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Cross-border bank mergers: What lures the rare animal? ☆

Claudia M. Buch [a,1], Gayle DeLong [b,*]

[a] *Kiel Institute of World Economics, Dusternbrooker Weg 120, Kiel, Germany*
[b] *Zickin School of Business, Baruch College, One Bernard Baruch Way, Box B 10-225, New York, NY 10010, USA*

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Abstract

Although domestic mergers and acquisitions (M&As) in the financial services industry have increased steadily over the past two decades, international M&As were until recently relatively rare. Moreover, the share of cross-border mergers in the banking industry is low compared with other industries. This paper uses a novel dataset of over 3000 mergers that took place between 1985 and 2001 to analyze the determinants of international bank mergers. We test the extent to which information costs and regulations hold back merger activity. Our results suggest that information costs significantly impede cross-border bank mergers. Regulations also influence cross-border bank merger activity. Hence, policy makers can create environments that encourage cross-border activity, but information cost barriers must be overcome even in (legally) integrated markets.

JEL classification: F21; G21
Keywords: Cross-border banking; Information costs; Regulations; Mergers and acquisitions

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* Corresponding author. Tel.: +1-646-312-3493; fax: +1-646-312-3451.
E-mail addresses: cbuch@ifw.uni-kiel.de (C.M. Buch), gayle_delong@baruch.cuny.edu (G. DeLong).
[1] Tel.: +44-431-8814-332.

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1. Motivation

Domestic mergers and acquisitions (M&As) in banking have risen steadily for the past two decades. Yet, compared to the number of domestic bank mergers, international bank M&As have remained until recently relatively rare. Between 1985 and 2001, only about one-fifth of all bank mergers around the world involved partners headquartered in two different countries. [2] Moreover, the share of cross-border mergers in the banking industry is low compared with manufacturing. Focarelli and Pozzolo (2001a) found that in the 1990s, cross-border mergers accounted for only 13% of merger activity within the banking industry compared to 35% within manufacturing and 24% within all sectors on average.

However, the share of cross-border mergers has varied greatly by region. In Europe and Asia, almost 40% of all bank mergers involved partners from different countries, but only about 12% of bank mergers in the Americas involved a foreign partner (see Fig. 1 and Table 1). Growth in the percentage of cross-border bank mergers has also varied by region. Worldwide, such mergers accounted for 7% points more in the second half of our study (1994–2001) compared with the first half (1985–1993). In the Americas and in Europe, the share of bank mergers that were cross-border increased by 5–8% points between the two time periods. In Africa and the Middle East, the share remained constant, and in Asia, the share of such mergers fell by 22% points.

The infrequency of international mergers is likely due to their limited success. Amihud et al. (2002) find that international mergers of financial institutions neither increase nor decrease risks in banking. Furthermore, foreign-owned banks in developed markets tend to be less efficient than their domestic counterparts. [3] Since M&As are an important way to enter a new market, this result also suggests that cross-border bank mergers might create institutions that cannot compete successfully in the host markets.

These three stylized facts – the infrequency, the uneven growth, and the limited success of international banking mergers – raise the question of what the constraining factors may be. Berger et al. (2001) suggest that efficiency barriers such as (geographical) distance, different languages, different cultures, or adverse regulatory and supervisory structures impede cross-border activity and therefore offset some of the gains of cross-border consolidation. From a policy perspective, the distinction between efficiency barriers caused by regulations and by information costs is important. [4] While

[2] Unless indicated otherwise, these and the following information on merger characteristics have been taken from Thomson Financial Securities Data (2002).

[3] For a survey, see Berger et al. (2000). Peek et al. (1999) argue that the poor performance of foreign bank subsidiaries is mainly due to pre-existing conditions. At the same time, foreign owners are also unable to turn around the banks they acquire. In contrast to the evidence found for developed market economies, Demirgüç-Kunt and Huizinga (1999) and Claessens et al. (2001) find that foreign banks in emerging markets tend to outperform domestic banks.

[4] Buch (2003) shows that these factors affect the cross-border borrowing and lending decisions of commercial banks.

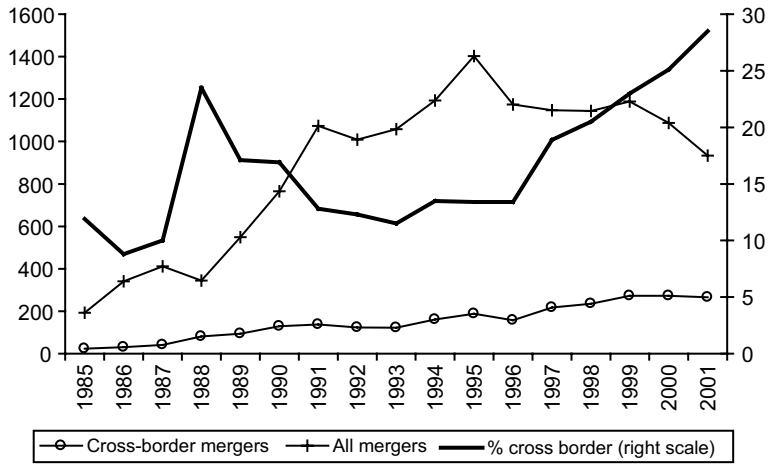

Fig. 1. Bank mergers by year 1985–2001. The study consists of 3081 completed cross-border mergers announced between 1985 and 2001 where at least one partner is a commercial bank. The graph shows the number of international merges as well as the total number of bank mergers announced by year.

the former can eventually be removed, the latter will remain even in (legally) integrated markets. [5]

So far, the empirical literature on causes and effects of international M&As in banking has not attempted to assess the importance of information costs or regulations as possible constraining factors. Rather, the focus has been on firm characteristics such as the relative efficiency of the acquirer and the target bank (see Berger and Humphrey, 1992; Vander Vennet, 1998; Peek et al., 1999). [6] Although Berger et al. (2000) argue that cross-border M&As frequently occur in response to deregulation initiatives, the paper does not provide empirical analysis on this point.

The aim of this paper is to fill this gap. In Section 2, we present stylized facts on international versus domestic banking mergers. Section 3 briefly surveys the existing literature on determinants of international banking mergers. Section 4 presents our own empirical estimates. We are using a new dataset, comprising over 3000 bank mergers that took place between 1985 and 2001. We use different empirical methods to gauge the determinants of international bank mergers. Since we aim at identifying determinants of bank mergers for a large set of countries and banks, we confine the choice of explanatory variables to those capturing country characteristics. While we could have included bank-specific variables in our analysis, the variables would have limited the coverage of our sample substantially.

[5] Institutional factors are not the only factors that influence M&A decisions. For example, Focarelli and Pozzolo (2001b) show that potential profit opportunities influence decisions to expand banking services into a particular country.

[6] Work by Demirgüç-Kunt and Huizinga (2001) also suggests that foreign banking is driven by tax incentives.

Table 1
Cross-border bank mergers by continent

	Europe	America	Africa	Asia	Austral-Asia	Middle East	Total
Panel A: 1985–2001							
Number of bank mergers	5936	8361	166	1054	310	200	15,129
Cross-border mergers	2229	1009	883	428	158	84	3081
Cross-border as % of total	37.4	12.1	53.0	40.6	51.0	42.0	20.4
Intra-continental as % of total	24.8	4.4	14.5	14.4	16.5	8.5	13.8
Panel B: 1985–1993							
Number of bank mergers	2108	3506	40	258	124	36	5760
Cross-border mergers	683	320	17	148	70	14	938
Cross-border as % of total	32.4	9.1	42.5	57.4	56.5	38.9	16.3
Intra-continental as % of total	20.7	2.8	12.5	16.7	15.3	0.0	10.5
Panel C: 1994–2001							
Number of bank mergers	3828	4855	126	796	186	164	9369
Cross-border mergers	1537	689	71	280	88	70	2143
Cross-border in % of total	40.2	14.2	56.3	35.2	47.3	42.7	22.9
Intra-continental as % of total	27.1	5.6	15.1	13.7	17.2	10.4	15.9
Difference between Panel B and Panel C							
Cross-border as a % of total	7.8***	5.1***	13.8	−22.2	−9.1	3.8	6.6***
(*z*-statistic)	(6.00)	(7.25)	(1.54)	(−6.32)	(−1.59)	(0.42)	(10.11)
Intra-continental as % of total	6.4***	2.8***	2.6	−3.0	1.9	10.4***	5.4***
(*z*-statistic)	(5.65)	(6.38)	(0.42)	(−1.13)	(0.44)	(4.35)	(9.80)

The table shows the number of cross-border mergers announced and completed between 1985 and 2001 where at least one partner is a commercial bank. It also reports results of splitting the sample according to year of announcement. The first time period is from 1985 to 1993, and the second is from 1994 to 2001. The statistical significance of the difference between the two time periods is measured using the following statistic: $z = \hat{\pi}_1 - \hat{\pi}_2 / \sqrt{\hat{\pi}(1-\hat{\pi})\left(\frac{1}{n_1}+\frac{1}{n_2}\right)}$ where $\hat{\pi} = \frac{x_1+x_2}{n_1+n_2}$ and where $\hat{\pi}_1$ and $\hat{\pi}_2$ are the sample proportions, n_1 and n_2 are the total number of observations in each sample, and x_1 and x_2 are the number of observations that possess the characteristic. Worldwide figures are less than the sum of the continents due to mergers between banks headquartered in two nations that are located on the same continent.

Source: Thomson Financial Securities Data (2002), author calculations.

***Statistically significant level at the 1% level.

We find that both information costs and regulations affect international merger decisions. As expected, high information costs impede cross-border bank mergers. Regulatory environments are also important. We find that targets of cross-border bank mergers tend to operate in relatively highly regulated environments, whereas acquirers tend to be located in countries where transparency is rather poor. However, looking at changes in mergers characteristics over time, we find that regulatory changes made to encourage regional integration produce mixed results. The number of cross-border bank mergers within the European Union following the EU's Single Market Program in 1992 did not increase significantly, but the number of cross-border bank mergers among Canada, Mexico, and the United States did increase after the implementation of the North American Free Trade Agreement in 1994.

Our paper complements the work of Focarelli and Pozzolo (2001a), whose work is motivated by the relatively small number of cross-border bank mergers, compared to cross-border mergers of non-financial firms. They conclude that asymmetric information and regulations impede cross-border bank mergers, but that large, efficient banks located in countries with developed bank markets can overcome these barriers and tend to be the banks that expand abroad. In a companion study, Focarelli and Pozzolo (2001b) look at where the banks expand their cross-border shareholdings and find the most important determinants are potential profit opportunities as well as regulatory environments. Cross-border shareholdings in their analysis include both mergers and greenfield investment. Our paper differs from Focarelli and Pozzolo in that we examine only mergers. The distinction is important, because the motivations and barriers to engaging in a cross-border merger could be different from setting up new operations. For example, an acquiring bank may be more inclined to buy a bank in a country where banking is efficient, but less inclined to start up new facilities in such a country. Our study further differs from the work of Focarelli and Pozzolo in that part of our analysis allows us to include explanatory variables that vary through time so that we can investigate, for example, the effect of changes in regulations.

2. International M&As in banking: The rare animal

International mergers between financial institutions, it may seem, are one feature of the globalization of financial markets. Headline cases – such as the take-over of the US commercial bank Bankers Trust by the German Deutsche Bank in 1999, the acquisitions of US financial institutions by Japanese banks in the late 1980s, [7] or the inroads of US investment banks into European financial markets – suggest that the banking industry is currently operating on a global scale. Yet, a more careful examination of the numbers suggests that international mergers of financial institutions are recent phenomena and tend to occur only in certain countries.

[7] Recently, market shares of Japanese banks in the US market have declined (see Buch and Golder, 2001).

We explore where and why such mergers have only recently begun to occur. We examine cross-border mergers that were announced and completed between 1985 and 2001 where at least one of the partners was a commercial bank and the other partner was any type of firm. Usually, the other partner was in financial services, that is, commercial banking, securities, or insurance. We define a cross-border merger as any merger whereby the headquarters of the target are not located in the same country as the ultimate parent of the acquirer. For example, when the US subsidiary of a German bank acquires a US bank, the deal is considered to be cross-border. We include only completed mergers. We obtain the names of merger partners from Thomson Financial Securities Data, which uses more than 200 news sources, regulatory filings, trade publications as well as surveys of investment banks, law firms, and other advisors to create its database. The database includes international mergers starting in 1985. Up to 1992, the database includes all deals with values of at least $1 million, and after 1992, deals of any value are covered. [8] Also included are transactions with undisclosed values as well as public and private transactions. Thomson Financial Securities Data identifies 3081 mergers that meet our criteria.

Fig. 1 shows that the number of international bank mergers has steadily increased over time, but the percentage of bank mergers that are cross-border has been small. The percentage climbed during the late 1980s to reach a plateau around 15% in the early 1990s. However, since the mid-1990s, the share has grown steadily to reach almost 30% in 2001.

The sample includes mergers that involve 144 countries. Table 1 shows the number and the percentage of international bank mergers per continent as well as the change over time. Worldwide, the number of mergers involving banks increased steadily between 1985 and 2001, with nearly twice as many mergers taking place between 1994 and 2001 compared with the eight years beginning in 1985. Cross-border bank mergers accounted for 15% of all bank mergers in the 1980s and 1990s, with the share in the second half of our sample being almost 7% points higher than in the first. Europe and the Americas experienced a significant growth in the share of cross-border bank mergers between the two periods, while Africa, Australasia, and the Middle East saw no significant change in the percentage of bank mergers represented by cross-border transactions. Asia experienced a significant decline in the percentage of international bank mergers, presumably as a result of the financial crises in the late 1990s. Table 1 also shows that cross-border mergers increasingly occurred within continents. This increase could be the result of countries in Eastern Europe and Latin America opening their markets to their wealthier neighbors. Banks in Western

[8] Cross-border mergers tend to be large so the fact that our data source reports only mergers with values greater than $1 million between 1985 and 1992 creates almost no bias in the data. Our post-1992 sample is not swamped with smaller mergers since only 34 mergers out of the 2351 mergers announced after 1992 have values less than $1 million. Moreover, mergers between 1985 and 1992 had a mean (median) value of $200 ($83) million, well above the $1 million minimum. Importantly, Thompson Financial Securities Data reports mergers even when the value of the merger is not available. Values were not available for 373 of the 765 mergers announced between 1985 and 1992, and values were not available for 1173 of the 2316 mergers announced between 1993 and 2001.

Europe and North America would then tend to acquire institutions in their own continents as opposed to traveling across oceans to find a merger partner.

3. Why should banks merge across borders?

The theoretical literature on the determinants of international banking has taken a fairly eclectic approach to the question of why banks should merge across borders. [9] Empirical studies that examine the determinants of bank mergers usually focus on domestic mergers, often in the United States. Some of the findings, however, are interesting to our analysis of cross-border mergers. In this section, we discuss some of these results. We focus on the implications concerning the importance of information costs (or "cultural proximity") and regulations. [10] We also discuss possible control variables. Table 2 details the data specification and sources.

3.1. Information costs

Berger et al. (2001) argue that "efficiency" barriers such as distance as well as differences in language, culture, currency, and regulatory or supervisory structures inhibit cross-border bank mergers within Europe. However, they do not provide statistical tests on the relative importance of these factors. In this paper, we examine three different measures of information costs, i.e. geographical distance, a common language, and a common legal system.

The motivation for the use of the distance variable is related to a strand of the literature that applies gravity-type models to international investment decisions. According to the gravity model of foreign trade in goods, trade between two countries is proportional to the size of the markets, and it is inversely related to geographical distance, which enters with a coefficient estimate of around −0.6. [11] In this literature, distance is typically considered to capture transportation costs. In contrast, international finance literature interprets distance in terms of information costs. Empirical applications by Ahearne et al. (2000), Choi et al. (2002), Portes and Rey (1999), Wei and Wu (2001) show that distance influences international capital flows and investment decisions of banks in a similar way as it influences international trade.

Besides geographic proximity, sharing a common language is likely to lower the costs of melding two corporate cultures. Information needs to be communicated in only one language, and, more indirectly, sharing a common language can be seen as a proxy for common cultural links. We examine the importance of language by

[9] More specifically, this literature distinguishes between location- and ownership-specific factors (see, e.g., Sagari, 1992). Williams (1997) provides a detailed survey of theories of international banking. Recently, Repullo (2000) stressed the supervisory implications of international bank mergers.

[10] See Tschoegl (1987) for an early contribution that discusses the effects of these variables on international retail banking strategies.

[11] For surveys of gravity models, see Frankel (1997) or Leamer and Levinsohn (1995).

Table 2
Data specification and sources

Variable	Definition and sources
Biggest bank	Assets of largest bank in US-Dollar. Data have been taken from various issues of 'The Banker'
Both EU	Dummy variable set equal to 1 if both partners are members of the European Union, 0 otherwise
Both EU after 1992	Dummy variable set equal to 1 if both partners are members of the European Union and merger is announced after 1992, 0 otherwise
Both NAFTA	Dummy variable set equal to 1 if both partners are members of the North American Free Trade Agreement, 0 otherwise
Both EU after 1994	Dummy variable set equal to 1 if both partners are members of the North American Free Trade Agreement and merger is announced after 1994, 0 otherwise
Capital control index	Index of capital controls that has been computed as the sum of 1-0 dummies capturing the following aspects: multiple exchange rates (after 1996: dual or multiple exchange rates), restrictions on current account transactions (after 1996: adoption of IMF Article VIII), restrictions on capital account transactions (after 1996: controls on financial or commercial credits), surrender of export proceeds (after 1996: repatriation or surrender requirements). Before 1996: kindly provided by Gian Maria Milesi-Ferretti. After 1996: IMF (1998)
Credit	Credit provided by the domestic banking sector in percent of GDP. World Bank (2000)
Density	Log of density of population in 1998. World Bank (2000)
Distance	Computed as the shortest line between two countries' commercial centers according to the degrees of latitude and longitude. In 1000 km (logs). Kindly provided by Dieter Schumacher (DIW)
GDPCAP	Log of GDP per capita in US-Dollar in 1998. World Bank (2000)
GDP	GDP in billion US-Dollar in 1998. World Bank (2000)
Government	Share of government ownership in the banking system. *Source*: Barth et al. (2001)
Offshore	Dummy variable set equal to 1 if the country in which the target is based hosts on offshore financial center
Relative risk	Standard deviation of the bank index returns in the target's country divided by the standard deviation of the bank index returns in the acquirer's country
Risk	Standard deviation of the bank index returns in a country
ROA	Return on assets of banking industry within a country. OECD (2002)
Same language	Dummy variable set equal to 1 if official language of both partners is the same, 0 otherwise
Same law	Dummy variable set equal to 1 if the same legal system prevails in the target and acquirer country, 0 otherwise. Legal systems considered are (by origin): English, French, German, Scandinavian, Socialist. La Porta et al. (2000)
Toughness	Index of toughness of banking supervisors that has been computed as the sum of 1-0-dummies capturing the following aspects: (i) Are supervisors legally liable for their actions?, (ii) Can the supervisory agency supercede bank shareholder rights and declare bank insolvent?, (iii) Can the supervisory agency order directors/management to constitute provisions to cover actual/potential losses?, (iv) Can the supervisory agency suspend dividends?, (v) Can supervisory agency suspend bonuses?, (vi) Can supervisory agency suspend management fees? *Source*: Barth et al. (2001)
Transparency	Index of disclosure requirements in the banking industry that has been computed as the sum of 1-0-dummies capturing the following aspects: (i) Are consolidated accounts covering bank and any non-bank financial subsidiaries required?, (ii) Do regulations require credit ratings for commercial banks?, (iii) Must banks disclose risk management procedures to public?, (iv) Are off-balance sheet items disclosed to public? *Source*: Barth et al. (2001)

including a dummy that is set equal to one if the official language of the partners' countries is the same.

While geographic proximity and a common language between acquirer and target address the cultural aspect of information costs, legal aspects are also relevant. One expectation could be that the presence of a common legal system has a positive impact on cross-border M&As. However, precisely the fact that the target bank has experience in dealing with a different legal environment could make it an attractive partner. In this case, the effect of a common legal system might be negative. A similar argument would hold for sharing a common language. Hence, we include a dummy variable that is set equal to one if countries have the same legal origins to test which of these effects dominates.

3.2. Regulations

The empirical literature on the determinants of bank mergers generally supports the hypothesis that deregulation has a substantial impact on merger decisions (see Jayaratne and Strahan, 1998; Saunders, 1999). Anecdotal evidence also suggests that foreign banks have often found it easy to make inroads into domestic banking systems that have undergone major privatization programs. Guillén and Tschoegl (2000) show that privatization has paved the way for many Spanish banks into Latin America, and Bonin and Abel (2000) show that privatization has been one of the reasons for the high market shares of foreign banks in the transition economies of Eastern Europe. Since we do not have comprehensive data on the initiation of bank privatization programs for our cross-section of countries, we use the share of government ownership in banking as a proxy (La Porta et al., 2000). We expect the coefficient on this variable to be negative as high government ownership would serve as a deterrent to entry and a barrier to the internationalization of banks.

We also include a dummy variable for the presence of an international financial center in the target country. These countries can be expected to have more liberal regulatory regimes and superior profit opportunities, and thus to be more attractive destinations for international mergers (see Choi et al., 1986, 2002; Ter Wengel, 1995).

Finally, we use the information provided in Barth et al. (2001) to capture regulatory aspects of the financial system. This database contains an extensive list of indicators capturing inter alia the disclosure requirements and the toughness of banking supervision. Therefore, we combine several of these indicators into two indices. For details on the construction of these indicators, see Table 2. We expect banks in countries with a high degree of disclosure requirements to be more attractive targets of international bank mergers since foreign acquirers can better assess the soundness of these banks. Hence, the disclosure indicator for the target should enter with a positive sign. In a similar vein, banks in countries with greater rights for banking supervisors (a greater 'toughness' indicator) would more likely be targets. At the same time, greater toughness might create disincentives of banks to be acquirers since regulators might fear the risk of international acquisitions. The toughness indicator should therefore be positive for target countries and negative for acquiring countries.

3.3. Other variables

Information costs and regulations are not the only factors driving bank merger decisions. Rather, the empirical literature has found substantial evidence for the importance of both bank-specific and macroeconomic factors. In this study, since we are interested in aggregated merger activity between two countries, we examine only macroeconomic factors. [12]

The relative level of economic development of the countries involved might have an impact on merger decisions. Generally, the demand for differentiated financial services – including cross-border financial services – tends to increase with the level of economic development. The heightened demand increases the incentives for banks to form cross-border alliances and to jointly provide financial services. Hence, if this motive is important, we would expect a positive coefficient on the level of GDP per capita.

Economies of scale are likely to be motives for international mergers as well (see Berger et al., 1993; Bentson et al., 1995; Berger et al., 2000). [13] We include information on the size of the financial system, specifically, credit over GDP and the size of the largest bank in each partner's country, to capture economies of scale. Also, we control for market size (and thus the potential for scale economies) by including the level of GDP. Population density may also be important to an acquirer seeking economies of scale. The more scattered the population, the more difficult for a bank to acquire market share, because a branch network has to be built first. This situation may increase the attractiveness to enter the market through an established domestic bank that already has a branch network. However, we do not have information about the size of the branch networks of all the countries in our sample. We thus need to conjecture that if population density enters with a positive sign, the branch networks of the target banks have either not been large *or* the motive to access the market through an existing branch network has not been important in the merger decision. Conversely, we can interpret a negative sign on population density as indirect evidence that banks have been targets, because they have provided access to a branch network.

[12] Bank-specific characteristics that increase the likelihood of entering into a merger include efficiency, experience in a competitive environment, economies of scale and scope, and domestic clients that have international operations. See Berger et al. (1999) for a review of reasons for banks to merge. Using various measures of efficiency and profitability, studies find that stronger banks take over weaker ones in that acquirers tend to be more cost efficient (Berger and Humphrey, 1992), more profitable (Peristiani, 1993), or better capitalized (Wheelock and Wilson, 2000) than their targets. For European banks, Vander Vennet (1998) finds that acquiring banks tend to be larger and more efficient than their targets. An analysis of mergers on a firm-level might thus be biased if the macro-economic variables that are included affect banks with specific characteristics differently. However, since the focus of this paper is on explaining the number of bank mergers between two countries rather than merger decisions at a bank-level, we leave this issue for further research.

[13] Berger et al. (1993, 2000) also suggest economies of scope could be important in bank mergers. However, since we do not use bank-specific explanatory variables, we have insufficient information to test the potential importance of economies of scope.

Finally, the relative profitability of banks in the target's and in the acquirer's country could be important for merger decisions. Focarelli and Pozzolo (2001a) find that banks from countries with efficient banking systems tend to engage in cross-border bank activity. One component of efficiency is the average return on assets of a country's banks. Acquiring banks therefore probably come from countries where banks have a relatively high average of return on assets. Furthermore, Focarelli and Pozzolo (2001b) find that banks tend to expand into countries where banking systems are inefficient. Target countries would therefore tend to have low average returns on assets. If, however, inefficiency in the target country's banking system is associated with a low degree of competitiveness, target banks might have a high return in assets. We therefore include the average return on assets for the banking industries of the acquirer's and the target's countries. We expect the coefficient on the acquirer's country average ROA to be positive, while sign of the coefficient on the target's country average ROA is not clear a priori.

4. Why do banks merge across borders?

The goal of this paper is to determine the motivation for international bank mergers. For instance, we would like to know whether mergers tend to occur between banks that are geographically close or that share a common cultural background. We are also interested in knowing which banks are more likely to be targets. For example, are banks from developing countries more often targets or acquirers? To answer our questions, we use two main sets of regressions to analyze our data. We start with tobit estimates of merger characteristics in Section 4.1, using the aggregated number of mergers that took place between 1995 and 2001, i.e. in the period in which globalization gained momentum, as the dependent variable. For this part of the analysis, we include all countries for which merger activity has been reported in this period, and we also include those country pairs for which no mergers took place. The main reason why we restrict the analysis to the number of mergers over a seven-year period is that we do not have time-varying data for some of the variables that we are interested in. Most importantly, information on the characteristics of banking supervisory systems as provided by Barth et al. (2001) is available for the end of the 1990s only. We use the cumulative number of bank mergers over the given period to obtain a less volatile measure of merger activity than data for one year only would provide. Moreover, we believe that changes in the structure of supervisory systems over this period have not been too significant.

One result of this first set of regressions, which informs us about the effects of differences in regulatory systems on bank mergers, is that merger characteristics differ significantly between developed and developing countries. In Section 4.2, we therefore restrict our sample to OECD countries to assess how merger characteristics have changed over time. The advantage of restricting the analysis to OECD countries is that we have information of the structure of the banking systems that we can use as additional control variables. We can also test whether the EU's Single Market

Program of 1992 has stimulated merger activity among EU countries. The disadvantage of using data for OECD countries over time is that we cannot control for the structure of the supervisory systems since we have this information only for one point in time. Several robustness checks are discussed in Section 4.3.

4.1. Differences in merger characteristics between countries

To determine the importance of the time-invariant variables we detailed in the previous section, we examine the number of cross-border bank mergers one country has with another country. To assess the importance of characteristics of the acquirer and target countries, we classify a US bank taking over a German bank in one category and a German bank taking over a US bank in another category. The dependent variable in our analysis is the number of cross-border bank mergers for each country pair. We exclude country pairs for which we lack information on one or more explanatory variable. We have a complete set of explanatory variables for 5161 country pairs and mergers took place between 291 of those country pairs. We estimate the following equation, using a tobit regression:

$$N_{ij} = \alpha + X_i\beta_1' + X_j\beta_2' + Y_{ij}\beta_3' + \varepsilon_{ij} \tag{1}$$

where N_{ij} is the cumulative sum of the number of mergers between banks in countries i (targets) and j (acquirers) between 1995 and 2001, X_i (X_j) is a vector of country characteristics of the target (acquirer) bank's country, and Y_{ij} is a vector of characteristics of the country pair.

Tobit analysis jointly determines the probability of having a positive number of mergers as well as the relationship between the explanatory variable and the dependent variable as if the dependent variable were not truncated (see Greene, 2000, Chapter 22). Since the coefficients reflect both of these influences simultaneously, we cannot simply examine the coefficients to determine the importance of the explanatory variables. In order to assess the economic importance of the variables under study in explaining merger activity, we thus also present the marginal effects for the unconditional expected value. Similar to an elasticity, the marginal effect gives the percentage change in the dependent variable associated with a 1% change in the explanatory variable.

The following explanatory variables are included. Information cost proxies include two dummies that indicate whether partners speak the same language and whether partners have the same law as well as the geographical distance between the two countries. To measure regulations, we use a dummy to indicate an offshore financial center, an index showing the stringency of disclosure requirements (*transparency*), and an index capturing the toughness of banking supervisors. Moreover, we include the share of government ownership in banking. Control variables include (log) GDP per capita for both partners' countries, the (log) population density of the target's country, country size (GDP), and the size of the banking systems (credit over GDP). These control variables are average values for the years 1995–2000 and have

Table 3
Summary statistics, full sample

Variable	Mean	Standard deviation	Mininum	Maximum	(Maximum−minimum)/ standard deviation
Number of mergers	0.05	0.61	0.00	64.00	104.29
Information costs					
Log distance	8.75	0.80	4.17	9.90	7.14
Same language	0.03	0.18	0.00	1.00	5.54
Same law	0.07	0.26	0.00	1.00	3.81
Regulations					
Toughness_t	3.82	1.63	0.00	6.00	3.68
Toughness_a	3.85	1.58	0.00	6.00	3.79
Transparency_t	1.89	0.87	0.00	4.00	4.57
Transparency_a	1.78	0.84	0.00	4.00	4.74
Government_t	20.68	24.00	0.00	97.10	4.05
Government_a	21.49	25.08	0.00	97.10	3.87
Offshore_t	0.11	0.31	0.00	1.00	3.22
Control variables					
log (gdp_t)	24.23	2.07	17.68	29.73	5.83
log (gdp_a)	23.26	2.34	17.68	29.73	5.14
log (gdpcap_a)	7.65	1.59	4.70	10.81	3.85
log (gdpcap_t)	8.16	1.52	4.70	10.81	4.01
Domcredit_a	55.13	45.30	0.26	299.62	6.61
Domcredit_t	66.29	48.38	0.26	299.62	6.19
density_t	256.80	845.72	0.16	6386.87	7.55

This table shows summary statistics for explanatory variables used the tobit analysis of Section 4.1. For data definitions, see Table 2.

been retrieved from the World Bank's *Global Development Indicators*. [14] Table 3 shows the summary statistics for these variables.

Table 4 reports our regression findings. The first panel gives the results for the full sample and for country pairs where both partners are developed countries. The second panel has results for mergers where both partners are developing and only the target is developing. We follow Barth et al. (2001) and classify a country as developed if GDP per capita exceeds US$10,000. Mergers involving both partners from developed countries dominate the panel (138 country pairs with positive entries), followed by banks from developed countries taking over banks from developing countries (111 cases), banks from developing countries taking over banks from developed countries (22 cases), and banks from developing countries taking over banks from other developing countries (20 cases). [15]

[14] Although the dependent variable is the number of mergers that were announced and completed between 1995 and 2001, information on the explanatory variables was not available for 2001. We therefore take the average of the years 1995 to 2000. Including 2001 would not substantially alter these averages.

[15] To save space, the results for the sub-sample with mergers between acquirer from developing and targets in developed countries are not reported but are available upon request.

Table 4
Determinants of international bank mergers: Tobit estimates by development of partners' countries

	Full sample		Both partners developed	
	Coefficient	Marginal effect	Coefficient	Marginal effect
Information costs				
log (distance)	−1.56***	−0.004	−1.56***	−0.1536
	(−12.34)		(−7.34)	
Same language	2.65***	0.027	1.74**	0.2626
	(6.83)		(2.56)	
Same law	0.46*	0.0014	1.00**	0.1177
	(1.74)		(2.11)	
Regulations				
Toughness_t	0.36***	0.0009	0.54***	0.0530
	(4.92)		(3.87)	
Toughness_a	−0.22***	−0.0005	0.08	0.0081
	(−3.28)		(0.72)	
Transparency_t	0.22*	0.0006	0.20	0.0197
	(1.69)		(0.84)	
Transparency_a	0.04	0.0001	0.11	0.0113
	(0.33)		(0.48)	
Offshore_t	1.67**	0.0101	2.88*	0.5613
	(2.58)		(1.75)	
Government_t	−0.002	−0.0000	−0.02*	−0.0024
	(−0.41)		(−1.68)	
Government_a	−0.007	−0.0000	0.01	0.0009
	(−0.97)		(0.64)	
Control variables				
log (gdp_t)	1.12***	0.003	1.62***	0.1597
	(9.95)		(6.55)	
log (gdp_a)	0.93***	0.002	1.03***	0.1020
	(9.70)		(6.52)	
log (gdpcap_a)	0.76***	0.002	1.45**	0.1429
	(4.30)		(2.56)	

log (gdpcap_t)	−0.11	−0.0003	0.24	0.0241
	(−0.78)		(0.40)	
Credit_a	0.0001	0.0000	−0.01*	−0.0009
	(0.33)		(−1.80)	
Credit_t	−0.007***	−0.0000	−0.02***	−0.0017
	(−2.77)		(−2.77)	
Density_t	−0.0002	−0.0000	−0.00	−0.0000
	(−1.08)		(−0.42)	
Pseudo R^2	0.33		0.24	
Log likelihood	−1095.37		−464.09	
Total observations	5161		639	
Positive observations	291		138	
	Both partners developing		Developed acquirer, developing target	
Information costs				
log (distance)	−1.86***	−1.8601	−1.61***	−1.8601
	(−5.51)		(−8.81)	
Same language	2.64***	2.6492	3.22***	2.6492
	(3.35)		(5.08)	
Same law	−0.31	−0.3118	0.44	−0.3118
	(−0.52)		(1.14)	
Regulations				
Toughness_t	−0.16	−0.1574	0.33***	−0.1574
	(−0.93)		(3.61)	
Toughness_a	−0.04	−0.0437	−0.14	−0.0437
	(−0.30)		(−1.37)	
Transparency_t	0.48	0.4803	0.52***	0.4803
	(1.58)		(2.82)	
Transparency_a	0.38	0.3808	−0.17	0.3808
	(1.20)		(−0.83)	
Offshore_t	0.32	0.3270	1.45*	0.3270
	(0.28)		(1.78)	
Government_t	0.004	0.0045	0.02**	0.0045
	(0.30)		(2.05)	

Table 4 (*continued*)

	Full sample		Both partners developed	
	Coefficient	Marginal effect	Coefficient	Marginal effect
Government_a	0.008	0.0082	−0.02	0.0082
	(0.43)		(−1.40)	
Control variables				
log (gdp_t)	0.30	0.3032	0.95***	0.3032
	(1.42)		(5.74)	
log (gdp_a)	0.95***	0.9494	0.98***	0.9494
	(3.91)		(6.75)	
log (gdpcap_a)	−0.13	−0.1329	−0.05	−0.1329
	(−0.43)		(−0.09)	
log (gdpcap_t)	0.17	0.1794	0.78***	0.1794
	(0.40)		(2.89)	
Credit_a	0.03***	0.0318	−0.01**	0.0318
	(3.36)		(−2.53)	
Credit_t	−0.001	−0.0062	0.00	−0.0062
	(−0.65)		(0.87)	
Density_t	−0.003	0.0035	−0.00*	0.0035
	(−1.53)		(−1.73)	
Pseudo R^2	0.36		0.25	
Log likelihood	−87.65		−387.99	
Total observations	2074		896	
Positive observations	20		111	

This table shows the influence of several factors on international bank M&A activity. The dependent variable is the number of cross-border bank mergers between two countries, and the independent variables show various aspects of the acquirer and target countries. GDP per capita, GNP, (population) density, and distance are in logs. Countries are divided into four groups depending on the stage of development of the countries in which the partners are located. Developed countries are defined as high income in Barth et al. (2001). *t*-values based on robust standard errors in brackets. The marginal effect is the effect of an explanatory variable on the unconditional expected value. A constant term is included in the regression but not shown in the table.

***Statistically significant at the 1% level.

**Statistically significant at the 5% level.

*Statistically significant at the 10% level.

Results for the full sample confirm most of our expectations regarding the determinants of cross-border mergers. [16] The variables that reflect information costs are important. Cross-border bank merger partners tend to speak the same language, have the same legal system, and are close in terms of distance.

The power of the supervisory authorities also has a significant impact but the effects for the target and for the acquiring country differ. While a tough supervisory system in the target country increases the number of bank mergers, greater toughness of the acquiring country's authorities discourages mergers. One interpretation of this result could be that banks are attracted to markets with good supervisory systems but that national supervisors fear the increase in risk due to international mergers and thus try to discourage these mergers. The positive and significant sign on the transparency index for the target country's supervisory system confirms this interpretation. Transparency of the acquiring country's supervisory system is insignificant. Likewise, government ownership does not have an impact on the probability that bank mergers occur between two countries. Banks in offshore financial centers, as expected, are likely to be targets in international mergers cases.

GDP, which we use to scale the number of bank mergers, has the expected positive sign and is highly significant. [17] The GDP per capita of the acquirer country is significantly positive, while GDP per capita of the target is insignificant. This result suggests that banks in large, relatively rich nations tend to be the acquirers. The population density of the target country is insignificant. The size of the target country's banking system has a negative impact on the probability that bank mergers occur. One possible interpretation of this result is that banks do not invest in markets that have established a relatively large banking sector. This interpretation is plausible to the extent that some of these markets may already be over-banked.

An analysis of residuals suggests that the model best fits developed countries. Residuals tend to be smaller for mergers between partners in developed countries, and larger for mergers between partners in developing countries. Specifically, residuals from this model range from a minimum of −2.43 for mergers where a France acquirer takes over a Belgian target to a maximum of 12.87 for Lithuanian targets of Egyptian acquirers.

Table 4 verifies the preliminary observations we reached when examined the residuals. The table shows that our results are driven almost entirely by mergers that involve acquirers from developed countries, because a majority of our sample involves such acquirers. Therefore, we are not surprised when we our results for mergers between banks from two developed countries are similar to our results for the full sample. However, a few exceptions exist. The offshore dummy and the common language effect have a highly significant positive impact on merger activity. The toughness of the acquirer's banking supervisory system and the transparency of the target's supervisory system are not significant anymore. Government ownership in banking in the

[16] The following results hold even if we exclude the 5% largest bank merger cases from the sample.

[17] Note that the full effect of changes in GDP must be evaluated by taking into account that GDP is also used to scale some of the other RHS variables.

target country lowers the probability of mergers between banks from developed countries while it makes take-overs of banks in developing countries more likely.

The remaining sub-samples also provide interesting results. The sub-sample where the acquirer is developed and the target is developing shows that banks from developed countries tend to move into developing countries that have relatively high GDP per capita and good supervisory systems. In the sub-sample where both banks are headquartered in developing countries, only four variables are significant: distance (negative), same language (positive), GDP of the acquirer's country (positive), and the size of the banking system in the acquirer's country (positive). The last result is interesting because the coefficient on the variable is also significant, but negative, for acquiring banks from developed countries. The results suggest that a bank in a developed country with a large banking system tends to stay at home, whereas a bank from a developing country with a large domestic banking system uses the domestic environment as a foundation upon which to expand abroad.

Generally, results from splitting up the sample show that there are significant differences in merger characteristics of developed and developing countries. Therefore, the following analysis will shift focus and look exclusively at OECD countries.

4.2. Changes in merger characteristics over time

The regression results reported above have the shortcoming that we cannot assess changes in mergers characteristics over time. In the following analysis, we address this shortcoming. At the same time, we restrict our sample for the subsequent analysis to OECD countries. These modifications allow us to assess whether certain regulations such as the EU's Single Market Program have led to increased merger activity over time. Furthermore, by narrowing the countries we examine, we can look more closely at the structure of the banking systems in the individual countries (see OECD, 2002). We can now scale our dependent variable by the total number of banks in a given country, and we can include data on the structure and the profitability of banking systems of individual countries. However, one disadvantage of studying time-series characteristics of bank mergers over a 16-year period is that we have no time series evidence for some of the variables capturing regulatory aspects. We therefore exclude supervisory toughness, transparency, and government ownership from the analysis. Among other controls, we include country fixed effects.

We again estimate a tobit model, where the dependent variable is the number of bank mergers for each country pair in each year, scaled by the number of banks in the target and acquirer countries. [18] The highest value the dependent variable can

[18] The dependent variable we use in the analysis of OECD countries in Section 4.2 differs from the dependent variable in our analysis in Section 4.1 that includes all countries. In Section 4.1, we use the unscaled number of bank mergers for a country pair, while in Section 4.2 we scale the number of mergers by the total number of banking institutions in the partners' countries. Note that we do scale the number of mergers in Section 4.1 by including GDP as an independent variable. Although the scaling technique in Section 4.2 is more precise than the technique in Section 4.1, we have information on the total number of institutions only for OECD countries. Therefore we are able to use the more precise technique only in Section 4.2.

reach is 0.50 since the highest number of mergers between two countries is the number of banks in that country that has the smaller number of banks. For example, if two countries each have one bank and if the two banks merge, the numerator of our dependent variable is one and the denominator is two, resulting in a dependent variable of 0.50. If one of the countries has two banks, the denominator is larger, so the dependent variable becomes smaller. Our full dataset now has around 14,800 observations for the years 1985 through 2001, and we have about 14,100 entries where no merger was recorded. However, due to missing data for the dependent variable (specifically, the number of banks in the partners' countries that we use as a scaling factor), we can use only about half of all observations in the current analysis.

As explanatory variables, we again use variables that measure information costs and regulations. To measure information costs, we use the same variables as above, namely, same language, same law, and distance. To measure regulations, we include an index for capital controls – see Table 2 for a complete definition – as well as variables that capture the effects of trade pacts within Europe and Northern America. Within Europe, the European Union's Single Market Program of 1992 was implemented to level the playing field for financial institutions in Europe by deregulating entry and harmonizing regulations. The North American Free Trade Agreement of 1994 included similar provisions for trade amongst its member nations, Canada, Mexico, and the United States. To measure the change in cross-border bank mergers within the European Union as a result of the EU's Single Market Program, we follow the method of Amihud et al. (2002) and include two dummy variables. The first dummy variable equals one for all mergers between EU countries and the second dummy variable equals one for mergers between EU countries that occur after 1992. The results from the second dummy reveal the influence of the EU's Single Market Program. We perform a similar analysis on NAFTA countries to examine the change after 1994.

In addition to measures for information costs and regulations, we include control variables. For both the acquirer's and the target's countries, we include (log) GDP and (log) GDP per capita for the year in which the observation takes place. In a robustness check in Section 4.3, we include with size of the biggest bank in each partner's country. We control for fixed effects by including dummy variables for each country as a target or acquirer. For example, whenever France is an acquirer in a country pair, we set the France_acquirer dummy to one (zero otherwise), and whenever France is a target, the France_target dummy is one (zero otherwise). We also control for the year the merger is announced by including year dummies. To avoid overspecifying the equation, we exclude Australia as target and acquirer and the dummy for announcements in 1985.

Table 5 shows the descriptive statistics for the variables used. Since we include country pairs with zero entries, each country is entered as both an acquirer and a target country. Therefore, the descriptive statistics for explanatory variables that are common to both targets and acquirers (capital control index, ROA, GDP per capita, and size of biggest bank) are the same.

Table 6 shows the results. We report the coefficient on as well as the marginal effects of each explanatory variable. Although the marginal effects we now report

Table 5
Summary statistics, OECD sample

	Mean	Std. dev.	Minimum	Maximum	(Maximum – minimum)/ std. dev.
Information costs					
(log) distance	8.12	1.16	5.16	9.90	4.10
Same language	0.08	0.27	0.00	1.00	3.72
Same law	0.16	0.37	0.00	1.00	2.71
Regulations					
Capital controls index	0.84	1.11	0.00	4.00	3.61
Both EU	0.20	0.40	0.00	1.00	2.51
Both EU after 1992	0.11	0.31	0.00	1.00	3.24
Both NAFTA	0.01	0.10	0.00	1.00	10.04
Both NAFTA after 1994	0.00	0.06	0.00	1.00	17.33
Control variables					
ROA_banks in a country	0.82	1.00	−3.14	4.80	7.93
(log) GDP	8.18	2.81	2.89	18.23	5.45
(log) GDPCAP	9.50	0.78	7.39	10.69	4.25
(log) assets of biggest bank	11.01	1.28	7.45	13.50	4.73
Variability of bank index returns (risk)	0.02	0.01	0.00	0.07	7.91

This table shows summary statistics for explanatory variables used the tobit analysis for the OECD subsample. Control variables have identical summary statistics for acquirer and target country. For data definitions, see Table 2.

appear small, recall that the dependent variable is the number of mergers between a country pair scaled by the number of banks in the partners' countries. A marginal effect of, say, 0.04% could translate into many mergers, depending on the number of banks in each partner's country. The insight we gain from the marginal effects is again the relative importance of the explanatory variables.

We can see from Table 6 that information costs are important variables in determining whether a bank merger occurs between a country pair. Bank mergers are more likely to occur in countries that share the same language and legal system, but are not far from one another. Concerning structural aspects, countries with high GDP per capita tend to be acquiring nations, suggesting that the more developed a country's economy, the more often banks search outside the borders for targets. The average profitability of banks in the acquirer and the target country, however, does not have a significant impact on merger decisions.

Deregulation of entry appears to have minimal effects on cross-border bank merger activity. Capital controls do not seem to affect international bank merger activity, and the EU's Single Market Program does not seem to have spurred cross-border bank mergers. Weak evidence exists that the number of cross-border bank mergers decreased after the implementation of the Program. These results are interesting since the European Union was created to promote internal integration. Mergers would be one way to integrate. However, the result substantiates a study by Dufey and Yeung (1993), who find that immediately following the implementation

Table 6
Determinants of international bank mergers: Tobit estimates for OECD countries

Parameter	Estimate (*t*-statistic)	d*P*/d*X*	Estimate (*t*-statistic)	d*P*/d*X*
Constant	−0.0583 (−1.57)	−0.5116	−0.0724** (−2.01)	−0.7388
Information costs				
log(distance)	−0.0040*** (−9.79)	−0.0353	−0.0035*** (−8.72)	−0.0354
Same language	0.0018* (1.77)	0.0154	0.0019** (2.08)	0.0196
Same law	0.0028*** (3.71)	0.0247	0.0027*** (3.78)	0.0271
Regulations				
Capital control index (target)	−0.0005 (−0.86)	−0.0040	−0.0004 (−0.81)	−0.0041
Capital control index (acquirer)	−0.0006 (−0.92)	−0.0050	−0.0006 (−1.08)	−0.0063
Both EU	0.0000 (0.00)	0.0000	0.0003 (0.24)	0.0030
Both EU after 1992	−0.0021* (−1.68)	−0.0186	−0.0020* (−1.73)	−0.0208
Both NAFTA	−0.0091 (−3.35)***	−0.0802	−0.0081*** (−3.21)	−0.0835
Both NAFTA after 1994	0.0054* (1.71)	0.0472	0.0050* (1.72)	0.0511
Control variables				
ROA_banks in target's country	−0.0001 (−0.13)	−0.0005	−0.0001 (−0.20)	−0.0009
ROA_banks in acquirer's country	0.0005 (0.87)	0.0043	0.0003 (0.65)	0.0034
log(GDP_target)	−0.0006 (−0.47)	−0.0050	0.0002 (0.22)	0.0025
log(GDP_acquirer)	−0.0016 (−1.47)	−0.0139	−0.0008 (−0.83)	−0.0085
log(GDPCAP_target)	0.0006 (0.19)	0.0049	−0.0027 (−0.92)	−0.0272
log(GDPCAP_acquirer)	0.0103*** (3.57)	0.0905	0.0065** (2.29)	0.0663
Size of biggest bank (target country)			0.0028** (2.45)	0.0284
Size of biggest bank (acquirer country)			0.0033** (2.55)	0.0340
Sigma	0.0081*** (26.34)		0.0075*** (26.30)	
Log likelihood	810.16		844.08	
Total observations	7482		6772	
Positive observations	415		409	

This table shows the influence of several factors on internationalization of bank M&A activity. The dependent variable is the number of cross-border bank mergers between two countries scaled by the sum of the number of banks in each country, and the explanatory variables show various aspects of the acquirer and target countries. Specific definitions for the explanatory variables are given in Table 2.
***Significant at the 1% level.
**Significant at the 5% level.
*Significant at the 10% level.

of the EU program, consolidation and M&A activity in banking took place mainly on a domestic level. Also, Berger et al. (2001) find no increase in consolidation in the European Union after the program. Results concerning NAFTA are as expected, though weak. That is, weak evidence exists that merger activity increased after the forming of the free trade area.

An analysis of residuals suggests that the model best describes mergers that involve a US target, but does not describe well mergers where an Australian acquirer takes over a New Zealand target. Residuals of non-truncated observations ranged from −0.0046 (for mergers in 1997 where a Canadian acquirer takes over a US target) to 0.0704 (for mergers in 1990 where an Australian acquirer takes over a New Zealand target). [19] Moreover, seven of the 10 smallest residuals involved observations with a US target, while three of the six largest residuals involved observations where Australian acquirers took over New Zealand targets.

4.3. Robustness tests

We performed a number of robustness checks. In all but one robustness check, we kept the dependent variables the same as in the original analyses. In our analysis of all countries, we added a number of explanatory variables to the final specification. None of the variables we added – inflation, an index for the protection of property rights, interest rate spread – was statistically significant.

In our analysis of OECD countries, we checked the robustness of our results in three ways. First, we included the size of the largest bank in the target's and the acquirer's country. Information on individual banks' assets has been obtained from various issues of *The Banker* and we thus have data for each year under study. Including the size of the largest bank allowed us to test the economies of scale hypothesis. We did not include these variables in our original tobit analysis, because we lose over 700 observations when we include these variables. We see in Table 6 that the larger is the largest bank in a country, the more likely the country will experience international bank merger activity both as a target and as an acquirer country. The results suggest that economies of scale may be a motivation both in target and acquiring countries.

In a second robustness test, we test Repullo's (2000) hypothesis that the (relative) level of riskiness of targets and acquirers might be a motive for international bank mergers. We included the standard deviation of bank returns in both the acquirer's and target's country as well as an indicator of relative risk (standard deviation of the bank index returns of the target's country divided by the standard deviation of the bank index returns of the acquirer's country). We calculated this ratio for each year of the study. We obtained the bank index returns from Datastream (2002). These variables were all insignificant.

[19] Note that the residuals from the model in Section 4.2 differ by a magnitude from the residuals from the model in Section 4.1. The difference is the result of the different scaling techniques we use in each model. See footnote 17.

In the third robustness test, we replaced the dependent variable with the number of mergers between two countries. This dependent variable is similar to our original variable, but it is not scaled by the number of banks in the partners' countries. This modification allows comparing results in Section 4.2 to those reported in Section 4.1. No significant changes occurred.

5. Summary

Using an encompassing, novel dataset of more than 3000 international bank merger cases, which were announced and completed between 1985 and 2001, we have addressed two issues. First, we have asked to what extent regulatory factors and information costs affect bank merger decisions. To analyze this question, we have restricted the analysis to the second half of the 1990s while distinguishing banks from developed and from developing countries. Second, we have asked whether regulatory initiatives in Europe (Single Market Program) and in North America (NAFTA) have affected bank mergers. For this part of the analysis, we have restricted ourselves to OECD countries while studying the full time dimension of our dataset.

Results from the first set of regressions support for the notion that regulations that strengthen a domestic banking system such as transparency and supervisory toughness affect international merger decisions. As countries increase transparency and enhance supervisory power, their banks become more attractive targets of international bank mergers. At the same time, there is some evidence that increased supervisory power reduces the incentives of banks to engage as acquirers in international merger cases. In addition, banks from more developed countries (and thus presumably more efficient banks) tend to take over banks in less developed countries. We also find evidence to confirm that a merger decision involving partners from developing countries should be treated differently in empirical research from those involving partners from developed countries only.

Results from the second set of regressions focusing on OECD countries show that the relative profitability of banking systems has little explanatory power for merger activity. Since the OECD countries are a relatively homogeneous group, this result suggests that differences in profitability are not large enough to outweigh factors such as distance, common language, and a common legal system. The difficulty to overcome the barriers to mergers that these factors erect is also shown by the EU and NAFTA effects. If anything, deregulation of entry has lowered rather than increased merger activity within Europe and North America, respectively.

One interesting result concerns the importance of regulations and information costs in affecting merger decisions. Generally, we find that high information costs, as proxied by distance and common cultural factors, tend to hold back merger activity. Moreover, information costs have large effects on the number of bank mergers than our regulatory variables. Although information costs cannot be "legislated" away in the same manner as regulations, information costs can be lowered through advancements in technology that promote travel and communication. However,

these effects are going to materialize only gradually. For the time being, information costs are thus going to remain an important impediment to the integration of international financial markets and to the consolidation of the international financial services industry.

There are several routes along which the analysis of this paper could be extended. Studying merger decisions at the level of the individual bank and including more bank-specific variables would be interesting. Including bank-specific data would also allow analyzing the relative importance of macro- versus bank-specific factors in international merger decisions. In addition, it would interesting to analyze differences in M&As and in greenfield foreign direct investment. If it is true that banks acquire banks abroad in order to obtain access to the "knowledge" capital embedded in these banks, one might expect greenfield investments to be more important *ceteris paribus* in countries for which barriers in terms of information costs are low. Looking at uncompleted mergers could also create insights. By including mergers that have been announced but not been completed, one could analyze the extent to which differences in business cultures have contributed to the failure of these M&As.

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