

Procyclicality and Financial Crisis: Wrong Regulation, Poor Supervision, Excessive Optimism or Just Loose Money?

Jan Frait

Head of Financial Stability

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Outline

- Procyclicality, capital regulation and accounting.
- Dynamic provisioning and countercyclical capital buffers as complementary tools
- Will all this suffice? How about monetary policy and macroprudential tools?

This lecture represents my own views and not necessarily these of the Czech National Bank.



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I.

Procyclicality

- Financial system procyclicality means the ability of the financial system to amplify fluctuations of economic activity over the business cycle via procyclicality in financial institutions' lending and other activities.
- The procyclical behaviour of financial markets transmits to the real economy in amplified form through easy funding of expenditures and investments in good times and financial restrictions leading to declining demand in bad times.
- Procyclicality have increased over the last few years due to (i) the greater use of leverage in the financial and real sectors, (ii) closer ties between market and funding liquidity e.g. through increased use of collateral in secured financing, (iii) increased contagion effects in integrated markets as well as (iv) the (unintended) effects of some regulations, including accounting standards. (EFC WG Report)

To provision or not to provision

5

- Debate about the instruments that might reduce the potential procyclicality of regulation is not a new one.
- Borio and Lowe (2001) – To provision or not provision
 - paper written just prior to the setting and implementation of current regulations,
 - describes a conflict between the interests of supervisors and accountants,
 - financial supervisors have tended to emphasise the role that provisions can play in ensuring that banks maintain adequate buffers against future deteriorations in credit quality,
 - accounting authorities have stressed the importance of provisions in generating fair and objective loan valuations.
- The accountants won the battle ... but after a few years we seem to be at the start back again.

To provision or not to provision, to buffer or not to buffer

6

- 2009 - to provision or not to provision, to buffer or not to buffer
 - bank supervisors have always been more supportive of liberal general provisioning regimes than have accounting and securities authorities
 - this time the supervisors may use the opportunity, but it is not so easy to win a war ...
- Procyclicality may be caused by broad spectrum of factors going much beyond accounting and capital regulation framework of financial institutions' regulation.
- The very idea that central bank will do its best by focusing its monetary policy instruments on achieving its macro goals, while using its regulatory, supervisory and lender-of-last resort powers to help ensure financial stability should probably be reconsidered.

- ECOFIN roadmap on financial supervision, stability and regulation takes the issue of procyclicality rather seriously:
 - 1. Valuation and accounting standard: Refinement of the accounting rules in respect of dynamic provisioning
 - 2. Capital requirements for banks (CRD): Supplementary measures addressing leverage;
 - 3. Pro-cyclicality:
 - Follow-up to the report of the EFC-WG on Pro-cyclicality and the July Ecofin Conclusions Possible measures to address pro-cyclicality of capital requirements in the short term
 - Identify policy tools to mitigate pro-cyclicality in the financial system and financial regulation, including of capital requirements through counter-cyclical capital buffers in the CRD - dynamic provisioning, proc-
-  cyclicality of CRD.



I.

Provisioning

To provision or not to provision

9

- In general principle, banks should set aside provisions to cover their expected losses while their capital should primarily be used to cover unexpected losses.
- There generally exist several provisioning systems differing in either when the provisions are created and entered in the accounts or what event triggers provisioning.
- The prevailing practice is “specific” provisioning.
 - specific provisions are fixed against losses on predominantly individually assessed loans and start at the moment an evident event occurs;
 - specific provisioning is backward looking (i.e. it identifies risk ex post).
- General and dynamic provisions
 - are set against losses from portfolios of loans and can be forward looking (i.e. they identify credit risk ex ante)

To provision or not to provision

10

- The key argument for forward-looking provisioning is the inherent tendency of banks to relax excessively lending standards during economic upturns and tighten them excessively during downturns
 - the risks are underestimated during upturns leading to credit booms with loans extended with prices set too low,
 - subsequent downturn leads to re-pricing under the impact of higher default rate, potentially ending in credit crunch.
- Forward-looking (dynamic) provisioning should therefore help to ensure correct pricing of expected credit risk emerging at time when the credit is extended.

To provision or not to provision

11

- The international accounting standards currently in force (IAS 39) allow banks to provision only for loans for which there is clear evidence of impairment (i.e. backward-looking provisioning).
 - specific provisions are created and entered in the accounts only after credit risk comes to light (which usually occurs in times of recession),
- In the dynamic provisioning system provisions are also created when credit risk comes into being (i.e. to a large degree in times of boom)
 - banks provision against existing loans in each accounting period in accordance with the assumption for expected losses:
 - at times when actual losses are smaller than assumed a buffer is created which can then be used at times when losses exceed the estimated level...
- This looks straightforward, but in practice it is not so.

- Spain used „traditional“ provisioning up to 2000:
general provisions (GP) reflected estimate of average expected loss from total loans:
 $GP = g * L$, where L stands for total loans and g for the parameter (between 0.5% and 1%),
while specific provisions (SP) were set in a standard way:
 $SP = e * M$, where M stands for impaired loans and e for the parameter (between 10% and 100%).
total provisions: $TP = g * L + e * M$.
- In 2000, additional component was added – statistical provisions:
Total provision (TP) = Specific (SP) + General (GP) + Statistical (StP)

- Banks sorted loans to six homogenous categories with different risk coefficient (defined by supervisor as average specific provisions over the whole cycle).
- **StP** = **Lr** – **SP**, where Lr is a latent risk $s * L$, where s stands for the coefficient (between 0% and 1.5% in the standard approach),
 - ◆ $SP > Lr \rightarrow$ (high impaired loans) $\rightarrow StP < 0$ (depletion of the statistical fund),
 - ◆ $SP < Lr$ (low impaired loans) $\rightarrow StP > 0$ (building up of the statistical fund),
 - ◆ balance of the statistical fund: $StF = StP_t + StF_{t-1}$, with a limit:
 $0 \leq StF \leq 3 * Lr$

- System had to be modified with effect from 2005 due to the IRFS – statistical provisions were hidden in newly defined general provisions:

Total provision (TP) = Specific (SP) + General (GP)

SP = unchanged,

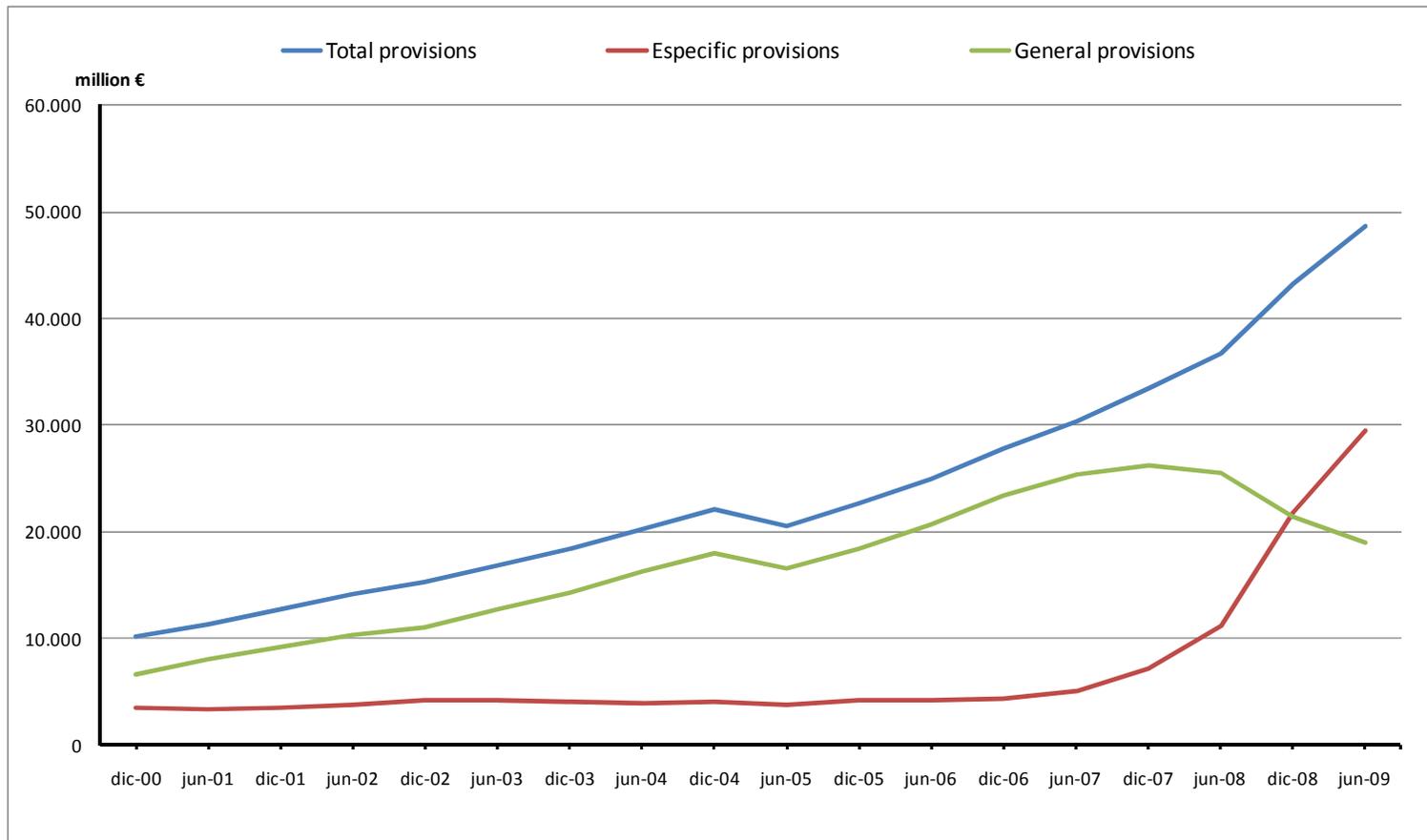
$$\mathbf{GP} : GP_t = \sum_{i=1}^6 \alpha_i \Delta L_{it} + \left(\sum_{j=1}^6 \beta_j L_{jt} - SP_t \right)$$

- banks must make provisions against the credit growth according to parameter α which is the average ratio of estimated credit losses (“collective assessment for impairment” in a year neutral from a cyclical perspective) and β parameter which is the historical ratio of average specific provision,
- 1st component reflects losses in the past, 2nd reflects specific provisions in the past relative to current ones (dynamic component),
- limits for fund set as $0,1\% \leq GF \leq 1,5\%$ of total loans.

Provisioning in Spain

15

- Developments in provisioning funds in Spain after 2000

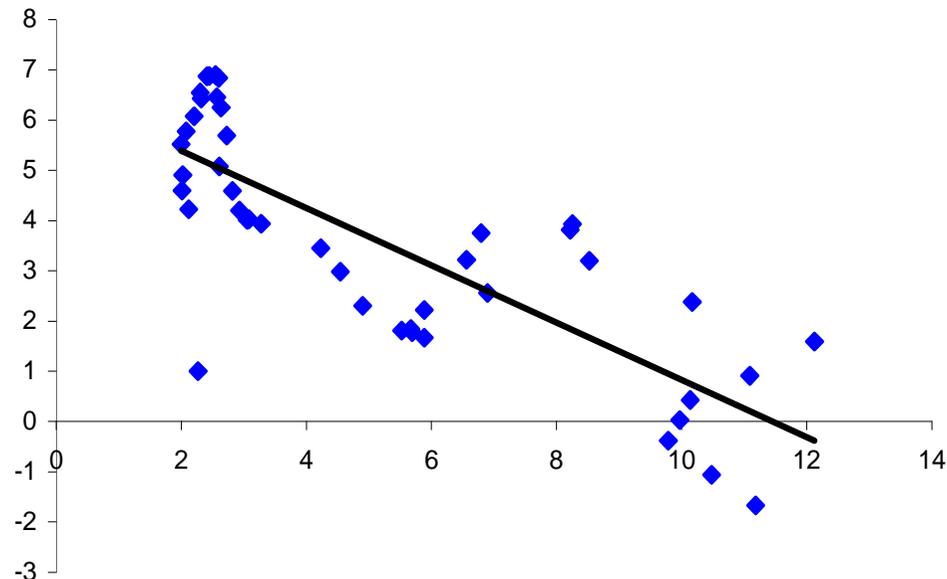


- Spanish authorities considered a new system IFRS compatible (IFSB not).
- Fund was set in good times, buffer was created prior to current crisis
 - NPLs 200% covered at the beginning of 2008 (EU average 60%),
 - Nevertheless, at the end of 2008 only 100% covered,
 - not sure whether the fund will suffice ... still better that nothing.
- Spanish system was rather simple – a kind of pre-dynamic provisioning:
 - not optimal, just one of potential solutions,
 - not sure whether it really restricts excessive lending,
 - can hardly be adopted in current recessionary conditions,
 - unilateral attempts to do so might do more harm than gain – see Brunnermeier, M. et al. (2009).

Do the Czech banks provision procyclically?

17

Loan loss provisions/total loans and GDP growth
(Czech Republic, 1998 - 2008)



Source: CNB, CZSO

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

- There is a negative relationship between GDP growth and the ratio of loan loss provisions to total loans in the Czech Republic for the period 1998–2008.
- Does it reflect procyclical behaviour?
- If yes, how strong are the non-procyclical features of banks' behaviour?
- For results see Frait and Komárková (2009)

Do the Czech banks provision procyclically?

18

$$(LLP/TA)_{i,t} = \alpha_1 + \alpha_2 \cdot \Delta \ln GDP_t + \alpha_3 \cdot UNEMPL_gap_t + \alpha_4 (EARN/TA)_{i,t} + \alpha_5 \Delta \ln LOANS_{i,t} + \alpha_6 \cdot (LOANS/TA)_{i,t} + \alpha_7 (CAP/TA)_{i,t} + \varepsilon_{i,t}$$

Variables:

- (i) **macroeconomic**: the growth rate of real GDP ($\Delta \ln GDP$),
the unemployment gap ($UNEMPL_gap$);
- (i) **bank-specific**: the ratio of loan loss provisions to average total assets (LLP/TA), loan growth ($\Delta \ln LOANS$), the ratio of total loans to TA ($LOANS/TA$), pre-tax earnings ($EARN$), the ratio of equity capital to TA;
- (ii) **other**: „t“ denotes time and „i“ the individual banks, TA stands for the average total assets for the two periods ($0.5(TA_t + TA_{t-1})$).

Do the Czech banks provision procyclically?

19

- If banks behave procyclically, the rate of economic growth will be negatively correlated with provisioning, unemployment rate gap positively, loans growth and the ratio of total loans to total assets positively if banks behave prudentially, pre-tax profit positively, capital ratio more likely negatively.

Results of panel regression for loan loss provisions

Variables	Coefficients	Std. Deviations	t
LLP/TA, lagged by 1Q	0,3390	0,5084	6,67***
GDP growth	-0,0003	0,0020	-1,74**
Unemployment gap	0,0012	0,0006	1,84**
Pre-tax profit	0,6565	0,0567	11,57***
Loans growth	-0,0022	0,0022	-1,00
Loans/TA	0,0118	0,0048	2,46***
Capital/TA	-0,2230	0,0319	-6,98***
No. of observations	172		
R2 - within (among banks)	0,942	R2 - overall	0,947
R2 - between (over time)	0,993	rho	0,102
	375,46	Prob > F	0,000
F test of equality of constants for banks (FE)			
F (3,161)	2,24	Prob > F	0,0857

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

Do the Czech banks provision procyclically?

20

Conclusions:

- The negative GDP growth and positive unemployment rate gap suggest that provisioning is significantly procyclical and lacks to a large extent forward-looking assessment of cycle-related risk;

...however

- The procyclicality is being partly reduced:
 - (i) positive and relative high coefficient of the pre-tax profit = the income smoothing or tax optimization,
 - (ii) positive coefficient of loans to total assets = prudential behaviour confirmed;
- ... but banks set aside fewer provisions to cover their expected losses when their capital buffer is larger (negative capital/TA coeff.).



II.

Capital buffers

- Borio and Lowe (2001) revisited
- One possibility ... is a clearer treatment of the relationship between provisions and regulatory capital ...
 - to exclude general provisions from capital and to set provisions so that they cover an estimate of the net embedded loss in a bank's loan portfolio,
 - capital could then be calibrated with respect to the variability in those losses (their "unexpected" component). (p. 46)
- Another approach ... supervisors could supplement capital requirements with a prudential provisioning requirement ...
 - instead of having the annual statistical provisioning charge deducted from a bank's profit and loss statement, have it added to the bank's regulatory capital requirement for unexpected losses. (p. 48)

- Procyclicality of Basel II was widely debated prior its implementation.
- There was a clear understanding that risk-based regulatory capital requirements tend to rise more in recessions and grow less during expansions, laying the ground for potentially pro-cyclical effects.
- The authors of the framework therefore pretended that they included some mitigating factors to dampen the potential pro-cyclical effect of Basel II's increased risk-sensitivity.
- Although improved risk management was one of the arguments for the introduction of Basel II, it now appears that neither regulatory capital nor economic capital has been set adequately to capture actual risk, particularly the risk contained in the trading book.

Capital buffers: Basel II or not Basel II

24

- High (perceived) costs of scraping Basel II down are reflected in the desire of regulators/supervisors to continue relying on Basel II framework in dealing with procyclicality.
- First, they hope, after the current crisis, micropolicies may become easier for implementation including „theoretical“ tools within current Basel II-Pillar II:
 - Internal Capital Adequacy Assessment Process, Supervisory Review and Evaluation Process
 - Stress testing with scenarios and methodology from supervisors
 - Backward testing of PDs and LGDs, downturn LGDs, conservative margins, tests of adequacy of provisions ...
- Second, they struggle to add some procyclicality-mitigating factors into the concept.

- CEBS (CEBS, 2009) proposes practical tools for supervisors to assess under Pillar 2 the capital buffers that banks have to maintain under the Basel II/CRD framework (focusing on procyclicality of banking book of IRB banks).
- CEBS is considering the use of mechanisms that adjust probabilities of default (PDs) estimated by banks, in order to incorporate recessionary conditions.
 - The size of the buffer decreases in recession and increases in an upswing based on the differences between the probabilities of default (PD) estimated by banks in recession and current PD estimates; the differences are used to dynamically adjust the current estimates.
 - CEBS proposes two alternative options for the calculation of the buffer: 1) a portfolio level option and 2) a rating-grade level option, together with variants of each option.
- CEBS says proposal might easily be adapted in a Pillar 1 context, but ...

- IRB framework - regulatory capital requirements should be determined by the risk of default - input to the IRB formula is the annual PD expected to be incurred in that grade.
- Current (grade-) PD: the long-term average of the default rates in a given grade.
- Portfolio-PD: the average of current grade-PDs weighted by the number of borrowers in each grade.
- Downturn PD: the highest PD over a predetermined time-span (either at the grade or portfolio level).
- Scaling factor: the ratio of downturn PD and current PD. The size of the adjustment decreases in a recession and increases in expansionary phases.

- PD is assigned in a two stage process:
 - (i) a rating is assigned to a borrower; (ii) a PD is assigned to an individual rating grade.
 - cyclical in capital requirements can result from rating migrations (i.e., individual borrowers are assigned higher or lower ratings), from recalibration of the rating grade to PD mapping (i.e., borrowers in a given rating grade will be assigned a different PD) or from both of them.

Rating Grade	Grade-PD
Good	1%
Bad	4%

CEBS proposal - portfolio level option

28

- In the first variant of this option the PD of the portfolio at time t is calculated as the average of grade PDs weighted by the number of counterparties in each grade.
 - PD of the portfolio would change over the cycle as the result of the migration of borrowers across grades and the change of grade PD,
 - the scaling factor for the portfolio is: $SF_p = PD_{p_downturn} / PD_{p_current}$ (close to 1 in a recession and higher than 1 in expansionary phases),
- In the second variant the buffer is determined by making the confidence level of the risk-weight function time-varying.
 - the idea is to compute the IRB capital charge in a bad year (economic downturn) and to adjust the confidence level of the IRB risk weight function upwards in a good year (economic upswing) so as to achieve the same level of capital.

CEBS proposal - rating-grade level option

29

- The two variants of this option determine the scaling factor either as the ratio between the recessionary PD (i.e., the highest PD) and the current PD (i.e., the long run average of one-year default rates) for each rating grade (one-step PD scaling factor) or by additionally taking into account rating migrations (two-step PD scaling factor).
- One-step PD scaling factor:
 - the scaling factor (SFg) would be determined as the ratio between the recessionary PD and the current PD for each rating grade.
 - In expansion $PDg_current < PDg_downturn$ for each grade, $PDg_downturn$ is used leading to build up of buffers
 - In recession, buffers decrease since $PDg_current$ and $PDg_downturn$ are closer.
- Two-step PD scaling factor - in addition to calculating downturn PDs for each grade, rating migrations are introduced in a first step

- There is a risk that combination of redrafted Basel II combined with dynamic provisioning, capital buffering and leverage limits will produce something unexpected ...
- D. Tarullo (2008): „ ... there is a strong possibility that the Basel II paradigm might eventually produce the worst of both worlds—a highly complicated and impenetrable process (except perhaps for a handful of people in the banks and regulatory agencies) for calculating capital but one that nonetheless fails to achieve high levels of actual risk sensitivity”...
- Still, if the cycle is driven by overly optimistic expectations, only combined effect of several other policies could do the job.

- „Perspectives of Banking After 2000“ - Karviná, 19 October 2005 - Jan Frait & Luboš Komárek - Monetary Policy and Asset Prices: What Role for Central Banks in New Member States? (see Frait and Komárek, 2007)
- We mildly deviated from the mainstream view of that era (on a slide titled „*What Bernanke seems to ignore*“, Frait and Komárek, 2005):
 - *What if the bubble is emerging without any signs of inflationary pressures?*
 - *inflation measured in terms of consumer prices has not always signalled when imbalances in the economy have been building up.*
 - *prevailing monetary policy models used to forecast inflation pressures derive demand pressures from current inflation pressures.*
 - *a realistic scenario (small open economy case): higher economic growth ⇒ excessively optimistic expectations ⇒ nominal appreciation of domestic currency ⇒ a very low inflation can prevail even under a rapid credit growth and asset price acceleration for rather a long time ⇒ when the open inflation pressures finally appear, it may be too late for monetary policy to react*

- „Perspectives of Banking After 2000“ - Karviná, 19 October 2005 - Jan Frait & Luboš Komárek - Monetary Policy and Asset Prices: What Role for Central Banks in New Member States? (see Frait and Komárek, 2007)
- ... and on a *concluding slide* (Frait and Komárek, 2005):
 - *Central bank policies should be conducted in a way that does not promote build-up of asset market bubbles.*
 - *Monetary policy must be forward-looking beyond the next two years.*
 - *Central banks in small open economies must be ready to use monetary policy steps as a kind of insurance against adverse effects of exchange rate bubbles.*

Money, regulation and supervisors courage

33

- The imbalances leading to current crisis were developing in a very complex manner due to the combined effect of globalization, financial market deregulation and increases in productivity that seemed to be more than temporary.
- Such a process was reflected in a build-up of optimistic expectations leading to „this time it will be different“.
- Monetary policy was really not much helpful, but not the major source of asset price booms (see IMF World Economic Outlook, October 2009).
- There was no “key source“, “major policy fault“, “most important wrongdoer“ behind the sources of crisis and a major difference in a single policy could not prevent it.
 - Or, do we really think that central bankers and supervisors were strong enough to stop a high speed train with a massive political support?
 - Or even, how strong would be the support of policy makers in one country who would try to cut off the music when the whole world was still dancing?

Money, regulation and supervisors courage

34

- The lesson for myself – if the international economy in the future starts undergoing a dynamic drive again, accompanied by credit and asset price booms, the authorities should apply concerted set of microprudential and macroprudential measures to tame the immoderate optimism.
- Factors mitigating procyclicality embodied in regulation should ensure accumulation of buffers and better supervision should prevent the bank managers from taking excessive risks.
- Monetary policies might need to step in directly via interest-rate channel or indirectly via macroprudential/microprudential tools changing its transmission.
- Still, plenty of courage, luck and communication skills would be needed to succeed.

Thank You for Your Attention

Contact:

Financial Stability Team in the CNB:
financial.stability@cnb.cz

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Jan Frait
Economic Research and Financial Stability Dept.
Czech National Bank
Na Prikope 28
CZ-11503 Prague

Tel.: +420 224 414430
E-mail: jan.frait@cnb.cz



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