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AT THE UNIVERSITY OF MICHIGAN

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William Davidson Institute Working Paper Number 1023
November 2011

THE DEPENDENCE OF CEECs ON FOREIGN BANK CLAIMS: DIRECT AND INDIRECT RISKS OF CAPITAL WITHDRAWAL

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Abstract

CEECs are characterised by a significant presence of foreign banks and by a marked dependence upon financing from foreign bankers. We show that this situation leaves these countries open to two types of financial risk, which have grown throughout the present decade. The first relates to the direct financial exposure between European creditor countries and CEECs and the risk of sudden withdrawal of capital. The second, which is indirect, is associated with the risk of regional contagion via spill-over effects and the common creditor channel. Based on a synthetic measure of these risks, we show that the degree of vulnerability of each country to the recent financial crisis could have been anticipated.

Key words: Eastern Europe, banking risks, foreign claims, contagion, subsidiaries.
JEL: F23, F32, F36, G01, G21

Introduction

Since the 1990s, mass privatizations in CEECs[1] have resulted in foreign capital taking a hold of whole sections of business activities, particularly the banking sector. On average, foreign banks have a concentrated hold on three-quarters of CEEC banking assets (versus 19% for euro zone countries and 23.8% for the European Union as a whole). The share held by foreign banks is even in excess of 80% in Bulgaria, Lithuania and Romania, and above 90% in the Czech Republic, Estonia and Slovakia. This significant presence has been accompanied by growing financial integration between CEECs and Western Europe, and by growing dependence on financing from foreign banks. In all countries, the latter accounted for over 70% of GDP in 2009[2].

In relation to a given country, foreign banks operate either on a cross-border basis, or by opening subsidiaries in host countries. These are either newly created establishments (*greenfield banks*) or the result of acquiring local banks (*take-over banks*). Foreign bank claims, to use BIS terminology, are composed as follows: cross-border claims, i.e. claims of foreign banks from their home country on

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[1] Central and Eastern European countries: Bulgaria, Estonia, Hungary, Latvia, Lithuania, Poland, Czech Republic, Romania, Slovakia and Slovenia.
[2] BIS banking statistics report total foreign bank claims of BIS reporting banks on a given country. These are claims in all currencies, on a host country, of foreign banks and their offices operating locally (subsidiaries, branches, joint-ventures).

agents in the borrowing country, usually in foreign currency; plus, claims of the subsidiaries of foreign banks operating in the host country on resident agents, called local claims, either in local or foreign currency. The growing presence of foreign banks in CEECs has increased the share of local claims, but cross-border claims are still significant (44% of foreign bank claims in 2009, on average, for the 10 CEECs).

Literature has evidenced several advantages linked to the opening up of local markets to competition from foreign banks. The implantation of foreign banks, amongst other things, enables host countries to benefit from transfers of skills, technology, human capital and networks, thereby enhancing the efficiency and quality of bank intermediation (Claessens and *al*., 2001; Maechler and al., 2009). The presence of foreign banks then augments the banking system's credit supply capacity (Haselman, 2006; de Haas et Van Lelyveld, 2006, 2010). As opposed to domestic banks, foreign banks are seemingly not restricted by the raising of domestic deposits needed to self-finance, because they can borrow from the parent bank or utilise the reputation of the parent bank to borrow from other banks (Levine, 1996; Agénor, 2003; Aydin, 2008). This is how they seem to have helped finance the vigorous growth posted by CEECs in the 2000s and the dynamic of the catch-up process. The large hike in bank credit reflects in part a normal phenomenon of economic and financial catch-up to reach European standards (Brzoza-Brzezina, 2005). It may have, however, appeared excessive in many CEECs (Brzoza-Brzezina, 2005; Coricelli and al., 2006; Tamirisa and Igan, 2008), verging on the expected maximum when based on economic fundamentals (Bulgaria, Estonia, Hungary and Slovenia) and even overrunning (Latvia). This excess may imply over-indebtedness of agents (particularly households) but also excessive recourse to foreign financing. Very few studies have shown any real interest in this CEEC dependence on financing from foreign banks (Arvai et al., 2009; Aydin, 2008; Gersl, 2007; Maechler et al., 2009). This is the aim of this article. What are the risks and the vulnerabilities associated with the dependence of CEECs on foreign banks and their financing? So far, in the literature, the presence of foreign banks has been studied more through a stabilising factor on the supply of domestic credit, given that they seem to be less sensitive to the host country's economic conditions than local banks (Haselman, 2006; de Haas et Van Lelyveld, 2006, 2010; Arena et al., 2007). The risks linked to the financial external dependences have not been accurately studied.

The global financial crisis of 2008-2009 highlighted the risks linked to financial interdependence, particularly in the case of emerging countries, the risk of the "sudden stop" phenomenon or a reversal in external financing from foreign banks in a context of tighter restrictions affecting the liquidity and solvability of international banks and among others parent banks in the home country. Some studies have shown that global banks played a significant role in transmitting the 2008-2009 financial crisis to emerging markets (see for example Cetorelli and Goldberg, 2010). However, the contraction of foreign banks' loans was different in different countries. For Kamil and Rai (2010), the propagation of the global credit crunch was lower in countries with more foreign loans in local cur-

rency and more via local subsidiaries. The degree of risk exposure for the withdrawal of foreign bank financing deserves to be precisely apprehended. What are these risks concerning the CEECs? Are they all exposed to the same risks? Have the most vulnerable countries to financial external dependence had been the most affected by the crisis, the capital flow reversals and the following recession?

In actual fact, CEECs are prone to two types of risk. Firstly, the size of foreign bank claims exposes them to the direct risk of capital withdrawals and credit crunch by foreign banks or their subsidiaries. This risk is incremental with regards not only the amount of claims but also their structure. CEECs are then faced with indirect financial risks, owing to regional interdependence and inter-bank relations. One country might be affected by a crisis that triggers in another, i.e. suffer from quasi-simultaneous withdrawals of capital or a fall in the credit supply to residents because the two countries depend upon the same creditor. If debtor countries belong to the same region, the risk is that of regional contagion. And the contagion may also rely on links between parent banks and subsidiaries.

In relation to the traditional issues in literature raised over the stabilising role of foreign banks operating in CEECs, our article focuses on the financial risks run by CEECs. We look first of all at the direct risk involved with the sudden withdrawal of capital (1), then at the indirect risk of regional contagion with the construction of a concentration index (2). After that, we rank countries in accordance with their total financial exposure through the construction of a synthetic measure of risk (3). Finally, based on this synthetic indicator of risk, we conclude that the vulnerability of the different countries to the recent financial crisis could have been anticipated (4).

1. The risk of a sudden withdrawal of capital

With their dependence on foreign financing, CEECs run the risk of capital withdrawal, which is funding risk. This risk grows with regards, on the one hand, the size and extent of foreign claims, and on the other the structure of this financing.

The heavy inflows of capital since the early 2000s have led to an accumulation of foreign liabilities in the region. Foreign bank claims, as measured by the BIS, appear particularly high – in percentage of GDP – in the Baltic States, Hungary, the Czech Republic and Slovakia (Table 1). These foreign claims are often associated with record current account deficits[3] that were easy to finance in times of surplus liquidity worldwide and when there was an appetite for risk. Usually, they are also associated with a financing shortfall or funding gap.

[3] Fitch (2008) reckons that 7 of the 8 highest deficits with the 105 emerging countries studied in 2007 come down to countries in transition, and that the 2-figure deficits in percentage of GDP reached by these countries are most unusual. The current account deficit thus represents 25% of GDP in Latvia, 19.5% for Bulgaria, 16% for Estonia, 13.7% for Lithuania and 14% for Romania.

Table 1. Foreign bank claims and funding gap (2008)

	Foreign bank claims (%GDP)	Domestic credit/domestic deposits (%)
Bulgaria	**87.9**	**94.4**
Czech Republic	**99.3**	67.0
Estonia	**174.7**	**154.2**
Latvia	**416.5**	**130.4**
Lithuania	**100.5**	**138.1**
Hungary	**98.2**	**120.9**
Poland	57.4	85.6
Romania	72.6	**102.2**
Slovenia	80.3	**120.7**
Slovakia	**107.8**	81.7

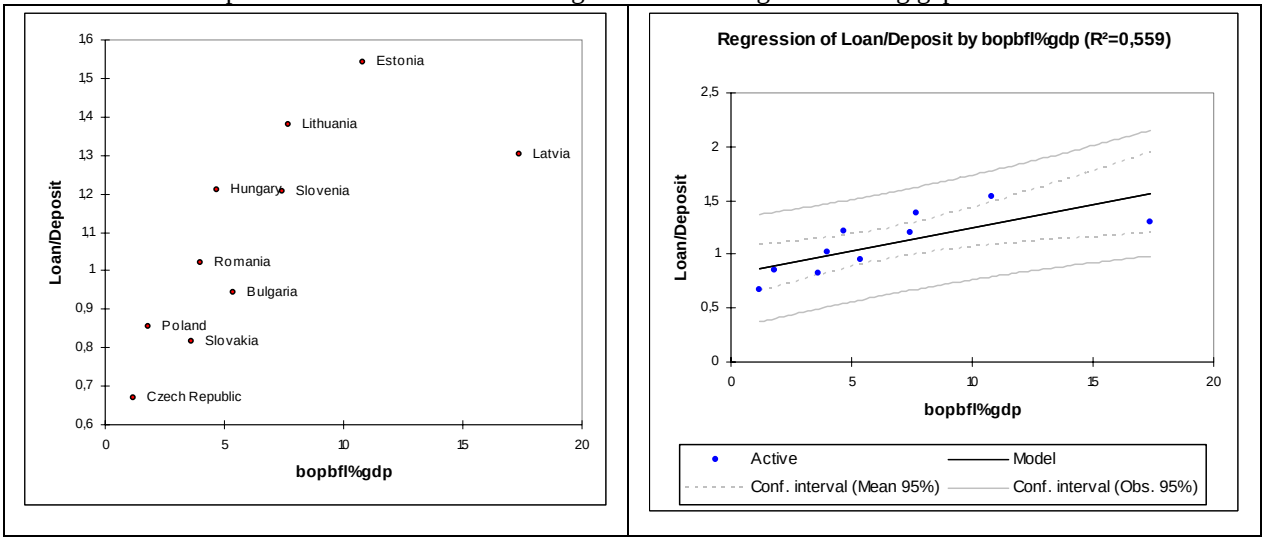
Sources: BIS data and Bankscope data, as calculated by the authors.

These foreign loans have helped to finance the growing demand for domestic credit. The countries that have most accumulated foreign claims are the countries which have recorded the highest rise in domestic credit and have the highest level of debt. Thus, the ratio between domestic credit to private sector and GDP is the highest in Latvia (85%), ahead of Estonia (83%) and Slovakia (70%), three countries which also post the highest foreign debt. Then, with domestic debt levels of between 40 and 50%, we find Hungary, Bulgaria, Lithuania and the Czech Republic, in that order. Inversely, Poland, which appears to be the country that is the least dependent upon foreign financing, has recorded the lowest growth in domestic credit and has the lowest rate of internal indebtedness in its private sector.

In many countries, particularly the Baltic States, Romania and Hungary, the banking systems are reporting a sharp shortfall in deposits compared with the loans they have been granted (Table 1, column 2), the difference being financed by inflows of capital. In the Baltic States, on average and between 2003 and 2008, the part of foreign bank financing in liabilities represented from 50% to 90% of distributed credit. This figure is 40% in Romania and 30% in Bulgaria, Slovakia and Hungary. The following graph (Graph 1) shows that there is a strong correlation between the share of foreign bank loans (bopfl)[4] in percentage of GDP and the size of the funding gap, measured by the ratio between credit and bank deposits.

[4] IMF balance of payments data.

Graph 1. Correlation between foreign bank financing and funding gap.



Sources : authors' calculations

Through domestic credit, these inflows of foreign capital have financed the high growth seen with CEECs throughout the present decade. It is estimated that 25% of the variance in corporate investment can be explained by the growth in domestic credit, and 40% for household consumption (Unicredit Group data, 2008). In countries where inter-bank markets are underdeveloped, only the maintaining of access for banks to foreign financing has prevented a total collapse of the credit system and helped maintain growth.

This dependence on foreign bank loans leaves countries exposed to the solvability and liquidity of their banking system and that of parent banks. It exposes CEECs to the risk of financing not being renewed and even the risk of a sudden withdrawal of capital. Such dependence on foreign financing is all the more risky if it is denominated in foreign currency (exchange risk), is short-term (refinancing risk) and is provided by banks that are not operating locally (risk of instability) (Table 2).

Table 2. Risks linked to the structure of foreign bank financing (2008)

	Claims in foreign currency*	Short-term claims*	Cross-border claims*
Bulgaria	**72.7**	**37.5**	44.0
Czech Republic	24.5	**40.3**	26.6
Estonia	**83.7**	20.7	**57.1**
Latvia	**89.6**	27.8	41.2
Lithuania	**77.4**	28.8	**63.8**
Hungary	**67.6**	18.0	**48.0**
Poland	41.8	25.4	22.1
Romania	**66.9**	**46.2**	38.2
Slovenia	**62.0**	**37.7**	**55.9**
Slovakia	35.0	28.5	23.7

* in % of total foreign claims.
Sources: BIS data, as calculated by the authors.

The high share of foreign bank claims is generally associated with a higher share of claims in foreign currency, to the detriment of claims in local currency (Table 2, column 1). On average, 60% of CEEC claims are denominated in foreign currency, whether cross-border or local. The high share of foreign currency claims is linked to the phenomenon of the original sin, which reflects the inability of emerging countries to borrow on international capital markets in their own currency (Eichengreen & al., 2007). In CEECs, it is reinforced by the presence of foreign banks in local markets. The latter prefer to grant loans in euros, the currency in which they are refinanced by their parent bank. The banking sector's access to foreign financing has also facilitated foreign currency loans to the local economy, especially in the Baltic States but also in Slovenia, Hungary, Bulgaria and Romania. Countries which opted for fixed or quasi-fixed exchange rate systems in relation to the euro (Bulgaria, Baltic States)[5], are the countries which have the highest share of claims denominated in foreign currency. In this frame, borrowing in foreign currency helps provide a favourable interest rate spread, while the perceived exchange risk is nil as long as the exchange system stays credible. Depreciation or devaluation of the local currency could very quickly render the weight of foreign currency claims unsustainable in these countries.

Dependence on foreign financing then leads to a risk of instability with the said financing. Firstly, exposure to withdrawal of capital is all the greater in that foreign financing is short-term. Judging by Table 2 (column 2), we see that Bulgaria, the Czech Republic, Romania and Slovenia are particularly exposed to the risk of loans not being renewed. Garcia Herrero et al. (2007) show, moreover, that the split of foreign claims between cross-border and local claims also has an impact on the volatility of foreign financing. Given that the implantation of subsidiaries comes under FDI and incurs significant and irreversible costs, it is only logical that the activity of these subsidiaries be less sensitive to shocks, or that parent banks work to maintain normal operations within these institutions. For Peek & Rosengren (2000) and De Haas et al. (2004), during periods of financial stress, only cross-border claims go down. Furthermore, when the subsidiary's credit supply (local claims) is in local currency (local claims in local currency), the result is additional stability for the economy because supply is made on the basis of deposits collected locally and on developed local activity. This also reduces currency mismatches (Moreno & von Kleist, 2007) and, more generally, for the subsidiary, dependence on financial support from the parent bank. The role of the parent bank is thus less of a core issue for countries, meaning greater protection from potential shocks (McGuire & Tarachev, 2008).

In three countries, the share of cross-border claims (Table 2, last column) is greater than that of local claims. They are Estonia, Lithuania and Slovenia, while the proportion is split more or less equally in Hungary. These countries would therefore be more prone to a risk of instability affecting

[5] Currency Board systems exist in Bulgaria, Estonia and Lithuania while Latvia has anchored its currency with the euro with a fluctuation band of +/-1% in relation to the pivot rate.

foreign financing. Inversely, in the Czech Republic, Poland and Slovakia, three-quarters of foreign claims are local claims and so originate from subsidiaries operating locally.

Finally, if we look at the direct risks to which CEECs are exposed on account of their dependence on foreign bank financing, five countries look to be particularly vulnerable: the Baltic States, Bulgaria and Hungary. Then, but to a lesser extent owing to a lower foreign debt, we find Slovenia and Romania.

2. The risk of regional contagion

The second financial risk run by CEECs is an indirect risk of financial contagion, linked to financial interdependencies between countries. The contagion financial channel (Van Rijckeghem et al., 2001; Broner et al., 2004) supposes that countries are linked through their presence in a portfolio of loans of a common third-party country. The adjustment of an asset portfolio, owing to a search for cash to offset losses suffered after a crisis in an initial country, spreads the rationing and the liquidity crisis in another country. A country will thus be all the more exposed to the risk of regional financial contagion if there is a common creditor in a region and if it, itself, is dependent upon this creditor (Arvai et al., 2009).

Many transition countries are exposed to a common creditor[6], through cross-border loans granted by foreign banks from the home country, but also through the network of subsidiaries of one and the same parent bank. The common creditor may therefore be appreciated at the macro-economic level (home country) and at the microeconomic level (parent bank and the scope of its subsidiary network).

The common creditor channel may be appreciated, first of all, at the macro-economic level. Four Western European countries are highly exposed in several CEECs, in which they are also significant creditors. They are thus likely to play the role of common creditor for these countries. According to banking statistics from the BIS, in 2008, Austria alone accounts for more than 30% of total foreign claims of BIS reporting banks on the Czech Republic, Romania and Slovakia, and almost one-quarter of claims on Hungary and Slovenia. It is therefore a significant creditor for each of these CEECs and is common to all five. So the conditions for generating a regional contagion are all there. The same goes for the following creditors: Germany, alone, covers 32.6% of all foreign claims on Slovenia, 22.6% on Hungary, 17.6% on Poland and 12% on Latvia. Sweden holds over 80% of foreign claims on Estonia, almost 64% of claims on Lithuania and 55% on Latvia. Lastly, Italy holds 24% of total foreign claims on Slovakia and between 16% and 18% of claims on Poland, Hungary, Slovenia and Bulgaria. To recap, Austria is centre-stage[7] in six CEECs, Belgium in three, Germany in four and Italy

[6] Initial definitions and metrics were put forward by Kaminsky & Reinhart (2000) after the Asian crisis.
[7] Over 10% of total foreign claims.

in six (cf. Table 6 in the appendix). These countries are therefore significant common creditors, implying that an economic problem in any one of these countries would spill over significantly and simultaneously to several CEECs.

A country would be all the more affected by a financial contagion if it were a large debtor to the lending country in trouble, and also if its foreign claims were concentrated on a small number of creditors[8]. To evaluate the degree of risk linked to the creditors concentration, we have calculated a creditor concentration index for each CEECs. It shows how vulnerable a country is if it has one or more major foreign creditors. This concentration index (Table 3) is calculated by a Herfindahl index. It is reached by adding up the square of the share of each creditor in the total foreign claims on a country. It shows that Estonia, Latvia, Lithuania and, to a lesser extent, the Czech Republic, Slovenia and Slovakia, are vulnerable to a withdrawal of financing owing to the concentration of their creditors. Consequently, they appear highly exposed to the risk of regional contagion. This situation is explained by the strong dependence of their external position on very few creditors, by their significant weight in the portfolio of these creditors and by the fact that they share these creditors with other CEECs. In the Baltic Countries, Sweden is the major creditor, common to all three debtor states (Estonia, Lithuania and Latvia). For the Czech Republic, the major creditors are Austria, Belgium and France with these three countries representing three-quarters of received foreign bank claims. Slovenia also concentrates two-thirds of received foreign claims granted by three countries, Austria, Germany and Italy. For Slovakia, we see Austria and Italy, ahead of Belgium.

Table 3. Risk of regional contagion (2008): a macro view

	Concentration of creditors*	Major creditors**
Bulgaria	8.6	Italie, Suisse Autriche
Czech Republic	20.8	Autriche, Belgique, France
Estonia	**65.3**	Suède
Latvia	**32.3**	Suède, Allemagne
Lithuania	**41.3**	Suède
Hungary	15.7	Autriche, Allemagne, Italie, Belgique
Poland	9.8	Allemagne, Italie, Pays-bas
Romania	16.6	Autriche, France, Italie
Slovenia	20.4	Allemagne, Autriche, Italie
Slovakia	21.2	Autriche, Italie, Belgique

* Concentration of creditors in % of foreign claims, the Herfindahl index (multiplied by 100).
** Share of claims superior to 10% of foreign claims on a country.
Sources: BIS data and Bankscope data, as calculated by the authors.

This exposure to the risk of regional contagion is also apparent at the microeconomic level and with the parent bank/subsidiaries network. Arvai et al. (2009) present different channels of regional contagion that may be exerted via inter-bank links and parent bank/ subsidiaries relationships. Via a

[8] Cf. Table 7 in the appendix for details per country.

first channel, the problems of cash or solvability experienced by a subsidiary will affect its parent company, which has a backlash on its other subsidiaries in other host countries via the common creditor channel. The parent banks of other banks operating in the host countries of the subsidiaries concerned will be affected in turn. A variant of this channel may also involve a subsidiary with which a parent company wishes to reduce its exposure for reasons of portfolio diversification. This translates to withdrawals of deposits or to a rise in the cost of financing this subsidiary, which may engender problems of liquidity and affect, by way of the monetary market, the other banks in the host country plus their respective parent banks and the markets in which they do business. Lastly, through an ultimate channel, the parent company's problems of liquidity or solvability will affect its subsidiaries, an ill that will spread, via inter-bank links or through distrust in the banking system, to the other banks in the host country and, in return, impact their respective parent companies. In fact, the internal capital market with banking groups allows the parent company to arbitrate between subsidiaries. The parent bank can modify the composition of its investment portfolio depending on the condition of the host country and on expected yields (substitution effect), and not only support the most fragile subsidiaries (support effect) (De Haas & Van Lelyveld (2010); Cetorelli & Goldberg (2010)).

So, the common creditor channel passes through the parent bank and its subsidiary network. The majority of major banking groups in the European Union are active in Eastern Europe, and a dozen have opened a subsidiary network in at least three CEECs (Table 4). Their exposure may be evaluated in absolute terms (assets held in the region in €billions) or relative terms (share of assets held in the region in percentage of the group's total assets). Six Western European groups concentrate the greatest exposure in CEECs, in excess of €30 billion in 2007 (UniCredit, Erste, Raiffeisen, KBC, Société Générale, Intesa Sanpaolo).

Table 4. Market share (%) of foreign banks with the greatest presence in CEECs and the national ranking of the subsidiary (2008)

	Bulgaria	**CZ**	**Estonia**	**Latvia**	**Lituania**	**Hung.**	**Poland**	**Roumania**	**Slovenia**	**Slovak.**
UniCredit (Italie)	20.3 (1)	8.3 (4)	(9)	(9)	(10)	6.3 (7)	20.6 (2)	6.7 (6)	9 (4)	8.8 (5)
Raiffezen RZB (Autriche)	10.4 (4)	3.7 (5)				8.3 (6)	3.6 (10)	7.9 (3)	2.8 (11)	16.5 (3)
Erste Bank (Autriche)		23.3 (2)				8.5 (5)		26.2 (1)		23.3 (1)
KBC (Belgique)	3.4 (7)	23.9 (1)				9.8 (2)	4.5 (8)		38.5 * (1)	11.6 (4)
Société Générale (France)	3.3 (8)	19.1 (3)						16.6 (2)	6.7 (5)	2.3 (12)
Intesa Sanpaolo (Italie)						9.2 (4)		2.2 (14)	5.6 (6)	18.5 (2)
Swedbank (Suède)			70.1 (1)	26.4 (1)	27.7 (2)					
SEB (Suède)	2.8		21 (2)	17.9 (2)	30.8 (1)					

For market shares, total assets of foreign subsidiary in the host country in percentage of the total assets of the host country's banking system, as calculated by the authors using Bankscope data. The national ranking of the subsidiary is given in parentheses.
*However, KBC has only a minority stake (30%) in the largest bank in Slovenia.
Sources : Bankscope Data, Banks reports, authors' calculations

Austrian banks appear to have the greatest exposure in CEECs. Erste Bank operates in 16 Central and Eastern Europe countries (out of 25) and the region represents 54% of the group's assets. Raiffeisen operates in 5 countries, i.e. 39% of the group's assets. This data reflects a deliberate regional strategy on the part of Austrian banks and makes them potential players in any future contagion. We then find the Unicredit (Italy) and KBC (Belgium) groups operating respectively in 19 and 12 countries with significant presence in absolute terms (€140 and €60 billion respectively) but lower when seen in relative terms (respectively 12% and 20% of assets). Then come Société Générale and Intesa Sanpaolo with exposure representing respectively 5.9% and 6.6% of their assets. Finally, Swedish banks are averagely exposed (21% of Swedish GDP: concerning Swedbank, exposure in real value of €35 billion in CEECs, i.e. 16% of assets), but this exposure is concentrated on a single area, the three Baltic Countries (around 15% of GDP).

We see this hierarchy of Western European banks when studying market shares in different host countries (Table 4). Erste Bank, Unicredit and KBC often hold market shares in excess of 20% and generally speaking their subsidiaries are ranked amongst the top 5 banks in local banking systems. Swedish banks also hold market shares of over 20% in the three Baltic States, going as high as 70%

for Swedbank in Estonia. Ultimately, these high market shares reveal the dependence of CEEC banking systems on financing from subsidiaries of a smallish number of parent companies.

Table 5. Risk of regional contagion (2008): a micro view

	% of parent banks*	Market share held by foreign banks (total)
Bulgaria	40.2	81.6
Czech Republic	**78.3**	91.5
Estonia	**91.1**	98.8
Latvia	44.3	62.5
Lithuania	58.5	83.7
Hungary	42.1	57.4
Poland	28.7	70.5
Romania	59.6	82.1
Slovenia	24.1**	28.5
Slovakia	**81**	95.9

* Parent banks: Share of banking assets (the 20 biggest banks in the host country) belonging to the 8 largest parent banks, %. ** Without KBC participation.
Sources: BIS data, Bankscope data, ECB data, as calculated by the authors

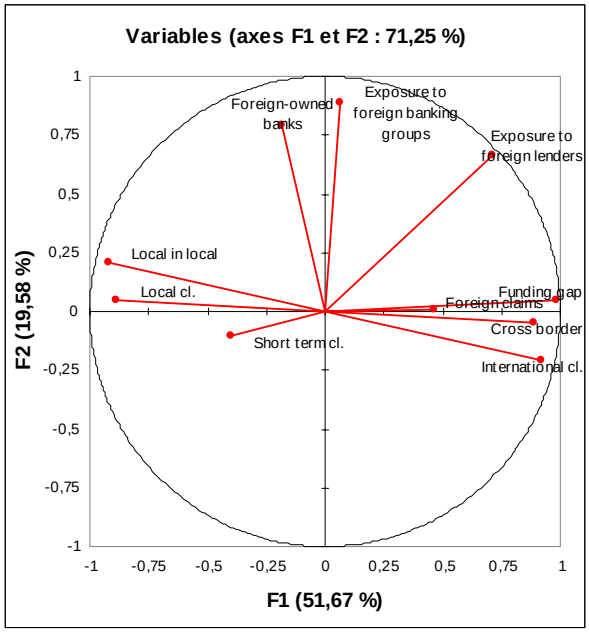
Calculation of the market share held by the eight biggest parent banks (Table 5) shows that exposure to regional contagion is particularly high in three countries (Estonia, the Czech Republic and Slovakia). In these countries, major Western European groups account for over 75% of banking assets. It is also high in the Baltic Countries, very much dependent on two creditors (Swedbank and Seb). Furthermore, in the Czech Republic, Estonia and Slovakia, the presence of foreign banks is particularly concentrated on a few banks: the eight largest parent companies account for more than 80% of the total foreign bank market in the local banking system. This is not the case in Poland, where the market share held by the big eight is 28.7%, compared to that of all foreign banks which stands at 70.5%. In Slovenia, international banking groups have a stake in seven out of the ten largest banks if we include the minority stake of KBC in the largest bank in Slovenia (30%), which represents a total of 62,6% of banking assets (24,1% without KBC).

This exposure to just a few creditors, particularly for the Czech Republic, Estonia and Slovakia, illustrates the vulnerability of these countries to the state of relations between parent banks and subsidiaries. Given the importance of the parent banks on the international financial stage and their significant presence in several CEECs via associated subsidiary networks, these three countries do seem particularly vulnerable to the risk of indirect contagion. Belonging to the same parent company and relations between subsidiaries appear to be significant links in the spill-over of shocks. Yet, some of these countries, for instance the Czech Republic or Slovakia, seem to be rather well protected from risks arising from direct creditor/debtor exposure in terms of amounts and of the currency denomination of their claims.

3. Ranking of countries according to a synthetic measure of the different financial risks

Through a principal component analysis, we are able to take account of the different risk factors associated with foreign bank financing in CEECs (Graph 2) and consequently rank countries in relation to these risks.

Graph 2. A Principal Component Analysis (PCA), 2008.



Foreign owned banks: % of domestic banking system assets with foreign capital
Exposure to foreign banking groups: market share of the biggest banking groups
Exposure to foreign lenders: the Herfindahl index for the concentration of foreign creditors
Foreign claims: total foreign claims, from home country and through locally operating subsidiaries (% GDP)
Cross border: cross-border claims of foreign banks from the home country and in foreign currency (% foreign claims)
International claims: foreign currency claims of foreign banks = cross-border claims + local claims by the located subsidiaries in foreign currency on a country (% foreign claims)
Local claims: claims of subsidiaries operating locally (% foreign claims)
Local in local: claims of subsidiaries operating locally in local currency (% foreign claims)
Short term claims: short-term claims of foreign banks (% foreign claims)
Funding gap: ratio between domestic credit/domestic deposits (%)

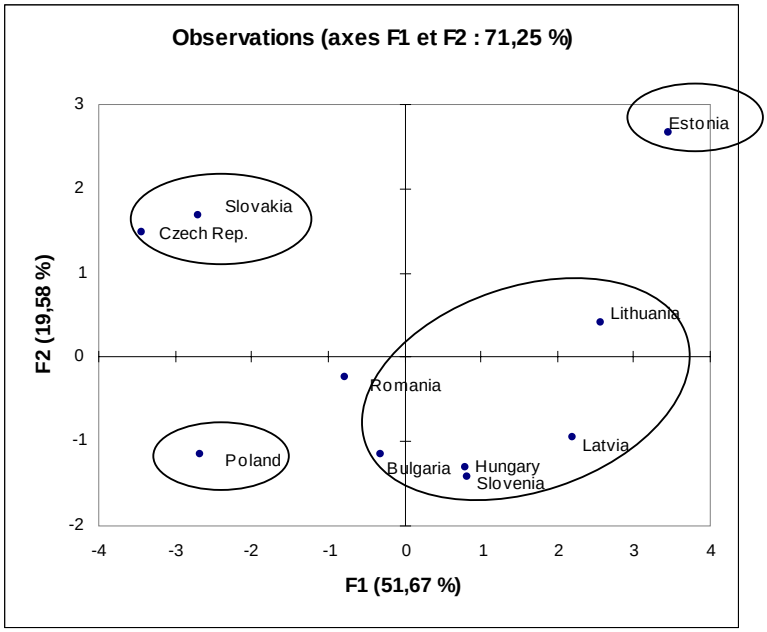
Sources: authors' calculations on ECB, BIS, IMF data

The horizontal axis opposes, on the left, countries where foreign bank claims are primarily in the form of local claims, these local claims being accompanied by financing mostly in local currency, with countries where foreign bank financing is mostly cross-border. They are associated with a larger funding gap and more financing (foreign and local) in foreign currency.

The vertical axis opposes countries marked by a significant presence of foreign banks operating in the host market and a significant presence of major Western European banking groups, with countries where there are more domestic banks or a lower concentration of foreign ownership.

The different risks to which CEECs are subjected owing to their dependence on Western European banks through cross-border claims and the activity of subsidiaries operating locally make it possible to identify four groups of countries (Graph 3).

Graph 3. Split of countries, 2008.



Sources: authors' calculations

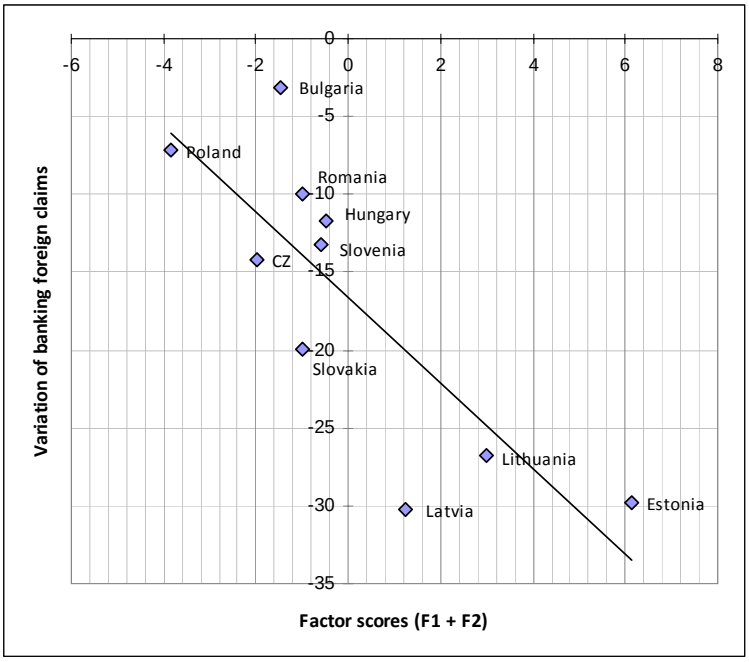
First of all, Estonia appears to be the country the most prone to both direct and indirect financial risks. These risks are linked as much to the size of foreign claims as to the extreme concentration of creditors. Six countries then appear vulnerable on account of their direct financial exposure: Latvia, Lithuania, Romania, Bulgaria, Slovenia and Hungary. More precisely, these countries are particularly highly exposed to exchange rate risk owing to imbalances in terms of currency[9]. In this group, Slovenia appears somewhat apart from the rest owing to the relatively small-scale implantation of foreign banks in its host market. The third group of countries comprises the Czech Republic and Slovakia, which appear prone to indirect risks and rather better protected against direct risks. Analysis of banking interdependence shows that these countries, apparently less exposed owing to the accumulation of foreign claims in foreign currency, are not protected from banking-related problems. Despite solid fundamentals, they may be affected by the phenomena of regional contagion. More than three-quarters

[9] The risk of a twin crisis was latent in 2008-2009 (case of Latvia in June 2009).

of these countries' banking assets (78.3 and 81% respectively) are in the hands of major European banking groups, a fact that leaves them exposed to problems with parent banks or with the other subsidiaries of these parent banks. Finally, Poland[10] seems to be comparatively less exposed to foreign financial risks, whatever the indicators used.

We have constructed a synthetic risk indicator measuring total exposure (direct and indirect) to foreign lenders. To this end, we have added up the coordinates of each country on the f1 and f2 axes. The higher is the factor score, the riskier is the country. We have compared this risk indicator with the actual reduction of foreign claims by international banks during the financial crisis of 2008-2009 (change between 2008 June and 2009 December). Have the most vulnerable countries to the risk measure had been the most hit by the crisis?

Graph 4. Correlation between aggregate financial risk and reduction of foreign banks lending during the 2008 financial crisis



Source: authors

We observe a strong negative correlation between these two measurements (Graph 4). The Pearson correlation coefficient is of -.808. The financial crisis of 2007-2009 did not spare Eastern European countries, all in the front line owing to their dependence on financing from international banks. The countries that were the most vulnerable to the risks described above and aggregated in this risk indicator, were actually the countries that were the most affected by the banking flow withdraw-

[10] Even though, owing to an effect of size, a financial problem in Poland could contribute to the phenomena of contagion.

als. Not surprisingly, the Baltic States were the worst hit by the drop in foreign bank claims owing to their direct exposure to financing from foreign banks. This fall topped 30% in Estonia and Latvia, and 26% in Lithuania between June 2008 and December 2009. The sharpest drop then affected countries that are highly dependent on parent bank/subsidiary networks and whose claims were relatively highly concentrated on a few common creditors. For instance, Slovakia saw its foreign bank financing fall by 19%, the figure for the Czech Republic was 14%. These two countries clearly illustrate the advantage of apprehending financial risks, not only in terms of total outside exposure but also through the effects of contagion, which implies apprehending common creditors and the network effects. Finally, Poland, a country that is little exposed to financial risks, whether direct or indirect, is one of the least affected countries (-7%).

In addition, the ranking of countries that emerges from our work is also to be found in the ECB study (2010)[11] focusing on the consequences of the financial crisis for real activity (GDP decline, Q4 2008-Q3 2009). Poland comes out on top (+1,5%), the Baltic States are the worst affected (Estonia -13%; Latvia -16%; Lithuania -12%), while Bulgaria (-2,5%), the Czech Republic (-3%), Romania (-4,5%) and Hungary (-5%) are in an intermediary position even though there are differences between them.

4. Conclusion

In this article, we show that it is important to assess the risks associated with the entry of foreign banks in emerging countries, particularly in CEECs. This presence has an impact on capital flows, particularly banking foreign claims, but also on the structure of local funding. A risk assessment must take into account the structure of external and local financing (local *vs* foreign currency, foreign claims maturity, cross border claims *vs* local claims by the located subsidiaries). It must also address the dependence on one or very few creditors (concentration index), and evaluate systemic risk, through major banking groups and the subsidiaries' network. It was possible, before the crisis, to rank countries according to the risks posed by dependence on foreign lenders. We show that this classification is correlated with the magnitude of reversals of capital flows during the crisis. So, our study highlights firstly that it is important to precisely measure the different types of risks (direct and indirect) and secondly that such a synthetic indicator might be a useful early warning indicator of capital outflows and financial crisis.

The presence in a given country of subsidiaries belonging to a vast network may thus amplify the shock-waves during a crisis. However, it may also be one of the conditions for economic recovery: according to ECB (2010), the Czech Republic was the first country in this region to revert to economic growth over the 1st half of 2010. Moreover, foreign claims on CEECs, down sharply between Spring

[11] This study does not address the case of Slovenia or Slovakia.

2008 and Autumn 2009 owing to foreign banks being hit by problems of liquidity or capital, have gradually begun to grow again since the end of 2009. We notice a certain return-to-normal of the economic situation in CEECs and of the financial strain on major creditor banks. But the economic and financial risks we have described have not disappeared. The quieter context simply makes their presence less felt.

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Appendix

Table 6. The significance of the emerging debtor for creditors: creditor outstanding sums with an emerging country in % of creditor outstanding sums for emerging Europe*, September 2008

	Austria	**Belgium**	**France**	**Germany**	**Italy**	**Netherlands**	**Portugal**	**Spain**	**Sweden**	**Switzerland**	**UK**	**US**
Slovenia	3.63	1.90	1.93	**6.27**	3.46	0.55	0.30	0.38	0.005	0.35	0.98	0.48
Bulgaria	1.98	1.39	2.13	1.27	3.55	0.49	0.02	0.70	0.03	**11.26**	0.26	0.62
CZ	**21.93**	**36.57**	**20.32**	5.54	**6.87**	5.97	0.45	7.29	0.13	1.07	**10.47**	**6.35**
Estonia	0.09	0.08	0.07	0.45	0.19	0.01		0.18	**27.98**	0.063	0.10	0.052
Hungary	**13.26**	**13.02**	6.45	**15.92**	**12.25**	5.00	2.74	2.88	0.30	1.47	**7.48**	5.79
Latvia	0.19	0.01	0.20	2.27	0.59	0.007	0.074	0.28	**21.59**	0.07	0.44	0.12
Lithuania	0.094	0.05	0.25	1.54	0.27	0.10	0.30	0.07	**25.72**	0.12	0.07	0.03
Poland	6.01	**17.70**	**14.19**	**24.19**	**22.90**	**34.23**	**84.57**	**39.63**	7.69	**15.18**	0	**22.61**
Romania	**15.70**	0.87	**10.64**	1.86	6.05	**8.76**	2.57	1.62	0.14	**13.82**	0.51	2.43
Slovakia	**11.56**	**8.92**	3.74	1.72	**10.10**	4.34	0.13	0.48	0.51	0.11	3.63	2.99

Sources : BIS data, as calculated by the authors. *Consolidated banking Statistics on immediate borrower basis. Foreign claims* A+L

16 countries declare the position of their banks with regards emerging countries to the BIS. We have chosen not to include Australia, Canada, Ireland or Japan owing to their weak positions or the unavailability of data.

* Emerging Europe covers 20 countries: Albania, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Macedonia, Moldova, Montenegro, Poland, Romania, Russia, Serbia, Slovakia, Turkey and Ukraine, and residual

Table 7. The significance of the creditor for an emerging country: creditor outstanding sums with the country in % of foreign claims for all creditors on the emerging country - September 2008

%	**Austria**	**Belgium**	**France**	**Germany**	**Italy**	**Netherlands**	**Portugal**	**Spain**	**Sweden**	**Switzerland**	**UK**	**US**
Emerging Europe	*16.75*	8.25	9.35	*13.27*	*13.25*	7.37	1.05	0.67	6.43	3.53	0.03	3.23
Slovenia	**23.82**	6.13	**7.07**	**32.54**	**17.92**	1.60	0.12	0.101	0.01	0.49	0.01	0.61
Bulgaria	**12.82**	4.42	**7.69**	6.52	**18.18**	1.39	0.009	0.18	0.07	**15.38**	0.003	0.76
CZ	**31.78**	**26.09**	**16.44**	6.36	7.88	3.81	0.04	0.42	0.07	0.32	0.02	1.77
Estonia	0.70	0.30	0.30	2.71	1.14	0.03	0	0.06	**80.76**	0.10	0	0.08
Hungary	**23.74**	**11.48**	6.45	**22.58**	**17.35**	3.93	0.31	0.77	0.20	0.55	0.02	2
Latvia	1.28	0.04	0.75	**12.05**	3.13	0.02	0.03	0.08	**55.42**	0.10	0.01	0.16
Lithuania	0.60	0.17	0.91	7.907	1.39	0.30	0.12	0.02	**63.72**	0.17	0.001	0.04
Poland	5.52	**8**	**7.27**	**17.58**	**16.62**	**13.81**	**4.89**	**1.45**	2.71	2.94	0	**4**
Romania	**35.19**	0.96	**13.31**	3.31	**10.73**	**8.63**	0.36	0.14	0.12	**6.53**	0.002	1.05
Slovakia	**35.31**	**13.42**	6.38	4.18	**24.42**	5.83	0.02	0.06	0.60	0.07	0.02	1.76

Sources : BIS data, as calculated by the authors. *Consolidated banking Statistics on immediate borrower basis. Foreign claims* A+L

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