EDIT HORVÁTH–KATALIN MÉRŐ–BALÁZS ZSÁMBOKI

Studies on the procyclical behaviour of banks

The views expressed in this Paper are those of the authors and not necessarily those of the National Bank of Hungary

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Foreword

The three papers in this volume investigate the same subject matter, the procyclicality of banking sector behaviour, from three different perspectives.

Banks are said to behave in a procyclical way when their lending, the stringency of their credit rating policy and provisioning practices as well as their profitability move in correlation with the economy's short-term business cycles. During a cyclical upswing, banks tend to be excessively optimistic about the economy and hence their customers' position and to advance loans against poorer collateral (possibly overrated due to asset price bubbles created during the cycle), as well as to reduce the applied risk premia and to allocate less loan-loss reserves to cover expected risks. At the same time, there is usually an upsurge in banks' profitability during a boom.

However, the heady optimism of a cyclical upswing vanishes once the business cycle turns down and economic conditions become less rosy, causing formerly hidden shortcomings to become visible. At such times banks may incur disproportionately large provisioning burdens, which can undermine profitability and worsen their capital situation. Banks will typically respond by an excessive cut-back in lending, often declining loans even to enterprises which have maintained their creditworthiness despite the cyclical downturn. Thus, when times get hard, banks may start to behave in a way that further aggravates the situation. Cutting back sharply on lending may even result in a credit crunch, i.e. a major restriction of credit, while the shortage of reserves and the

erosion of earnings potential and capital may, in extreme scenarios, even precipitate a system-wide banking crisis.

Thus, procyclicality in banking may contribute in its own right to the volatility of economic trends, increasing the amplitude of economic cycles. As this is a harmful trend from the point of view of financial stability, central bankers, responsible for financial stability, have the task of exploring the causes of procyclical behaviour, gaining thorough knowledge about its nature and, if necessary, mitigating it by regulatory means (or if the required means are not available within central bank regulatory instruments, promoting the creation and adoption of such).

Guided by this objective, the economists of the Banking Department and Regulatory Policy Department of the National Bank of Hungary have attempted to examine procyclicality in banking behaviour from a number of perspectives. The following three papers do not aspire to explore all facets of the problem, wishing only to make some contribution to the ongoing research on the subject. Thus, none of the studies deal with the actual progress of and experiences with historical lending cycles in great detail, and they do not (or only to a limited extent) make any specific proposals. Although all three papers focus on procyclicality, they differ significantly in terms of their approach and the issues dealt with.

Balázs Zsámboki, author of the first paper of the volume, focuses on some regulatory aspects of banks' procyclical behaviour. He begins with a look at the real economic role of bank loans and a description of the effects on monetary transmission. He then analyses the real economic implications of lending cycles, concentrating on the effects on small and medium-sized enterprises, the importance of demand and supply factors and the implications of changes in lending standards.

This is followed by an assessment of the relationship of the current and proposed Basle capital regulations,

and accounting and provisioning principles to procyclical behaviour. The author points out that regulatory shortcomings, perverse incentives generated by the system and problems arising from asymmetric information significantly influence the rate of credit growth, the composition of the lending portfolio and, indirectly, the correlation between and prospective development of the banking system and the real economy.

The second paper in the volume, by Katalin Mérő, deals both with the depth of financial intermediation and banks' procyclical behaviour. It seems justified to link these two subjects as the catching-up economies (including Hungary, of course), which exhibit a very low level of financial intermediation in global comparison, may in all likelihood need to deepen financial intermediation to a significant degree in order to facilitate the sustainable economic growth necessary for the catching-up process. Thus, the strong credit expansion seen in these countries may not be merely the consequence of procyclical lending behaviour, but also that of an unavoidable financial deepening. Hence, the two effects cannot be separated. Consequently, the regulatory dilemma posed by the proposed restriction of financial institutions' procyclical behaviour in these countries is a much more complex issue. The primary conclusion of the paper is that in the catching-up countries (which have a low level of financial intermediation) effective regulation should be based on a regulatory framework that focuses on qualitative measures in promoting the development of the sector and its operation according to international standards rather than quantitative rules which (may) hamper activity growth.

The third paper, by Edit Horváth, describes some regulatory options that may encourage banks to prepare in due time for a deterioration in loan quality due to changes in the economic environment. This paper seeks to pinpoint the specific methodological and regulatory

deficiencies which prevent banks from taking account of a downturn in economic conditions and which lead to risk assessment and risk classification assuming that the current economic situation is permanent. Of the regulatory options devised to prevent procyclical behaviour, such as amendments to the rules on collateral assessment, provisioning and capital adequacy, the paper takes a close look at "dynamic provisioning" for expected loss, which also considers the trend of systemic risk. It presents the conceptual model of dynamic provisioning, the main obstacles to its widespread implementation, in addition to detailed analyses of some specific international examples.

We sincerely hope that this volume will promote a better understanding of banks' procyclical behaviour and greater awareness of risk, as well as contribute to professional thinking about the questions raised in the volume.

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Authors

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Balázs Zsámboki

The effects of prudential regulation on banks' procyclical behaviour

Contents

1 | Introduction

There are a number of conflicting views in the literature on banking operations, and the entire financial sector in general, regarding the economic role of financial intermediaries and the most important characteristics of their activities. In this paper the cyclicality of banks' lending practices is examined from several perspectives. This facet of banks' behaviour deserves special attention, as cyclical lending activities may well have serious implications for the real economy. Consequently, all factors which amplify the cyclicality of lending may represent risks to both the macroeconomy and financial stability. The paper focuses on these factors and the effects of banking regulations, in particular.

Cyclical lending may have serious real economic effects and may pose risks to financial stability

When analysing the cyclical nature of lending, the first step is to examine the importance of bank lending for the efficient operations of the economy and the role credit plays in the monetary transmission mechanism. Chapter One discusses these issues. Separate sub-chapters deal with the real economic effects of lending cycles on small and medium-sized businesses, the importance of supply and demand factors, and the possible consequences of changes in credit standards. In addition, the analysis also devotes space to examining how lending cycles develop in response to a change in economic regime. As an example, the paper provides an overview of lending practices in the European Union, paying particular attention to developments in the banking market in recent years. The reasons for this special treatment are that the creation of EMU has brought about radical changes in the financial markets of member states, and that these changes will likely affect Hungary as well.

Chapter Two looks at lending cycles from the perspective of banking regulation. Following an introduction to the basic principles of banking regulation, the paper presents an evaluation of the Basle Capital Accord, the capital standard accepted world-wide, shedding light on the deficiencies and perverse incentives of the current system. A separate sub-chapter deals with the effects of the latest Basle recommendations on bank capital and banks' lending activities, as well as on their cyclical lending behaviour, placing the main emphasis on the likely consequences. This chapter also discusses accounting issues as well, as a large part of banking regulation affects this field.

Chapter Three analyses provisioning against loan losses, a possible 'antidote' to procyclical bank lending, from both economic and regulatory perspectives.

The paper concludes with a short summary.

2 | Lending cycles

2.1 The effects of bank loans on the real economy

Economic literature generally explains the existence of financial intermediaries with transaction costs and information asymmetry. Harmonising the different preferences of savers and borrowers entails a transaction cost in respect of the maturity, denomination, liquidity and other parameters of loans. Beyond this, there exists an information asymmetry between savers and borrowers, which may lead to serious problems in the lender-borrower relationship, especially, if the lender is unable to adequately watch its customer (monitoring), or the customer is unable to differentiate himself from other, possibly lower-rated, clients (signalling), and borrowers may find it impossible to obtain financing. All these phenomena lead to the rise of financial intermediaries, who make the flow of funds between savers and borrowers more efficient and are able to mitigate the problems mentioned above. These institutions include banks, which have an information advantage over other economic agents in respect of judging the quality and creditworthiness of customers. Nevertheless, it should be emphasised that, albeit to a smaller extent, the information asymmetries noted above exist between banks and their customers as well, and that financial intermediation may also create new asymmetries.

The existence of financial intermediaries is generally explained by transaction costs and information asymmetry

Banks have an information advantage in judging customers' quality and creditworthiness

An important facet of today's financial markets is that the importance to the economy of both transaction costs and information asymmetry is declining. Naturally, this tends to affect the very existence of financial intermediary institutions as well as their activities. The decline in transaction costs and information asymmetry primarily stems from the rapid development of information technology, so the institutions active in the market, and in particular banks, which have a relative information advantage, must face up to new challenges.

The importance to the economy of transaction costs and information asymmetry is declining, due primarily to the rapid development of information technology

Although the decline in their relative information advantage may affect banks negatively, information asymmetry is still an existing phenomenon of the financial world. Precisely because of this, a large proportion of economic research is currently devoted to addressing these issues, and much has been achieved in recent de-

Information asymmetry is still an existing phenomenon of the financial world

cades in the analysis of financial markets and the operations of credit markets, in particular.[1] Most of the research focuses on the various interactions of real financial relationships[2] going back as far as the Great Depression. In the literature special emphasis is placed on the analysis of allocation effects arising from the information problems facing financial markets. As the imperfect operations of credit markets have consequences for monetary policy as well, it is very important for central banks to analyse these issues, especially in order to better understand the channels of monetary transmission.

A bank credit is a special product, i.e. there is no perfect substitute from the perspective of either the bank or the borrower. Monetary policy directly influences the developments in bank lending

The relationships between central bank policy actions and the operations of credit markets are dealt with in the economic literature on 'credit channels' or, using another term, 'lending view'. These studies take as their starting point the fact that a bank credit is a special product, i.e. there is no perfect substitute from the perspective of either the bank or the borrower, and that monetary policy directly influences the developments in bank lending. It is important to stress that these preconditions must be met in order for the monetary transmission channel through bank lending to exist.

There are two approaches within the 'lending view' literature. One examines the effects of monetary policy on the balance sheet structures of borrowers (balance sheet theories); the other looks at the influences of central bank actions on bank loans (bank loan theories). In both cases, the effectiveness of monetary policy is dependent on the imperfections of markets.

The balance sheet structure influences the opportunities to have access to external finance

At the core of balance sheet theories is the view that the balance sheet structure influences the opportunities to have access to external finance, as lenders fundamentally rely on information which can be derived from balance sheets and other financial statements when assessing debtors' creditworthiness. Central bank decisions on interest rates have an impact on a given firm's net worth (as rising interest rates negatively affect borrowers' cash flow due to higher interest payments, and reduce the value of their collateral as well), so they affect firms' creditworthiness, too. Banks take into account all these influences, and build them into risk premia, thereby influencing the demand for and supply of loans.

The operations of firms that are heavily dependent on banks, and the real economic consequences of these are fundamentally determined by changes in the bank lending market

By contrast, bank loan theories investigate (i) the extent to which a bank loan can be deemed as unique, (ii) whether there are substitutes for bank loans in the financial marketplace, and (iii) at what price and for which sectors or firms these substitute products are available. As the various economic sectors depend on bank finance to various degrees, the operations of firms that are heavily dependent on banks, and the real economic consequences of these are fundamentally determined by changes in the bank lending market.

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[1] One of the most comprehensive studies on the subject is Gertler (1988).
[2] A substantial portion of the literature analyses the relationship between the depth of financial intermediation and economic development, and generally demonstrates a strong correlation between these two factors. For a discussion of the literature and conclusions for the Central and Eastern European countries, see Méro (2002), included in this volume as well.

2.1.1 The effect of lending cycles on small banks and small businesses

Small and medium-sized businesses and households are particularly heavily exposed to banks' lending decisions as they have no access to alternative finance at all, or only at a prohibitive cost.[3] The high costs of entering the capital market, coupled with mandatory disclosure requirements, mean that borrowing from non-bank sources is only attractive to firms above a certain size.

At this juncture, it is important to emphasise the special role small banks play in financial intermediation – as small firms are generally financed by small banks, the effect of the monetary transmission mechanism, realised through the lending channel, may be stronger and may affect smaller economic agents more sensitively in countries where small institutions dominate the banking sector.

The explanation for small banks' leading role in this market segment is that they provide finance based on longer-term relationships, very often personal contacts. By contrast, large banks generally offer standardised loans, which they provide to firms after considering various financial indicators. However, there has been a structural rearrangement in the financial markets world-wide. One of the characteristics of these changes is the increase in the number and average value of bank mergers and acquisitions. An examination of this issue raises the question of the likely consequences of small banks being taken over by large ones, and whether this threatens small businesses' access to finance.

In most countries, there is a very strong financing relationship between small banks and small businesses. Table 1 illustrates the strength of this relationship in the United States.

Strahan and Weston (1996) point out that the data indicating a strong relationship between small banks and small businesses cannot be examined statically, given that, by taking over small banks,

Small and medium-sized businesses and households are particularly heavily exposed to banks' lending decisions

Monetary transmission realised through the lending channel may affect smaller economic agents more sensitively

Table 1

Portfolio Shares of Small C&I Loans

Per cent

Banks by Asset Size	Small C&I Loans / Total C&I Loans	Small C&I Loans / Total Assets
< $100 million	96.7	8.9
$100 million to $300 million	85.2	8.8
$300 million to $1 billion	63.2	6.9
$1 billion to $5 billion	37.8	4.9
> $5 billion	16.9	2.9

Source: Strahan and Weston (1996)

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[3] These arguments are valid for larger companies as well in countries with underdeveloped capital markets.

large ones seize the opportunity to lend. If, however, it is not worth it for a large institution to lend to small businesses, it means that small banks enjoy a cost advantage in providing finance to this segment of the market, i.e. they can operate profitably in this market sector, even over the longer term. In other words, the demand of small businesses for loans creates small banks' *raison d'être*. This is supported, for example, by the experience of the United States, where the proportion of small business loans in existing small banks' portfolios has increased simultaneously with the fall in their number.

Where information asymmetries are strong, bank-based financing appears to be advantageous…

Looking at the issue from a broader perspective, bank-based financing appears to be advantageous mainly for industries or economic sectors where information asymmetries are strong. One advantage of bank finance is that banks mitigate the effect of economic shocks for their customers as their interest rates are less volatile than market rates ('smoothing effect'), and that banks are able to provide funds even if no other financial intermediary institutions or channels for obtaining finance are available.[4] Moreover, the securities markets, an alternative source of obtaining finance, are not always liquid enough for businesses to satisfy their funding needs. However, aside from the potential liquidity problems of the capital markets, the real difficulty for small and medium-sized firms is that often they are not able to bear the high costs of entering the capital market, and so are strongly dependent on banks for obtaining long-term financing.

…banks mitigate the effect of economic shocks for their customers…

…and are able to provide funds even if no other channels for obtaining finance are available

Loans to individuals are generally much more sensitive to changes in monetary policy than corporate loans

Examining the relationship between monetary policy and bank lending, not only loans to small businesses but those to individuals as well are peculiar from a certain perspective. Experience shows that loans to individuals are generally much more sensitive to changes in monetary policy than corporate loans. De Bondt (1999) demonstrated that this is particularly valid for Germany, France and Italy. In these countries, there is a strong transmission through the lending channel. De Bondt (1999) believes that the existence of a balance sheet channel is primarily demonstrable in Germany and Italy.

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[4] In connection with this, Duisenberg (2001) points out that the strong dependence of small debtors on banks and their sensitiveness to the imperfections of credit markets explain the general phenomenon of the banking system that, in cases of monetary tightening, the ratio of small business loans to large loans falls.

2.1.2 Demand and supply factors of lending cycles

Analysing banks' lending activities, it is often difficult to see whether an expansion or contraction of lending is attributable to changes in the demand for or supply of credit. Furthermore, provided that both play a role, what are the relative weights of these factors? If, for example, the decline in the supply of credit is sharper than that in demand for loans, it means that restrictions on lending may exacerbate the economic downturn. Such episodes of credit crunches were observable, for example, in the United States from the second half of the 1980s. Large losses on lending affected banks' capital positions quite negatively in the period, and this contributed to the perceptible curtailment of lending.

Restrictions on lending may exacerbate the economic downturn…

…large losses on lending affect banks' capital positions quite negatively…

However, examining the role of demand and supply factors in lending cycles, Berger and Udell (1994) found that the supply-side effect was not significant in the USA at the end of the 1980s. They argue that the contraction of credit supply had a major impact on the real economy in Japan and a smaller one in the Scandinavian countries.

A marked lending cycle was observable in Australia in the period 1986–1993. Examining the lending cycle, Tallman and Bharucha (2000) found that the robust expansion of lending, accompanied by narrow margins, was followed by an unfavourable turn in economic conditions, a drastic decline in lending, huge loan losses, rising margins and a significant rearrangement of portfolios. Those banks that had larger-than-average problem assets cut back on lending by more than the broad average and reduced the growth rates of their risk-weighted assets. While the growth rate of outstanding loans remained positive overall, the adjusted balance sheet total often fell, i.e. banks made a shift towards low-risk loans within total lending. In other words, banks' profitability and capital strength did indeed have an effect on their lending decisions. Rising margins, in turn, dampened demand, so the forces on both the demand and supply sides served to reinforce the downturn.

…Which causes a decline in lending, rising margins and a significant rearrangement of portfolios

Analysing the case of Spain, De Lis et al (2000) explain procyclical lending by the cyclical changes in demand, in addition to supply-side factors. One of the expansionary forces on demand is the fact that in the upward phase of the economic cycle borrowers generally spend more on products that entail a higher financing requirement. On the consumer side these include consumer durables and investments in residential property, while on the corporate side these include business-related investments. At the same time, however, borrowing not only assists the purchase of real goods but that of financial investments as well, which are not included in the com-

Procyclical lending is also explained by the cyclical changes in demand

ponents of GDP, but which exhibit very strong cyclical movements. De Lis et al (2000) maintain that real interest rates are also an important element of demand for credit. Another factor affecting credit demand is the change in relative prices, for example, property market booms. The latest strong upsurge in lending in Spain is explained by the country's preparation for entry into EMU, as well as the resulting macroeconomic stability and low interest rate levels.[5]

Intensifying competition among market participants may trigger lending booms, which can be especially dangerous for stability

It is important to point out that intensifying competition among market participants may also trigger lending booms. Shrinking margins and new products resulting from competition attract new customers to the market. This phenomenon, however, can be especially dangerous for stability, as banks are at an information disadvantage vis-à-vis the new entrants. Since losses only come to light later, this strong asymmetry may prove to be lasting, and so current assessments of loans may not necessarily give an accurate picture of borrowers' actual creditworthiness.

2.1.3 The role of non-price factors in lending cycles

Movements in the demand for and supply of credit are influenced by developments in the broadly defined credit standards

In addition to interest rates, movements in the demand for and supply of credit are influenced by other factors, such as developments in the broadly defined credit standards. The reason for this is that the 'prices' of loans are not only interest rates – various fees and commissions must also be taken into account.

Prices do not always have a market clearing function, i.e. prices do not necessarily bring demand and supply into equilibrium, and non-price conditions may become more important when allocating credit

Moreover, borrowers must fulfil a number of criteria before loans are granted. Prices, as the theory of asymmetric information asserts, do not always have a market clearing function, i.e. prices do not necessarily bring demand and supply into equilibrium.[6] The prices of loans are often a secondary factor and clients' creditworthiness as well as other individual, non-price conditions may become more important when allocating credit. Therefore, banks quite often opt to tighten the broadly defined credit standards as the main means of curtailing lending, rather than raising interest rates.

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[5] In addition to the reasons above, De Lis et al (2000) emphasise banks' disaster myopia, herding behaviour, perverse incentives and principal-agent problems. The explanation for this is that the market is likely to more easily 'forgive' errors if committed by more and, consequently, managers are encouraged to realise expansive lending policies in times of economic recoveries.

[6] Analysis of this phenomenon is primarily in the focus of the theory of credit rationing. See, for example, Stiglitz and Weiss (1981). It should be noted, that this phenomenon may occur not only in episodes of crisis. The theory treats credit rationing as a general feature of the market as a consequence of the information asymmetry of credit markets. The 'credit crunch' phenomenon, which means a drastic decline in lending activity, is slightly different and is mainly relevant for crisis periods.

A number of studies examine the relationship between the lending criteria banks require of their corporate clients and economic growth. Analysing the characteristics of this relationship, Lown et al (2000) found that lending drops off following the tightening of lending criteria, and economic performance weakens as well. This phenomenon is particularly observable in inventory financing. Demonstrably, banks generally tighten standards within short periods, while loosening takes a longer time. Due to this, the decline in lending also starts to pick up later, only after lending criteria have been relaxed.

Lending drops off following the tightening of lending criteria, and economic performance weakens as well

Data is collected regularly in the USA in respect of changes in credit standards, based on reports by banks' lending specialists. Using this database, Lown et al (2000) showed that in 1998, in the aftermath of the Asian and Russian financial crises, lending criteria were tightened strongly in the United States, leading to a decline in lending in early 1999. The same pattern was observable in the period 1973–1975 as well as in the early 1990s, when banks reported a tightening of credit standards, and subsequently there was a large drop in lending. Out of the last five recessions in the USA, four were preceded by a tightening of credit standards; consequently, this has a good predictive power in respect of the future development of the economy. However, the authors also pointed out that it is difficult to separate demand and supply effects in the case of credit standards, as reports by lending specialists show that the timing of the decline in demand for credit and the tightening of credit standards coincide.

Tightening of credit standards has a good predictive power in respect of the future development of the economy. The timing of the decline in demand for credit and the tightening of credit standards broadly coincide

Examining the relationship between credit aggregates and economic performance, Asea and Blomberg (1997) also demonstrated a stable procyclical link between these two factors. The authors analysed the relationship between banks' lending criteria and the cyclical changes in unemployment in the United States. For this analysis they used data from 483 banks, examining the contractual terms of nearly two million loans granted between 1977 and 1993. According to their findings, there are systematic changes in credit standards. During cyclical downturns, banks require higher risk premia and more collateral. At times of economic expansion, the reverse is true, with the added feature that the average size of loan increases as well. Consequently, deficiencies exist not only in times of recession, when counter-selection increases (i.e. bad loans crowd out good ones), but during economic expansion as well, when bad loans are extended along with the good. During these periods of economic upturn, even customers with higher default risks have access to financing, so changes in lending criteria influence the performance of the real economy as well and contribute to excessive risk taking, which then sooner or later reverses the cycle. Asea and Blomberg (1997) emphasise that changes in credit standards usually accompany the entire economic cycle.

There is a stable procyclical link between credit aggregates and economic performance

Changes in credit standards usually accompany the entire economic cycle

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Excessive expansions and contractions of lending may have real economic implications

Financial crises may worsen the economic conditions and prolong the crisis

In periods of financial crisis, the distortions of the financial intermediary system grow more intense

From the studies mentioned above we can draw the conclusion that excessive expansions and contractions of lending may well have real economic implications. At the same time, the question arises as to what extent financial cycles or, in more serious cases, financial crises could be a trigger of real economic crises. Eisenbeis (1997) maintains that the economic history of the United States provides evidence for real economic recessions leading to financial crises in many cases; however, the process is not observable in reverse – financial crises do not necessarily cause real economic recessions. However, if the crisis erupts during a recession, then that may worsen the economic conditions and prolong the crisis.

A related issue is that not only a decline in outstanding loans can cause a further real economic recession during financial crises, but also the fact that during such periods the distortions of the financial intermediary system (deterioration in the lender/borrower relationship, asymmetric information, etc.) grow more intense, and thus obtaining finance becomes more difficult for borrowers. Bernanke (1983) points out that the Great Depression is a good example of the negative implications of the distortions in financial markets. However, these assertions should be treated with care, as interrelationships that were valid in the past are not necessarily true today, when the information asymmetry between economic agents is less and the cost of access to information is lower than a couple of decades ago.

2.2 The effects of the change in economic regime on bank lending – experiences of EMU

The Economic and Monetary Union can be interpreted as a kind of change in the economic regime in the European financial marketplace

The Hungarian financial market is characterised by the dominance of banks, as are those of the EMU member states

Theoretical interrelationships are often invalidated if radical changes take place in the real economy or the financial sphere over a short period. The birth of the Economic and Monetary Union is an example of such a fundamental change, which can be interpreted as a kind of change in the economic regime in the European financial marketplace. As it is one of Hungary's most important objectives to become a member of EMU as soon as possible after joining the EU, it is worth examining the changes that have taken place in the European bank loan market over recent years, and especially to see whether the change in economic regime has had any impact on lending cycles. Naturally, these events are too recent to allow firm conclusions to be drawn. Presenting the initial experiences, however, may be useful, especially because the Hungarian financial market is characterised by the dominance of banks, as are those of the EMU member states. Therefore, analysing the developments in the lending market may yield a number of useful lessons.

The important economic role of loans in the European Union is demonstrated by the statistics of the ECB (2000), which show that the ratio of banks' corporate lending to firms expressed as a percentage of GDP was 45.2% in 1999, while the figure for corporate bonds was only 7.4%. In the USA these ratios were 12.6% and 29%, respectively. In other words, banks' role in financing the economy is much greater in Europe than in the USA. The balance sheet total-to-GDP ratio is further evidence of this, being 175% in the euro area, compared with just 99% in the USA.

In line with the earlier remarks, the ECB (2000) points out that the way in which monetary policy exerts its influence and the efficiency of transmission both strongly depend on developments in demand and supply and structural factors in the banking sector. These latter include the level of competition, the preferences for the maturities of loans and deposits, the adjustability of interest rates, the various risk premia, as well as administrative regulations and costs. Household and corporate sector borrowing rates follow the trends of market rates fairly closely, although the variability of bank rates is much lower; consequently, the smoothing effect mentioned earlier is observable here as well.

The way in which monetary policy exerts its influence, and the efficiency of transmission, strongly depends on developments in demand and supply and structural factors in the banking sector

The primary external source of finance for non-financial corporations operating in countries of the euro area is bank loans, although the role of bank lending has fallen somewhat in the past decades.[7] A large proportion of loans are long term – nearly 70% of them are for periods of more than one year, and the original maturity of more than a half of all loans is longer than 5 years (ECB, 2001a, Table 2).

The primary external source of finance for non-financial corporations operating in countries of the euro area is bank loans

Table 2

Financial structure of non-financial corporations*

Per cent

	Euro-area			USA	Japan
	1997	1998	1999	1999	1999
Liabilities	100.0	100.0	100.0	100.0	100.0
Loans	30.0	27.2	23.3	5.4	38.9
Trade credit and advance payments received	10.7	9.8	8.3	7.8	12.4
Securities other than shares	3.1	2.8	2.4	10.6	9.4
Shares and other equity	51.7	56.3	62.6	70.2	33.8
Other liabilities	4.5	3.9	3.3	6.1	5.5

Source: ECB (2001c)
* Debt securities and shares are valued at market prices.

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[7] At this juncture, it should be noted that if the structure of financing shifts gradually away from bank loans to equity and bond financing in a country, then the emphasis on wealth effects within the consequences of monetary policy actions will be greater. The explanation for this is that changes in interest rates affect the prices of financial and real goods, and through the wealth effect, firms' and households' creditworthiness as well.

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Taking into account that the prices of debt securities and shares rose significantly in the period 1997–1999, the table obscures the fact that there was a robust increase in loan and bond liabilities in volume terms. Although the revaluation effect reduced substantially the weight of loan and bond liabilities within total liabilities, the ratio to GDP of non-equity borrowing actually rose. Lending growth fluctuated around 10% in the period under review, which, after taking inflation into account, corresponds to a very significant real increase of some 7%–8% (ECB, 2001a). There were a number of factors behind this high rate. The majority of these were linked to the change in economic regime – EMU convergence brought about low interest rates and a favourable economic environment in the region, together with increased M&A activities, all of which contributed significantly to an expansion in lending. At the same time, however, one-off factors also had an influence on the overall picture, in particular the financing requirements of UMTS licences, which also caused a considerable lending expansion.

According to the ECB (2001a), EMU convergence brought real interest rates down to around 4% by the end of the 1990s, creating favourable conditions for borrowing. However, economic growth tapered off in the second half of 2000, and real interest rates rose above 5%. As a consequence, lending activity also fell somewhat. Calza et al (2001) demonstrate that economic growth and the real interest rate level taken together are good explanatory variables of developments in real lending in the euro area, and their model based on this finding provides a good description of the fluctuations in lending within the EU.

However, since the birth of EMU the expansion of lending has exceeded the level forecast by their model, despite falling a little. Some of the reasons for this are the pick-up in corporate investments outside the EU, for which, in a number of cases, banks provide the finance, and the increase in property and land prices, in addition to the telecommunication projects already mentioned.

The slight drop in lending has affected the various economic sectors unevenly. Whereas annual growth in corporate borrowing remained above 10% in 2000, growth in consumer credit and housing loans declined, in line with the theory discussed earlier. The decline in demand for housing loans can be explained partly by rising interest rates and partly by a slower increase in property prices. All these developments show that the procyclical behaviour of bank lending is characteristic in the European Union as well. However, in its early stages EMU, which can be regarded as a change in the economic regime, helped prevent the decline in economic growth from leading to a large-scale contraction of bank lending.

Nevertheless, the changes in regimes affecting financial markets need not only be macroeconomic by nature, but can also include changes in the regime in terms of banking regulations. Such a process resulting in sweeping changes was the liberalisation of financial markets in the 1970s and 1980s, which led to considerable credit expansion. However, the creation and widespread use of standardised international capital regulations can also be interpreted as a change in the economic regime, being a kind of counter-reaction to the operational problems of liberalised financial markets. The next chapter is an overview of the impact of these regulatory changes on banks' lending activities.

The changes in regimes can also include changes in terms of banking regulations…

… including the creation and wide-spread use of standardised international capital regulations

3 | Banking regulation and cyclicality

3.1 Principles of banking regulation

The significant differences that existed between the various international frameworks for bank regulation necessitated the formulation of a regulatory framework based on uniform guidelines, bearing in mind competitive neutrality for the institutions operating in the liberalised market. The capital adequacy standards issued by the Basle Committee on Banking Supervision in 1988 adopted a uniform methodology to measure banks' regulatory capital and risk-weighted assets. Within a few years, the new capital standards were incorporated first into the national regulation of the OECD countries and then into the national regulation other countries.

In the United States, which had played a key role in the formulation of the Basle principles, the Fed approved the risk-based capital calculation guidelines as early as 1988, with the date of application set for 1992. This left the banks with sufficient time in which to make the gradual transformation required by the new regulation. In this way it was possible to implement the regime change without the banks suffering any shocks. The adjustment first of all called for a strengthening in the banks' capital position, the results of which are shown in the Table 3 below.

Its main objective in establishing the new standards was to promote a level playing field from a prudential perspective to regulate the banks participating in international financial markets

In the period prior to the introduction of risk-weighted capital regulations, national authorities in general imposed a single capital ratio on all banks, broadly in terms of a proportion of their balance sheet totals. The Basle principles provided some additional standards in relation to credit risk. The Committee's main objective in establishing the new standards was to promote a level playing field from a prudential perspective to regulate the banks participating in international financial markets, thereby removing the possibility of

Table 3

Weighted percentage of banks that would have failed the total capital requirement and the average total CAR

Per cent

	Q1 1990	Q2 1991	Q4 1992
CAR<8%	29.5	9.1	0.6
CAR, average	9.8	10.8	12.5

Source: Grenadier and Hall (1995).
Note: Banks are weighted by asset size.

arbitrage between differing national capital requirements for banks. Differences in regulation between Japanese and US banks were especially salient. Adoption of the capital adequacy ratio (CAR) provided a universal approach to measurement of capital, which has eliminated in large part the possibility of arbitrage between countries.

While the regulatory differences between countries have largely disappeared, the difference between bank and non-bank regulation has remained. In other words, arbitrage has shifted from countries to financial sectors. Widespread securitisation of bank assets is perhaps the best example, which has taken bank lending off balance sheets.[8] It became clear shortly after the capital standards were introduced that if the focus of the regulations was the institution, then the activity of those under more stringent regulation would be taken over by less regulated, or, indeed, completely unregulated institutions. The Basle standards on market risk capital requirements are already based on the principle that it is not so much the type of institution that matters but the type of activity. Thus, the standards use identical principles to regulate both banks and investment firms.

The difference between bank and non-bank regulation has remained, leading to arbitrage between financial sectors

The shifting of risk to non-bank institutions is a motivation for regulators to make further refinements in lending risk standards, in order to make bank capital in every sector of activity more sensitive to the risk taken, in other words, to establish a closer alignment of regulatory capital with 'economic capital', which is used to cover actual losses.

The shifting of risk to non-bank institutions is a motivation for regulators to make bank capital more sensitive to the risk taken

The introduction of uniform capital measurement standards was also an urgent task because the type of activity and risk undertaken by banks has changed significantly due to numerous financial innovations, and banks have not always had capital of sufficient size and quality to cover the latter. Carr (2001) points out that on-balance sheet capital ratios have been declining steadily, from 35% in the 1860s to around 4% today. This has caused a sharp rise in the probability of failure, the costs of which are often borne by taxpayers or deposit insurance funds.

The type of activity and risk undertaken by banks has changed significantly due to financial innovation

It is a typical feature of banking that depositors, shareholders and management all prosper during a boom. When times are good banks offer higher interest rates to depositors to ensure funds for lending, shareholders may hope to earn higher dividends thanks to higher profitability and management takes home high salaries and bonus payments. On the other hand, when banking is loss-making, the depositors normally have no cause for concern as they are pro-

Asymmetry in terms of gains and losses raises the issue of moral hazard

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[8] As far as the size of the arbitrage is concerned, Clementi (2001) found that non-mortgage securitisation amounted to USD 200 billion for the ten largest American bank holding companies, exceeding 25% of the risk-weighted loans of these institutions.

tected by either explicit or implicit deposit insurance. Shareholders' liability is limited to the capital invested and management is not financially liable (unless there has been a criminal offence). This asymmetry in terms of gains and losses raises the issue of moral hazard. This is because shareholders have the option of leaving the bank to the creditors (depositors), while the creditors can similarly shift the problems onto the taxpayer or the deposit insurance funds.[9] Although this paper does not wish to discuss the issue of government bailout of banks or the problem of 'too big to fail', we would like to indicate how crucial capital is to 'absorbing' losses so that the parties concerned do not exercise the aforementioned options. Thus, the socially optimal level of capital lies above the privately optimal level of bank capital. In Carr's (2001) definition, economic capital is optimal for shareholders and regulatory capital is optimal for the taxpayer. This concept has been recognised by the Basle Committee in its move to broaden the definition of regulatory capital to include other capital elements, in addition to the capital shown in the accounts, with the aim of taking it closer to the socially optimal level.

3.2 The economic effects of the current regulations

After regulation was introduced in the United States and Japan, there was a decline in lending and a reallocation of bank portfolios

Numerous studies have analysed the effects of the Basle regulations, with mixed results (e.g. Hall 1993, Grenadier–Hall 1995, Ito–Sasaki 1998, Jackson 2000, Furfine 2000). Studies on the United States and Japan, for example, clearly reveal that after regulation was introduced there was a decline in lending and a reallocation of bank portfolios in the direction that could have been predicted in the light of the regulatory incentives. Grenadier and Hall (1995) showed that in the USA low-risk securities and mortgage loans increased in weight, simultaneously with a drop in the proportion of corporate and commercial property development loans. In the period between 1988 and 1992 securities as a whole increased by 12% in annual terms, with mortgage loans increasing by 11.3%. Commercial property loans rose by 2% and consumer lending re-

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[9] Following Merton (1977), it is now a common theorem of economic literature that deposit insurance can be viewed as a put option for a bank's assets. In the event of failure, shareholders 'sell' their assets to the deposit insurers (or the state). The exercise price equals the sum of the insured deposits. This option represents a positive value for the bank on which the insurance premium is paid. The value of the option can be raised by banks increasing leverage and/or asset volatility. If the insurance premiums contain no risk premium, then these incentives might influence banking behaviour considerably.

Table 4

Ratio of net write-offs by type of loan in the United States, 1976–1993

Per cent

	All real estate	C&I	Fogyasztói hitel	Consumer	Commercial real estate
Mean	0.40	1.10	1.30	0.13	1.70
Standard deviation	0.40	0.50	0.60	0.10	0.70
Maximum	1.30	2.30	2.50	0.20	2.40
Minimum	0.04	0.30	0.50	0.01	0.80

Source: Grenadier and Hall (1995).

mained virtually flat (0.5%). C&I loans even exhibited a negative trend (–2.6%).[10]

Furfine (2000) came to a similar conclusion regarding the effects of the current Basle regulations. He shows that there is clear evidence of a shift from lending to securities-based financing in the USA. Banks shifted away from lending to increase their securities holdings, a move reflected in the fall of the bank portfolio share of corporate loans from 22.5% to 16%, simultaneously with a rising proportion of government securities from 15% to 25% between 1989–1994. Thus, the early 1990s witnessed a real credit crunch in the United States. (See Table 4)

It should be born in mind that the American economy was in a slump in that period, making it difficult to judge whether the shift in the portfolio composition was due to a rise in capital requirements or to weaker demand for credit. Furfine (2000) points out that the reallocation of portfolios started before the recession and was still there for one or two years after the recession ended. Moreover, during previous recessions (1974–1975 and 1982) there was no evidence of similar restructuring. The study demonstrates that the weaker demand for credit does not by itself explain the decline in lending, whereas the change in capital requirements gives a good explanation for all the portfolio shifts. In other words, US banks responded strongly to the incentives inherent in the regulations.

The change in capital requirements gives a good explanation for all the portfolio shifts

Prior to the introduction of risk-based capital regulation, banks were only able to improve their capital adequacy by reducing assets or raising additional capital. In contrast, the new framework enables them to achieve this by changing the composition of their assets. This is the case for on and off-balance sheet items.

Banks achieved an improvement in capital adequacy by changing the composition of their assets

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[10] 'C&I loans' are largely comprised of lending to non-financial private enterprises, and as such roughly correspond to 'corporate lending' under Hungarian terminology.

As noted above, the upsurge in mortgage-based residential lending was also one of the consequences of the portfolio reallocation. Grenadier and Hall (1995) point out that the capital requirement still appears to be excessive when compared to default rates in this market segment, and the incentives have encouraged banks to gradually shift from direct mortgage lending into the secondary mortgage market.

When loans with a similar risk weighting are concerned, banks are encouraged to shift towards riskier items

A sign of the rigidity in the current Basle regulations is that despite large differences between commercial property loans in respect of write-offs, i.e. losses incurred on industrial and retail loans being lower than those on office and hotel loans, the Basle standards classify them into the same risk category. Thus, when loans with a similar risk weighting are concerned, banks are encouraged to shift towards riskier items.[11] In this way, they can take more risk without increasing their level of capital and, consequently, charge higher premiums on their loans.

As regards the issue of writing off losses, it should be noted that, as long as the stock of lending is increasing, figures will tend to underestimate the true rate of the losses, while the reverse is true when lending is falling. It should also be taken into consideration that since banks write off certain types of loans faster than others, the data do not necessarily give a true picture of the losses.

A major shortcoming of the current Basle regulations is that they fail to take into account the advantages arising from diversification…

Another major shortcoming of the current Basle regulations is that they fail to take into account the advantages arising from diversification. As suggested by Grenadier and Hall (1995), lending losses can be reduced by as much as 50% through greater geographical diversification.[12] The authors also point out that while the reallocation of portfolios carried out in response to regulation has reduced the risk of failure, it has also increased interest rate risk and the balance sheet term structure risk. Therefore, the supervisory authorities must also consider whether an apparent improvement in risk might be due to a reallocation from one type of risk to another.

…or a great number of financial innovations

An additional serious weakness is that the current regulatory framework does not take account of the many financial innovations over the past decade and does not adequately recognise the role of such innovations in increasing or lowering risk in the current system. To eliminate these shortcomings, for years the Basle Committee has been engaged in drawing up new capital standards, submitting its

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[11] Had capital requirements been better aligned with the risks, property market investment probably would not have received bank financing on such a large scale, considering the rather volatile returns on such investments. The low capital requirement of short-term interbank loans must have been one of the factors at work in the strong lending to Asian countries during the pre-crisis years.

[12] Needless to say, geographical diversification is only one of numerous diversification options. For a more detailed description of the risk-reduction and efficiency-boosting effects of loan portfolio diversification, see Morgan (1989) and Gollinger-Morgan (1993).

proposals for a comprehensive professional debate. The next section describes the current and prospective regulations, together with an analysis of their likely impact.

3.2.1 The effect of the Basle standards on banks' procyclical behaviour

When evaluating the Basle principles, this paper focuses on issues crucial to financial stability, examining whether banking regulation is a contributory factor in amplifying the fluctuations of the business cycle. As suggested by the preceding sections, although banks' procyclical behaviour is a general phenomenon, from a stability point of view it is crucial to examine its impact on the real economy and the financial environment. Past experience suggests that prudential regulation can amplify or weaken procyclical bank behaviour. As current regulation focuses mainly on determining the adequate level of capital, it is through this mechanism that regulation makes its effect felt.

Prudential regulation can also amplify or weaken procyclical bank behaviour

Ideally, the regulatory framework should be devised so that capital reserves can be built up during the profitable years in order to ensure that banks' capital position remains adequate when there is a recession and the unexpected losses are written off against capital. In other words, banks' capital reserves should change in line with the economic cycle, since during a slump, when profitability is low, banks will run into significant difficulties in their search for new injections of capital. The question is whether the current and new approaches ensure that capital reserves are built up before they are needed.

Banks' capital should change in line with the economic cycle

Looking into the relationship between regulation and procyclical lending, a study by the ECB (2001b) claims that procyclicality occurs mainly when the capital and provisions held by banks are not sufficient to cover risks at the time of an economic downturn or imminent recession; that is to say, at such times banks are forced to restrict lending so that they can comply with regulatory requirements. Incidentally, this procyclicality also exists when there are no minimum capital requirements. This is because when economic activity is buoyant banks can typically make more profits, with the higher profit reserves raising their level of capital, while the situation is just the reverse during a slump. This will affect bank lending independently of regulation.

Procyclicality occurs when the capital and provisions held by banks are not sufficient to cover risks at the time of an economic downturn

The question is, to what extent regulation itself contributes to cyclicality and how much the Basle proposals reduce or amplify existing cyclical effects.

Analysts' opinions vary about the extent of procyclicality in the current system (Jackson (1999), Furfine (2000)). It is certain, however, that there has been a clear increase in banks' average capital adequacy ratio in the period since capital standards were introduced. Within euro-area countries, the ratio rose from 9% in 1989 to 10.6% in 1999 (ECB, 2001b), reaching 10.9% for the 100 largest banks. As shown by the calculations of Jackson et al, (1999), the average capital adequacy ratio in the G-10 countries rose from 9.3% to 11.2% between 1988 and 1996. The resulting higher capital reserves dampen procyclicality as banks then have higher levels of capital to cover potential losses. Moreover, banks seek to hold more capital than the minimum limit anyway.

In the boom phase procyclicality tends to strengthen, as banks can obtain additional capital under more favourable terms, which may give further impetus to their lending. By contrast, during a downturn capital becomes more expensive and banks often respond by cutting back lending or shifting towards lower-risk customers. This is especially true for undercapitalised banks. At the same time, it is difficult to separate the effect of capital standards from banks' behaviour during a recession when, prompted by deteriorating customer quality, they tend to shift towards lower-risk customers.

It is worthwhile to examine the size of the reduction (increase) in banks' balance sheet total that might be caused by a unit fall (increase) in bank capital for the banking system as a whole. As documented by the ECB study (2001b), the capital-to-assets ratio within the euro-area countries moved in line with the economic cycles. In other words, capital acted as a successful shock-absorbing cushion. This means that a drop (or lower growth rate) of capital did not entail a similar reduction in assets.

3.3 The possible impact of the new Basle regulations on lending cycles

It has been noted that the current Basle principles are not sufficiently sensitive to risk, which may cause numerous problems in banking, often leading to distorted incentives. The Basle Committee has therefore brought forward for discussion within the profession a proposal for an updated revision of the standards, in order to bring them into line with the new challenges and to remedy these weaknesses. One of the key elements of the new proposals (hereinafter referred to as Basle 2) is that in the future banks will be allowed to determine the amount of capital required to cover credit risk, based

on an internal ratings-based (IRB) approach. According to the new approach the capital requirement is the function of individual customers' probability of default, loss given default and exposure to default, maturity and portfolio concentration. Needless to say, bank supervisors will face a major task in testing how realistic the model parameters are.

Banks with insufficient resources to implement the rather costly internal rating systems can continue to use the standard approach, which has been refined to a significant degree so that it is better able to assess credit risk.

These steps all serve the Committee's purpose of narrowing the gap between regulatory capital and economic capital.

Altman and Saunders (2001) stress that a capital adequacy system built around traditional rating principles may be procyclical, following rather than leading the business cycle, and thus resulting in an enhanced rather than a reduced degree of instability for individual banks and the banking system as a whole. Demonstrating that the capital requirements for the risk categories in the standard approach do not cover real risks, they propose an alternative risk weighting for corporate loans.

A capital adequacy system built around traditional rating principles may be procyclical, resulting in an enhanced degree of instability for individual banks and the banking system as a whole

The 30% shown in the Table 5 is much lower than the 100% suggested in the first version of the Basle proposal. The latest proposal shows a slightly different version, but also applies a weighting of at least 50% to the A-rated category and 100% to lower-rated items.

It should be noted that the customer ratings suggested in the new Basle standards move in line with changes in economic cycles, which implies higher bank capital requirements when economic conditions are bad. As client rating depends to a great extent on the probability of default, as assessed by the banks on the basis of internal ratings models, which itself changes in correlation with the economic cycle, this may intensify the cyclicality of capital requirements and lending.

The customer ratings suggested in the new Basle standards move in line with changes in economic cycles

Table 5

*An alternative risk weighting proposal
for bank corporate loans*

Per cent

	AAA and AA–	A+ and BBB–	BB+ and B–	Lower rating
Risk weights of corporate loans	10	30	100	150

Source: Altman and Saunders (2001).

The primary risk of procyclicality lies in the inadequate timing of allocating capital reserves

This may be of particular significance when a bank's rating system is based on a point-in-time or a short-term assessment of a client's economic situation, and longer-term developments are not given appropriate consideration. Thus, the risk of procyclicality lies not so much in allocating larger capital reserves to cover greater risks, but in inappropriate timing, i.e. risks are not identified in time.

During a crisis, there is a significant increase in the volatility of ratings

External rating agencies are praised for their longer-term approach, as they ignore short-term changes over the business cycle. Experience suggests, however, that this is only the case in crisis-free periods. The Asian and Russian crises provided a great deal of evidence of significant changes in a country's risk rating and a rise in the volatility of ratings. Nevertheless, it can be stated with reasonable certainty that if external rating is pro-cyclical, internal rating is even more so, because of the shorter time horizon.[13]

During a downturn the value of collateral declines, which implies that banks must hold a higher level of capital, which in turn reins in lending

Another procyclical effect is that the new Basle regulations make capital requirements subject to credit-risk mitigating techniques. The best example of this is that collateral changes in value over the course of an economic cycle. It is common during a downturn that the value of collateral declines or, in many cases, even plunges (as with asset price bubbles, for example). The implication is that banks must hold a higher level of capital, which in turn reins in lending. Furthermore, as shown by Clementi (2001), this cyclical movement is not only true when real property is used as collateral but also in the case of equipment and inventories, and even the assignment of receivables. Small and medium-sized businesses are particularly vulnerable in this respect, as they can typically offer less or poorer quality collateral.

Adjusting the capital adequacy ratio is a costly process, and shareholders are reluctant to increase the capital of an undercapitalised bank

In order to avoid the negative side effects of the cyclical volatility of capital, banks relying on internal models will have to hold significantly larger amounts of buffer capital, i.e. excess reserves, in addition to the regulatory minimum. In his assessment of the required size of this buffer, Rime (2001) argues that such excess capital is needed primarily because adjusting the capital adequacy ratio would be a costly process, considering that issuing shares could convey a negative message about the value of a bank when there are information asymmetries. Furthermore, shareholders are reluctant to increase the capital of a critically undercapitalised bank, as the bank's creditors (depositors) are the primary beneficiaries. Hence, banks tend to maintain a capital buffer primarily in order to avoid the need for any adjustment, and the greater the volatility of capital, the larger the buffer.

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[13] Some estimates suggest that in a recession banks' capital requirements may even double under the new system. Clementi (2001) argues that capital regulation is only one facet of financial stability, in addition to value accounting, loan loss provisioning and liquidity management. (See later.)

Table 6

Capital data for different categories of Swiss banks

	Excess capital (percentage of required capital)	Standard deviation of excess capital
Big banks	8.06	2.15
Cantonal banks	21.02	6.62
Regional banks	25.16	7.60

Source: Rime (2001).

As banks of various sizes and profiles differ significantly in their access to additional capital, the required capital buffer also varies considerably, in line with the size of individual banks. Rime (2001) uses the example of Switzerland to illustrate this point. The Table 6 shows that smaller institutions held nearly 25% more capital than the minimum requirement. The reason for this is that the shares of small institutions are less liquid, which makes it more difficult for them to raise funds through this channel.

Jokivuolle and Karlo (2001) also use the cost argument to argue in favour of the need for a capital buffer. If a bank is undercapitalised, such costs may arise from more stringent and regular supervision, damaged business reputation and the threat of the bank being forced to cut back lending, resulting in a loss of profitability. As shown above, one of the key consequences of the new Basle principles is the increase in capital volatility. This raises the probability that a bank might approach or even dip below the minimum at certain times. This may be the case especially when IRB models of high-risk sensitivity are applied. The implication is that given an unchanged portfolio, the new system will encourage banks to hold more capital, making reliance on the IRB approach less attractive. However, if banks are not willing to increase their levels of capital they can still achieve the same objective by shifting towards less risky activities. Higher capital and/or lower risk portfolio will enhance stability of the banking system, though it will not promote the deepening of financial intermediation.

Given an unchanged portfolio, the new system will encourage banks to hold more capital

The Basle Committee has naturally recognised the effects of procyclical capital fluctuations, and has drawn up a number of recommendations to deal with these. One such recommendation is that when calculating the capital requirement and determining the average values of the probability of default, banks should examine the longest possible time horizon. The effectiveness of this approach is diminished by the fact that historical data is not necessarily suitable for forecasting future trends as the financial market itself is changing exceptionally fast, causing historical interrelationships to become outdated quickly. An alternative option is to set sufficiently stringent

When calculating the capital requirement and determining the average values of the probability of default, banks should examine the longest possible time horizon

probabilities of future default during the upswing of the cycle. This is especially true in respect of customers in industries showing a strong correlation with the business cycle. A third option is to use various stress testing and scenario analysis methods to model adverse future developments and then adjust internal model parameters accordingly.

The options suggested above, however, do not always offer a genuine solution to the problem. The ECB (2001b) lists the following weaknesses:

In many cases, banks lack sufficiently long time-series data on a given client

1 Adequacy of data: In many cases, banks lack sufficiently long time-series data on a given client. Moreover, the rapid transformation of the market environment and the changing market participants make it even more difficult to acquire and process such data. Consequently, the IRB model cannot be sufficiently accurate or prudent. These problems may be mitigated somewhat by setting up efficient debtor information systems. This, however, is hampered by various obstacles to data flows, especially at the international level.

Banks tend to underestimate their capital requirements during a boom

2 Incentives: In the effort to curb capital costs, banks tend to underestimate their capital requirements during a boom. By the same token, it is in banks' interest to set the IRB model parameters to ensure the lowest possible capital requirement, which implies an incentive against prudent assessment. This negative incentive may be especially significant when banks hold a low level of capital to begin with.

These problems impose an especially great responsibility on supervisors, calling for stringent control of banks' prudent operations. It seems expedient to allow authorities to prescribe higher capital requirements for banks that are regarded as highly vulnerable to risk. Another suggested solution is that loan loss provisioning be assigned a greater role as a buffer to absorb negative shocks, and that this be subject to external supervisory inspection.

The task of financing higher risk customers might shift to those banks that lack high-quality risk management techniques

Any evaluation of the new Basle principles should draw attention to the threat of adverse selection, namely that the banks forced to hold higher capital under the IRB approach than the standard approach would probably withdraw from financing higher risk customers. Clementi (2001) suggests that the task of financing higher risk customers might shift to those banks that lack high-quality risk management techniques.

The way in which the perception of sovereign debts affects the rating of customer loans, a factor primarily affecting internationally active banks, should also be examined. As documented by Ferri et al (2001), less developed country sovereign debt has often been downgraded by rating agencies more than was justified, due to individual unfavourable economic developments. As up to now sovereign debt rating has represented the upper limit of private enterprise ratings,

excessive changes have also affected customer ratings, introducing a great deal of volatility into bank capital. Although the new Basle principles abolish this upper limit, it seems to be a fair assumption that sovereign debt ratings and corporate ratings will continue to correlate in the future.

Ferri et al (2001) also show that sovereign debt is generally sooner upgraded as a result of stronger economic performance than is corporate debt, which adversely affects banks with corporate customers. An example of this is the Asian crisis. Individual countries may be especially hard hit if they are downgraded from the investment into the speculative category, as this greatly narrows the range of potential creditors, with many countries prohibiting certain types of financial institutions from investing in speculative paper. Thus, it should be noted that to the extent that sovereign rating is procyclical, corporate lending is also procyclical. Moreover, corporate ratings follow sovereign ratings with a time lag, which does not improve the situation either.

Sovereign debt is generally sooner up-graded than is corporate debt…

…to the extent that sovereign rating is procyclical, corporate lending is also procyclical

Calculations by Ferri et al (2001) suggest that the envisaged Basle regulations would prescribe lower capital requirements for banks lending to companies in OECD countries, resulting in a 1 percentage point change in the CAR. By contrast, the more stringent regulations in respect of less developed countries would entail a 1.5 percentage point rise in the CAR. The capital requirement prescribed for loans to banks would increase in both groups of countries, by 2 and 6 percentage points respectively. As a result, less developed countries would incur significantly higher costs in raising funds. The proposed changes and the higher risk weighting would also be disadvantageous for Hungary and other lower-rated OECD countries. All this might increase reliance on raising funds through parent companies and subsidiaries registered in countries with a better credit rating.

The higher risk weighting would be disadvantageous for Hungary as it might increase reliance on raising funds through parent companies and subsidiaries

The impact study carried out by the Basle Committee (BCBS, 2001a) came to slightly different conclusions, suggesting that as EU country bank portfolios have a relatively small proportion (in the range of 15–20%) of customers with an A or higher credit rating, the lower risk weights that can be assigned to them will not effectively reduce the aggregate capital requirement imposed on loans. The reason for this is that under a new proposal, customers with low credit ratings will be given 150% risk weights, in addition to the various credit lines, which are subject to higher risk weightings. This will lead to an increase in capital requirements. A large part of the banking portfolio, roughly 70%–75%, is not rated in terms of creditworthiness, which implies that the relevant risk weights will remain at 100%.

Looking at the potential consequences of the new Basle proposals, Jokivuolle and Karlo (2001) also point out the difficulty of

quantifying the different effects in numerical terms, since historical data become largely irrelevant when there are fundamental structural changes in the system, and Basle 2 can be viewed as precisely such a change in regime.

As the IRB approach is not mandatory, it will only be adopted by those banks for which the new system will mean a lower capital requirement

The authors of the paper also point out that the IRB approach is not mandatory but optional for banks. As IRB is costly to introduce, it will only be adopted by those banks for which the new system will mean a lower capital requirement, and therefore, a lower cost of capital. This may reduce aggregate capital for the banking system as a whole.

The absence of standardisation may impair data comparability

As suggested by Jokivuolle and Karlo (2001), implementing IRB might give a better picture of the state of a bank, but external participants may have a problem in comparing the capital requirement data published by individual banks, as the information to be compared is no longer derived from a uniform standard, but a large number of different models. In other words, the absence of standardisation may impair data comparability and, consequently, the assessment of banks' relative risk conditions.

The greater role of rating agencies will cut banks' information advantage. This will enhance disintermediation

Jokivuolle and Karlo (2001) argue that, due to the fact that the banks which are not implementing the internal models will have to rely on the credit ratings of external rating agencies, the greater role of such agencies will cut banks' information advantage, and thus competitiveness, as less regulated non-bank institutions may also use external rating agency evaluations in their lending decisions. Increasing disintermediation, this process may have an adverse effect on banks' interest rate income and profitability. On the other hand, it may facilitate the emergence of a secondary loan market, thanks to non-banks' easier access to credit information. While enhancing disintermediation, this process may have a negative impact on financial stability, enabling banks to reallocate portfolios more easily and re-channelling credit to less regulated institutions, which is likely to increase systemic risk.

The authors also note that the high fixed costs associated with IRB may promote mergers of small institutions. The same tendency is likely to be reinforced by recognising reductions in portfolio concentration as a risk-mitigating factor when calculating the capital requirement. At the same time, strong diversification may weaken the incentive to monitor and screen customers, which may pose a threat to stability.

Nevertheless, there are also advantages to Basle 2, as thanks to its higher risk sensitivity it provides stronger incentives to deal with problems quickly, thereby boosting corporate and financial sector efficiency, at least in the long run.

3.4 The relationship between accounting and procyclicality

Any analysis of procyclicality should also discuss accounting issues, as the valuation and accounting treatment of assets also influence banks' behaviour, via profitability. This is a timely issue, due to the strong controversy about the future course of development in accounting. The literature gives increasingly greater attention to fair value accounting, which tries to approximate as closely as possible the value of assets at the time of drawing up the financial statements, which implies that non-realised profits and losses are also taken into account. Fair value accounting implies that the value of a bank's problem assets will fall immediately, in contrast with historical accounting where banks have to make reserves for the difference between the book value and actual value. The relevance of this for this paper lies in the fact that frequent changes in the value of assets exposed to market price fluctuations tend to amplify capital volatility, which, as shown above, affects lending cycles.

The valuation and accounting treatment of assets also influence banks' behaviour, via profitability…

…fair value accounting tries to approximate as closely as possible the value of assets at the time of drawing up the financial statements

One of the benefits of fair value accounting is that it provides a more up-to-date picture of a bank's assets at any point in time, offering better information to investors, bank management and supervisors alike when assessing the financial state of an institution. In addition, fair value accounting allows enterprises less latitude to manage earnings in a way that reflects management intentions, in contrast with historical cost accounting, where the level of reserves depends, to a certain extent, the decisions of the management.

It provides a more up-to-date picture of a bank's assets at any point in time, while allowing enterprises less latitude to manage earnings

Nevertheless, it should be noted that if a bank implements fair value accounting, it still needs to create a certain level of reserves even if there has been no downgrading of its portfolio, as losses may materialise later during the year, even before the inflow of excess receipts from the interest rate premium. Jackson and Lodge (2000) argue that such reserves should not be classified as capital, as profits cannot be part of the capital unless they are realised.

However, there are several arguments against implementing fair value accounting. Following the approach of Clerc et al (2001) they can be listed as follows:

1 Fair value accounting does not reflect adequately the principle of prudence. This is because it treats latent profits and latent losses similarly, whereas the concept of prudence requires that latent profits not be taken into account, with the exception of profits on liquid assets.

Fair value accounting does not reflect adequately the principle of prudence

2 Fair value accounting does not adequately recognise the specific nature of bank lending. It views banks as portfolio managers rather than as resolvers of information problems. This is because the market value of a bank loan is difficult to define due to the underlying

It does not adequately recognise the specific nature of bank lending

special information that is only available to banks. Furthermore, fair value accounting can enhance the procyclical character of bank lending, causing the bank credit market to strongly resemble the bond market. This implies that at the time of a bond market tightening banks will not be able to offer an alternative source of liquidity, given that the economic and financial market developments will have had a similar impact on their balance sheets as that on the bond markets.

It raises a number of practical valuation and verification issues relating to the fair value of non-negotiable products

3 Fair value accounting raises a number of practical valuation and verification issues relating to the fair value of non-negotiable products. Without going into technical details, it should simply be noted that the valuation of assets is a difficult task not only for banks but also for auditors and supervisors.

It will increase the volatility of bank earnings…

4 Critics of fair value accounting argue that it will increase the volatility of bank earnings even when banks make no changes in their activities. This could make capital management more difficult for banks, raising the cost of capital and even posing a threat to systemic stability.

…and also has implications for monetary policy

5 Fair value accounting also has implications for monetary policy. If changes in interest rates affect banks' balance sheets due to fair value accounting, monetary authorities may hesitate before raising interest rates sufficiently, especially if the banking system is fragile and the central bank wants to avoid a more serious crisis.

The full-scale introduction of fair value accounting is not desirable at this point

Jackson et al (2000) suggest that, due to the great number of uncertainties surrounding fair value accounting, its full-scale introduction is not desirable at this point. Furthermore, the current system also has mechanisms that could enable the valuation of bank portfolios to approximate to the true value as closely as possible. One way to achieve this could be the development of provisioning principles and procedures and formulation of relevant international standards. This issue takes us to the relationship between capital and provisions, however, which is the focus of the next section.

4 | Provisioning rules and cyclicality

4.1 Provisioning principles

An increasing number of studies deal with the analysis of the economic consequences of bank capital regulation, with special regard to procyclical effects, but as pointed out by Cavallo and Majnoni (2001), these papers often disregard banks' provisioning practices and their links with the rules on regulatory capital. These factors should be looked at together, as unless banks make adequate provisions to cover expected loan losses both expected and unexpected losses will have to be covered by capital. Accordingly, inadequate provisioning practices could amplify the fluctuations in economic cycles via their effects on capital.

It should be noted at this point that the economic literature and the Basle regulations hold slightly different views regarding the role of provisions and capital in covering losses. In terms of generally accepted textbook approach provisions are made to cover expected losses, while the purpose of capital is to cover unexpected losses. By contrast, the Basle regulations make the distinction on the basis of whether the losses have been identified or not. In this approach, provisions are to cover identified losses, while capital is there to cover unidentified losses. This discrepancy in approach causes some difficulty in, for instance, the treatment of general risk provisions, which in part are viewed as provisions (because they are intended to cover expected losses) but which, according to the Basle regulations, are part of capital (relating to unidentified losses).

Therefore, it should be emphasised that in its analysis of the effects of provisioning this paper makes a distinction between specific provisions and general provisions, as they are made for different purposes by banks and thus fulfil different functions in risk management.

Cavallo and Majnoni's (2001) interpretation, also followed in this paper, is that **specific provisions** serve to cover **prospective identified losses.** In character, they are similar to credit write-offs, when identified loan losses are accounted for in banks' books. Consistent with the European practice, from 2001 items that were previously called specific provisions will also be recorded as valuation adjustments in Hungary.

Within the category of prospective but still **unidentified risks** a distinction should be drawn between **expected** and **unexpected** loan losses. Expected losses stem from normal banking operations and can, in fact, be interpreted as the mean of the density function of loan losses. **General loss provisions** are designed to cover these types of loss. By contrast, **regulatory capital** serves to cover unexpected losses, which can be characterised by the extreme values of the density function.[14] Needless to say, if a bank does not make adequate provisions to cover expected losses, then from a risk management perspective this will impose a disproportionately large burden on capital.

Cavallo and Majnoni (2001) stress the following as the main implications of distinguishing between expected and unexpected losses:

1 General risk provisions cannot be reduced by portfolio diversification, as they are characterised by the mean and not the variance of the expected losses. In other words, the same loan implies the same provisioning requirement no matter whether it is evaluated individually or as part of a highly diversified portfolio.

2 Due to the above-noted statistical properties, the provision requirement can be estimated more efficiently than the capital requirement, being less dependent on such statistical properties as the asymmetry of the probability distribution or the number of observations. This is also beneficial from a regulatory perspective, as the provisioning requirement can be defined more simply and accurately than the capital requirement. Hence, it is easier to monitor and enforce the regulations. This can be a particularly important consideration in countries that lack the adequate quantity and quality of information on bank loans.

3 From an accounting point of view, it is important that expected losses receive the same treatment on both the income and expenses sides of the profit and loss account. If this is not so, banks' operating income will be distorted. This means that if the expected loan loss is entered into the interest premium as a credit item but the general risk provision made to cover the same risks is not recorded as an expense within the operating income, then banks will be able to report better results on this item than are justified. Although in Hungary risk provisions are treated as expenses within operating in-

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[14] Banks do not calculate unexpected losses, but use the required return on equity as the basis of lending terms. However, to ensure cover for the expected losses, i.e. to make provisions, banks must charge a risk premium depending on the size of the risk taken. If the provision is less than the expected loss then the calculated capital requirement will not be sufficient to cover the losses it was intended to cover. Hirtle et al (2001) argue that in the longer run the regulatory capital requirement, the purpose of which is to cover unexpected losses, makes it highly desirable to rethink the methodology behind calculating provisions. They also propose that provisions should also be calculated by applying a multiplier, as in the case of market risks.

come, there are a number of countries where this item is only entered (if at all) in the pre-tax income line.

Furthermore, as regulators frequently set upper limits on general provisions, banks cannot always make provisions at the necessary level. These restrictions are in place mainly because the expected losses cannot be documented or linked to individual transactions. They can only be estimated statistically, which may lead to their manipulation. Consequently, allocating general provisions for risk may often run into obstacles from a taxation point of view, with limits imposed on the size of possible deductions from taxes (or the tax base).

As regulators frequently set upper limits on general provisions, banks cannot always make provisions at the necessary level

Cavallo and Majnoni (2001) point out that the treatment of general risk provisions often follows the evolution of fiscal deficits. This means that an increase in the deficit will prompt authorities to tighten taxation policy, which can have a negative effect on provisioning. However, this could also affect the stability of the banking system, as the negative economic developments caused by the absence of adequate reserves may undermine previously sound banks. The fiscal costs incurred may be substantial, as financial crisis management is shown to be more expensive than prevention. Consequently, in the longer term it is more desirable for the state to provide banks with the incentive to make adequate provisions to cover the risks taken.

In the longer term it is more desirable for the state to provide banks with the incentive to make adequate provisions to cover the risks taken

With regard to the cyclicality of provisioning, the authors point out that in G10 countries a strong positive correlation can be observed between general risk provisions and banks' pre-tax income. By contrast, banks in non-G10 countries are more likely to create inadequate provisions during profitable years and are then forced to make up the missing provisions during the bad times.

4.2 The role of provisions in the new Basle regulations

As we have seen, loan-loss provisioning and capital requirements serve to cover different risk factors. There is a broad-based agreement between banks and the Basle Committee that capital should be used to cover unexpected losses. During the debate on the new Basle guidelines, however, banks criticised the suggestion that capital be used to cover expected losses. When defining the capital requirements for IRB models, the Basle Committee decided not to change the definition of regulatory capital, which includes general provisions (or general loan-loss reserves) as well as supplementary (tier 2) capital.

When defining capital requirement using the IRB approach, banks are required to generate capital for expected losses as well, not only for unexpected losses

However, it follows from the earlier arguments that this capital element serves to cover expected (but not yet identified) losses in normal cases. In other words, the supervisory authorities would want to require banks to generate capital for expected losses as well, not only for unexpected losses, when defining capital requirement using the IRB approach. The reason for this is that in the opposite case, the bank would use the general risk provisions (which, as mentioned earlier, continues to be a part of regulatory capital) for double gearing – to cover expected losses first and then to cover unexpected losses second.

The fairly different approaches to provisioning for losses in various countries is a source of problems

The Basle Committee justified its decision to stipulate capital requirements for both expected and unexpected losses on the grounds that it wished to avoid problems arising from the fairly different approaches to provisioning for losses in various countries. A fresh study by the BCBS (2001b) raises two rather important problems surrounding provisioning and capital requirements:

The current system of specific provisions involves perverse incentives

1 The current system of specific provisions involves perverse incentives, as creating specific provisions reduces capital while banks are still required to generate capital for the net value of assets reduced by the amount of provisions. This does not encourage banks to make timely provisions and disadvantages those institutions that pursue cautious provisioning practices.

The system does not encourage the creation of general risk provisions either

2 The current system does not encourage the creation of general risk provisions either, as it is impossible to take full account of such provisions when calculating regulatory capital, given that there are two limits – first, general risk provisions may not be higher than 1.25% of the amount of risk-weighted assets; second, tier 2 capital, which includes this component of the risk provision, may not exceed core (tier 1) capital. So, it may happen that banks make general risk provisions to cushion against losses but regulatory capital nevertheless falls, due to the above limits. This does not encourage banks to pursue prudent provisioning practices either.

The Basle Committee recommends, among other things, that capital requirements related to expected losses be calculated separately from unexpected losses. Naturally, a precondition for this is that there be greater harmony across countries in credit rating and provisioning and that international standards be developed.

The limits to the inclusion of general provisions when calculating a capital charge for expected losses should be lifted

The BCBS has suggested a number of proposals to modify the calculation method for EAD (exposure at default), LGD (loss given default) and SP (specific provision). In addition, it suggests that the limits to the inclusion of general provisions when calculating a capital charge for expected losses should be lifted.

With regard to specific provisions, more and more economic research is being devoted to analysing lending cycles and investigating how fluctuations in specific provisioning could be 'smoothed' to make the operations of the banking system more stable and balanced, and to reduce the strongly procyclical nature of lending.

It is important to note that expected losses do exist even at the moment a loan is given. Precisely because of this, provisions for expected losses can be built right at the beginning of the loan period. This may be especially important if banks make less specific provisions than required in 'good' times due to strong cyclicality. This underprovisioning is characteristic, for example, of Spain, where banks showed strongly procyclical behaviour in the period 1963–1999, despite significant structural changes. Moreover, the amplitude of lending cycles was higher than fluctuations in GDP (see Table 7).

As expected losses do exist even at the moment a loan is granted, provisions for expected losses can be built right at the beginning of the loan period

The integration of provisioning principles requires the harmonisation of credit rating standards as well, as these are far from unified even in the developed countries. There are countries where banks and auditors are entrusted with developing the standards, and there are others where the standards are defined in detail, although even in these latter countries the standards are not yet uniform. Claims 90 days overdue are generally qualified as non-performing. However, there are countries where rating is not conditional upon delay, but credit rating is defined on the basis of the likelihood of repayment (in principle, the Hungarian practice is similar to this). There are even

The integration of provisioning principles requires the harmonisation of credit rating standards

Table 7

Spanish economic cycles

	1963–1975	1976–1986	1987–1991	1992–1996	1997–1999
Annual real growth rate of loans Of which:	11.4	0.3	9.2	0.5	13.1
– Mortgage loans	13.7	1.2	15.8	8.1	16.4
– Other loans	10.9	0.0	7.1	–3.3	10.7
GDP	5.8	1.8	4.3	1.4	3.8
Residential investment	5.0	–2.2	4.6	1.6	6.0
Non-residential investment	9.2	–0.6	11.2	0.3	8.5
Durable goods	7.7	0.7	6.5	0.0	11.6
Net acquisition of financial assets (% GDP)	–	18.2	19.1	13.6	20.4
Average real interest rates of loans	–2.4	0.0	10.1	7.6	3.6
Housing price index	–	–	13.0	–4.4	4.9

Source: de Lis (2000).

greater differences in building provisions and their taxation than in credit ratings.

Importantly, though, if provisions generated for expected losses are treated inadequately from the taxation perspective, then banks' profits are higher than justified. This may be harmful from the point of view of prudence, as larger profits allow larger dividend payouts, which in turn reduce banks' solvency. Furthermore, if the total costs of a loan are not taken into account, managers are inclined to underprice loans at times of expansion, given that banks pursuing cautious policies lose market share. This represents a systemic risk.

Dynamic provisioning serves the purpose of smoothing the cyclicality of provisioning

A number of solutions, both theoretical and practical, have been suggested to smooth the cyclicality of provisioning and prevent systemic risks. The increasing popularity of dynamic provisioning deserves special mention. However, the presentation of this approach is not the purpose of this study.[15]

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[15] These issues are discussed in Horváth (2002), with special emphasis on the theoretical and practical aspects of dynamic provisioning. The analysis is available in this volume.

5 | Conclusions

Analysing the cyclical behaviour of bank lending reveals that, in addition to micro and macroeconomic factors, prudential regulation also significantly affects banks' operations, and this may well have serious real economic consequences. Lending expansions or contractions should not be examined in isolation – the accompanying risks, developments in credit standards and possible changes in risk awareness should also be taken into account.

The potential real economic consequences of an excessive expansion of or a cutback in lending affect the various sectors of the economy differently. Therefore, it is important to examine not just the absolute measures of total lending, but also its distribution. We have seen that regulation has a key role in the development of banks' portfolios. Taking into account that the extent of outstanding loans and their structure both have a strong impact on economic agents' behaviour, it is of utmost importance from the perspectives of macroeconomic and financial stability to understand the reasons for the cyclicality of bank behaviour.

This paper has attempted to contribute to the better understanding of the interaction between the banking system and the real economy, and of the direction of future developments, by giving an overview of the imperfections of the system, the conflicting incentives generated by the system, and the problems stemming from information asymmetry.

As monetary transmission realised through lending affects the various sectors differently, and it may have numerous negative implications for small firms in particular, a better understanding of the mechanism of the credit channel and the characteristics of, and reasons for, lending cycles is important from the perspective of monetary policy. There are a number of suggestions, as well as practical solutions, for mitigating the potential problems that may arise from the cyclicality of lending. Of these, cautious, forward-looking principles for calculating capital and provisions deserve special mention. The purpose of this study was not to draw up recommendations for regulation. However, by giving an overview of the literature, it is hoped to contribute to the academic debate on the issue, which, if necessary, may help well-founded decisions to be reached in this area.

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KATALIN MÉRŐ

Financial depth and procyclicality

Contents

1 | Introduction

This study focuses on the relevance of certain conclusions about the role, depth and character of financial intermediation for three East-Central-European transition economies (Hungary, the Czech Republic and Poland, hereinafter: ECE3), as these conclusions – while generally accepted – appear to be more or less contradictory in the case of these countries.

The two conclusions under investigation can roughly be summarised as follows:

1 The depth of financial intermediation and economic growth exhibit a close, direct relationship with each other – indeed, according to some recent studies, the level of financial development is a good indicator of future economic growth.

2 Due to its special characteristics, financial intermediation – and in particular bank lending – tends to be procyclical in nature, as in periods of economic upswing banks are more willing to extend credit to clients and tend to accumulate lower credit risk provisions on their exposures than would otherwise be reasonable, as they often become overly optimistic about their clients' business prospects. If subsequently the economic situation deteriorates, the solvency of their clients also falls, and banks are suddenly confronted with increased risk provisioning requirements. These factors lead to a decline in banks' profitability and capital base, automatically triggering more rigorous credit evaluation and a further squeeze in their lending activities. Accordingly, upturns in the business cycle are accompanied by a growth in credits and banks' profitability, while downturns in the business cycle can be characterised by more drastic than

necessary credit squeezes and falling earnings, due to banks' overreaction to their clients' deteriorating position, and in their behavioural stance affecting their level of earnings.

Naturally, these two statements relate to different time horizons – the first applies to long-term economic development, while the second pertains to the short term. The two statements co-exist peacefully together in market economies, where the level of development of financial intermediation and the overall state of economic development correspond well. In these countries financial intermediation has already deepened significantly, and thus financial depth can be viewed as an indicator which correctly reflects the state of development of economy as a whole.

While financial deepening has also been a historical process in these economies, this deepening has generally occurred as a trend, and not as a series of sporadic credit booms. In those cases, banks' procyclical behaviour can clearly cause serious damage, an extreme manifestation of which can be the emergence of a credit crunch or even a systemic banking crisis. This problem has recently become one of the key elements in theoretical approaches to financial stability. Numerous studies have been published analysing this particular topic[1] in detail and several possible regulatory responses to this problem have been outlined as well.

In economies where significant deepening in financial intermediation has not yet occurred, i.e. where the trend in financial depth must change, these two conclusions and their resulting regulatory and behavioural implications may inevitably contradict each other (the ECE3 economies analysed in this study in more detail, but generally speaking, the economies of former socialist countries should be placed in this category). In these

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[1] The special volume published by BIS (2001/a), containing 18 essays, is perhaps the most authoritative of these.

countries, the liberalisation of the financial intermedia-tion system and its development towards market confor-mity has a very short history. Compared to developed countries, financial depth in these countries can be con-sidered quite low, and it is quite certain that in order to support sustainable economic growth there is an abso-lute need for a significant deepening of financial interme-diation. Thus, in the case of these countries, vigorous credit expansion can be treated as a consequence not only of the procyclical stance of the banking sector, but also as an unavoidable consequence of the deepening in financial intermediation, and these two aspects cannot be clearly isolated from one another.

This is one reason that the implementation of regula-tions of an anticyclical character does not necessarily lead to a beneficial smoothing in the business cycle. On the contrary, serious damage could be caused by this ap-proach by limiting the pace of financial deepening and thus restraining the longer-term trend of the economic growth.

When catching-up economies are con-cerned, regulatory approach should be based on multiple considerations

At the same time though, if financial deepening is not accompanied by appropriately prudent behaviour in the banking sector, then for less developed, less well-regulated and subsequently more vulnerable bank-ing sectors (compared to those functioning in developed countries), the danger of a credit crunch or a systemic banking crisis constitutes a phenomenon of an even more threatening character. Consequently, for these countries, the issue of regulatory alternatives aimed at restraining the procyclical attitude of financial institutions is more complex, and the evaluation of proposed alternatives re-quires a different system of criteria as well.

The following chapter contains a short overview of the relationship between economic growth and finan-cial depth. The third chapter highlights the main obser-vations on the procyclical character of the banking sector as well as the possible regulatory responses. The fourth chapter analyses the depth of financial intermediation

in Hungary, the Czech Republic and Poland in the decade following the change of regime in their socioeconomic management. In the fifth chapter we try to answer the question raised as the point of departure – is financial intermediation in the ECE3 procyclical or due to deepening. The last chapter presents the conclusions.

2 | Economic growth and financial depth

2.1 Theoretical background

The last decade has seen a wealth of publications analysing the relationship between economic growth and particular features of financial systems. Postulation of a relationship between economic growth and financial depth cannot be considered a brand-new discovery, as this was one of the cardinal points of Schumpeter's development theory. According to the theoretical stance advocated by Schumpeter, the engine and prime mover of economic development has always been the entrepreneur who is permanently striving to gain profit by applying new combinations of factors of production. In order to achieve this, the entrepreneur needs funding that can be obtained through the money market.[2] According to this view there is a direct, causal relation between economic growth and financial depth – economic development generated by new combinations of production factors (i.e. that portion of production growth, which is due not only to the mere quantitative expansion of production factors, as this does not constitute an integral part of the definition of development according to Schumpeter's theory) is naturally accompanied by financial deepening, because an important precondition for economic development is that it is financed by funds through the financial intermediation system, more precisely through the money and capital markets.

According to Schumpeter's theory, in order to satisfy entrepreneurs' demand for credit, banks assess the risks of firms requiring outside funding, measuring their creditworthiness and, acting on behalf of society in general, selecting those companies which are considered worthy of receiving loans. Hence, economic growth is unimaginable without the active participation of the banking system (or more broadly, the system of financial intermediation) and the more faster this growth is, the more active a financial intermediation system (deeper financial intermediation) is needed. Theories extending their investigations into the costs of information and transac-

Financial intermediation plays a key role in Schumpeter's development theory

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[2] According to Schumpeter's theory, the definition of capital has a special meaning, as it is nothing else than a means by which factors of production could be transferred into new domains or by which new direction in production can be determined. This clearly shows that capital is the sole source of financing innovation and economic development. Accordingly, the definition of money and capital market also differs from that which is generally accepted as in Schumpeter's theory the principal vocation of money and capital market is the allocation and circulation of credits for financing development.

tions, and refusing to suppose the existence of perfect competition in markets, have led to conclusions similar to Schumpeter's.

The system of inter-mediation lowers information and transaction costs

According to these theoretical models, information and transaction costs can be reduced with the aid of institutions conducting financial intermediation, and thus the existence of these intermediaries increases economic efficiency and fosters economic growth. Basically, by mobilising savings, diversifying risks, and channelling savings into new projects as well as by monitoring the projects financed, financial intermediation helps lower information and transaction costs. For example, the essay of Diamond (1996) on the special role of financial intermediation can also be viewed as a theoretical work on this topic. Diamond derives the raison d'etre for the financial intermediation system from the need to minimise the costs of acquiring the information required to constantly appraise and measure each project financed by funds obtained from banks. According to Diamond's essay (and similar to Schumpeter's theory) a bank is an organisation which plays the role of an intermediary between enterprises and savers. Nevertheless, while in Schumpeter's theory, the main task of an intermediary is to correctly select suitable projects for financing, Diamond focuses on the monitoring of projects financed by bank loans, a task delegated especially to the banks. Thus, in his view, a bank is an agent which – acting as an observer on behalf of the savers – continuously analyses and supervises firms' activities and their ability to repay the loans, in exchange for remuneration in the form of a monitoring fee. He highlights the fact that as long banks finance an adequately large number of projects, this monitoring function delegated to the banks leads to lower costs for society as a whole because borrowers' default is far less frequent. Consequently, according to this train of thoughts, the existence of the financial intermediation system fosters more efficient use of the resources available to the society. Hence, Diamond's model of financial intermediation also implicitly contains the idea of a relationship between financial intermediation and economic growth.

A better understand-ing of risks promotes technological devel-opment

Within the domain of economic literature there is also a wide range of theoretical works on the role of financial intermediation in diversifying credit risk, which serves as a guarantee for every saver against repayment failure of individual investment projects. Levine (1997) stresses that by diversifying credit risks, it is possible not only to assist and foster capital accumulation, but at the same time to promote technological development. Financial intermediaries – acting as risk analysts – are constantly trying to gain technological advantage by identifying the risks with increasing accuracy and are thus continuously discovering new, profitable market niches. On one the hand, those developing technological advantages reap the profit, and on the other hand, successful innovation accelerates technological development.

As a digression, but for the sake of completeness, it should be noted that the aforementioned examples do not imply that a peaceful consensus has been achieved in the professional literature regarding the relationship between economic growth and the financial system. On the contrary, according to mainstream development economics, the driving forces behind economic growth are to be found in the real sphere of the economy. In development theories which presuppose perfect market competition, the economy has no need for a financial intermediation system whatsoever. Accordingly, classical theories of development economics generally ignore financial intermediation – indeed, they do not treat finance as an exogenous variable of economic growth.[3]

2.2 Historical evidence

The importance of the relationship between economic growth and financial development has also been stressed by several studies in the field of economic history, although this topic is approached from a totally different standpoint in these cases. The most well known and often cited among these is perhaps the conclusion of Hicks that it was not the emergence of technical innovation, but rather the evolution of appropriate forms and methods of capital allocation that paved the way for the industrial revolution in England. Long before the industrial revolution occurred all the products and technologies which are its hallmarks had already been invented. But in order to realise production on a mass scale, a dimension of capital concentration and the existence of risk sharing techniques were necessary, and only the appearance of joint stock companies could assure this. Thus, even in Hicks' theory, one necessary precondition for the occurrence of the industrial revolution and the economic growth seen in that era was the active role played by the system of financial intermediation in the form of liquid capital markets.

The historical importance of the evolution of appropriate forms and methods of capital allocation

Rousseau and Sylla also reached the same conclusion, after thoroughly examining the relations between financial systems and economic growth in the economies of the Netherlands, England, Germany, France, the United States and Japan, within the framework of small case-studies on these countries. Rousseau and Sylla define a properly functioning financial system with five criteria.[4] Among countries they investigated, the criteria of a modern, up-to-date financial system first developed in the Netherlands in the

The Netherlands

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[3] Overviews of different types of theories on the relationship between economic growth and financial systems can be found in Levine (1997), Rousseau and Sylla (2001) or Levine (2001), for example.

[4] These criteria are : (1) a solid state of public finances and public debt management; (2) stable monetary arrangements; (3) the existence of a great number of banks, of which several have internal or external orientation and possibly some oriented in both direction; (4) a functioning central bank for stabilizing the state of internal finances and managing international financial relations; (5) properly functioning security markets.

early 17th century. This was followed by one of the most outstanding periods in Dutch economic history, at least as evidenced by its economic performance, and is referred to by economic historians as the 'golden era' or the first modern economy. Nearly one century later, the Dutch financial system was introduced in its entirety in England as well. This was followed by a stabilisation of public finances, and in parallel the internal money market began to flourish. The British East-India Company was founded patterned on the Dutch example *England* and in 1694 the Bank of England was established. The development of England's financial system paved the way for the famous industrial revolution and enabled the country to finance the building of its empire and its wars for the acquisition of foreign territories.

France and Germany The commencement of development in both the French and the German financial systems, which occurred very late, is often cited as a counter example. Until the mid-19th century, neither France nor Germany had created the necessary preconditions for smoothly-functioning financial systems. One can argue that the missing elements of a properly functioning financial system were established in both countries only during the mid-19th century, and that only after this process was it possible for more rapid economic growth to actually begin in these two countries.

In addition to analysing economic history developments in certain countries by way of special case-studies, Rousseau and Wachtel also investigated the relationship between economic development and the financial system using econometric methods to analyse a database collected on five industrialised countries[5] for the period 1870–1929. Rousseau and Wachtel's analysis covered five countries where industrialisation was carried out rapidly in this period. Applying Vector Error Correction Models (VECM), they substantiated the existence of a long-term relationship between financial intermediation and the volume of per capita output. Following this, by employing the Granger causality test they found that indicators characterising financial depth can help to explain the pace of activity in the real sphere of the economy, although there is no causal relation in the opposite direction. Examining data for each individual country (despite the individual differences) leads to the same result – the authors clearly demonstrated that in the period prior to the Great Depression, in the five rapidly industrialising countries they reviewed the quality of the functions provided by the developed financial system contributed greatly to economic growth.

Applying regression analysis for data on 17 countries[6] compiled for a period of approximately 150 years (1850–1997), Rousseau and Sylla again found a close positive correlation between financial depth and the rate of economic growth. At the same time

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[5] The United States, England, Canada, Norway and Sweden
[6] Argentina, Australia, Brazil, Canada, Denmark, Finland, Germany, Italy, Japan, the Netherlands, Norway, Portugal, Spain, Sweden, England and the United States.

they also proved that the impact of financial intermediation in fostering economic growth was stronger in the period prior to the Great Depression, and although this effect remained significant even in subsequent periods, its impact has weakened demonstrably.

2.3 Empirical analyses

Owing to the abundance and better availability of data, empirical analyses of the relationship between economic growth and the financial system can be more easily performed for the period after 1945. The following section presents a short overview of the empirical literature examining the evidence of a relationship between economic growth and financial systems.[7]

King and Levine (1993/a, 1993/b) also examined the nature of the links between economic growth and the financial system. In their analyses they investigated empirical evidence, analysing a database collected for 80 countries for the period 1960–1989, seeking to determine whether a higher intensity in financial intermediation shows a significant positive correlation with faster economic growth in a given period or for future periods. For their research work they applied four indicators which they qualified as able to characterise the level of a financial system's development. These can be enumerated as follows: (i) the size of the financial intermediary sector compared to GDP;[8] (ii) the degree to which credit is allocated by the banking sector versus central bank; (iii) the ratio of loans allocated to private enterprises compared to loans granted to state sector; (iv) the ratio of total loans to private enterprises to GDP. Similarly, the rate of economic growth was measured applying four indicators: (i) the average rate of real per capita GDP growth, which was broken down into two sub-components; namely (ii) the average rate of physical capital accumulation; and (iii) total productivity growth; and finally (iv) the ratio of investments to GDP. In their study they concluded that from 1960 to 1989, (a) the four indicators featuring financial systems unanimously show and prove the existence of a positive, statistically significant correlation between the four indicators of financial development on the one hand, and the four growth indicators, on the other hand, and (b) there is close correlation even between the finan-

There is positive and significant correlation between measures of the development of the financial system and indicators of growth

[7] There are two trends in the empirical literature published on this subject which can be distinguished: one searches for connections between economic growth and aggregate indicators of financial system, while the other lays stress on revealing and defining such factors of financial system which can have the effect of generating economic growth. In some studies, the two different kinds of analysis present themselves as complementary: an analysis of macro-economic character is supplemented by an analysis of the effect of some other factors (for example: the system of jurisprudence or accounting, the structure of the financial system, etc.) In this paper – in accordance with the issues indicated as a point of departure – we deal only with professional literature attempting to demonstrate a relation of an aggregate feature. An overview of the empirical literature can be found in: Tsuru (2000) and Thiel (2001).

[8] The size of financial intermediation has been defined and measured as the aggregate sum of liquid liabilities (cash money outside the banking sector + sight and interest bearing deposits held by banks and non-banking financial intermediaries).

cial development indicators themselves. Hence, it can be demonstrated that the development level of financial systems and economic growth are closely and explicitly linked to one another.[9]

Financial depth is a good leading indicator

King and Levine also explored whether some kind of a relationship could be demonstrated between the initial level of financial development indicators and the rate of economic growth recorded for a succeeding period. The data at their disposal supported the hypothesis that financial depth is a good leading indicator of subsequent rates of economic growth. In countries with a more developed system of financial intermediation, a significantly faster rate of economic growth was achieved over the following 10–30 years. The conclusion that not only is there a statistically significant correlation between financial depth and the rate of long-term economic growth, but that this indicator also has a reliable forecasting capacity, raises serious questions about the assumption that financial depth simply moves in parallel with other factors behind economic growth. These findings also highlight the guiding influence of the development of the financial system on economic growth.

Cause and effect relationship

In their analysis, Levin, Loayza and Beck (2000) explicitly focus on the causality of the relationship between financial intermediation and economic growth. In order to reveal the existence of a cause and effect relationship, they apply two kinds of econometric approaches. Data for 74 countries for 1960–1995 were analysed using a cross-sectional, instrumental-variable estimator on the one hand, and GMM (generalised method-of-moments) dynamic panel estimators as well, an assessment procedure formulated especially for dynamic panel models, on the other hand. In order to measure the depth of financial intermediation, of the indicators applied by King and Levine (1993/b) they considered the fourth one to be relevant, namely the ratio of total loans by banks and other financial intermediaries to private enterprises as compared to GDP, a variable they consider to be the main indicator. As complementary indicators, they employed the first and the second indicators from King and Levine's study as well.[10] Studies employing the panel model as well as the cross-sectional method of analysis produced the same result – the exogenous variable of financial intermediary development exhibits a strong positive relation to the rate of long-term economic growth.

Channels through which the development of financial intermediation affects the rate of economic growth

Applying the same econometric methods, Beck, Levine and Loayza (1999) also analysed the channels through which the development of financial intermediation affects the rate of economic growth. Their main conclusion can be summarised as follows: the financial sector exerts its beneficial impact on economic growth not

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[9] It is understood that the correlations they observed do not definitely mean the existence of a causal relationship, because it can also be imagined that, for example, this relationship has its origin in a third factor constituting a variable not involved in this analysis, but otherwise having a bearing on both the system of financial intermediation and economic growth.

[10] The calculation method for these three indicators has been significantly improved compared to the that applied in the analysis published in 1993.

primarily by increasing per capita capital accumulation or the savings rate, but by increasing productivity (i.e. through more efficient allocation of resources).

Levine (2001) examines to what extent the initial level of depth of banking intermediation – as measured in 1960, and the size and liquidity of capital markets as registered in 1976 – defined the rate of economic growth during 1960–1989, as well as for 1976–1993. For the purpose of this analysis, he ranks the countries in the study into four categories according to the initial level of the variable with explanatory effect as registered in 1960 and in 1976 (very low, low, high, very high). His conclusions are as follows:

(a) Financial depth predicts future economic growth in a reliable manner.

(b) Financial depth predicts future growth in total factor productivity (TFP).

(c) Financial depth does not predict the future development of the savings rate.

(d) Stock market liquidity predicts future economic growth.

Predictive power of indicators

(e) Stock market liquidity also predicts future growth in productivity (TFP).

(f) At the same time, stock market liquidity does not predict the evolution in the future trend of savings.

(g) Stock market capitalisation does not predict the future growth of savings.

(h) Stock market volatility does not predict economic growth.

The effects of the financial sector on economic growth are described as causal, robust and strong.[11] Furthermore, banks and capital markets have an impact on the economic growth rate primarily by increasing productivity, and not by their effects on boosting the savings propensity of financial asset holders. On the basis of this Levine reached two important conclusions. Firstly, the economies of countries which currently have more smoothly functioning financial systems will probably grow faster during the coming decades; and (closely related to this assumption) secondly: this is why it is highly important for economic policy decision-makers to give high priority to reforming the financial sector.

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[11] According to the view expressed by Levine, for example if the financial intermediation of the banking sector in Mexico had been average size regarding the initial situation prevailing in 1976, then the rate of growth in per capita GDP during the period reviewed would have been 3 percentage points higher per annum, while if the liquidity situation on its capital market were of an average character, then the per capita growth rate of the Mexican economy would have been 1 percentage point higher.

3 | Procyclical character of banks' behaviour

3.1 The pattern of procyclical behaviour

*Amplification of
economic cycles*

The procyclical nature of banks' behaviour – derived from information asymmetry between creditors and borrowers – can be described schematically as follows: in periods of economic recession, due to information asymmetry, not even projects which otherwise would be financed profitably and without problems can be assured of obtaining loans. Accordingly, banks' behaviour contributes to further deepening of an emerging crisis. During periods of economic upswing the situation is reversed. Under these circumstances, banks' attitude changes – loans can be more easily received by enterprises, and the easier conditions for obtaining loans facilitate and strengthen the process of economic development. Naturally, in periods of economic upturn, the repayment capacity of debtors is stronger, while during recession periods it is generally weaker. But banks - due to the fact that their appetite for risk varies according to the actual phase of economic cycle – enormously overreact to these swings. In phases of economic boom, banks are inclined to take on greater risks, owing to their basically positive anticipations as regards the course of the economy and future trends. In such periods it could generally be observed that banks show more willingness to extend loans to clients and ease the requirements for accepting collaterals as well. This cyclical behaviour by banks is supported greatly by the fact that during economic upturns the value of collaterals accepted by banks increases significantly, while during economic recessions the value of such collaterals may decline considerably. The increase in banks' risk appetite is reflected in the pricing of loans, too. One typical phenomenon during economic upswings is that banks cut the prices of their loans, thereby helping to preserve or increase their market share. So, the attitude governing banks' credit policy tends to reinforce business cycle, both in terms of cyclical upturns and downturns, and thus – by its very nature – has a strongly procyclical character.

In addition to their anticipations about the future economic situation in general, another key factor behind banks' procyclical behaviour is the cyclical character of bank profitability. In cyclical upturns,

banks' earnings generally grow, while during recessions they typically decline.

The main reason for this phenomenon can be found in the evolution of banks' provisioning costs. The ratio of provisions to total loans, and consequently the costs of provisioning, only decline during cyclical upturns, while during downturns in the business cycle these increase quickly and significantly. So, the turning point in the business cycle is immediately accompanied by an erosion of bank earnings together with a sudden deterioration in banks' willingness to take on risk, a tighter supply of credit, a restructuring of their asset portfolio towards increased security as well as a modification of their risk pricing, i.e. an increase in interest rates.

Banks' profitability and the business cycle

The procyclical nature of banks' behaviour is statistically very well documented. Borio, Furfine and Lowe illustrated this process using a database collected on 10 developed OECD member-countries[12] for the period 1980–1999. They demonstrated that periods of economic upturn[13] are accompanied by significant increases in the ratio of private sector credit to GDP, while during periods of an economic downturn this indicator generally falls. Similarly, periods of strong credit demand coincide with upward trends in real estate and equity prices. They found the procyclical nature of banks' credit risk provisioning to be even stronger than that of changes in the volume of loans granted and asset prices. A strong negative correlation was demonstrated between banks' provisioning, on the one hand, and business cycles, on the other,[14] with the consequence that the volume of provisions accumulated by banks for covering future losses generally only begins to increase after the rate of economic growth has already slackened significantly. Indeed, in many cases, this occurs only when it is clear that the economy is in a recession. One direct consequence of banks' provisioning behaviour is clearly the coincidence between the development of bank earnings and the economic cycle.[15] This positive correlation is strongest in countries which suffered a systemic banking crisis during the 1990s. A positive correlation was also detected between the evolution of the economic cycle and that of banks' share prices, although in accordance with the rational expectations of capital markets, this correlation is weaker.

A statistically well documented phenomenon

In summary, banks' procyclical behaviour in all of the ten countries examined was documented clearly in retrospect – regardless of whether one approaches the issue of the link between eco-

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[12] These were: the United States, Germany, the United Kingdom, Australia, Finland, Japan, Italy, Spain, Sweden and Norway.

[13] The authors use the output gap to measure the pace of an economic upturn or a recession as calculated by OECD.

[14] From among the 10 countries examined, only in the case of the United States could the existence of a small positive correlation be detected caused by increased credit risk provisioning required of banks in the second half of the 1980s. This was triggered to a great extent by late the portfolio revision accomplished by US banks and required by the debt crisis occurring in developing countries during the early 1980s.

[15] Using their hidden reserves German banks were capable to exert a smoothing effect on evolution of their earnings and so, they are the only exception.

nomic cycle and the attitude of banks from the perspective of the development of total loans, changes in asset prices, banks' provisioning behaviour, or the trend in their profitability, or price movements of in bank equities.

3.2 Causes of procyclical behaviour

According to the point of view stated by the BIS, the primary cause of the clearly procyclical behaviour of the financial system is that money market participants fail to treat the time-dimension of risks appropriately.[16] The main reason for this is that they generally incorrectly assess the evolution of risk over time (this generalisation holds true less for the assessment of individual risks, but more so for systemic risks). Another less important reason which was found is that the incentives affecting the attitude of market participants and the regulatory environment as well leads in the following direction: even if they judged the time-dimension of a certain risk appropriately, they wouldn't act based on this appropriate assessment.

3.2.1 Assessment of the time-dimension of risks

A short time horizon and ignoring changes in correlations over time

The shortcomings in credit risk assessment are primarily derived from the extremely short horizon of the risk measurement techniques applied by banks. Another cause is that when assessing credit risks, little attention is paid to changes in correlations over time. Both these factors can be clearly demonstrated in credit risk management systems as well, which rely on banks' internal rating systems, external rating agencies and the application of credit risk models. Banks using internal rating systems rank the loans they extend into different categories each representing a different level of credit risk. In general, internal rating systems assess the risk represented by a client at a given point in time and, based on this initial

The characteristics of internal ratings

assessment, often extrapolate this risk for the entire time-horizon. This time-dimension is generally very short, usually just one year.[17] Hence, it is a natural consequence that ratings become more advantageous in periods when default ratios are generally low, reflecting the low expected default ratio for the coming period of time, and on the contrary, when the default ratio of borrowers increases and short term business expectations deteriorate in parallel, the ratings are also worse. This is why – owing to the methods applied – internal ratings of the banks move in parallel with the business cycle.

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[16] This conclusion is presented in the chapter on the existence of a relationship between business cycles and financial systems contained in BIS (2001/b) as well as in the Borio, Furfine and Lowe which is the leading study (published as the BIS background paper) of BIS (2001/a).
[17] A detailed overview of internal rating practices applied by banks can be found in BCBS (2000/a).

The ratings from external rating agencies used by banks are also characterised by the fact[18] that in many cases they react retroactively to credit risk events which have already occurred. One commonly quoted example of this phenomenon was the behaviour of rating agencies during the autumn 1997 crisis in Asia, when long-term debts denominated in foreign currencies of the countries affected were ranked into a higher sovereign risk category only after the national currencies of these countries had been devalued. In general, the approaches to risk assessment applied by rating agencies only differ from those employed by banks in that sense that in most cases agencies do not focus on a single point in time, but search for an appropriate answer to the following question: what would be the actual degree of vulnerability of a certain party (sovereign or enterprise) in the event of a downturn in the business cycle as envisaged according to a scenario they construct, and to what measure would this affect the repayment capacity of that party. While external rating agencies do not simply extrapolate the contemporary situation, even the scenarios they formulate are rigid, and are only modified on rare occasion, and generally as a reaction to a shock which has already actually occurred, but was not originally accounted for in the scenario. So, in respect of external ratings as well, it is true that during upturns in the business cycle they are better (actual downturns in the business cycle are generally more severe than in the scenarios), while during downturns, they are more pessimistic. In summary, even ratings by external rating agencies have a procyclical character, although the intensity of this aspect is less pronounced than in internal rating systems due to their special approach.

The characteristics of external ratings

Credit risk modelling offers a more sophisticated approach to credit risks.[19] The limited availability of forward-looking information causes problems in connection with extending the time-dimension in these models,[20] and increasing this time-dimension may also greatly increase the margin of error in the forecasts.

3.2.2 Incentives and the regulatory environment

Of the incentives influencing the cyclical assessment of risks, the relaxation of credit standards during economic upturns, and conversely their tightening during downturns, is of outstanding importance. The main cause for relaxing standards during upturns can be found in banks' efforts to defend their competitive positions in the market, while during recessions the incentives to avoid losses are

The objectives are the defence of competitive positions during an economic upturn and the avoidance of losses during a recession

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[18] A detailed overview of practices applied by external rating agencies can be found in BCBS (2000/b).
[19] An overview of credit risk modelling applied by banks can be found, for example, in BCBS (1999) or in a study by Jackson, Nickell and Perraudin (1999).
[20] This is why in order to manage future shocks, banks applying the most sophisticated risk management systems more and more frequently resort to stress testing, in addition to models, but in parallel with them as well.

obviously stronger. Although the changes in behaviour at individual banks according to fluctuations in the business cycle do not have a significant impact on the evolution of the cycle itself, it is easy to see that if banks' incentives all work in the same direction, i.e. if cyclical changes in credit standards become characteristic of the banking sector as a whole, then these incentives will strengthen the procyclical nature of lending activity.

Taxation and accounting practices

Banks' procyclical attitude is promoted by taxation, accounting and regulatory practises as well. Accounting rules on provisioning frequently allow provisioning only for expected losses which are correctly documented, while tax regulations impose serious limits on provisioning before taxes, and – taking into account the retrospective character of assessing credit risks – this almost automatically leads to insufficient provisioning during economic upswings. Capital adequacy rules are another incentive for overtightening bank lending during downturns in the business cycle. Although current capital adequacy rules require only a minimum level of capital, falling capital adequacy ratios during recession periods can trigger tightening in lending activity long before these ratios could reach their regulatory minimum level, because the capital adequacy position has become one of the primary synthetic indicators with an important effect on the credit rating of the banks themselves, as well as on their capacity to raise additional capital. The existence of incentives to sustain the level of capital adequacy are underlined by the fact that parallel movements between capital ratios and the evolution of the economic cycle have not been clearly demonstrated.[21]

Capital adequacy rules

3.3 Procyclical behaviour and financial crises

Expansion in credit is frequently an ex post indicator of financial crises...

In most publications analysing financial crises the procyclical nature of banks' behaviour and credit expansion linked to economic upturns, which considerably exceeds the dimension of such upturns, have both been noted as one of the important indicators of financial crises that has been identified ex post.[22] Of 15 empirical analyses conducted by the IMF[23] in 12 of the studies an upward trend in the loan to GDP ratio was noted as one of the indicators capable of predicting the emergence of a future crisis, while in 14 of the 34 empirical analyses by Hawkins and Klau, the impact of credit expansion on the emergence of a systemic financial crisis was found to be significant. Of the 34 studies, seven focused explicitly on

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[21] See: BIS (2001/b).
[22] There is a wide-ranging professional literature on the analysis of episodes of banking crises and attempting to identify indicators capable reliably forecasting such crises. See, for example: Kaminsky and Reinhardt (1999) Demirgüc-Kunt and Detragiache (1998) IMF (2000). A more detailed summary of professional literature can be found in: IMF (2000), Bell and Pain (2000) and Klau (2000) .
[23] See: IMF (2000).

banking crises within the sphere of financial crises in a broader sense, and four discerned the impact of rapid credit expansion as triggering these banking crises. Practically all of the empirical analyses mentioned can be characterised by the fact that a great number of countries which have already suffered a banking crisis were included in the sample, and the time-dimension chosen for examining economies and financial sectors of the countries to be analysed was not restricted to the period of the crisis itself, but was extended to a longer time frame. According to the conclusions drawn from these studies an overvalued exchange rate, an inadequate level of international reserves, economic recession, high real interest rates and excessive lending growth by banks were identified as key indicators for banking crises.

...but cannot be considered an ex ante indicator

Nevertheless, models attempting to define the main indicators for reliably forecasting the emergence of banking crises suffer from a number of imperfections.[24] Banking crises occur more frequently in developing countries than in developed countries, and complete accessibility and reliability of the data for appropriately describing these countries' economies is by no means assured. Nor is it unconditionally true that only banking systems in economies which have already suffered from banking crises are vulnerable and threatened by crises. Approaching the question from another perspective, it has also not been possible to clearly demonstrate that (excessively) expansive behaviour of banks – a phenomenon which can be demonstrated in economic upturns – can be considered an ex ante indicator capable of reliably predicting the emergence of a crisis, or that periods of lending booms are highly likely to be followed by periods of financial crises.

Banking crises are not the results of credit expansion...

Gourinchas, Valdés and Landerretche (2001) also analysed the relationship between lending booms and banking crises. They defined a lending boom as a period when the ratio of private credit to GDP deviates from its stochastic trend more than a previously defined threshold. The divergence was analysed by these researchers in absolute and in relative terms as well.[25] They treated as banking crises the episodes defined as such by Caprio and Klinguebiel (1997), or by Lindgren, Garcia and Saal (1996). They examined whether the degree of probability of a banking crisis occurring was higher during periods preceding, or following lending booms, or during 'quiet' periods. Data collected for 91 countries for 1960–1996 were taken as a basis for the analysis. Their conclusions can be summarised as follows: (i) The probability of a banking crisis occurring following periods of lending booms is not very high. Based on

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[24] A detailed criticism of the so-called leading indicator models can be found in: Bell and Pain (2000).

[25] In the event of a divergence in relative terms, the growth of lending activity as compared to the trend is qualified according to its relation to the size of the banking sector, while in the case of divergence in absolute terms it must be compared to the volume of GDP itself.

Lingreen, Garcia and Saal's data, the degree of probability ranges between 9.5 and 13.9 percent, while according to Caprio and Klinguebiel's data, the probability fluctuates between 12.7 and 21 percent. (ii) Although the probability of a banking crisis occurring within two years of a lending boom was judged to be somewhat higher compared to a 'quiet' period, in most cases the increase in the degree of probability was not judged to be statistically significant. In other words, it could not be definitively proven that banking crises are direct repercussions of lending booms, because most periods characterised credit expansion in the banking sector have not been followed by any banking crisis whatsoever.

...but may contribute to an increase in banking sector vulnerability

The case of Latin America, where exceptionally strong growth in lending took place in the 1990s, was examined separately by the study. In contrast to the findings valid for the overall sample of countries analysed, this lending boom enormously increased the vulnerability of Latin American countries to banking and financial crises. Otherwise, lending booms experienced in the Latin American countries involved in the sample analysed, occurred during periods of financial deregulation and capital flows liberalisation, in parallel with massive capital inflow and failed exchange rate-based stabilisation programs. Accordingly, the probability of a lending boom being followed by a banking or currency crisis is twice or three times greater compared to other regions in this respect.

This overview of the relationships between lending booms and banking crises suggests that while a rapid expansion of lending is frequently one of the key factors contributing to an increased degree of vulnerability of banking systems, the existence of a clear-cut, causal relationship capable of generating a crisis cannot be unequivocally demonstrated. Systemic banking crises can always be traced back to the simultaneous presence of a number of factors, and – at least according to the experience gained from crises which have occurred so far – the types and combinations of these factors can very greatly from crisis to crisis.

It can be assumed that the indicators formulated as a result of empirical analyses are more appropriate for assessing the particular degree of stability in financial or banking systems as well as their vulnerability, but are less suitable for reliably forecasting future crises. At the same time though, it is important to stress that it is by no means certain that systems which appear to be vulnerable based on the indicators are actually in a state preceding a crisis. Thus, vulnerability constitutes a fairly demonstrable precondition for a crisis, but should not be considered to be a clear-cut, undeniable cause of it.

3.4 Possible regulatory policy responses

In their work Borio, Furfine and Lowe classified four different groups of possible methods for preventing procyclical behaviour by banks. The first method is aimed at helping market participants better understand the actual nature of risks, their development over time and how risks are related to business and financial cycles. This goal is achieved by analyses published by financial authorities, and speeches, lectures or statements delivered by leading financial officers. The Financial Stability Reports published by an ever growing number of central banks also greatly facilitate better assessment of credit risks as well as a professional exchange of views on the nature of risks. In addition to this approach, the efforts of international organisations designed to render the functioning of financial intermediation systems as transparent as possible, and to make them conform to international standards established according to different types of institutions can be included in this category.[26]

A better understanding of risks

Endowing supervisory authorities with discretionary powers represents a second possibility for constraining/eliminating the impact of procyclicality. For example, exercising their discretionary powers, supervisory authorities can increase the minimum capital adequacy ratios enforceable either for the banking sector as a whole or for certain individual banks if they feel that in the euphoric atmosphere of an economic boom banks are assessing credit risks inadequately, or if they feel that systemic risks have begun to emerge. In addition to increasing the required capital adequacy ratios, another complementary discretionary instrument can also be applied if necessary, either by increasing the level of individual credit risk provisioning required or insisting on the application of more rigorous rules by the banks in their practise of accepting collaterals.[27]

Endowing supervisory authorities with discretionary powers

Prescription of mandatory prudential rules to be applied by banks constitutes the third possibility. These rules can be stipulated as a function of a specific economic indicator, or can be fixed ones, which are nevertheless able to mitigate the procyclical attitude of the banking system. As a matter of fact, the former option may represent an alternative to rules of a discretionary nature, with the difference that the prescription of more rigorous rules does not only depend on the judgement of supervisory authorities, but rather depends on a trend in a certain economic indicator (lending growth, real estate prices, etc. are good examples of this). For instance, regulations of an anticyclical character to be implemented by applying

Prescription of mandatory prudential rules

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[26] The results of this effort have been presented, for example, by the reports based on surveys conducted by IMF missions in its member-countries and published regularly on their home page on the Internet under the title: Reports on Observance of Standards and Codes (ROSC)

[27] This sort of regulation practice was applied, for example, in Hong Kong from 1991 on, where regulatory authorities suggested that banks should apply a 70 percent loan-to-value ratio ceiling in the case of mortgage lending.

provisioning rules,[28] or the proposed modification of the Basle Capital Accord aimed at correcting the procyclical provisioning attitude of banks by broadening the scope of capital requirement to cover not only unexpected risks but expected risks as well, can be viewed as belonging to this category.[29]

Role of monetary policy

Applying monetary policy instruments to preclude the emergence of procyclicality in the financial system represents the fourth regulatory possibility. One special tool in the sphere of monetary policy is, for example, if the central bank reacts to an excessive expansion of mortgage loans by raising interest rates, and does so even if this wouldn't otherwise be justified by other circumstances.

Having reviewed the regulatory options, the authors conclude that each approach has a number of advantages and disadvantages. Weighing these pluses and minuses, they reach the conclusion that – based on the current state of knowledge on financial and business cycles – of the various options, the application of direct prudential regulatory instruments, which can be classified into the third category, seems to be the most expedient approach. As a first step, they would expect the introduction of forward-looking provisioning rules to restrain procyclicality, but with a view to the future they consider it important that eventually the required loan-to-value ratio or minimum capital adequacy ratios be changed, in line with the business cycle, or more precisely linked to it. Nor can the introduction of regulations in the sphere of monetary policy, as well as discretionary powers of supervisory authorities be precluded, but the authors feel that these are acceptable only on rare occasion, i.e. in the event of a serious financial imbalance.

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[28] The most striking example of this is the dynamic rules governing credit risk provisioning requirements for banks in Spain. See: Lis, Martinez and Saurina (2001).

[29] See: BCBS (2001). Although this element of the proposed regulation by no means has a significant counterbalancing effect on credit risk provisioning attitude of procyclical character found at some banks, the proposal in general - according to the opinion of most analysts - would rather enhance than weaken the procyclicality of banks' behaviour by increasing the risk sensitivity of their capital. (See: for example ECB (2001). This element of the Basle proposal for extending capital requirements to cover both the expected and unexpected risks, is one of the most debated features of the new regulatory framework, and it is not certain at all that it can be introduced as the originally proposed version would entail. The professional debate on the new Basle proposal can be found at www.bis.org.

4 | The depth of financial intermediation in Hungary, the Czech Republic and Poland

The development of financial intermediation in Hungary, the Czech Republic and Poland has its roots in the financial systems of centrally-planned economies, characterised by single-tier banking systems and the complete lack of a capital market. In these three countries the establishment of a two-tier banking system and a capital market was a necessary precondition for the development of financial intermediation. In respect of transforming the system of financial intermediation, the leading role was played by Hungary where well before the change of regime, market orientation had begun to be an increasing characteristic feature of this sector. From 1982 on enterprises were allowed to issue bonds, in 1987 the two-tier banking was established[30] and in 1989 the Budapest Stock Exchange was opened – the first of its kind in the region.

In establishing capital markets, these countries had to start from scratch – prior to the change of regime the notion of a joint stock company, trading in shares as well as that of corporate bond issue[31] was practically unknown. Public sector financing requirements were satisfied directly by the central banks in accordance with the central plan. The establishment of two-tier banking systems was carried out similarly. One characteristic feature of these three countries was that the former 'mono-bank' was transformed into independent financial organisations playing the role of the central bank on the one hand, as well as handling functions of commercial banks, on the other (initially in state ownership), and that the stock of credits in the commercial banking sphere was equivalent of that of the credits granted earlier by the mono-bank. In terms of the size of the banking sectors in the three countries at the moment of their establishment a remarkable difference was already visible – the ratio of credit to GDP in the Czech banking sector significantly surpassed the same value for the Hungarian banking sector, and the credit volume of Polish commercial banks was considerably lower than in Hungary. Under the centrally-planned socialist regime it was a policy decision made by the economic management of each respective country, as to what sort of role was defined for bank loans for financing enterprises, because the mono-bank

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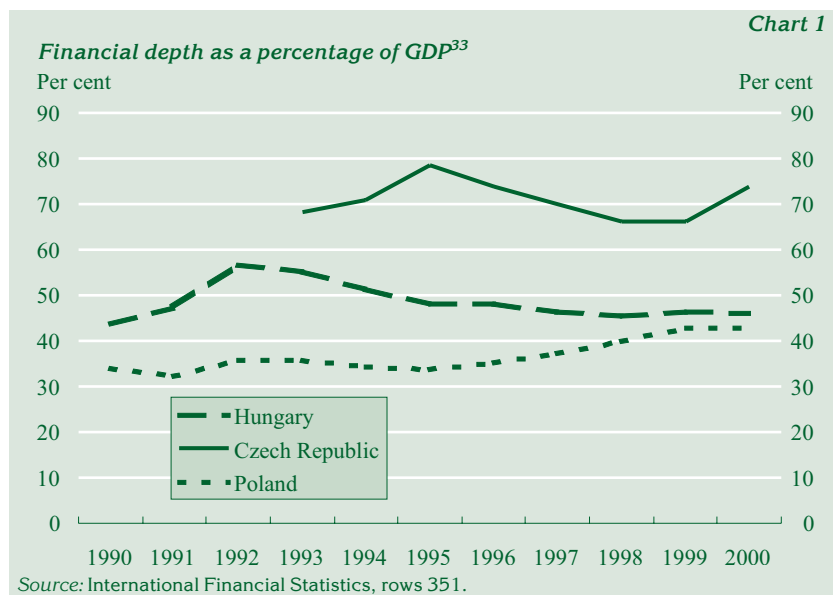[30] The Polish banking system became a two-tier system in 1989, while that of the Czech Republic in 1990.
[31] Although in Hungary bond issuance was legally allowed and some bonds were already issued, their role in financing enterprises was only marginal.

allocated loans among the agents of the economy in accordance with the pre-determined directives of the central plan, without considering economic efficiency criteria. The Czech system of economic management ascribed greater importance to allocating loans by banks which is why the initial level of loans registered by Czech commercial banks was naturally higher compared to the two other countries. Accordingly, the initial level of financial intermediation was lowest in Poland, where under the centrally-planned system the role played by bank loans was marginal. In addition to this, even well before the transformation crisis which followed the change of regime, financial depth in Poland was considerably weakened by the protracted economic and financial crisis experienced during the 1980s.

4.1 The depth of banking intermediation

The level of liquid liabilities changed very little between 1990 and 2000, remaining particularly low in Hungary and Poland

The ratio of liquid liabilities to GDP is considered the most suitable and widely accepted indicator for generally assessing the depth of banking intermediation.[32] The ratio of liquid liabilities (M2) indicates how much of a role financial processes play in an economy. This indicator measures the banking sector synthetically, without distinguishing between different types of institutions or specific uses of financial resources. In open economies one disadvantage it suf-


Chart 1

Financial depth as a percentage of GDP[33]

Source: International Financial Statistics, rows 351.

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[32] This was already used by King and Levine (1993/a and 1993/b), but the application of this is proposed – as part of a new database appropriate for international comparison – by Beck, Demirgüc-Kunt and Levine (1999) as well.
[33] Data representing the evolution of M2 indicator have been derived from stock data, while those on GDP represent flow data, hence according to this analysis the changes from one year to another could be misleading, although the evolution of orders of magnitude as well as trends are shown appropriately by these data, too.

Chart 2

Financial depth in Hungary, the Czech Republic and Poland in international comparison

Per cent
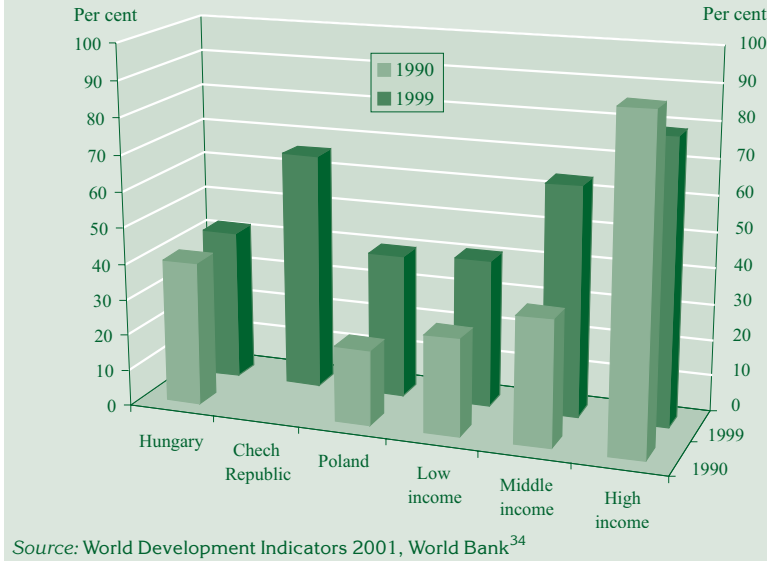
Source: World Development Indicators 2001, World Bank[34]

fers from is that it only measures domestic financing resources. In the three economies under review, there is an external channel for deepening financial intermediation, and while its order of magnitude cannot be qualified as negligible, its size is not so great that it can considerably affect the conclusions to be drawn from international comparisons or from the analysis itself.

To a great extent, the legacies inherited from the previous socialist-type economies determined the depth of financial intermediation in the three countries, and, as evidenced by Chart 1, the first decade of transformation to a market economy has not led to any significant changes in this respect. At first glance, it can be seen that the establishment of a market economy in the ECE3 has not been accompanied by significant changes in the role of finances played in their economies.[35]

In 1990, the level of financial intermediation in Hungary in international comparison (see Chart 2) was identical to that of the group constituted by middle-income countries, while in this respect the level characterising Poland approached the group of low-income economies. During the last decade, the intensity of financial inter-
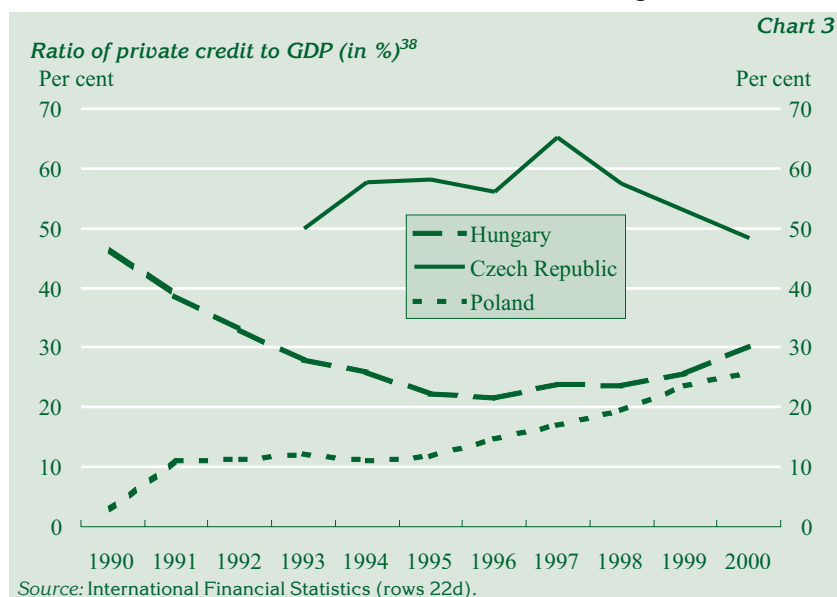
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[34] For the purpose of comparison, the World Bank employed data representing the trend of M3 instead of that focusing on the evolution of M2 used for compiling Chart 1. But as regards the three countries analysed, the difference between data characterizing the trend of M2 and that of M3 is not significant.

[35] This study does not deal with the principal causes of low level in financial intermediation (the modest volume of financial assets owned by households considered really low as compared to volume of its earnings, the wave of bankruptcies coinciding in a natural way with transformation crisis, high level of nominal and real interest rates, etc. could be enumerated as main examples), because this has a very indirect relation with the overall question of procyclicality. Only the phenomenon itself and the conclusions to be drawn from it have been examined here.

mediation in the Hungarian banking sector did not change in line with the trend of strong deepening seen in the group of middle-income countries – accordingly, by 1999, its degree had become rather similar to that of low-income countries, lagging well behind the middle-income group. As far as Poland is concerned, its relative position over the last decade has not changed either. In 1999, financial depth in the Czech Republic[36] was practically at the same value for the group of middle-income countries.

The ratio of private sector loans to GDP is also low, but it has started rising in Hungary and Poland

Of the indicators capable measuring the degree of depth in banking intermediation, which were proposed by Beck, Demirgüc-Kunt and Levine (1999), the ratio of private sector loans by deposit money banks to GDP represents a more focused, sophisticated indicator than liquid liabilities to GDP, because it more adequately reflects the role that loans play in financing economic activity[37] (see Chart 3). In addition to the initial position, the trend in the evolution of the private loans to GDP ratio depends largely on the timing and the particular methods each country applied to resolve portfolio quality problems which represent a serious risk for the banking system as a whole, and were unavoidably coupled with transformation crises in all the three countries in question. For example, in Hungary the trend in total loans reflects the more and more rigorous character

Chart 3

Ratio of private credit to GDP (in %)[38]

Source: International Financial Statistics (rows 22d).

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[36] Obviously, in respect of the Czech Republic only data for the period after the establishment of the country is available, i.e. after the separation of the former Czechoslovakia into two individual countries.

[37] This indicator separates the volume of credits granted by banks to the government or to the public sphere of the economy from those they allocated to the private sector, and when measuring the actual extent of financial depth, only the latter have been taken into account. Nor have credits granted directly by monetary authorities to the private sector been considered an integral part of financial intermediation carried out by banks.

[38] See the footnote to Chart 1. Here the data on aggregate credits is stock data, while those on the trend of GDP are flow data.

Chart 4

Ratio of private loans to GDP in the Hungarian, the Czech and the Polish banking sectors, in international comparison
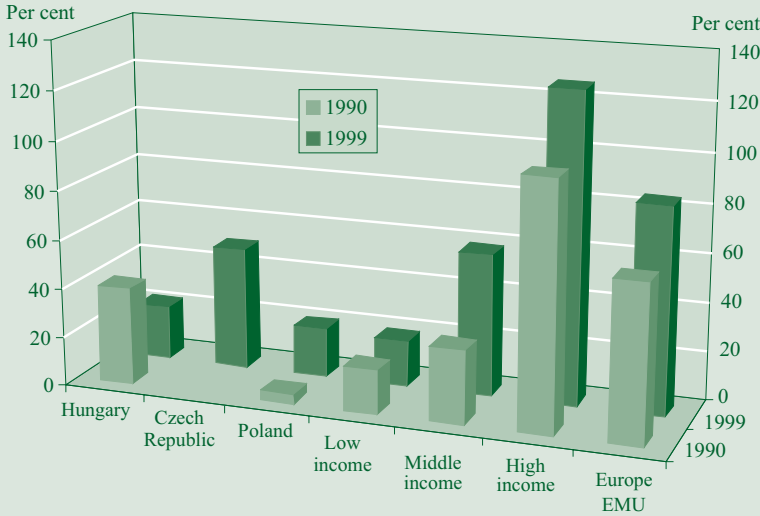
Source: World Development Indicators 2001, World Bank.
The World Bank employed IFS rows 32d in International Financial Statistics for the purposes of comparison, which incorporates liabilities of monetary authorities vis-à-vis the private sector (IFS rows 12d), in addition to those held by deposit money banks (IFS rows 22d).[39]

of regulations on assessing credit portfolio risks by banks as well as the impact of their portfolio revisions performed during the consolidation of the sector. In Poland – owing to the low base figures characterising its banking system at the outset – the consolidation process was not coupled with a decline in the ratio of total loans to GDP, while in the Czech Republic the protracted (and as of yet unfinished) consolidation and privatisation of the banking sector is one important reason why this ratio only began to decline in the latter half of the 1990s. Nevertheless, one conclusion valid for the entire ECE3 is that the role played by domestic banks in financing the economy continues to be very low by international standards. The role of loans granted by banks in Hungary and Poland only minimally exceeds the size characteristic for the group of low-income countries. By 1999, only in the Czech Republic did the ratio of private loans to GDP approach the level typical for the middle-income group of countries, and even so it still lagged far behind the level registered in EMU members as well as the high income group (see Chart 4).

Nevertheless, based on Chart 3, the initial conclusion reached after a superficial study of Chart 1 can be refined further – in respect of Hungary and Poland, the changing role that loans play in financing their economies may be a key factor behind the stability seen in total

Loans play a changing role in financing the economy

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[39] Employment of data incorporated into row 32d of IFS is clearly justified by the fact that in several countries (especially in less developed ones) direct credit granting by monetary authorities plays an important role in financial intermediation. But in the three countries examined this factor is negligible, so the orders of magnitudes in Charts 3. and 4. represent practically the same ones.

liquid liabilities over the last decade. During the transformation crisis, the overhaul of banks' bad quality portfolios – due to former obsolete structure of production – was completely accomplished, and this was able to serve as an appropriate basis for increasing lending on the heels of this crisis, so that – following a temporary decline (or in the case of Poland, a stagnation in this respect) – a clear process of deepening in financial intermediation of their banking sectors could begin.

While adding to its complexity, direct borrowing from abroad does not change the overall picture

The very low level of bank credits by international standards is evident together with the fact that in these countries, financing by banks plays a strikingly greater role in their financial system than that of their capital markets. The financial sectors of the three countries can be typified as the so-called German-type, namely bank-based features, instead of bearing the hallmarks characteristic of Anglo-Saxon countries, which tend to have market-based systems.[40]

Chart 5

Ratio of domestic and external private loans to GDP (in %)

Czech Republic — Hungary — Poland — Other countries
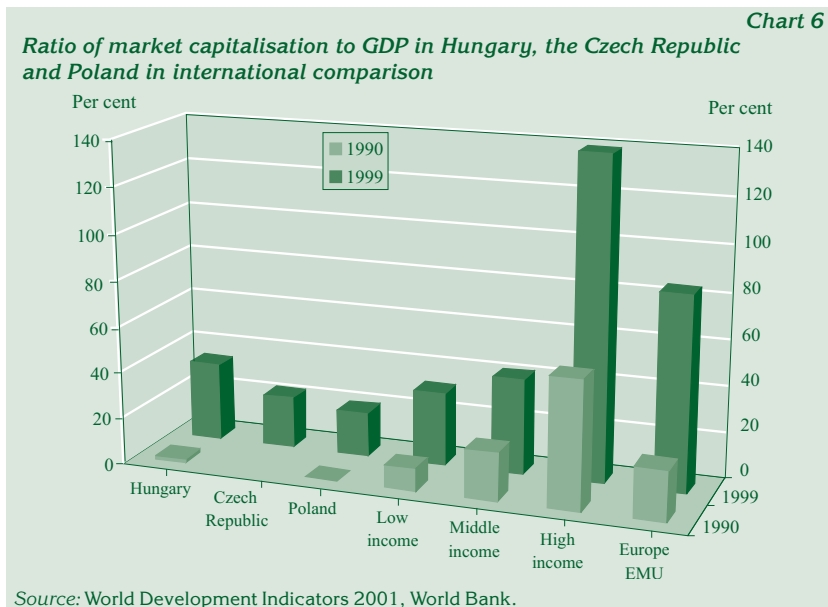
Source: Wagner and lakova (2001).
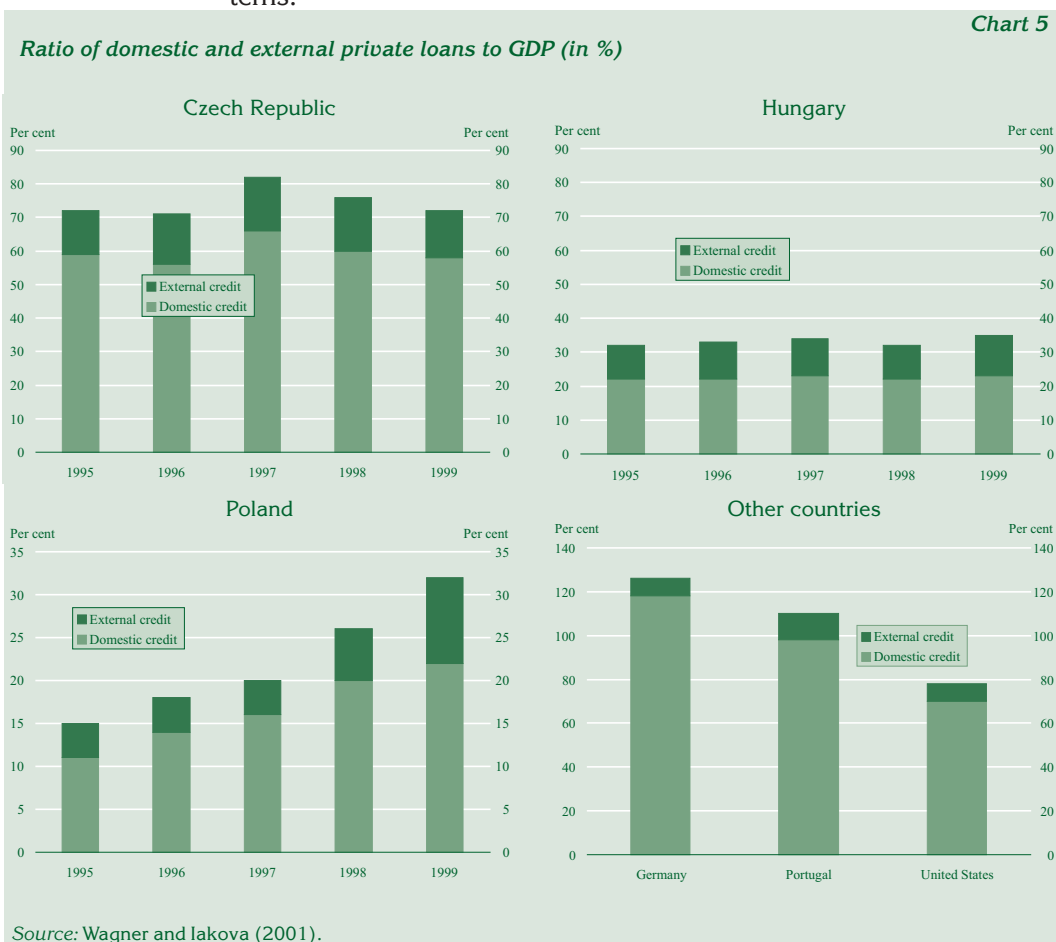
[40] In the case of these countries financial assets owned by banks represent 85–95 percent as compared to their aggregate volume, in contrast with the proportion of about 50 percent in countries with market-based financial systems. (See: Wagner and lakova /2001/).

The overall picture from this analysis of banking intermediation depth in the ECE3 may be further influenced by the fact that these countries have open economies, and hence, in addition to domestic resources, their enterprises are able to increase their level of indebtedness by relying on external loans as well. As illustrated by Chart 5, in the ECE3 corporate sector financing via external loans has been very important, helping to establish a healthy corporate financing structure which stimulates and sustains economic growth, but does not increase the depth of domestic banking intermediation. At the same time, it cannot be stated that the private loan to GDP ratio, adjusted accordingly by direct foreign indebtedness, would be such a degree higher that it would be able to modify the overall picture of generally low banking intermediation.[41]

4.2 The depth of capital market intermediation

In accordance with the basically non-market character of financial intermediation, the depth of capital market intermediation can also be characterised as being very low in the ECE3. In 1999, only in Hungary did the ratio of market capitalisation to GDP, an indicator generally used for measuring the size of capital markets, approach the level typical for the group of middle-income countries, while in
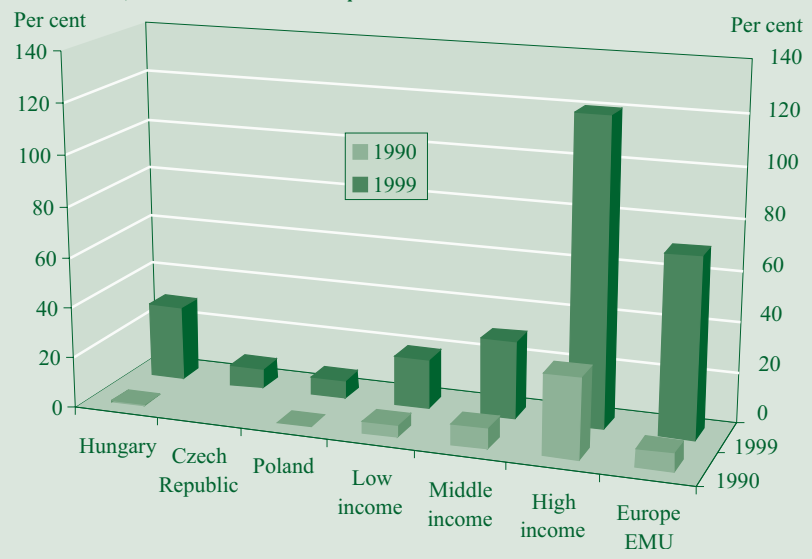
The depth of capital market intermediation is also low

Chart 6

Ratio of market capitalisation to GDP in Hungary, the Czech Republic and Poland in international comparison

Source: World Development Indicators 2001, World Bank.

[41] Intercompany loans, constituting an integral part of foreign direct investment (FDI), could also be classified into the foreign resources of enterprise financing, the order of magnitude of which in the case of the three countries examined is approximately identical to that of the volume of stock of credits granted by foreign banks. But according to its very nature, it is questionable what role this source of enterprise financing plays: one similar to that played by capital or more so by credits.
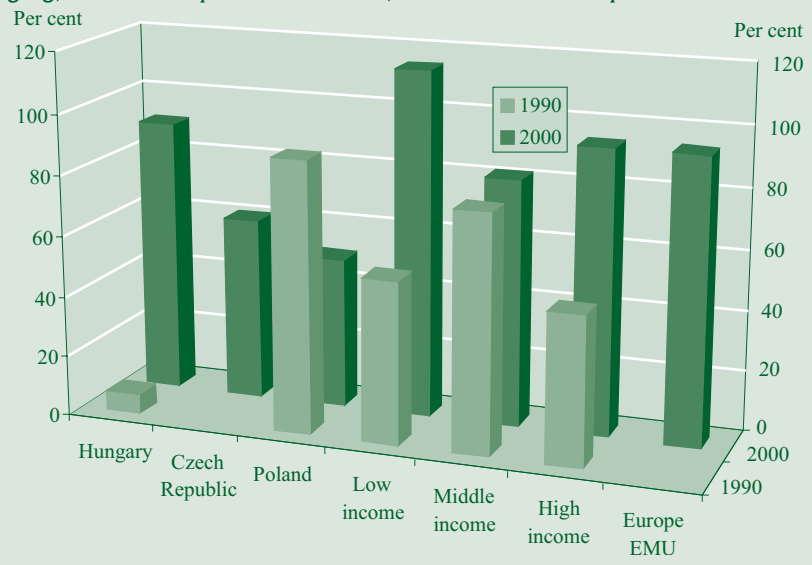
Chart 7

Tendency in capital market turnover to GDP in Hungary, the Czech Republic and Poland, in international comparison

Per cent

Per cent

- 1990
- 1999

Hungary Czech Republic Poland Low income Middle income High income Europe EMU

1999
1990

Source: World Development Indicators 2001, World Bank.

Chart 8

Tendency in capital market turnover to the market capitalisation in Hungary, the Czech Republic and Poland, in international comparison

Per cent

Per cent

- 1990
- 2000

Hungary Czech Republic Poland Low income Middle income High income Europe EMU

2000
1990

Source: World Development Indicators 2001, World Bank.

the two other countries it was even lower than that of the low-income group. Compared the EMU area and especially to the group of high-income economies, it is smaller by several orders of magnitude (see Chart 6).

In addition to the size of capital markets, their degree of liquidity is also highly important, as only appropriately liquid capital markets can guarantee the mobilisation of capital to be channelled into financing the economy. There are two indicators generally accepted for measuring the degree of capital market liquidity. One is the value traded ratio, which represents the total value of shares traded on the stock exchange divided by GDP (trading volume/GDP), the other is the turnover ratio, which is the total value of shares traded on stock exchange divided by stock market capitalisation, representing the size of the capital market (trading volume/market capitalisation). Obviously, these two market liquidity indicators show totally differing values for countries where the capital market is small in size, but is coupled with relatively high liquidity. The trend in the two liquidity indicators is shown in Charts 7 and 8. From the ECE3, even in respect of level of capital market liquidity, the situation in Hungary could be qualified as the most favourable one. In Hungary, the increasing volume of market capitalisation has been coupled with the same tendency in the evolution of the level of capital market liquidity over the last decade, and thanks to this progress, by 1999 the ratio of capital market liquidity to GDP had reached the level of the middle-income group, while the ratio between the volume of market liquidity and the dimension of the capital market can be considered as being in conformity with internationally typical level. In the Czech Republic and in Poland, the low level of market capitalisation has been associated with a low degree of liquidity in capital markets. Meanwhile, it must be noted that data on capital markets for 2000 and 2001 show a more disadvantageous tendency in the depth of capital market intermediation in East-Central-Europe than the end-1999 data. The reason for this is that from the second quarter of 2000, global participants on capital markets have been restructuring their investment portfolios towards investments guaranteeing more security, and thus have reduced their volume of investments in this region. For example, in Hungary the ratio of capital market capitalisation to GDP dropped from 36 percent in 1999 to 26 per cent in 2000, in line with a decline in the turnover ratio from 30 per cent to 25.5 per cent.[42]

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[42] See: 2000 Annual Report of the National Bank of Hungary.

5 | Necessity of financial deepening and procyclicality

A s was mentioned in the analysis of banking intermediation depth, according to the distribution of financial assets among different types of financial institutions, the ECE3 can be characterised as countries with bank-based financial intermediation.

Currently, financial intermediation is 'neither bank-based, nor market-based'

But a look at the data on financial depth in these countries renders a picture which can be characterised more appropriately as 'neither bank-based, nor market-based' in terms of their financial intermediation. For all three countries, it can be argued that they have lagged far behind the level they are aiming for, namely that of the EMU-area countries or developed countries in terms of the intensity of banking, as well as capital market intermediation. As far as banking intermediation is concerned, the situation in the Czech Republic could be described in this respect as more favourable than the average of this group of countries, while in Poland, and to a lesser extent in Hungary as well, a process of deepening in financial intermediation is visible. In the case of Hungary, indicators of capital market size and liquidity are higher.

The second chapter of this study analysed the relationship between economic growth and financial depth. Presumably, the conclusions drawn there could be relevant for the banking systems of the ECE3, too. If the state of development of the financial intermediation system and deeper banking and capital market intermediation do have an undeniably positive impact on productivity trends, then in respect of the ECE3 it is important and crucial for their further development that significant deepening in their financial intermediation be achieved in the future. If the initial level of financial depth reliably predicts the rate of development of the following period, then it can also be suggested that if sufficiently large-scale deepening process does not take place in their financial intermediation systems, this would necessarily lead to a lower trend of economic growth, compared to what could be achieved in conjunction with an appropriate deepening in their systems of financial intermediation.

Catching-up requires financial deepening…

In these countries procyclical behaviour of the banks cannot be observed yet, because the possibility of normal economic cycles developing only appeared from the mid-1990s - or to put it more precisely, after the transformation crises had subsided. According to Chart 3, in the case of Hungary, the existence of a close relationship between the transformation crisis and banking intermediation in particular is discernible, as from 1990 to 1995, the depth of financial intermediation continuously dropped, while from 1996 on, it has slowly begun to increase. In Poland, due to the protracted crisis dur-

ing the 1980s and to the low basis, the transformation period was not accompanied by a temporary drop in the degree of financial depth, but the increase in the volume of loans since the mid-1990s has been more pronounced than in Hungary.

In order for the ECE3 to close the gap to the developed countries, it is absolutely necessary that in the future the role of lending in their economies grow significantly and that a period definable as a lending boom occur. Based on an analysis by Gourinchas, Valdés and Landerretche it was demonstrated that lending booms are not - as a rule - followed by systemic banking crises. In order for the role of lending to increase smoothly as is necessary, and for it not to lead to a higher degree of vulnerability of the banking sector, and eventually to a credit crunch or – in extreme cases – a systemic banking crisis, it is important that during lending booms the establishment of a pattern of procyclical behaviour by banks be prevented, i.e. deepening in financial intermediation should not be accompanied by a relaxation of rigorous credit standards, by loosening collateral requirements nor by under-provisioning credit risks.

...in addition to sufficiently prudent lending behaviour

5.1 When is fast growth in credit extension activity considered damaging and when is it advantageous?

In principle, and based on the considerations presented, this question should be easy to answer. It is generally seen as useful when the degree of financial depth increases, as this is conducive to economic growth. Conversely, it is damaging if such deepening is accompanied by a relaxation of credit standards and by the emergence of a pattern of procyclical behaviour, as this increases the vulnerability of the financial system to a great extent.

Analysing lending cycles in the US economy, Keeton (1999) differentiates three possible causes of lending booms – first, a supply shift, second, a demand shift and third, a productivity shift. The pattern of procyclical behaviour by banks can be seen as a typical supply-side shift – banks' inclination to grant credits increases, leading to a relaxation of credit standards (for example, banks tend to lower the value of collaterals they require, or accept poorer track-records, etc.). Obviously, this type of behaviour by banks, possibly in conjunction with a decreasing level of interest rates, exacerbates the banking sector's future losses.

The three types of lending booms are......

supply shifts......

If corporate demand for credits increases, this can also contribute to a growth in lending activity, as well as to more rigorous credit evaluation standards. A relative increase in financing costs through the channel of the capital market or a decline in the volume of internal cash flow at enterprises, as a result of which firms may wish to increase the proportion of bank loans, can result in a kind of a boom on the demand-side. Due to the increase in demand, banks are inclined to raise the level of interest rates on loans, and to tighten credit standards, both of which serve to reduce the probability of future losses.

demand shifts...

In the case of an increase in credit demand stimulated by a pro-
ductivity shift, in principle more vigorous lending activity does not
aggravate bank's potential losses, as the financial position and debt
repayment capacity of their clients is improving, and even applying
the same credit standards, more and more clients are judged by
banks as being creditworthy. Indeed, growth in lending volume stim-
ulated by a productivity shift can diminish the probability of future
losses even in cases when banks relax credit standards. If corporate
productivity is growing, in parallel with this the probability that a
group of clients with given characteristics will be able to repay their
debts increases. This makes it possible, for example, for banks to
ease their requirements as regards collaterals or requirements for
the quality of borrowers' track-records. Rising productivity also
stimulates enterprises to increase their credit demand. Thus, the
changes stemming from advances in productivity can lead to a lend-
ing boom due to the combined impact of a relaxation in the rigour of
credit standards, as well as burgeoning credit demand by enter-
prises. In this case, the process of relaxing credit standards does not
necessarily lead to higher losses by banks, because the impact of
financing even more poorly rated clients (i.e. with less collateral
or shorter track-records) may be counterbalanced by this possibility
– taking into account gains in productivity, the debt repayment
capacity of average quality clients may also increase.

*For successful con-
vergence, lending
has to grow at a
faster pace than pro-
ductivity*

In respect of transition economies, which have been characterised
by a low level of financial intermediation, the possibility of increasing
lending activity is even greater, and may even surpass productivity
gains, as a low degree of financial intermediation means (amongst
other things) that earlier loan extension to clients which otherwise could
have been financed by them profitably, has not taken place.

Having accepted the aforementioned classification, it seems
obvious that in the ECE3 the catching up process could be
achieved, based solely on a credit boom stimulated by (and even
surpassing) advances in productivity. In this process there is even
some leeway for a relaxation of credit standards, but only to the
extent that the overall banking sector's prudential behaviour in
respect of lending is not called into question. For example, bank's
remarkable increase in financing of small and medium-sized enter-
prises has been a necessary precondition for the region's economic
progress, while at the same time, it is obvious that during the trans-
formation period this sphere of the economy – which has practically
no collateral of acceptable value, and where good quality track-
records are few and far between – could not have been financed
at all from the point of view of focusing exclusively on the risk bear-
ing capacity of the banks. During the catching up period, after the
transformation crises are over, the debt repayment capacity of this
sphere of the economy naturally improves, even though their weak
track-records and relatively low value collateral continue to re-
strain them from obtaining loans (i.e. in this period this sector can
only be financed by the banks due to loosening credit standards.)

Examining the business policy of Hungarian banks, it is clear that since economic growth took off in the late 1990s, small and medium-sized enterprises have increasingly become the financing target group of the banking sector. Banks' expansion of lending in this sphere of the economy will not cause losses if the scope of the lending boom does not exceed the improvement in firms' future repayment capacity based on productivity growth. However, it is clear that this is necessarily accompanied by a relaxation of credit standards during a lending boom. In order to avoid this process leading to the development of a procyclical behaviour pattern in the banking sector, great emphasis must be placed on factors such as the quality of lending, careful analysis of clients' financial position, as well as constant monitoring - and such monitoring must begin immediately after clients obtain loans from the banks.

Small and medium-sized enterprises have increasingly become the financing target group of the banking sector

5.2 Deepening of financial intermediation, the process of sectoral transformation and regulation possibilities

The process of deepening banking intermediation in the ECE3 is a question deserving great attention, as the transformation of the banking sector in these countries towards market economy standards only began after the change of regime, and despite the enormous progress achieved up to now this process still cannot be considered finished. This makes it very difficult to judge the transparency and accuracy of the credit risk assessments of their banking sectors.

Since 1994, the EBRD has continuously evaluated the development of its members' financial systems, and to this end its staff has formulated a system of indicators. This system assesses the development level of individual countries' financial systems on a scale of 1 (no reforms at all) to 4.3 (functioning financial system similar to that in a market economy).[43] The key aspect in this evaluation is to correctly assess the following: to what extent does the degree of overall banking regulation and the sector's operations – due to the reforms carried out in the countries' banking and non-banking financial intermediation systems – approach the norms and standards of developed countries? From Table 1, it can be seen that even the Hungarian financial sector – which the EBRD has rated as the best since 1997 – was not once given the highest rating of 4.3, while the

Financial sector operations are not yet fully harmonised with market economy standards

Table 1									
EBRD indexes for the banking sector									
	1991	1992	1993	1994	1995	1996	1997	1998	1999
Hungary	2.0	2.0	3.0	3.0	3.0	3.0	4.0	4.0	4.0
Czech Republic	2.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.3
Poland	2.0	2.0	3.0	3.0	3.0	3.0	3.0	3.3	3.3
Source: Transition Report 2000, EBRD.									

[43] At the beginning, the values marked on the scale ranged from 1 to 4+. From 1997, the +/– signs which supplemented the index numbers marked on the scale and were given by the EBRD staff to individual countries were substituted by a method of adding or subtracting +/– 0.3 from the value of the rating originally stipulated by the Bank.

Table 2

EBRD indexes for non-banking financial intermediaries

	1991	1992	1993	1994	1995	1996	1997	1998	1999
Hungary	2.0	2.0	2.0	2.0	3.0	3.0	3.3	3.3	3.3
Czech Republic	1.0	1.0	2.0	2.7	2.7	2.7	2.7	3.0	3.0
Poland	2.0	2.0	2.0	2.0	3.0	3.0	3.3	3.3	3.3

*Source:*Transition Report 2000, EBRD.

Table 3

EBRD indexes for the degree of overall legal regulation in the financial sector

	2000			1999		
	overall	extent	effectiveness	overall	extent	effectiveness
Hungary	4	4	4	4	4	4
Czech Republic	3+	4	3–	3	3+	2+
Poland	4	4	4	4	4	4

*Source:*Transition Report 2000, EBRD.

ratings for the Czech and the Polish banking sectors have been one level lower than Hungary's. In all three countries, the transparency of risks is seriously hindered by the lack of consolidated financial sector regulation and supervision. In the Czech Republic the still unfinished process of consolidating problematic loan portfolios has made an appropriate assessment of banks' positions particularly difficult.

In its 2000 report, the EBRD also separately evaluates to what extent the degree of overall legal regulation and the efficiency of enforcement of these regulations in financial the sector (examining banking and non-banking financial intermediation together) of the individual countries can be generally qualified as complying with the standards and norms of market economies. A scale of 1 to 4+ is used.

Hence, in the ECE3 financial deepening must occur in a period when the transformation of the regulation and operations of their financial sectors towards conformity with market economy requirements is already very advanced, but cannot yet be qualified as complete. Although it has not been possible to observe a full economic cycle since the completion of the transformation crises in these countries, the lending booms which have unavoidably unfolded intrinsically carry the danger that the mechanisms characteristic of procyclical banking behaviour, which foster instability in their financial sectors, may develop (see Table 2,3).

*Need for special regu-
latory solutions*

This phenomenon requires a very careful reaction from both regulatory and supervisory authorities, and the application of policies and instruments which do not hinder the deepening of financial intermediation, but do safeguard their system from excessive risks and, as a consequence, from an emerging pattern of procyclical behaviour by banks, which may eventually contribute to the occurrence of a systemic banking crisis. In our view, of the possible methods capable of solving the problem – as proposed in Chapter 3.4 – the first option mentioned, namely encouraging transparency in the system of financial institutions and promoting better assessment of credit risk, is best able to support achievement of this goal. Endowing supervisory authorities with discretionary powers may also be useful because if they feel that the banking sector is assuming risks above and beyond the extent justified to foster economic growth, in excess of the rate of pro-

Differences between legal systems and their relations with the financial sphere

Legal systems are generally broken down into two main categories: legal systems based on Roman law (so-called 'civil law' systems), and Anglo-Saxon legal systems based on precedents (so-called 'common law' systems). The key difference between these two types of legal systems is that whilst the first one functions almost exclusively by applying statutory provisions stipulated by jurists, the second assures an important role for the judgements of courts rendered in legal disputes as well, and these judgements continuously affect the law itself.

Within the category of civil law systems, three further sub-groups are differentiated in the professional legal literature. The basis for the French-type legal system is the jurisprudence applied under Napoleon. The German-type legal system is based on the jurisprudence applied under Bismarck in the period following German unification. The Scandinavian-type system, though also based on civil law, occasionally treats civil law prescriptions less rigidly, and thus from a certain point of view represents a transitional type between the two main groups of legal systems. As to the type of legal system, Hungary and the Czech Republic can be classified into the group of countries applying a mixed Franco-Latin/Germanic type of jurisprudence, while that applied by Poland falls into the Germanic/Scandinavian group.**

A close relationship can be seen between the different legal systems on the one hand, and the development level of the financial sphere, on the other. La Porta et al analysed the legal systems of 49 countries in respect of investor protection. Investor protection was examined according to two points of view - actual rules and the enforcement of such. It was found that in countries applying the most rigid rules based on French civil law, the legal protection of investors' rights could be qualified as weakest, while in countries applying common law, it could be considered as strongest. Countries applying legal systems based on German and Scandinavian-type civil law take a middle position in this respect. (No former socialist countries were included in the sample comprising 49 countries.) The data used by La Porta et al for the legal systems was examined by Levine, Loayza and Beck (2000) together with their own database as regards financial intermediation systems. They concluded that formal rules, as well as their enforceability, exhibited a close relation with the development level of financial intermediation. In countries where the quality and enforceability of rules protecting investors' rights was better, the operation of financial intermediation systems was smoother.

(2000) goes far further in considering the relationship between legal systems and the financial sphere. His hypothesis, taking as its basis Hayek's view on the superiority of Anglo-Saxon-type legal systems versus French-type systems, states that one or the other type of legal system not only constitutes an instrument capable of more or less supporting financial development, but also plays a causal role in the development of financial systems in its own right. Having examined data collected on 102 countries for 1960-1992, he found that the economic growth rate was significantly higher in countries applying common law systems than in those applying legal systems based on civil law (once again, in this sample former socialist countries were not represented). According to his view, this is mainly due to the fact that Anglo-Saxon-type legal systems support private sector economic activity more strongly, while legal systems based on civil law support state intervention more efficiently.

Today, the problems stemming from differences between characteristics or special types of legal systems have already begun to dissolve due to the globalisation of international money and capital markets, and in our view, it can be expected that the responsibility borne by international financial institutions for maintaining and safeguarding financial stability will alleviate such problems even further. The Financial Stability Forum and activities of the Basle Committee on Banking Supervision (BCBS) are good examples of this process. The Forum has defined 12 international standards, compliance with which constitutes a key precondition for the stable functioning of financial systems. As seen, these standards have been accepted and applied by a steadily growing number of countries, irrespective of their particular type of legal system, and are increasingly accepted as a basis for their national regulations. The BCBS's proposal for renewing capital adequacy regulations is based on three pillars and contains the following main principles: transparency, comprehensive control by supervisory authorities, and the possibility of intervention using discretionary powers. Widespread international acceptance of uniform rules and standards governing financial systems automatically leads to fewer differences between legal systems. Analysing their special features and regulatory proposals as well as standards, it is clear that a shift towards an Anglo-Saxon-type legal approach to financial systems is underway.

* An overview of legal systems can be found in La Porta et al (1996), for example.
** See: Wood (1997).
*** The Financial Stability Forum (FSF) was established in April 1999 with the purpose of coordinating the efforts of different forums for supporting financial stability. International financial institutions, national authorities with responsibility for safeguarding financial stability as well as national supervisory authorities are among the Forum's founding members.

ductivity gains, then they should have an appropriate instrument at their disposal for intervening efficiently. Endowing supervisory authorities with discretionary powers may also be an efficient, precision instrument for restraining excessive growth in lending by banks, although its application raises several problems as well. On the one hand, in these countries the supervisory authorities have short track records and thus their reputation cannot be compared to that of supervisory authorities operating in market economies of developed countries. For this reason, the legitimacy of discretionary, and frequently individual, intervention is much lower than in developed countries. Furthermore, the type of legal system applied in the ECE3 countries, based on civil law and rigorous codification principles, does not encourage endowing supervisory authorities with discretionary powers and their efficient functioning on this basis.

Dynamic provisioning does not promote catching up

In our view, the third possible method for solving the problem in question, considered by the authors of the BIS study as most suitable, can only be applied in transition economies to a limited degree. The introduction, for example, of dynamic provisioning rules, fundamentally assumes that a lending boom during an economic upturn is associated with a procyclical pattern of bank behaviour, i.e. the increase in credit volume is based on a supply-side shift and not on productivity gains. In respect of a lending boom engendered by advances in productivity, it presumes that the degree of relaxation in credit standards will exceed the improvement in debtors' repayment capacity. Consequently, dynamic provisioning not only smoothes banks' provisioning behaviour, but also smoothes lending activity itself, by restraining the buoyancy of lending during an economic upswing, and reducing the scope of credit squeeze during a recession. This may have quite a damaging impact in transition economies, as it necessarily hinders the deepening process in their financial intermediation. Prescribing high loan-to-value ratios and further increasing these during lending booms may also constitute an obstacle to deepening financial intermediation.

6 | Conclusions

The most important conclusion of this study is that – in respect of the ECE3 – in order to lay the groundwork for the sustainable economic growth necessary to close the gap to the developed countries, a significant deepening of their financial intermediation systems and in particular their banking sectors is imperative. It is crucial that this deepening of financial intermediation be accomplished in such a way that the damaging effect of a pattern of procyclical character by banks, an excessive relaxation of credit standards, under-provisioning for banks' credit risks, and an erosion of banks' earnings be avoided.

A significant deepening of the financial intermediation systems is imperative

The lending boom which had to occur in these countries is not an unequivocal sign of imprudent lending or a supply-side expansion in lending by banks – on the contrary, it should be viewed as a natural accompaniment in the economic development and progress of these economies. If regulatory and supervisory authorities assess expansion in lending by banks in this region as an undeniable sign of procyclical behaviour, and formulate regulations to cool down their lending activity, they may cause serious damage, and, under extreme circumstances, even contribute to interrupting the path of economic growth in these countries. On the other hand, if during a lending expansion supervisory authorities fail to duly enforce or attend to the enforcement of the principles of prudence, the best possible assessment and measurement of credit risks by banks, this may lead to banks' expansive business policy not deepening financial intermediation, but rather undermining the stability of the financial system as a whole.

Prudence and risk awareness are crucial

In developed market economies regulatory authorities and the BCBS are increasingly paying attention to eliminating the deleterious effect of procyclicality, and a number of proposals regarding regulation of this character or some alternatives actually capable solving this sort of problem have been outlined. Presumably, regulations designed to prevent procyclicality cannot be considered as rules applicable uniformly for every banking system, and – in particular with regard to transition economies – it must be examined on a case-by-case basis whether or not such regulations hinder the required deepening in these financial intermediation systems. In our view, these countries need regulations which encourage better as-

Fostering a better understanding of risk factors

sessment of risks, transparency of banking business, and the emergence of appropriate corporate governance, but – in parallel with these aspects – do not automatically rein in strong lending activity by banks. For this purpose, publications promoting better assessment of risks as well as professional exchange of views are most suitable. The special surveys conducted under the title 'Financial System Stability Assessment (FSSA)', published within the framework of the Financial Sector Assessment Program (FSAP) initiated by the International Monetary Fund fall into this class, and are devoted to exploring the degree of stability or vulnerability of individual countries' financial sector. Similarly, financial stability reports published by the central banks of more and more countries and publications by the Basle Committee on Banking Supervision (BCBS), presenting professional debates on the renewal of capital adequacy rules can be classified in this category as well.

Vesting supervisory authorities with discretionary powers may also be suitable for restraining excessive and at the same time insufficiently prudent bank lending. But in the ECE3, and mainly in respect of Hungary and the Czech Republic, this instrument is difficult to harmonise at the time being with their legal systems which are based on traditional civil law.

Compulsory application of rules formulated or introduced in developed market economies for restraining procyclicality under certain conditions may clearly hinder economic development in transition countries, and hence under no circumstances would we recommend their introduction as uniform international norms. Different kinds of dynamic provisioning or rules envisaging extremely rigorous norms for accepting collateral by banks during periods of expanding lending also belong to this type of regulation.

Focus on quality factors

In summary, in our view regulatory instruments which focus on quality factors, foster the development of this sector and operate in accordance with international standards are effective means of regulating the financial sector in transition economies, placing less emphasis on quantitative regulations which (may) slow down the rate of expansion in bank lending.

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EDIT HORVÁTH

Lending booms, credit risk
and the dynamic provisioning system

Regulatory reactions to portfolio problems arising
from lending booms during periods
of economic expansion

Contents

1 | Introduction

A number of international precedents draw attention to the fact that in lending booms occurring during expansionary phases of the business cycle (which are defined as positive output gaps) banks fail to prepare for a possible reversal of the cycle and for managing the growing risks entailed by such a reversal, whereas deterioration of loan portfolio quality during a recession (negative output gap) can easily cause shocks in the banking system. This paper investigates the regulatory methods which are implemented during lending booms in overheated economies and which attempt to motivate banks to be aware of the risks inherent in a change in the business cycle.

A considerable increase in the loan portfolio in a temporarily overheated economy is especially dangerous because the very same loans involve a much higher credit risk exposure in a recession, as financial downturns are characterised by an increase in the probability of default and loss given defaults, and by a strengthening of the correlation among loan losses and a decline in the value of collaterals. Thus, loans – as of the moment of being extended – entail a kind of systemic risk according to changes in the macroeconomic environment.

Consequently, the banking instruments which are presently used to manage credit risks, primarily the traditional asset side provisioning/loan loss system based on ex post criteria and the definition of the capital requirements, are insensitive to the fact that if a lending boom takes place during an expansionary business cycle, the quality of the loans does not reflect potential losses arising from a possible downturn in the economic cycle.

International experience shows that the ratio of provisions to the total loan portfolio declines during an expansion and grows during a recession, disregarding the above-mentioned trend of credit risks. Hence, the development of this risk renders banks' results unstable, exacerbating the impact of economic cycles on their stability. Banks' behaviour in this regard indicates that they tend to regard an economic expansion, which is temporary in its nature, as a permanent phenomenon, and evaluate their loan-related risks on that basis. On the one hand, the reason for this is that the consideration of risks increases costs and consequently the price of certain loans, and, on the other, unsolved methodological problems and the lack of regulatory encouragement have the same result.

Even the adoption of the New Basel Capital Accord (Basel 2), which is regarded as a reform of the present banking regulations, will not modify this type of instability in the banking system, due to the short length of the forecast horizon and other deficiencies in the risk evaluation methods. Indeed, its adoption may even increase the cyclical flow of capital. Cyclical fluctuations are also exacerbated by neglecting the fact that the extent of correlation between loan losses and the value of collaterals develops in parallel with business cycles. Collaterals play a decisive role in the rating system of banks, mitigating losses in case of default. Since both the extent of the loan loss provision and the risk weight used to specify the capital requirement according to the New Basel Capital Accord depend on the value of collateral, any shift in the value of the collateral – which follows the development of the business cycle much closer than the loan portfolio – influences the extent of loan loss provisions and capital at the same time and in the same direction. Basel 2, however, also points out that one of the risk factors – the Loss Given Default – depends on the business cycle. This is partly the reason why only those banks which meet the highest requirements and use data of at least 7 years (probably reflecting the characteristics of everal phases

of business cycle) may use their own estimation to specify this indicator.

Regulatory instruments which are able to reduce the banking system's exposure to the business cycle include correct modification of loan-to-value ratios, capital requirement regulations and provisioning rules.

This study focuses on the presentation of the classical principle of dynamic provisioning, which at present seems to be the most sophisticated method. In this case, provisioning is undertaken on the basis of expected future losses specified by statistical models. Examples of this form of regulation are shown using the experiences of two countries – Spain, where it is a mandatory administrative requirement and Australia, where it is a recommendation of the supervisory authority.

2 | Cyclical development of bank lending, problem loans and provisions

The development of banks' private loan portfolios tend to follow changes in the business cycle. This trend, however, cannot be demonstrated with complete certainty.

According to the BIS panel investigation (see Chart 1) the temporary overheated nature of an economy, or a recession has an impact on changes in the loan portfolio, although this impact is not necessarily procyclical - in many cases it is deferred and varies from country to country.

In the countries reviewed a temporarily overheated economy (positive output gap) caused an increase in the loan portfolio/GDP ratio, while in most cases a negative output gap led to stagnation, or less frequently, to a decline in the ratio. Even during a negative output gap the loan portfolio/GDP ratio did not decline in Japan in the 1980s, in England in the early 1980s, nor in Italy in the late 1990s.

In those countries reviewed where the loan portfolio/GDP ratio declined (Spain, Scandinavian countries), this decline started with the output gap turning negative; when the crisis was overcome, the loan portfolio/GDP ratio started to increase concomitantly with the decline in the negative output gap.

International examples of banking system crises (in the Scandinavian countries, Japan, the US, and other Asian countries) illustrate that in each case the banking crisis was preceded by a rapid expansion of lending in an overheated economy, while in other cases this phenomenon did not cause a decline in the credit/GDP ratio.

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[1] This is demonstrated by the output gap, the difference between the actual and the potential (trend) GDP. A stable position of the economy is shown by close to zero value of the output gap; if the output gap is positive, the economy is overheated to such an extent which cannot be maintained permanently, if it is negative, there is a recession which is also to be regarded as a temporary phenomenon.

Chart 1

Sensitivity of household and corporate loan portfolios to changes in the output gap[2]

Japan

Per cent — Per cent

- Total privat loans/GDP (per cent)
- Output gap (right-hand scale)

United Kingdom

Per cent

- Total privat loans/GDP (per cent)
- Output gap (right-hand scale)

Italy

Per cent

- Total privat loans/GDP (per cent)
- Output gap (right-hand scale)

Spain

Per cent

- Total privat loans/GDP (per cent)
- Output gap (right-hand scale)

Australia

Per cent

- Total privat loans/GDP (per cent)
- Output gap (right-hand scale)

Sweden

Per cent

- Total privat loans/GDP (per cent)
- Output gap (right-hand scale)

[2] BIS Papers: Procyclicality of the financial system and financial stability: issues and policy options, March 2001. (Output gap data are based on the methodology used in the OECD Economic Outlook.)

> **Business and lending cycles**
>
> *On an aggregate level, both credit demand and supply factors change in parallel with the economic background. The economic background can be characterised using the following aspects: GDP and the rate of unemployment, private consumption, asset prices and the regional and global development of the economy. Problems arise if the evaluation of the future is unrealistic, i.e. if increases in asset prices and loans are unjustified, because the expectations on which their values are based have become irrational. Bubbles of this type will burst sooner or later, and this is evident mainly in declines in asset prices.*
>
> *Asset prices may be defined as the present value of the income produced by the assets in the future. Thus, increasing asset prices reflect increasing future incomes, which make it worthwhile to take out more loans ($\Rightarrow$ demand for loans increases). The supply of credit increases as well, since higher asset prices enable higher levels of credits. So parties wishing to borrow are in a better position. Simultaneously, they will be assessed more positively, as higher income and cash flow expectations indicate that debtors will be able to service and repay their debts more easily. The banking crises in the 1980s and 1990s in the developed economies all resulted from an expansion of lending driven by high asset prices (frequently increasing real estate prices entail a change in the loan portfolio, for example in the case of the Scandinavian crisis).*
>
> *Private consumption and a positive international business environment may also lead to increases in the loan portfolio (for example, in Denmark in 1982–1986 and 1993–1998). In the household sector the macroeconomic consequences of a boom are declining unemployment and rising real wages, while in the corporate sector the result is an improving market for products. The corporate sector's credit demand rises in order to accommodate growing consumer demand. Households also want to borrow out more, in order to purchase capital goods (which seems to be more cost-effective due to the expansion) or to follow growing real estate prices or to make advance consumption. While banks are prepared for the possibility that some of their loans will be non-performing (for example due to default by firms), they are not prepared for a concurrent series of defaults in a recession.*

2.1 Changes in credit risk during business cycles

The relationship between economic activity and loan losses is much more evident than the relationship between economic activity and the credit/GDP ratio. Nevertheless, it is still quite difficult to quantify this phenomenon and to model the temporal changes in the correlation of individual debtors' loan losses. Despite the uncertainties we can presume the following: ceteris paribus, cash flow forecasts are optimistic throughout a boom, and equity prices and the market value of firms are high as well. Thus, the probability of default and loss given default – due to a change in the valuation of the collateral – is lower during a boom (and higher during a recession). In case of dynamic economic activity banking conditions ease (partly formally, partly automatically regarding performance) and this may cause an excessive accumulation of loans.

Relationship between economic activity and credit risk

Risk factors change…

...and so does systemic risk

Economic intuition suggests that the correlation among loan losses is higher if the probability of default is high. The reason for this is mainly that the better a company's credit rating, the lower its correlation with the loan losses of other companies and vice versa. Thus, we might presume that default correlation is also higher during a recession than during a boom. The development of correlation of loan losses is also reinforced by the fact that the coincidence of default is probably due to systematic factors as well; thus, the change in the correlation may clearly follow the development of systemic risk, which is higher during a recession. For the participants of the financial system systemic risk is a 'mediator', which 'transmits' the cyclical development of the economic and financial environment.

An increase in the loan portfolio is a kind of risk indicator

Since loans involve a latent risk as of the very moment of being extended – depending on the changes in the macroeconomic environment – this latent credit risk moves in parallel with the loan portfolio, and increases when the loan portfolio grows. Consequently, it may be justified to regard an increase in the loan portfolio as a kind of risk indicator.

In terms of banking instruments, provisions and capital are used to measure and manage credit risk exposure. Thus, it is useful to investigate how their level changes in connection with the aforementioned development of credit risk exposure.

2.2 Instruments used to manage credit risk exposure – provisions and capital

Credit risk is covered by provisions and capital

Traditionally, capital is used to cover unexpected losses, whereas provisions serve to cover expected losses. For capital it is expedient to consider a different time horizon than in the case of provisions. A time period is considered to be relevant throughout which the bank is able to raise new capital or is able to eliminate risk exposures in its balance sheet. Whereas expected events after the expiration of the duration may modify the asset value and the provisions needed, this change does not influence the quantity of capital. In respect of loans, however, this diverging time horizon does not result in a significant difference, since in most cases the duration is defined by the maturity of the asset and upon 'expiration' of the duration the asset disappears.

The aggregate volume of provisions formed in relation to lending activity is designed to reflect a bank's credit risk exposure in the

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[3] In the case of individual debtors, client groups and industries as well.
[4] Zhou (1997), Gersbach and Lipponer (2000)

entire loan portfolio, to reduce the value of loans to a level which is in line with their risks, and to represent all these aspects in the profit and loss accounts, thus rendering a correct and prudent evaluation of the bank's profit and capital. The total volume of provisions (specific and general) can be considered adequate if it is able to counterbalance the estimated losses in the loan portfolio.

Forward-looking provisioning

It is a fact, that in countries experiencing a financial recession banks have consistently underestimated the possible losses in their assets, and thus overvalued their assets (including the value of loans) and capital. This highlights the fact that there is an urgent need for forward-looking criteria, through which expected future losses on loans are already treated as losses in the present, functioning as a certain type of insurance. In certain countries the financial authorities support the specification of expected losses with statistical models, and the provisions established on the basis of such calculations are called ex ante or dynamic provisions. The following table presents a few examples of ex post and ex ante provisioning criteria.

Unlike ex post criteria, ex ante criteria are not specified by regulators

It is clear that the use of ex post criteria is the simplest and most self-evident method. Regulators tend to formulate ex post criteria most clearly, while also ambiguously referring to ex ante criteria as well, thus providing significant leeway for banks to apply ex ante criteria. In most countries specific provisions are established if a loss is highly probable (for example due to past-due payment), however there is still a possibility that the claim will be collected. Thus, in some respects they use also ex ante criteria, but in practice only the most developed banks use ex ante provisioning, and – as will be evident from the limits of the credit risk models – in these cases as well

Table 1[5]	
Ex post criteria	Ex ante criteria
– Delay in interest rates or principal payments – If the loss is legally acknowledged	– Loss is highly probable according to statistical analyses (including delays, historical experiences, present economic conditions) – The quality of the loan has deteriorated (there is not enough collateral to service it) – According to credit rating information the loss is quite probable. – The loss is attributable to temporary factors (fluctuation in the annual loss around the expected value throughout a business cycle)

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[5] Cortavarria, Dziobek, Kanaya, Inwon (2000)

the criteria are applied only with certain shortcomings. General provisions are created on a 'more forward looking' basis since they are established for losses, which are formally not predictable although their occurrence is quite probable.

According to current regulations in Hungary specific provisions/loan loss allowances must be established if default for a specified period of time has occurred in the schedule of payments, or if information is obtained indicating that such a default is quite probable – thus both ex ante and ex post criteria are formulated. This, however, is realised initially as an ex post criteria related to the present and the past. The main reason for this is that measuring future credit quality expectations is very complicated and thus, in the course of the rating based on traditional balance-sheet indicators, provisions are established mainly on the basis of events which have already happened and not on those which may happen in the future. General provisions on the liability side, which – amongst other things – also include the growth in the loan portfolio, only reflect the increase in the volume, and not the character (slowing, accelerating) of growth.

According to the examples illustrated in Chart 2, the provision/total loans ratio begins to grow upon termination of the positive output gap and peaks at the top of the negative output gap. Comparison with Chart 1 shows that the quality of the loans accumulated during the positive output gap deteriorates considerably when the economy ceases to be overheated. Since only an insignificant portion of provisions established in a certain year are connected with new loans, the change in the provisions/loan portfolio ratio provides insight on the change in the quality in the previous year's portfolio. With the decline in the negative gap the provisions/total loans ratio also declines, thus the quality of the portfolio does not continue to decline - banks do not face more default on payments; on the contrary, the trend improves. The development of provisions also illustrates the behaviour of banks, showing that they evaluate the quality of loans based on the assumption that the business situation prevailing in a certain year is permanent.

Aware of the change in risk factors, even on the basis of mere observations, we may draw the conclusion that changes in the business cycle influence the systemic risk of loans. Whereas the development of a positive gap means low risks throughout the maturity of an average loan portfolio (which, on the basis of the recommendations of the New Basel Capital Accord, is about 3 years), a decline in the positive gap and the development of a negative gap lead to a considerable increase in risks.

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[6] According to the valid (effective) Hungarian regulations general provisions might be taken into consideration among tier 1 capital elements up to maximum 1.25% of the total balance sheet.

Chart 2

Sensitivity of banks' provisioning to changes in the output gap[7]

Japan

United Kingdom

Italy

Spain

Australia

Sweden
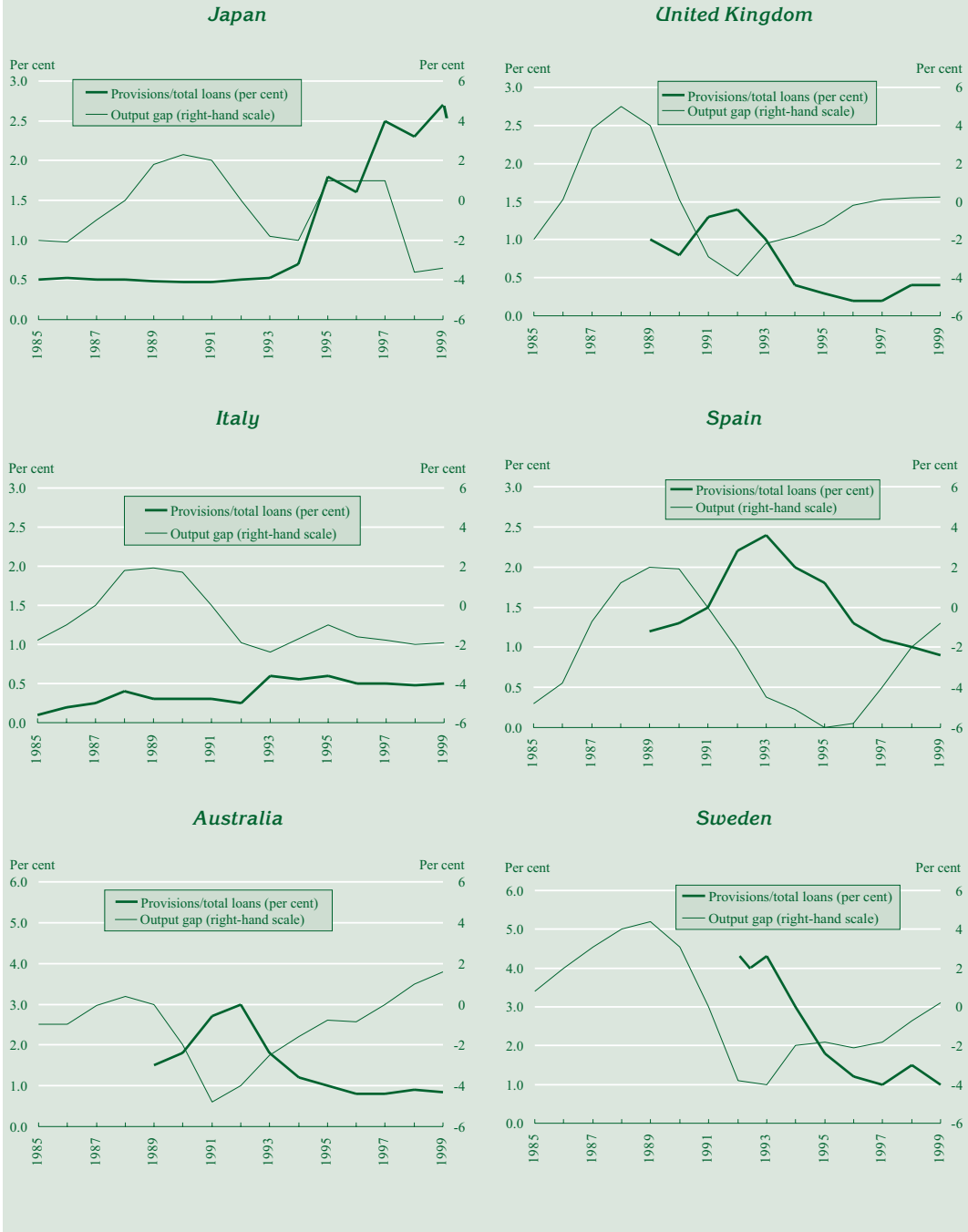
[7] BIS Papers (2001) Output gap data are based on the methodology used in OECD: Economic Outlook.

The change in provisions outlined above can be explained in several ways. Accumulation of specific provisions declines during an economic upswing due to the fact that the debt repayment ability of debtors is excellent and they satisfy traditional evaluation criteria more easily. The creation of general provisions increases, since these are established in most cases in relation to total assets, i.e. they exert some kind of correcting effect – but on the basis of international examples, it can been seen that this is insufficient. (See Chart 2.)Thus, all in all, the ratio of provisions established against total loans declines. Bank results, which are improving anyway due to the credit boom, will continue to improve since they need only charge a small amount of provisions as costs.

The effect is exactly the opposite in the case of a recession – the allocation and portfolio of specific provisions increases, because the position of debtors deteriorates and the volume of general provisions increases at a slower rate (if the recession causes a decline in the rate of increase of loans and not of the total volume since in the latter case the portfolio decreases). Thus, total provisioning increases, with a further deleterious impact on banking results, which are declining anyway.

This behaviour will be strengthened further by the fact that during a strong business upturn the market expects a higher yield from banks and exerts considerable pressure on them to produce higher profits. This increase in profits is also supported by the decline in provisions established against loans - thus banks will be less interested in disclosing uncertain future losses and thereby reducing their results.

3 | Limitations of risk measurement methods in the assessment of systemic risks

The current risk measurement methods (banks' internal ratings, ratings of credit rating agencies, credit risk models) are primarily able to assess relative risks, but are hardly suited for the evaluation of changes in systemic risks due to financial and business cycles. The main reason for this is the lack of available data, but certain characteristics of the models also have this consequence, such as the short-term time horizon, disregard of the diversification effect in the loan portfolio, or the assumption that the correlation between the loan losses of different elements of the portfolio remains constant.

Methodological short-comings

Internal rating system of commercial banks

The more developed rating systems, which evaluate the total credit risk exposure of the portfolio and are also involved in pricing, capital allocation and provisioning decisions, suffer from the following problems: they focus on a particular date (point-in-time) and investigate the risk of a one-year time horizon. The reason for the one-year horizon is the availability of data, the accounting period of banks and the time period of allocating new capital. These systems do not deal at all with changes in the correlation typical for the portfolio or with the fact that they develop in parallel with the business cycle and the deterioration of credit quality.

Consequently, the quality of banks' portfolios changes considerably throughout a business cycle.

Internal rating systems focus on a point in time and investigate the risk of a one-year time horizon

Credit rating agencies

Despite the fact that actual practice shows a different picture, agencies specialised in rating debtors and loans try to rate their debtors so that the rating is valid through a whole cycle (through-the-cycle). Their method is to assume a hypothetical negative scenario when investigating the debtor (they assume a higher default probability or – more often – higher loss given de-

Credit rating agencies assume a hypothetical negative scenario to stabilise their ratings

faults). Ratings are changed if the agency changes the probability of default in the negative scenario or the scenario itself. This, of course, also means that if a recession is more severe than the postulated negative scenario, the rating deteriorates. The consequence of this method is that whereas the rating of a debtor will not change throughout a cycle, the probability of default relevant for a specific rating will. On the contrary, if the debtor is rated for a particular date assuming present conditions, the rating of the debtor will change over the course of time, but the probability of default will remain constant. Thus, banks must pay particular attention to the method which they wish to use in their internal rating system and whether or not they want to make their rating categories correspond to the categories of external rating agencies.

Analysis of industries' business industries' cycles

Most rating agencies do not only modify risk factors on the basis of their assumptions regarding business cycles, but also consider the role of the debtor within the particular sector of industry as well as the demand and supply-determining role of the industrie's business cycle.

Credit risk models

The majority of models extrapolate the present state into the future

For the majority of models it is evident that models extrapolate the present state into the future in some way or another. For larger portfolios the nature of correlations within the portfolio – if they are constant or depend on the present state of the economy – is a significant factor as well.

Limitations are...

...the cyclicality of share prices...

The Merton-based model   concentrates on microeconomic changes. In concrete terms this means that the probability of default is calculated from the capital structure and the volatility of the asset price. According to the model, default occurs if the value of liabilities exceeds the market value of assets on the day of maturity. According to initial assumptions credit risk is governed by the dynamism of asset values, thus it evaluates the probability of liabilities' book values exceeding assets' market values, in correspondence to certain systemic factors.

The market value of corporate assets is not considered as a value which can be observed – hence, the market value will be specified with the aid of equity prices, the volatility of equities and the book value of liabilities applying the option characteristic of equities. Used for a one-year period it will produce obviously cyclical values

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[8] More detailed see Horváth (2001)

since equity prices and the volatility of equities moving in parallel with the business cycle determine the default probability and the correlation among corporate defaults. A longer than one-year application of the model is possible as well; in this case, however, the time horizon will be automatically extrapolated.

The CreditMetrics model using a transition matrix operates on the following principle: each debtor is rated and, with the help of a transition matrix, the probability of an improvement or deterioration of the rating, or perhaps default is specified. A default is the most extreme case of a drop in value, but the price of the loan also declines if the rating deteriorates. Accordingly the CreditMetrics model simulates the distribution of the debtors' rating at random (what is the probability of each rating). It recalculates the price of the loan on the basis of the values calculated and with forward premiums typical for the rating given and – by aggregating these sums – it generates the value of the portfolio. Thus, it is generally regarded as a forward looking model; the consideration of future events, however, occurs through a mechanical adaptation of transition matrixes, and a transition matrix does not depend on economic or financial variables. Another disadvantage of the model is that it strongly depends on the rating system used.

...the mechanical adaptation of transition matrixes...

The CreditRisk+ model focuses on the loss distribution of portfolios using analytical calculations. Its methodology is based on mathematical models which are also used in the field of insurance. Different sectors are created in the model, with each sector exhibiting a characteristic loss distribution and using two parameters: the expected value and the volatility of the probability of default. The conditional probability of default of a particular loan is worked out with cross-sector weighting. Thus, the occurrence of a default is a statistical probability without any background argument. The model, which due to its default mode aspect concentrates exclusively on losses from default and does not handle changes in loan quality, depends strongly on the methodology according to which the probability of default is formulated. If this is focused on a particular date, the results of the model will be cyclical.

...dependence on the quality of the data...

There are also models, which make their results explicitly dependent on the state of the economy. The CreditPortfolioView is an econometric model, which regards the actual macroeconomic environment as a determinant factor in the evaluation of credit risk. Thus, for example, the default probability of a BBB debtor is higher in a recession than in an improving economic environment.

...and shortage of data

The distribution of losses is customised using the state of the economy in different countries and industrial sectors. The econometric model calculates the ratio of default through the analysis of an indicator consisting of macroeconomic variables and the sensitivities related to them. Instead of using average default ratios to

generate the rating, it makes the present and transition probabilities dependent on the actual economic situation. This model was created by the observation that the ratio of default changes in parallel with the cycles of the economy, and that the volatility of the default ratio can differ considerably across various sectors. Therefore, in this case, the links observed among macroeconomic factors and transition matrixes are used. The problem is primarily a lack of the required data.

4 | Possible regulatory instruments for reducing the volatility of financial cycles

In the event of intervention, the following question arises: to what extent are the authorities better able to estimate the vulnerability of the system than the market? In any case, regulators have different incentives and different responsibilities than market players (e.g. protection of depositors, stability of the system, etc.). Thus, for example, in a period of rapid growth regulators may find it necessary to increase capital requirements whereas the institutions themselves are less willing to increase capital. At the same time, another aspect must be taken into consideration: what are the consequences if the authorities intervene in the wrong direction? The efficiency of the banking sector may deteriorate if regulators require excessive caution, which is not justified based on the growth of asset prices, whereas it may lead to a weakening of the system if no intervention is carried out when necessary.

Regulatory intervention may be necessary, but also dangerous

A financial cycle's volatility may be exacerbated by regulatory restrictions, collateral valuation techniques, incorrect estimation of capital reserves and provisions. Regulators have three instruments, which they can use in different ways (discretionarily, automatically and by setting minimum limits):

The three instruments of regulatory intervention...

    – suitable modification of loan-to-value ratios
    – modification of capital adequacy regulations
    – changes to provisioning requirements.

In addition to these options, there is the possibility of verbal intervention as well, revealing and communicating risks in the form of published analyses, research studies and speeches presented by managers on the stability of the financial system. Accordingly several countries, including Norway, Sweden, England and Hungary publish reports on financial stability. Verbal intervention, of course, can only have results if market players take the analyses of the authorities seriously – warnings which are ignored have no effect.

... and its three methods are verbal intervention...

Regulatory instruments can also be supplemented automatically in line with the change in risks if minimum capital adequacy ratios, provisioning ratios and the maximum loan-to-value ratio are linked automatically to factors such as the growth rate of loans, the length of an expansion, or changes in real estate prices. This method has the same effect as the use of discretionary instruments.

...changing the methods behind regulatory requirements

One advantage is that it does not depend on the hesitation of authorities, and there is no need of constantly justify this type of intervention. One disadvantage, however, is the difficulty in estimating the correlation among variables and finding weights, which are constant within the time limit, and modelling their effects. Another method of amending regulations is that the regulatory requirements do not change explicitly, but rather the methods and models behind them are altered. One example of this is a change of provisioning rules. More and more sophisticated internal models are adapted to specify expected losses. It would be beneficial to make use of these models in the accounting rules as well.

...and discretionary intervention

Discretionary use of supervisory instruments is only seldom possible, in the case of significant imbalances. In such cases supervisory instruments are employed on the basis of particular supervisory decisions and not automatically. These methods may function primarily as security brakes, in the event that automated mechanisms fail.

The period reviewed should be a medium time period

In order to correct the most important shortcomings of the models – namely, the short time period – regulators may specify that the period reviewed be a medium time period, thereby integrating changes in the business cycle into the model.

4.1 Examples of regulatory intervention

More stringent standards may amplify the cycle

Attention should be drawn to two possible dangers of regulatory intervention or the failure to undertake such intervention. During an economic downturn there is greater pressure on supervisors to introduce tighter standards, in order to protect depositors and the banking system. This, however, may contribute to a further expansion of the crisis since it curbs lending activity, which is already declining more steeply anyway. It exacerbates the cyclical movement of lending too, if the supervisors do not change the standards during a business cycle. Constant standards represent a de facto easing during an upturn and a tightening during a recession.

4.1.1 Modification of loan-to-value ratios

In most countries it has been realised that real estate prices react most sensitively to the development of the financial cycle. Thus, the market price of collaterals may intensify the evolution of the cycle. This will have an even stronger effect if the loan-to-value ratio is high. Most supervisory authorities do not specify exact parameters

for the valuation of collaterals, but one widely used instrument is to specify discount rates to calculate the present value or to recommend the use of conservative valuation procedures. Thus, for example, in Germany minimum discount rates and forecasting time periods are defined, in Denmark discount rates are defined but in a less formal way, while in Japan and Mexico haircuts for further depreciation of the market value are formulated. During the crisis in Hong Kong in the 1990s lending was limited to 70 per cent of the collateral – 3 years later this figure was cut back to 60 per cent. The New Basel Capital Accord (Basel 2) specifies the minimum haircuts according to the type and quality of collaterals; the first draft of the recommendation allowed a perfect coverage only in extraordinary cases (i.e. repo-style transactions).

Changes in the maximum loan-to-value ratios or modification of the haircuts used in the valuation of collaterals can also be used as a discretionary instrument. However, it is also possible for maximum loan-to-value figures to be linked automatically to certain indicators. In addition to automatic modifications minimum haircuts might be specified to the valuation of collaterals as well.

Medium-term economic changes may also be taken account of through the modification of the haircuts used in the valuation of collateral and loan-to-value ratios

4.1.2 Modification of capital adequacy ratios

As another discretionary instrument, authorities may require higher capital adequacy ratio throughout a boom either at the system level or at specific banks which are highly exposed to changes in the business cycle. The same could function automatically when – such as in the case of loan-to-value ratios – minimum capital adequacy ratios are linked to the state of the economy, the growth rate of lending or real estate prices. Changes to minimum capital adequacy ratios may serve as a minimum mandatory supervisory regulation when, for example, 'target' capital requirement indicators are set for banks, which they may underperform only during recessions and may lower their capital adequacy ratio to the minimum level.

Higher capital adequacy and higher provisions demanded during a boom will provide a buffer during a downturn

4.1.3 Modification of provisioning methods

Minimum provisioning ratios can be specified both discretionarily and automatically, similar to the aforementioned. There are mandatory, normative supervisory regulations available as well, to mitigate the cyclical changes in provisions, such as the regulations introduced in Spain.

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Tasks associated with dynamic provisioning are...

...defining expected losses...

In the course of dynamic provisioning, which aims at specifying expected losses, the most important steps are the following:

– Specifying expected losses which are characteristic for individual categories (regulators use a minimum value, while banks use a value estimated by internal models). Essentially, this is the most controversial area, since there is no perfect model and different models produce different results.

...and clarifying accounting rules

– Selection of accounting principles. Provisions created in this manner are a kind of general provision in the sense that they are not connected to a particular loan but to categories and the portfolio as a whole. On the other hand, such provisions are not part of own funds - contrary to general provisions - since with the realisation of risks the specific provision is transferred from these provisions.

International models

Dynamic provisioning or the application of similar statistical methods for creating provisions is not yet a widely used technique. As a mandatory regulation it is applied only in Spain and Portugal; in Australia the supervisory authority recommends its use, while several other countries offer tax incentives to encourage application of this method. Some of the most developed banks use a provisioning system based on statistical methods, for example: Barclays Bank PLC and Swiss Banking Corporation in Europe, Bankers Trust, JP Morgan, Bank of America, Citibank and Bank of Montreal in North-America.

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[9] The point of this method is that statistical provisions are defined on the basis of long-term average losses and specific provisions are established complementing these allowances, so the change in specific provisions does not influence profit and loss accounts.
[10] Cortavarria, Dziobek, Kanaya, Song 2001)

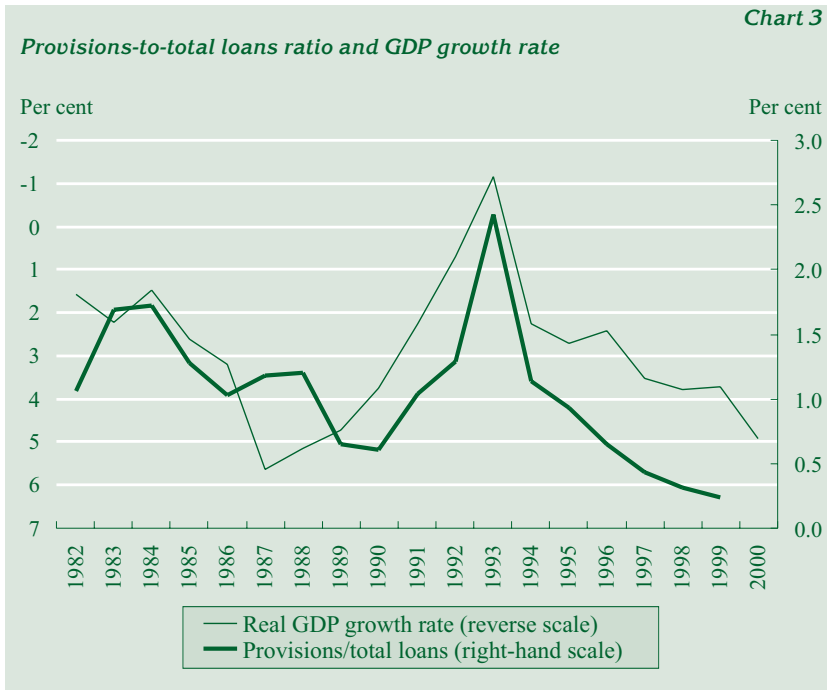# 5 | International examples of dynamic provisioning

5.1 The statistical provisions in Spain

5.1.1 The new method of provisioning

As a result of the boom in the Spanish economy, since 1993 the lending expansion of banks has led to a low value of the provisions/total loan portfolio ratio for the reasons outlined above.

Recognising the problems inherent in this phenomenon, the authorities modified the provisioning rules in the second half of 1999. These regulations now require credit institutions to take risks of this nature into consideration over the medium and long term. A new provisioning category was also created, the so-called 'statistical provision for insolvency' (see Chart 3).

In Spain and Portugal, dynamic provisioning has been a regulatory instrument since 1999

Chart 3

Provisions-to-total loans ratio and GDP growth rate

Per cent — Per cent

— Real GDP growth rate (reverse scale)
— Provisions/total loans (right-hand scale)

General and specific provisions are created continuously in the traditional manner and for traditional purposes. General provisions are established to cover expected losses as a given proportion of the total loan portfolio (there are three risk groups: 0%, 0.5%, 1%), which are, however, not connected with direct assets and are for unspecified losses. Specific provisions are created to cover the expected impairment of assets based on problem loans and coefficients connected therewith (these more or less correspond to the categories found in Hungary). In addition to these provisions, the statistical provision is formed with the purpose of anticipating risks arising from changes in business cycles for each risk category. The statistical provision records the expected losses connected with the initial portfolio in a way that total provisions (specific, general and statistical) created over the years are smoothed. The statistical provision increases in periods of economic growth, complementing net specific provisions, which are rather low in these periods compared to total loans. That is, it records expected losses expected in a recession against the profit for the present period. The ratio of specific provisions to total loans, which increases during a recession, will be reduced in the P&L account by the release of the statistical provision. Thus, in a specific year it is not necessary to create as high provisions as specific provision indicators show, since the institution is already prepared to handle that problem, it has already created a part of this provision earlier.

The new approach establishes six categories according to the riskiness of loans and these six categories are assigned the historical average net specific provisioning ratios (ratios increasing with riskiness) based on a previous cycle (1986–1998). This indicator is the average of the net provisions created throughout the cycle, thus it determines the amount of provisions to be created for expected loan losses (latent risks) for one year in advance (this indicator is known as the statistical specific charge, or SSC, hereinafter: estimated statistical loss), which is shown in the P&L accounts for the year in question. Due to its calculation methodology, this value is a flow value and not a stock value. It indicates the amount of provisioning necessary against the loan portfolio with a given risk in that particular year in order to smooth provisions connected with the initial loan portfolio during the years. Following the estimation of expected losses of the loan category given, the write-off is carried out smoothly, not in one step.

On a quarterly basis, the estimated statistical loss (one-quarter of the yearly amount) is compared to specific provisions, loan loss write-offs and recoveries, and releases of provisions in the profit and loss accounts (this is the net provision created against doubtful and bad loans). The aim of this method is that the aggregate amount of the estimated statistical loss and the general provision (GP) should

appear as a provision-total in the profit and loss account of the given year. Hence, if the amount of the estimated statistical loss is higher than the specific provisions created in that quarter (recorded provisions are insufficient or loan loss forecasts are too optimistic) the missing difference is entered into the Statistical Provision account as a profit-decreasing item. If the situation is the opposite and the estimated statistical loss is lower than the specific provision created, the surplus will be released through the Statistical Provision account and it will be entered as a profit-increasing item. In this way it is possible for the correct amount of provision to be entered in the profit and loss account, no less and no more.
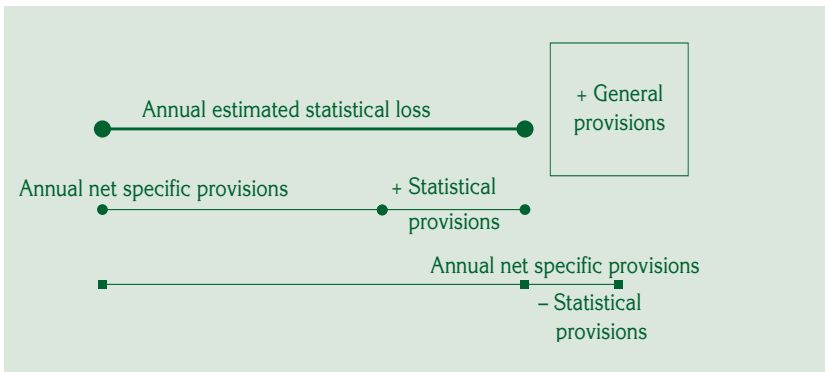
Provisions required in one particular year – expected annual losses – and general provisions

The new loan loss provisioning method is a correcting account which smoothes the cyclical nature of the ratio of provisioning to total loans and the profit influencing effects of provisions. The change in provisions indicates the change in the portfolio of risky loans – essentially changes in the credit quality of new loans and to a lesser extent changes in existing loans. This later might only happen if the estimation is incorrect, or an unexpected shock occurred. It already provides information on the risks of the loan at the beginning of the transaction and thus the bank will have a chance not only to simply react, but can decide as early as the lending phase if it wishes to take on the risk of the transaction or not.

Correcting accounts

Changes in provisioning provide information about the difference between the risk profile of new loans and that of existing loans

The determination of the estimated statistical loss, which is used as a basis for provisioning, is a critical point in this system - hence, a high level flexibility is built in to ensure the viability of the system. In the case of the standard approach the result is the following: six different categories are established according to the sensitivity to changes in the business cycle, and these are multiplied by coefficients characteristic for the different credit categories (in brackets) which are to be modified according to the characteristic features of the development of the next business cycle:

– Without risk (0%) items: risks involving the public sector

– Low risk (0.1%) items: certain mortgages, and exposures to firms whose long-term debts are rated at least A.

– Medium-low risk (0.4%) items: financial leases and other collateralised claims (which are different from the two points above)

– Medium risk (0.6%) items: risks not categorised under the other points.

– Medium-high risk (1%) items: personal credits to finance purchases of durable consumer goods, other goods and services not for business purposes.

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

In specifying credit risk categories and their coefficients, Spanish regulators made use of their historical experience (at least in the case of the centrally-formulated standard methodology). As a model they considered a total business cycle (1986-1998) and the ratio of net specific provisions created during the years of that cycle to the total loan portfolio. This is the ratio of provisioning which is needed to cover loan losses expected in a business cycle, and this volume was distributed evenly (averaged) for the years of the cycle. The aim was not to adapt to the past cycle in the example, but rather to anticipate the next cycle. Thus, they decided that all these coefficients might be modified any time if a shift in the characteristic trend through the cycle and the associated loss renders such a change necessary.

Assuming minimum requirements are satisfied, credit institutions are allowed to use their own risk management system to specify the provisioning ratios necessary in individual cycles if they find their system more appropriate. With this policy they encourage banks to use risk management systems, which are more in accordance with the new capital adequacy reforms, which the BCBS wishes to introduce. The standard approach is a minimum requirement at the same time (if they use their own methodology, but if this is below the level of the centrally-specified rates, they must use the later). Despite the fact that the method of calculation and the determination of the ratio of provisioning to be achieved is left up to the credit institutions, the treatment of these provisions is in accordance with the accounting system of the centrally-regulated standard approach.

5.1.2 Principle of operation

Net provisions created during the year using statistical provisions as well (SP+GP+StP) involve elements, which follow the volume indicators of the loans (GP+estimated statistical loss) since both are calculated in the proportion of risky loans. Thus, the change in provisions reflects the development of loans correctly if there is no need to change coefficients.

Provisions follow changes in the volume of risky loans

General Provision:
> Level: coefficient * total loan portfolio
> Change in provision of the year: GP = coefficient *   total loan portfolio

Specific Provision:
> Level: coefficient * problem loan portfolio
> Change in provision of the year: SP = coefficient *   problem loan portfolio

Statistical Provision:
> Latent risk measure (estimated statistical loss, SSC):
>   coefficient * size of the given loan category
> Change in provisions in the year: StPt = SSC – SP (specific provisions created in the year)
> Level: StPt + the previous year's level

Change in total provisions in the year given:
> GP+SP+StPt=coefficient*   total loan+SP+(SSC–SP)=GP+SSC

The expected effects of the new provision factor is well illustrated in Charts 4 and 5 which are the results of the simulation developed for the case of Spain.[11]   The left axis shows the value of loans, while the right axis the value of net provisions created during the year and the horizontal axis the number of years. The actual statistical provision is the change in the statistical provision level in the year given, i.e. the sum of creation and release of provisions in the year given, so negative values are possible, the level of the statistical provisions, however, may never fall below zero. Traditional provisions are shown similarly as changes in the portfolio.
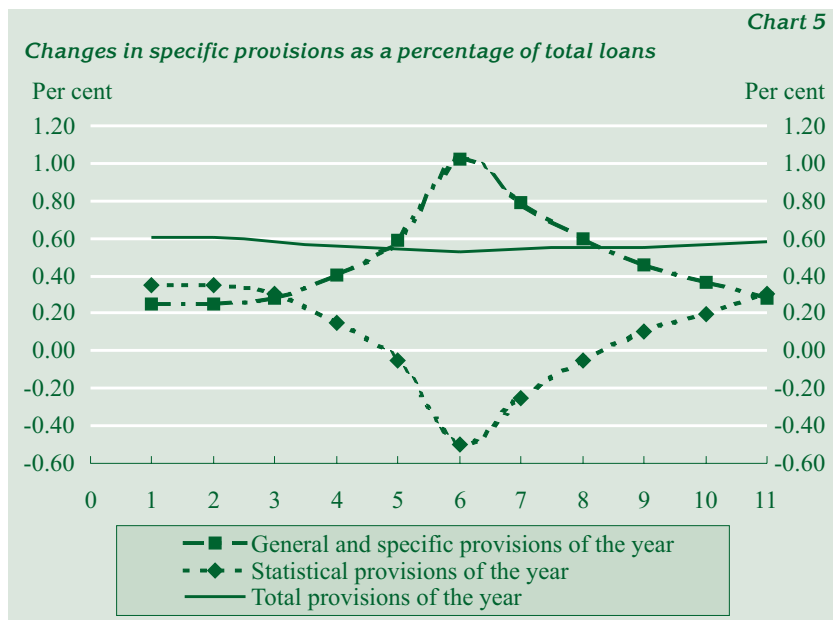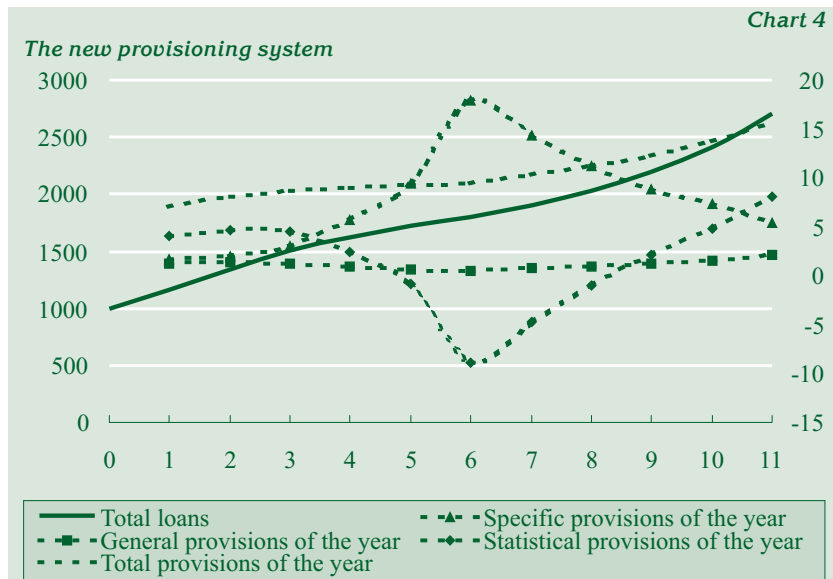
Chart 5 illustrates how provision portfolio changes evolve during a lending cycle in a traditional approach and with statistical provisions. As is also observed in practice, the increase in traditional provisions is low when the loan portfolio is increasing, which is mainly due to the dominance of specific provisions.

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[11] Lis, Pagés, Saurina (2000)

With the help of statistical provisions total provisions follow the development of the volume and risk of the loan correctly, thus performing a dynamic provisioning function.

Analysing the change in the ratio of provisions to the total loan portfolio, the change in the statistical provision and thus its result-smoothing effect is evident.

Chart 4

The new provisioning system

Legend: Total loans — Specific provisions of the year — General provisions of the year — Statistical provisions of the year — Total provisions of the year

Chart 5

Changes in specific provisions as a percentage of total loans

Per cent

Legend: General and specific provisions of the year — Statistical provisions of the year — Total provisions of the year

5.1.3 Security brakes

If the shape or the length of the cycle was not properly estimated, the consequence will be that coefficients and hence expected losses will be specified incorrectly. In this case, since the portfolio of statistical provisions is limited to between zero and three times the annual expected loss, incorrect calculation does not have serious consequences. The correcting effects of the statistical provisions linger on and when they reach the ceilings, they allow the system to continue working, as if the correction did not exist at all.

The limits stock represent security brakes

The same will happen if the statistical provision is introduced in a period when a decline is just starting. Since its level may never be negative, it automatically 'will not start operating' until the economy and lending starts expanding.

5.1.4 Taxation and capital adequacy

Regarding the characteristics and working principles of the statistical provision (created as a cost to cover expected losses) it is not an element of own funds. Nevertheless, creation of the statistical provision influences the amount of capital, because, ceteris paribus, low results during a boom decrease the size of the basic capital elements, while during a recession, on the other, they increase it.

Provisioning influences the amount of capital via the financial results

In Spain specific and general provisions are tax-deductible expenses, whereas the statistical provision is not – thus the distribution of tax-payment through a cycle has not changed.

5.2 Recommendations of the Australian Supervisory Authority[12] for dynamic provisioning[13]

In June 2001, the Australian supervisory authority published a recommendation on dynamic provisioning. The new provisioning system represents a shift in the fundamental strategy of provisioning, since it does not specify the expected loan losses for a future date (for example on December 31); instead, the expected loan loss within the maturity of the loan is regarded as the key factor.

Recommendations issued in 2001

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[12] APRA, Australian Prudential Regulation Authority
[13] Staff member of the Australian Reserve Bank, Mr. Patrick D'Arcy helped us in this chapter with documents.

For identified losses of particular loans (which are not yet losses, although the signs of non-performance are already indicated, for example, by a delay in interest payment) a specific provision is created, while for losses expected in the portfolio, general provisions are generated using the technique of dynamic provisioning. The supervisory authority recommends the following methodology to specify expected losses:[14]

Calculation method of expected losses

Expected losses = loan value * probability of default (%) * Loss given defaults (%) * (correction factor to reflect stage of economic cycle, if applicable) * average remaining term of exposure

Provisions are calculated based on the expected losses during the maturity of the loan corrected for the stage of the business cycle

The formula above defines the expected loss of particular loans – by aggregating these, the total expected loss of the portfolio can be calculated. Since the probability of default and loss given defaults are annual indicators, multiplying them by the value of loans produces the annual expected loss. Correction of the result by the average remaining term to maturity is necessary to define the expected loss throughout the period of maturity. Correction according to business cycles is necessary since the probability of default and loss given defaults are specified on the basis of historical data. Without this correction the result is much less relevant in respect of the future. On the basis of the aforementioned, the formula can be interpreted as follows: expected losses during the maturity of the loan corrected for the stage of the business cycle.

On the basis of the definition above the model accepts the systemic risk stemming from the change in the business cycle and its explicit effects on the particular risk of the debtor, but it does not include one-off shocks, which are unexpected losses of the debtors.

Provisions are smoothed during a period of stable business

Correction by the remaining term to maturity ensures that whereas new loans increase the level of provisions, provisions for old loans continuously decline. Thus, if a maturing loan is substituted for a loan in a similar risk category, of similar amount (stable business) the provision does not change. For example, if I grant 3-year loans on an annual basis, in the first year my portfolio consists of 3 loans each with a face value of 100 with 1, 2 and 3 years duration. Next year the 1-year term loan expires and instead a new 3-year loan will enter the portfolio. The remaining duration of the other two loans decreases by 1 year, thus the product of the value of the loan portfolio and the average remaining duration remains constant.

Correction by the remaining term to maturity obviously encourages short-term lending, in the case of stable course of business; however, if the risk of maturing and new loans is identical, the portfo-

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[14] The risk factors of which are the same as the risk factors in the internal models published in the New Basle Capital Accord (probability of default, loss given default, maturity).

lio risk and the volume of provisions remain stable (this is reflected in columns of provision without correction for maturity in Table 2).

One important difference compared to the method used by the Spanish regulators is that expected losses are not distributed over the whole period of the cycle, but the entire estimated amount is deducted the moment the loan is entered into the balance sheet. The table below illustrates roughly how the correction by the average term of maturity functions. For the sake of simplicity we demonstrate the creation and release of the provision of a loan portfolio with four-year average remaining term, with an initial face value of 100, excluding interest and principal payments. The expected annual loan loss is 10.

The estimated amount of expected loan losses is deducted the moment the loan is entered into the balance sheet

Table 2

Volume and effect on the result of provisions assuming stable course of business

Year	Provision (without maturity correction, Spanish model)	Effect on result	Provision (with maturity correction, Australian model)	Effect on result
1	10	−10	40	−40
2	20	−10	40	0
3	30	−10	40	0
4	40	−10	40	0

5.2.1 Dynamic provisioning at the Westpac Bank

The system introduced in 1997 manages larger loans, corporate loans and consumer loans differently. On the whole, the method is not different from the recommendations of the Australian supervisory authority published two years later, but it does not explicitly correct the model for business cycles. During the recording of the risk factors, however, this correction may be introduced into the value of expected loss in an implicit way as well. In the case of retail loans, specific loans are not rated but rather are assigned to default categories. According to this method there is a category for one-month delay, two-month delay, etc. The flow among categories and ultimately the occurrence of risks can be characterised with a

stable proportion and provisioning is based on that ratio. In the event that no appropriate data are available for this approach, a ratio is used for provisioning, i.e. the portfolio of the yearly average bad loans is expressed in the proportion of outstanding housing loans.

For corporate loans (large loans) the rating system of the bank corresponds to the rating system of the rating agencies (Moody's, Standard & Poors) and uses the default ratios officially published by these agencies. The bank decides on the question, to which category the particular loan may belong. The extent of the loss, however, is estimated on the basis of own data.

The amount of provision will be specified the following way:

Dynamic provision = expected losses = loan * probability of default of the loan category * severity of loss, characteristic for industry, calculated over the loan portfolio * average remaining term

Dynamic provisioning without correction for the business cycle

The average maturity is equal to the weighted average remaining term of different loan categories; the maturity of particular loans is weighted by the ratio of those loans within the portfolio. The formula above is calculated for each business unit and for each rating category regarding losses characteristic for the business unit and probability of default characteristic for the given rating category. Basically, a matrix is drawn up where the categories created according to the probability of default are shown in the rows and the default loss categories characteristic for industries are shown in the columns. The expected loan loss, the basis of provisioning, is specified for each cell in the matrix and is reviewed monthly.

Provisioning continues to be unstable

The provisioning is based on forward-looking and expected losses – nevertheless, it does not take into account the development of the business cycle. This is in part the reason that the development of provisions continues to be cyclical at this Australian bank.

The provisioning system of the Australia and New Zealand Banking Group Limited

There is less detailed information available for Australia and New Zealand Banking Group Limited. On the basis of data available the bank generates a new provision category independent from the specific and general provision called 'Economic Loss Provision' which indicates the yearly average expected loss of a loan portfolio with a given risk rating throughout a business cycle. On the other hand, specific provisions reflect identified losses, not expected losses, similar to the previous bank.

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[15] If the remaining terms of the particular loans are defined as duration, the weighted average will be duration too.

5.3 Comparison of the Australian and Spanish models

In the Australian model expected losses are covered with general provisioning when entering the loan into the balance sheet (a specific provision may not yet be connected to a new loan since at that time there is no possibility of delay or default and no losses to be written off). In each individual case when the allocation of a specific provision is required, this can be regarded as the realisation of expected losses, and the specific provisioning is transferred from the general provision (thus, it does not influence the bank's result). The Spanish, however, generate specific and statistical provision with a different accounting methodology, – they create them in parallel with each other (not by transferring them from each other), in such a manner that the aggregate amount of both provisions should correspond with the preliminary estimates.

Different accounting methodologies

In the case of the methodology illustrated by Australian examples expected losses within the term of maturity of specific, actual loans are estimated, whereas in the Spanish model the expected loss within a business cycle of a given loan category is recorded. At the same time the stability of the product – face value * remaining duration analysed in the Australian model is obviously characteristic to loan categories; therefore there is also a possibility in that case to specify the ratio of longer-term losses of the category.

Loan category vs. individual loans

The Australian model is adjusted to the average maturity of loans, thus a decline in the quality about 6–7 years later, even after expiration, is not built into the price of loans. If the correction depending on the state of the economy is proper, this methodology fosters an increase in loans at the beginning of the boom and restrains lending at the peak of the boom. In the last years of the boom it encourages banks to consider the quality of the loans on the basis of the approaching economic recession. For this reason – in contrast with the Spanish model – this method does not have a smoothing effect on results, but the fluctuation in the results due to the rapid changes in provisioning will, however, be dampened.

The proportion of provisions to total assets is constant in the case of the Spanish model, thus it does not follow necessarily changes in actual expected losses.

One advantage and disadvantage of the Spanish model is that once the ratio of provisioning through the cycle is defined, it is not necessary to modify the values according to the changes in the actual business cycle. In this case, however, it is difficult to make corrections.

Difficulty associated with correction for actual risk

6 | Advantages and disadvantages of alternatives for evaluating expected losses

Evaluation of loans granted during temporary economic upturns during temporary economic upturns

The differences in the examples clearly show that there is no perfect method for revealing risks arising from shifts in systemic risk. One of the principal reasons for that is, that there is no methodical solution which is able to model the deterioration of quality due to the change in the business environment on the basis of an objective approach. Definition of the characteristics of the future business environment is uncertain, and nor can it be taken for granted that the shift in the business environment really causes the deterioration in quality, which was expected. However, in terms of theoretical considerations and historical lessons it is clear that lending during economic upturns which are to be regarded as temporary should be evaluated much more cautiously and that this state of the economy should not be regarded as a long-term situation.

To distinguish business trend and cycle, the output gap may function as a suitable indicator, showing to what extent the performance of the economy diverges from the value of the trend, from the potentially expected performance. Divergence should be regarded in any case as a temporary phenomenon, since the economy may not deviate from its potential performance over the long run. Thus, a period with a positive output gap involves a higher credit risk than is shown by methods indicating permanence in the state of the economy. In order to correct this fact a methodology is needed which indicates a lower correction if the positive output gap is lower and a higher one if the gap is higher.

The consequences of recording expected losses as a provision, also considering the trend of systemic risk, are shown in the table below.

Corrections differing in terms of methodology and size

The examples of regulation methods differ as to whether they prefer the correction of risk factors determining the expected losses or they correct the expected loss itself. There may also be deviations in terms of the extent of the correction. There is a possibility for minor corrections, or for corrections which result in average values, and it is also possible – such as in the case of the rating agencies – to specify the worst scenario rating and the loss connected to this rating. However, all these methods only offer appropriate safety, if the next recession does not turn out to be worse than assumed in the negative scenario.

	Table 3
Advantages of dynamic rovisioning	**Disadvantages** of dynamic rovisioning
Ensures more precise coverage for actual credit risks. It is based not on the permanency of the present business situation but it evaluates the risk of loans and loan categories on the basis of future medium-term expectations.	The lack of data on previous cycles.
Changes in provisions provides information on changes in the risks of the portfolio, and it is connected first of all to new loans. It informs about the risk of new loans already at the beginning of the transaction, thus the bank will have the chance not only for reactive steps but it may decide in the phase of lending, if it wants to undertake the risk or not.	There is no methodology to specify characteristics of a future cycle.
Part of the credit risk (expected loss) is indicated in the books of the bank ex ante, from the moment of occurrence. Thus the values of the P L balance are more realistic and it makes managers of the bank aware of the presence of the credit risk in the medium term.	On the one hand it ensures coverage for certain risks, on the other, however, it generates new ones, i.e. the uncertainty of future events. Mainly two uncertainties create significant risks – first, whether the economy develops as expected, second, if it has the expected consequences in the deterioration of quality (provisioning).
Dampening cycles in the ratio of provisions/loan portfolio and thus it diminishes fluctuation in the results of banks and contributes to the stability of the banking system.	The methodology allows long-term processes and terms to be integrated into in the system, but it is hard to decide in reality if the trend has changed or, instead, a new cycle has started.
Information and methods used in dynamic provisioning may be helpful for pricing loans and calculations of capital requirements as well.	Banks estimate their expected losses using their internal models, thus they have the chance to smooth their profit too, making evaluation of banks more complicated.
It applies a mechanism, which makes banks to deal with problems of the future even in the period of growth.	Loans granted in the upward cycle of the economy become more expensive. The rise in the costs of loans depends on the sensitivity to shifts in the business cycles. This, of course, is not an absolute disadvantage since higher costs mean that higher risks are really observed.

The recommendation of the Australian supervisory authority demonstrates the correction of certain risk factors and the expected losses and also the Integrated Prudential Sourcebook, the new collection of basic rules to be introduced by the FSA in 2005. According to the concept of the British supervisory authority the indicator of expected losses used for the calculation of capital should be corrected according to the state of the business cycle – in the case of increasing growth the correction would be less, in the case of slowing growth higher (more detailed mechanisms have not been elaborated yet).[16]

FSA – instead of provisioning modified capital requirements

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[16] Stephenson (2001)

In accordance with Basel 2 – capital requirements for expected losses

Instead of provisioning, the stress has been shifted to the definition of capital requirements, following the new concept formulated in the New Basel Capital Accord. Basel 2 namely prescribes a capital requirement to cover expected losses as well, modifying the old system, where the purpose of the provision was to cover expected losses, whereas that of the capital to cover unexpected losses.

If the risk factors are specified not by corrections but by the average value characteristic for the loan risk category throughout a whole cycle, the results are similar to that of the Spanish model. The method based on average loss values (trends) are preferred by regulators since there is a possibility of using historical data as a minimum requirement and using objective requirements, despite the fact that this means limitations at the same time.

Basel 2 recommends seven-year data series

The New Basel Capital Accord tries to eliminate the expected fluctuation arising from the annual forecast periods of risk by fixing the ratio of loss given defaults to loans (Foundation Approach), or it requires taking into consideration a 7-year data series. However, for the time being it has no suggestions for which method and what weights data should be taken into consideration, although the explanations to the length of the series indicate the consideration of average values. According to the explanations seven years are needed for default loss data since this allows fluctuations due to the business cycle to be taken into consideration as well.

6.1 Accounting principles

Provisions based on expected losses are general provisions in the case of the Spanish model since they are not connected with the loan specified but only with the category and the portfolio as a whole. In the Australian model the provision based on expected losses is connected with an actual loan – according to the Australian accounting system, however, it is not part of the specific provision connected with individual loans since the creation of specific provision already means the identification of losses. Part of the general provision representing expected losses, on the other hand, is not part of the regulatory capital, since in the event of realisation of the risk, a specific provision must be transferred from this provision.

Capital to cover expected losses and general provisions

Nevertheless, it seems that the Basel Committee insists on its standpoint that in the future regulatory capital will also serve for the coverage of expected losses expected, and the above-mentioned problem may be solved by recording all general provisions among capital elements.

Table 4

Consequences of provisioning on the basis of expected losses

Provisioning based on expected losses	In this case, irrespective of the different accounting methods, the provision generated throughout the year is divided into a provision based on expected losses and a provision based on unexpected losses. The provision based on expected losses guarantees that financial institutions are protected from volatilities of business cycles. Provisions created are higher in a cyclical upturn and lower in recession compared to the present system. The extent of the deviation guarantees that the fluctuation of the provision/ loan portfolio ratio will decline and follow a trend.
Pricing effect	Practical experience show that provisions are included directly in the price of loans, but that does not mean that the expected loss characteristic for the risk category would be priced into the value of the individual loan as well. If so, it might also happen that during an upturn *ceteris paribus* the loan will be more expensive due to the higher burden of the provisions, and during recession the lower provisions will not be reflected in lower prices.
Effect on results	The fluctuation of results compared to the loan portfolio will diminish. Since provisioning according to loan quality is one of the items of the P L account, the fluctuation of which influences the volatility of the result considerably, with the smoothing of this single item the fluctuation of the result will moderate. We had no assumptions regarding the movement of the other items (interest margin, overheads, etc.) so we may find only with the assumption that they are constant that the result will be lower during an upturn and higher during a recession compared to the previous system.
Effect on taxation	In parallel with the effect on results it means less tax payment obligation during an upturn and higher obligations during a recession than in the traditional system. If the institution is profit making, on the whole it will pay the same amount of taxes throughout a cycle, whereas if it is loss making, only the tax smoothing effect will work. If the development of lending really depends on the development of the economy, the new provisioning system is more beneficial for the state, since tax collection is smoothed and in a recession receipts are even higher than in the previous system. This is not unfavourable for credit institutions since their provisioning, one of the most volatile items of their results, becomes independent from economic cycles (the decline in the loan portfolio connected with a recession worsens their position but the deterioration of the quality of the former portfolio does not) and their tax burden becomes more balanced as well.
Capital adequacy	If the provisioning for expected losses cannot be part of the capital, since it is generated from the result it influences the volume of the capital as well. Through an upturn more provisions are generated, thus banks will have less profit and worse capital adequacy ratio. If they are not able to increase capital they must cut back lending and so the overheated lending boom will moderate. In an opposite situation, during a recession banks are able to increase lending due to their favourable capital adequacy and thus they may moderate recession in the economy.

7 | Conclusions

Medium-term risk awareness

Although illustrated mainly using international examples, it is true even for Hungary, that current prudential regulations do not take into account the problem that fluctuations in the state of the economy – independent of the depth of the financial intermediation system – significantly influence banks' lending activity and results. At the same time this indicates a lack of medium-term risk awareness by banks and regulators. The purpose of this study is to support the development of this awareness by focusing on the approach that in evaluating credit risks the medium-term cyclical nature of the economy should also be taken into consideration.

Provisioning changes in line with the stock of the different loan categories

Following the overview of international regulatory examples and recommendations, we focused on the regulation of dynamic provisions, which were introduced in Spain and Portugal as mandatory regulations, in Australia as a recommendation. The aim of the method is to guarantee that the value of provisions reflect ex ante the expected future loss of the present portfolio which is to be recorded by statistical means and that this is reflected properly in banks' results as well. The use of this technique involves that the ratio of provisions in the year under review be in line with the development of the loan portfolio, due to the fact that from the moment the loan is entered into the balance sheet of the bank, a provision is to be created to cover the expected losses. Similarly, it follows the changes in the structure of the loan portfolio too, since some individual loan categories (public sector, best-rated companies, or firms of industries which are highly exposed to the development of the business cycles, private loans, credit cards) belong to different risk categories. This is what is meant by 'dynamic' provisioning.

Dynamic provisioning primarily uses the same definitions, principles and risk factors as the Internal Ratings Based method presented in the New Basel Capital Accord.[17] The most important difference is that it uses the principles presented there to create provisions for different loan categories extended for a longer time period and possible turns of the trend are considered as well.

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[17] Internal Ratings Based (IRB) method is a procedure of the new Basel capital adequacy recommendations, which are to be introduced in January 2005, in the course of which institutions (mainly credit institutions) are allowed to use their own internal credit rating systems to define their minimum capital requirement. With certain regulatory limitations the probability of default estimated by credit institutions and loss given defaults determine the volume of the minimum capital.

While dynamic provisioning is not able to prevent crises arising from unexpected shocks characteristic for developing economies (e.g. the Asian currency crisis or the financial and capital market crisis in Russia), it is much more capable following the gradual change in the quality of loans in parallel with business cycles, which is a phenomenon characteristic of developed countries. Its widespread use is hindered by limits which are well familiar from risk management models. There is no model available, which is able to estimate the expected losses and the development of business cycles over the longer term objectively and with adequate accuracy. Most of the models are not able to look forward for more than one year – the reason for this is mainly the lack of data and the inaccuracy of measurements arising from the longer time period. Only limited data are available on losses in previous cycles and at the same time it is much more complicated to evaluate the characteristics of future cycles.

Taking account of the gradual change in the quality of loans in parallel with business cycles

Lack of data and inaccuracy of measurements

In the course of the analyses of practical regulations it became clear that present solutions to the problems raised are not to be regarded as optimal regulatory reactions for many reasons, and the 'best regulatory practice' is – for the time being – not available.

There is no best regulatory practice

In the absence of a suitable methodology, for the moment, the scope of the regulatory instruments is limited to the definition of expected losses as precisely as possible – and to fostering risk awareness. In evaluating future losses it should be investigated whether or not the present state of the economy is stable, and the individual risk of the debtor should be evaluated on the basis of the trend values of the economy (and if possible of the industry).

The recommendation is to specify expected losses while taking account of the trend of the economy and the particular sector of industry

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