Why and How financial meltdown occurs in East and threatens the West? An one side of the iceberg of problems of the EU banks

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Abstract

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Introduction

Throughout the past decade, a host of Western European banks planted subsidiaries in Central and Eastern European Countries (CEECs), and the Community of Independent States (CIS), often by acquiring the local and huge banks. The hope was that this might improve and diversify their revenues in the new growing markets where modern banking activities have been completely missing. This is a sound source of revenues till this region show an economic growth of 5-7% per year in the conditions of a 2% of growth of the origin country.

But doubts are now surfacing about the strategies carried out by the Western banks. The lending practices of these banks in CEECs and CIS are riskier than previously thought. Currency risk is the greatest concern, along with the increasing reliance on foreign currency lending. Hungary and Poland have seen a boom in lending in Swiss francs, Romania in euros and Ukraine in dollars.

Default risk of Western European banks recently came on the spotlight, as CDS (credit default swap) premium are currently raising to historical high levels. This market outcome was led by fears of a general downgrade (by Moody's) of Western European banks with high exposure over Central and Eastern European (CEE) banking sectors. For example, Austrian banks' exposure is roughly 75% of Austria's GDP. Moreover, Western European banks called from end-2008 for an ordered bailout of CEE banks by the EU. Recent initiatives, like the IBRD-EBRD-EIB joint financing plan (EUR 24.5 bn, providing direct recapitalization and liquidity flows to finance SMEs), were organized to provide a first response to the rising conundrum related to strong recapitalization needs within Eastern banking sectors (estimated to USD 123 bn)

These elements raise questions about why and how financial meltdown occurs in East of Europe and threatens the "old Europe". It threatens the banks of the old members of the EU because they are largely exposed to the economies of the new EU member-states and of the CIS, and their soundness is evidently deteriorating along with plummeting cyclical dynamics in the Eastern economies, which are highly exposed on financial and economic external shock coming mainly from the Western Europe. Obviously, these two regions (new EU member-states and old EU member-states) will have to become more integrated, but prudential implications of Western European banks' exposure to the East should have to be monitored more carefully. It is then reasonable to wonder about the factors that pushed these banks in CEECs to adopt a behaviour that weakened them so much during this financial meltdown. This is important as many key Western banks are systemic players within this region.

Austrian lenders Raiffeisen Bank and Erste Bank have built entire strategies around expanding eastwards. Italy's Unicredit obtains about 25% of its earnings from CEECs and CIS, following its acquisition of Germany's HypoVereinsbank (HVB) in 2005 and its entry in Ukraine a couple of months before the current credit squeeze. The largest exposure of the German banks is to Russia and, alongside Austria, to Hungary, to Czech Republic, and to Poland. France's third-largest bank, Société Générale, has also made CEE markets a strategic priority, with high banking market shares in Czech Republic, Romania, Bulgaria, and Russia where it holds 60% stake in Rosbank (the second-largest private bank in Russia by assets). In Romania and Bulgaria, the largest Greek Banks have also important participations. Finally, Swedish banks play a key role in the Baltics.

The main goal of our paper is to try to reveal the main factor of the Western banks' risk-taking behaviour in the East. For this reason, we focus on the old and, in the same time, recurrent debate on the role of the competition. As Freixas and Rochet (2008) summarised the conclusions of different theoretical and empirical literature, the general consensus is that more competition leads banks to increase their risk appetite. Cordella and Levy-Yeyati (2002) establish theoretically that increased competition reduces product differentiation and margins. This gives an incentive for bank managers to take higher risks. Beck et al. (2003) study empirically the effect of bank concentration on the probability of banking crisis. They found that crises are less likely in more concentrated banking market. Other papers support also the same conclusion.

As a result, we describe briefly the evolution of the Western banking strategies in CEECs and CIS. We can easily establish that these banks behaved as described above: encouraging foreign currency lending, intensifying mortgage and other risky lending, increasing the share of the non-interest revenues as a consequence of a higher non-interest earning assets, and swelling of the off-balance sheet transactions. Would the increase of the competition in these banking markets be one of cause of this behaviour?

We provide an answer with an index that measures the level of competition. As mentioned by Cetorelli (1999) the concentration index is not a good estimator and could be used only within Cournot framework. The indicators of market power, or competition, are determined by the methods of the New Industrial Organisation. There are non structural indicators, as the revenue test of Panzar and Rosse, and structural indicators, as mark-up test of Bresnahan and Lau and Lerner index of market power. Given the objective of our paper, that is partly related to the study of the evolution of the Eastern banking markets and its

impact on the evolution of the banks' behaviour into crisis environment, we use structural indicators. Among them, we choose the Lerner index of market power because it can be calculated for each bank and year, which allows us to analyse the relationship between market power and banks' behaviour (before and after the crisis, for local and Western banks). This index is defined as the mark-up of the price above the marginal cost. So, higher is the index value, higher is the bank's market power and theoretically it must take positive values.

Our study is based on the ten new EU member states and two CIS, Ukraine and Kazakhstan. As mentioned above, the Western banks have subsidiaries in all CEECs and among all CIS are exposed primarily in Ukrainian and Kazakh banking markets. Thus, we begin by describing the banking industry in the East and by exposing the reasons of the western banks to entry these markets. The way in which they entry is also analyzed in order to reveal their exposure in CEECs.

We continue by estimating and analysing the competition among CEECs' banks. As mentioned above, the increase in competition or the decrease in banks' market power could lead them to risk-taking behaviour to avoid the reduction of their financial performances. This "resurrection" policy implies necessarily the diminution of the quality of the interest earning assets and increases the banks' vulnerability to any exogenous shock. We regress a measure of risk-taking behaviour on the Lerner index of market power and we find effectively that the banks that have lesser market power are more incited for a risk activity.

We also complement our study with a bank-by-bank examination of traditional indicators of performance, liquidity and risk-taking, enabling us to show how and where the situation deteriorated. We show also that bank balance-sheet imbalances didn't increase markedly before the current financial storm. However, the liquidity position deteriorated, implying that Eastern economies' banks vulnerability to cyclical and exchange rate shocks was huge and visible.

Finally, we describe the policy responses to the current crisis, trying to summarize the main preliminary lessons to be drawn for the CEECs.

I   Banking in the East: a retrospect

I.1 How and why western bankers increased their presence in the East?

There are many factors that push banks towards foreign markets: the intensification of the foreign trade and of the foreign direct investment, the good economic performances of the host country or/and the poor performances of the home country, and the liberalisation of the financial market, namely of the banking market. All of them explain in different period of transition the motivation of the foreign banks to invest in the CEECs' banking markets.

At the beginning of the nineties, the growth of the foreign direct investment and trade with the CEECs were the factors that pushed western banks in the East (Bonin *et al.*, 1998, Majnoni *et al.*, 2003). Then, financial markets liberalisation accelerated the process, because the presence of the western foreign banks was perceived as a necessary condition for an efficient and competitive banking intermediation. As a consequence, the Estonian, Slovak and Czech banking markets are almost entirely held by foreign banks, the other being obviously dominated by the presence of the foreign banks (Table 1). Thus, the liberalisation of the CEECs' banking markets, fiscal incentives, and the economic outlook of these countries have been the major push factors. A developing financial sector, as in the CEECs in the nineties, represents an attractive ground. Moreover, the improvement of the economic performances implies that the foreign banks' activities are positively correlated with the increasing demand for loans in this region. Moreover, low growth in the 'Old Europe' pushed the western banks to look for higher income-generating opportunities in the CEECs.

Table 1. Share of foreign banks' assets as a percentage of each country's banking market.

	2001	2002	2003	2004	2005	2006
Bulgaria	70.9	72.5	85.2	81.6	75.6	77.2
Estonia	91.2	90.0	89.0	97.4	98.8	98.5
Hungary	56.0	56.5	56.3	56.2	56.2	56.3
Latvia	33.8	38.6	41.9	43.8	52.6	64.8
Lithuania	50.2	51.1	51.1	73.8	74.4	76.7
Poland	69.2	63.2	62.7	62.8	62.5	65.4
Romania	36.1	42.8	49.4	54.7	57.9	85.8
Slovakia	79.5	82.9	93.4	91.7	93.3	92.3
Slovenia	14.6	16.0	17.8	18.8	22.4	28.9
Czech Rep.	77.0	93.1	95.6	95.5	97.2	96.9

Source : ECB (2006, 2007), BankScope, Central Banks and author calculations.

On the other hand, the western banks followed their customers who delocalised their production activity in these countries in order to take advantage of the development of East. Such entry strategy is justified by the imperfections of the banking market linked to the asymmetry of information. Entering a foreign market, the banks are incited to finance in priority the projects of their home country's customers. Haselmann (2006) tests which of these three factors are determinant for foreign banks in their decision to entry the CEECs' markets. He find that the entry decision is based namely of the conquest optic and has a long-run objective. His conclusion is due to the lack of any relationship between their loan supply and the macroeconomic conditions of the host country.

The asymmetry of information not only pushed the western banks to follow their clients but also influenced their choice of the host country. The geographic proximity, the cultural and linguistic similarities represent decisive elements too. According to Buch and De Long (2004), Buch (2003), Buch and Lipponer (2004), the bilateral distance, the same frontier and language are the main factors that influence the decision entry of foreign banks, because they could imply the reduction of the asymmetry of information. That influenced the decision of the Scandinavian banks (SEB, SwedBank, Danske Bank, DNB Nord, Sampo Bank) to invest in the Baltics, the decision of the Austrian (CreditAnstalt, Raiffeisen Bank, Erste Bank) banks to develop their activities in Central Europe (Hungary, Czech Republic, Poland, Slovakia and Slovenia) and the decision of the French banks (BNP, Crédit Lyonnais, Société Générale) to be in francophone countries like Romania and Bulgaria.

The asymmetry of information influences not only the choice of the region but the modality of entry too. To reduce its effect is to acquire an existing bank. It was not possible at the beginning of transition, when the existing domestic banks, that have been state-owned, have not been ready to be privatised. Thus, in the beginning of nineties, the western banks entered the CEECs' markets on the *green field* basis. After that, the foreign banks preferred to acquire the local banks because they can dispose of the already established loan portfolio. Van Tassel and Vishwasrao (2007) show theoretically that the decision to enter a foreign market is determined by the difference of information disposed by foreign and domestic banks. The former will be incited to acquire an incumbent bank because it knows better the market.

From Table 2, we can see that in all CEECs after the end of the nineties the foreign banks preferred to enter by acquiring a domestic bank. This wave was so important as it surpassed the number of entry on the *green field* basis that largely dominated at the beginning.

Table 2. Number and the ways of entry of foreign banks.

	<1999	1999	2000	2001	2002	2003	2004	2005	2006	Total
Bulgaria										
GF	11	1	1	1	0	1	0	0	0	**16**
Acq	4	1	2	2	1	2	0	1	1	**14**
Estonia										
GF	0	0	0	0	0	0	0	0	0	**0**
Acq	1	2	1	0	0	0	1	0	0	**5**
Hungary										
GF	15	0	0	0	0	0	1	0	0	**16**
Acq	8	0	0	0	0	0	0	0	1	**9**
Latvia										
GF	3	0	0	0	0	0	0	0	0	**3**
Acq	1	1	0	1	0	1	1	1	1	**7**
Lithuania										
GF	0	0	0	0	0	0	0	0	0	**0**
Acq	0	0	3	2	0	0	0	0	0	**5**
Poland										
GF	18	0	0	1	1	0	0	2	1	**23**
Acq	8	5	4	1	0	1	0	2	0	**21**
Romania										
GF	11	0	1	0	0	0	1	0	0	**14**
Acq	2	0	5	0	2	1	1	2	2	**15**
Slovakia										
GF	5	0	0	0	0	0	0	0	0	**5**
Acq	1	0	2	2	3	0	0	0	0	**8**
Slovenia										
GF	4	0	0	0	0	0	1	0	0	**5**
Acq	0	0	0	1	2	0	0	0	0	**3**
Czech Rep										
GF	25	0	0	0	0	0	0	2	0	**27**
Acq.	3	1	1	1	0	1	0	0	1	**8**

Source: BankScope, Central banks, banks' statements and author calculations.
*Note*: GF – means the number of foreign banks entered through Green Field investments and Acq – represents the number of foreign banks entered in CEECs' markets by acquisition of the local banks.

As it can be seen with following Figures 1 & 2, the countries with the main exposure to CEECs are Austria (with a broad regional strategy for the two main banking groups, Raiffeisen and Erste Bank), Italy (mainly Unicredit though the M&A with Hypovereinsbank), Sweden (in the Baltics) and Greece (in the Balkans).

Figure 1. Western Banks presence in the East.

Figure 2. Geographic Breakdown of Foreign Claims in the Banking Sector.
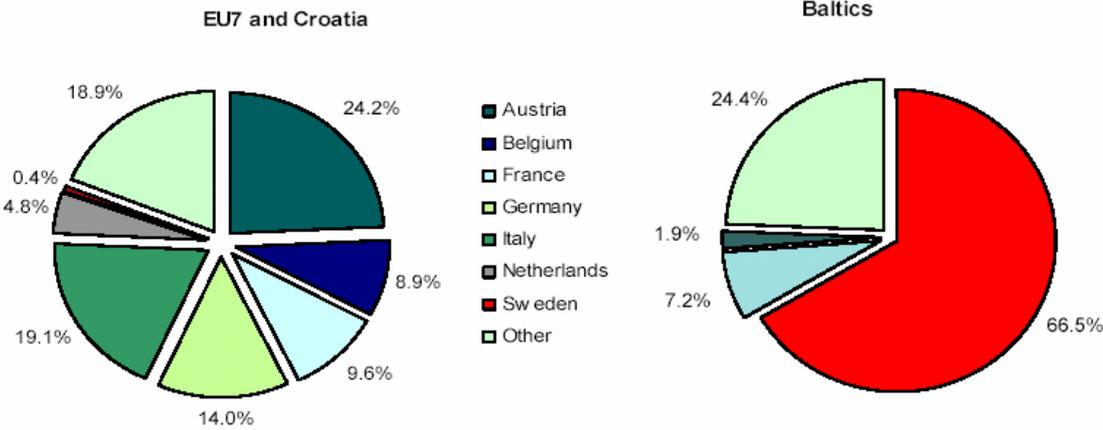
Notes: EU7 refers to EU10 without the Baltic countries.
Sources: BIS, World Bank Staff calculations.

I.2 Macro-financial indicators deteriorated

A key lesson from the current world financial crisis is related to the relevance of macro-financial indicators for banking supervisors. A bank-by-bank approach is not sufficient and as a result may be able to deliver irrelevant conclusion for the banking supervisors. Macroeconomic imbalances have to be monitored carefully in order to identify common vulnerability factors for the whole banking system of a given country.

As shown in Table 3, CEECs financial sectors relied heavily on foreign funding, as their net external positions vis-à-vis BIS reporting banks were largely negative, and stronger than strong as compared with other emerging economies. This heavy reliance on foreign funding was a key financing source for a strong domestic credit growth rate. Moreover, loan to deposit ratios were on average more deteriorated than in other emerging economies, implying illiquidity when fortune frowned. Finally, CEECs had the potential for full-blown balance sheet crisis related to counterparty risks given that massive foreign currency loans were held by non-tradable agents (particularly households borrowing in Swiss Franc to fuel housing financing needs, e.g. in Hungary or in Poland). Foreign currency lending was facilitated by lower interest rates and low currency variability. Recently, the risks associated with rising imbalances related to a poorly monitored financing system scheme degenerated into huge losses. Interbank lending to the CEECs was reduced, implying a rising roll-over risk, increased by very strong refinancing needs in 2009, related to quite poor levels of foreign exchange reserves. Strong domestic credit growth rates turned negative and Non-Performing Loans are now on the rise. Banks with high loan to deposit ratios, as BTA Bank in Kazakhstan are on the verge to default. Depreciated exchange rates lead to default fears of private domestic agents indebted in foreign currency.

However, all these phenomena were well-known in other regions of the world, as strong foreign currency credit growth rates in countries with rigid or fixed exchange rates (e.g. Mexico, emerging Asia and Argentina) led to huge balance sheet crises in the so-called second lost decade (of the nineties).

Table 3. Macro and Financial Indicators in Selected Emerging Market Countries (Global Financial Stability Report, April 2009).

	Current Account Balance[1] (Percent of GDP)	External Debt Refinancing Needs in 2009[2] (Percent of reserves)	Net External Position vis-à-vis BIS Reporting Banks[3] (Percent of GDP)	Average Real Credit Growth over the Last Five Years[4] (Percent, year-on-year)	Loan/Deposit[5] (Ratio)	Forex Share of Total Loans (Percent of total loans)
Europe						
Bulgaria	−12.3	132	−34.9	35.9	1.3	66.9
Croatia	−6.5	136	−44.5	13.1	1.1	62.0
Czech Republic	−2.8	89	−13.1	16.0	0.8	13.6
Estonia	−6.3	346	−68.8	27.3	2.1	85.3
Hungary	−3.9	101	−50.2	14.3	1.4	65.7
Kazakhstan	−6.4	82	−5.1	50.1	1.7	43.6
Latvia	−6.7	331	−57.6	38.4	2.8	89.3
Lithuania	−4.0	204	−41.5	43.2	2.0	64.0
Poland	−4.9	141	−15.4	14.7	1.1	32.6
Romania	−7.5	127	−32.5	47.1	1.3	55.5
Russia	0.2	34	3.1	34.5	1.3	15.3
Serbia	−12.2	...	−12.2	26.2	1.2	68.0
Turkey	−1.1	110	−11.9	29.8	0.7	28.9
Ukraine	0.6	117	−10.3	47.5	2.0	59.5
Gulf States						
Kuwait	25.8	109	3.8	19.8	1.1	...
Saudi Arabia	−1.8	...	22.3	22.2	0.9	8.2
United Arab Emirates	−5.6	...	−12.2	...	1.2	18.9
Africa						
Egypt	−3.0	14	8.5	0.9	0.6	28.0
Ghana	−10.9	13	−5.0	26.4	0.8	...
Nigeria	−9.0	...	10.3	34.2	1.1	...
South Africa	−5.8	49	4.4	12.8	1.2	...
Uganda	−6.2	...	...	17.7	0.8	...
Asia						
China	10.3	14	0.7	11.3	0.8	...
India	−2.5	33	−8.9	18.2	0.8	...
Indonesia	−0.4	73	−7.5	15.1	0.8	19.8
Korea	2.9	93	−18.9	6.3	1.2	8.5
Malaysia	12.9	23	−8.3	5.2	0.9	...
Pakistan	−5.9	28	2.4	13.5	0.7	...
Philippines	2.3	39	−2.2	...	...	...
Thailand	0.0	34	1.3	2.6	1.0	...
Vietnam	−4.8	8	−7.4	26.4	1.1	21.2
Latin America						
Argentina	2.3	85	2.5	14.6	0.7	15.8
Brazil	−1.8	40	−7.1	15.9	0.8	...
Chile	−4.8	119	−7.2	11.6	1.4	...
Colombia	−3.9	52	0.5	16.0	2.0	6.3
Mexico	−2.5	64	−2.1	11.7	0.8	11.6
Peru	−3.3	27	−2.2	8.2	0.9	57.5
Venezuela	−0.4	59	19.7	45.8	0.8	<0.5

Sources: Bank for International Settlements (BIS); Bloomberg L.P.; IMF, Direction of Trade Statistics, International Financial Statistics, and World Economic Outlook (WEO) databases; and IMF staff estimates.

Note: The shaded boxes of the table point to areas of potential concern. Cut-off values are as follows: current account balance below −5 percent of GDP; refinancing needs in excess of 100 percent of reserves; net external liabilities to BIS reporting banks above 10 percent of GDP; average real growth of credit to the private sector greater than 30 percent year-on-year; loan-to-deposit ratio exceeding 1; and foreign-currency-denominated loans exceeding 50 percent of total loans.

[1] Projections of the current account balance and GDP for 2009 in dollar terms from the WEO.

[2] Short-term debt at initial maturity at end-2008 plus amortizations on medium- and long-term debt during 2009, estimated by IMF staff. Care should be taken in interpreting the figures, as circumstances among countries differ. For instance, the figures include obligations resulting from lending by foreign parent banks to domestic subsidiary banks, so the stability of the relationship between parents and subsidiaries needs to be taken into account. In addition, some countries have sovereign wealth funds whose assets may not be included in reserves.

[3] Data on external positions of reporting banks vis-à-vis individual countries and all sectors from the BIS, as of September 2008.

[4] Average growth of credit to the private sector, adjusted for inflation.

[5] Credit to the private sector relative to demand, time, saving, and foreign currency deposits.

II Increased Competition in the East, Was It for Real?

Numerous studies associate the level of competition with the market's concentration level, expressed by the Herfindahl-Hirschman ratio or by the market share of the 5 largest banks. Calculated as the sum of market share squares, the first index represents a more comprehensive and precise measure of market concentration. However, the relationship between the latter and the competition is established only in a particular analysis framework, that of a structure-conduct-performance. According to this theoretical approach, a more concentrated market implies a lower level of competition, because banks are supposed to have more market power. And yet, according to the contestable market theory (Baumol, 1982), there could be both a concentrated and competitive market if there are no entry or exit costs. This fact explains, for example, why higher concentration does not imply lesser competition among banks in Latin America (Levy Yeyati and Micco, 2007). Cetorelli (1999) shows that the negative relationship between concentration and competition is only verified in a Cournot competition framework. This model assumes that the bank does not anticipate the reactions from its competitors in response to a variation in its production. However, in a framework characterized by reactions and production responses, the relationship is less obvious between the concentration level and the market power. For this reason, we use an econometric approach to determining the level of competition among banks.

Two different methodologies are generally implemented to determine the level of competition: the Panzar and Rosse (1987) revenue test and the Bresnahan (1982, 1989) and Lau (1982) mark-up test. The first is a non-structural index and the second is based on a structural approach. The structural approach is used here because it directly takes the competitive banking environment into account. The Lerner index is then the most appropriate as it stems from the Monti-Klein imperfect competition model. Moreover, in comparison to Panzar and Rosse's H index and Bresnahan and Lau's λ parameter, the Lerner index is only recently applied to banking industry, for instance by Angelini and Cetorelli (2003), Fernández de Guevara *et al.* (2007), Solís and Maudos (2008) and Carbó *et al.* (2009).

II.1 Determination of the market power

Let be a market with N banks where $r_L(L)$ represents inverse demand for bank loans, with $L = \sum_{i=1}^{N} L_i$, and $r_D(D)$ represents inverse demand for bank deposits, with $D = \sum_{i=1}^{N} D_i$.

Under budget constraint, the function of the profit of bank i is

$$\pi_i = \left(r_L(L) - r\right)L_i + \left(r - r_D(D)\right)D_i - C(L_i, D_i). \tag{1}$$

We introduce the Cournot-Nash equilibrium condition to the following condition for maximizing profit:

$$\frac{\partial \pi_i}{\partial L_i} = 0 \text{ and } \frac{\partial \pi_i}{\partial D_i} = 0. \tag{2}$$

The Lerner indices for credits and deposits are:

$$L_L = \frac{r_L^* - r - \dfrac{\partial C}{\partial L}}{r_L^*} = \frac{1}{Ne_L} \text{ and } L_D = \frac{r - r_D^* - \dfrac{\partial C}{\partial D}}{r_D^*} = \frac{1}{Ne_D}. \tag{3}$$

As in the studies by Fernández de Guevara *et al.* (2007), and Carbó *et al.* (2009), we use only one indicator for bank activity. We will consider total assets (*TA*) as a banking product. Here we make the assumption that in CEECs, the flow of banks' products and services is proportional to their assets. We can thus calculate the average price p as the ratio between total revenue (*R*) and total assets (*TA*). The Lerner index is determined as follows:

$$LernerAll_{it} = \frac{p_{it} - cm_{it}}{p_{it}}, \tag{4}$$

with $p_{it} = R_{it}/TA_{it}$.

The index *LernerAll* measures the overall market power disposed by each bank at the moment t. Thus, it will reveal the level of competition among banks for all services rendered to customers. The question is to know if the competition for lending is higher. If it is so, it is not surprising that many loans have been lent without revealing the true debtor's creditworthiness. Such behaviour leads to an increase of the amount a loan and consequently of the amount of the non-performing loans, and make vulnerable the banks' situation. In the case of the financial meltdown, this huge competition for lending implies a high amount of impaired loans and increases the banks' insolvability.

To test this hypothesis, that is to verify if the market power for lending is lesser than overall market power, we construct a Lerner index for loans (*LernerLoan*). It takes the same formula as the index LernelAll, except the price p is replaced by the loan interest rate r_L and the total cost, from which is derived marginal cost, contains total loans as banking product.

For the cost function, we take the translog function; first, because it is a flexible function, and second it allows the estimation of the marginal cost, and respectively the

calculation of the market power, for each bank and each period. The following cost function is to be regressed:

$$\ln C_{it} = c_i + \mu_t + \sum_{j=1}^{3} \alpha_j \ln w_{j,it} + \beta_1 \ln Pr_{it} + \beta_2 \ln Eq + \sum_{k=1}^{3}\sum_{l=1}^{3} \varphi_{kl} \ln w_{k,it} \ln w_{l,it} + \rho_1 \ln Pr_{it} \ln Eq_{it} +$$

$$+ \rho_2 (\ln Pr_{it})^2 + \rho_3 (\ln Eq_{it})^2 + \sum_{k=1}^{3} \tau_k \ln w_{k,it} \ln Pr_{it} + \sum_{k=1}^{3} \phi_k \ln w_{k,it} \ln Eq_{it} + \varepsilon_{it}. \tag{5}$$

In order to regress this function, we impose the symmetry and homogeneity conditions for the price coefficients of this cost function, that is $\sum_{j=1}^{3} \alpha_j = 1$, $\sum_{k=1}^{3} \varphi_{kl} = 0$, $\sum_{k=1}^{3} \tau_k = 0$, and

$\sum_{k=1}^{3} \phi_k = 0$. Finally, the marginal cost of bank i at the moment t is determined as

$$cm_{it} = \frac{\partial C_{it}}{\partial Pr_{it}} = \left[\beta_1 + \rho_1 \ln Eq_{it} + 2\rho_2 \ln Pr_{it} + \sum_{k=1}^{3} \tau_k \ln w_{k,it} \right] \frac{C_{it}}{Pr_{it}}, \tag{6}$$

where Pr is the banking product, which is total assets, when the overall market power is determined, or total loans, when the market power for lending is calculated. Loans are proxed by total earning assets[1]. In order to determine the overall market power and the market power for lending the total revenue (interest income, commission income, other operating revenue) and the interest income are used respectively to estimate the price of the banking product (total assets in the first case and loans in the second one). w_1 is the price of the purchased funds and is calculated as the interest expenses divided by deposits and other interest bearing liabilities. w_2 measures the price of labour and is determined as personnel expenses divided by total assets. The last production factor is the capital, which price w_3 is determined as operating costs except personnel costs divided by total assets.

As is argued by Berger and Mester (1997), the bank's capital level directly affects costs by providing an alternative to deposits and other earning bearing liability as a funding source for loans. Interest paid on deposits and other dent counts as a cost, but dividends paid do not. On the other hand, raising equity involves higher costs than raising deposits. It could increases the bank's cost if the first effect dominates, and *vice versa* the cost could be reduced if the second effect prevails. All in all, the bank's equity Eq influences its cost and we must take it into consideration in the cost function.

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[1] The statistical information available in the database used (BankScope) does not permit the construction of prices or rates for loans. More precisely, the income statement does not disaggregate the information on "Interest income" by type of assets and it is impossible to calculate the price of loans. For this reason, we use the earning assets as proxy for loans.

As some paper argue (DeYoung, 1998; Dietsch and Lozano-Vivas, 2000; Lozano-Vivas et al., 2002), in estimating the cost function it is important to allow for variation in environmental conditions which are beyond the control of bank managers. For this reason, we introduce into the cost function the annual rate of the real growth of GDP, *GDPGR*. This variable captures the possible effect of the business cycle and is related to the demand and supply of banking services. Additionally, dummy variables for each country are included to take into account the influence of other environmental variables which are specific to each banking sector (regulatory and institutional variables, the branch network, entry barriers etc.).

II.2 Data and results

Bank data were obtained from Bank-Scope database. The sample consists of a total of 1182 observations of 219 banks during the period 2000-2007. The banking sectors analyzed are those of the Bulgaria, Estonia, Kazakhstan, Latvia, Lithuania, Poland, Romania, Slovakia, Slovenia, Czech Republic, and Ukraine. How is explained above, the western banks are hardly exposed in these countries which justifies this sample. The data for the real GDP growth rate are extracted from the Economic Intelligent Unit data base.

The Lerner index of market power is obtained by regressing the equation (5) and by estimating the expressions (6) and (4). Theoretically, this index should take non-negative values, zero indicating perfectly competitive behavior. Negative values obtained may be explained as a consequence of extremely strong competition, which forces the bank to offer a price lower than its marginal cost. For estimating the Lerner index we use only the statistically significant coefficients at maximum 5% level (see Appendix).

The values of overall market power are weighted averaged and are presented in table 4. They are very low for all countries, and for some years they are negative as for Kazakhstan and Latvia. Thus, for all twelve countries the market power is low even if it has increased during 2000-2007 period. It is higher in Bulgaria, Kazakhstan, Latvia, and in Czech Republic, and it is lesser in Hungary, Poland, Romania, Slovenia and in Ukraine. However, in many countries this increase is jeopardized in 2007. We can see that the competition among banks is strengthened in Estonia, Kazakhstan, Slovakia, Latvia, Hungary, and in Ukraine. In these three later countries, the decrease of the overall Lerner index of market power was very important in 2007. Thus, the banks of these countries were especially implied into an important wave of competition.

Table 4. Overall Lerner index of market power.

	2000	2001	2002	2003	2004	2005	2006	2007
BG	-	0.021	0.154	0.048	0.102	0.167	0.202	0.254
ET	0.003	0.117	0.058	0.120	0.200	0.123	0.188	0.154
HU	0.023	0.060	0.085	0.075	0.108	0.130	0.140	0.086
KZ	-0.075	0.121	0.159	0.251	0.249	0.238	0.236	0.216
LV	0.046	0.075	0.089	0.104	0.186	0.241	0.206	0.169
LT	-0.042	-0.104	-0.055	0.009	0.097	0.158	0.190	0.196
PL	-	-	-	-	0.033	0.040	0.098	0.145
RO	-0.020	0.082	-0.007	0.027	0.080	0.036	0.056	0.076
SK	0.041	0.075	0.104	0.078	-0.028	0.145	0.153	0.121
SV	0.120	0.081	0.059	0.062	0.066	0.083	0.078	0.107
CZ	0.072	0.035	0.023	-0.011	0.116	0.176	0.255	0.299
Ukr	0.058	0.118	0.023	0.119	0.099	0.062	0.102	0.084

Note: BG – Bulgaria, ET – Estonia, HU – Hungary, KZ – Kazakhstan, LV – Latvia, LT – Lithuania, PL – Poland, RO – Romania, SK – Slovakia, SV – Slovenia, CZ – Czech Republic, Ukr – Ukraine

Table 5. Lerner index of market power for loans.

	2000	2001	2002	2003	2004	2005	2006	2007
BG	-	-0.040	0.020	-0.026	0.035	0.074	0.121	0.182
ET	-0.187	0.009	-0.128	-0.074	0.016	-0.136	-0.006	0.068
HU	-0.096	-0.106	-0.051	-0.115	-0.023	-0.030	-0.030	-0.061
KZ	-0.421	-0.124	-0.022	0.109	0.123	0.135	0.152	0.192
LV	-0.315	-0.235	-0.293	-0.325	-0.137	0.034	0.051	0.071
LT	-0.258	-0.415	-0.408	-0.409	-0.221	-0.114	0.001	0.061
PL	-	-	-	-	-0.157	-0.119	-0.189	-0.078
RO	-0.083	0.009	-0.112	-0.194	-0.088	-0.137	-0.111	-0.090
SK	0.043	0.019	0.070	0.055	-0.064	-0.053	0.039	0.050
SV	0.064	0.043	0.034	0.028	0.008	-0.036	-0.063	0.003
CZ	-0.045	-0.054	-0.003	-0.016	0.071	0.075	0.096	0.174
Ukr	-0.317	-0.161	-0.226	-0.141	-0.151	-0.105	-0.006	0.010

Note: BG – Bulgaria, ET – Estonia, HU – Hungary, KZ – Kazakhstan, LV – Latvia, LT – Lithuania, PL – Poland, RO – Romania, SK – Slovakia, SV – Slovenia, CZ – Czech Republic, Ukr – Ukraine

Or, the increase in the market power could be a mirage regarding to the lending activity. The banks compete fiercely on the loan market as the Lerner index reflecting this activity is mainly negative. The results presented in Table 5 show that the values of the index LernerLoan are much lesser than those of the index LernerAll and that for all countries. It is to notice that the index LernerLoan is negative for Estonian, Hungarian, Polish, Romanian and Ukrainian banks for all period. The competition is so important among these banks as interest rate of loans is lesser than marginal cost of lending.

II.3 Does higher competition cause risk-taking behaviour?

But what is the most important is the different degree in evolution of the market power among the banks. The biggest Western banks undergo a decreasing in their market power in the many CEECs markets: Raiffeisen Bank (Hungary, Romania, Slovenia), UniCredit Bank (Hungary, Latvia, Romania, Slovakia, Slovenia), ABN AMRO (Kazakhstan, Romania), HSBC (Kazakhstan), Danske Bank (Latvia), Intesa Sanpaolo (Romania), Erste Bank (Romania, Ukraine), Dexia (Slovakia). This observation raises question on the relationship between the evolution of the banks' market power and their risk-taking behaviour.

Table 6. Relationship between market power and risk-taking behaviour.

Impaired loans/Gross Loans	Total assets		Loans	
	Coef.	Std. Err.	Coef.	Std. Err.
LernerAll	-0.047*	0.026		
LernerLoan			-0.032	0.020
Ln*AT*	0.018***	0.006	0.018***	0.006
GDPGR	-0.003*	0.021	-0.003**	0.002
Const	-0.068	0.055	-0.069	0.056
R²	0.73		0.73	
Nr. of obs.	535		535	
Nr. of banks	159		159	

Note: The model is estimated using fixed effects and time effects as Hausman test suggests. For both regressions this test rejects the hypothesis of no correlation between the regressors and error term. To control for bank's specific variable we use its size (Ln*AT*) and for country's specific variable real GDP growth (GDPGR). ***, ** and * signify that results are significant at 1%, 5% and respectively 10% significant level.

In order to shed a light, we regress a measure of riskiness of bank activities on the Lerner index. As measure for risk-taking behaviour we take the ratio of the impaired loans on the total loans. The regressions are made into panel model with fixed and time effects as Hausman test suggests. They are made for both LernerAll and LernerLoan index of market power and the results are presented in Table 6.

Both regressions show that the banks that have lesser market power have higher ratio of the impaired loans. The diminution of the possibility to make higher profit by increasing the intermediation margin leads banks to raise the amount of loans and perhaps to be less demanding on the conditions to fulfil for obtaining a loan. Inevitably, the quality of loan portfolio diminishes because the banks with lesser market power provide lesser effort to reduce the asymmetry of information between them and debtors.

III   Bank-by-Bank behaviour: performance, liquidity, risk-taking (*preliminary*)

Along with our broader study of competition in Eastern banks, we held also a comprehensive balance-sheet analysis, aiming to disentangle between three kinds of behaviour within our sample of Eastern European banks. We use here an approach very similar to Apoteker and Colliac (2007).

Ones may analyze and compare bank behaviours around six indicators, allowing to define a ranking between a sample of banks from the lower to the higher risk. We use a combination of two indicators to build three fundamental balances of bank's behaviour:

- The Performance Balance: we use two indicators, the *Return On Average Assets (ROAA)*, and a ratio aiming to capture the strength of such a performance, the *Equity to Total Assets* ratio. The higher are the ROAA and the strength indicator the sounder is the bank balance sheet.

- The Liquidity Balance: the first indicator (*Liquid Assets to Deposits and Short Term Funding*) aims to give an insight over a plausible maturity mismatch between the assets and the liabilities. The second indicator (*Net Loans to Deposits and Short Term Funding*) summarizes the extent of the transformation from short-term assets to longer term loans. The lower are the maturity mismatch[2] and the transformation the sounder is the bank balance sheet.

- The Risk Balance: it compares an estimation of asset quality[3] (*Non Earning Assets to Total Assets*) to the risk provisioning effort (*Loan Loss Reserves to Gross Loans*). The higher are the asset quality and the risk provisioning effort the sounder is the bank balance sheet.

In order to estimate balance-by-balance and overall health of our sample of banks, we use a scoring technique. We estimate the sample average of each of our six indicators over the banks balance sheets obtained for our sample of 224 banks between 2000 and 2007. When the ratio is better (worse) than the sample average, the situation is good (weak).

We use our scoring technique to give scores for our sample of banks over each fundamental balance. For a relevant balance, the score 1 is given to banks with fair ratios over the two relevant indicators. The score 4 is given when the two ratios exhibit poor results. The score 2 means that one ratio exhibits sound results when the other shows weak results.

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[2] The higher are the liquid assets as compared to the deposits and short term funding.
[3] The lower are the non earning assets as compared to the total assets.

Finally, the overall score for each bank and each year is the product of the three relevant balances' scores. For example, ABC Bank is scored 1 (good) for Performance, 4 (weak) for Liquidity and 2 (intermediate) for Risk-Taking. It means that the overall score is 8 (1*4*2) for ABC Bank. The better risk is 1, and the poorest is 64.

We present here some first-analysis results based on a preliminary analysis of our sample, and according to the scoring approach explained above.

First, we find that 2007 was not a particularly riskier year than ever, as the average overall score was 21 as compared with an average score of 19,18 over 2000-2007. However, the strongest deterioration was related to the Liquidity Balance, implying an increasing vulnerability to roll-over risks, visible in Hungary, Kazakhstan, Lituania, Slovenia and Ukraine. The Risk Balance was particularly poor in Romania, as many banks have a very strong share of non earning assets.

Table 7. Overall Sample summary results in 2007

	Risk	Liquidity	Performance	Overall Score
Bulgaria	3,20	2,88	2,38	23,00
Czech Rep.	2,11	2,29	3,11	17,33
Estonia	2,50	2,60	1,67	14,00
Hungary	2,00	3,33	3,14	32,00
Kazakhstan	2,11	3,26	1,95	14,67
Latvia	2,21	2,29	3,14	17,52
Lituania	2,00	3,44	3,11	22,22
Poland	1,90	2,65	2,61	20,33
Romania	3,41	2,41	2,86	24,91
Slovakia	2,09	2,89	3,09	19,64
Slovenia	1,60	3,82	3,75	30,33
Ukraine	2,05	3,38	3,05	20,92
Overall sample average 2007	2,33	2,95	2,83	21,04
Overall sample average 2000-2007	2,27	2,53	2,69	19,18

As it can be read in Table 8, we also classified our 224 banks according to their ownership structure. Public banks behave as the well-known usual suspect with a poor Performance Balance and a low liquidity, eventually related to moral hazard issues led by a more unconditional political backing. However, Foreign Banks exhibit a comparable overall score, with a particularly poor performance over the Risk Balance.

Table 8. Summary results in 2007 according to the ownership structure

	Risk-Taking	Liquidity	Performance	Overall Score
Foreign banks	2,35	3,08	3,06	24,4
Local private banks	2,00	2,97	2,59	15,25
Public banks	1,78	3,29	3,30	23,6

A ratio-by-ratio analysis is also highly consistent to identify key vulnerabilities in CEECs banks, as the crisis outcome is highly non linear. It means that, as in other non linear events, it is not always an average poor quality of bank balance sheet health that effectively matters. It can be the more deteriorated ratio that can play a key role implying overall insolvency, even with high equity to assets levels. Such a fruitful analysis is given by the comparison of loan to deposit ratios for our panel of 224 banks in 2007.

Table 9. Deteriorated loan to deposit ratios in the 12 countries bank panel in 2007

SID Bank	Slovenia	467%
Czech Export Bank	Czech Rep.	435%
BTA Bank JSC	Kazakhstan	335%
Credit Europe Bank CJSC	Ukraine	306%
Danske Bank (Sampo banka)	Latvia	289%
Bulgarian-American Credit Bank	Bulgaria	272%
UkrSibbank	Ukraine	257%
Alliance Bank JSC	Kazakhstan	246%
Eximbank	Kazakhstan	225%
Hansabanka	Latvia	224%
Bulgarian Development Bank	Bulgaria	222%
Kazkommertsbank	Kazakhstan	218%
Nurbank JSC	Kazakhstan	215%
JSC BTA Ipoteka	Kazakhstan	212%
Ukreximbank	Ukraine	202%
OJSC Temirbank	Kazakhstan	193%
First Ukrainian International Bank	Ukraine	191%
Alfa Bank CJSC	Ukraine	167%
Kaspi Bank	Kazakhstan	166%
ProCredit Bank Ukraine	Ukraine	160%
SKB Banka DD	Slovenia	159%
SEB Bankas	Lituania	158%

As it can be seen in Table 9, banks with a strong record in recent news were heavily burdened by an inventive lending activity, as in Kazakhstan with the recently defaulting banks BTA (1st Kazakh bank, with a 335% ratio, and a default over a foreign debt of USD 11 bn) and Alliance. The Ukrainian Alfa Bank CJSC (that missed an Eurobond redemption and

repaid with a six days late) and First Ukrainian International Bank (that recently began to negotiate a rescheduling of its debt) are also on the spotlight. More generally, Ukrainian and Kazakh banks were particularly imprudent. As compared with EU New Member States, these two countries combined stronger links between oligarchy and the financial sector, and a lower penetration of foreign western banks (and a stronger penetration of more poorly managed and inefficient Russian parent banks).

IV   Policy Response

The growth-cum-foreign currency credit model was increasingly vulnerable to two growing risks:

- Foreign currency mismatches, with a deteriorating coverage of short-term foreign currency (private) liabilities by short-term foreign currency (public) assets, as well as growing unsolvency risks of local 'non-tradable' agents related to foreign exchange depreciation.

- A sudden cyclical deterioration, implying sharp deteriorations over key sectors, as construction, real estate, automotive industry (…), as well as fears over the ability to roll over short term debt along with plummeting capital inflows (including interbank lending).

Without a systemic shock as Lehman related financial storm, the duration of the growth-cum-foreign currency credit model would be of some more years, and would probably lasted with less severe consequences. However, lessons to be drawn are all but anecdotic. We find four main issues to put on the spotlight:

- The balance between foreign currency borrowing's benefits and costs was, as usual as compared with other emerging markets' crashes, far too imbalanced. Foreign currency borrowing was cheap for the debtor, benefiting from low interest rates particularly with loans denominated in Swiss Francs (CHF). Moreover, domestic currency depreciation risks were undervalued. In the New Member States (NMS), Central Banks behave the exchange rate evolutions to become stickier in order to join the Exchange Rate Mechanism II scheme. In Ukraine and Kazakhstan, the exchange rate was pegged to the USD as myopic policymakers were convinced that it would help to avoid consequences on exchange rate appreciation related to the *dutch disease* that hurts all natural resources' rich economies when commodity prices are on the upside. In all 12 economies, such behaviour led to real exchange rate appreciations as compared with main competitors.

- The gap between foreign and domestic currency reserve requirements was too small, not discouraging the use and abuse of foreign currency inflows. Monetary policy neglected the consequences related to the accumulation of opened positions in foreign

currency, and poorly managed to fulfil with its main objectives, namely financial stability as well as low inflation.

- Monetary policy effectiveness is low, with free capital flows and fear of floating. In other words, the classical impossible trinity argument holds. Within such economies, great expectations over the business cycle and of low probability to financial disruptions imply strong capital inflows. Moreover, when macro-prudential risks are undervalued by the banking regulator, short-term foreign currency interbank lending grows a lot. Such an increased lending leads to a rapid increase in domestic credit, letting money flowing into the economy, itself booming over potential. Short-term foreign currency interbank lending gives an access to cheaper funding sources, implying that monetary policy through key policy rates loses the plot.

- Financial supervision was increasingly noised by the foreign penetration in Eastern countries' banking sectors. As a result, a *moral hazard* possibly emerged for domestic supervisors, as their banks became too big to fail also for the banking supervisors of the parent banks. As a result, the question of the home-host country in banking supervision is clearly on the agenda.

As the crisis outcome is related to a sharp deterioration of financial conditions in the US and the EU, ones should worry about a repatriation of funds by the western parent banks. As the liquidity deteriorated in western banks, a rational response should be to cut interbank credit lines with eastern peers. However, the rationale for such a behaviour is very different whether eastern banks are held by western banks or not. Moreover, commitments are easier to implement in countries where the financial disruption is visible, implying an intervention of the international financial institutions.

A coordinated response was first suggested by the Austrian government, as Austrian banks exposure to their eastern peers represents 75 % of GDP. So, a banking crisis in the East would be hardly manageable for Austrian banking supervisors. It implied the introduction of the Joint Vienna Initiative by Thomas Wieser from the Austrian Treasury. The Joint Vienna Initiative resulted from the conclusion of a seminar held in Vienna in late January, with the following participants: European Commission, IMF, WorldBank, EBRD, EIB, and relevant countries (Albania, Austria, Bulgaria, Belgium, Croatia, France, Germany, Greece, Hungary,

Italy, Romania, Serbia, and Ukraine). The Joint Vienna Initiative implied four relevant recommendations:

- All the members of the EU have to implement comprehensive bailout plans for their financial sector.

- Central Banks have to carry initiatives to ease foreign currency liquidity.

- Capital flows should remain free.

- Partnership strategies with Central and South-Eastern European countries have to be intensified particularly with the implementation of adequate financial instruments.

Some of these issues are related to a short-term response to the financial crisis. The fourth recommendation is more general. It should imply a long-term response, implying the generalization of the use of the local currency in the relationships with eastern banks. However, a broader interpretation of this fourth recommendation may suggest to open negotiations in Eastern economies to ease the conversion of foreign currency assets in local currency and/or compensate for exchange rate losses of the private sector (particularly households and the SMEs). Some of these issues are actually discussed, particularly in Hungary and in Ukraine.

However, a more operational policy response was originated by the IMF, for Romania, Serbia and Hungary. Two meetings were organized in Vienna in late March, related to "financial sector coordination" in Romania and Serbia. These meetings were called in the context of the implementation of Stand-By Arrangements with these two economies. Later, in May, two meetings were organized in Brussels, organized jointly by the European Commission and the IMF, to examine "financial sector coordination" in Hungary and Romania. During these meetings, relevant parent western banks fulfilled to maintain their financial presence in these three countries, implying a commitment not to cut their current credit lines with their subsidiaries in Eastern Europe.

As banks in the CEECs are mainly foreign-owned, the burden sharing of the recapitalization effort is related to the debate on the home-host country. Moreover, the size of the recapitalizing needs is currently estimated to USD 130-150 bn by the EBRD, implying that the International Financial Institutions will have to play a key role to provide financing resources. Two initiatives were introduced to mitigate the impact of the crisis over the banking sector:

- A joint IFI action plan was introduced by the EBRD, the WorldBank and the European Investment Bank, implying the mobilization of USD 31 bn. Given that (e.g.) the EIB is not allowed to recapitalize directly the banks, a significant share of the financing program will be used to provide loans to SMEs (at least, the IFIs will recapitalize the banks which keep providing loans to SMEs despite the current economic crisis). The EBRD began to provide funds to recapitalize, e.g. USD 250 mn to UkrEximbank, and USD 462 mn to Unicredit group subsidiaries in CEECs economies.

- The IMF earned new prerogatives implying that a given share of the new financial resources (an additional USD 500 bn) decided during the G20 will be able to be used to finance recapitalization needs in cooperation with other IFIs, such as the WorldBank.

A pending issue associated with financial vulnerabilities will be related to the restructuring of corporate and consumer loans, and particularly the plausible conversion from foreign currency to domestic currency. A share of the IMF lending towards Hungary was devoted to favour such an outcome. Similar problems exist in other CEECs, with potential strong fiscal costs related to conversion towards local currency, implying that a significant share of the new financing instruments of the IMF may be used to help countries to mitigate these costs.

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Appendix Results of regressions for the estimation of the Lerner index.

	Total assets		Loans	
	Coef.	**Std. Err.**	**Coef.**	**Std. Err.**
Ln(w_1/w_3)	0.325***	0.024	0.264***	0.036
Ln(w_2/w_3)	0.256***	0.031	0.352***	0.043
LnPr	1.372***	0.034	1.157***	0.044
LnEq	-0.408***	0.034	-0.218***	0.047
GDPGR	0.002	0.008	0.020	0.013
Ln(w_1/w_3)×Ln(w_1/w_3)	0.091***	0.006	0.087***	0.009
Ln(w_1/w_3)×Ln(w_2/w_3)	-0.021**	0.010	-0.034**	0.016
Ln(w_1/w_3)×Ln(Pr)	0.025***	0.008	0.027**	0.012
Ln(w_1/w_3)×Ln(Eq)	-0.024***	0.009	-0.025**	0.013
Ln(w_1)×GDPGR	-0.009***	0.002	0.001	0.003
Ln(w_2/w_3)×Ln(w_2/w_3)	0.004	0.007	0.031***	0.011
Ln(w_2/w_3)×Ln(Pr)	0.007	0.010	0.028**	0.014
Ln(w_2/w_3)×Ln(Eq)	-0.036***	0.010	-0.085***	0.015
Ln(w_2)×GDPGR	0.003	0.002	0.005	0.004
Ln(w_3)×GDPGR	-0.002	0.002	-0.006*	0.004
Ln(Pr)×Ln(Pr)	-0.060***	0.005	-0.033***	0.008
Ln(Pr)×Ln(Eq)	0.124***	0.011	0.061***	0.016
Ln(Pr)×GDPGR	-0.006***	0.002	0.000	0.003
Ln(Eq)×Ln(Eq)	-0.062***	0.007	-0.026***	0.010
Ln(Eq)×GDPGR	0.005**	0.002	0.000	0.003
GDPGR×GDPGR	-0.001*	0.000	-0.001*	0.001
Ln(Pr)×BG	-0.002	0.007	0.027***	0.011
Ln(Pr)×ET	0.012	0.009	0.026**	0.014
Ln(Pr)×HU	0.017**	0.009	0.051*	0.014
Ln(Pr)×KZ	0.002	0.006	0.020**	0.009
Ln(Pr)×LV	0.009	0.007	0.024**	0.010
Ln(Pr)×LT	-0.003	0.007	0.026***	0.011
Ln(Pr)×PL	0.002	0.006	0.001	0.010
Ln(Pr)×RO	0.001	0.004	0.026***	0.006
Ln(Pr)×SK	-0.004	0.008	-0.014	0.012
Ln(Pr)×SV	0.006	0.007	0.012	0.011
Ln(Pr)×CZ	-0.017**	0.008	-0.008	0.012
Const	0.591***	0.065	1.193***	0.090

R2	0.57	0.57
Hausman, Chi2(39)	96.4***	160.4***
Nr. of obs.	1182	1182
Nr. of banks	219	219

Note: The model is estimated using fixed effects and time effects as Hausman test suggests. For both regressions this test rejects the hypothesis of no correlation between the regressors and error term. To control for country's specific variable we use real GDP growth (GDPGR) and additionally dummy variables for each country. The excluded dummy variable is Ukr.

BG – Bulgaria, ET – Estonia, HU – Hungary, KZ – Kazakhstan, LV – Latvia, LT – Lithuania, PL – Poland, RO – Romania, SK – Slovakia, SV – Slovenia, CZ – Czech Republic, Ukr – Ukraine. Pr – Loans or Total Assets. ***, ** and * signify that results are significant at 1%, 5% and respectively 10% significant level.