

Financial Integration of the CEE banking sector

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Abstract: Several CEE countries are members of the EU and, thus, participate in the single financial market. To realize advantages, a successful economic integration assumes convergence processes. The study focuses on the aspects of financial integration of CEE banks into the European single banking market, not forgetting the impacts of global financial crisis in 2008 which caused both liquidity shortage and increasing insolvency. The methodology is a literature review, on one hand, data survey with comparative analysis, on the other.

Keywords: banking, financial integration, Central and Eastern Europe,
JEL F31, F37, G17, G21, G33

Introduction

The crucial question of creation of a single market is whether can this process unite the partial markets and, thus, increase the completion pressure to spur cost-competitiveness and inexpensiveness. The financial sector is especially important in regard of overall economic costs and growth since every companies and almost every citizen in the EU must use banking services. The EU-accession of the group of the Central and Eastern European (CEE) member states was a considerable extension of the single financial market, too. Success of their overall financial integration is significant issue for the EU. That is why this study analyses some aspects of CEE financial convergence.

Although, in the second decade of the 21st century, the CEE commercial banking sector operates in market economies as usual, the region has a legacy of the command economy lasted until 1989. Benczes (2008) summarized this impact of past in a relatively not long ago liberalized, privatized banking sector which was shifted towards two-tier system and opened for foreign investors. Latter ones have played a majority owner role in the undercapitalized transition region. Besides, the CEE markets are characterized by small scale, low degree of financial penetration, low degree of product diversification. This process created individual characteristics for the vulnerability and stability of the CEE banking sector. (Benczes, 2008: 128-138) As Jokipii and Lucey (2002) wrote, in the 2000s, the CEE banking sectors were over the privatization, deregulation, liberalization of licensing, and capitalization by foreign investors. The 1990s already brought market clearing by bank failures, especially in case of under-capitalized, domestic small banks.

The regional past and specialties resulted a relatively dynamic expansion of crediting from a low activity base. This credit growth was accelerated by the economic catching-up of the region. (Kiss et al., 2006) The favourable global economic and financial circumstances and the medium term growth of CEE region led to risky exposure by the lending activity measurable in credit/deposit ratio. As Benczes (2008:135) worded, the CEE banking sector had to face the challenge to *'find the appropriate balance between an increased lending activity and to maintain a stable functioning'*.

Small scale, fragmented market structure in CEE is typical not only because of the fragmented country structure of the region, but also because of various national financial-fiscal-monetary policy mixes and strategies. Sovereign risks and interest rate policies affected differently the structure of loans and deposits. Before the global and euro crisis, all CEE countries have had national monetary autonomy. Some of them chose the strategy to pass it to the European Central Bank as soon as possible (Slovenia, Slovakia, Estonia, Latvia), or planning to do it soon (Bulgaria, Romania, Lithuania). Some others have strived – at least since 2010 – to reserve the national currency (Czech Republic, Poland, Hungary). Some monetary authorities applied strict and high interest rates, some did not. Some country had higher foreign reserves, other had lower in the eve of the crisis etc. These policy differences modified, differentiated the credit and deposit structure of the countries. Because of the differences of national risk premium and interest rate policy, in those countries (Hungary, Baltics, Romania, Ukraine) who kept high rates beside giving opportunity for foreign currency loans, the depreciation of emerging market currencies by global panic found their households and firms deeply indebted in euro, Swiss franc and some other foreign currencies. The countries which kept their risk premium close or under the euro zone in market rates had insignificant loan exposure to foreign exchange. Thus, it is expectable, that the financial contagion was not uniform in the region.

The study analyses the price-based and quantity-based aspects of financial integration with focus on CEE member states. First, the theory and methodology of financial convergence is surveyed which is complemented with a regional literature review. The CEE empirical outlook incorporates a cross-border capital flow and exposure explanation to enlighten the

risks, too, originated in a strong integration. To understand the institutional circumstances of the financial integration process, an overview about the structure of the CEE banking market is explicated. The indicators of financial integration are the inter-bank rates and the market share which are analyzed in this study. The hypothesis of the analysis is that financial convergence is measurable in the CEE countries' banking sector by price- and quantity-based indicators.

1. Theory and empirics of financial integration

Beale et al. (2004) define the financial integration with a trinity of single set of rules on financial instruments and services, equal access to financial instruments and services, and equal treatment in the market. Beale et al. (2004) and Baltzer et al. (2008) distinguish different ways of measures of financial integration: price-based, news-based and quantity-based measures. The price based measures analyze β -convergence regression about the local yields and benchmarks. The news-based measures analyze the correlation between single market news and local yields. The quantity based measures analyze cross-border penetration of banking and loans. The ECB (2015) used the price-based and the quantity-based indicators to measure the financial integration. In case of banks, this methodology applied composite index of cost of borrowing, composite rates on small, medium and large bank loans and composite rates on deposits as price-based indicators, besides, non-domestic share in total assets and loans, number of non-domestic institutions, and share of cross-border loans and deposits as quantity-based indicators.

Haan et al. (2010) distinguish the dimensions of financial integration by the market, by the regulator and by the community of the industry. The market dimension means cross-boarder comparability and competition of yields, loans and assets. The regulatory dimension contains the single rules and single licenses. The community dimension sums the industrial level harmonization in technology and standards in a united market. Haan et al. (2010) analyzed the distribution of banking assets, the convergence on retail banking interest rates, market concentration and number of banks, and number of cross-border M&A.

About the credit market, convergence was measured by Adam et al. (2002) who calculated β - and σ -convergence on 3-month interbank rates, and by Dahl et al. (2008) who made a panel data analysis.

Although, in the second decade of the 21st century, the CEE commercial banking sector operates in market economies as usual, the region has a legacy of the command economy last until 1989. Benczes (2008) summarized this impact of past in a relatively not long ago liberalized, privatized banking sector which was shifted towards two-tier system and opened for foreign investors. Latter ones have played a majority owner role in the undercapitalized transition region. Besides, the CEE markets are characterized by small scale, low degree of financial penetration, low degree of product diversification. This process created individual characteristics for the vulnerability and stability of the CEE banking sector. (Benczes 2008: 128-138)

Dahl et al. (2008) introduced the concept of "activity-level convergence" as a framework for assessing the results of adaptive period of bank activities after the implementation of some directives of single banking regulation. The measuring of convergence is applied for product line and financial structure of customers' loans, deposits and securities. Their methodology is to calculate ratios of loans, assets, securities, deposits, equity to each other and make a panel regression analysis with means and standard deviations.

First of all, it should be clarified why do banks invest into foreign country. Bol et al. (2002) summarized the literature answering this question. Berger et al. (2001) assume a global advantage of multinational banks in comparison to domestic banks as the multinationals have better technology to price and monitor the risk, and better practices to treat moral hazard.

Goldberg and Saunders (1981), Bearley and Kaplanis (1996), Konopielko (1999), Buch (2000), Moshirian (2001), Williams (2002) state that banks are following their customers. Also, there is a group of authors (Claessens et al 2000, Hymer 1979) saying that the banks are seeking efficiency, higher profitability what can be achieved by extending the market or number of customers abroad. Lesnik and Haan (2002) measured strong positive correlation between the liberalization of banking market and the banking FDI moving into the developing, transiting countries. E.g. Claessens et al (2000) or Demirgüç-Kunt and Huizinga (2000) modelled the tax advantages seek by foreign banks. Namely, the banking FDI can be classified by reasons to the OLI-paradigm (Dunning 1979) or to the market – efficiency – resource – strategic asset seeking approach (Szentes 2002). Soussa (2004:3) identified the following determinants of banks' FDI into emerging countries, according to Clarke et al. (2001):

“(i) shifts in regulatory opportunity and environment; (ii) increased economic integration between home and host countries; (iii) information costs; (iv) profit opportunities; (v) factors relevant to specific institutions; and (v) factors relevant to the home markets of acquiring institutions.”

Papi and Revoltella (1999), Mathieson and Roldos (2001) found about CEE and other post-soviet European countries that the ROE, NPL ratio, attitude of host country authority, liberalization of entry regulation were the significant factors of attractiveness. Naaborg (2007) found confused literature about efficiency and foreign ownership.

The global procedures has been typical for the CEE bank sector just like transnationalization of ownership after liberalization of the national banking market. Thus, the dominant oligopolies in the CEE banking markets were backed by such big banks which has been considered to be too big to fail. Stern and Feldman (2009) explains that the too-big-to-fail (TBTF) phenomenon means that the political decision makers bail out the big banks in case of their failure, because they fear from an extended bank crisis and sudden stop of crediting which can launch a general economic depression. The TBTF parent banks are important factors in the recapitalization of CEE banking sector as the losses were backed by parent banks' home governments. Financial integration of CEE countries is strongly related to the transnationalization of CEE banking sector. Haan et al. (2010:108-112) made a mix of the corporate transnationalization and the international integration theories. The CEE banking processes can be understood better by using their terms on drivers of financial integration. The market enforces the optimization, the scale efficiency and the technological and product innovation by the competition in the single European market. The collective actions of banks standardize the practices of the sector. (E.g. single standard payment systems in the inter-bank relations.) Meanwhile, the public actions – like FSAP, Banking Union etc. - standardize the regulation. The three drivers together caused measurable convergence in yields, over-night lending rates, retail banking interest rates, for example. (Haan et al 2010:198-119,223)

The importance of measuring financial integration is explained by the benefits and the risks of a single banking market. The strong connections have efficiency effect through more intensive competition, on one hand, but negative spill-over is quickened in an integrated market, on the other hand. This negative spill-over is the financial contagion which is explained by Diamond and Dybvig (1983) as a coordination failure between deposits and their use. Besides, their approach is that bank runs are not accidentally, but self-fulfilling risks. In their early model, the vulnerability of banks was connected to the conflict between the withdrawal of deposits and the investments into illiquid (long term) assets. Battacharya et al. (1998) worded it as bank runs triggered by adverse information. Allen and Gale (1998) concentrated on the strong correlation between business cycles and the bank runs by claiming financial crises an “inherent” part of the business cycle. Bandt and Hartman (2001) joined to the coordination failure explanation by defying the banking contagion as a systemic failure of

fundamentally solvent institutions. This systemic risk is manifested by co-movements, cross-market events and interdependences. (Forbes and Rigobon, 2002). E.g. Manz (2002) or Schoenmaker (1998) distinguished two origins of such an exposure: One is the case when debtors' failure results creditors' failure, namely the contagion occurs through capital linkages. The other case is called information contagion when after the collapse of a bank or asset induces liquidation in mass, namely the depositors and investors rescue their money from similar banks and assets. (The latter one has a significant literature – Chen (1999), Acharya & Youlmazer (2003), – but this version has not been typical for the CEE banking sector under the period of global crisis started in 2008.) The contagion from capital linkages (or credit channel) is described by Schoenmaker as a 'complex web' of interbank linkages. Especially in a globalized financial market, banks hold international assets and liabilities what creates a geographical channel for contagion by global credit crunch. This is a typical cash-flow contagion approach which derives the crisis from friction of maturity. As Losoncz (2009) summarize the financial sector practice led to the crisis of 2007-2009, the preventive approach is very limited. Ex post, reaction on crisis means adjustment to the changed deposit withdrawal habit or to the increasing likelihood of default. The banks can try to reduce the volume of claims with a more limited lending, the credit/deposit ratio by collecting deposit and stop crediting, clean their balance sheet from defaulted credit, cut the operation cost, turn away from lending toward other banking activities etc. (Losoncz and Nagy, 2010). After the occurrence of crisis, the banks – which could survive – will have a very narrow and path-dependent room for maneuver for a longer period.

Jokipii and Lucey (2007) measured the contagion in CEE banking sector as a co-movement of national markets. Their correlation coefficients indicate the persistence of banking contagion between the CEE countries – only Poland, Hungary and Czech Republic. This analysis showed strong correlation in case of contagion effect from Czech Republic to Hungary and not in any other direction. This result was earlier recognized by Morzuch and Weller (1999) who strengthened the interesting fact, that a national financial crisis in 1990s did not really affect the neighboring CEE countries, namely regional bank runs did not cause cross-border contagion, even neither after liberalization. They also tried to find its reasons. Their model assumes that bank runs are launched by second generation crisis, namely, by speculation. The base of speculation is a continuous appreciation of financial assets from quick profit targeting capital inflow into the financial markets of an emerging market after financial liberalization. However, low cross-border contagion does not mean low financial integration since the undercapitalized CEE region has quickly found big, effective, prudent and well capitalized multinational banks with lower risk exposure. Besides, small local banks typically have no international linkages. This can get known from Gropp et al. (2009), who examined the European banking sector, and they found evidence for cross-border banking contagion only in case of large banks because small banks' cross-border exposure is insignificant. If there is no cross-boarder risk spill-over among the CEE sectors, there could be an assumption, that the risk is transferred between the CEE affiliates and the multinational parent banks. But this is neither typical. Árvai et al. (2009) concentrated on the cross-border interbank spill overs between Western and Eastern Europe. They recognized an asymmetric dependency of CEE countries on the Western European banks. The measured exposure of Western banks (except Austrian and Swedish ones) is small. The contagion effect is more likely if the lender is concentrating on the CEE region. The authors proved that the CEE bank crediting is very much affected by extra regional banks, namely, these countries are heavily exposed to Western European banks.

Morzuch and Weller (1999:5-6) found that, besides the presence of multinational banks in CEE region, the followings lowered the contagion risk in the 1990s. This is a very instructive list as many of them was not true in the 2000s:

- The high risk premium threatened from local borrowing. This did not remain true for the 2000s, since in some countries market rates got low, other countries circumvented the high national rates with authorization of foreign currency credit.

- The foreign exchange appreciation which has been very typical in other emerging countries – mostly because of FX peg – did not happen in CEE countries, so the financial assets did not get overvalued. This characteristic was neither completely true for CEE in the 2000s as some countries used pegging (Baltics, Bulgaria), or the interest rate policy strengthened the national currency unduly (Hungary, Romania).

- Default risk was low because of economic prosperity. Before 2008 it was particularly true, but default risk was lower due to the high liquidity of the global markets.

- Maturity risk from high share of short term loans what can result a quick wave of defaults, was not significant because of cautious high stocks of official foreign reserves. This was neither true in the 2000s. The general 20-30 percent depreciation of CEE national currencies fundamentally in both good and bad countries (except the strictly pegging Baltic countries and Bulgaria) indicated that the fast illiquidity was unexpected for the CEE national banks in the end of 2008.

2. The structure and risk of CEE banking sector during the first years of integration.

First of all, to understand the various contagion effect of global crisis, we have to know the pre-crisis characteristics of the CEE banking sector. Árvai et al. (2009) found significant inter-linkages within Europe. The CEE banking sector is very much depends on the Western European banks. In the CEE banking market, the financial risk exposure is concentrated to Austrian, German and Italian banks, and in case of Baltics to Sweden. The post-communist past of CEE and SEE regions resulted aggressive banking strategies and fast extension of credits. From Árvai et al. (2009:7) calculation can be established, that the speed of credit extension was 43% in the Baltics and 15.5% in the V4 countries before the crisis, in 2004-2007, as a cumulated change. in the transition and integration period. Árvai et al. (2009) observed inverse relationship between level of development and credit growth. But it is more important to recognize generally on CEE countries that the extension of credits were significantly faster than the growth of deposits. (see Árvai et al. 2009: fig. 4.) This created, finally, a credit/deposit ratio where the credits significantly exceeded the deposits what resulted interbank contagion risk, too.

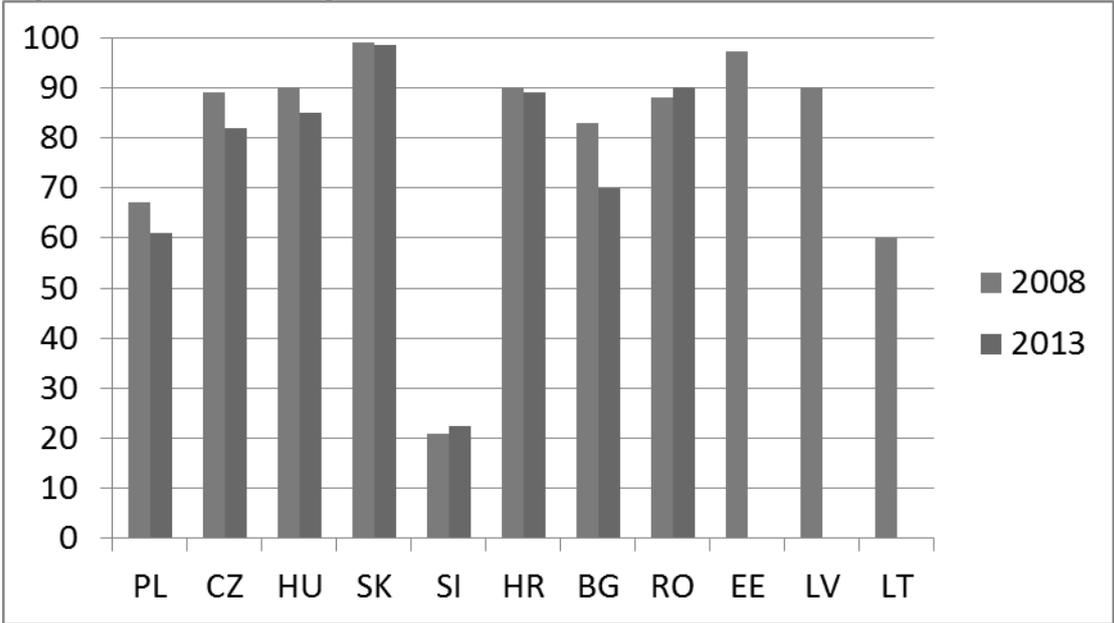
According to Raiffeisen (2013), the loans exceeded the deposits significantly before the crisis, what was followed by correction forced by the global markets. From this ratio, it can be foreseen, which countries had to face with serious balance-sheet contagion risk from uncovered credit defaults. This risk was multiplied by the FX factor in case of Ukraine, Hungary, Croatia, Romania, Belarus, Serbia. Beside, the countries with ratio under 100% faced the crisis with less fragile banking sector.

Even though, the global crisis and the domestic debtors' default made the CEE banking sector not attractive for investors, there were some changes in the ownership structure which even altered the foreign/domestic characteristic of the bank. (E.g. in 2013 in Hungary the Korean Hanwha Bank in Hungary was acquired by the Hungarian Evo Pro company, thus, it become a domestic bank, or Banco Popolare sold its affiliate to the domestic MagNet Bank, or the Bayerische Landesbank sold its Hungarian MKB subsidiary to the Hungarian government, and the same happened with the Hungarian affiliate of DZ Bank, Takarékbank.) As the Bankscope data on bank were usually updated until end of 2012, the structural analysis was made for year of 2012 and took the owner in that year into account. In case of those CEE banks whose shares are publicly traded in the stock exchange, and that is why they have lot of foreign institutional or private investors in few percentage one-by-one, but has no foreign

investor with significant leverage (min. 25% ownership), these CEE banks are classified to be domestic banks in their country of residence (OTP in Hungary, PKO Bank or Getin Noble Bank in Poland). Its rationale is that the foreign portfolio investments are made through the stock exchange trade of already existing shares and not via initial public offering.

Small scale, fragmented market structure in CEE is typical not only because of the fragmented country structure of the region, but also because of various national financial-fiscal-monetary policy mixes and strategies. Sovereign risks and interest rate policies affected differently the structure of loans and deposits. Before the global and euro crisis, all CEE countries have had national monetary autonomy. Some of them chose the strategy to pass it to the European Central Bank as soon as possible (Slovenia, Slovakia, Estonia, Latvia), or planning to do it soon (Bulgaria, Romania, Lithuania). Some others have strived – at least since 2010 – to reserve the national currency (Czech Republic, Poland, Hungary). Some monetary authorities applied strict and high interest rates, some did not. Some country had higher foreign reserves, other had lower in the eve of the crisis etc. These policy differences modified, differentiated the credit and deposit structure of the countries. Because of the differences of national risk premium and interest rate policy, in those countries (Hungary, Baltics, Romania, Ukraine) who kept high rates beside giving opportunity for foreign currency loans, the depreciation of emerging market currencies by global panic found their households and firms deeply indebted in euro, Swiss franc and some other foreign currencies. The countries which kept their risk premium close or under the euro zone in market rates had insignificant loan exposure to foreign exchange.

Figure 1. Share of foreign banks in total assets in CEE markets



source: Raiffeisen (2013), EBRD

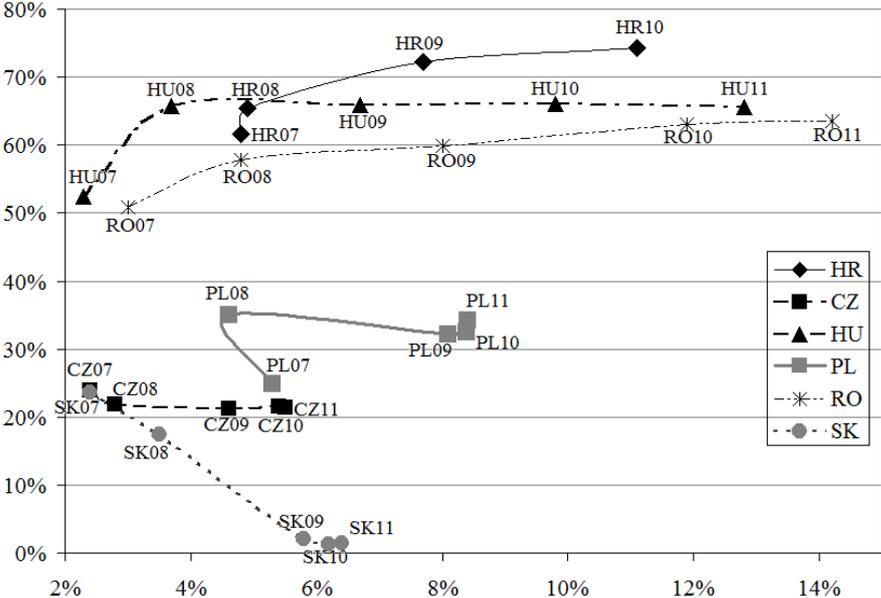
Árvai et al. (2009) concentrated on the cross-border interbank spill overs between Western and Eastern Europe. They recognized an asymmetric dependency of CEE countries on the Western European banks, which strengthen also our assumption, that banking contagion is very much determined (softened) by the multinational foreign banks. The measured exposure of Western banks (except Austrian and Swedish ones) is small. From the historical figures of market share of foreign banks it is clear, that foreign ownership is determining in the CEE region, much beyond 50%, except Slovenia. This foreign share is important in two folds. On one hand, the strong connection to multinational banking opens indirect channel toward each

other in the CEE region by affecting across the common lender parent bank. On the other hand, the relative big size of multinational banks made it possible to soften and prevent the mass failure of CEE banking sectors as these MNCs have had the liquidity to refund the lost equity of the banks and guarantee the deposits became uncovered by increasing non-performing loans.

In case of economic crisis, the public finances demand new types of tax base if fiscal balance is enforced by the credit money shortage of capital markets. The banking sector is one of the industries which can be a target of temptation of the government since banks work with money. In the CEE region, the banking tax and tax on financial transfers appeared since 2010. E.g. the Hungarian government tried to levy tax on banks turnover and transfer services very innovatively showing practice for Poland and others, besides, limited the banks' opportunity to reload this burden on customers. Very typically the new taxes have been introduced as temporary public revenue implied by the crisis, but became sooner or later permanent unit of the public budget. Such kind of tax impact can raise the assumption that the equity restoration particularly connected to losses from tax liabilities. In practice, the European Commission (DG-Taxation) recommends the taxation on financial transfers. Hungary introduced a significant bank tax on turnovers in 2011, but a lower rate already existed since 2009. Slovenia has applied bank tax since August of 2011. Slovakia introduced a onetime tax in 2012, but, not a surprise, it turned to be permanent in 2013 in a modified form. Poland introduced bank tax in 2014. In the rest of CEE countries bank tax is just a plan (Croatia, Romania, Bulgaria) or not part of governments' taxation plans at all (Estonia, Latvia, Lithuania, Czech Republic).

The non-performing loans (NPL) are significant factor of banks assets and equity. The NPL ratio reduces the bank's lending capacity via provisions. The assumption of the analysis is that the increasing NPL ratio forces the bank to decide the dilemma whether it wants to keep its lending capacity with capital increase or change the lending strategy and accept the reduced capacity. Fig. 2 shows that the NPL ratio of CEE bank sector increased sharply during the crisis.

Figure 2. Share of Non-performing loans (horizontal axis) and foreign currency loans (vertical axis) from total loans, 2007-11



Source: author's composition from Raiffeisen (2013) calculation based on IMF and national bank data (dots = country + year, e.g. HR10= Croatia in 2010)

Klein (2013) seeks the reasons of non-performing loans in CEE and SEE regions. As it is clear from his regression analysis, there is a not too strong, but significant negative correlation between the GDP growth and the increase of credit defaults. Namely, he found that recession is a factor of contagion. This paper tried to find connection between credit default and other macroeconomic indicators too, but these significances are questionable, or many of them are not significant even at 10%.

However, Klein (2013) found evidence that CEE debtors' solvency is a little bit sensitivity for the recession of the euro zone. He concluded that, in case of the *“the bank-level indicators, the estimations show that higher equity-to-assets ratio leads to lower NPLs, therefore confirming the “moral hazard” effect; and higher profitability (RoE) contributes to lower NPLs and suggests that better managed banks have, on average, better quality of assets. [...] Unlike in other studies mentioned earlier, other bank-level indicators such as the bank size and expense-to-income ratio were not found to have significant impact. On the macroeconomic level, the results show that an increase in unemployment contribute to higher NPLs, thus validating the strong link between the business cycles and the banking sector's resilience. In addition, both higher inflation and the depreciation of currency were found to increase NPLs.”* [...] About the global environment factors: *„Higher volatility index and lower Euro area growth reduce the firms' capacity to repay, perhaps because of higher rates in the international financial markets, which reduce the firms' ability to rollover their debt, and because of lower export revenues. In addition, these two factors may also lead to lower external funding of the banks and therefore may result in negative credit growth [...].”* (Klein, 2013:12)

It is possible to draw some conclusions about the difference of countries indebted in foreign and those who did it in local currency according to the Deloitte (2012) data on growth of loans/GDP and growth of non-performing loans between 2004 and 2008. Although private loan to GDP ratio is comparable between Slovakia and Hungary, or between Poland and Romania, but the multiplication of non-performing loans is significantly faster by the crisis in case of Hungary and Romania financed with foreign loans.

From Deloitte (2012), it gets clear, that the FX depreciation hit mostly the following countries by 20%-30% depreciation: Hungary, Poland, Romania and Ukraine. If we compare this with the ratio of foreign currency credit and external financing, it will be clear that these two factors strongly determined the banking contagion based on credit default risk. Besides, if we consider the pre-crisis highly overvalued HUF, ROL, UKR, HRK by high market rates, in comparison to euro rates, it can be understood how could the foreign currency loans became a toxic asset in these countries, while rest of CEE was effected only by other factors of credit default (global recession, national recession, unemployment). From market interest rates it is clear, that before the crisis, Romania, Croatia, Hungary had to compensate fundamental risks with high national market rates. (See: Eurostat data on FX and 3-months monthly market interest rates) Thus it was clear, that local actors turned toward FX credits with significantly lower market rates. According to Raiffeisen (2013), in case of ROE and ROA analysis, it is harder to connect the damage of banks to the FX impact. It is more likely that discretionary effects, just as banking tax e.g., or national recession factors determined the earnings much stronger.

From the historical data of market share of foreign banks it is clear, that foreign ownership is determining in the CEE region, much beyond 50%, except the CIS countries and Slovenia. (See: Árvai et al. 2009: fig. 1, p. 6; Raiffeisen 2013) This foreign share is important in two folds. On one hand, the strong connection to multinational banking opens indirect channel toward each other in the CEE region by affecting across the common lender parent bank. On the other hand, the relative big size of multinational banks made it possible to soften and prevent the mass failure of CEE banking sectors as these MNCs have had the liquidity to

refund the lost equity of the banks and guarantee the deposits became uncovered by increasing non-performing loans.

About regional contagion, Árvai et al. (2009:5) remark that the larger is the dependence of a country in CEE from a lender (country) with big exposure, the higher is the likelihood of regional contagion. This thesis hints, also, to the CEE characteristic, that if we want to find regional contagion, it will not appear between CEE countries, but in the relation of CEE and high developed Western European lenders (as it was mentioned, mostly Austria, Germany and Italy). However, there are some regionally significant banks whose place of management and location is in a CEE member. Their exposure in the CEE region is relatively high, thus, they can be a channel of regional contagion. Árvai et al. (2009) – as mentioned above – examined the cross-border contagion in relation with common external lenders. The four significant external lender countries in CEE were found Austria, Germany, Italy and Sweden. Any from the three types of contagion (subsidiary insolvency, reduced lending through subsidiary, parent bank insolvency) through a Swedish parent bank is a threat only and exclusively for the three Baltic countries. In case of the three other external lenders, all of CEE countries have some contagion risk, but very variously. If Austria is the common lender, Croatia has extraordinary exposure, besides, Hungary, Slovakia and Romania have considerable risk. In case of Italy, the exposure is generally minimal, but Croatia and Hungary is relatively outstanding. Germany as an external lender canalizes relatively small risk into the CEE region. Inward this minimal risk, Hungary and Croatia are more exposed and Romania, Russia and Poland have relatively significant index levels, too.

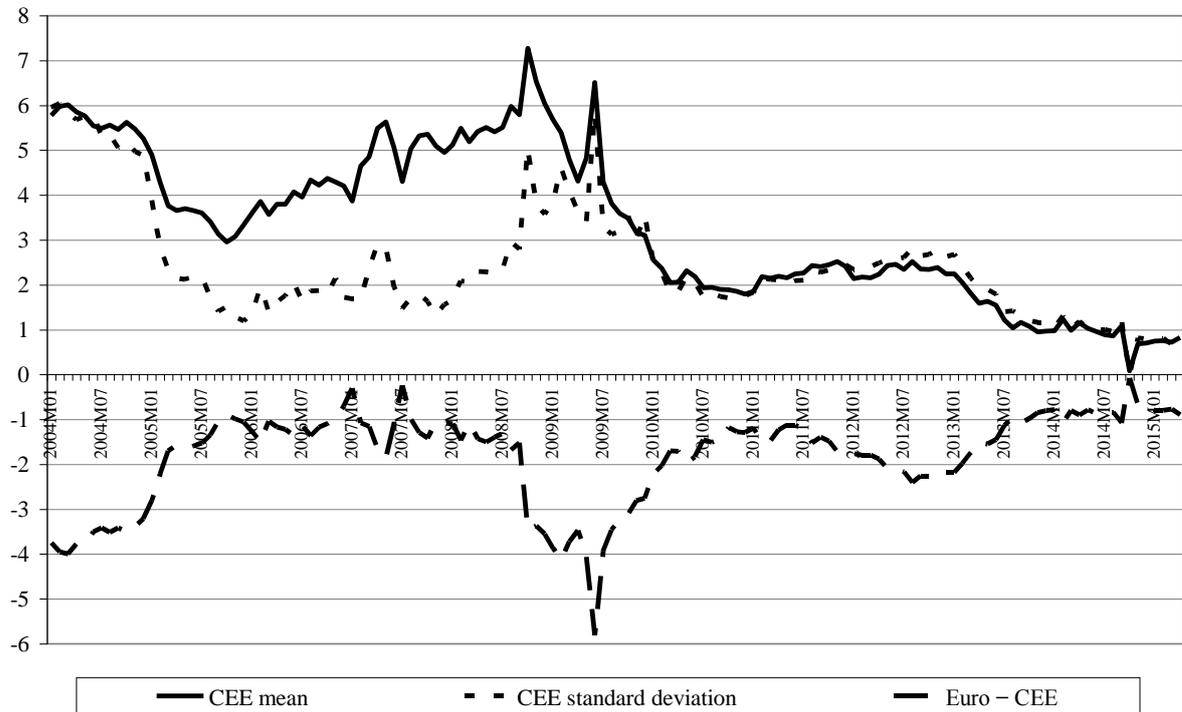
3. Indicators of financial integration of CEE banks

Price-based indicators

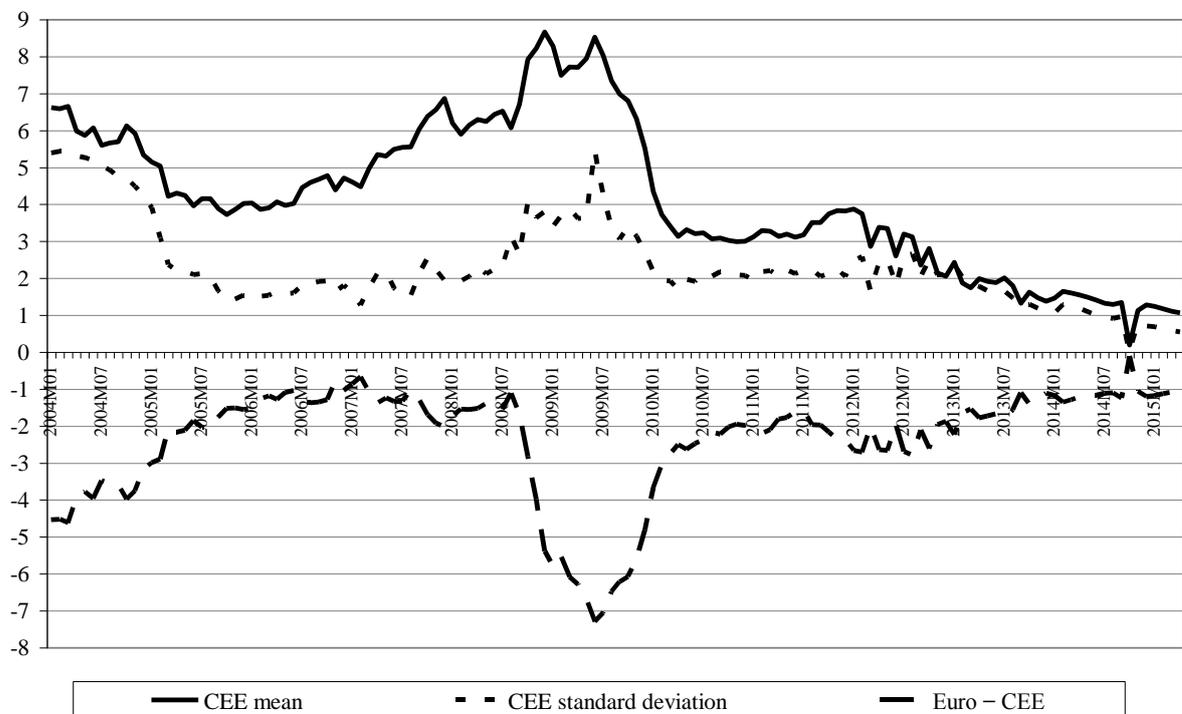
The price-based indicators of financial integration are calculated from inter-bank interest rates. Mean and standard deviation of CEE, beside, the difference between euro zone rates and the mean of CEE rates. Every indicator, both in case of day-to-day and 3-month rates, shows convergence in prices. (See fig. 3 and 4) However, structural differences make these indicators sensitive for cyclical or crisis impacts as the standard deviation and the difference from euro rate show temporary extreme peak/trough from the trend of convergence, in 2009. The clustering of CEE countries by structure of loans in Kutasi (2015) explains the deviation.

Figure 3. Mean, standard deviation and (euro zone – mean) of inter-bank rates, monthly data, 2004-2015, %

a) Based on day-to-day inter-bank rate



b) Based on 3-month inter-bank rate



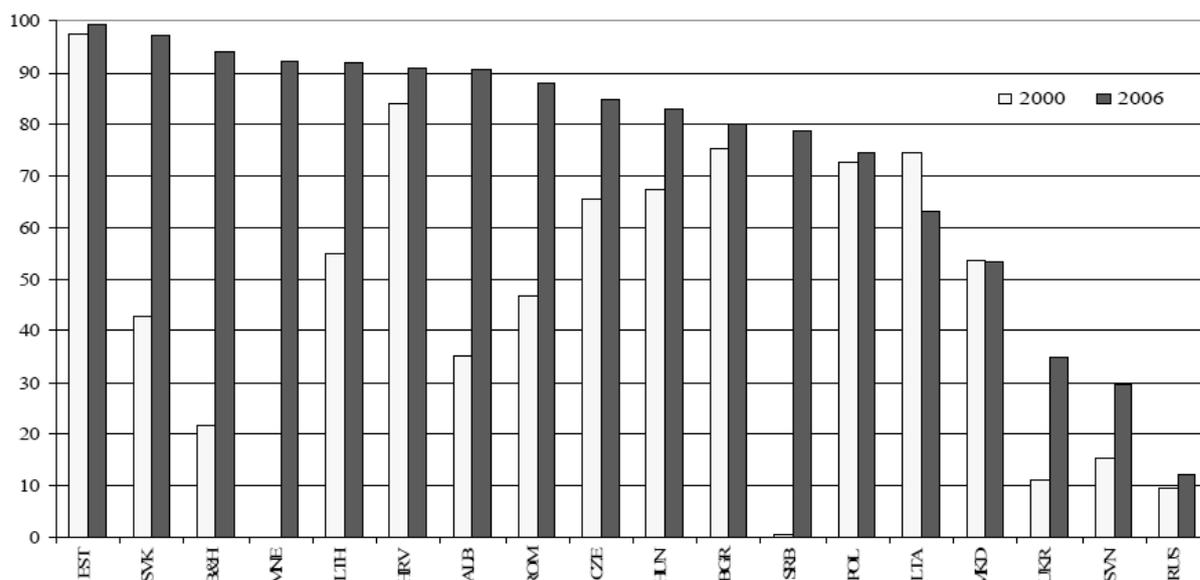
CEE mean and standard deviation are calculated from the non-euro EU member CEE countries' data in a given year. Croatian data used only from 2013. "Euro - CEE" is the euro inter-bank rate reduced with CEE mean.

Source: Eurostat, calculation by the author

Quantity-based indicators

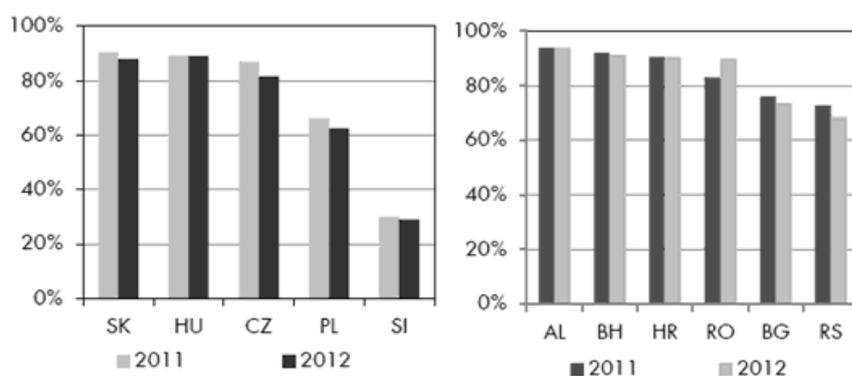
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Fig. 5. Market share of foreign-owned banks in CEE and SEE countries



Source: Árvai et al. (2009: fig. 1, p. 6), IMF Staff calculation from EBRD data

Fig. 6. Foreign ownership in banking, % of total assets



Source: Raiffeisen (2013), calculation from national banks' data

RU50 = over 50% foreign ownership in Russia, RU100= 100% foreign ownership in Russia

However, if it is the turn to consider the integration process into the single financial market, it can be recognized that the post-crisis impact on banking sector is a slightly decreasing market share of foreign parents. Particularly individual losses, particularly policy intents explain the change in trend. (E.g. in 2013 in Hungary the Korean Hanwaha Bank in Hungary was acquired by the Hungarian Evo Pro company, thus, it become a domestic bank, or Banco Popolare sold its affiliate to the domestic MagNet Bank, or the Bayerische

Landesbank sold its Hungarian MKB subsidiary to the Hungarian government, and the same happened with the Hungarian affiliate of DZ Bank, Takarékbank.) From international affiliates, these banks became local banks focusing on a thin slice of the national market cake. This tendency reduced the competition pressure on these national markets a little bit according to the quantity-based approach, and this phenomenon is against the aim of financial integration.

Conclusions

Several CEE countries are members of the EU and, thus, participate in the single financial market. In this study, the aim was to establish whether their financial integration is successful according to the terms of financial convergence. The hypothesis was that financial convergence is measurable in the CEE countries' banking sector by price- and quantity-based indicators. The study focused on the price- and quantity-based aspects of financial integration of CEE banks into the European single banking market, not forgetting the impacts of global financial crisis in 2008 which caused both liquidity shortage and increasing insolvency. The methodology was literature review and data survey with comparative analysis.

It was established that the crucial question of creation of a single market is whether can this process unite the partial markets and, thus, increase the completion pressure to spur cost-competitiveness and inexpensiveness. The financial sector is especially important in regard of overall economic costs and growth since every companies and almost every citizen in the EU must use banking services. The EU-accession of the group of the Central and Eastern European (CEE) member states was a considerable extension of the single financial market, too. Success of their overall financial integration is significant issue for the EU. That is why this study analyses some aspects of CEE financial convergence.

The theory and methodology of financial convergence was surveyed to determine the price- and quantity-based approaches and indicators. Besides, the empirical review contained a cross-border exposure explanation which enlightened the risks originated in a strong integration. The overview about the structure of the CEE banking market concluded strong and robust foreign share in most of the CEE banking markets. The FDI motivations related to CEE banking were explained, too, by a broad literature review.

In case of the empirical analysis about the financial integration, the following can be concluded: The price-based indicators (mean and standard deviation of CEE, the difference between euro zone rates and the mean of CEE rates based on day-to-day and 3-month rates) showed convergence of the CEE region prices. But it was also observable that structural differences made these indicators sensitive for crisis impact as the standard deviation and the difference from euro rate showed temporary divergence in 2009.

The quantity-based approach concluded that foreign ownership is determining in the CEE region, much beyond 50%. This connection to multinational banking opens indirect channel toward each other in the CEE region by affecting across the common lender parent bank. Besides, the relative big size of multinational banks made it possible to soften and prevent the mass failure of CEE banking sectors as these MNCs have had the liquidity to refund the lost equity of the banks and guarantee the deposits became uncovered by increasing non-performing loans. However, a weak sign of a turnaround was recognized in the financial integration process. The post-crisis impact moved the CEE banking sector toward a slightly decreasing market share of foreign parents. From international affiliates, some banks became domestic banks by market portfolio. The tendency is against the aim of financial integration by reducing the competition pressure.

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