

THE PROCYCLICALITY OF THE FINANCIAL SECTOR: NATURE, IMPLICATIONS AND POLICY OPTIONS

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■ Introduction ■

Due to global economic and financial crises, the fight with factors that exacerbate cyclical impact – procyclical factors – has become topical. It is difficult to provide a single definition of the procyclical process, as its causes and implications vary to a great extent. Despite the complexity of the symptoms of procyclical, promoters of financial stability are determined to find solutions to mitigate its impact. Currently the debate on most of the measures that lessen cyclical impact – counter-cyclical measures – is ongoing, and only a limited number of states (eg Spain) have applied them.

The first part of this article examines the nature of procyclical and its implications both from a theoretical perspective and on the basis of the Estonian experience. The second part discusses the measures of combating procyclical, emphasising those that have been presented in theory and seeking to establish connections with the situation in Estonia. Finally, the article presents the main conclusions and proposals that can be applied to enhance financial stability in Estonia.

■ The Nature and Implications of Procyclical ■

Financial sector by its nature inclines to strengthen the impact of a business cycle through intensifying lending during economic booms and through loan restrictions during an economic downturn. The most common explanation of procyclical is the asymmetry of information between borrowers and lenders as well as the inappropriate, or socially sub-optimal, reaction of market participants to changes in risk-over time.¹ During an economic boom, procyclical contributes to rapid credit growth, the rise in collateral values, the artificially low lending spread, the loose capitalisation and provisioning policies. During an economic downturn the opposite is true.²

¹ Among other things, causes of the latter are considered to include psychological factors, like cognitive dissonance, herd behaviour, disaster myopia, etc.

² Claudio Borio, Craig Furfine and Philip Lowe, Procyclical of the Financial System and Financial Stability: Issues and Policy Options, 2001.

Procyclicality can be understood as a so-called second-round effect, which is preceded by a certain triggering process or event that exerts an exceptionally strong positive or negative effect on the market. In the first case, an investment outbreak, the triumph of new economic sectors (eg electronics industry in Asia, e-commerce bubble in the United States), the innovation of new financial instruments³, or the deregulation of the market, evoke a sharp increase in economic activity stimulating demand for loan capital. Unfortunately, this is often followed by over-investments and underestimation of risks that accompany it. In contrast, when economic difficulties appear – for example, due to the rapid outflow of foreign capital or the loss of an important market – companies are faced with loan-repayment problems, credit risk increases, and the procyclical effect of restricting loan supply begins, which either deepens the crisis or slows down economic recovery.

Financial Crises and Procyclicality – Estonia’s Experience to Date

The 1997 shock in Estonia was precipitated by the sudden liquidity squeeze on the stock market (a drop in demand), which resulted from the Asian crisis. The subsequent Russian crisis in 1998 brought the economy into further recession. It is difficult to judge against this background whether the behaviour of the financial sector protracted the crisis. It would require answers to the question of whether the resources necessary for the restructuring of businesses could be borrowed quickly and at a reasonable price, and whether new enterprises could raise capital to replace bankrupt businesses and conquer new markets.

It is also worth considering, whether the impact of the Asian and Russian crises would have been as severe, if an equity boom had not preceded them. It is widely recognised that in 1997 businesses were able to absorb substantial finances from the stock market, which was then unduly spent on short-sighted business plans and speculations on the stock market giving rise to over-investment and excessive risks.

As Figure 1 demonstrates, the excessive lending growth in the first half of 1997 was followed by a rapid contraction, brought about by the stock market crash in October. At the same time, the capitalisation of banks strengthened. The latter was partly due to the raising of regulatory capital adequacy rate from 8% to 10%. As predicted, the stricter conditions set by the Bank of Estonia – the higher minimum threshold of capital adequacy and the requirement of additional liquidity – did not have a direct impact on the market. Rather, the decision of the central bank was aimed at the stabilisation of the environment in the longer perspective. The impact of stricter prudential requirements would be hard to measure in the first place, because of the overthrow caused by the external environment and the fundamental

³ The markets of new financial instruments, which have not experienced crises, are especially sensitive with regard to the financial sector instability (see Philip Davis, *A Cross-Country Comparison of Market Structures in European Banking*, 1999).

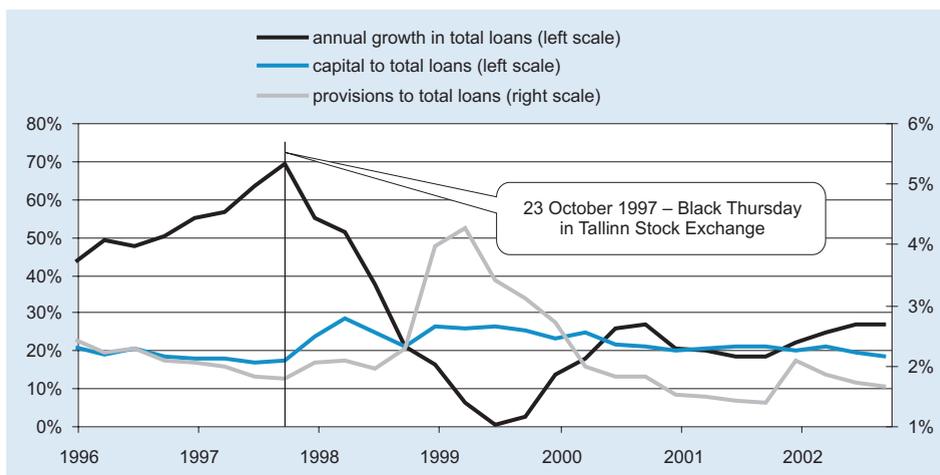


Figure 1. Dynamics in Estonian credit institutions' loans, provisions and capitalisation 1996–2002

reorganisation of the sector. The absence of capital constraints during this period is revealed by the fact that the capital adequacy of most banks exceeded 10% already before 1997 when the required level was raised by two percentage points.

The materialisation of bad loans, ie the growth in provisions, culminated a year later. Therefore, it can be argued that credit restrictions were not primarily a result of heavy loan charge-offs, which had a serious effect only after the Russian crisis, but rather of negative signals of the stock market and the significantly poorer accessibility of foreign funding.

The impact of the Russian crisis of 1998 gave another strong blow to the profitability of banking. As a result, the activities of Eesti Maapank were halted in June and the activities of EVEA and ERA banks in October. The volume of loans decreased further as a result of the banking crisis. The Swedish banks, which entered the Estonian banking market in the autumn of 1998, helped to overcome the deep crisis, by injecting liquidity and capital. The funding constraints no longer posed an obstacle to the recovery in lending, but in reality the market got buoyant only a year later. This was mainly due to instability brought about by the Russian crisis.

Hence the above-discussed situation did not directly express procyclically protracted depression, as loan restrictions were not induced by the behavioural bias of the financial sector or its capital constraints, but by the shocks that occurred on the stock market and in real economy. Considering the high level of provisions, which normalised only in the autumn of 2000, the growth in the loan portfolio was restored relatively quickly – already in the autumn of 1999.

Since 2001, the growth in loans has accelerated again, reaching markedly high speed in 2002. The share of provisions has decreased and this has supported in keeping capitalisation

high. The banking sector's reaction to the economic upturn indicates some rise of procyclical optimism.

The present situation seen in retrospect does not image the financial overheating of 1997. The role of banks with foreign majority shareholding constitutes 86% in aggregate banking capital. Although the sector concentration is high (Hansapank and Eesti Ühispank have 83% in total), the loan market remains highly competitive. A possible hazard in the given situation is a scenario where banks with high foreign capitalisation cross-subsidise activities on the riskier market in Estonia, at the expense of the owner country's strong financial stability. In the name of staying in the competition banks do not adequately consider the potential risks and distinct features of Estonian market and may overestimate foreign owner's willingness to offer financial support in case of emergency. Such a strategy is first and foremost dangerous for smaller banks, as they lack strong backup in the form of a foreign investor; however, in the longer perspective, this may also destabilise the whole banking sector.

Implications of Procyclicality in the Economic Environment of Estonia

The crises encountered during Estonia's short period of market economy are primarily driven by external shocks rather than based on distortions in the fundamentals of domestic economy. Particular attention needs to be paid to the growth of the banks' foreign debt, which places financial intermediation, and thereby important part of the economy, into dependency on external impulses. Mutual claims of Estonian banks are very small, reaching a mere 0.5% of total assets.

The impact of the procyclical performance of the domestic financial sector manifests itself in different economic sectors and types of businesses with varying degree. Presumably the procyclical contraction hurts more smaller businesses that are orientated to the local market and rely strongly on domestic funding. The more open and integrated the economy and the less dependent on merely domestic bank funding, the smaller is the impact of procyclical credit crunch on the macro-environment as a whole. It follows that **in Estonian circumstances procyclicality manifests itself asymmetrically, ie overheating is stronger than downturn.** This results from the fact that banks are largely dependent on strong enterprises, which are capable of independently raising funds from the external market.⁴ In favourable conditions the investments of such enterprises accelerate the overheating of the domestic environment⁵; however, if the environment deteriorates, banks cannot easily turn their backs on them, as that would lead the banks to rest on weaker and small businesses, which do not have funding alternatives. In such a scenario, the

⁴ According to the data of Enterprise Estonia, half of Estonia's export is made up of enterprises with foreign holding, which employ a fifth of the labour force.

⁵ Enterprises with foreign holding manage their liquidity partly by short-term funding from domestic banks.

simultaneous fierce competition between banks, which amplifies procyclical performance, is especially dangerous.

At the same time, it is necessary to differentiate between the impact of the externally transmitted economic cycle and the implications of procyclicality of the financial sector itself. Interest fluctuations, which over transmission mechanism foster or hinder financial intermediation are merely sowing the seeds for procyclical instabilities. The latter is expressed in the reaction of the financial sector, which is irrational from the perspective of macroeconomic stability and manifests itself through excessive toughening or easing of credit conditions (overreacting).⁶ The reason behind this is the asymmetry of information between lenders and borrowers (moral risk).

Capital Adequacy and Procyclicality

The requirement of capital adequacy, which increases the cost of extending loans, boosts procyclical behaviour of banks. Capital becomes expensive and scarce primarily during financial distress, which usually entails impairment of loan quality with subsequently increasing provisions that deplete capital buffers (profit).⁷ Nonetheless, the experience of Estonian banks has rather been the opposite, meaning that capital cushions have grown due to boom-driven earnings (even in good times dividend payments have been modest). Thus large part of capital has been accumulated over reinvested profits. It is a different question of how objectively the profit, which has been declared during high conjuncture and expanded due to small provisions, reflects the actual risks.

In addition to the volume and structure of own funds, the regulatory capital is influenced by the banks' lending policy and provisioning practice. The considerable and unfounded easing of loan conditions – application requirements and risk spread – during economic growth paves the way for painful and sudden corrections during depression. Thus, the lending policy of banks should be geared to assessing the customer creditworthiness in longer term (encompassing different phases of the economic cycle).

The requirement of capital adequacy plays also a critical role from the aspects of competition and credit rationing. Thakor⁸ distinguishes three main reasons for credit rationing:

- Increased costs of funding loans, including toughening the requirement of capital adequacy;

⁶ It is necessary to distinguish normal market dynamics (eg economic depression) and financial crises. The latter are much more difficult to define.

⁷ Eva Catarineu-Rabell, Patricia Jackson, Dimitrios P. Tsomocos, Procyclicality and the New Basel Accord – Banks' Choice of Loan Rating System, 2002.

⁸ Anjan V. Thakor, Capital Requirements, Monetary Policy, and Aggregate Bank Lending: Theory and Empirical Evidence, 1996.

- Subsidising the price of deposits in comparison to capital costs, ie the growth of opportunity costs of loans (eg income tax exemption of deposits, state deposit insurance, etc);
- Pre-lending screening costs.

Although the thin domestic bond market does not offer alternative for bank funding, many companies find a leeway in direct foreign borrowing. However, the fact remains that the mobilisation of capital is more expensive than funding based on deposits; therefore, when the latter become cheaper, capital requirements involve additional costs for lender. For example, according to the 2001 statistics of Eesti Pank, the subordinated claims included in Tier 2 capital were 2.5% more expensive than deposits.

Thakor's model differentiates between **credit denial** and **credit rationing**. In the first case the bank receives a signal about the poor creditworthiness of the borrower and does not issue credit; in case of credit rationing, the bank reduces the borrowing opportunities of all potential clients, for example, through establishing stricter minimum loan application requirements (minimum down-payment, level of capitalisation, credit history, etc), without outright verification of every individual borrowers creditworthiness. It is the latter type of behaviour that is linked to procyclicality.

Thakor's analysis proves that a monopolistic bank does not restrict lending, because it issues loans only on the basis of pre-lending screening of loan applicants, giving a positive answer to each applicant whom it considers eligible and refusing loans to those whose creditworthiness is weak.⁹ This conclusion derives from the fact that a monopolistic bank can tie-on the screening costs in the price of the loan. In fact, in case of a monopolistic lender, the price of the loan rather depends on the profitability of the loan recipient's project than on the budget constraint of the monopolist, as the bank can appropriate the profit from the borrower's investment.

In a competitive environment (two or more banks) banks cannot transfer the screening costs on the borrowers' burden, as the loan price no longer depends on the cost constraint of a single bank, but on the strategy of several competing banks. In other words, it leads to the Bertrand solution, where each bank offers a price covering marginal costs that does not compensate the sunk costs, including outgoings on the screening of clients. Therefore, minimum requirements for all loan applicants are toughened, ie the tactics of rationing loans is triggered because, in case of competition, banks want to reduce the expenditure involved in client screening. Based on this each bank tries to create a situation where it is a monopolistic lender, meaning that it can compensate the costs of credit analysis from the price of the loan, for example, banks only finance key customers.

⁹ Such data may include any information on the borrower's economic situation. For example, the existence of tax arrears may be considered negative and lack of tax arrears a positive signal.

In addition, Thakor reviews the influence of capital adequacy on the competition of states with different minimum capital requirements. If the minimum rate of capital adequacy is higher in country A than in country B, the toughening of capital requirements in both countries results in even further inequality, ie it boosts the growth of the cost of financing loans in the country with higher capital requirements, in country A, more than in country B. It follows that in changing capital requirements the ability of domestic banks to compete with foreign banks with (lower) capital requirements must be considered.

In order to alleviate the situation where Estonian banks, in order to stay in competition, try to raise capital adequacy by inappropriately low provisions, it is first and foremost necessary to reduce the risks of the domestic lending environment. Different factors supporting macro- and micro-stability play their role in this (low inflation rate, high sovereign rating, strong real sector, residents' sufficient saving ability, efficient and enforceable regulation).

■ Measures to Level the Impact of Procyclicality ■

Dynamic Provisioning in Spain

The policies of building up loan loss reserves may be influenced by several incentives, including the desire to level the profit of different periods, fulfil foreseen capital requirements, or signal the reliability of the bank to clients and investors. Research has shown that the wish to increase the general loss reserve is characteristic of relatively undervalued banks that have higher intrinsic value¹⁰ than market value (share price). By that they aim to communicate the bank's ability to absorb potential future loan losses with current earnings. On the other hand, income smoothing by creating a reserve is characteristic of both the banks with relatively higher than average performance and those well below the average.¹¹

Creating a dynamic loan loss reserve helps to smooth economic fluctuations by raising cushions for losses, which become apparent during depression. Although credit risk is born at the moment the loan is issued, traditional provisions only reflect *ex post* losses, in other words, those that have already occurred. Such subsequent provisions conceal the real price of the loan and stimulate loan over-extension, which coupled with intense competition, increases incentives to offer financing with unreasonably low spreads.

In order to establish *ex ante* or anticipatory reserves against expected future losses, Spain has developed, in addition to general and specific provisions (procyclical provision), a

¹⁰ Book value of equity and expected future earnings adjusted by discount rate.

¹¹ Kiridaran Kanagaretnam, Gerald J. Lobo, Yang Dong-Hoon, Joint Tests of Signaling and Income Smoothing through Bank Loan Loss Provisions, 2000.

statistical or counter-cyclical provision.¹² Banks have the opportunity to use their own internal models for assessing statistical loan loss, which are based on the risk management system of the bank and on extensive historical lending data. The calculation methodology of the statistical reserve must be approved by the supervisory authority.

For those credit institutions that do not have their own internal dynamic provision models, supervision has developed a standard methodology.¹³ According to this, the total provision is calculated as the sum of the general provision, specific provision and statistical provision. The general provision is calculated on the basis of the parameter set by the bank supervision, accounting for 0.5% for mortgage credit and 1% for other loans.¹⁴ In calculating the specific provision the coefficients established by the supervision are used, which range between 10–100% (see Table 1).

Table 1. Specific provision ratios

Time elapsed since the maturity	Provision (%)
3–6 months	10
6–12 months	25
12–18 months	50
18–21 months	75
over 21 months	100

According to the provisioning standards of Banco de España, claims are considered doubtful when outstanding debts are overdue by more than three months or when substantial evidence exists on the borrower's inability to meet regular repayments. Claims are considered as very doubtful and written off when the borrower has been declared bankrupt or claims have been recognised as doubtful during three years (six years in case of mortgage credit).

The unique statistical provision applied in Spain is the difference between the volume of the loan portfolio, which is adjusted according to the appropriate parameter and the specific provision. The parameters reflect the average net specific provision based on figures for the period 1986–98.¹⁵ The period in question witnessed the downturn in loan growth from 1992–94¹⁶ as well as the lending boom from 1997–99. Accordingly, the central bank has set down provision coefficients reflecting through-the-cycle dynamics (see Table 2).

¹² The calculation of statistical provision takes place quarterly.

¹³ Statistical provision does not reduce income tax, but the general and individual provision decrease it to the pre-determined upper limit margin. See Santiago Fernandez de Liz, Jorge Martinez Pages and Jesus Saurina, *Credit Growth, Problem Loans and Credit Risk Provisioning in Spain, 2000*.

¹⁴ The requirement for setting aside general reserves does not apply to the public sector claims. In case of mortgage credit the value of exposure shall not exceed 80% of the value of the property. In the opposite case provisioning has to be done on an equal footing with other claims.

¹⁵ Provisions net of claims recovered.

¹⁶ This was not a banking crisis, rather an implication of restrictive monetary policy.

Table 2. Statistical provision coefficients

Coefficient (%)	Risk categories
0	Without risk (public sector)
0.1	Low risk (mortgages with outstanding risk below 80% of the property value and long-term debts rated at least A)
0.4	Medium-low risk (financial leases and other collateralised risk)
0.6	Medium risk
1.0	Medium-high risk (personal credits to finance purchases of durable consumer goods)
1.5	High risk (credit card balances and overdrafts)

If the specific provision is small, the statistical or counter-cyclical buffers increase; in the reverse case they decline.

As the European Union Directive 86/635/EEC sets the maximum rate of the general loss reserve at 4% of the value of claims, the upper limit of the statistical reserve has been established, which equals the loan outstanding and the statistical provisioning coefficient multiplied by three times. According to Spanish experts, such a limit guarantees that the sum of the statistical provision and the general provision does not exceed 4% of the lending stock.¹⁷

The drawback of the Spanish model is its overly mechanical nature and the fact that in case of a very large fluctuation the applied measure may turn out to be insufficient due to the limits of the statistical reserve or the shortness of the reserve accumulation period.

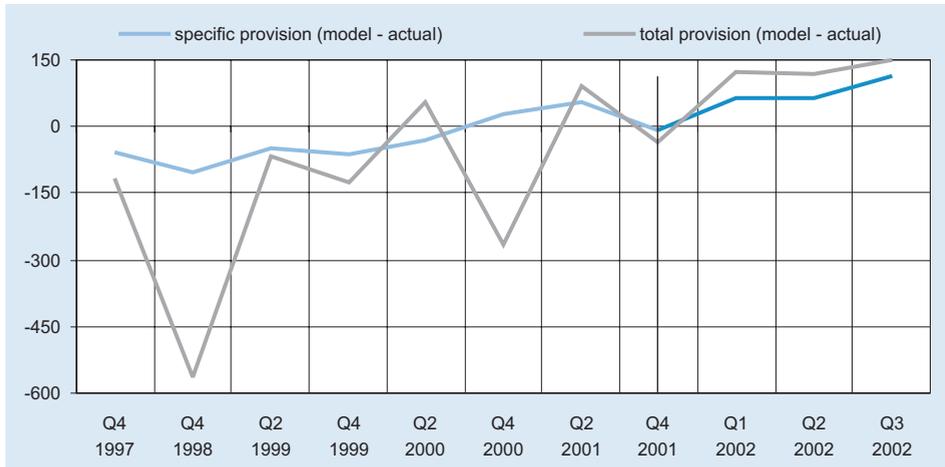
Adapting the Spanish model to Estonia is prevented by differences in provisioning policy and relevant regulative acts. Another reason complicating the parameter estimation for statistical provision is the distinctive nature of a transition country, offering poor opportunity to analyse the relevant legal environment and economic processes during a meaningful period of time. Whereas Spanish banks have detailed regulatory framework for forming the general and specific provisions, Estonian banks have much more discretion in making their own judgements.¹⁸ In other words, the requirements set for Estonian credit institutions are based on defining the criteria and broad categories for evaluation of loan risk, rather than definite coefficients or provision parameters. Defining the structure of the loan portfolio and the degree of risk involved are also remarkably different. For example, according to the capital adequacy rules in Estonia, the claims of local governments have a 100% risk weighting, meaning that they are equal to the risk level of enterprises; in Spain, however, all claims of the public sector are considered to be risk free from the provisioning aspect. At

¹⁷ Raimundo Poveda's speech Reform of the System of Insolvency Provisions, 2000.

¹⁸ See Decree No 9, from 27 June 2000, of the Governor of the Eesti Pank 'Servicing of Loans of Credit Institutions and Entering of Uncollectible Claims in Expenses'. According to this, the general provision will equal the difference between the book value of claims and the present discounted value of future expected cash flows.

the same time, the share of the Spanish public sector claims in the portfolio is somewhat higher than in Estonia. Also, mortgage financing which forms a large part of Spanish bank loans (near 45%) exceeds the role of the loan and leasing portfolio of residential housing in Estonia, which forms a fifth of the whole portfolio.¹⁹ When using the same risk coefficients the average risk level of the Spanish banks' credit exposure is smaller by a quarter, mainly because of the loans of the risk-free public sector and the large share of mortgage financing.

Figure 2 demonstrates the test of the statistical provision model to the context of Estonian banks loan and leasing data from 1997–2002. In relation to loans outstanding to central government zero coefficient applies; in relation to other types of claims – mortgage, leasing, other loans, consumption loans and overdraft facilities – the same ratios are used as in Spain (see Table 2). With years the structure of the loan portfolio has become less risky, in other words the considered average provision has declined from 0.54% at the end of 1997 to 0.47% in September 2002.²⁰ Despite this, since the end of 2001, the volume of actual specific provisions has stayed behind the calculated or statistical provision, as a result of which the buffers related to the latter ought to be (theoretically) raised. Testing the model on Estonian data exhibits that by September 2002 the statistical risk measure exceeded the actual specific provisions by over 100 million kroons, and the total allotments of three quarters should make an additional 240 million kroons. In other words, the provisions to the loan and leasing portfolio should exceed the current level (0.23%) by two times, thus forming at least



* Leasing provision data incl since 4th quarter of 2001.

Figure 2. Evolution of Estonian banks' specific and total provisions against the model in 1992–2002 (EEK m)

¹⁹ Comparisons between the levels of Estonian and Spanish mortgage financing are difficult due to the lack of information on commercial property and housing financing in Spain. In Estonia, only collateralised housing loans have a lower risk weighting in terms of capital adequacy.

²⁰ The greater role of mortgage loans and leasing has decreased the risk and provisions.

0.47%. In adding the rate of the general provision of the Spanish central bank to the statistical provision, it becomes clear that, in 2002, also the total provision (general allowances plus specific provision) of Estonian credit institutions stayed below the calculated level corresponding to the model. To sum up, this result should nevertheless be considered as an indicator that reflects the rapid growth in loans during 2002 and the optimistic provisioning policy as a direct conclusion.

Establishing the Maximum Loan-to-value Ratio

Sudden growth in asset prices (eg, real estate, shares, etc) is a significant risk factor, as the concurring rise in inflation contributes to the real value of issued loans. Moreover, an upsurge in assets market value brings along the growth of the net worth of borrowers, which in turn intensifies loan demand and supply. In order to limit loans extended on the basis of volatile collateral assets, the prices of which can fluctuate significantly and prove to be overvalued during an economic peak, some countries have introduced a maximum loan-to-value ratio. For example, such a lever has been used since 1991 in Hong Kong, where the maximum loan-to-value ratio was 70%. Unfortunately it became too easy to evade this. In order to do so, top-up loan packages were introduced, thus property loans were enlarged through alleged consumption loans.²¹

Most countries regulate the loan-to-value ratio indirectly – via capital adequacy. On the basis of capital adequacy the loan-to-value ratio is 66% in Estonia, which enables to weight the residential mortgage loans within a 50% risk category.

Valuation of collateral is based on market price. However, the value of a collateral over its lifetime does not merely depend on the static market price, rather on price dynamics (fluctuation and deviation around its true value). As property prices are very cycle-sensitive, loan-to-value ratio helps to counteract potential systemic risk. For example, it may be considered to adjust the value of the cycle-sensitive collateral value (real estate) with the counter-cyclical coefficient. In Estonia, where the loan boom partly depends on the intensity of foreign borrowing, a possible solution is to reduce the value of collateral assets by a coefficient derived from the growth of the loan-to-deposit²² ratio. This presupposes that the value of a collateral reflects the component of foreign borrowing, which should be eliminated to neutralise the cyclical distortion. The drawback of this measure is the complexity and expense of control. It would be easier to categorise the coefficient-weighted part of asset price sensitive loans within a higher risk (more than 100%) category.

However, it would be even more hands-on to **apply the supervisory discretion, with the guidelines of capital adequacy, as for recognition of the profit of the current period in**

²¹ In 1998 the mortgage guarantee system was created in Hong Kong and since 2000 borrowers have to provide guarantees at least to the extent of 90%.

²² The deposits of clients, as these do not include funds placed by other banks (especially foreign parent banks).

the bank's tier capital. To date, idiosyncratic or micro-level factors have played a role in issuing this kind of permission. In the future this discretion could be used to make decisions on the basis of managing cyclical risks or on the basis of common risk factors, ie to leave a part of current cycle-volatile earnings unaccounted for in the tier capital.

Linking the Deposit Guarantee Payment Instalments with the Portfolio Risk

Taking account of the risk assessments of the supervision (eg CAMEL²³) in determining the deposit guarantee payment instalments²⁴ encourages banks to keep an eye on the quality of assets. Specifically, it has been proposed to link the payment instalment with the structure of risk assets used in calculating capital adequacy. A well-diversified loan portfolio and solid risk management help to cut the costs of insuring deposits. In order to anticipate procyclical impact, the supervisory assessment of the bank's risks should be based on forward-looking analysis and the forecast of cyclical effects. It is also possible to consider measures that reduce deposit insurance costs during economic downturns and increase them during booms.

Calculation Methodology of the Counter-cyclical Capital Adequacy

Rabell, Jackson and Tsomocos²⁵ have proposed a counter-cyclical model, according to which a bank's ratio of capital adequacy depends on the expected level of collectability of loans. In other words, a counter-cyclical factor reflecting the expected share of loans recovered is introduced into the calculation scheme of capital adequacy. The initial risk weighting of the loan portfolio is adjusted according to the expected average recovery rate. The resultant adjusted risk weighting²⁶ is multiplied with the loans outstanding.

It can be concluded from the model that, if 100% of the loans are repaid, risk weighting grows by 20%; however, if all loans remain unpaid, risk weighting decreases by 20%. Risk weighting will not change if we assume that half of the loans will be recovered. The size of the actual counter-cyclical factor of risk weighting should depend on the bank and the environment. In reality banks in stable circumstances have at least 95% of loans performing. Therefore, the coefficients of a given model are hypothetical. The weakness of the linear, counter-cyclical risk weighting is that the deterioration in loan quality does not happen symmetrically but asymmetrically strongly during a crisis. Therefore, different coefficients

²³ **C**apital, **A**sset, **M**anagement, **E**arnings, **L**iquidity – the system used to measure the financial strength of banks.

²⁴ Applied in Hong Kong.

²⁵ See footnote 7, p 36.

²⁶ Contra-cyclical coefficient: $0,4(\bar{n}) - 0,2$, where \bar{n} = average expected recovery rate.

should be used during periods of stability and crises. Like Figure 3 demonstrates, risk weighting would grow just by a minor extent in case of well above 95% loan recovery. Only when the recovery rate worsens remarkably (in crisis situations), more pronounced decline in risk weighting follows. This kind of model is clearly too robust to apply in practice.

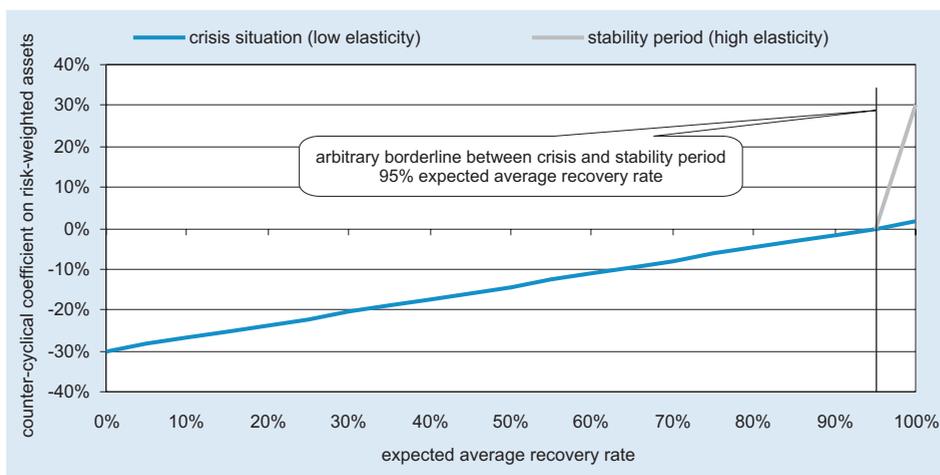


Figure 3. Counter-cyclical coefficient on risk-weighted assets under assumption of stability and crisis periods

In addition to elaborating the model, the authors, in search of optimal solutions, reached the conclusion that **if the banks could choose between the procyclical, counter-cyclical or cycle-neutral capital adequacy models, they would choose the counter-cyclical scheme, which guarantees the highest profit.** The reason is that during a period of boom, banks raise loan interests due to higher risk weighting, loan activity declines and this, in turn, reduces the default dispersion of borrowers. In a recession, loan interests are relatively lower, inspiring businesses to borrow more. This raises the credit risk, but less than in the case of the cycle-neutral or counter-cyclical scheme, as, in the conditions of depression, demand is contracted.

Nonetheless, from the perspective of macroeconomic welfare, the scheme of neutral capital adequacy (ie fixed risk weighting through-the-cycle) is preferable, as it does not distort loan performance and investment decisions of businesses during the different phases of the economic cycle. In essence, the counter-cyclical credit risk weighting enables to shift the complication that accompanies economic downturns from banks onto businesses. But this does not mean that cycle-sensitive risk schemes should be given up; rather the counter-cyclical factor should be put into operation in a way that would allow its functioning in the longer term, depriving the banks of the chance to make short-term profits at the expense of the real sector.

Moral Suasion and Supervisory Review

As rules-based regulation handles all of those involved more or less by the same token, this may produce undesired side effects. For example, it can hinder lending to sectors that do not suffer from overheating or which are of vital importance to the economy. The financing of small businesses²⁷ and alike may be hit.

With the aim to pre-empt the piling up of risks in overheated sectors, the institution-oriented approach of supervision enables to handle risks individually. Such surveillance aims at persuading banks to diversify their loan portfolios. Supervision can also convince banks of dangers that accompany the excessive bidding in loan sales, ie it can interfere on the banking market in order to restrict the artificial lowering of credit spreads.

Unfortunately, the supervisory pressure on banks tends to be procyclical, too, because at the time of economic upswing banks declare good earnings, which makes it difficult for supervision to explain its concerns. In the aftermath of a banking crisis, on the contrary, monitoring tends to be too strict and penalising, thereby unduly impeding the recovery of the financial market. Empirical research to date however has demonstrated that the impact of supervisory pressure on sector-wide lending policy is relatively small, but from the prospective of the new capital adequacy framework (Basel2) drafted by the Basel Committee on Banking Supervision at the Bank for International Settlements (BIS), it will grow in the future. The main innovations of the framework include the reorientation of bank supervision from rules-based regulation to the assessment of the plausibility of individual banks' internal risk management.

Disclosure and Market Discipline

Increasingly accessible communication- and data-transmission channels have turned the banks' disclosure policy into a very important surveillance tool. Moreover, market participants themselves monitor banks, thus saving public sector expenses. Therefore, the task of supervisory authority is to establish such disclosure requirements for banks, which facilitate the implementation of control by market participants. Nevertheless, the prerequisite of effective market discipline is the incentive of market participants in monitoring and assessment of the banks' prudence along with necessary competence to draw plausible conclusions on the basis of disclosed information.

In Estonia the real sector's know-how and experiences for the purpose of assessing bank performance are modest; also, the loan boom has brought a deepening of the paradoxical

²⁷ When loan standards become more stringent, large clients seek alternative financing sources but small businesses have to face serious limits in funding.

situation where the enterprise sector turns out to be net borrower vis-à-vis the banks. As the deposit guarantee system covers potential losses up to predefined limit, then its impact on weakening the incentives to carry out bank monitoring is relatively insignificant.

Due to fierce competition banks strive to advertise favourable conditions in order to attract customers and may attempt to underemphasise the implicit expenses and risks that borrowers might face. Thus, a situation may develop where small customers do not perceive adequately the obligations and risks inherent in a loan contract. Due to the lack of deflation experience, borrowers tend to overestimate the real value of an issued loan as well as their nominal future cash flows. In other words, during the loan boom accompanied by low interest rates, the risks hidden in interest rate volatility are not appropriately perceived in the long run, which in turn deepens procyclicality on the demand side.

Recent papers have emphasised the importance of public assessment stated by central banks or other neutral experts in order to communicate their view about the risks and trends present on the financial market. For this reason, more and more countries publish financial stability reports.

The necessity of elaborating methods, which capture better the time-horizon of the risk and measure the relative risk²⁸ instead of the absolute risk have also been emphasised. In this regard, modern measures and approaches such as stress testing, formation of dynamic provision and through-the-cycle risk evaluation should gain more importance.

■ Conclusions ■

Estonia's short and turbulent banking history coupled with incomplete records does not enable thorough description and formation of single understanding about the past in view of procyclicality. Despite of remarkable step towards stability, Estonian economic environment still remains vulnerable to severe shocks being fertile ground for procyclical developments. This leads to the ultimate need for regular monitoring and analysis of systemic risks. Such an analysis cannot limit itself to measuring individual indicators (like credit spreads or provisioning rate), rather continuous and thorough examination of a set of quantitative and qualitative data must take place.

To sum up we can conclude that:

- The phenomenon of procyclicality must be differentiated from the transmission processes or inherent reaction of the finance sector to changes in the external environment (eg interest rate trends) and from convergence related trends;

²⁸ Relative risk shows the risk in relation to something, for example, in comparison to other institutions or instruments; absolute risk demonstrates the risk ratio at a given point in time, although usually the risk ratio of a certain period is compared to that of another period.

- Estonian banking crises to date have not been strongly linked to shocks stemming from domestic real sector, rather they convey the imbalance accelerated by factors transferred from the external environment;
- The norms and experiences of other countries (eg Spain) cannot be directly transferred to Estonian circumstances as they need significant adjustment and re-assessment to be plausible for conclusions;
- Linear models are too robust for describing the actual developments in banking. In a crisis situation bank indicators are significantly more unstable than during a period of stability, which means that a symmetrical approach cannot be used for tackling pro-cyclicality issues;
- In addition to rules-based regulations, the supervisory review and the central bank in promoting financial stability play critical role in shaping public awareness and attitude towards systemic risk.

In conclusion, Borio, Furfine and Lowe²⁹ have nonetheless argued that, explicit counter-cyclical measures and policy instruments should be implemented only in a situation where serious financial imbalances are apparent.

²⁹ See footnote 2, p 32.