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Foreign Banks, Foreign Lending and Cross-Border Contagion: Evidence from the BIS Data

Adam Geršl

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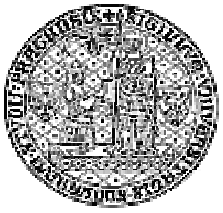

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Foreign Banks, Foreign Lending and Cross-Border Contagion: Evidence from the BIS Data

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Abstract:
The article discusses the role of foreign banks and foreign lending in the CEE countries from the financial stability perspective using the data on international banking business. The pattern of foreign banks' involvement is analyzed and the risk of cross-border contagion explored, focusing on three aspects: maturity of cross-border exposures, concentration of foreign creditors and the existence of common creditor.

Keywords: contagion; banks; financial stability; common creditor

JEL: F30; F34; G21

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1. Introduction

The strong inflow of capital in recent years has increased the integration of the Czech economy into international financial markets. Non-residents have a significant share in the equities of the financial and non-financial sectors thanks to past foreign direct investment. Moreover, they hold a range of other securities as portfolio investment, for example government and corporate bonds and shares traded on stock exchanges. As a result, prices of assets on the domestic financial markets often change in line with global market sentiment. In addition, a number of domestic entities take credit abroad, either via issuing international debt securities or taking a loan from internationally active bank. Similar level of financial integration can be seen in other new EU Member States and EU accession and candidate countries.

The dominance of foreign players on domestic territory may generate concerns about whether the domestic financial and real sectors are becoming too dependent on foreign factors. One of the traditional problems discussed in analyses of financial stability for strongly financially integrated markets is the risk of cross-border contagion. A shock which affects one country can generate turbulence on financial markets and spill over to other countries through existing links and financial exposures. The issue of cross-border contagion has often been mentioned as one of the triggers of the Asian financial crisis in the latter half of the 1990s. The Czech Republic experienced this phenomenon during the currency crisis in 1997 (Šmídková 1998).

In this short article, we focus on the role of foreign banks and foreign lending in the Czech Republic and other central and eastern European (CEE) countries and explore the scope for cross-border contagion via financial exposures. For the analysis, we use the data on international banking business from the Bank of International Settlements (BIS), a unique data source of cross-border financial linkages.

The article is organized as follows: section 2 contains a short review of literature related to foreign banks, capital flows and cross-border contagion. Section 3 presents main features of the database used for the analysis, while section 4 analyses foreign banks' involvement in the Czech Republic and other CEE countries. Section 5 discusses three main factors that can increase the risk of cross-border contagion: maturity of cross-border exposures, concentration of foreign creditors and the existence of common creditor. Section 6 concludes.

2. Short review of literature

At least since the crises in Asia, Russia and Brazil in late 1990s, there has been an increasing interest in research of cross-border contagion and spillovers that can spread financial crisis from one country to another (Claessen and Forbes 2001). There is no unique definition of

contagion: in Eichengreen et al. (1996), contagion is defined as a case where knowing that there is a crisis elsewhere increases the probability of crisis at home. Calvo and Reinhart (1996) distinguish between fundamentals-based contagion (also called spillover), which arises when the infected country is linked to other via trade or finance, and "pure" or "true" contagion, which arises when common shocks and all channels for potential interconnection are either not present or have been controlled for. The latter kind of contagion is usually related to the herding behavior of international investors.

There are two basic strands of empirical literature exploring the cross-border contagion. Some authors look at co-movement of asset prices and test whether a change in asset prices in country A has some effect on asset prices in country B, using a number of econometric techniques (Baig and Goldfajn 1999; Bae et al. 2003; Corsetti et al. 2002; Forbes and Rigobon 2002). Kumar and Persaud (2002) test for "pure" contagion, looking at changing investors' risk appetite as a trigger for contagion. Some literature on contagion looks also on CEE countries (Linne 1999; Darvas and Szapary 1999; Gelos and Sahay 2001).

The other strand of literature looks at existing financial and trade links, exploring the channels through which contagion could take place (Dornbush et al. 2000; Kruger 2000). Peek and Rosengren (1997) investigate how financial crisis in Japan in early 1990s had effect on lending by Japanese banks in the United States. Traditional debate has been also led in the realm whether trade or financial linkages are the main transmission channel for contagion (Kaminsky and Reinhart 2000; Van Rijckeghem and Weder 2001), concluding that financial linkages may be more important, mainly due to common bank lender effect. Some recent literature thus concentrates on the role of banking system and international banks in transmitting financial shocks across borders (Sbracia and Zaghini 2003), including the case of CEE countries (Weller and Morzuch 2000). Some literature in this strand uses the same data source as this article, namely the BIS statistics on international banking business (Van Rijckeghem and Weder 2001), other use for example the data from Coordinated Portfolio Investment Survey by IMF (De Alessi Gracio et al. 2005).

Next to empirical literature, there have also been studies providing some theoretical framework for possible contagion effects. Pericolli and Sbracia (2003) design a two-country model of portfolio allocation and asset pricing that provides a highly stylized account of how a crisis originating in one country can spread to the world economy. Other theoretical models can be found in Obstfeld and Rogoff (1996) or Corsetti (2000).

This article discusses also the role of foreign banks and foreign lending in CEE countries as a possible transmitter of shocks across borders. More in general, the role of foreign banks in CEE countries and emerging countries has been analyzed over the past years, including the positive effects and possible financial stability implications (Haas and Lelyveld 2003; Haas and Lelyveld 2002; Haas and Naaborg 2005; Weill 2003; Clarke et al. 2001a, 2001b; Clarke et al. 2002).

3. Data description

The analysis is based on the consolidated international banking statistics collected by the Bank for International Settlements (BIS). The data cover financial claims reported to BIS by domestic bank head offices in 27 major banking centers, including the exposures of their foreign affiliates, and are collected on a worldwide consolidated basis with inter-office positions being netted out.[1] The claims include deposits with and loans and advances to banks

[1] In addition to consolidated banking statistics, the BIS collects also data on locational banking statistics where inter-office positions are not netted out, see BIS (2003).

and non-banks, holdings of securities and participations. The main purpose of the statistics is to provide comprehensive data on banks' claims on other countries (BIS 2003).

The BIS consolidated statistics distinguishes between the residency of the immediate borrower and the residency of the ultimate obligor (McGuire and Wooldridge 2005). The ultimate obligor refers to a counterparty that is ultimately responsible for servicing the obligation in the event of default by the immediate borrower. As a result, there are two bases on which claims of reporting banks on other countries (so-called foreign claims) are reported: an immediate borrower basis and an ultimate risk basis.

Foreign claims on an immediate borrower basis consist of international claims and local claims of foreign affiliates. International claims include BIS reporting banks' cross-border claims in all currencies *plus* the local claims of their foreign affiliates in foreign (non-local) currencies. Local claims include local claims of foreign banks affiliates in local currency only. As a result, local claims on an immediate borrower basis understate the local activity of foreign banks' branches and subsidiaries.

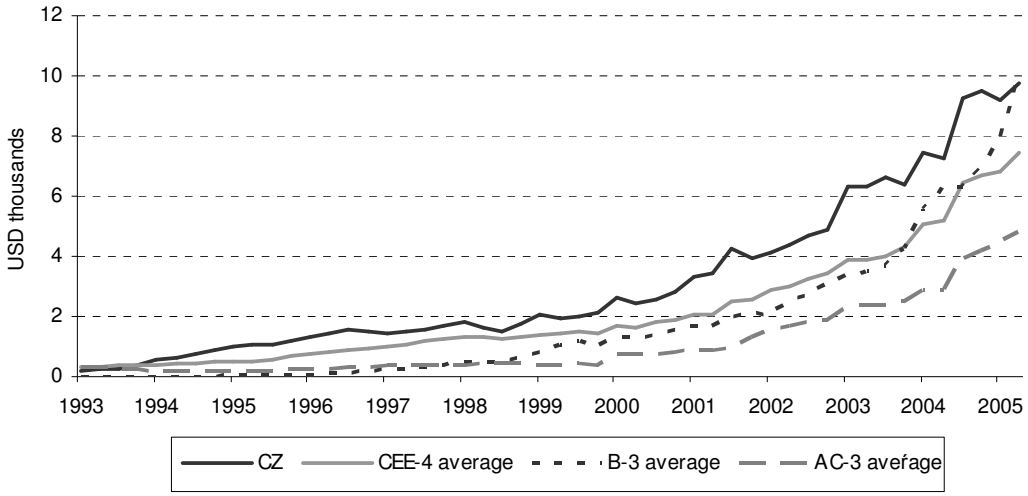
Foreign claims on an ultimate risk basis are broken down to cross-border claims and local claims. In this case, however, cross-border claims refer only to "real" cross-border claims, while local claims include all local activity of foreign banks affiliates, both in local and foreign currencies.

As the breakdown of foreign claims by country, maturity etc. differs between the data on both bases, in this article we use mainly the data on an immediate borrower basis, referring to the statistics on ultimate risk basis only in few cases.

4. Analysis of foreign banks' involvement

Foreign banks play a key role in providing finance to CEE countries. As Chart 1 indicates, the foreign banks' involvement, as measured by the amount of foreign claims per capita held by major international banks on these countries, has been rather low during 1990s, but increased heavily over the last couple of years.

Chart 1: Foreign claims held on CEE countries (per capita)



Source: BIS Consolidated International Banking Statistics, immediate borrower basis; Eurostat.
Note: CEE-4 countries denote Hungary, Slovakia, Poland and; B-3 stands for Estonia, Lithuania and Latvia; AC-3 refers to Bulgaria, Romania and Croatia

The Czech Republic stands out as one of the main debtors to internationally active banks, but the Baltic countries did catch up in the recent past (Estonia has the highest foreign claims per capita). Foreign claims on the south-eastern countries such as Bulgaria, Romania and Croatia picked up from relatively low values later than those on the other CEE countries.

In principle, there are two basic channels through which internationally active banks can provide credit to other countries: directly, i.e. via cross-border (international) lending, or indirectly, via entering the domestic market of a host country in the form of a subsidiary or a branch and providing credit locally. Table 1 shows the decomposition of foreign claims on CEE countries on an immediate borrower basis. As mentioned in section 3, the BIS data on an immediate borrower basis allows decomposing the foreign claims into international (cross-border) claims and local claims by foreign affiliates, with the caveat that local lending in foreign currency is classified as international rather than local claim. Thus, the figure for local claims clearly underestimates the importance of the local lending channel, while the statistics regarding the international claims overestimates the relevance of cross-border credit.

Table 1: Composition of foreign claims on an immediate borrower basis
(in USD billion)

	Total foreign claims		International claims		Local claims	
	1996	2005	1996	2005	1996	2005
Czech Republic	13.6	94.0	9.6	28.6	4.0	65.4
Hungary	12.9	79.6	11.7	53.5	1.2	26.1
Poland	11.2	123.2	7.6	62.8	3.6	60.5
Slovakia	2.7	40.0	2.5	13.6	0.3	26.4
Slovenia	2.0	17.5	2.0	15.0	0.0	2.5
Estonia	0.2	19.1	0.2	15.9	0.0	3.2
Lithuania	0.2	14.9	0.2	12.5	0.0	2.4
Latvia	0.1	12.5	0.1	10.9	0.0	1.6
Bulgaria	2.4	12.5	2.4	9.2	0.0	3.3
Romania	3.1	31.6	3.0	21.8	0.1	9.7
Croatia	1.5	45.9	1.5	27.8	0.0	18.2

Source: BIS Consolidated International Banking Statistics, immediate borrower basis.

In contrast to cross-border lending, local currency lending by foreign affiliates was very low or non-existent in mid-1990s in the CEE countries. Both components of foreign lending have increased markedly between 1996 and 2005, but the pattern slightly differs across countries. The Czech Republic has the highest amount of local claims in absolute terms out of the analyzed countries. However, this might be due to both high presence of local subsidiaries of foreign banks and the fact that most locally provided loans are denominated in domestic currency (CNB 2006). This contrasts with the practice in many other CEE countries where local lending in foreign currency is much more common (Backe and Zumer 2005; ECB 2006).

Table 2 shows both types of foreign banks' involvement in relative terms. The relevance of foreign lending, as measured by the ratio of foreign claims to GDP, is very high in Estonia and Croatia, followed by Slovakia, Latvia and the Czech Republic. The share of local claims in total foreign claims has risen substantially between 1996 and 2005 in all countries. The increase is the combined result of bank acquisitions, usually via privatization, green-field investments of foreign banks and the high credit growth the CEE countries have been experiencing over the last couple of years (Backe and Zumer 2005; Backe et al. 2006; ECB 2006). Obviously, given the definition of local claims in the BIS data on an immediate

borrower basis, the share of local lending in all foreign claims is underestimated given the high share of foreign-currency loans in many CEE countries.

Table 2: Foreign claims on an immediate borrower basis in relative terms

	Total foreign claims in % of GDP		Local claims by foreign banks in % of total foreign claims		Total foreign claims in % of total domestic credit		Local claims in % of total domestic credit	
	1996	2005	1996	2005	1996	2005	1996	2005
Czech Republic	22.2	75.8	29.1	69.6	32.8	178.1	9.5	123.9
Hungary	28.6	72.8	9.3	32.8	42.6	124.0	3.9	40.6
Poland	7.3	40.8	32.5	49.1	25.1	125.7	8.1	61.7
Slovakia	13.1	84.2	9.9	66.0	25.0	178.7	2.5	117.9
Slovenia	9.6	51.0	0.0	14.1	30.1	82.6	0.0	11.7
Estonia	3.9	138.9	0.0	16.7	19.1	214.6	0.0	35.8
Lithuania	3.0	58.1	0.0	16.0	25.9	144.3	0.0	23.0
Latvia	1.7	79.2	0.0	12.9	14.9	114.1	0.0	14.7
Bulgaria	24.8	46.8	0.6	26.5	62.2	113.4	0.4	30.1
Romania	8.8	32.5	2.4	30.9	39.3	179.8	0.9	55.5
Croatia	7.6	119.3	0.0	39.6	17.4	170.1	0.0	67.3

Source: BIS Consolidated International Banking Statistics, immediate borrower basis; IMF IFS.

Table 2 also indicates the relative importance of foreign credit in comparison with domestic credit. The combined local currency lending by foreign affiliates and international claims exceeded the total domestic credit (ratio higher than 100%) in all countries except Slovenia in 2005. In some countries, the ratio of foreign claims to domestic credit approaches (or even exceeds) 200%. Finally, local claims of foreign banks' subsidiaries and branches in local currency represent quite a large part of domestic credit. Especially two countries, where local loans are usually denominated in local currency, the Czech Republic and Slovakia, exhibit high share.[2]

The data on an ultimate risk basis better capture the structure of foreign claims, as here the local claims include all locally provided finance regardless of the currency of denomination. However, these data are available for CEE countries only since 2004, so the comparison over a longer period of time cannot be made. In addition, the total foreign claims on an ultimate risk basis differ from the total foreign claims on an immediate borrower basis, depending on whether the risk have been transferred elsewhere via credit risk transfer instruments or guarantees. Table 3 shows both the structure of foreign claims and their relevance in relative terms on an ultimate risk basis.

Table 3: Foreign claims on an ultimate risk basis

(in USD billion; end-2005)

	Total foreign claims	Cross-border claims	Local claims	Total foreign claims in	Local claims by foreign	Total foreign claims in	Local claims in % of total

[2] In principle, the ratio of local currency loans to domestic credit should be always lower than 100%. The figures for the Czech Republic and Slovakia, exceeding this limit, might be caused by different methodology of domestic credit data in the IMF statistics and foreign claims data in the BIS statistics.

				% of GDP	banks in % of total foreign claims	% of total domestic credit	domestic credit
Czech Republic	85.1	26.9	58.2	68.7	68.3	161.2	110.2
Hungary	72.5	36.1	36.4	66.4	50.3	113.0	56.8
Poland	103.6	32.5	71.1	34.3	68.6	105.7	72.5
Slovakia	33.9	7.8	26.1	71.5	77.0	151.8	116.9
Slovenia	14.9	12.1	2.8	43.4	18.8	70.4	13.3
Estonia	17.5	11.7	5.8	127.5	33.2	197.0	65.3
Lithuania	11.9	9.5	2.4	46.5	20.2	115.6	23.3
Latvia	10.8	5.8	5.0	68.1	46.2	98.2	45.3
Bulgaria	9.4	3.5	6.0	35.4	63.4	85.7	54.3
Romania	25.8	11.8	14.0	26.6	54.4	146.9	80.0
Croatia	38.0	16.7	21.3	98.7	55.9	140.6	78.7

Source: BIS Consolidated International Banking Statistics, ultimate risk basis.

Table 3 shows that total foreign claims on an ultimate risk basis are lower than on an immediate borrower basis. This would suggest that the risk of default of the debtor in the CEE countries is transferred via credit derivatives or guarantees to entities outside the CEE countries. For example, if a UK bank provides a loan to a subsidiary of a German auto manufacturer in the Czech Republic and the loan in guaranteed by the parent company in Germany, then on an immediate risk basis the loan would be reported as a claim on a borrower in the Czech Republic, but on an ultimate risk basis the loan would be reported as a claim on a borrower in Germany. Given the relatively high share of foreign ownership of corporate sector in CEE countries, the guarantee channel might be one of the main risk transfers channels in these countries.

The table also shows the relevance of local claims, now including both domestic and foreign currency credit. While in CEE-5 countries (except Slovenia) and AC-3 countries local claims of foreign affiliates make up the larger part of total foreign loans, in Baltic countries the cross-border claims represent the main part of foreign claims.

The increase in foreign claims in CEE countries has been mainly due to the entry of foreign banks into the domestic markets. Table 4 shows that while number of all banks rather declined over the last six years in the CEE countries, the number of foreign-owned banks increased. This reflects the on-going new entries of foreign entities into domestic banking sector and its subsequent consolidation.

While in the first half of 1990s foreign banks usually entered the central and eastern European banking markets via green-field investment, establishing a branch or subsidiary, towards the end of 1990s and especially over the last five years the most usual way of entry was acquisition of a local bank through privatization. Moreover, some of the green-field-based subsidiaries and branches of foreign banks later participated in state bank privatizations. As a result, the share of foreign ownership of banks increased considerably in CEE countries, reaching values around 80%-90% with the exception of Slovenia and partly Latvia.[3]

[3] The lower share of foreign-owned banks in Romania as of 2005 does not yet reflect the early 2006 privatization of the biggest Romanian bank Banca Comerciala Romana to the Austrian Erste Bank that will increase the share of foreign-owned banks to around 80%.

Table 4 also illustrates that the increase in foreign ownership over the last five years was indeed due to privatization, as it corresponds with the decrease in the share of state-owned banks.

Table 4: Foreign ownership of banks

	No of banks (of which foreign-owned)		Asset share of foreign-owned banks (in %)		Asset share of state-owned banks (in %)		Non-performing loans (in % of total loans)	
	1999	2005	1999	2005	1999	2005	1999	2005
Czech Republic	42 (27)	36 (27)	38.4	84.4	41.2	2.5	43.4	4
Hungary	43 (29)	38 (27)	61.5	82.6	7.8	7	4.4	3.1
Poland	77 (39)	61 (50)	49.3	74.2	24.9	21.5	14.9	12.9
Slovakia	23 (10)	21 (16)	24.1	97.3	50.7	1.1	32.9	5.5
Slovenia	31 (5)	25 (9)	4.9	22.6	42.2	12	9.3	6.4
Estonia	7 (3)	13 (10)	89.8	99.4	7.9	0	2.9	0.2
Lithuania	13 (4)	12 (6)	37.1	91.7	41.9	0	11.9	0.7
Latvia	23 (12)	23 (10)	74	57.9	2.6	4.3	6.8	0.7
Bulgaria	34 (22)	34 (23)	42.8	74.5	50.5	1.7	17.5	3.8
Romania	34 (19)	33 (24)	43.6	59.2	50.3	6.5	35.4	6.1
Croatia	53 (13)	34 (13)	40.3	91.2	39.8	3.4	20.6	7.2

Source: EBRD Transition Report 2006.

Both academic literature and practical experience have shown that foreign banks' involvement in transition countries, especially via entering local market, has brought significant benefits in terms of increased competition in the banking sector, better access of corporations and households to external finance, risk management, efficiency, corporate governance, and overall stability of the sector (Clarke et al. 2001a; Haas and Lelyveld 2002; Weill 2003). Banks with international owner may supply credit to the economy in a more stable way given the typically high capitalization of foreign banks and access to liquidity from the parent office.

The increase of foreign ownership of banks was also associated with a decrease in the share of non-performing loans in banks' portfolios (see Table 4). However, the causality link is not clear and the apparent co-movement is probably a joint product of three factors: first, the crisis that most analyzed countries underwent in late 1990s brought the increase in share of non-performing loans, and at the same time might have triggered the decision of policymakers to privatize domestic banks to strong foreign owners. Second, in order to attract foreign capital, government usually cleaned up the balance sheets of the state-owned banks before their privatization, moving the bad loans out of the banking sector. Finally, better risk management und prudent behavior of foreign-owned banks may have prevented accumulation of non-performing loans to which state-owned banks might be more prone, especially in an environment of strengthened banking supervision.

5. Financial stability challenges

Next to the above mentioned benefits, there are also several less clear-cut financial stability implications of foreign bank penetration in CEE countries. The repatriation of local banks' profit to the countries of owners may put pressure on current account. Foreign-owned banks

may prefer to provide local loans in foreign currency, especially in the currency of the home country if they refinance themselves in the home market via the parent bank. This could increase the vulnerability of borrowers to exchange rate movements and transmit back to banks via increased credit risk. Additional sources of risk may stem from the transfer of decision making and risk management to the foreign headquarters and unifying the rules within the whole banking group, which does not take into account the local interest and may lead to worse access to finance from local small and medium enterprises (Clarke et al. 2001b; ECB 2006).

However, one of the main financial stability implications of foreign bank presence and foreign lending is the risk of cross-border contagion. Using the BIS data on international bank lending, we discuss more in detail three aspects of cross-border contagion: maturity of cross-border exposures, concentration of foreign creditors and the existence of common creditor.

The risk of cross-border contagion increases in particular if the cross-border exposures of global agents have very short maturity and investors can thus liquidate them virtually instantly. Table 5 shows the maturity breakdown of international claims on CEE countries. The Czech Republic, together with Romania, Slovakia and Croatia, has relatively large share of short-term international claims from foreign banks, when compared to other CEE countries. Nevertheless, the share of long-term claims is higher. As regards the claims unallocated by maturity, i.e. mainly holdings of equities, the Czech Republic stands somewhere in the middle of CEE countries. To the extent that holdings of shares represent portfolio investments rather than strategic or foreign direct investments, the risk of sudden outflow of capital might be higher.

Table 5: International claims by maturity

(in % of all international claims; end-2005)

	Up to and incl. 1Y	Over 1Y and up to 2Y	Over 2Y	Unallocated by maturity
Czech Republic	37.7	3.8	41.6	16.9
Hungary	27.1	4.4	48.6	19.9
Poland	25.5	3.9	52.8	17.9
Slovakia	41.4	4.2	33.7	20.7
Slovenia	33.7	4.8	54.2	7.3
Estonia	29.5	7.6	44.2	18.7
Lithuania	30.0	15.1	44.2	10.7
Latvia	36.1	11.6	45.9	6.4
Bulgaria	36.8	6.3	49.0	7.9
Romania	47.4	5.1	41.2	6.4
Croatia	38.5	7.1	46.9	7.5

Source: BIS Consolidated International Banking Statistics, immediate borrower basis.

The second factor affecting the risk of cross-border contagion is concentration of foreign claims. For example, if foreign claims are concentrated with one large creditor and that creditor is hit by a shock which forces it to liquidate its foreign investments, the impact on the debtor country will be certainly greater than if the domestic economy uses foreign capital from several countries. Table 6 shows foreign claims by country of origin. Interestingly, the main creditors differ across different groups of countries. In CEE-5, Austria and Germany are

the most important claim holders, while in Baltic countries it is Sweden and Finland. In AC-3 countries, next to Austria, Greece is also worth mentioning.[4]

The table shows that foreign claims are relatively concentrated in the case of the Czech Republic (the three most important creditor countries hold around 73% of all foreign reported claims) compared to other CEE countries. However, the by far most concentrated foreign claims can be found in Baltic countries. In Estonia, for example, the foreign claims coming from Sweden account for almost 80% of all foreign claims, suggesting that the sensitivity of Estonian financial sector to economic conditions in Sweden might be relatively high.

Table 6: Foreign bank claims by geographic origin

(end-2005; claims by banks from selected countries in % of total foreign claims)

	AT	BE	DE	FI	FR	GR	JP	NL	SE	US	Top-3
Czech Republic	28.4	26.2	6.7	0.0	18.6	0.0	0.5	3.4	0.0	2.7	73.2
Hungary	23.9	12.8	25.6	0.0	4.1	0.0	1.4	4.7	0.2	2.6	62.3
Poland	7.4	6.7	16.7	0.1	2.9	0.0	2.5	10.6	1.9	5.9	34.8
Slovakia	42.0	9.3	4.9	0.0	2.2	0.0	0.2	8.2	0.1	3.1	59.5
Slovenia	39.8	7.2	21.3	0.0	8.9	0.1	1.7	1.1	0.1	0.2	70.0
Estonia	1.5	0.6	5.3	12.0	0.1	0.0	0.1	0.0	78.2	0.2	95.5
Lithuania	2.4	0.4	9.5	14.2	0.4	0.0	0.0	0.0	56.7	0.4	80.4
Latvia	2.6	0.2	10.3	10.4	0.1	0.1	0.2	0.2	58.2	0.1	78.9
Bulgaria	16.0	0.8	7.3	0.0	4.4	18.7	0.4	2.1	0.0	2.5	42.1
Romania	19.6	0.2	5.5	0.0	16.4	11.5	0.5	12.0	0.2	3.5	48.1
Croatia	41.7	0.4	7.3	0.0	1.2	0.3	0.9	0.4	0.0	0.5	50.2

Source: BIS Consolidated International Banking Statistics, immediate borrower basis.

The third factor which co-determines the degree of risk of cross-border contagion is the degree of similarity of the creditor structures of individual debtor countries. For example, if a debtor country was hit by a large shock and all the creditors of that country were affected, it is possible that they would also withdraw their exposures from other countries where they have their claims (Kaminsky and Reinhart 2000; Peek and Rosengren 2000; Sbarcia and Zaghini 2001). If the creditor structure of another country was completely identical to that of the country affected by the primary shock, this other country would also probably be hit by an investment outflow to the same extent.

To capture the degree of similarity of creditor structure, we calculated common creditor indices (Van Rijckeghem and Weder 2001; De Alessi Gracio et al. 2005). The index I measures the similarity in patterns of creditors between any two countries and is bounded between 0 and 1 (1 indicates the same composition of creditors, while 0 indicates no common creditor). For computing the index I, following formula was used:

$$I = \sum_c \frac{(v_{xc} + v_{yc})}{(v_x + v_y)} \left[1 - \frac{\left| \left(\frac{v_{xc}}{v_x}\right) - \left(\frac{v_{yc}}{v_y}\right) \right|}{\left(\frac{v_{xc}}{v_x}\right) + \left(\frac{v_{yc}}{v_y}\right)} \right]$$

[4] Unfortunately, the BIS data on an immediate borrower basis do not include claims by Italian banks, which are very active in the region.

where v_{xc} denotes the common creditor country's foreign claims on the CEE country x, v_{yc} denotes the common creditor country's foreign claims on the CEE country y, v_x denotes total foreign claims on the CEE country x, and v_y denotes total foreign claims on the CEE country y. Intuitively, index I is made up of two terms. The first term equals the common creditor's share of total foreign claims on the two CEE countries. The second term weights the first term - a higher weight reflects greater similarity between the shares of total foreign claims held by the common creditor. Summing is done across the 10 common creditor countries given in Table 6.

Table 7: Common Creditor Indices

(end-2005; using country structure of foreign claims on an immediate borrower basis)

CZ	1.00										
HU	0.67	1.00									
PL	0.44	0.67	1.00								
SK	0.62	0.70	0.64	1.00							
SI	0.64	0.78	0.56	0.76	1.00						
EE	0.12	0.14	0.15	0.10	0.10	1.00					
LT	0.24	0.36	0.39	0.27	0.29	0.79	1.00				
LV	0.23	0.38	0.40	0.28	0.32	0.79	0.95	1.00			
BG	0.48	0.60	0.62	0.62	0.51	0.09	0.26	0.28	1.00		
RO	0.61	0.61	0.56	0.62	0.54	0.10	0.26	0.28	0.71	1.00	
HR	0.47	0.56	0.55	0.80	0.71	0.11	0.31	0.33	0.67	0.53	1.00
	CZ	**HU**	**PL**	**SK**	**SI**	**EE**	**LT**	**LV**	**BG**	**RO**	**HR**

Source: BIS Consolidated International Banking Statistics, immediate borrower basis.

Table 7 indicates that some CEE countries indeed share to some extent common creditors with each other. The Czech Republic's creditor structure is broadly similar to that of Slovenia, Slovakia, Hungary, and also Romania, but less similar to that of Poland and other CEE countries. This reflects the results of the expansion strategy of several (mainly EU-based) banking groups which acquired significant shares in domestic banking sectors in a number of central and eastern European countries. Interestingly, two main groups of countries linked with common creditors are emerging: CEE-5 and AC-3 countries on the one hand, and Baltic countries on the other hand. As discussed above, this is due to significant role of foreign banks from Austria, France, Germany, Italy and Belgium in the CEE-5 and AC-3 countries as compared to the role of Scandinavian banks in Baltic countries.

However, the picture may be distorted by the inclusion of the claims of subsidiaries of reporting banks, including loans with longer maturities, which probably could not be instantly liquidated in the event of cross-border contagion. Moreover, the common creditor effect to materialize and to present a risk to financial stability would require two additional conditions to be fulfilled: first, the common creditor bank would have to be rather weak, and second, the adverse shock would have to be rather large. These conditions are rather hard to be fulfilled. Foreign banks active in the CEE countries are usually ones of the largest banks from advanced EU countries and the relevance of CEE claims in their portfolios is rather limited.[5] The vulnerability of the financial sector in many CEE countries is also limited by sufficiently sound macroeconomic policies. Thus, so far the risk of cross-border contagion seems to be contained.

[5] However, there is some opposite evidence for Austrian banks where claims on CEE countries represent a relatively large share of both total assets and income (Breyer 2004).

6. Conclusions

In this article, the role of foreign banks and foreign lending in the Czech Republic and other CEE countries was analyzed from the financial stability perspective. Increased integration of CEE countries into international financial markets, both via borrowing abroad and entry of foreign banks into local markets, might increase the risk of cross-border contagion.

Using the BIS data on international banking business, we analyzed the pattern of foreign bank's involvement and concentrated on three aspects related to the risk of cross-border contagion: maturity of cross-border exposures, concentration of foreign creditors and the existence of common creditor. The analysis suggests that the integration of CEE countries into international financial markets and the high share of foreign ownership and capital flows into these countries may create channels for the transmission of foreign shocks and foster greater susceptibility to the risk of cross-border contagion. The analysis concentrated on the "fundamental-based" contagion, i.e. caused by the existence of financial cross-border linkages, but in principle high openness of financial sectors in the CEE countries may create preconditions for any kind of contagion.

Nevertheless, any contagion through the cross-border claims channel would have to be generated by a large shock in the source country with a major impact on creditor countries. Given the heavy involvement of advanced economies as creditors of CEE countries and the relatively small share of claims on CEE countries in the creditors' total portfolios, the risk of cross-border contagion can be assessed as relatively limited.

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