FROM CREDIT BOOM TO CREDIT CRUNCH:EFFECTIVENESS OF POLICY MEASURES IN CENTRAL AND EASTERN EUROPE

Martina Jasova[1]
Charles University in Prague
Opletalova 26, 110 00 Prague, Czech Republic
Email: martina.jasova@yahoo.com, Tel: 00420-733 552 213

Adam Gersl PhD
Charles University in Prague
Opletalova 26, 110 00 Prague, Czech Republic
Joint Vienna Institute
Mariahilfer Straße 97, 1060 Vienna, Austria
Email: adam.gersl@gmail.com, Tel: 00420-603 787 574

ABSTRACT

This paper tracks the experience of eleven Central and Eastern European economies (CEE) on their way from credit boom to credit crunch (2003-2008). The analysis is focused on policy measures taken to alleviate the adverse effects of the credit expansion in the region. Until the eve of global financial crisis, majority of the CEE economies witnesses an unprecedented credit boom. With the impact of the crisis, the growth was suddenly discontinued and turned into a credit crunch. The paper is based on an original survey performed on all central banks in the CEE region. The survey covered three main types of interventions: a) monetary policy measures, b) macroprudential and supervisory measures and c) administrative and other administrative measures. Overall intensity of interventions is very high: findings confirm 82 measures taken in the region over the period of six years. Policy measures entailed both single and multiple instruments applied at a time. Furthermore, data reveal various paths of credit development and degrees of interventions to dampen the credit dynamics. Exchange rate regimes proved to matter both in scale ands scope of the responses. The assessment of the effectiveness of specific measures is the most challenging issue to address. This paper combines the direct assessment of particular central authorities and a difference-in-differences method that compares introduction of an instrument with a counterfactual scenario where no intervention was implemented. Deriving from the country experiences, the paper argues that in order to eliminate adverse impacts, policy measures should include combination of monetary and macroprudential tools with special emphasis on domestic environment and role of foreign banks in the CEE region.

Keywords: Credit growth, monetary policy, macro prudential policy, Central and Eastern Europe.

INTRODUCTION

Credit growth is an inherently beneficial process. Its revivals are seen as signs of healthy banking system and confidence in the economy. On the other hand, excessive credit growth increases imbalances and can contribute to amplifying vulnerabilities of the financial system. Too rapid credit development is often associated with accumulation of risks that materialize later in bad times and it is also considered a reliable predictor of future problems in the financial sector.

The objective of this paper is to analyse the policy responses to the credit developments in Central and Eastern European economies (CEE). In particular, it aims to answer a central question: are there effective measures that can tame the excessive development of the credit growth. The paper focuses on the private credit growth (household and firms) in CEE. The analysis is performed upon the results of a survey conducted on all eleven central banks in CEE.

The paper is structured as follows: first we present the stylized facts and literature review regarding the credit growth the CEE. Second, the menu of policy options central authorities have in hand is introduced. Third, we discuss the results of the survey conducted amount central banks in CEE. Fourth, we introduce the difference-in-differences approach to assess the effectiveness of the measures. The method is further applied on the selected cases: Poland and Latvia. Last chapter concludes the paper.

RELEVANT STYLIZED FACTS AND LITERATURE REVIEW

Private credit to GDP level in 2003-2008 was above the pace of the euro area, albeit the absolute levels remained relatively low. Figure 1 illustrates relatively low level of the private credit to GDP in CEE (compared to the euro area where on average the credit to GDP exceeded 100%). The credit dynamics was thus often regarded as a sign of financial deepening and convergence to the euro area countries. Due to the heterogeneity of the CEE region, the economies can be split into three sub-groups: South-Eastern
(SE-3), Baltic (BE-3) and Central European economies (CEE-5).

Figure 1: Private credit to GDP (2003-2008)

(a) SE-3   (b) BE-3

(c) CEE-5
Source: EBRD (2009)
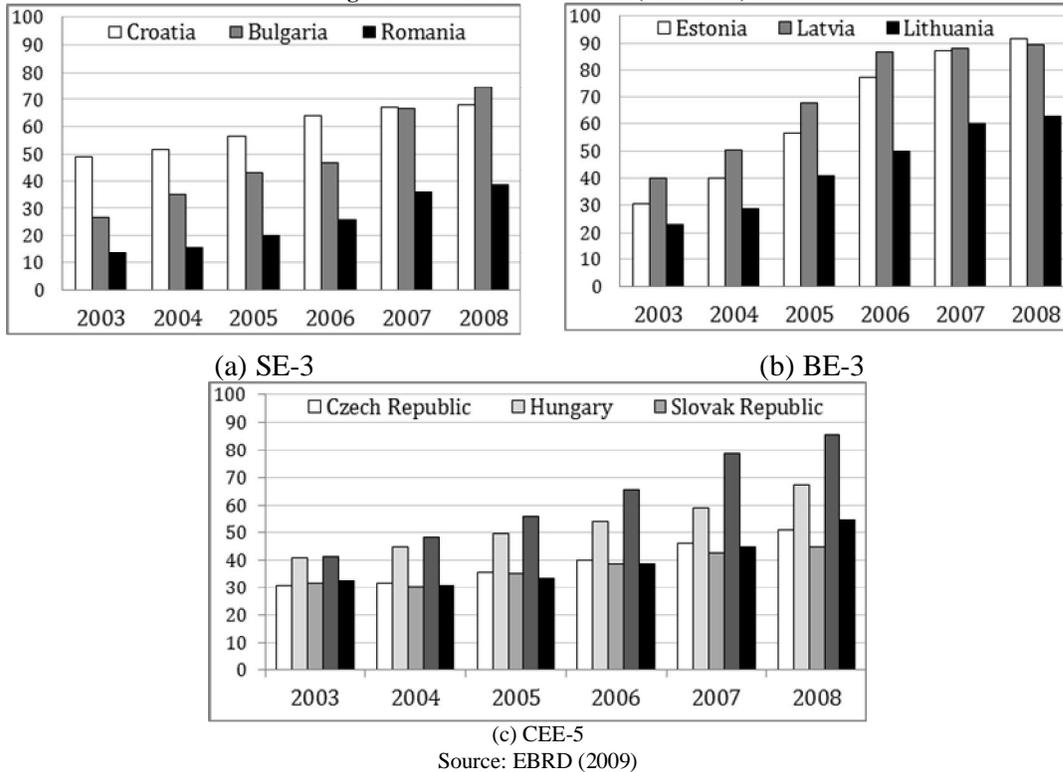
Large share of foreign banks was present in almost entire CEE region. In majority of the countries foreign currency denominated loans (FX loans) played a prominent role. As of mid-2007 the FX loans were widespread in 7 out of 11 CEE economies. Moreover, cross-border (direct) lending was profound in BE-3, SE-3 and Hungary. Cross-border channel can present serious troubles to domestic policymakers as they become unable to control the credit development as household and companies are obtaining credit directly from abroad.

Figure 2: FX loans (% of total loans to the private sector)

Source: Zumer et al. (2009) and national central banks.
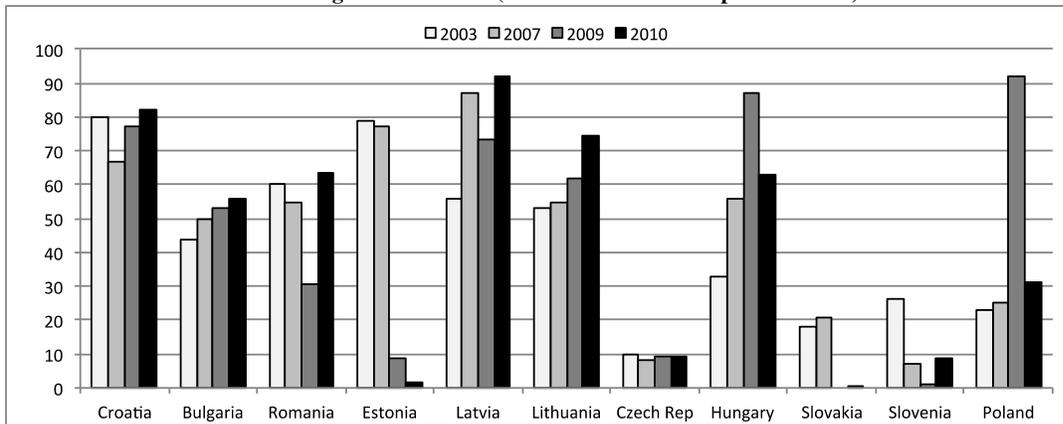
After the financial turmoil of 2008, credit growth suddenly turned into the credit crunch. Yet the downturn also reflected country and region specific factors. The credit crunch was particularly strong in the economies where credit growth was funded by capital inflows. Foreign mother banks, which were confronted with liquidity and capital shortages, came under severe liquidity pressure and saw themselves forced to stop new lending or even deleverage (Bakker and Gulde, 2010). Country and region also played the role. Imbalances translated in some economies into collapse on domestic demand, correction in the housing market (Zumer et. al, 2009). In selected countries, exchange rate depreciation caused significant challenges in repayment of FX loans.

Published literature firstly aimed to analyse the issue of excessiveness in credit growth. The most widespread approach to address the excessiveness was to derive the long-term equilibrium level of credit with respect to macroeconomic fundamentals (Boissay et al., 2007; Brzoza-Brzezina, 2005; Egert et al. 2006 – later revised at Backe et al., 2007 and Zumer et al., 2009).

Second stream of literature focused on actual measures implemented by policymakers. The most thorough palette of policy responses was introduced by Hilbers et al. (2005). The study also serves as a reference guide for this paper. Hilbers et al. (2005) looked at the wider group of countries in Eastern Europe but due to the year of publishing the research period was limited only to the mid-2005 thus it does not cover the main period of interventions analysed at this paper. The question of effectiveness of the specific policy measures was often approached on a country basis, namely by Kraft & Jankov (2005) for Croatia, Popa (2007) for Romania or as a part of the financial stability reports by NPL (2007) for Poland or Latvijas Banka (2007) in case of Latvia.

The financial crisis highlighted the debate about the role of macroprudential policy, its tools, implementation challenges and efficiency.[2] Since CEE provides a rich pool of experience from the credit boom period, policy measures applied in the region were subject to the further analysis (Dell'Ariccia et al., 2012; Gersl and Seilder, 2012; Lim et. al, 2011).

POLICY MEASURES

Crowe et al. (2011) stress there is "no silver bullet" among the policy options. Each policy introduces costs and distortions and loopholes and implementation problems limit the effectiveness. Broad reaching measures are more difficult to circumvent, and hence potentially more effective, but will typically involve greater cost. On the other hand, more targeted measures (specific macroprudential measures) may limit costs but will be challenged by loopholes, jeopardizing efficiency (Crowe et al. 2011). Needless to say, one must also account for the interactions across the range of the tools, their complementariness as well as potential conflicts. At last, every economy is unique in its distinctive characteristics and institutions that significantly influence feasibilities of each measure and possible trade-offs.

Table 1 summarizes a wide menu of policy options to counter the credit growth ranging from macroeconomic measures to soft measures such as promotion of better understanding of risk.

Table 1: Menu of policy responses

Macroeconomic Policy Measures	Fiscal	▪ Fiscal tightening ▪ Avoiding (quasi-)fiscal incentives that can spur lending
	Monetary	▪ Interest rate tightening ▪ Reserve requirements ▪ Liquid asset requirements ▪ Sterilization operations
	Exchange Rate	▪ Increase exchange rate flexibility ▪ Maintain a consistent mix of monetary and exchange rate policy

Prudential Measures	▪ Higher/differentiated capital requirements ▪ Tighter/differentiated loan classification provisioning ▪ Tighter eligibility criteria for certain loans ▪ Dynamic provisioning ▪ Tighter collateral rules, rules on credit concentration ▪ Tightening net open FX position limits ▪ Maturity mismatch regulations

Supervisory/ Monitoring Measures	▪ Increasing disclosure requirements for banks on risk management and internal control policies and practices ▪ Closer surveillance of potentially problematic banks or those with aggressive lending ▪ Periodic stress testing ▪ Periodic monitoring of banks' and customers exposure ▪ Increasing supervisory coordination of banks and nonbank financial institutions ▪ Dialogue between home supervisors of foreign banks

Market Development Measures	▪ Encouraging development of hedging instruments ▪ Asset manag. instruments to address distressed assets ▪ Improving credit culture ▪ Improving accounting standards

Administrative Measures	▪ Overall or bank-by-bank credit limits
	▪ Marginal reserve requirements based on credit growth
	▪ Controls on capital flows: e.g.,
	  ▪ Control on foreign borrowing
	  ▪ Diff. RR on domestic and foreign currency
	▪ Taxes on financial intermediation, import restrictions

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[2] The strongest initiative has been generated by the IMF Board asking for four strands of work (i) identifying indicators of systemic risk, (ii) reviewing country experiences on the use and effectiveness of macroprudential policy, (iii) assessing the effectiveness of different institutional setups for macroprudential policy and (iv) assessing the multilateral aspects of macroprudential policy (IMF, 2011).

Promotion of Better Understanding of Risks	• Strengthening ability to monitor, assess, manage risks • Public risk awareness campaigns, press statements, etc. • Discussions / meetings with banks ("moral suasion") to warn or persuade banks to slow down credit extension

Source: Hilbers et al. (2005)

SURVEY RESULTS

The core data were collected via direct survey across the central banks in the CEE region. Central authorities were asked to provide information regarding the measures used over the period 2003-2008 to control the credit growth. The survey consisted of three main parts: a) monetary policy measures, b) prudential and supervisory measures, and c) administrative and other administrative measures. Our survey was conducted in form of a simple questionnaire where central banks were to identify whether or not they undertook any of the listed instruments in period 2003-2008. If affirmative, they were to specify the date (month and year) when such steps were taken.

Table 2: Survey results - List of policy measures

Measures	CZ	SK	LT	LV	ES	HU	PL	RO	BL	HR	SL
Monetary measures											
Interest rate response				X			X	X			
Reserve requirements				X	X			X		X	
Changes in the level				X	X			X		X	
Differentiated by currency								X			
Differentiated by type				X							
Broaden the reserve base				X				X			
Prudential and Supervisory measures											
Capital requirements or risk weights			X	X	X	X	X	X		X	
Liquid asset requirements		X					X			X	
Tighter asset classification								X			
Tighter provisioning rules				X				X			
Tighter eligibility criteria				X		X		X			
Limit on LTV				X				X			
Limit on LTI								X			
Tighter valuation criteria											X
Tools targeted on FX loans			X	X			X	X		X	
Targeting unhedged borrowers				X			X	X		X	
Tighter net open position limits			X	X							
Soft measures: non-binding guidelines for banks	X	X	X	X	X	X				X	X
Tighter supervision				X		X		X			
Administrative and other measures											
Capital controls			X								
Credit ceilings								X		X	
Taxes on real estate transactions				X							

Table 2 illustrates the overall list of measures used within the region. As can be inferred from the data the experience is very rich; every measure asked was implemented at least in one of the countries. Altogether we observed 82 policy interventions. Yet, the country experiences varied significantly. Heterogeneity of the responses across the CEE region provide us with a unique possibility to compare the countries that made more effort to act against the adverse developments with the others in the region via difference-in-differences approach.

Exchange rate regime mattered both in scale and scope of responses. The fears about excessiveness of the credit growth came predominantly from fixed exchange rate regimes - countries operating under formal currency boards (Bulgaria, Estonia or Lithuania), quasi-currency boards (Latvia, Croatia). Additionally, having their hands tied in case of interest rates or exchange rate tools, countries possess a rich record of various prudential and supervisory activities. Most of the measures were specifically targeted to the key issues of the credit developments, namely FX-denominated private borrowing often in form of housing loans.

The overall assessment is however mixed. Among the most important reasons for underperformance is the insufficient scrutiny of foreign parent banks. The main problem was rooted in lack of enforcement capacity and weak cross-border supervisory cooperation. This argument was permanently stressed in the literature prior (Hilbers et al. 2005) or after the financial meltdown (Bakker & Gulde 2010). The lack of supervisory coordination contributed to creation of loopholes such as shift from FX-lending of local subsidiaries directly to foreign mothers, or shift to less regulated and supervised non-bank financial institutions (notably

leasing companies) that conducted quasi-bank activities and fell outside the regulatory horizon. On the top of that, selected countries experienced also faced persistent issues with domestic yet systematically important banks (Hungarian OTP Bank or Latvian Parex).

Policy measures were mostly reactive rather than proactive or counter-cyclical. There has been a controversy regarding the type and timing of policy responses. Taking the fiscal stance, Bakker & Gulde (2010) emphasized that with the benefit of hindsight, public expenditure growth should have been more restrained during the boom years. If the surge in revenues had been used to build up increasing fiscal surpluses, fiscal policy would not have further fuelled overheating (Bakker & Gulde, 2010). Based on the survey results, only Latvia undertook changes in taxation to discourage lending practices (the change in taxation was aimed at real estate transaction). Notwithstanding, Martin et al. (2009) argued even in the specific case of Latvia, the post-financial turmoil implementation of the fiscal measures stimulating the economy proved to be a very complicated task since the government has not accumulated any reserves in good times.

Evaluation of prudential and monetary stance is more questionable. First of all, policymakers devoted much effort to design prudential and supervisory measures get in line with the Western European best practices and Basel II requirements. Second, the levels of capital buyers were even higher than the latter listed requirements and practices. The rationale behind a more prudent stance of particular economies once again stems from the nature of the region (its relative immaturity, riskiness and turbulent credit developments). Moreover, leaning against the wind during good times had at least partially positive effect (see evaluation of Recommendation S in Poland, or detailed assessment of selected Croatian measures provided by Galac, 2010).

Since the objective of this paper is to evaluate the effect on the credit developments prior to the crisis rather than their counter-cyclical character of the instruments, there are two main points to consider. First, the reactiveness character of central authorities stemmed from the wide range of circumvention practices used by the banks. A few country experiences report shift of activities to less well-regulated parts of the financial system as a response to more prudent measures. Consequently, some countries reacted by further measures to counter the newly emerged adverse issues (broadening of the base for reserve requirements or extending the supervision). Second, even when the countries attempted to pro-actively introduce changes to the potentially dangerous issues, the circumvention was not rare. As a result, when evaluating the successes of most measures, successes turn out to be short-lived or we need wider datasets (on not only bank credit but also account for non-bank data) to correctly assess the issue.

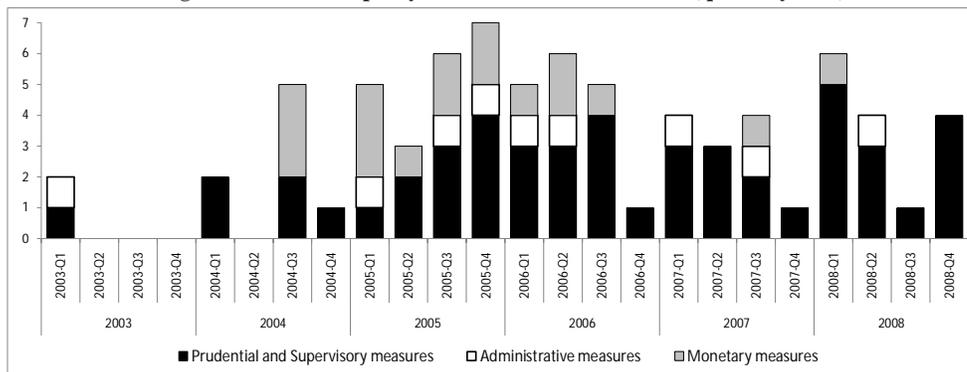**Figure 3: Number of policy measures over time in CEE (quarterly data)**

Figure 3 illustrates the time evolution of the measures used in entire CEE region. The reactiveness of the measures can also be supported by the frequency. In particular, unless facing serious issue, most policy responses were "late risers". The peak of policy activities was in second half of 2005 and first half of 2006. With respect to specific type of responses, we can observe that monetary measures were used among the first ones. Over time they mostly reached the limits and authorities turned into more specific prudential and supervisory tools.

Prudential and supervisory toolkit is particularly rich and over a wide range of relevant country lessons. The measures were popular until the end of the researched period, i.e., early stage of global financial crisis. This is also because some of the tools were not directed at slowing down the credit boom but they are designed to foster the resiliency of the banking sector. From this perspective the best scenario would be to achieve a less pronounced credit growth as a welcome side effect of more stable financial system.

Few economies facing the most serious external imbalances also undertook more controversial direct measures (credit ceilings or capital controls). The overall amount of such measures does not strictly correspond to the data showed in Figure 3 as all the modifications and amendments to the existing measures taken in different periods are displayed. For observed period Croatia witnessed two credit-ceiling periods (from January 2003 until the end of the year, from November 2007 until 2009).[3] Next experiences occurred in Bulgaria (since March 2005 with further adjustments taken over 2005 and 2006) and Romania (September 2005). In mid-2008 Lithuania also resorted to the introduction of capital controls.

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[3] The credit control was only eliminated in November 2009. The lifting of the tax was delayed due to fears that removing the tax would give banks room to depreciate the exchange rate.

<p align="center">**Table 3: Popularity of the policy measures**</p>

Policy measures	Total usage	Number of countries
Monetary policy		
Interest rate response	8*	3
Reserve requirements	12 **	5
Prudential and Supervisory measures		
Capital requirements (higher/different.) or risk weights	12	8
Liquid asset requirements (introduction/tightening)	3	3
Tighter asset classification rules	3	2
Tighter provisioning rules	3	3
Tighter eligibility criteria for certain loans (via LTV, LTI…)	5	3
Tighter rules on valuation criteria	1	1
Measures targeted on FX borrowing	6	5
Soft measures – new non-binding guidelines for banks	13	9
Tighter supervision	7	4
Administrative and other measures		
Capital controls	1	1
Credit ceilings	7 ***	3
Change in taxes on real estate transactions	1	1

Notes

* Total number of interest rate responses can differ from the stated value. Three countries listed interest rates tightening as a direct policy measure. Others acknowledge they raised key policy rate to affect inflationary pressure, influencing credit growth as a by-product.

** Out of which 5x MRR in Croatia.

*** 2x in Croatia and including changes and amendments of MRR in Bulgaria.

DIFFERENCE-IN-DIFFERENCES: BASIC SET-UP

Difference-in-differences (DID) attempts to find a naturally occurring comparison group that could mimic the properties of the control group in the properly designed experimental context (Blundell & Costa Dias, 2000). In our case the series of non-experimental data is the private credit growth in selected countries of CEE region. The DID approach is often applied to look at the effectiveness of the policy measures - mostly in labour economics (e.g. Meyer et al., 1995; Card and Krueger, 1994). With respect to the CEE region, Haselmann et al. (2010) used the DID to test the effects of law on lending. Nonetheless, the application on our point of interest is rare.

We define the event as a month and a year when the central authority applied a measure to control the credit growth. Event window will be set for (a) 6, (b) 12 and (c) 18 months prior and after the intervention. The most favourable would be to observe the outcome on the longest time span - case (c), unfortunately due to the high frequency of policy measures, long periods are often influenced by another policy measures that may bias the results. On the other hand, results from different event windows can reveal useful information about the duration of the success of the measure. The basic DID framework can be described as follows

$$Y_{ijt} = \beta_0 + \beta_1 X_i + \beta_2 I_j + \beta_3 T_t + \beta_4 X_i I_j + \varepsilon_{ijt} \tag{1}$$

where Y_{ijt} represents annual credit growth to the private sector (IFS IMF database). X_i is a dummy variable to distinguish treated and control countries taking value 1 in case of the treated country and value 0 in case of the control country (countries). Next, we present an intervention time dummy variable I_j. We split the researched period into two parts: pre-treatment period (I_j=0) and post-treatment period (I_j=1). In the pre-treatment period none of the countries intervened against the credit growth and we may assume they were following the parallel paths. Variable T_t stands for the time dummy for each period (month). Eventually, we focus on the impact of the treatment – a dummy that multiplies the interaction of the terms X_i and I_j as follows:

$$X_i I_j = \begin{cases} 1 & \text{treated group in post-treatment period (j=1)} \\ 0 & \text{otherwise} \end{cases} \tag{2}$$

The crucial assumption for simple DID estimator is the parallelism: we require similarity between comparison groups. (Haselmann et al, 2010). If the country selection permits, we will work with two control countries rather than one. The selection of control values is undermined by foreign currency regime and relative proximity of the economies. In case of Baltic countries, Estonia will be used as control country.[4] As for the floating ER regimes, we select two countries: Czech Republic (entire period) and Slovakia (2003-2007).[5] Finally, given that by construction of the policy dummy variable, the the model features positive

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[4] In 2006, Estonia resorted to new procedures in reserve requirements and capital weight. Moral suasion persistently occurred over the entire period. Capital weights were adjusted in line with Basel II standards.
[5] In 2008 Slovak central authorities implemented tools against the credit growth.

autocorrelation which may cause an understatement of the standard errors in the model (Bertrand, 2001; Wooldridge, 2003) we use robust standard errors in all models.

EFFECTIVENESS OF THE RECOMMENDATION S (POLAND)

In July 2006, Poland applied the Recommendation S to address the issue of large share of housing loans denominated in FX currency. Recommendation S combined measures targeted at FX borrowing (namely by targeting unhedged households) and non-binding guidelines for banks. The measure called banks to both assess and inform customers about FX risks. Among others, banks were to evaluate the ability of borrowers to repay FX loans in case of 20% depreciation od the zloty and interest rate at least equal to the level of the zloty interest rate when granting the FX loans (NBP 2007).

Table 4 illustrates DID results of annual private credit growth with the application of Recommendation S in July 2006. Here DID can be applied on two controls: Czech Republic and Slovakia. Results imply that the measures did not manage to slow down the boom but rather the other way round (positive and statistically significant β_4). To get more specific results, we need to look at the targeted group of the measure: FX-denominated housing loans.

Table 4: DID results - Case of Poland

	β_0	β_1	β_2	β_3	β_4	Adj. R^2
Case C	0.148 ***	−0.127***	−0.071***	0.006***	**0.167*****	
+/-18 months	*(0.0115)*	*(0.0099)*	*(0.0224)*	*(0.0009)*	*(0.0175)*	0.8492
Case B	0.182***	−0.134***	−0.066**	0.006***	**0.156*****	
+/- 12 months	*(0.0181)*	*(0.0152)*	*(0.0251)*	*(0.0057)*	*(0.0226)*	0.7569
Case A	0.233***	−0.139***	−0.043*	0.004	**0.118*****	
+/- 6 months	*(0.0162)*	*(0.0152)*	*(0.0214)*	*(0.0024)*	*(0.0211)*	0.7811
Values in parentheses are robust standard errors. *, ** and *** indicate statistical significance at the 10%, 5% and 1% significance level, respectively.						

According to the Figure 4 the annual growth of FX-denominated housing loans slowed down while the growth rate of zloty-denominated loans dramatically increased. By the end of 2007 both growth rate of zloty-denominated housing loans exceeded the numbers for FX loans. This is also in line with National Bank of Poland that emphasises mixed effect of the tool. On plus side, it appears that the Recommendation S was successful in raising the public awareness of FX risks stemmed from underlying fluctuation of the zloty exchange rate and interest rates which. Yet, NPB stressed that the dramatic fall of FX loans can also be attributed to the interest rate development. In the time of the policy introduction the interest rate spread between Swiss franc[6] and Polish zloty narrowed thus making FX borrowing relatively even less attractive.

Figure 4: Annual growth in housing loans (bn zloty)
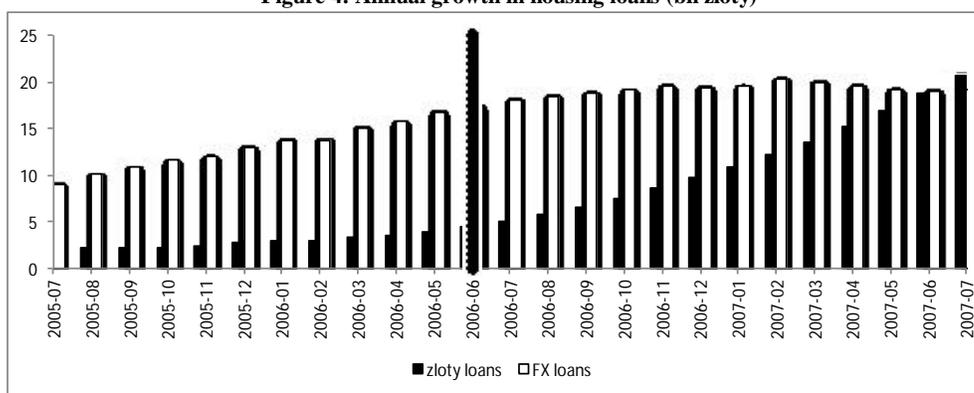
Source: National Bank of Poland

EFFECTIVENESS OF THE ANTI-INFLATIONARY PLAN (LATVIA)

In July 2007, Latvia introduced a new regulation to contain excessive real estate related credit boom. The measure named Anti-inflationary plan was targeted at both banks and real estate buyers. The toolkit included a set of comprehensive requirements, including limits on LTV and changes in taxes on real estate transactions. The minimum amount of initial down payment on real estate purchases was set at 10% while the limit on LTV of mortgage-backed credit at 90%. Stricter valuation criteria were also placed with respect to income situation of the borrowers - in case of loans in excess of 100 minimum monthly wages, statement of legal income was made compulsory.

The measures were to promote a gradual correction in real estate (mainly housing) market. The DID results of the developments of housing loans prior and after the implementation of Anti-inflationary plan are illustrated in Table 5 and Table 6. Results report

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[6] More than 95% of FX-denominated housing loans were in Swiss francs (NBP, 2007).

slowdown of the housing lending developments - success of the measure (the pace of credit housing loan growth in treated Latvia slowed down more than in case of control country Estonia).

Table 5: DID results - case of Latvia (total private credit)

	β_0	β_1	β_2	β_3	β_4	Adj. R^2
Case C	0.501***	0.218***	0.096	−0.013***	**−0.187***	
+/-18 months	*(0.0378)*	*(0.0367)*	*(0.0596)*	*(0.0025)*	*(0.0471)*	0.8610
Case B	0.465***	0.213***	0.109**	−0.014***	**−0.190***	
+/- 12 months	*(0.0426)*	*(0.0368)*	*(0.0511)*	*(0.0035)*	*(0.0459)*	0.8221
Case A	0.471***	0.186***	0.122***	−0.022***	**−0.144***	
+/- 6 months	(0.0169)	(0.0197)	(0.0238)	(0.0033)	(0.0243)	0.9187

Table 6: DID results - case of Latvia (housing loans)

	β_0	β_1	β_2	β_3	β_4	Adj. R^2
Case C	0.862***	0.212 ***	−0.034	−0.021***	**−0.145**	
+/-18 months	*(0.0340)*	*(0.0415)*	*(0.0616)*	*(0.0032)*	*(0.0588)*	0.9274
Case B	0.786***	0.246***	0.0134	−0.026***	**−0.146**	
+/- 12 months	*(0.0367)*	*(0.0415)*	*(0.0608)*	*(0.0048)*	*(0.0578)*	0.9106
Case A	0.695***	0.290***	0.039	−0.035***	**−0.108***	
+/- 6 months	*(0.0250)*	*(0.0275)*	*(0.0393)*	*(0.0058)*	*(0.0353)*	0.9532
Values in parentheses are robust standard errors. *, ** and *** indicate statistical significance at the 10%, 5% and 1% significance level, respectively.						

Nonetheless, the results and the used event windows should be treated with caution. First, in the first half of 2007, Latvia also introduced soft measures and tightened net FX open positions of banks. Second, the overall assessment of Anti-inflationary plan especially is rather difficult as it coincides with the early stage of global financial crisis. While most of the CEE countries were severely hit only in the post-Lehman phase of the crisis after September 2008, in Baltic countries the impact of the global financial crisis made itself felt already in the second half of 2007 when Swedish banks started to decelerate lending the overheating Baltic economies (Bakker and Klingen 2012). This had a dampening effect of real estate credit dynamics. Martin et al. (2009) argue that raised funding costs, lack of confidence and limited resource availability in the global financial markets adversely affected the Latvian banking sector, resulting in more conservative lending standards of Latvian banks. Latvijas Banka (2007) reported the drop in demand and consequent fall of real estate prices. Simultaneously, by tightened lending standards, banks also constrained financing of new projects of developers. One of the reported means of circumventions was an attempt to boost the demand via various discount offers and bonuses that however did not prove particularly successful. The corrections in the real estate market and a contraction of domestic demand materialized however the contribution of Anti-inflationary plan at the eve of financial turmoil is hard to treat separately.

CONCLUSION

Within eleven CEE countries we are able to identify various paths of credit development and degrees of interventions to dampen its dynamics. Rapid credit growth poses many risks to the financial stability. Hence, we performed a survey across the central banks in the region aimed at identification of the behaviour of policymakers to the credit boom. The survey consisted of three main issues: a) monetary policy measures, b) prudential and supervisory measures, and c) administrative and other administrative measures.

The main conclusions are as follows. First, exchange rate framework played a crucial role both in scale and scope of the responses. The fears about the excessiveness of the credit growth originated mainly in fixed exchange regimes. Having their hand tied in case of interest rate or exchange rate tools, countries introduced a wide scale of prudential, supervisory and administrative measures. Yet the effectiveness of the measures with respect to the credit slowdown was often fairly limited and short-lived as banks and local agents quickly found a new way of circumvention. We however acknowledge that specific prudential tools may have contributed to fostering the resiliency of the financial sector per se. Flexible exchange rate regimes did not face such a dramatic credit evolution. These countries mostly attempted to correct for maturity or currency mismatches.

Second, excessive FX borrowing was very often the main target of the policy measures. Unfortunately, the success was rare due to a number of circumvention practices. Among others, the most common circumvention was to switch to direct cross-border borrowing from the foreign parent banks or to shift to less supervised channels such as leasing companies. The cross-border borrowing did not only substantially limit the effectiveness of the measures but it also introduced more distortions as the system did not respond appropriately to the conventional measures for instance interest rates or reserve requirements. As a result, we strongly argue that design of the policy tool must reflect domestic environment and position of the foreign banks to help alleviate the risks entailed in the credit growth.

Third, last part of the paper was dedicated to the difference-in-differences (DID) estimations to study the impact of policy measures. Based on the survey results we were able to find matching control and treated countries to observe the effect of a policy intervention. The DID illustrated results of mixed successes due to the widespread circumvention practices.

In total we obtained 82 specific policy measures implemented separately or as a policy mix. This is an extremely rich record given the amount of economies and the time span. Unfortunately, since majority of the measures were implemented in the late phase, they coincide with the financial crisis and hence their contribution to the slowdown is very hard to assess.

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