overstating the related

[14] The model will also be applied to debt securities. Debt securities may be evaluated individually or in the aggregate based on similar risk characteristics to determine whether the recognition of lifetime expected losses is required. A predominant indicator for credit deterioration will be changes in the security's fair value.

asset balances as well as the yield on those assets in any given period in the income statement. This could be potentially misleading to investors, other users, and other market participants, while also raising the safety and soundness concerns of prudential authorities. The BCBS underlines that incorporating a broader range of available credit information than presently included in the incurred loss model should result in earlier identification of credit losses. In this respect, the EL model should address the "too-little-too-late" problem of the incurred loss model, for which it is necessary to minimize the difficulties in moving from Bucket 1 to Bucket 2 (or directly from Bucket 1 to Bucket 3).

Initially, it was hoped that existing approach would be replaced quite soon by the forward-looking countercyclical provisioning methodology being developed by the Basel Committee on Banking Supervision (BCBS) and IASB. However, the pace of preparation of the new approach is rather slow, partly because of a quest to make the U.S. and international rules compatible. Current expectations regarding the implementation of the impairment package go beyond 2015. There are two reasons for this. First, the experience with previous attempts to align the FASB's U.S. GAAP and the IASB's IFRS is making many observers quite pessimistic. The grounds for pessimism were strengthened by a report on the IFRS issued by the U.S. Securities and Exchange Commission in July 2012. Second, banks lack data on historical losses as well as the capacity to estimate expected losses. The upshot of this is that some national authorities may over time resort to interim measures similar to Spanish dynamic provisioning.

There is thus no current "best practice" for a through-the-cycle provisioning system, nor will there be for some time. Any country seeking to introduce one unilaterally would have to address a whole range of difficult questions.[15] Current international accounting standards still constitute a major barrier to through-the-cycle provisioning, as the latter is not compatible with the former. Efforts toward isolated application at the national level may have negative consequences. What is more important, the introduction of through-the-cycle provisioning would not provide a remedy for many advanced countries in the next few years owing to the current phase of the credit cycle. It is impossible to create a fund of through-the-cycle provisions in a situation where the quality of bank portfolios has deteriorated significantly as a result of declining economic activity and deflated asset prices.

A key item for discussion is the true influence of through-the-cycle 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 create a buffer for worse times, this buffer might prove to be inadequate in a deep recession anyway. In other words, through-the-cycle provisioning can hardly alone prevent the negative impacts of strong booms followed by strong recessions. Other instruments besides through-the-cycle provisioning can be used to curb the procyclicality in banks' lending. A natural tool is to set capital requirements according to Basel III, including countercyclical capital

[15] 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.

buffers during a boom. This buffer could then be used at times of weaker growth or recession. The two instruments could be applied complementarily. There will also be additional tools available stemming from Basel III (upper limits on leverage ratios for individual banks) and from the European CRDIV/CRR package. On top of this, supervisors can apply a number of other tools in their macroprudential policies if needed (for a detailed description of the tools available, see Frait and Komárková, 2012) or also employ the instruments of monetary policy (Frait et al., 2011).

5. Conclusions

The main focus of this article was the through-the-cycle provisioning regime currently under discussion as one of the possible regulatory responses to the ongoing financial crisis. The objective was to look at the extent of procyclicality in provisioning in European countries, since this is one of the crucial factors in designing through-the-cycle provisioning regimes. The analysis we applied revealed that the provisioning performed by banks from the Czech Republic and some other EU economies contains a cyclical component which might be smoothed to some extent by the introduction of through-the-cycle provisioning. We also found some features in banks' behavior that partially reduce the level of procyclicality. Theoretically, therefore, through-the-cycle provisioning could be helpful in creating a buffer during good times which could then be used during recessions. From the practical perspective, though, the uncoordinated introduction of through-the-cycle provisioning at national level is hard to envisage for number of reasons. It is therefore necessary to wait for the outcome of the deliberations of accounting standard setters.

No through-the-cycle provisioning regime can work as a magic wand for "making sure it won't happen again". Such regime can help in building up buffers in good times for helping to weather bad times. In the same way, it would not be realistic to expect through-the-cycle provisioning to be very effective in curbing credit booms. These are complex phenomena that need to be addressed by concerted set of policies and tools. In other words, if, in the future, the international economy starts undergoing a dynamic drive again, accompanied by credit and asset price booms, the authorities will have to apply set of microprudential and macroprudential measures to tame the immoderate optimism. Factors mitigating procyclicality embodied in regulations will hopefully ensure that buffers are accumulated, and better supervision may prevent bank managers from taking excessive risks. Monetary policymakers might need to step in directly using the interest-rate channel or indirectly using prudential tools to change its transmission. Still, plenty of courage, luck and communication skills will be needed to succeed.

APPENDIX

Table A1 Summary Statistics of Regression Variables: CZ

	Mean	Std.Dev.	Min	Percentil					Max
				0,01	0,25	0,50	0,75	0,99	
LLP/TA	0,09	0,13	0,01	0,00	0,01	0,03	0,15	0,65	0,79
CAP/TA	0,42	0,52	0,27	0,03	0,07	0,14	0,62	1,69	1,76
EARN/TA	0,11	0,16	0,00	0,00	0,01	0,03	0,17	0,74	0,84
D ln LOANS	10,73	17,84	-51,18	-23,63	1,83	9,76	17,59	62,38	178,60
UNEMPL_GAP	3,66	0,75	2,00	2,00	3,30	3,80	4,00	5,30	5,30
D ln GDP	0,70	1,01	-3,40	-3,40	0,45	0,80	1,35	2,30	2,30

Note: No. Observation = 660.

Table A2 Correlation Matrix: CZ

	LLP/TA	LLP/TA(-1)	CAP/TA	EARN/TA	D ln LOANS	UNEMPL_GAP	D ln GDP
LLP/TA	1,00						
LLP/TA(-1)	0.98*	1,00					
CAP/TA	0.74*	0.74*	1,00				
EARN/TA	0.98*	0.97*	0,82	1,00			
D ln LOANS	-0.21*	-0.22	-0.26	-0.22	1,00		
UNEMPL_GAP	0.09*	0.09*	0,03	0.08*	-0.09*	1,00	
D ln GDP	-0.04	-0.03	-0.02	-0.02	-0.01	0,01	1,00

*Note:***p*-value is 0.05.

Table A3 Summary Statistics of Regression Variables: Other Countries

	Mean	Std.Dev.	Min	Percentil					Max
				0,01	0,25	0,50	0,75	0,99	
LLP/TA	0,00	0,01	-0,10	-0,01	0,00	0,00	0,00	0,02	0,05
CAP/TA	0,04	0,03	-0,01	0,01	0,03	0,04	0,05	0,14	0,17
EARN/TA	0,01	0,01	-0,05	-0,01	0,00	0,01	0,01	0,04	0,05
D ln LOANS	5,27	17,30	-80,01	-48,33	-2,01	0,49	12,30	63,76	107,56
UNEMPL_GAP	5,88	1,78	3,00	3,20	4,70	5,40	7,00	12,60	13,20
D ln GDP	1,51	2,75	-6,70	-6,30	0,30	1,80	3,25	8,30	10,40

Note: No. Observation = 432.

Table A4 Correlation Matrix: Other Countries

	LLP/TA	LLP/TA(-1)	CAP/TA	EARN/TA	D ln LOANS	UNEMPL_GAP	D ln GDP
LLP/TA	1,00						
LLP/TA(-1)	0.5281*	1,00					
CAP/TA	0,04	0,01	1,00				
EARN/TA	0.12*	0.11*	0.68*	1,00			
D ln LOANS	-0.01	0,03	0.16*	0.14*	1,00		
UNEMPL_GAP	-0.03	-0.06	0,03	-0.06	-0.19	1,00	
D ln GDP	-0.09	-0.01	0.21*	0.23*	0.18*	0.03	1,00

Note: **p*-value is 0.05.

Table A5 Geographic Distribution of Sample Banks

Country	Number of banks
Austria	1
Belgium	1
Germany	10
Denmark	8
France	5
Hungary	2
Sweden	6
Slovakia	3
Total	36

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