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Foreign banks and the stability of foreign and domestic credit in CEECs

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ABSTRACT

The huge presence of foreign banks in CEECs leads to a strong dependence to banking foreign claims. They may be cross-border claims or claims of foreign subsidiaries located in the host country. Are foreign banks a factor that attracts foreign claims in the host country? Does their presence stabilize banking foreign flows and *in fine* the domestic credit supply? Using a *Push&Pull* framework, we adopt a macroeconomic point of view by using balance of payments data concerning banking foreign financing on all sectors in CEECs. Tests with panel data show that the presence of foreign banks is a substitute for banking foreign loans and is not a factor of their stability. Nevertheless, it has a stabilizing role on the domestic credit.

Classification JEL: F23, F32, F36, G01, G21

INTRODUCTION

Over the past decade, the banking system in Central and East European Countries (CEECs) has been dominated by foreign banks. Since the end of the 1990s, governments have set up privatisation programmes in a context marked by the presence of very few domestic banks, where few local investors could afford to buy, leaving the door wide open to foreign investors. Today, on average, foreign banks own three-quarters of CEEC bank assets (as opposed to 19% for the Euro zone and 23.8% for the European Union). This share (Table 1, Appendices) even exceeds 80% in Bulgaria, Lithuania and Romania and is over 90% in the Czech Republic, Estonia and Slovakia. Slovenia is the exception, where the share was just 28.5% in 2007, as the authorities have given preference to the creation of two powerful public-owned banks. In CEECs, this marked presence of foreign banks stands alongside a significant dependence on external financing. In 2009, the total amount of foreign banking loans (or foreign claims to use BIS terminology) represented at least 70% of CEEC GDP, thereby engendering the risk of a sudden withdrawal of capital (Table 2, Appendices). This involves either external and cross-border financing (cross-border claims) from the parent bank to the borrowing country, or loans made by local subsidiaries (local claims) via, possibly, financial support from the parent bank.

Further to the demise of Lehman Brothers, emerging countries suffered from significant outflows of funds between Autumn 2008 and Spring 2009. All geographic areas were affected by these “sudden stop” phenomena, but the focus was very much on emerging countries in Europe (Berthaud & Colliac [2010]). On average, the flows of foreign bank financing fell by 13% over the area between June 2008 and December 2009 (BIS data), with very sharp falls in the Baltic States (around -30%), also in Slovakia and, to a lesser extent in the Czech Republic (-15%) and Slovenia (-13%). The crisis that shook major international banks between 2007 and 2009 has raised the question of the potential destabilising role of parent banks for the host country in a situation of financial stress. Is the presence of foreign banks in CEECs an attractive factor for outside financing? Is it a factor of stability or instability for this financing? What are the consequences on the stability of the domestic credit? In the first section, we have expounded empirical considerations as to the decisive factors behind foreign bankrolling and their stabilising or destabilising effect on the host country; we have then analysed more precisely and from an econometric viewpoint the stability of foreign bank financing in CEECs and the decisive factors therein, and that of domestic credit. To this end and contrary to

traditional literature concerning the role of foreign banks in emerging countries, we have adopted a macroeconomic viewpoint using balance of payments data on loans from foreign banks.

BACKGROUND

The study of the impact of the presence of foreign banks on the amount and the stability of foreign bank financing and domestic credit lies at a crossroads between two trends in current literature.

Foreign banks and the stability of financing

Empirical literature as to the role of foreign banks in emerging countries and more particularly in CEECs has, as a general rule, adopted a microeconomic stance to underline the differences in behaviour between banks with foreign ownership and local banks. Studies have shown primarily that foreign located banks are more efficient than national banks, and that compared with national banks their business is less influenced by the economic conditions of the host country (Haselman [2006]). Moreover, by adopting long-term strategies in their foreign operations, via the subsidiaries, they stabilise bank credit for economies in times of crisis (Haselman [2006]; de Haas & Van Lelyveld [2006], [2010]; Arena & al. [2007]). Haselman (2006) compares the determinants of credit supply of foreign banks and domestic banks in 12 transition economies. He shows that the activity of foreign banks is influenced by economic conditions in the host country, but more weakly than in the case of domestic banks. He concludes that, because they rely less on domestic conditions than local banks, foreign banks would maintain their supply of credit in times of crisis (when the local banks would reduce it), and help to stabilize the domestic credit market. De Haas and Van Lelyveld (2006, 2010) lead to the same conclusion by introducing a dummy of a banking crisis in credit supply equation. While this variable is not significant in the regressions for foreign banks, it is significant and negative for local banks. They conclude that during periods of crisis, domestic banks contracted their credit supply, which was not the case of foreign banks, who thus had a stabilizing effect.This stabilising effect might be explained by the existence of an internal capital market with banking groups, which enables parent banks to maintain their subsidiaries' credit supply (de Haas & Van Lelyveld [2006],

[2010]; Dinger [2009]). The parent banks operate as a last-resort lender in the event of recession in the host country or of internal problems with the subsidiary.

Nevertheless, the empirical literature is not completely convincing. If Haselman [2006] finds that the foreign banks react less to the economic situation of the host country than the domestic banks, de Haas and Van Lelyveld [2006, 2010] found the opposite result. The index of crisis used by them in their demonstration is also problematic. Indeed, this index takes the value 1 (existence of a systemic banking crisis) at periods when the share of the foreign banks was relatively weak (12% on average on the whole of their sample). Apart from privatization transactions, it is often following the crisis of the domestic banking systems, in the 90s, that the share of foreign banks has increased during period of restructuring. It is thus logical that the index of crisis is significant for domestic banks but not for foreign banks[1]. In addition, we can also suppose that foreign banks resist the crisis better, not because they use the financial support of their parent bank, but simply because they are better managed or less fragile (less non performing loans in asset portfolios). This assumption is confirmed by the result of Haas and Van Lelyveld [2006, 2010] according to which only the greenfield foreign banks (completely created, compared to the take-over ones, acquired) follow their strategies of credit supply even if a shock affects the host country: contrary to the take-over banks, they did not inherit non performing loans.

Then, the studies conclude the stabilizing role of the foreign banks in the CEECs because it is implicitly supposed that emerging countries or countries in transition, and their banking systems, are more unstable and fragile than the parent banks and the home countries. However, in all the estimations of the above-mentioned studies, the supply of domestic credit in the CEECs depends significantly on the financial health of the parent banks (indicator of profitability, or ratio of provisions): so, foreign banks may have a destabilizing role on the domestic credit and the host country.

So, the stabilising character of the presence of foreign banks on domestic credit supply via the parent/subsidiary link remains open to question. There are risks inherent with the parent bank/ subsidiary relationship (McGuire & Tarachev [2008]), for instance a parent bank in trouble may restrict its financial support to subsidiaries. It may also

[1] Moreover, the non significativity of a crisis dummy variable in the equation of foreign banks supply of credit, does not suggest that foreign banks have not contracted their credit supply during crisis and therefore have a stabilizing role.

arbitrate between subsidiaries and modulate its financial support according to the state of the host country and to expected yields (substitution effect), and not merely produce a support effect for the most fragile of its subsidiaries (de Haas & Van Lelyveld [2006] and [2010]). So belonging to a large network of subsidiaries may have a destabilising effect for a subsidiary and for the host economy.

Finally, there is no empirical evidence in these studies of the existence of financial support from the parent to the subsidiary, which might explain the stability of the global supply of bank credit to the economy in times of crisis, as this data is not available. It is simply supposed. To our knowledge, this support has not been measured through foreign bank loans received by a given country. To see if the presence of foreign banks in a country leads to greater stability of this financing and the domestic credit supply, we need first and foremost to ascertain whether or not it is a factor of capital inflows. This latter query leads us to consider another field of literature.

Determinants of capital inflows: the push/pull factors

Since the pioneering articles from Calvo & al. [1993] and Fernandez-Arias [1996], the decisive factors for inflows of capital[2] to emerging economies have been listed under two categories. The push factors are factors outside the emerging country, i.e. rather unfavourable conditions for investment in industrialised countries, which push flows in an emerging country, whereas pull factors, are inside and specific to the emerging country, i.e. positive fundamentals which pull capital into a country[3]. Following on from Calvo & *al.* [1993], who studied the role of traditional push factors (interest rates and economic growth in developed countries) during the debt crisis of 1982, empirical studies have evaluated the respective role of each category of factor and delivered different results according to the emerging region. In particular, Jeanneau & Micu [2002], in a *Push&Pull* framework, have shown the significant role of pull factors in

[2] In general in these studies, the data used is portfolio inflows (Fernandez-Arias, [1996] ; Chuhan & *al*., [1998]).

[3] See Brana, Lahet [2010a] for a survey.

Asia, and of push factors in Latin America[4] over the period between 1985 and 2000 as determinants for international bank claims[5].

After the Asian crisis of 1997, literature focused on the study of contagion: transmission channels for shocks and swings in sentiment from foreign investors (Forbes & Rigobon [2002]; Masson [1999]). Thus, alongside the traditional *Push&Pull* variables, variables related to aversion to risk (such as the high yield spread or the US swap spread) appeared significant to explain the capital flows to emerging countries (Jeanneau & Micu [2002]).

In the end, few articles have tested banking variables as determinants for movements in capital flows, particularly foreign bank loans. McGuire & Tarashev [2008], over the period between 1990 and 2007 and relating to determinants for international bank claims, introduced the criterion of quality of banks from lending countries[6] alongside traditional macroeconomic factors, plus an indicator for the openness of host countries towards foreign banks without using any particular analysis frame or any variables for the soundness of host country banks. Hermann & Mihaljek [2010], focusing on cross-border claims[7] between 1993 and 2008 in the frame of a gravity model, have shown that in addition to distance, to traditional variables relating to global and specific factors and to risk aversion indicators, the soundness of banks in the lending country is a factor that explains the granting of loans to an emerging country, whereas the soundness of local banks is a pull factor[8]. According to the authors, the attractive nature of the soundness of local banks in CEECs apparently stems from the implantation of foreign banks, even though no specific variable was used to measure this idea[9].

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[4] The authors show the positive impact of the growth posted by the lending country, or the country's excessive liquidity, thereby marking a difference with traditional literature, particularly Calvo & al. [1993].

[5] Based on the BIS data base, *Consolidated Banking Statistics*. Loans between parent bank and subsidiaries are compensated.

[6] Evaluated by the banking sector's stock market index, the expected frequency of default in the banking system and the volatility of assets. For the latter two variables, indicators from Moddy's.

[7] Based on the BIS data base, *Locational Banking Statistics*. Loans between parent banks and subsidiaries are included but the authors say nothing about them. It corresponds in fact to received cross-border claims included in the "Other investment" category of the balance of payments.

[8] The soundness of banks is measured by the gap between the banking sector's stock market index and the reference stock market index, which furthermore is open to criticism from the authors. A rising index implicitly reflects inflows of foreign capital.

[9] Simply a correlation of 0.7 between the soundness indicator used for the banking system and the share of local banks with foreign ownership.

Consequently, to study the role of foreign banks in the host country plus the attraction and stabilisation of foreign bank financing, it would be wise, in a *Push&Pull* framework, to include the soundness of lending country banks and that of host country banks, together with a variable that accurately measures the presence of foreign banks in the local banking system as a *pull* factor, something that has not really been achieved to date in published literature. We have adopted a macroeconomic stance and used balance of payments data to address the evolution of foreign bank financing granted to CEECs and the determinants thereof. Thus, like Haas et al. [2006] and Haselman [2006], for whom the stable behaviour of foreign banks emerges through the refusal to tighten their credit supply (in times of crisis in the host country), we will study the variation in foreign bank loans and their standard deviation using the method developed by Garcia Herrero & al. [2007][10], to appraise the volatility / stability of foreign bank financing received by CEECs.

FINANCIAL FLOWS AND FINANCIAL INSTABILITY: THE IMPACT OF FOREIGN SUBSIDIARIES

In CEECs as at December 2009, financing from foreign banks (or foreign claims to use BIS terminology), was taking the form of cross-border claims (60%) and local claims (40%) granted by foreign banks located in the host country. However, only 40% of these foreign claims are in local currency (local in local), as opposed to 60% in foreign currency (international claims).

A Principal Component Analysis (PCA) casts light on the link between the amount and the type of foreign claim (local or cross-border, in foreign or local currency), their volatility and the presence of foreign banks set up in CEECs (Graph 1). First of all, the presence of foreign banks (*foreign bank* variable) is correlated to the granting of local claims by the subsidiaries (to the detriment of *cross-border claims*). It is also correlated to the granting of claims in local currency, a factor translating to a high proportion of domestic credit itself granted in local currency (left of the graph). Inversely, countries with more cross-border claims (without the presence of foreign banks) have more foreign claims denominated in foreign currency (*International claims*), a fact which ultimately helps to explain the "dollarization" of claims held by

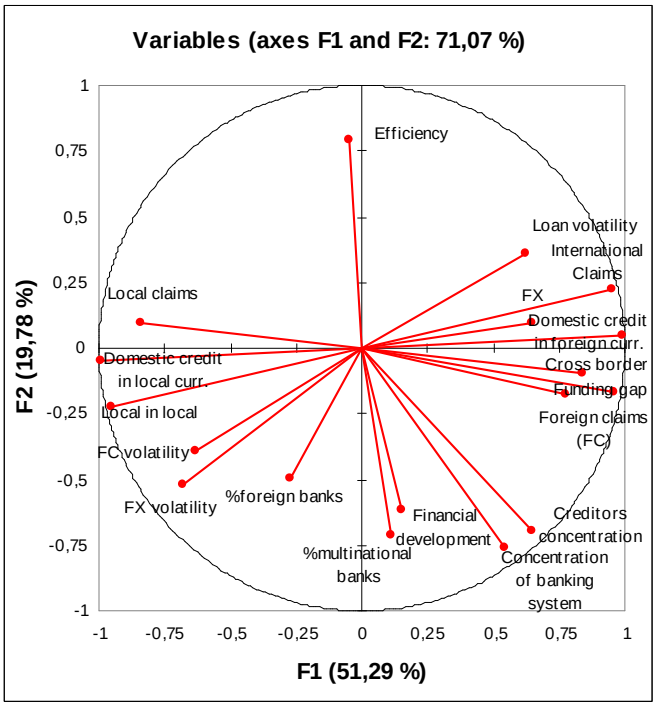
[10] Calculation of the average standard deviation to analyse the stability of claims granted by Italian, Spanish and American banks in a hundred countries.

resident non-financial agents (right of the graph). Additionally, these countries have a high credit ratio on deposits, translating to a funding gap that can become a serious issue in the event of sudden withdrawals of capital flows.

The presence of foreign banks in CEECs is associated with the financial development of these countries (measured by the share of banking system assets in GDP) and with a certain degree of banking efficiency. Indeed, this "efficiency", measured by the ratio 'number of employees/banking asset' is inversely correlated to the share of foreign banks and the importance of multinational (parent) banks (vertical axis).

However, the presence of foreign banks does not seem to be a pull factor. It would even appear that local banking market development via the located subsidiaries might be a substitute for foreign bank financing and precisely cross-border claims. Neither the share of external financing over GDP (*FX* variable) nor the share of foreign bank loans over GDP (*Foreign claims* variable or *FC*) is correlated to the percentage of foreign banks located in the country.

Graph 1. Principal Component Analysis (PCA) (average 2000-2008)



with: - *Foreign Claims* (FC) : foreign bank claims (% GDP).
- *FX*: total external financing (Direct investment, portfolio investment, and other investment, balance of payments statistics), % GDP.
- *Cross Border, Local claims, Local in Local, International claims*: % total foreign claims.
- *Domestic credit in local currency, Domestic credit in foreign currency*: % of total domestic credit.
- Foreign banks: Share of foreign banks (% of assets in the banking system).
- *Concentration of* (external) *creditors, concentration of banking system* (in the host country): Herfindahl index.
- % *Multinational banks*: asset of the 20 biggest host country banks that are owned by the 20 largest multinational parent banks (European banks).
- *FC volatility*: average standard deviation of foreign bank loans (Balance-of-Payment data)
- *FX volatility*: average standard deviation of total external financing.
- *Loan volatility*: average standard deviation of domestic credit.
- *Financial development*: financial development indicator measured by total asset of the banking system /GDP, %.
- *Efficiency*: number of employees in the banking system/banking asset.
- *Funding gap*: domestic credit/banking deposit.
Authors calculation with data from ECB, Bankscope, BIS and Datastream.

According to the hypothesis put forward by de Haas & Lelyveld [2010] and Dinger [2009], CEECs appear to have an internal banking group capital market that involves flows between parent banks and subsidiaries. We should therefore note a positive link between the presence of foreign banks (or the percentage of parent banks operating in CEECs) and foreign bank flows. Yet the PCA does not seem to indicate the existence of such a link.

Lastly, we note that the presence of foreign banks is no guarantee as to greater stability for external financing. There seems to be a link between the instability of

capital inflows (measured by the average standard deviation) as sole foreign banking loans (*FC volatility* variable) and the percentage of banking assets in the hands of foreign players. However, this instability of external financing does not lead to volatility with regards domestic credit (*Loan Volatility* variable), with the two variables being at opposite ends of the PCA horizontal axis. This might corroborate the hypothesis of a stabilising role from inter-bank claims and parent bank/ subsidiaries relations.

Our econometric analysis is carried out in two steps. In the first step, tests make it possible to specify the determinants of foreign banks financing and the stability of it. A second step allows us to conclude on the role of foreign banks on the stability of the credit supply of the CEECs' banking system.

As a starting point, the supply of foreign bank loans is traditionally associated with *push* and with *pull* factors (Haselmann [2006]. The estimated equation for the determinants governing foreign bank loans takes the following form:

$$K = c + X\alpha + Y\beta + u \qquad (1)$$

where K represents the net flows of foreign bank loans (balance of payments data), X is a vector of *pull* (or domestic) factors and Y a vector of *push* (or external) factors.

We chose to use balance of payments statistics instead of BIS banking statistics on loans from foreign banks for several reasons. K corresponds to the "other investment-banks" category of the financial account of the balance of payments, on a net flow basis, and covers all creditors' countries. Conversely, BIS statistics measure the gross international claims of only BIS reporting banks (27 major banking centers) vis-à-vis individual countries. Moreover, these data include the exposures of their affiliates and are collected on a consolidated basis, so inter-office positions are netted out. When it comes down to it, balance of payments statistics allow for better matching the foreign banks behaviour on longer time series.

Pull factors are represented by the fundamentals of the host country. They are approximated by the sovereign rating that we build using the numerical values of the Standard & Poor's and Moody's[11] indices and working out the average. The advantage of this variable is that it is a good synthetic indicator of a country's fundamentals and that it is closely monitored by international investors in their investment strategies (*Rating* variable). We have also taken on board the GDP growth rate in each country

[11] Long-term ratings in foreign currency.

(*host country growth*). We have also sought to ascertain whether more institutional variables have had an impact on inflows of bank loans. To do so, we have used the transition indicators of the EBRD, which gauge the progress of transition towards a market economy[12]. We have calculated a mean indicator for the whole economy (Variable *Score*), and have used the indicator pertaining more specifically to the banking sector (*Bank Score*). Lastly, we have introduced a dummy variable, using the value 1 as from a country's date of joining the European Union, and 0 before that date (*EU Integration*).

Inflows of capital may also be explained by *push* factors. These include the economic and financial situation of the home countries. As over 90% of the foreign bank capital invested in East European countries comes from Europe, we have introduced a variable representing Euro zone growth (*Euro zone growth*). We have also introduced a variable representing the yield differential between the two zones (East European countries *i* and the Euro zone), based on the 3-month rates of Treasury bonds (*Spread* variable). *Push* factors also include variables relating to financial stress and appetite for risk. These variables, determined on international markets, may explain pure contagion effects and explain inflows and outflows of capital. We have therefore introduced (Dailami & al. [2008]; Coudert & al. [2008]), general monetary conditions (M3 growth rate in the Euro zone, the M3 excess liquidity/GDP ratio for all OECD countries), default risk indicators (Ted Spread, High Yield Spread, for the United States and Europe) and volatility risk indicators (VIX).

In order to test the impact of the presence of foreign banks operating locally, we have added a foreign banks variable to pull factors, to measure the share of the host country's banking assets that are held by foreign banks. We have also introduced the state of health of banks in the lending country (*push* factor) and that of banks in the borrowing country (*pull* factor). To this end, we have used Bankscope data for the banking systems in the 9 home countries from where the major banking groups operating in CEECs originate[13]. The variables we have used measure the degree of the bank's capitalisation (equity to total asset), the degree of asset liquidity (liquid assets to total asset), profitability (profits to total asset) and the quality of credit portfolio

[12] See Papaioannou [2009] for an analysis of the impact of the institutional environment on international movements of bank financing.

[13] Italy, Germany, Austria, France, Sweden, Greece, Belgium, Denmark and the Netherlands. See Brana & Lahet [2010b] for an analysis of the presence of major European bank groups in CEECs.

(ratio of provisions for bad loans to total loans) (de Haas & Van Lelyveld [2006], Haselman [2006], Derviz & al. [2007]).

Estimations have been made with stationary variables. The Wald test revealed heteroscedasticity of residuals which was corrected in the fixed effects model by the White estimator. To take account of the heteroscedasticity and cross-section of residuals (there is no serial correlation), we have also estimated a FGLS model (method developed by Parks & Kmenta) and a PCSE (OLS models with panel-corrected standard errors, Beck & Katz method). Estimations are very close, perhaps a sign of the robustness of results.

Our empirical results (Table 3) show firstly the importance of the parent bank's financial situation, thereby confirming the results given by de Haas & Van Lelyveld [2006 & 2010]. Flawed solvency reduces the amount of bank loans made abroad. Multinational banks do therefore tend to transfer financial shocks suffered at home. By contrast, the financial situation of the host country's banking system does not appear to be significant.

Table 3. Determinants of the net inflows of foreign bank loans (balance of payments data) (1996-2008)*

	Fixed effects model			FGLS model			PCSE model		
	Coef.	t-student	Pr.	Coef.	t-student	Pr.	Coef.	t-student	Pr.
Euro zone growth	328.97	1.20	0.234	130.67	0.50	0.620	323.48	0.72	0.471
Host country growth	49.46	2.13	0.035	26.47	1.71	0.088	46	1.84	0.066
Provisions for parent bank bad loans (% total loans)	-1697.2	-3.21	0.002	-1203.64	-3.40	0.001	-1809.1	-3.19	0.001
Parent bank profits (% assets)	-2469.42	-1.69	0.093	-1259.17	-1.66	0.096	-2553.7	-2.00	0.045
% foreign banks in host country	-19.93	-2.06	0.041	-13.48	-2.24	0.025	-20.43	-2.74	0.006
EU integration	1534.64	2.55	0.012	1626.76	3.40	0.001	1427.16	2.11	0.035
Constant	7229.63	2.82	0.006	5048.51	3.49	0.000	7702.69	3.38	0.001
N° obs = 129	R-sq: within = 0.4632						R-sq = 0.4285		

* With the exception of the "euro zone growth" variable, only significant variables are given.

Results then show that foreign banks are firmly into a "*pull*" strategy. It is the economic conditions of the host country, not of the home country, that determine the investment strategies of international banks. This would confirm the conclusion made by Haselmann [2006], according to which foreign banks prefer long-term strategies in CEECs. Integration into the EU has also been a potent factor of attraction, again pointing to long-term investment strategy.

This result appears to be reinforced by the fact that no variable regarding appetite for risk, and no *spread* variable – measuring yield differentials between zones – appeared significant. Clearly, foreign bank financing in no way responds to any form of short-term financial logic, although this does not stop multinational banks from adopting arbitration strategies between zones (home country, other emerging countries), as shown by the negative sign with their profitability as a determinant for their foreign financing operations (however, this variable is only of very little significance).

Lastly, as the PCA would suggest, the implantation of foreign banks is not associated with the increase in foreign bank financing, which would imply that foreign banks operating locally find local financing resources, probably via deposits.

Our econometric analysis confirms, however, that the presence of foreign banks in CEECs does not protect these countries from the volatility of inflows of foreign bank loans (Table 4).

Table 4. Determinants of the volatility of inflows of foreign bank loans (balance of payments data), random effects model (2000-2008)[14]

	Modèle à effets aléatoires			Modèle FGLS			Modèle PCSE		
	Coef.	t-student	Pr.	Coef.	t-student	Pr.	Coef.	t-student	Pr.
% foreign banks in host country	0.039	2.32	0.021	0.018	2.91	0.004	0.053	3.38	0.001
Amount of foreign bank loans	-0.0006	-2.29	0.022	-0.0003	-2.09	0.036	-0.0007	-4.61	0.000
Variation of host country rating	-1.083	-2.74	0.006	-0.805	-3.27	0.001	-1.247	-5.16	0.000
Provisions for parent company bad loans (% total loans)	0.835	2.09	0.037	0.849	3.38	0.001	0.822	2.38	0.017
Constant	-1.954	-1.24	0.216	-1.282	-1.47	0.141	-2.683	-1.68	0.094
nb obs = 80	R-sq: within = 0.2351						R-sq: 0.3571		

The volatility of foreign bank loans to CEECs depends positively on the share of banking assets held by foreign banks in these countries. It falls in pace with the amount of these foreign loans, which is logical, and when the country's rating improves. Lastly, as foreign bank loans are essentially the doing of European banks, any deterioration in the quality of their balance sheet (a rise in provisions for bad loans in percentage of total loans) increases the volatility of foreign financing.

Thus, the presence of foreign banks operating in the host country clearly emerges as a factor of volatility with foreign bank loans. This result runs counter to the idea according to which foreign banks might have a stabilising effect on the host country. Foreign bank financing actually depends very much on the financial situation of the parent company.

In a second step, we investigate the potential role of foreign banks on stability or volatility of domestic bank credit. Unlike the existing literature, we adopt a macro perspective and take into account the overall supply of credit and the foreign bank financing (thereby integrating relations parent companies / subsidiaries).

[14] The Breush-Pagan test [($\chi^2(1) = 62.35$] reveals a degree of heteroscedasticity, probably due to the effects of size, that we have corrected using the White estimator. The Hausmann test indicates that the random effects model is preferable to the fixed effects model [($\chi^2(4) = 0.53$]. The Lagrange de Breush-Pagan multiplier test confirms that there are random specific effects [($\chi^2(1) = 18.08$]. Lastly, the Wooldridge test does not indicate any presence of residual self-correlation [$F(1.9) = 0.026$].

Table 5. Determinants of the volatility of domestic credit (2000-2008)[15]

	Fixed effects model			PCSE model		
	Coef.	t-student	Pr.	Coef.	t-student	Pr.
% foreign banks in host country	-.000489	-2.00	0.047	-.00044	-3.43	0.001
Amount of foreign bank loans	3.00e-06	4.19	0.000	2.51e-06	2.71	0.007
Domestic credit on GDP	-4.65e-08	-3.25	0.002	-2.46e-08	-5.61	0.000
Constant	.1048	5.91	0.000	.1125	13.04	0.000
N° obs = 134	R-sq: within = 0.1136			R-sq: 0.3451		

	Fixed effects model			PCSE model		
	Coef.	t-student	Pr.	Coef.	t-student	Pr.
% foreign banks in host country	-.00034	-1.41	0.161	-.00020	-2.04	0.042
Amount of foreign bank loans	2.75e-06	3.78	0.000	2.34e-06	2.57	0.010
Domestic credit on GDP	-3.07e-08	-2.17	0.032	-1.73e-08	-7.32	0.000
Volatility of foreign bank loan (cross border)	-.001218	-2.42	0.017	-.00195	-3.75	0.000
Host country growth	0.04396	2.25	0.027	.08298	9.73	0.000
Constante	.08989	5.09	0.000	.08202	10.06	0.000
N° obs = 129	R-sq: within = 0.1666			R-sq: 0.6106		

The presence of foreign banks reduces the volatility of domestic credit, which confirms the results of other studies (Haselman 2006; De Haas and Van Lelyveld, 2006, 2010). This stabilizing effect goes through two channels. The first is that the presence of foreign banks increases the supply of credit financed from local resources (domestic deposits) in local currency. These local assets in local currency are more stable than cross-border claims. The second channel is related to the access of foreign banks to international financing through their parent companies. While the amount of cross-border bank loans (variable *amount of foreign bank loans*) is positively correlated to the volatility of domestic credit, the volatility of these flows (variable *volatility of foreign bank loans*) is negatively related to that of domestic credit. We can see the sign of a buffering role of external financing from the local instability. This result confirms the existence of a "support effect" from the parent bank (see de Haas and van Lelyveld, 2010). The positive impact of the growth rate of the host country (host country growth variable) on the volatility of domestic credit confirms funding by

[15] The heteroskedasticity has been corrected in the fixed effects model using the White estimator. Wooldridge test indicates the existence of autocorrelation that we have corrected using a panel-specific autocorrelation structure in the regression with panel-corrected standard errors (PCSE). We cannot use this AR1 autocorrelation structure with feasible generalized least squares because the estimate requires a panel cylinder.

capital inflows of the credit boom and growth. Finally, consistent with traditional literature, the credit volatility is inversely related to its amount, measured in terms of financial development (domestic credit to GDP ratio).

CONCLUSION

Contrary to commonly accepted opinion, the strong presence of foreign banks in CEECs is neither a factor for capital inflows nor a factor of stability for this financing. On the contrary, the local implantation of foreign banks could be a substitute for external/foreign bank loans (cross-border claims). In favouring local claims and loans in local currency, foreign banks operating locally help to promote the stability of domestic credit and the rise in the deposit over credit ratio, thereby rendering host countries less vulnerable to the risk of mass capital flow withdrawals.

The presence of foreign banks is however associated with greater instability of foreign bank loans. We can see here the active management of the balance sheets of the foreign banks operating locally, which plays on loans from their parent companies to stabilise their credit supply. This result would appear to confirm the conclusions from other works, according to which the presence of foreign banks would make domestic credit less sensitive to local conditions. We might, however, also interpret this result in a less favourable light for the host country. The volatility of foreign bank financing may indeed also be explained by the financial situation of parent banks. In times of crisis, they adjust their foreign financing, thereby transferring financial instability to host countries. Over the entire study period, however, the stabilizing effect of the presence of foreign banks dominate.

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APPENDICES

Table 1. The characteristics of banking systems in CEECs (2007)

	Number of banks	Number of banks under foreign control	Share of foreign banks (% of assets in the banking system)	Share of European banks (% of assets in the banking system)
Bulgaria	29	21	79,5	81,6
Czech Republic	56	34	91,5	96,1
Estonia	15	13	98,8	98,8
Latvia	31	13	55,4	62,5
Lithuania	80	8	83,7	83,7
Hungary	206	30	54,3	57,4
Poland	718	54	62,1	70,5
Romania	42	35	82,1	82,1
Slovenia	27	11	28,5	28,5
Slovakia	26	25	95,9	95,9
European Union 13*	6128	1111	17,4	19
European Union 27	8348	1711	20,5	23,8

* Countries from euro-zone in 2007.
Source : Authors calculation with ECB data (2008).

Table 2. Foreign claims (%GDP) (December)

	2007	2009
Bulgaria	**87,9**	**91,8**
Czech Republic	**99,3**	**92,9**
Estonia	**174,7**	**146,6**
Latvia	**416,5**	**118,3**
Lithuania	**100,5**	**90,6**
Hungary	**98,2**	**112,9**
Poland	57,4	69,6
Roumania	72,6	71,4
Slovenia	80,3	78,8
Slovakia	**107,8**	84,7

Source : BIS and Datastream, Authors calculation.