Location Decisions of Foreign Banks and Institutional Competitive Advantage

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Abstract

Familiarity with working in a specific institutional environment compared to its competitors can provide a firm with a competitive advantage, making it invest in specific host countries. We examine whether this notion of institutional competitive advantage drives banks to seek out specific markets. Using detailed, bilateral data of bank ownership for a large number of countries over 1995-2006 and using a first-difference model, we find that institutional competitive advantage importantly drives banks' location decisions. Results are robust to different samples and model specifications, various econometric techniques and alternative measures of institutional quality. This finding has some policy implications, including on the increased cross-border banking among developing countries.

1. Introduction

The last decade has seen many foreign banks enter other markets, especially in developing countries, to provide a broad range of financial services locally. This has been driven by domestic deregulation, including the removal of entry barriers, technological advances, increased financial integration, and more generally heightened globalization. As for other foreign investors, individual banks have to weigh the costs and risks of going abroad against the opportunities at home and against other modalities to provide services across borders without establishing a presence, such as through cross-border lending. Furthermore, foreign banks have many markets to choose from when establishing a presence abroad. This leads to the question what factors drive the decision of a bank from a specific country to go abroad and establish presence in a specific country.

In this paper, we investigate the role of institutional competitive advantage in driving the decision of banks from specific countries to enter specific countries. Using a large sample of source and host countries over the last two decades, we examine whether banks seek out those countries where their institutional competitive advantage provides them with an advantage over other, competitor banks. We develop a measure of institutional competitive advantage for each source-host country pair based on third-party assessments of countries' institutional environments. Using a first-difference model and controlling for time-varying factors, we find that institutional competitive advantage is an important factor in driving foreign banks' location decisions.

Our finding relates to the general literature on the determinants of foreign bank entry. Banks engage in foreign entry presumably to increase profitability, within an acceptable risk profile. Several factors have been identified affecting this return versus risk consideration. Traditionally, the decision of banks to go abroad has been considered to be closely tied to the internationalization of non-financial firms through trade and FDI. In other words, banks follow their customers to provide them with financial services abroad, especially trade and project finance, and thereby increase their businesses and profitability. Empirical studies have shown that FDI in banking is indeed correlated with the amount of bilateral trade and other forms of FDI between source and host countries (Grosse and Goldberg, 1991, Brealey and Kaplanis, 1996, Williams, 1998, and Yamori,

1998). It helps explain why, for example, US as well as Spanish banks expand into Latin America as trade and FDI is relatively large between these groups of countries.

However, profit related to the direct provision of trade- and project-related finance to firms that have expanded across borders has arguably become a less important reason to establish a bank presence abroad. With technological advances and better communications, banks are increasingly able to provide many types of financial services across borders to firms' foreign affiliates without needing to establish affiliates in foreign markets. Furthermore, firms can more and more obtain trade- and project-finance related services from local banks that have improved their capacities. Rather, it seems banks have been expanding abroad to seek new, local market opportunities and so increase profitability within an acceptable risk profile. Indeed, host and source country characteristics capturing profitability and risks in general, but not specifically related to trade and FDI, have been found to be important drivers of banks' decision to enter a foreign market. Focarelli and Pozzolo (2000 and 2005), for example, find that banks prefer to have subsidiaries in countries where expected profits are larger because of higher expected economic growth and/or the prospect of benefiting from local banks' inefficiencies. And Buch and DeLong (2004) find that information costs and regulations hold back cross-border bank merger activity as they reduce profitability.

The general FDI literature has highlighted, however, that the motivation of profit requires some further explanation. For a firm from a particular source country to enter a certain market and be profitable, there must be an advantage of that firm relative to local firms. In the FDI literature, the internalization theory has developed to explain why this may be the case. The theory asserts that firms expand abroad to exploit the knowledge advantage created within the firm. This concept of internal knowledge is very broad and includes technical, marketing and managerial know-how (see Casson, 1987). To benefit most of this internal knowledge advantage, firms are best off to invest in countries that are similar to those they are already familiar with (Buckley and Casson, 1991). For banks, the concept of internal knowledge has mostly been used with respect to informational issues. Banks can, for example, derive informational advantages from long-term bank-client relationships by allowing them to offer their customers financial services at better terms than other providers may (Rajan, 1992, and Petersen and Rajan,

1994). More generally, banks' advantages derive in large part from their ability to process information efficiently because of greater use of technology, specialized skills (e.g., risk management), scale, etc. These advantages will depend in part on the information and business environment the bank already is working in.

In terms of explaining why and how banks expand abroad, the internalization theory would suggest that, depending on the familiarity of the bank with a certain environment in the source country, it can be a source of strength in terms of engaging in cross-border entry in another country. The empirical prediction would be that banks enter countries with a similar level of information quality and, more generally, with a similar institutional environment. For example, other things equal, a bank that is used to work in a very transparent country without corruption, would find it easier to operate in a not opaque and low corruption country. Vice-versa, a bank that is used to work in an opaque institutional environment, might be able to operate well in a country which is also opaque. This hypothesis is supported by Galindo, Micco and Serra (2003), who find that foreign bank penetration is greater between source and host countries that are legally and institutionally similar. This suggests that banks' internalization advantages play a role in entry decisions.

We build on these papers, but argue that the internalization motive alone cannot explain a bank's entry into a particular country. This argument implicitly assumes that the location decision of an individual bank is made independent of the location decisions made by other, competing banks that are also expanding their business abroad. When a bank decides to expand its business abroad, however, its choice of location is not just dependent on the bank's own advantage (and on issues such as bilateral trade and FDI flows), but also on the competitive advantage that the investing bank has over not only banks already present (local and foreign) but also over other foreign banks that are potential entrants. In other words, for a bank from a particular source country to enter a certain market, there must be a competitive advantage of that bank relative to local banks as well as relative to other foreign banks that can also enter. At the same time, the internalization hypothesis suggests that a bank can derive advantages from its ability to work within a certain institutional environment. Combining the competitive advantage requirement and the internalization hypothesis therefore implies that the institutional

difference between host and source country taking into account the institutional differences between host and all competitor source countries matters for foreign bank entry from a specific source country into a specific host country.

The impact of this concept of institutional competitive advantage on location attractiveness has not been studied before for any type of foreign investment. In order to test its empirical validity for the specific case of foreign bank entry, we construct a database covering banks in almost all countries, their ownership and, if majority foreign-owned, the source country of the owner, at each point in time during 1995-2006. We next construct a bilateral measure of a bank's institutional competitive advantage which relates to the source country and the specific host institutional environment as well as to the competitor source countries' institutional environments. Together, this allows us to test whether a bank's better knowledge about a certain business environment compared to its competitors is a determining factor in decisions to enter a certain market relative to other markets.

Using a first difference approach, we find that when the quality of institutions in the source country is close to that of the host country relative to how close the competitors' institutional qualities are on average to that of the same host country, a bank is more likely to enter. In other words, it is a bank's ability to better work in a certain institutional environment relative to its competitors, which makes it enter a certain market. We also find that being close in institutional quality to the specific host country relative to competitor banks matters more than just being close. We confirm earlier findings that higher institutional quality and lower entry barriers in the host country lead to more entry. Furthermore, more trade between host and source country leads to more entry. We also find evidence of some supply effects in that economic development in the source country matters for outward investments.

Our results help explain foreign bank entry, but also have some more general lessons. First, while the term competitive advantage is often used in analyses of FDI and countries' general prospects, few studies have tried to apply this concept empirically. The fact that competitive advantage related to institutional environment can be an important driving factor in entry decisions of foreign banks may also apply to other types of FDI, such as in high-technology or other institutional-sensitive services. As such, our

methodology to measure and employ institutional competitive advantage may have broader applicability. Second, our findings relate to the more general research on the role of institutions in development. While institutional quality has been found to affect country growth patterns and other aspects of development, much remains unexplained, including how economic actors "overcome" institutional weaknesses and how internationalization may help or hinder institutional development. Since banking is an institutionally-intensive activity, the location decision of foreign banks provides insights on how institutional differences may be dealt with more generally. Lastly, the finding that relative differences in institutional quality can drive cross-border entry in banking suggests that there is scope for increased cross-border entry among certain groups of countries, such as among developing countries, with potential associated benefits in the form of better and more efficient financial services provision. When source countries are developing countries, however, which are not of the highest institutional quality themselves, these benefits will have to be weighed against risks arising from, among others, poor home country supervision and poor incentive structures.

The rest of the paper is structured as follows. In Section 2 we describe the database used for foreign bank entry and show some basic patterns. Section 3 describes the methodology used. Section 4 includes the main results and various robustness tests. The last Section concludes.

2.   Data

Bank Entry Data

We construct a database that contains information on host country and source country bank ownership.[1] We do this for an extended period (1995-2006), covering all foreign bank entry and exit over this period, which allows us to explore the variation over time and to avoid some of the econometric issues related with cross-sectional regressions. Our primary source of information is Bankscope, an international dataset of balance-sheet items and ownership information of individual banks. The coverage is comprehensive,

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[1] For a full description of the database see Claessens, Van Horen, Gurcanlar and Mercado (2007).

with in the latter part of the period banks included roughly accounting for 90 percent or more of banking system assets in each country.

The database includes almost all countries, thus covering both high-income as well as developing countries. Countries with less than five active banks in Bankscope were not included, leaving us with a total of 138 high income and developing countries, with the latter divided into low, lower-middle and upper-middle income countries (on the basis of 2005 US dollar GDP level and using the World Bank classification). Our database thus provides for a wide variety of income levels and institutional quality. For developing countries, we include all banks in our sample that are available in Bankscope. In the case of high-income countries, we aim to capture a large share in terms of assets (at any time, at least 75 percent) of the domestic banking sectors of these countries. This means that in terms of numbers, we only need to include a small subset of available banks, as in these countries concentration ratios tend to be high.

Our database includes all currently and past active commercial banks, saving banks, cooperative banks, bank holding companies and long term credit banks that are or have been reporting to Bankscope between 1995 and 2006. For each bank, we determine the year of its establishment and, if applicable, the year it became inactive. Furthermore, we carefully treat mergers and acquisitions to avoid double counting.

The determination of ownership is as follows. First, we determine if a bank, where we include both foreign branches and subsidiaries, can be considered foreign owned. We use the definition generally applied in the literature on foreign banking (e.g., Clarke, Cull, Martinez Peria and Sanchez, 2003; Claessens, Demirguc-Kunt and Huizinga, 2001) and consider a bank as foreign owned if 50 percent or more of its shares is owned by foreigners.[2] Second, we sum the percentages of shares held by foreigners by the country of residence, with the country with the highest percentage of shares then considered the source country. Ownership is based on direct ownership, i.e., we do not consider indirect ownership. The rationale is that we are interested in the entry decision of a foreign bank as it relates to the institutional environment of the source country in

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[2] We do not consider the degree of ownership concentration. Investors may be a dispersed group, one large shareholder or multiple blockholders, which may matter for the impact of ownership on entry decisions. Because the available data make it difficult to further differentiate ownership structures, especially for the large sample of banks we have, we did not consider these factors.

which the bank is mainly operating and which can be expected to have the greatest influence on its operations. Using direct ownership is therefore more logical than considering any indirect ownership that may be far removed from the bank's main place of operations.[3] We did, however, take into account the fact that in some cases the direct owner is an entity just established for tax purposes. In these cases, we did not use the direct, but rather the relevant next level of ownership structures.

The ownership information and source country of ownership are determined for each year the bank was active in our sample period (1995-2006). To track the ownership and the changes thereof we use as our primary source the information available in Bankscope. This information is complemented, however, with information from several other sources, including individual banks' websites and annual reports, parent companies websites, banking regulatory agency/Central Bank websites, reports on corporate governance, local stock exchanges, SEC's Form F-20, and country experts. Through extensive searches we are able to obtain ownership information for almost 95 percent of the banks in our sample for the entire period in which they were active.[4]

Basic patterns

In total, our database includes 4,074 banks, of which 3,097 banks were active in 2006 in 138 countries. Of these, 1,045 were foreign banks in 2006, compared to 672 in 1995. For the whole sample, foreign ownership in terms of asset shares, increased from 5 percent in 1995 to 8 percent in 2005 (Table 1).[5] In terms of numbers, relative foreign ownership increased from 21 percent in 1995 to 35 percent in 2006. There are some important trends by income groups. In terms of numbers, the increase has been relatively the largest in the lower middle-income countries, where many, albeit smaller banks have

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[3] Looking at direct ownership instead of indirect ownership also implies that we consider a situation where a bank is already present in a foreign, second country sets up a bank in another, third country not different from a situation where a local bank from the second country establishes in the same third country. For example, if Hansabank Estonia sets up a bank in Lithuania, but Hansabank Estonia is ultimately owned by a Swedish bank, then we consider this a decision made in Estonia, and not an investment from Sweden in Lithuania. Data do not allow us to consider both cases separately, especially not for the large sample of banks we have.

[4] While our coverage is good, there are data limitations. For example, some foreign shareholders are trusts that hold shares on behalf of investors, which may or may not be foreigners, but available data do not provide this information.

[5] Asset data were not yet available for many banks for 2006, which is why the asset share is as of 2005.

entered. In terms of asset shares, the increase in foreign bank presence has been the largest in the upper-middle income group. This group includes many of the countries where today foreign banks constitute the majority of the banking system, such as Hungary, Mexico and Poland.

There have been increases in foreign bank presence for all regions. In asset shares, the regions with the largest increases in relative foreign bank presence were Non-OECD, Latin America and Caribbean, and Europe and Central Asia. Latin America and Caribbean, and Europe and Central Asia still remain the regions with the highest share of foreign assets, 39 and 37 percent respectively. In terms of numbers, the regions with the largest increases in relative foreign bank presence were Europe and Central Asia, followed by Non-OECD, Middle-East and Northern Africa, Latin America and Caribbean, and Sub-Saharan Africa. Albeit increasing, South Asia still has the lowest share of foreign banks in numbers as well as asset shares. Numbers for OECD-countries do not reflect all foreign bank presence, since we did not cover all small banks in these countries (we do cover at least 75% of banking system assets).

There are some trends in the number and type of countries exporting banking services and in the countries in which these banks invest. The number of developing countries that had their banks enter other countries increased from 43 in 1995 to 58 in 2006. And, while in 1995 developing countries' foreign banks were active in 58 countries, in 2006 this rose to 83. Consequently, there has been a substantial increase in the importance of foreign banks from developing countries in host countries' banking sectors. While in 1995 these foreign banks accounted (in terms of number of banks) for more than 10 percent of the banking sector in 54 percent of the countries, by 2006 this percentage increased to 69 percent. This broadening of foreign bank presence is reflected in the mix of source and host countries. In general, banks tend to invest in countries with similar or lower income levels. This is especially so for low-income countries: in 2006, some 72 percent of banks from low-income countries invested in other low-income countries, the highest intra-group investment share. The fact that we observe a broadening pattern of foreign bank investments and more investment among low-income countries hints at the importance of relative institutional similarities driving investment decisions.

3.   Empirical Methodology

In this section, we develop our formal test whether institutional competitive advantage affects the location decisions of multinational banks. Our competitive advantage hypothesis can be stated as:

Hypothesis: Banks will enter countries with an institutional development that, compared to their competitors, gives them an advantage to operate in.

To determine whether indeed competitive advantage due to familiarity with the institutional environment can explain location decisions, we need to construct a variable that takes the quality of institutions of the host and source country, but also that of competitor banks into account. We therefore first develop such a formal measure of institutional competitive advantage. We then describe our dependent variable, the measure of foreign bank entry. We perform our tests applying a first-difference model which we will elaborate on in this section. Furthermore, there are a number of other variables that may affect locations decisions of foreign banks which we introduce.

Measure of institutional competitive advantage

We want to test whether banks that are more familiar, compared to their competitors, with working in a country due to similarities in institutions will tend to invest more. To capture this notion of institutional competitive advantage, we divide the absolute difference between the institutional quality of the source country and that of the target host country by the average absolute difference between the institutional quality of each competitor source country and that of the host country (where we use the simple average for our benchmark model and a weighted average in one of our robustness tests). In other words, we define institutional competitive advantage for a bank from source country j with regard to host country i at time t as:

$$InstCompAdv_{ijt} = (\| InstSource_{jt} - InstHost_{it} \|) / \left(\sum_{j=1}^{k} \| InstSource_{jt} - InstHost_{it} \| / N \right)$$

If the absolute distance between source *j* and host *i* is large and the average (absolute) institutional distance of potential other source countries is small, i.e., source *j* has a competitive disadvantage in host country *i,* then the value of the institutional competitive advantage variable will be high. If the specific source country is close to the host country, but the competitor countries are institutionally far, i.e., the reversed situation occurs, then the value of the competitive advantage variable will be low. In other words, a lower (higher) value indicates an institutional competitive (dis-)advantage of a bank in source country *j* with regards to entry in host country *i*. For our sample, the institutional competitive advantage variable $InstCompAdv_{ijt}$ has a value between 0.01 and 2.72.

To construct our institutional competitive advantage variable we use the governance indicators of Kaufmann, Kraay and Mastruzzi (KKM, 2005). These measures have often been used in the literature, including in studies on the impact of institutional quality on the location of FDI in general and FDI in banking in particular (Stein and Daude, 2004 and Galindo, Micco and Serra, 2003). The KKM-indicators measure six dimensions: (1) voice and accountability, (2) political instability and violence, (3) government effectiveness, (4) regulatory quality, (5) rule of law and (6) control of corruption. For each dimension, indexes range from -2.5 to 2.5 with higher values indicating a better institutional environment. The measures are currently collected on an annual basis, but for earlier period only on a bi-annual basis. Countries' KKM scores vary considerably over time, with changes over the sample period varying between -2.6 and 1.6. Our standard institutional competitive advantage measure uses the simple average of these six governance indicators.[6]

Figure 1 shows the relevance of using a relative rather than absolute measure of institutional differences. The figure plots at the time of entry the institutional quality in the host country of the foreign bank against the institutional quality of the foreign bank source country (the country in which the foreign owner is headquartered), where institutional quality is the simple average of the six governance indicators. If entry decision would be driven by absolute differences in institutional quality, i.e., source country banks would seek out those host countries that in absolute terms are the closest,

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[6] Although taking averages can hide certain indicator-specific effects on foreign bank entry, we believe this possibility to be limited as correlations between the six indicators are very high, ranging from 0.60 to 0.96. Nevertheless, using each of the six specific indicators lead to qualitatively similar results.

then we would expect a scatter around 45 degree line. Instead, we observe much entry away and above from the diagonal. The figure thus provides some preliminary evidence that investment does not seem to be (solely) a function of investing banks choosing countries that are institutional similar, but that other factors, including possibly institutional competitive advantage, might play a role in the location decisions of banks.

Measure of foreign bank entry

Using the database described above, we construct entry data for all possible host-source countries combinations in the sample. We restrict the source countries, however, to those countries that are present in the banking sector of at least one country over the period 1995-2006. This is to avoid a bias in the estimation due to the fact that some potential source countries might have capital account restrictions or other economic or institutional factors that make it hard for their banks to expand to other countries, factors for which we cannot easily control. Furthermore, host countries that did not see any entry in the sample period are excluded to avoid a bias in the estimation arising from the fact that some host countries might have capital account restrictions or other factors that make entry impossible or unattractive, and for which we again cannot easily control. We exclude all offshore centers from our sample since decisions to source from or enter those markets are often driven by tax incentives. For this reason we also exclude Luxembourg. This leaves us with a maximum total country pairs of 9,957 for each year in the sample period. In robustness tests, we examine whether this sample choice affects the results.

Our dependent variable equals the change between 1996 and 2006 in the number of foreign banks from source country *j* present in host country *i*. We calculate this change not as a difference in stocks, but rather as the cumulative number of newly registered foreign banks from source country *j* in host country *i* over this period. In other words, the variable captures all new investments by source country *j* in host country *i* between 1996 and 2006. This means that we effectively consider gross foreign bank entry and that we do not take exits into consideration. We do so largely as exits are due to many factors (mergers, acquisitions, liquidation, voluntary closures, etc.) and difficult to capture perfectly. Furthermore, modeling both entry and exit of banks would make the model to

be estimated more complicated.[7] We use the change in the number of foreign banks rather than the change in foreign banks' assets since asset data are not available for all banks at all points in time. We do, however, conduct robustness tests using the available bank asset data.[8]

Empirical framework

In order to explain bilateral FDI in banking, we use a first-difference model relating the change in the number of foreign banks from country *j* located in country *i* (over a period) to changes in our institutional competitive advantage measure and other variables. A first difference model is preferred for two reasons, econometrically and given the behavior underlying the entry decisions. Econometrically, first-difference is a preferred model since it controls directly for all country-pair, host-country and source-country fixed effects.[9] It thus already controls for those bilateral, time-invariant factors that have proven to have explanatory power for foreign investment, including foreign bank entry, like distance, a common border or past colonial links between host and source countries.[10] Besides any other bilateral, time-invariant effects (e.g., the existence of free trade arrangement), host- and source-country specific effects, such as the general risk of investing in a country, are also controlled for.

Behaviorally, first difference is also a preferred model because of the way banks can be expected to make their investment decisions. Banks will enter a particular country on the basis of, among others, the institutional competitive advantage at the time. Entry, however, comes with many fixed costs and is a discreet choice, made at one point in time and is (in general) not repeated or reversed easily. Banks are therefore not likely to review their decisions as circumstances, including institutional competitive advantage, vary from one year to the next, but rather consider their overall presence from time to time in light of changing circumstances. Consequently, it is more logical to explain the (change in) overall presence of foreign banks as a function of the (change in the)

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[7] We also estimated, however, the model including both entry and exits and found that this does not affect our main result (results are available upon request).

[8] We also used the number of foreign banks from source country j present in host country i relative to the total number of foreign banks in host country *i* and found similar results (available upon request).

[9] However, the results also hold when using a panel model approach (results are available upon request).

[10] Buch (2005), for example, find that banks hold significantly lower assets in distant markets, but that the importance of distance for the foreign asset holdings of banks has not changed over time.

institutional competitive advantage over a period, rather than to explain entry (the flow of new foreign banks) as a function of year by year changing circumstances.

Compared to other analyses, most of which are cross-sectional regressions, using first-differences means the number of possible control variables we need to include are more limited as fewer variables are time-varying. One variable we do include is the change in entry restrictions, the limits imposed on foreign bank entry, with a dummy equal to one if foreign bank entry is restricted, and zero otherwise, i.e., a more liberal regime.[11] We also include the changes in the institutional quality of the host country, bilateral trade, source country dollar GDP, and source country dollar GDP per capita.[12] The Appendix provides a complete description of all variables used.

Since the decision to enter is likely made before the year of entry and, as such, is based on the information available at that moment, we lag our independent variables by one year. This means that, since our main dependent variable is the change between 1996 and 2006, we use for the explanatory variables their changes between 1995 and 2005.[13] This way we also further reduce the risks that foreign bank entry affects our independent variables. Our benchmark model becomes thus as follows:

$$dForpresence_{ij} = \alpha_0 + \alpha_1 dInstCompAdv_{ij} + \alpha_2 dInstHost_i + \alpha_3 dEntryrest_i + \alpha_4 dTrade + \alpha_5 dGDPsource_j + \alpha_6 dGDPcapsource_j + \varepsilon_{ij}$$

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[11] There might also be (lack) of entry restrictions that are not host country-specific but rather specific to the source country-host country combination. For example, while entry may be unrestricted in principle, for some reasons banks from one country may not be allowed to enter another country. Or the opposite may be the case, for example because of a Free Trade Agreement banks from a specific source country are allowed to enter a specific host country, but other foreign banks are not allowed to do so. Furthermore, it could be that, using the argument of prudential oversight, regulators in host countries only allow entry of banks from certain source countries (e.g., countries with strong institutions) to enter. The first difference regression controls for these and other bilateral, fixed effects as longs as they are time-invariant.

[12] Another useful indicator would be bilateral FDI flows, but data are not available. FDI flows are, however, highly correlated with trade flows, which are included in the model. Other potential explanatory variables considered in earlier analyses (mostly cross-sectional regressions), like the GDP of host country, financial depth of the host country, banking market structures, either have little time variation or may be endogenous to foreign bank entry. We therefore do not include these variables in the regression model (although doing so does not change our results qualitatively).

[13] Except for the institutional competitive advantage variable based on KKM for which we, due to data limitations, use the change between 1996 and 2004.

where *d* stands for the difference operator. A negative and significant sign for our institutional competitive advantage variable would confirm our main hypothesis.

To estimate this model, we use a Poisson specification.[14] The Poisson model is the most commonly used model when the dependent variable takes on nonnegative (integer) values (Wooldridge, 2002). Poisson models have been used in a number of finance and economic applications. For example, Fernando, Gatchev, and Spindt (2005) use it to explain the number of underwriting issues, Eisenberg, Sundgren and Wells (1998) the change in corporations' board size, and Vafeas (1999) the distribution of board meetings frequency. Using a Poisson model has a number of advantages. The major advantage is that it can account for the fact that for many source-host combinations there is no change in presence, i.e., the dependent variable consists of many zeros. Silva and Tenreyro (2006) show that a Poisson model is preferred when dealing with many zeros in de dependent variable, as for example when analyzing trade flows in a gravity model context. The second advantage is that the Poisson model has been shown to produce consistent estimates under relatively weak assumptions, including that the dependent variable does not have to follow a Poisson distribution (Gourieroux, Monfort and Trognon, 1984; Wooldridge, 1997). Lastly, coefficients are easy to interpret as (semi-)elasticities.

We estimate all standard errors robustly. Furthermore, to take into account that in general more banks exist that can potentially engage in cross-border investment in larger source countries and that more opportunities exist to invest in larger host countries, we use a weighted estimation, with the weights equal to the inverse of the product of the average dollar GDP of source *j* and host *i* countries, both measured over 1996-2005.

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[14] The model assumes that y given x has a Poisson distribution and that the conditional variance and mean are equal: $f(dforpresence_{ij} \mid X_{ij}) = \dfrac{\exp(-\mu_{ij})\mu_{ij}^{dforpresence_{ij}}}{dforpresence!}$ So the density of y given x under the Poisson distribution is completely determined by the conditional mean.

4.   Empirical Results

Univariate evidence

We start with some simple basic statistics that highlight the entry patterns and how institutional competitive advantage may matter. Table 2 provides two sets of statistics, those for all observations in the sample and those for the observations where there was bilateral foreign bank investment at the time.[15] Statistics are reported for both 1995 and 2006, allowing a comparison over time. The Table shows that foreign presence, the average number of foreign banks of a specific country *j* in host country *i*, almost doubled from 0.05 to 0.09 for all observations.[16] For those observations with bilateral investment, there is no change in average presence over time, but the number of host-source country observations with presence increases from 314 to almost 500. This confirms the increase and broadening of foreign banks' investments.

Important evidence for our institutional competitive advantage hypothesis is that for the sample with investment, the average institutional competitive advantage score goes down, from 1.29 in 1995 to 1.19 in 2006, which means an increase in relative familiarity. For the all observations sample, there is no such trend. Together, this suggests that the increased entry is driven in part by changes in institutional competitive advantage. The institutional competitive advantage variable itself, however, is higher for the entry sample than for the all observations sample, implying that often source countries are relatively further away from host countries than countries in general are. This univariate comparison is, however, misleading since the reasons why many countries with low scores on institutional competitive advantage have no entry may lie with other constraints, including a low level of host institutional quality. Indeed, in 1995, the average quality of host institutions was higher for observations with bilateral investment than for all observations, indicating that investment was concentrated in countries with relative good functioning institutions. In 2006, this difference was lower,

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[15] Note that to avoid any biases due to capital account, other restrictions or factors limiting in- or out-ward investments, we excluded those host countries receiving no investment and those source countries not investing at all abroad. In addition, offshore banking centers were also excluded.

[16] The low number reflects the fact that for many country-pairs no investment has taken place.

suggesting that host institutions have become less of a constraining factor, as investment was more in countries with relative lower quality of institutions.

As expected, entry restrictions fall over time for both groups. Control variables often used to explain cross-border activities, such as common border, colonial links and distance, of course, do not vary over time for the all observations sample, but for the investment sample, for which coverage of countries varies over time, there is some evidence of a reduction in "distance" measured in the various ways. This decline in distance among investment country pairs suggests that (developing) countries have become more active investors in their own region. As expected, for the investment sample host and source countries are closer in "distance" than for the sample of all countries.

Over time, trade between countries with investment increases but much less so for the investment sample than for the all observations sample, suggesting that the importance of trade has declined as a factor in entry decisions. GDP and GDP per capita show that source countries tend to be much larger and richer, whereas host countries are not larger or poorer than all countries. The variation in source country GDP does increase over time, consistent with the fact that more lower-income countries have become source country.

Regression results

The univariate comparisons do suggest that a number of factors, including importantly institutional competitive advantage, drive entry. Of course, these are just univariate comparisons and not all these factors vary over time (time-invariant factors are not relevant given our first-difference model). We now turn to the multivariate regression results to more rigorously investigate these issues. Table 3 presents the results. As noted, in terms of economic interpretation, the coefficients are (semi-)elasticities and capture the relative effect of the impact of the explanatory variable on the probability of entry from the source country to the host country as well as on the amount of FDI (i.e., the number of gross entries of foreign banks over the period 1996-2006).

The first column of the table shows the basic result which provides strong evidence in favor of our institutional competitive advantage hypothesis. The parameter on

the change in institutional competitive advantage is negative and highly significant, indicating that an improvement increases foreign bank entry. The impact of institutional competitive advantage on foreign bank entry is economically very relevant. An increase in institutional competitive advantage between source j and host i of 0.12 (the mean of the absolute change) would lead to an average increase of 15 percent in the number of banks from j in i. The first regression also shows that an improvement in institutional quality in the host country increases foreign bank entry, with the parameter also significant, but with a much smaller semi-elasticity. The fact that both the institutional competitive advantage and the institutional quality of host country are significant means one has to consider their combination when evaluating the effect of changes in the host country institutional environment. It indicates, for example, that, although a low quality institutional environment deters foreign bank entry in general, it does not need to do so for foreign banks coming from source countries with low quality institutions themselves since these could have an institutional competitive advantage in those host countries.

The regression result also shows that reductions in entry restrictions make an increase in foreign bank presence more likely as the coefficient on the entry restrictiveness variable (a positive value implies a move to a more closed regime) is statistically significant negative. As expected, increases in bilateral trade are associated with more foreign bank entry. The change in GDP in the source country is statistically significant, with a negative sign, suggesting some supply effects as source countries whose GDP grows faster see less outward FDI, maybe as domestic opportunities for investments are greater. The change in GDP per capita in the source country does not seem to have an impact on foreign entry.

The result in column 1 shows that banks that have an institutional competitive advantage in a specific host country tend to invest more in that country. It shows that our institutional competitive advantage variable—the absolute difference in institutional quality between source and host country relative to the average absolute difference in institutional quality between other competitor source countries and the same host country—matters for entry. The absolute difference in institutional quality between source and host country could, however, be a driver of foreign bank presence as well, as others have identified. To further test which is the more important driver of foreign bank

entry, we include first the absolute difference in institutional quality (column 2) and than both our institutional competitive advantage and the absolute difference in institutional quality between host and source country (column 3). That way we consider separately the effects of the nominator and the denominator of our institutional competitive advantage variable. We continue to control for the quality of institutions in the host country and the usual other factors.

We find that a greater absolute difference in institutional quality between host and source country reduces foreign bank entry, consistent with earlier literature (column 2). But the semi-elasticity of the absolute difference variable is smaller than that of the institutional competitive advantage variable. When we next include both the institutional competitive advantage and the absolute difference in institutional quality between host and source country (column 3), we find that only the institutional competitive advantage remains statistically significant and the absolute difference in institutional quality between host and other competitor source country is no longer significant. The semi-elasticity for the institutional competitive advantage is comparable to the regression results in column (1). In other words, both in terms of economic and statistical significance, the institutional competitive advantage variable captures best the drivers of foreign banks entry: what matters is how close the source country is to the host country relative to how close its competitors are to the same host country.

We next ask whether competitive advantage matters differently for merger/acquisitions than for greenfields.[17] For this, we estimate the same model but interact our institutional competitive advantage variable with the mode of entry (column 4). The results suggest a greater importance of institutional competitive advantage for mergers/acquisitions than for greenfield investments, however, the difference between the two parameter estimates is not significant

The fact that different forces influence the potential importance of institutional competitive advantage for the two modes of entry might explain why we do not find a significant difference in the impact. Mergers/acquisitions are likely large investments that involve local deposit-taking and lending to local firms that requires banks to use more

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[17] Another, possibly related issue is the legal form of entry, specifically branches versus subsidiaries. Cerutti, Dell'Ariccia and Martinez Peria (2007) study, controlling for the entry decision, this choice as it relates to source and host country characteristics, including outward and inward regulation and barriers.

local employees and skills. In addition, mergers and acquisitions have to work, at least initially, with acquired bank's existing technology, processes and procedures. If the bank is not familiar working in a business environment similar to that of the host country, it may be harder to operate a merged/acquired bank than a greenfield. At the same time, however, institutional competitive advantage can also be important for greenfields. Unless the foreign bank already has a competitive advantage to work in the host country's institutional environment, it may find it hard to start a greenfield operation, a new bank, from scratch. As a consequence, for different reasons, institutional competitive advantage is important for both modes of entry.

Robustness tests

We next conduct a number of robustness tests, reported in Table 4, where we only provide the coefficients of (the change in) our institutional competitive advantage variable (all other variables are not reported, but generally retain their statistically significance). We have so far conducted the main regressions using Poisson regressions. Tobit can, however, be an alternative technique when the change in the gross number of banks present is a positive number. The regression result using Tobit is reported in Table 4, second row (first row repeats the base regression of Table 3). The result is very similar to that using Poisson, with the sign and statistical significance of the institutional competitive advantage the same (the coefficient is of different size since it is a different technique and is not a semi-elasticity).

Instead of using either Poisson or Tobit techniques, we also estimate the model with simple OLS using all observations (Table 4, row 3). This is admittedly not the right econometric model, since only a limited number of countries experience a change in the number of foreign banks present, i.e., many observations are zero. Nevertheless, the regression results do show the same sign and significance for our institutional competitive advantage variable.

We next re-estimate the base regression using Poisson estimation techniques but using different sample periods over which we calculate the change in foreign bank presence. Specifically, we consider changes over the periods 1996-2000 (row 4) and 2001-2006 (row 5). We adjust all the explanatory variables to match these periods. In

both periods we retain the negative sign for institutional competitive advantage with equal statistically significance, although in the second period the parameter is smaller.

Since the entry decision of a bank may depend on the size of the bank's investment, we also investigate which variables best help to explain the change in foreign bank presence in terms of market share. We therefore next use the change in asset shares between 1996 and 2005, rather than the change in the number of banks, as dependent variable using again Poisson estimation techniques (row 6). This robustness test gives us very similar regression results as the base regression, with again a large semi-elasticity.

We also use regional dummies in the regression to test whether aspects like the establishment of regional free-trade agreements (FTAs) and currency unions affect the entry patterns in such a way to alter the importance of the institutional competitive advantage variable. We continue to find the same results (row 7), although with a less strong impact of our institutional competitive advantage variable, possibly because some of the entry is motivated by regional factors.

We next investigate the robustness of our results to the specific lag structure used for the explanatory variables. Instead of using the first lag, we use the second lags of all explanatory variables and look at entry for the period 1997-2006. By using a longer lag structure we reduce the risks of reverse causality, e.g., entry affecting the host institutional environment. Again we find that our institutional competitive advantage variable has a negative and statistically significant impact on entry decisions (row 8), with a magnitude very similar to the base regressions.

In the next robustness test we examine whether our results are affected by an endogeneity bias. The variable capturing the impact of changes in institutional quality in the host country might be endogenous as entry of foreign banks could have an impact on the institutional quality in the host country in the following years. Although it is unlikely that endogeneity is affecting the results due to a number of factors (our dependent variable captures bilateral FDI of banks, not all foreign banks come from better institutional environments, our main institutional quality variable is quite general and we lag all our independent variable by one year), we test whether this is the case. As our bilateral trade variable could also be affected by foreign bank entry, we exclude this variable. The result (row 9) shows that the sign and significance of our institutional

competitive advantage variable is not affected by excluding these two variables, indicating that our main results were not biased due to endogeneity.

We also explore the sensitivities to the specific sample of countries. We report two tests: including all source and host countries, even when they did not have any in- or outward investments in banking, except for off-shore financial centers; and including all source countries, but studying only developing countries as host countries. The first sample is much larger, almost 15,500 observations compared to the 8,838 observations in most other regressions. The second sample of developing host countries only is somewhat smaller, 7,076 observations. The regression results are reported in rows 10 and 11, with the first regression results for all countries and the second for the sample of developing countries only.

When we consider all countries, row 10, we find the institutional competitive advantage variable to be again statistically significant at the 1 percent level with the same negative sign and a somewhat larger coefficient. The result for the sample of only developing host countries (row 11) shows that the institutional competitive advantage variable remains significant at the one percent level, with the semi-elasticity slightly lower than the base regression.

We next explore whether results are similar when, instead of using a simple average to calculate the denominator of the institutional competitive advantage, we use a source GDP-weighted average to account for the fact that some source countries are larger, have more banks that can invest abroad, and thus are potentially more important competitors than other countries are. The result (row 12) shows that this measure of institutional competitive advantage is similar in sign and significance, but displays a lower semi-elasticity than the base regression. It suggests that large source countries have other reasons than institutional competitive advantage that make them able and willing to invest aboard.

Lastly, we explore the sensitivity of our results to the specific variable used to capture institutional quality, the KKM variable. One constraint we face is the time dimension: few other institutional environment indicators are available for the same, long time period as our banking entry data are. Also the large number of countries in our sample excludes the use of some institutional indicators. At the same time, we need

institutional environment variables that relate to the hypothesis of institutional competitive advantage with respect to banking business.[18] We use two indicators that overlap in time, are available for the vast majority of countries in our sample and that are related to banking business. One is the International Country Risk Guide (ICRG) composite indicator and the second is the Country's Policy and Institutional Assessment (CPIA) index of the World Bank.[19] We create the competitive advantage variables from these indexes the same way we create the KKM-based institutional competitive advantage variable.

The robustness regression results with these two institutional variables show similar results (rows 13-14) to those using the KKM variable. The only difference is that the semi-elasticities are smaller, about half those of the base regression. This could be because these indexes capture less well the institutional environment characteristics on which basis foreign banks make their entry decisions.

5.   Conclusions

The literature on foreign banking has identified several factors that can influence the location decisions of multinational banks. In this paper we add to this literature by examining whether institutional competitive advantage, the ability of a foreign bank to deal better with the host country's institutional environment than its competitors can, is a determining factor in a bank's decision to enter a certain market. Our empirical results show that how the difference in institutions between the host country and source country *compare to* the difference for the bank's competitors has a determining impact on the bank's location decision. This implies that for those banks which compared to their

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[18] Currently available indexes that would be useful if they had been available for longer periods of time and/or for a larger group of countries include variables such as the coverage of credit bureaus, the degree of investor and creditor protection, the quality of information, collateral costs, and bankruptcy recovery rates and costs.

[19] This index covers various aspects of a country's policy and institutional environment and is prepared by World Bank staff on an annual basis, following a fixed template and methodology, with substantial internal review. The data go quite far back, even before our bank entry data, but do not cover developed countries and not all developing countries. We therefore set for all the developed countries the index to its highest level and only create an institutional competitive advantage variable for developing countries for which we have the CPIA data. As for some of the other indexes, the CPIA index is to some degree subjective, introducing possible biases.

competitors are used to work in countries with good institutions, a relatively high institutional quality in the host country will positively impact cross-border entry, while for banks that are more familiar with working in a country where institutions are weak, a relatively low institutional quality in a host country can be a reason to enter such a market. We find these institutional competitive advantage effects to matter even when controlling for similarity between host and source countries' institutional quality.

Our results are important from a research perspective. They expand the previous literature on how institutional factors affect cross-border banking entry. They introduce the concept of institutional competitive advantage, which had previously only been used qualitatively, in an empirical rigorous way. They also shed light on how institutionally-sensitive sectors are affected by differences in countries' rules, thus fitting in the growing literature on the institutional determinants of countries' general development.

The results are also important from policy perspectives. For one, they show that high institutional quality is not necessarily a prerequisite to be able to attract FDI in banking. As the financial sector is an engine for growth and since foreign banks tend to have a generally beneficial impact on the domestic financial system, this is potentially good news for low-income developing countries that have poorly developed financial systems. However, some caution is warranted. The fact that banks with an institutional competitive advantage entering institutionally less developed countries are more likely to come from other institutionally less developed countries could create some risks. These foreign banks could become a source of instability in their host countries because they lack proper supervision in their source country, as has happened in some cases (BCCI is one notorious example). These foreign banks may take advantage of weak institutional environments in the host countries and exploit the safety nets provided to banks by taking on excessive risks. As such, increased foreign bank entry from institutionally less developed countries could pose risks that may require specific policy responses.

Our results also suggest a further research agenda. One area of future research is to investigate in more detail the source of institutional competitive advantage using additional and more specific measures of institutional differences. For example, whether institutional competitive advantage is based on differences in countries' business environment or on differences in the way banks are being supervised, can be analyzed by

estimating which of these differences is the more important determinant of foreign bank entry. Related, it will be important how institutional competitive advantage impacts banks' operations and performance. Is it that foreign banks with greater institutional comparative advantage can make loans easier and better, with lower risks and less need for loan-loss provisioning? Or is it that banks with institutional comparative advantage are better able or more willing to take advantage of weak supervisory structures in host countries, in the process taking more risks, leading to more non-performing loans? One way to differentiate between these hypotheses is to investigate how measures of actual foreign bank performance vary with institutional competitive advantage. Do foreign banks with specific institutional competitive advantage make more loans, to more informationally intensive borrowers, at lower risks? Another, complementary way is to investigate the impact of foreign bank entry on the domestic banking system, especially of low-income countries. Do banks from different countries with more institutional competitive advantage have a greater impact on the domestic financial system? None of these areas has yet been studied, however.

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Figure 1 - Simple correlation of institutional quality

The figure shows at the time of entry the institutional quality in the host country of the foreign bank and the institutional quality in the country in which the foreign owner is headquartered (the source country), where institutional quality is calculated as the simple average of the six governance indicators as measured by Kaufmann, Kraay and Mastruzzi (2005).
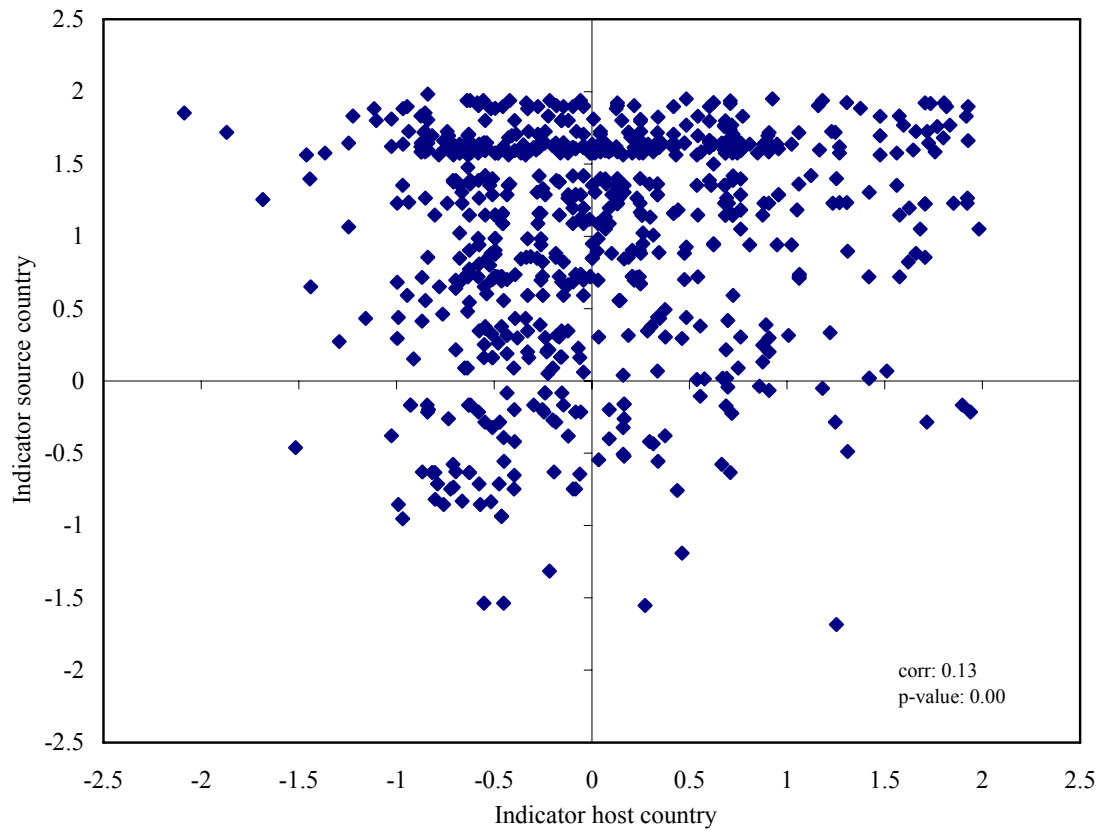
Table 1 - Changes in foreign banking: aggregates by income level and region

This table shows foreign ownership in terms of asset shares and number of banks aggregated by income level and region. A foreign bank is defined as a bank with at least 50 percent foreign ownership. Figures reported are ratios of number of foreign banks to total number of banks (in 1995 and 2006) and foreign bank assets to total bank assets (in 1995 and 2005) in each group (asset shares are based on the consolidated balance sheets). Income and region classifications follow World Bank definitions as published in Global Development Finance (2006). Group-based figures are obtained using: ΣiFBi/(ΣiDBi+ΣiFBi) for each country i within a group, where FB is foreign bank and DB is domestic bank.

	Foreign bank assets in total bank assets		No of foreign banks in total number of banks		Total number of foreign banks		Total number of countries
	1995	2005	1995	2006	1995	2006	
Income level							
Low income	0.03	0.18	0.19	0.31	103	165	37
Lower middle income	0.07	0.06	0.19	0.39	145	367	37
Upper middle income	0.13	0.38	0.26	0.40	316	382	28
High-income	0.04	0.08	0.18	0.25	104	148	35
Region							
East Asia and Pacific	0.07	0.26	0.18	0.22	51	61	8
Europe and Central Asia	0.24	0.39	0.16	0.44	120	331	25
Latin America and Caribbean	0.11	0.37	0.29	0.41	253	284	23
Middle East and Northern Africa	0.07	0.15	0.21	0.35	36	57	10
South Asia	0.00	0.06	0.06	0.10	8	16	5
Sub-Saharan Africa	0.14	0.14	0.30	0.42	99	163	31
OECD	0.04	0.06	0.19	0.24	87	109	22
Non-OECD	0.03	0.32	0.12	0.27	17	40	13
All countries	0.05	0.08	0.21	0.35	671	1061	137

Table 2 - Summary statistics

This table shows summary statistics of our dependent variable *foreign presence* and of those variables we use or have typically been used to explain foreign bank entry, both for the years 1995 and 2006. In the top panel, statistics are based on all observations using a balanced sample, while in the bottom panel the statistics reflect only observations when there are banks from a specific source country present in the specific host country. Note we have excluded from all our samples all host countries without any foreign banks present between 1995 and 2006 and all source countries that did not invest in any other source country. Furthermore, all host and source countries that are offshore centers were excluded. All variables are in levels and distance is measured in kilometers. For definition of the variables see the Appendix

All observations

	1995			2006		
	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.
Foreign presence	0.05	0.36	9,605	0.09	0.46	9,605
Institutional competitive advantage	1.05	0.61	9,605	1.04	0.62	9,605
Institutions host	0.06	0.86	9,605	0.00	0.88	9,605
Entry restrictions	0.44	0.50	9,605	0.13	0.33	9,605
Border	0.03	0.16	9,605	0.03	0.16	9,605
Colonial Links	0.06	0.23	9,605	0.06	0.23	9,605
Distance	6,359	4,013	9,605	6,359	4,013	9,605
Trade	534,302	4,631,598	9,605	1,269,198	9,202,733	9,605
GDP host	136,177	334,193	9,605	222,133	492,088	9,605
GDP source	330,864	1,002,171	9,605	510,205	1,485,114	9,605
GDP per capita host	6,990	7,003	9,605	10,854	10,552	9,605
GDP per capita source	10,303	8,345	9,605	15,998	12,790	9,605

Investment only

	1995			2006		
	Mean	Std. Dev.	Obs.	Mean	Std. Dev.	Obs.
Foreign presence	1.61	1.21	314	1.60	1.24	498
Institutional competitive advantage	1.29	0.76	314	1.19	0.72	498
Institutions host	0.13	0.79	314	-0.01	0.82	498
Entry restrictions	0.47	0.50	314	0.12	0.33	498
Border	0.17	0.37	314	0.17	0.37	498
Colonial Links	0.15	0.36	314	0.19	0.39	498
Distance	4,488	3,652	314	3,937	3,620	498
Trade	4,074,157	18,000,000	314	7,871,936	29,900,000	498
GDP host	167,336	304,309	314	233,523	440,998	495
GDP source	1,616,507	2,381,012	314	2,163,259	3,552,207	195
GDP per capita host	6,960	6,162	314	10,484	9,467	478
GDP per capita source	18,111	8,210	308	26,281	12,381	479

Table 3 - First-differences test of institutional competitive advantage in foreign banking

The dependent variable equals all new investment from source country *j* in host country *i* between 1996 and 2006. *dInstCompAdv* is the change in the institutional competitive advantage variable between 1995 and 2005, which is defined as (|(Inst_source-Inst_host)|/(∑|(Inst_source-Inst_host)|/N)), see main text for explanation. Institutional quality is calculated as the simple average of six governance indicators as measured by Kaufmann, Kraay and Mastruzzi (2005). *dInstHost* is the change in the quality of institutions in the host country. *dInstDif* is change in the absolute difference between quality of institutions of source and host countries. *dEntryres* is the change in entry restrictions, with entry restrictions measured by a dummy which is 1 if foreign bank entry is restricted. *dTrade* is the change in the log of (1 plus) the sum of export and import between host and source country. *dGDPsource* and *dGDPcapsource* are the changes in the log of respectively GDP and GDP per capita in the source country. A Poisson regression model is applied. Regression coefficients reflect elasticities for the explanatory variables measured in logarithms and semi-elasticities otherwise. All regressions include a constant. Data are weighted by the inverse of the product of GDP of host and source country averaged over the sample period. The robust p-values appear in brackets and ***, ** and * correspond to one, five and ten percent level of significance respectively.

	(1)	(2)	(3)	(4)
dInstCompAdv	-1.200 ***		-1.066 *	-0.387 ***
	[0.000]		[0.061]	[0.000]
dInstHost	0.560 **	0.393	0.526 **	0.246
	[0.026]	[0.111]	[0.021]	[0.328]
dInstDif		-1.035 ***	-0.158	
		[0.000]	[0.750]	
*dInstCompAdv*M&A*				-2.835 ***
				[0.000]
*dInstCompAdv*Green*				-2.298 ***
				[0.000]
dEntryres	-0.389 ***	-0.329 ***	-0.381 ***	-0.362 ***
	[0.001]	[0.006]	[0.001]	[0.004]
dTrade	0.063 ***	0.068 ***	0.064 ***	0.050 ***
	[0.000]	[0.000]	[0.000]	[0.002]
dGDPsource	-1.108 ***	-1.085 ***	-1.105 ***	-0.917 ***
	[0.000]	[0.000]	[0.000]	[0.000]
dGDPcapsource	0.369	0.337	0.367	0.352
	[0.254]	[0.284]	[0.255]	[0.263]
Wald chi2	168.53	157.18	171.49	301.08
No. Obs.	8,838	8,838	8,838	8,838

Table 4 - First-differences test of institutional competitive advantage in foreign banking - Robustness tests

The table shows the results of several robustness tests. The results presented in this table refer to the estimates for the institutional competitive advantage variable in the different models. The benchmark model is the model whose results are shown in Table 3 first column. See for details of this model the main text and the explanation provided in Table 3. In the first two robustness tests we estimate the model using different estimation techniques (tobit and OLS), in both cases (1 plus) the dependent variable is transformed in logs. In the next two robustness tests we adjust the sample period, i.e. the dependent variable reflects the change in number of foreign banks from source country j in host country i between 1996 and 2000, and 2001 and 2006 respectively. In the following robustness test the dependent variable reflects the change in assets from source country j in host country i between 1996 and 2005. In the sixth robustness test we include regional dummies in the model. Robustness test seven uses the second lag for the explanatory variables instead of the first lag and is estimated for the period 1997-2006. In robustness test eight we exclude the change in host institutions and in trade as regressors. In the next two robustness tests we change the sample by including all countries available in our database except source and host countries that are offshore centers and only developing countries respectively. In the eleventh robustness check we take as denominator of the institutional competitive advantage variable the weighted averaged where the weight is determined by the country size proxied by the dollar GDP. In the final two robustness tests we use alternative variables to capture institutional competitive advantage: International Country Risk Guide composite indicator (ICRG) and the World Bank's Country's Policy and Institutional Assessment (CPIA) index. The robust p-values appear in brackets and ***, ** and * correspond to one, five and ten percent level of significance respectively.

		dInstCompAdv
1)	Benchmark	-1.200 ***
		[0.000]
2)	Tobit	-0.012 ***
		[0.000]
3)	OLS	-0.013 ***
		[0.001]
4)	Sample 1996-2000	-1.205 ***
		[0.000]
5)	Sample 2001-2006	-1.025 ***
		[0.000]
6)	Change in assets	-1.479 ***
		[0.000]
7)	Including regional dummies	-1.069 ***
		[0.000]
8)	Second lag explanatory variables	-1.260 ***
		[0.000]
9)	Excluding host institutions and trade	-1.378 ***
		[0.000]
10)	All countries	-1.318 ***
		[0.000]
11)	Only developing countries	-1.132 ***
		[0.000]
12)	Weighted average	-0.534 ***
		[0.000]
13)	ICRG	-0.512 ***
		[0.000]
14)	CPIA	-0.515 ***
		[0.000]