# Foreign banks and credit stability in Central and Eastern Europe. A panel data analysis

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## Abstract

We examine whether foreign and domestic banks in Central and Eastern Europe react differently to business cycles and banking crises. Our panel dataset comprises data of more than 250 banks for the period 1993–2000, with information on bank ownership and mode of entry. During crisis periods domestic banks contracted their credit base, whereas greenfield foreign banks did not. Also, home country conditions matter for foreign bank growth, as there is a significant negative relationship between home country economic growth and host country credit by greenfields. Finally, greenfield foreign banks' credit growth is influenced by the health of the parent bank.
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## 1. Introduction

During the last decade foreign banks have entered several Central and Eastern European (CEE) transition countries, though to different degrees. Some countries regarded foreign strategic investors as a means to improve both the quantity and quality of financial intermediation. In contrast, critics have pointed to the risks for the stability of the banking system, emphasising the danger of a more volatile credit supply.[1] Although research has been done for the Latin American case – where foreign bank penetration is high as well – there is to our knowledge no empirical research on the role of foreign banks as regards credit stability in a cross-section of CEE countries. We therefore focus on ten CEE countries (Croatia, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovak Republic and Slovenia), using a unique panel dataset comprising balance sheet and income statement data (1993–2000) on more than 250 banks. We study whether foreign and domestic banks in CEE have reacted differently to business cycle conditions and host country banking crises. Additionally, we divide foreign banks into greenfields and take-overs, so as to differentiate between modes of entry, and investigate whether the financial health of the parent bank influences its CEE-subsidiaries. Finally, we examine the influence of home country GDP growth on foreign banks' activities, a topic that has received only limited attention in the literature to date (Williams, 2003). A better understanding of these issues is of special policy relevance for those countries that still have to decide whether to open up their banking sectors to foreign competition. The remainder of this paper is structured as follows. In Section 2 we give a brief overview of the literature on foreign banks and financial stability, after which we describe our dataset in Section 3. Section 4 goes into our econometric methodology and empirical results. Section 5 concludes.

## 2. Foreign banks and financial stability

### 2.1. Theoretical considerations

The penetration of foreign banks into less-developed banking systems is the subject of a lively, mostly empirically oriented debate.[2] The majority of this literature focuses on the influence of foreign banks on the efficiency of host country banking systems. Such studies generally find that foreign bank entry has positive efficiency effects (e.g. Claessens et al., 2001; Lensink and Hermes, 2004). However, efficiency gains may be (partly) offset if a trade-off between banking efficiency and banking stability is present. Unfortunately, the strand of empirical literature that deals with the impli-

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[1] Stiglitz (2002) has for instance articulated this view.

[2] In the empirical part of this paper, we limit ourselves to the activities of foreign banks within the borders of the host country. Foreign banks can also provide cross-border services from home to host country. For an analysis of the importance and stability of cross-border vs. within-border foreign bank credit in CEE, see De Haas and Van Lelyveld (2004).

58 cations of foreign bank entry for host country financial stability is rather limited. Be-
59 fore discussing this literature, it is useful to point out some theoretical considerations.
60    As yet, there is no single, comprehensive theory of multinational banking, espe-
61 cially not in an emerging market or transition country context. Yet, some important
62 mechanisms through which foreign banks may influence the stability of the host coun-
63 try banking system can be identified. Most of these theoretical mechanisms elaborate
64 on the fact that foreign bank subsidiaries are not completely autonomous organisa-
65 tions, but form part of a larger bank holding company (or: parent bank) with an inter-
66 nationally diversified asset portfolio. As a result, their policies will to a certain extent
67 be influenced by decisions of this (foreign-based) holding company. On the positive
68 side, this parent bank may act as a "back-up facility" or lender of last resort during
69 crisis periods. It may also manage an internal capital market and centralised treasury
70 operations to allocate capital and liquidity over its subsidiaries (Stein, 1997). This
71 may translate into a more stable credit supply of the foreign-based subsidiary.[3] More
72 specifically, a supportive parent bank and abundant funding sources may make for-
73 eign bank subsidiaries less prone to the adverse effects of a host country bank capital
74 shock. Foreign bank subsidiaries may be able to recover relatively fast and keep up
75 their credit supply relatively well (when compared to domestic banks).
76    Contrary to this potentially positive role of foreign bank subsidiaries, it can be
77 argued that foreign banks' credit supply may be less stable than credit granted by
78 domestic banks. This will be the case if foreign banks react more procyclically to
79 changes in the host country macroeconomic environment.[4] A reason for such behav-
80 iour could be that the parent bank reallocates capital over different geographical re-
81 gions on the basis of expected risks and returns. When economic growth in a
82 particular host country declines, the activities of the subsidiaries in this country
83 may be scaled down in favour of other regions. Domestic banks may not have such
84 foreign alternative investment opportunities, and may therefore be less sensitive to
85 host country macroeconomic conditions. In this line of reasoning, there will thus
86 be a positive relationship between the host country business cycle and the foreign
87 subsidiary's credit supply.
88    A different mechanism exists if foreign bank subsidiaries react not so much to
89 changes in the host country economic conditions ("pull factor"), but rather to
90 changes in the parent bank's home country ("push factor"). On the one hand, wors-
91 ening economic conditions in the home country can force a (capital-constrained)
92 parent bank to scale down activities, including those of (consolidated) foreign

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[3] In this paper, stable foreign bank credit refers to a situation in which foreign bank lending is not contracted severely during or after a financial crisis, or at least not more severely than domestic lending, and in which foreign bank lending is more countercyclical, or at least less procyclical, than domestic bank lending. We thus define foreign bank credit stability in relative terms.

[4] Morgan and Strahan (2004) show that on the one hand, foreign bank entry may dampen the effect of a general bank capital shock on firm investment in the host country, since they can rely on parental liquidity and capital back up. On the other hand, the impact of a firm collateral shock in the host country may be amplified, as foreign banks will reallocate their portfolio on the basis of changes in expected risk/return characteristics. The theoretical aggregate effect of foreign bank entry on host country business cycle volatility thus remains ambiguous.

93 subsidiaries. Actually, foreign operations may be among the first to be reduced. In
94 that case, there is a positive relationship between the home country business cycle
95 and the foreign subsidiary's credit supply. Such a relationship becomes more likely
96 when the parent bank's financial condition is relatively poor. On the other hand,
97 it can be argued that when economic conditions in the home country worsen, parent
98 banks will increase their efforts to expand their activities abroad, since investment
99 opportunities in the home market are scarce. Vice versa, when home country condi-
100 tions improve, the opportunity costs of limiting home country lending increase and
101 banks may therefore allocate less capital to their foreign subsidiaries (Molyneux and
102 Seth, 1998; Moshirian, 2001). In this scenario there is thus a negative relationship
103 between the home country business cycle and the foreign subsidiary's credit supply.
104 The latter is more likely if parent banks are financially healthy and bank holding
105 capital is free to chase the highest returns.
106     The extent to which foreign bank subsidiaries differ from domestic banks also de-
107 pends on their level of embeddedness in the multinational banking organisation. An
108 important distinction in this regard is between de novo foreign bank affiliates, so-
109 called greenfields, and affiliates that are the result of a take-over of an already exist-
110 ing bank. Greenfields and take-overs may differ because they reflect different entry
111 strategies of the parent bank. Greenfield foreign banks may, for instance, be more
112 aggressive in their pricing strategies in order to quickly gain market share (Soledad
113 Martinez Peria and Mody, 2004). Moreover, some parent banks establish greenfields
114 because they want to control all aspects of the new affiliate right from the start.
115 Other banks put more emphasis on the need to be a real local bank, and thus prefer
116 to take-over an existing bank. In that case, however, the strategic direction and bal-
117 ance sheet composition of take-overs may for some time continue to reflect the influ-
118 ence of the former management. This will especially be the case when local
119 management and staff is not, or only partly, replaced. In general, the organisational
120 and corporate governance links between a parent bank and a take-over are likely to
121 be looser than those between a parent bank and a greenfield affiliate.
122     Finally, differences between foreign and domestic banks are not only related to
123 the fact that a foreign bank subsidiary is part of a multinational banking organisa-
124 tion, but can also result from other differences in banks' strategies and balance sheet
125 health. Banks, for instance, differ in their attitude towards client relationships. Some
126 banks may grant credit on a "transaction-by-transaction-basis". In that case, banks
127 increase their credit supply to meet the extra demand for finance when the economy
128 improves, only to decrease credit supply when economic conditions worsen. Con-
129 versely, other banks may finance their clients "through the cycle" and will not easily
130 cut off credit lines in case of temporary adverse economic developments. Such rela-
131 tionship lending will be less sensitive to business cycle fluctuations or banking crises
132 and can therefore be characterised as relatively countercyclical and stable. Also,
133 regardless of the ownership structure of a bank, the quality of its balance sheet
134 may be of decisive importance in influencing credit supply. Banks that are in poor
135 condition, will not be able to expand their credit in reaction to positive market sig-
136 nals, but will instead focus on balance sheet repair.

## 2.2. Empirical results to date

A number of empirical studies for the US provide evidence of bank holding companies operating internal capital markets in which they allocate capital and liquidity to subsidiary banks. Houston et al. (1997) show that subsidiaries' credit growth is more sensitive to the cash flow and capital position of the holding company than to the bank's own capital and cash flow. Credit growth at a particular subsidiary also turns out to be negatively correlated with loan growth in other subsidiaries of the same bank holding, which is consistent with "winner-picking" behaviour. Houston and James (1998), again for the US only, compare banks that form part of a bank holding company with stand-alone banks. They find that the former are less sensitive to their own cash flow, capital position and liquidity than the latter. Jeon and Miller (in press) show that whereas foreign bank performance in Korea is not affected by bank solvency, domestic bank performance is. Internal capital markets thus provide for an important mechanism through which parent banks can influence the (stability of the) credit supply of their (foreign) subsidiaries.

The empirical research to date points in the direction of a stabilising effect of foreign bank entry on the credit supply in host countries, though with some qualifications. Dages et al. (2000) show for Argentina and Mexico, and Crystal et al. (2002) for Chile, Colombia and Argentina, that during the second half of the 1990s foreign banks that had been present in the host country for a relatively long time, exhibited stronger and less volatile credit growth than domestic banks. Also, during times of crisis, diversity of ownership has contributed to greater stability of credit as foreign banks showed significant credit growth during crisis periods and thereafter. Peek and Rosengren (2000a), Goldberg (2001), and Soledad Martinez Peria et al. (2002) also find that foreign banks did not reduce their credit supply during adverse economic times in the host country. Indeed, they viewed such economic problems as opportunities to expand, by acquisition or by growth of existing subsidiaries. De Haas and Van Lelyveld (2004) and Kraft (2002a) find similar results for CEE countries. However, Dages et al. (2000) also find that domestically owned and foreign owned banks with low problem loan ratios behave similarly, which suggests that bank health, and not ownership as such, has been critical.

Notwithstanding these positive results, other empirical findings point to the fact that under certain circumstances foreign banks may also have some destabilising effects. As regards pull factors, Peek and Rosengren (2000a) show that cross-border lending, where foreign banks provide credit from their home country offices, did in some cases retrench during economic slowdowns in Latin America. Morgan and Strahan (2004) find tentative evidence of a positive link between foreign bank presence and economic volatility. This is due to foreign banks being relatively sensitive to local business conditions as they are better able to reallocate funds outside the particular host country. As regards push factors, Jeanneau and Micu (2002) find that bank lending to emerging countries is positively correlated with the economic cycles in the major industrial countries. More specifically, Peek and Rosengren (1997) show that the sharp drop in Japanese stock prices starting in 1990, together with binding

180 capital requirements for Japanese banks, led Japanese bank branches in the USA to
181 reduce their credit supply ("positive push relationship"). However, Soledad Marti-
182 nez Peria et al. (2002) find evidence that foreign banks, except the Japanese ones,
183 tended to increase their lending to Latin America when economic conditions in their
184 home countries worsened. Calvo et al. (1993), Hernandez and Rudolph (1995), and
185 Moshirian (2001) also find that worsening home country conditions led banks to
186 seek external lending opportunities ("negative push relationship"). Goldberg
187 (2001) finds that US banks' claims on emerging markets have been correlated with
188 US GDP growth, although the direction of causality of this push relationship dif-
189 fered between Asia (negative) and Latin America (positive).

190     Finally, differences may exist between take-over foreign banks and de novo,
191 greenfield foreign banks. De Haas and Naaborg (2005) compare different types of
192 foreign bank subsidiaries in CEE on the basis of structured interviews with managers
193 and board members of both parent banks and their CEE-subsidiaries. They find that
194 many local banks that have been taken over by foreign banks remain relatively inde-
195 pendent for quite some time. Local management is often kept in place, risk manage-
196 ment practises are only gradually brought in line with those of the parent bank, and
197 the subsidiaries are expected to finance themselves relatively independently. In con-
198 trast, most greenfields are more closely integrated into the parent bank organisation,
199 are set-up by home country managers and use the parent bank's risk management
200 methodologies and treasury management from day one. Such strongly integrated
201 greenfield foreign affiliates will be easier to steer from the home country than rela-
202 tively independent take-overs.[5]

203     In sum, foreign bank entry can have positive effects for total credit stability as for-
204 eign bank subsidiaries, supported by the internal capital market of the parent bank,
205 often keep up or even expand their credit supply when local economic conditions get
206 worse. Yet, the empirical results also show that foreign banks' host country credit
207 may react to home country economic conditions, although the direction of this rela-
208 tionship is still debated. Moreover, the strength of this relationship may depend on
209 the type of foreign bank – greenfield or take-over – and its level of integration into
210 the multinational parent bank. We examine whether in CEE too, foreign and domes-
211 tic banks have reacted differently to the host country business cycle and to banking
212 crises, and whether foreign bank credit has been influenced by home country eco-
213 nomic conditions.

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[5] Other studies also find differences between greenfields and take-over foreign banks. Kraft (2002b) finds that Croatian greenfields expanded their credit supply significantly faster than both take-overs and domestic banks. This result holds, even when controlling for greenfield banks' small average size, which will have led to some catching-up/convergence growth. According to Kraft especially greenfields have been able to increase their net foreign liabilities in order to fund rapid credit expansion. Soledad Martinez Peria and Mody (2004) find for Latin-America that greenfield foreign banks charge lower interest rate spreads than take-over foreign banks. Majnoni et al. (2003) replicate this finding for Hungary and also show that Hungarian greenfield banks have lower operating costs and labour costs and are more profit efficient compared to take-overs. Interestingly, Fries and Taci (2005) find for CEE as a whole that greenfields are less cost efficient than take-overs.

## 3. BankScope dataset and descriptive statistics

### 3.1. The BankScope dataset

We constructed our panel using Bureau van Dijk's BankScope database. This database contains yearly balance sheet and income statement data for individual banks in a large number of countries. In general, the banks included in this database cover about 90% of total banking assets in a particular country (Mathieson and Roldos, 2001). To ensure that our panel was representative for the banking system of transition countries, we checked the coverage of the BankScope data through a comparison with information from central banks in the region and the Internet. This showed that our database has a good coverage of the banking system in the countries we study. Any differences could often be explained by divergent definitions of what a bank is.[6] Finally, an important drawback of BankScope is that it does not take in the activities of most foreign branches, since these do not report separately from their foreign headquarters. This can lead to an underestimation of the level of foreign participation. We obtained banking data for all domestic banks and foreign subsidiaries included in BankScope for the period 1993–2000 (Appendix 1). Before 1993, independent CEE banks had only just emerged and the quality of balance sheet data is questionable. For the year 2001, BankScope data were – at the time of downloading – only available for a limited number of banks. The development in our sample size – increasing until 1997 and decreasing afterwards – reflects the rapid increase in bank start-ups at the beginning of the transition process, as well as the consolidation process later on.

We examined the ownership structure of all banks for each individual year, and then constructed two ownership dummy variables for each bank in each year. The first ownership dummy (TAKE-OVER) is one for foreign banks resulting from a take-over and zero for all other banks. The second ownership dummy (GREENFIELD) is one for greenfields and zero for all other banks.[7] Adding ownership information for each bank *in each year* was necessary because BankScope only gives information on ownership structure for the point in time that the database is last updated. Since

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[6] Our focus is on banks and their financing of the private non-bank sector. We therefore included only commercial banks, savings banks, co-operative banks, real estate/mortgage banks, and medium and long term credit banks. We excluded such categories as securities houses, non-banking credit institutions, specialised governmental credit institutions, central banks, and multilateral governmental banks. For the countries in our sample, Schmitz (2003) compares the (aggregated) BankScope data with IMF International Financial Statistics and finds that approximately 70–90% of total banking assets is covered by BankScope.

[7] We consider a bank to be foreign if foreign shareholders own a majority of outstanding shares. A controlling interest is generally assumed if participation exceeds 50% of the subscribed capital of a bank (cf. Bank for International Settlements, 2003). When a domestic bank was taken over in year $T$, we included it as a domestic bank for $T$ and all years before $T$ for which data were available, whereas it was included as a take-over for $T + 1$ and all later years for which data were available (we did this 41 times). Greenfields are those banks that were erected from scratch by a foreign parent. The terms "greenfield" and "take-over" thus refer to foreign banks only.

243 changes in ownership structure in the CEE banking sector have been frequent, and
244 since we are particularly interested in differences between domestic and foreign
245 banks, it was essential to carefully unravel all the ownership changes in our sample
246 period. The sources for the ownership dummy variables and changes therein were
247 Reuters, bank websites, business publications, and correspondence with central
248 banks.
249    Besides checking the coverage of our dataset and extending the ownership infor-
250 mation, we also made a further check on data quality and consistency. We removed
251 two banks from our sample that were included in BankScope, but did not report any
252 financial information. We also corrected for the fact that not all banks report in the
253 same currency by redenominating balance sheet and income statement variables in
254 millions of euro.[8] To the extent that PPP holds, this also provides for an approxima-
255 tion of our variables in real terms. However, fluctuations in inflation rates are gen-
256 erally not offset by immediate or sufficient exchange rate changes. Therefore, we
257 include in our regression estimates the CEE inflation rates as regressors (assuming
258 that eurozone inflation has shown a relatively stable development). Remaining val-
259 uation effects due to excessive nominal exchange rate movements appear to be lim-
260 ited. As we use yearly data, temporary exchange rate shocks – such as the 1997 Czech
261 currency crisis – are of little influence. Moreover, nominal exchange rates either re-
262 mained more or less stable during our sample period or showed a gradual deprecia-
263 tion that matched persisting high inflation (such as in the Hungarian crawling peg
264 system, where a rate of devaluation was chosen that broadly compensated for the
265 inflation differential between Hungary and its trading partners).

266 *3.2. Foreign and domestic banks in CEE: Descriptive statistics*

267    Before we analyse whether foreign banks behaved differently during our sample
268 period, we want to find out whether foreign and domestic banks have a different
269 structure in the first place. We do this by testing whether domestic banks differ sig-
270 nificantly from both greenfields and take-overs on a number of balance sheet and in-
271 come statement items. We look into the (significance of) differences in the mean for
272 both levels and growth rates, as well as into differences in coefficients of variation (as
273 a within group dispersion measure). We correct for mergers and acquisitions, start-
274 ups, and bankruptcies by eliminating the bank/year observations with the 1% largest
275 positive and negative growth rates. The results of the significance tests for the full
276 sample are shown in Appendix 2. Some interesting results emerge. We find that
277 greenfields are significantly smaller than both take-overs and domestic banks,
278 whereas domestic banks are somewhat smaller than take-overs, though not signifi-
279 cantly so. This last result probably reflects that during the privatisation process
280 the large(st) domestic banks were sold first. Money market funding is especially high

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[8] Before 1999 we used a ''synthetic'' euro to redenominate. Due to the hyperinflationary environment in
Romania, data for banks reporting in Romanian Leu were first inflation adjusted. For some banks this
adjustment was already done in the BankScope database, whereas for others we deflated the data
ourselves, using the wholesale price index from the IMF International Financial Statistics database.

281 at take-overs when compared to domestic banks, which may reflect that after a bank
282 is taken over by a foreign bank it gets better access to the (international) money mar-
283 ket. Although take-overs have larger balance sheets than domestic banks, both their
284 (absolute) revenues and expenses lie at a somewhat lower level. In addition, take-
285 overs have a somewhat higher cost to income ratio and a lower profit before tax
286 (cf. Majnoni et al., 2003). This last result most likely reflects that after a take-over,
287 foreign banks incur considerable reorganisation and restructuring costs. As for
288 growth, there is a clear tendency for convergence: greenfields display the highest
289 average growth rates, whereas domestic banks grow marginally faster than take-
290 overs. Finally, we find that for almost all balance sheet and income statement items,
291 domestic banks as a group are more heterogeneous (higher coefficient of variation)
292 than take-overs, while greenfields are most homogeneous. Since this general picture
293 conceals important bank-specific characteristics, we proceed by using a panel data
294 methodology.

## 4. Econometric methodology and results

296  To gain insight into the possible divergent credit behaviour of domestic and for-
297 eign banks, we run two categories of regressions. In the first one, we use as the
298 dependent variable the percentage growth in total credit of bank $i$ in year $t$.[9] Besides
299 running regressions for the whole sample, we also run regressions for domestic banks
300 and foreign banks separately. In the second set, our dependent variable is $\Delta \text{MSCRED}_{i,t}$,
301 which is the percentage change in the credit market share of bank $i$ ($i = 1, \ldots, N$) in
302 the particular country in year $t$:[10]

$$\Delta \text{MSCRED}_{i,t} = \left[ \frac{\left( \frac{\text{CRED}_{i,t}}{\sum_{i=1}^{N} \text{CRED}_{i,t}} - \frac{\text{CRED}_{i,t-1}}{\sum_{i=1}^{N} \text{CRED}_{i,t-1}} \right)}{\left( \frac{\text{CRED}_{i,t-1}}{\sum_{i=1}^{N} \text{CRED}_{i,t-1}} \right)} \right] \times 100. \tag{1}$$

305 In this second set of regressions we thus aim to explain the growth of bank $i$ in coun-
306 try $j$ in a particular year relative to the growth of the total banking system in country
307 $j$ in that year. In this way, we correct for (macro)economic factors that influence the
308 banking sector as a whole, such as the business cycle and the related demand for
309 credit, and are able to focus on bank specific changes in the supply of credit. Note,

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[9] In addition, we ran all regressions for growth of deposits as well. Note that to the extent that banks'
balance sheets are driven by credit expansion, deposits will mirror the asset side of banks' balance sheets.
Indeed, due to such balance sheet restrictions, our deposit results and credit results were very similar and
therefore not shown.

[10] As with the credit growth regressions, we estimate percentage changes in market shares to take into
account that a 1%-point market share increase is a different achievement depending on the initial market
share. Market share increases from for instance 3–4% and from 50% to 51%, respectively, both represent a
1%-point increase, whereas in terms of percentage the former increase (+33%) is much larger than the
latter (+2%).

310 however, that by estimating changes in market shares in order to control for credit
311 demand, we implicitly assume that all (domestic and foreign) banks grant credit to
312 the same market segments and customer types. This is a rather strict assumption
313 and changes in banks' market share may therefore still partly be driven by different
314 credit demand functions. As we do not have data on banks' customers, we are unfor-
315 tunately not able to control for such heterogeneous customer types.[11]

316     Taking into account the theoretical considerations of Section 2.1, we can now for-
317 mulate three hypotheses with regard to differences between domestic and foreign
318 banks in CEE. First, we expect that credit of foreign banks is relatively insensitive
319 to host country crisis periods, as they may rely on parental support. In contrast, we
320 expect domestic banks' credit to be negatively related to crisis periods. Second, we ex-
321 pect foreign bank credit to be positively and relatively strongly related to the host
322 country business cycle (pull relationship), whereas the sign of the relationship with
323 the home country business cycle is ambiguous (push relationship). Third, we expect
324 that the sensitivity to home country GDP growth and insensitivity to host country cri-
325 sis periods will be more pronounced for greenfields than for take-overs, as the former
326 are likely to be more strongly embedded in the foreign bank holding than the latter.

327     We test the abovementioned hypotheses as follows. First, we capture the effect of
328 foreign ownership through the dummy variables FOREIGN, TAKE-OVER and GREEN-
329 FIELD. We use the latter two dummy variables to construct interaction terms with
330 the other explanatory variables in order to test explicitly for differences between
331 take-overs and greenfields. Second, in the separate regressions for domestic and for-
332 eign banks, we use a CRISIS dummy variable, which takes on value one if the CEE
333 host country experienced a banking crisis in that particular year, whereas it is zero
334 otherwise.[12] We expect the coefficient of this variable to be negative for domestic
335 banks, but insignificant or even positive for foreign banks, especially when interacted
336 with the greenfield dummy.

337     Besides these dummy variables, we employ a number of macroeconomic vari-
338 ables. First, we use two home country variables (which are thus zero for domestic
339 banks): home country GDP growth (HOME $\Delta$GDP), and home country average bank
340 lending rate (HOME LENDING RATE).[13] Second, we use comparable host country vari-

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[11] In the first set of regressions, we estimate simple credit growth (instead of market share growth) and here as well, credit growth may be partly related to changes in credit demand rather than credit supply. Therefore, when discussing our empirical results we will speak of changes in credit rather than changes in credit supply.

[12] This dummy is mainly based on an overview of systemic banking crises as described in Caprio and Klingebiel (2002) (we would like to thank Daniela Klingebiel for providing us with the latest version). Of course, some subjectivity is associated with identifying the precise occurrence of banking crises. According to Caprio and Klingebiel (2002, p. 1) "*the dates attached to the crises reviewed are those generally accepted by finance experts familiar with the countries, but their accuracy is difficult to determine in the absence of the means to mark portfolios to market values*". See Appendix 3 for an overview.

[13] We use deposit rates instead of lending rates in the deposit regressions (not shown). All variables are taken from the International Financial Statistics (IFS) database (IMF). We also experimented with interest rates from other sources, such as the money market rate and the government bond yield. Since these are highly correlated with the lending rate and the deposit rate ($\rho > .75$ in all cases), our results are robust to the choice of short or long term interest rates.

341  ables, which apply to both foreign and domestic banks: HOST ΔGDP, HOST LENDING
342  RATE, and the host country inflation rate (HOST INFLATION).[14] Third, we experiment
343  with combinations of host and home variables, as foreign bank subsidiaries may
344  not so much react to home or host country conditions per se, but rather to the dif-
345  ference between them. These include host country minus home country GDP growth
346  (HOST − HOME ΔGDP, cf. Goldberg and Saunders, 1981) and the host country minus
347  the home country lending rate (HOST − HOME LENDING RATE). We expect that foreign
348  banks are positively and relatively strongly related to host country GDP growth,
349  while the sign of the coefficient for home country GDP growth is undetermined. Fur-
350  thermore, we expect that higher host (home) country lending rates will be positively
351  (negatively) related to host country credit growth by foreign banks. Higher lending
352  rates make, ceteris paribus, a country more attractive for credit expansion.

353  We also include a set of bank specific regressors in order to control for other bank
354  characteristics than ownership that may influence a bank's tendency to expand cred-
355  it. These include equity to total assets, as a measure of bank SOLVENCY (+), liquid
356  assets to total assets, as a measure of LIQUIDITY (+), total bank assets to total banking
357  assets in the particular country, as a measure of SIZE (−), ROA as a measure of bank
358  PROFITABILITY (+), and finally net interest margin, as a measure of bank EFFICIENCY
359  (+) (in parentheses the expected sign). To preclude any endogeneity problems, we
360  use the one period lag of SOLVENCY, LIQUIDITY, and SIZE in all regressions, as in these
361  cases reversed causality is conceivable. Lastly we include the variable WEAKNESS
362  PARENT BANK as a proxy for the financial condition of a foreign subsidiary's majority
363  owner. This variable equals loan loss provisions to net interest revenue of the parent
364  bank. An increase implies that higher credit risk is only partially compensated for by
365  higher interest margins. To construct it, we determined the largest foreign strategic
366  shareholder for each foreign bank subsidiary. For this shareholder we then
367  calculated the abovementioned ratio for each year. We expect a negative relationship
368  between this variable and foreign bank credit growth, as weaker parent banks (high-
369  er ratio) may be forced to reduce the credit supply of their foreign – and consolidated
370  – subsidiaries.[15]

371  We used several estimation methods.[16] First, we applied pooled ordinary least
372  squares (OLS), assuming that a common error structure applies to all banks. Yet,
373  treating banks as homogeneous entities is most likely too strong a restriction. We
374  therefore in principle assume that all (unobservable) factors that influence individual
375  bank behaviour, but that are not captured by our regressors, can be summarised by a

[14] In the ordinary growth regressions (Tables 1 and 2) we also include country dummy variables, so as to take into account that banking systems as a whole may have shown different growth rates across countries. However, we did not include country dummy variables in the market share regression (Table 3), since in this specification the dependent variable already includes information about the growth of the national banking systems.

[15] Peek and Rosengren (2000b) find that non-performing loans of parent banks may cause an even stronger negative effect on host country lending than parent banks' capitalisation.

[16] We excluded all banks for which we have less than three years of data. This left us with a basic panel of 278 banks. Also, after close inspection of the data, we decided to exclude the 1% bank/year combinations in which credit either rose or declined most rapidly.

376 random error term. Another option would have been to estimate the bank specific
377 effects as fixed parameters. However, this would imply that – since our panel con-
378 tains many banks relative to years – many degrees of freedom would be lost.[17] Also,
379 we are not so much interested in the value of the unobserved bank-specific effect $\mu_i$
380 for a particular bank, but rather in making inferences with respect to population
381 characteristics. Thus we estimated the following random effects (RE) model:

$$gr_{it} = \alpha + \beta_1 \text{TAKE-OVER}_{it} + \beta_2 \text{GREENFIELD}_i + \beta_3 \text{CRISIS}_{it}$$
$$+ \beta_4 \text{MACRO}_{it} + \beta_5 \text{CONTR}_{it} + \mu_i + \varepsilon_{it}, \tag{2}$$

384 where

$gr_{it}$ is percentage credit (market share) growth of bank $i$ in year $t$;
$\alpha$ is the intercept term;
TAKE-OVER$_{it}$ and GREENFIELD$_i$ are the take-over and (time-invariant) greenfield
388 dummy;
CRISIS$_{it}$ is a matrix of crisis related variables (crisis dummy and interaction terms);
MACRO$_{it}$ is a matrix of GDP growth, interest rate, and inflation variables;
CONTR$_{it}$ is a matrix of bank specific control variables;
$\mu_i$ is the unobserved, panel-level random effect, $\mu_i \sim \text{IID}(0, \sigma_\mu^2)$;
$\varepsilon_{it}$ is the idiosyncratic error, $\varepsilon_{it} \sim \text{IID}(0, \sigma_\varepsilon^2)$;
$\beta_1, \ldots, \beta_5$ are the coefficients (or coefficient vectors);
$i = 1, \ldots, N$ where $N$ is the number of banks in the sample;
$t = 1, \ldots, T_i$ where $T_i$ is the number of years in the sample for bank $i$.

397
398    In addition to the above basic random effects specification, we use two additional
399 estimation techniques. First, we estimated a model using feasible generalised least
400 squares (FGLS) in which we combine a heteroscedastic error structure – allowing
401 for bank specific variance – with an AR(1) process where the correlation parameter
402 is allowed to be unique for each bank (so as to take into account bank specificities –
403 such as management and its strategies – that do not adjust instantaneously to
404 changes in the (economic) environment):

$$\mu_i \sim \text{IID}(0, \sigma_{\mu_i}^2), \tag{3}$$

407 and

---

[17] We tested for our final specifications whether OLS, FE, or RE was to be preferred (using both the
Hausman specification test and the Breusch Pagan Lagrangian multiplier test). The results show that the
individual effects ($\mu_i$) were in most cases not significantly correlated with the explanatory variables, so that
random effects was the best way to model bank level specificities. Fries et al. (2002) also use a bank panel
on CEE and conclude the same. However, the results of the tests depend on the exact specification. In
Table 2 we therefore used the Hausman and Taylor (1981) instrumental variable procedure. In Table 3 we
used PCSE estimates although the Hausman test statistic was small for this regression as well. However, in
this case we estimate changes in market shares, and we considered unobservable random bank specific
effects to be theoretically more appealing than fixed bank specific effects.

$$\varepsilon_{it} = \rho_i \varepsilon_{i(t-1)} + \upsilon_{it}, \quad \text{where } \upsilon_{it} \sim \text{IID}(0, \sigma_\upsilon^2) \quad \text{and} -1 < \rho_i < 1. \tag{4}$$

Second, we apply panel-corrected standard error (PCSE) estimates with exactly the same error structure as the FGLS-model: bank level heteroscedasticity combined with an AR(1) process.[18] The reason for doing this is that the FGLS standard error estimates may be unacceptably optimistic (Beck and Katz, 1995). Our (significant) FGLS results indicated that this was indeed the case. Finally, for the estimations in Table 2 we use the Hausman and Taylor (1981) instrumental variable estimator (see footnote 17). In this way we can apply fixed effects – which was in this case recommended on the basis of the relevant test statistics – while still being able to estimate the parameter of our time-invariant greenfield dummy.[19]

Our final estimations are reproduced in Tables 1–3. Table 1 shows the results for simple credit growth for the total sample and for domestic and foreign banks separately. Table 2 shows full sample regressions in which we include interaction terms with the take-over and greenfield dummy variables.[20] This allows us to check whether foreign banks are a homogeneous group, or whether greenfields and takeovers behave differently. Finally, Table 3 shows the regression for credit market share growth, rather than simple credit growth (here we use interaction terms as well). Estimations based on the full sample and on the subsample of foreign banks are represented twice (denoted I and II). In columns I we use relative macroeconomic regressors, whereas in columns II we split these regressors into separate home and host country effects.[21] Throughout all tables blank cells indicate that the particular explanatory variable was not included in the specific regression for theoretical reasons; all insignificant results are thus shown in the tables.

A noteworthy first result from all three tables is that we do not find much evidence of a separate effect of ownership structure *as such* on credit growth during normal economic times. Only in the first regression in Table 2, we find that greenfields grow faster on average, which is in line with our finding from the descriptive statistics. However, when we control for a broad set of other bank specific characteristics, which indeed play an important role in a number of cases (see below), the general

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[18] We actually estimated three versions of the PCSE-model: without an AR(1) error structure, with a single AR(1) parameter for all panels, and with panel-specific AR(1) parameters. Since the estimates did not differ substantially as regards economic and statistical significance of individual coefficients, we chose to estimate panel-specific AR parameters because of theoretical considerations.

[19] In the Hausman and Taylor (1981) estimates, we assume that the take-over dummy and the bank specific control variables are correlated with the bank specific unobserved random effect (endogenous and time-varying variables), whereas the macroeconomic variables are not (exogenous and time-varying variables). The greenfield dummy is also assumed to be endogenous, but is time-invariant.

[20] The bank specific variables and host country macroeconomic variables are interacted with both the greenfield dummy and the take-over dummy. The reference group consists of domestic banks. However, the home country macroeconomic variables are only interacted with the greenfield dummy. In this case, the reference group consists of the take-overs, since home country variables do not apply to domestic banks.

[21] Note that when we estimate changes in individual banks' market shares (Table 3) we cannot include host country macroeconomic regressors since host country conditions will act upon all banks in the banking system and thus cannot explain changes in individual banks' market shares.

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Table 1
Credit growth

|  | Full sample I | Full sample II | Domestic banks | Foreign banks I | Foreign banks II |
|---|---|---|---|---|---|
| TAKE-OVER | −11.58 (1.26) | −5.65 (0.29) |  |  |  |
| GREENFIELD | 14.99 (1.29) | 29.59 (1.55) |  | 12.39 (0.88) | 8.11 (0.65) |
| CRISIS | −19.79*** (4.30) | −14.42*** (2.93) | −19.36*** (3.43) | 0.31 (0.03) | −4.13 (0.33) |
| HOST − HOME ΔGDP | 8.08*** (4.18) |  |  | 8.86*** (4.11) |  |
| HOST ΔGDP |  | 6.68*** (7.39) | 6.74*** (6.98) |  | 8.64*** (2.93) |
| HOME ΔGDP |  | −6.04* (1.89) |  |  | −8.62*** (2.78) |
| HOST − HOME LENDING RATE | 1.12** (1.97) |  |  | 0.85 (0.88) |  |
| HOST LENDING RATE |  | 0.28 (1.08) | 0.34 (1.36) |  | 1.50 (1.11) |
| HOME LENDING RATE |  | 2.97*** (4.03) |  |  | 1.11 (1.15) |
| HOST INFLATION | −0.01 (0.37) | 0.03 (1.01) | 0.03 (0.12) | 0.08 (0.61) | 0.07 (0.44) |
| WEAKNESS PARENT BANK | −0.19*** (4.37) | −0.16*** (3.04) |  | −0.23*** (7.00) | −0.19*** (4.27) |
| SOLVENCY | 1.29*** (5.34) | 1.25*** (4.77) | 0.85*** (3.24) | 3.33*** (5.53) | 3.18*** (5.30) |
| LIQUIDITY | −0.05** (2.09) | 0.02 (0.78) | 0.02 (0.70) | −0.53 (1.40) | −0.43 (1.14) |
| SIZE | −34.65** (1.96) | −29.14 (1.56) | −21.93 (1.16) | −108.00 (0.54) | −136.19 (0.72) |
| PROFITABILITY | 1.09** (2.18) | 1.09** (2.14) | 1.21*** (2.81) | 2.16 (0.75) | 0.91 (0.29) |
| INTEREST MARGIN | 1.66*** (2.90) | 1.90*** (3.41) | 2.71*** (4.96) | −3.42 (1.18) | −2.84 (0.94) |
| Observations | 1003 | 1003 | 770 | 233 | 233 |
| No. of banks | 247 | 247 | 184 | 82 | 82 |
| Hausman test statistic | 0.66 | 0.94 | 0.76 | 0.58 | 0.92 |
| $R^2$ | 0.28 | 0.33 | 0.30 | 0.46 | 0.47 |

Absolute *z*-values in parentheses; *significant at 10%; **at 5%; **at 1%. Panel-corrected standard error (PCSE) estimates. Disturbances: heteroscedasticity corrected and panel-specific AR(1) process.
Country dummy variables and constant are not shown.

Table 2
Credit growth (including interaction terms (IT))

|  | Full sample I | Full sample II |
|---|---|---|
| TAKE-OVER | −20.02 | −69.28 |
|  | (0.47) | (1.13) |
| GREENFIELD | 92.02** | −3.99 |
|  | (2.07) | (0.06) |
| CRISIS | −22.19*** | −18.07*** |
|  | (3.43) | (2.73) |
| IT with TAKE-OVER | −52.08 | −45.66 |
|  | (0.80) | (0.76) |
| IT with GREENFIELD | 47.46** | 31.31 |
|  | (2.10) | (1.57) |
| HOST − HOME ΔGDP | 2.39 |  |
|  | (0.60) |  |
| IT with GREENFIELD | −0.09 |  |
|  | (0.02) |  |
| HOST ΔGDP |  | 5.85*** |
|  |  | (5.25) |
| IT with TAKE-OVER |  | 0.36 |
|  |  | (0.06) |
| IT with GREENFIELD |  | 0.43 |
|  |  | (0.11) |
| HOME ΔGDP |  | 2.99 |
|  |  | (0.48) |
| IT with GREENFIELD |  | −5.27 |
|  |  | (0.67) |
| HOST − HOME LENDING RATE | −2.34 |  |
|  | (1.28) |  |
| IT with GREENFIELD | 1.58 |  |
|  | (0.67) |  |
| HOST LENDING RATE |  | 0.16 |
|  |  | (0.48) |
| IT with TAKE-OVER |  | 3.73 |
|  |  | (1.06) |
| IT with GREENFIELD |  | 0.81 |
|  |  | (0.64) |
| HOME LENDING RATE |  | 5.14** |
|  |  | (1.97) |
| IT with GREENFIELD |  | 1.49 |
|  |  | (0.26) |
| HOST INFLATION | −0.04 | 0.01 |
|  | (1.35) | (0.26) |
| IT with TAKE-OVER | 3.58 | −2.00 |
|  | (1.24) | (0.63) |
| IT with GREENFIELD | 0.09 | 0.01 |
|  | (0.85) | (0.14) |

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Table 2 (*continued*)

| | Full sample I | Full sample II |
|---|---|---|
| WEAKNESS PARENT BANK | −0.36 | −0.31 |
| | (1.15) | (1.01) |
| IT with GREENFIELD | 0.27 | 0.16 |
| | (0.83) | (0.50) |
| SOLVENCY | 1.63*** | 1.42*** |
| | (4.44) | (4.06) |
| IT with TAKE-OVER | −0.25 | −0.27 |
| | (0.25) | (0.29) |
| IT with GREENFIELD | 3.27*** | 3.31*** |
| | (2.71) | (2.97) |
| LIQUIDITY | −0.01 | 0.03 |
| | (0.31) | (0.70) |
| IT with TAKE-OVER | −0.44 | −0.69 |
| | (0.23) | (0.39) |
| IT with GREENFIELD | −0.14 | −0.31 |
| | (0.29) | (0.67) |
| SIZE | −3.22 | −30.42 |
| | (0.07) | (0.69) |
| IT with TAKE-OVER | 288.35 | 210.43 |
| | (0.82) | (0.61) |
| IT with GREENFIELD | −6394.05*** | −5369.42*** |
| | (3.58) | (3.32) |
| PROFITABILITY | 1.97*** | 1.98*** |
| | (3.27) | (3.42) |
| IT with TAKE-OVER | 6.41 | 4.56 |
| | (0.80) | (0.58) |
| IT with GREENFIELD | −4.42 | −4.77 |
| | (1.00) | (1.11) |
| INTEREST MARGIN | 0.49 | 0.71 |
| | (0.62) | (0.93) |
| IT with TAKE-OVER | −2.30 | −7.45 |
| | (0.27) | (0.78) |
| IT with GREENFIELD | −4.54 | −4.77 |
| | (0.76) | (1.11) |
| Observations | 1003 | 1003 |
| No. of banks | 247 | 247 |
| Hausman test statistic | 0.00 | 0.00 |

Absolute *z*-values in parentheses; * significant at 10%; ** at 5%; *** at 1%.
Hausman and Taylor (1981) estimates. Country dummy variables and constant are not shown.

438  insignificance of our take-over and greenfield dummies shows that the growth differ-
439  ences as observed in practice are not the result of foreign ownership as such (cf.
440  Dages et al., 2000). For Hungary, Majnoni et al. (2003) also find that whereas green-
441  fields and take-overs differ, for instance, as regards profitability, they do not differ in
442  their ability to expand credit.

Table 3
Credit market share growth (including interaction terms (IT))

| Full sample | |
| --- | --- |
| TAKE-OVER | 20.19 |
| | (0.76) |
| IT with CRISIS | 2.79 |
| | (0.11) |
| GREENFIELD | −12.92 |
| | (0.54) |
| IT with CRISIS | −1.13 |
| | (0.11) |
| HOME $\Delta$GDP | 7.35 |
| | (1.58) |
| IT with GREENFIELD | −15.51** |
| | (2.53) |
| HOME LENDING RATE | 4.20*** |
| | (4.07) |
| IT with GREENFIELD | −3.57* |
| | (1.74) |
| WEAKNESS PARENT BANK | 0.13 |
| | (0.74) |
| IT with GREENFIELD | −0.32* |
| | (1.70) |
| SOLVENCY | 0.27 |
| | (0.66) |
| IT with TAKE-OVER | 0.66 |
| | (1.31) |
| IT with GREENFIELD | 4.41*** |
| | (4.33) |
| LIQUIDITY | 0.03 |
| | (0.72) |
| IT with TAKE-OVER | −0.64 |
| | (0.43) |
| IT with GREENFIELD | −0.731** |
| | (2.48) |
| SIZE[a] | 0.00 |
| | (0.22) |
| IT with TAKE-OVER | −0.02** |
| | (1.96) |
| IT with GREENFIELD | 0.03*** |
| | (2.83) |
| PROFITABILITY | 1.14 |
| | (1.16) |
| IT with TAKE-OVER | 0.79 |
| | (0.24) |
| IT with GREENFIELD | 3.70 |
| | (1.07) |

Table 3 (*continued*)

| Full sample | |
| --- | --- |
| INTEREST MARGIN | 2.99*** |
| | (3.42) |
| IT with TAKE-OVER | −14.81*** |
| | (3.27) |
| IT with GREENFIELD | −3.64 |
| | (1.15) |
| Observations | 997 |
| No. of banks | 245 |
| Hausman test statistic | 0.00 |
| $R^2$ | 0.25 |

*z*-Values in parentheses. Constant is not shown. Panel-corrected standard error (PCSE) estimates. Disturbances: heteroscedasticity corrected and panel-specific AR(1) process.

[a] Here defined as "total assets" instead of "total assets to total banking assets in particular country" (as in Tables 1 and 2).

However, things change during host country crisis periods. Bank ownership then starts to matter. Table 1 clearly shows that whereas the crisis dummy is insignificant in the foreign bank regressions, it enters negatively and significantly in the full and domestic bank estimations. During crisis periods domestic banks thus contracted their credit, whereas foreign banks did not show any reduction at all. The first column of Table 2 shows that this positive stability effect during crisis periods is driven by greenfields. The interaction term between the crisis dummy and the greenfield dummy is positive and its absolute value exceeds that of the stand-alone crisis dummy. However, in the second column, in which we split the macroeconomic variables into host and home country developments, the significance of this greenfield-crisis effect disappears. Apparently, the inclusion of a separate host country GDP variable, which is highly significant, now captures most of this effect. We also estimated another regression in which credit growth is explained by the crisis dummy, the interaction terms between this dummy and the ownership dummies and the set of macroeconomic and bank-specific control variables.[22] In this regression, the positive interaction term between the crisis dummy and the greenfield dummy is again larger than the separate negative coefficient for the crisis dummy (and significant at the 1% level). Again, the interaction term between the take-over dummy and the crisis dummy is insignificant.[23] Taken together, these results show that whereas domestic banks reduced credit during crisis periods, greenfield foreign banks did not.[24]

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[22] This is basically the same regression as in column 1 of Table 1 but with the ownership dummies now interacted with the crisis dummy rather than included separately.

[23] This result may very well be driven by the limited number of observations of take-over foreign banks during crisis periods. Our main result is therefore that during crisis periods greenfield foreign banks have shown much more stable credit than domestic banks.

[24] Table 3 shows that the fact that greenfields kept up credit during crises, while other types of banks did not, did not enable them to significantly gain market share during such periods.

463    Next we are interested in the effect of home and host country conditions. First,
464 Table 1 shows that credit growth of foreign banks is significantly and positively af-
465 fected by host country GDP growth. The coefficient is even higher than for domestic
466 banks, so that on average foreign bank credit tends to be somewhat more procycli-
467 cal: a 1%-point increase in host country GDP growth leads foreign (domestic) banks
468 to expand credit by 8.64% (6.74%). This result is in line with the finding of Houston
469 and James (1998) that affiliated banks are more responsive to local market condi-
470 tions than stand-alone banks. This higher sensitivity to local economic conditions
471 may reflect the portfolio view of the parent bank, which allocates capital to foreign
472 subsidiaries on the basis of expected investment opportunities. At the same time,
473 domestic banks may be better equipped for "relationship lending" than foreign bank
474 subsidiaries, given their longer presence and superior knowledge of the local market.
475    A second result worth mentioning is that foreign banks are significantly influ-
476 enced by home country GDP growth as well. As a matter of fact, the last column
477 of Table 1 shows that these banks are just as much influenced by home country
478 ("push factor") as by host country ("pull factor") conditions.[25] A 1% point higher
479 GDP growth in the home country leads to a credit decline by foreign subsidiaries
480 of 8.62%. Higher home country growth implies that the opportunity costs of forego-
481 ing home country lending increase (Molyneux and Seth, 1998; Moshirian, 2001).
482 Vice versa, this negative relationship means that lower home country growth leads
483 foreign banks to focus their activities more on other countries where growth is rel-
484 atively high. More specifically, since most of the home countries were not in a reces-
485 sion during our sample period, the negative relationship we find reflects that
486 increasing/decreasing *but positive* home country GDP growth has led to lower/higher
487 credit growth by foreign bank subsidiaries.[26]
488    Tables 2 and 3 allow us to differentiate between greenfields and take-overs. First,
489 Table 2 shows that the positive effect of host country GDP growth is similar for both
490 categories of foreign banks. The significant and negative home country GDP effect
491 from Table 1 (column 2 and 5), appears to be driven by greenfield banks.[27] In Table
492 3, when we interact home country GDP growth with the greenfield dummy, it be-
493 comes clear that only for greenfields there exists a negative relationship between
494 home country GDP growth and credit market share growth. These results are in line
495 with those of Calvo et al. (1993) and Hernandez and Rudolph (1995), and more re-
496 cently those of Goldberg (2001) (for emerging Asia), Moshirian (2001), and Soledad
497 Martinez Peria et al. (2002), all of which find a negative correlation between home
498 country GDP growth and host country credit by foreign banks. However, our results
499 show that, at least for CEE, such home country effect may be limited to foreign
500 banks that have been erected from scratch. The organisational relationships between

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[25] See also Jeanneau and Micu (2002) on the complementarity of push and pull factors.

[26] Only 22 out of 531 observations of home country GDP growth rates are negative. When we excluded these 22 observations, the negative relationship between home country GDP growth and foreign subsidiaries' credit remained and even became statistically more significant.

[27] In the full sample estimates with interaction terms of Table 2, where only the foreign bank observations have a home country GDP value, the home country GDP effect disappears.

501  parent bank and subsidiary appear to be tighter for greenfields than for former
502  domestic banks that have been taken over. Such take-overs may enjoy greater auton-
503  omy, at least for some time, and are thus less influenced by home country conditions.
504      As regards the effect of lending rates, it is interesting to note that we do not find
505  evidence for a relationship between the host country lending rate as such and host
506  country credit growth, neither for foreign nor for domestic banks. However, in
507  the full sample regressions we find in all three tables that foreign banks' credit growth
508  in the host country is positively related to home country lending rates. This positive
509  effect of the home country lending rate is somewhat puzzling, as we would expect
510  that lower lending rates in the home country would, ceteris paribus, make it more
511  attractive to expand credit in the host country. A plausible explanation for this re-
512  sult, as well as for the fact that we do not find any influence of host country lending
513  rates, is that comparing home and host country lending rates may be only half of the
514  story. When deciding whether to expand credit or not, banks not only take into ac-
515  count (relative) prices, but (relative) risk levels as well. Changes in average risk levels
516  may thus disturb our findings for bank lending rates.
517      Finally, the bank-specific control variables show some interesting results.[28] Two re-
518  sults are especially worth pointing out. First, we find a consistent and significant direct
519  influence of parent bank health. Weaker parent banks, as reflected in higher loan loss
520  provisions to net interest revenue, lead to lower credit growth in their CEE-subsidiar-
521  ies (Table 1). However, Table 3 shows again that in terms of market share this effects
522  only operates for greenfield foreign banks (10% level). Furthermore, we find that all
523  types of banks – domestic banks, greenfields, and take-overs – face a capital con-
524  straint: more solvent banks are able to grow faster. This contrasts with the results
525  of Houston et al. (1997) who find that bank holding subsidiaries' credit growth is only
526  sensitive to the capital position of the holding company, not to the capital position of
527  the subsidiary itself. Apparently, the foreign bank subsidiaries in CEE are more inde-
528  pendent than the US bank holding affiliates studies by Houston et al. (1997). Tables 2
529  and 3 show that greenfield banks are especially constrained by their solvency in
530  expanding credit and credit market share. Although greenfield foreign banks are rel-
531  atively sensitive to home country economic conditions and parent bank health, they
532  are nevertheless still restricted in their growth rate by their own capital. Apparently,
533  parent banks provided these banks with capital if necessary, but kept this to a mini-
534  mum, thus retaining the link between capital and credit growth at the subsidiary level.
535      Since our analysis is based on a limited number of years, our results should be
536  viewed as applying to the short run. If and when foreign banks and domestic banks
537  converge as regards their structure and behaviour, the differences as observed by us
538  would gradually disappear. However, to the extent that the main difference between

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[28] The very large coefficient for the interaction term between greenfield and (relative) size in Table 2
shows the tension that is inherent in estimating a single model with interaction terms. The range for market
share for the full sample is between approximately 0% and 96%, while the largest market share for
greenfields is only 11%. Thus the interaction term is in a sense truncated. To maintain consistency we have
nevertheless retained the interaction variable. However, excluding the size interaction terms does not
materially change the estimates.

539 foreign bank subsidiaries and domestic banks is that the former are integrated in a
540 multinational bank holding, whereas the latter are stand-alone entities, our results
541 may actually be more long-lasting.

## 5. Conclusions

543    The transition process from plan to market has proven to be an opportunity for
544 many foreign banks to expand their activities to CEE, either through establishing
545 greenfields or through taking over former state-owned banks. From the host country
546 perspective, foreign strategic investors and their capital and knowledge have helped
547 to strengthen national banking systems and improve the low level of financial inter-
548 mediation. Still, there are also some concerns about the growing influence of foreign
549 banks. These mainly relate to the possibility that foreign banks turn out to be insta-
550 ble sources of bank credit, especially during financial crises or during economic
551 downturns (either in CEE or in their home markets).
552    Using a large and detailed panel dataset on both domestic and foreign banks, our
553 empirical analysis shows that during crisis periods domestic banks contract their cred-
554 it. In contrast, greenfield foreign banks play a stabilising role by keeping their credit
555 base stable. At the same time we find that foreign banks, both greenfields and take-
556 overs, react somewhat more procyclically to changing local economic conditions.
557 We also find that home country conditions are relevant to foreign banks' expansion.
558 We find a significant and negative relationship between home country economic
559 growth and host country credit by foreign bank subsidiaries. This result turns out
560 to hold only for greenfield foreign banks and not for take-over foreign banks. Appar-
561 ently, greenfields have not so much been squeezed by (capital-constrained) parent
562 banks during difficult economic times in the home country, but rather been stimulated
563 to increase their credit, in order to make up for the lack of profitable investment
564 opportunities "back home". Especially for greenfields we also find that a decrease
565 in the financial health of the parent bank has negative repercussions for their ability
566 to expand their own credit. These results point to a strong influence of their parent
567 banks. In case of former domestic banks that have been taken over by foreign bank-
568 ing groups, the intragroup relationships appear to be more loose.
569    All in all, greenfield foreign banks have had a positive stability effect on total cred-
570 it supply in CEE countries. During crisis periods they kept up credit supply, while
571 during normal economic times they yielded some diversification effects due to their
572 sensitivity to home country business cycle shocks and to their parent bank's health.
573 This suggests that diversification of foreign banks on the basis of their home markets
574 and bank holding company may diminish the risks of significant spill-overs from
575 individual home countries.

## Acknowledgements

**Appendix 1. Number of domestic banks, take-over foreign banks and greenfield foreign banks in dataset**

| Year | | Croatia | Czech Republic | Estonia | Hungary | Latvia | Lithuania | Poland | Romania | Slovak Republic | Slovenia | Total |
|------|------|---------|---------|---------|---------|---------|-----------|--------|---------|---------|---------|-------|
| 1993 | All | 16 | 14 | 2 | 11 | 4 | 2 | 16 | 2 | 7 | 7 | 81 |
| | Domestic | 16 | 7 | 2 | 4 | 4 | 2 | 12 | 2 | 5 | 6 | 60 |
| | Take-over | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Greenfield | 0 | 7 | 0 | 7 | 0 | 0 | 4 | 0 | 2 | 1 | 21 |
| 1994 | All | 25 | 23 | 3 | 19 | 12 | 3 | 28 | 4 | 11 | 11 | 139 |
| | Domestic | 25 | 13 | 3 | 7 | 10 | 3 | 22 | 3 | 8 | 10 | 104 |
| | Take-over | 0 | 0 | 0 | 2 | 0 | 0 | 0 | 0 | 0 | 0 | 2 |
| | Greenfield | 0 | 10 | 0 | 10 | 2 | 0 | 6 | 1 | 3 | 1 | 33 |
| 1995 | All | 28 | 25 | 5 | 22 | 15 | 5 | 33 | 5 | 14 | 17 | 169 |
| | Domestic | 28 | 14 | 5 | 8 | 13 | 5 | 25 | 4 | 10 | 14 | 126 |
| | Take-over | 0 | 0 | 0 | 3 | 0 | 0 | 0 | 0 | 1 | 0 | 4 |
| | Greenfield | 0 | 11 | 0 | 11 | 2 | 0 | 8 | 1 | 3 | 3 | 39 |
| 1996 | All | 34 | 28 | 9 | 23 | 17 | 7 | 39 | 8 | 19 | 24 | 208 |
| | Domestic | 34 | 16 | 9 | 8 | 15 | 7 | 29 | 5 | 11 | 20 | 154 |
| | Take-over | 0 | 0 | 0 | 4 | 0 | 0 | 0 | 0 | 2 | 0 | 6 |
| | Greenfield | 0 | 12 | 0 | 11 | 2 | 0 | 10 | 3 | 6 | 4 | 48 |

| Year | | | | | | | | | | | | |
|------|-----------|----|----|---|----|----|----|----|----|----|----|-----|
| 1997 | All       | 40 | 29 | 9 | 25 | 23 | 10 | 41 | 10 | 20 | 24 | 231 |
|      | Domestic  | 38 | 16 | 9 | 8  | 18 | 10 | 28 | 5  | 11 | 20 | 163 |
|      | Take-over | 0  | 0  | 0 | 4  | 1  | 0  | 2  | 0  | 2  | 0  | 9   |
|      | Greenfield| 2  | 13 | 0 | 13 | 4  | 0  | 11 | 5  | 7  | 4  | 59  |
| 1998 | All       | 35 | 24 | 5 | 24 | 20 | 9  | 42 | 24 | 21 | 20 | 224 |
|      | Domestic  | 31 | 11 | 5 | 4  | 15 | 9  | 25 | 13 | 11 | 15 | 139 |
|      | Take-over | 1  | 2  | 0 | 7  | 2  | 0  | 4  | 0  | 2  | 1  | 9   |
|      | Greenfield| 3  | 11 | 0 | 13 | 3  | 0  | 13 | 11 | 8  | 4  | 66  |
| 1999 | All       | 34 | 25 | 4 | 28 | 19 | 9  | 43 | 25 | 16 | 19 | 222 |
|      | Domestic  | 28 | 10 | 4 | 4  | 13 | 7  | 24 | 13 | 8  | 14 | 125 |
|      | Take-over | 1  | 3  | 0 | 8  | 3  | 2  | 5  | 1  | 2  | 1  | 26  |
|      | Greenfield| 5  | 12 | 0 | 16 | 3  | 0  | 14 | 11 | 6  | 4  | 71  |
| 2000 | All       | 31 | 23 | 4 | 29 | 20 | 9  | 38 | 21 | 15 | 19 | 209 |
|      | Domestic  | 22 | 9  | 2 | 3  | 15 | 6  | 15 | 12 | 7  | 14 | 105 |
|      | Take-over | 3  | 4  | 2 | 9  | 2  | 3  | 10 | 0  | 2  | 1  | 36  |
|      | Greenfield| 6  | 10 | 0 | 17 | 3  | 0  | 13 | 9  | 6  | 4  | 68  |

**Appendix 2. Descriptive statistics: *t*-tests level and growth differences domestic banks (D), greenfields (G) and take-overs (T)**

| Variable | D lv | G lv | T lv | D≠G lv | D<G lv | D>G lv | D≠T lv | D<T lv | D>T lv | D gr | G gr | T gr | D≠G gr | D<G gr | D>G gr | D≠T gr | D<T gr | D>T gr | σ/μ D | σ/σμ G | σ/σμ T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Loans | 607 | 127 | 851 | **0.06** | 0.97 | **0.03** | 0.51 | 0.26 | 0.74 | *75* | *649* | *55* | 0.30 | 0.15 | 0.85 | 0.42 | 0.79 | 0.21 | 6.10 | 1.00 | 2.19 |
| Probl. loans | 69 | 7 | 129 | **0.00** | 1.00 | **0.00** | 0.29 | 0.15 | 0.85 | *87* | *55* | *344* | 0.24 | 0.88 | 0.12 | 0.24 | 0.12 | 0.88 | 2.64 | 1.60 | 1.99 |
| Total deposits | 1136 | 229 | 1554 | **0.02** | 0.99 | **0.01** | 0.52 | 0.26 | 0.74 | *80* | *749* | *52* | 0.34 | 0.17 | 0.83 | 0.29 | 0.85 | 0.15 | 4.97 | 0.95 | 2.23 |
| Money market funding | 40 | 19 | 254 | 0.11 | 0.94 | **0.06** | 0.25 | 0.12 | 0.88 | *290* | *193* | *94* | 0.58 | 0.71 | 0.29 | 0.26 | 0.87 | 0.13 | 3.42 | 2.19 | 3.77 |
| Liabilities | 1308 | 252 | 1849 | **0.02** | 0.99 | **0.01** | 0.50 | 0.25 | 0.75 | *57* | *249* | *52* | 0.31 | 0.16 | 0.84 | 0.81 | 0.60 | 0.40 | 4.95 | 0.96 | 2.40 |
| Assets | 1360 | 280 | 2107 | **0.02** | 0.99 | **0.01** | 0.41 | 0.20 | 0.80 | *41* | *49* | *40* | 0.49 | 0.24 | 0.76 | 0.90 | 0.55 | 0.45 | 4.83 | 0.93 | 2.48 |
| Loan loss reserves | 15 | 2 | 2 | **0.04** | 0.98 | **0.02** | **0.03** | 0.98 | **0.02** | *261* | *125* | *845* | 0.50 | 0.75 | 0.25 | 0.40 | 0.20 | 0.80 | 1.91 | 1.35 | 1.40 |
| Non-earning assets | 174 | 18 | 188 | **0.03** | 0.99 | **0.01** | 0.90 | 0.45 | 0.55 | *159* | *127* | *42* | 0.77 | 0.61 | 0.39 | 0.29 | 0.86 | 0.14 | 5.94 | 1.11 | 3.22 |
| Liquid assets | 326 | 65 | 561 | **0.05** | 0.98 | **0.02** | 0.47 | 0.23 | 0.77 | *116* | *200* | *132* | 0.28 | 0.14 | 0.86 | 0.87 | 0.43 | 0.57 | 5.94 | 1.40 | 3.51 |
| Net interest revenue | 32 | 10 | 74 | **0.02** | 0.99 | **0.01** | 0.16 | **0.08** | 0.92 | *25* | *79* | *40* | **0.06** | **0.03** | 0.97 | 0.53 | 0.27 | 0.73 | 4.29 | 0.91 | 2.52 |
| Profit before tax | 58 | 5 | 11 | 0.28 | 0.86 | 0.14 | 0.36 | 0.82 | 0.18 | *−1663* | *−50* | *44* | 0.27 | 0.14 | 0.86 | 0.25 | 0.12 | 0.88 | 12.53 | 1.63 | 9.68 |
| Net income | 48 | 3 | 8 | 0.30 | 0.85 | 0.15 | 0.36 | 0.82 | 0.18 | *−131* | *47* | *18* | 0.40 | 0.20 | 0.80 | 0.36 | 0.18 | 0.82 | 13.25 | 1.80 | 8.41 |
| Equity | 52 | 29 | 257 | 0.76 | 0.62 | 0.38 | 0.16 | **0.08** | 0.92 | *110* | *27* | *21* | 0.57 | 0.71 | 0.29 | 0.55 | 0.73 | 0.27 | 21.81 | 0.77 | 3.23 |
| Total revenue | 333 | 36 | 253 | **0.03** | 0.98 | **0.02** | 0.62 | 0.69 | 0.31 | *59* | *73* | *46* | 0.53 | 0.26 | 0.74 | 0.65 | 0.68 | 0.32 | 6.15 | 0.89 | 2.19 |
| Total expenses | 317 | 29 | 235 | **0.04** | 0.98 | **0.02** | 0.63 | 0.69 | 0.31 | *46* | *57* | *32* | 0.34 | 0.17 | 0.83 | 0.27 | 0.87 | 0.13 | 6.55 | 0.89 | 2.77 |
| Loanloss provisions/ interest revenue | 30 | 8 | 9 | **0.02** | 0.99 | **0.01** | **0.03** | 0.99 | **0.01** | *–* | *–* | *–* | – | – | – | – | – | – | 4.14 | 3.27 | 2.66 |
| Interest margin | 6 | 6 | 5 | 0.34 | 0.83 | 0.17 | **0.00** | 1.00 | **0.00** | *3* | *35* | *0* | 0.20 | **0.10** | 0.90 | 0.80 | 0.60 | 0.40 | 0.91 | 0.66 | 0.39 |
| ROA | 0 | 2 | 0 | **0.03** | **0.01** | 0.99 | 0.65 | 0.68 | 0.32 | *−27* | *126* | *−6* | 0.47 | 0.24 | 0.76 | 0.72 | 0.36 | 0.64 | 20.12 | 1.60 | – |
| Cost/income | 70 | 73 | 82 | 0.66 | 0.33 | 0.67 | 0.23 | 0.11 | 0.89 | *22* | *11* | *3* | 0.54 | 0.73 | 0.27 | 0.32 | 0.84 | 0.16 | 1.33 | 0.66 | 0.64 |

Level (lv) variables in millions of euro, growth variables (gr) in percentages (italics). Averages across banks and over years.

D ≠ G: *p*-value of two-sided *t*-test on equality of means. H1: μ(domestic banks) ≠ μ(greenfield banks).

D < G: *p*-value of one-sided *t*-test on equality of means. H1: μ(domestic banks) < μ(greenfield banks).

D > G: *p*-value of one-sided *t*-test on equality of means. H1: μ(domestic banks) > μ(greenfield banks).

*p*-Values equal to or smaller than 10% (bold).

## Appendix 3. Overview of systemic banking crises

We constructed our CRISIS-dummy by assigning a value of "1" to all bank/year-combinations that were confronted with a banking crisis in the particular host country. An overview of banking crises in CEE was put together on the basis of Caprio and Klingebiel (C&K) (2002), with a small number of adjustments and further specifications as regards the precise timing of the crises (see below). C&K define a banking crisis as a period during which much or all of bank capital in a country is exhausted.

| Country | Crisis years | Additional remarks |
|---|---|---|
| Croatia | 1996, 1998–1999 | C&K only mention 1996, Kraft (2002a) also mentions 1998–1999 |
| Czech Republic | 1993–1997 | |
| Estonia | 1992–1995 | |
| Hungary | 1991–1995 | |
| Latvia | 1995–1997 | |
| Lithuania | 1995–1996 | |
| Poland | 1991–1995 | The main part of the recapitalisation program was completed by 1996 |
| Romania | 1998–1999 | Restructuring and bank liquidations continued until 1999 |
| Slovak Republic | 1996–2000 | Restructuring and bank liquidations continued until 2000 |
| Slovenia | 1992–1994 | |

## References

Beck, N., Katz, J.N., 1995. What to do (and not to do) with time-series cross-section data. American Political Science Review 89, 634–647.

Bank for International Settlements, 2003. Guide to the international banking statistics. BIS Paper No. 16. Bank for International Settlements, Basel.

Calvo, G.A., Leiderman, L., Reinhart, C.M., 1993. Capital inflows and real exchange rates appreciation in Latin America – the role of external factors. IMF Staff Papers 40, pp. 108–151.

650 Caprio, G., Klingebiel, D., 2002. Episodes of systemic and borderline banking crises, World Bank,
651     Washington, DC, mimeo.
652 Claessens, S., Demirgüç-Kunt, A., Huizinga, H., 2001. How does foreign entry affect domestic banking
653     markets? Journal of Banking & Finance 25, 891–911.
654 Crystal, J.S., Dages, B.G., Goldberg, L.S., 2002. Has foreign bank entry led to sounder banks in Latin
655     America? Current Issues in Economics and Finance 8, 1–6.
656 Dages, B.G., Goldberg, L.S., Kinney, D., 2000. Foreign and domestic bank participation in emerging
657     markets: Lessons from Mexico and Argentina. Federal Reserve Bank of New York Economic Policy
658     Review (September), 17–36.
659 De Haas, R.T.A., Naaborg, I.J., 2005. Foreign banks in transition economies: Small business lending and
660     internal capital markets, mimeo.
661 De Haas, R.T.A., Van Lelyveld, I.P.P., 2004. Foreign bank penetration and private sector credit in
662     Central and Eastern Europe. Journal of Emerging Market Finance 3, 125–151.
663 Fries, S., Taci, A., 2005. Cost efficiency of banks in transition: Evidence from 289 banks in 15 post-
664     communist countries. Journal of Banking & Finance 29, 55–81.
665 Fries, S., Neven, D., Seabright, P., 2002. Bank performance in transition economies. William Davidson
666     Working Paper No. 505, University of Michigan Business School.
667 Goldberg, L.S., 2001. When is US bank lending to emerging markets volatile? NBER Working Paper No.
668     8209, New York.
669 Goldberg, L.G., Saunders, A., 1981. The determinants of foreign banking activity in the United States.
670     Journal of Banking & Finance 5, 17–32.
671 Hausman, J.A., Taylor, W.E., 1981. Panel data and unobservable individual effects. Econometrica 49,
672     1377–1398.
673 Hernandez, L., Rudolph, H., 1995. Sustainability of private capital flows to developing countries – is a
674     generalised reversal likely? World Bank Policy Research Working Paper No. 1518, World Bank,
675     Washington, DC.
676 Houston, J.F., James, C., 1998. Do bank internal capital markets promote lending? Journal of Banking &
677     Finance 22, 899–918.
678 Houston, J., James, C., Marcus, D., 1997. Capital market frictions and the role of internal capital markets
679     in banking. Journal of Financial Economics 46, 135–164.
680 Jeanneau, S., Micu, M., 2002. Determinants of international bank lending to emerging market countries.
681     BIS Working Paper No. 112, Bank for international Settlements, Basel.
682 Jeon, Y., Miller, S.M., in press. Performance of domestic banks and foreign banks: The case of Korea and
683     the Asian financial crisis. Global Economic Review.
684 Kraft, E., 2002a. Characteristics and behavior of foreign banks during and after the banking crisis. In: 5th
685     Conference on Financial Sector Reform in Central and Eastern Europe: The Impact of Foreign Bank
686     Entry, Tallinn.
687 Kraft, E., 2002b. Foreign banks in Croatia: Another look, Croatian National Bank Working Paper No.
688     10. Croatian National Bank, Zagreb.
689 Lensink, R., Hermes, N., 2004. The impact of foreign bank entry on domestic banks: Does economic
690     development matter? Journal of Banking & Finance 28, 553–568.
691 Majnoni, G., Shankar, R., Várhegyi, E., 2003. The dynamics of foreign bank ownership: Evidence from
692     Hungary. World Bank Policy Research Paper No. 3314, World Bank, Washington, DC.
693 Mathieson, D.J., Roldos, J., 2001. The role of foreign banks in emerging markets. In: Litan, R.E., Masson,
694     P., Pomerleano, M. (Eds.), Open Doors. Foreign Participation in Financial Systems in Developing
695     Countries. The Brookings Institution, Washington, DC, pp. 15–55.
696 Molyneux, P., Seth, R., 1998. Foreign bank profits and commercial credit extension in the United States.
697     Applied Financial Economics 8, 533–539.
698 Morgan, D., Strahan, P.E., 2004. Foreign bank entry and business volatility: Evidence from U.S. states
699     and other countries. In: Ahumada, L.A., Fuentes, J.R. (Eds.), Banking Market Structure and
700     Monetary Policy. Central Bank of Chile, Santiago, pp. 241–269.
701 Moshirian, F., 2001. International investment in financial services. Journal of Banking & Finance 25, 317–
702     337.

703  Peek, J., Rosengren, E.S., 1997. The international transmission of financial shocks: The case of Japan.
704       American Economic Review 87, 495–505.
705  Peek, J., Rosengren, E.S., 2000a. Implications of the globalization of the banking sector: The Latin
706       American experience. New England Economic Review (September/October), 45–63.
707  Peek, J., Rosengren, E.S., 2000b. Collateral damage: Effects of the Japanese bank crisis on the United
708       States. American Economic Review 90, 30–45.
709  Schmitz, B., 2003. What role do banks play in monetary policy transmission in EU accession countries?
710       University of Bonn, mimeo.
711  Soledad Martinez Peria, M., Mody, A., 2004. How foreign participation and market concentration impact
712       bank spreads: Evidence from Latin America, World Bank Policy Research Paper No. 3210, World
713       Bank, Washington, DC.
714  Soledad Martinez Peria, M., Powell, A., Vladkova Hollar, I., 2002. Banking on foreigners: The behavior
715       of international bank lending to Latin America, 1985–2000, World Bank Working Paper No. 2893.
716       World Bank, Washington, DC.
717  Stein, J.C., 1997. Internal capital markets and the competition for corporate resources. Journal of Finance
718       52, 111–134.
719  Stiglitz, J., 2002. Globalization and Its Discontents. W.W. Norton & Company, New York.
720  Williams, B., 2003. Domestic and international determinants of bank profits: Foreign banks in Australia.
721       Journal of Banking & Finance 27, 1185–1210.
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