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Do multinational banks create or destroy economic value?

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Abstract

Multinational banks are a distinctive feature of today's globalized economy with some institutions now operating in more than 100 countries. Despite the thorough analyses of bank internationalization over the last decades, the literature has failed to provide clear evidence that cross-border expansion is a profitable process from a firm's perspective. The analyses of the costs and benefits of focusing or diversifying the activities of a firm have a long tradition in the economic and business literatures. The overall evidence is mixed, due to the opposite effects of scale and scope economies on one side and agency costs on the other. In this paper, we study the value of internationally diversified commercial banks. In our analysis we construct a measure of banks' excess value using a large sample of more than 500 large banks from 56 countries between 2001 and 2007, and relate it to different measures of the international diversification of their activities. We find robust evidence of a statistically and economically significant diversification premium, suggesting that, in banking, the benefits of geographic scale and scope economies more than offset the agency costs.

JEL classification: G34; G21; G15; L22; F23; F36
Keywords: Geographical diversification; Corporate diversification; Multinational banking; Foreign Direct Investment

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1. Introduction

Multinational banks are a distinctive feature of today's globalized economy. In the years prior to the 2007-2008 financial crisis, global players such as Citigroup (a group with 300,000 employees, about 16,000 offices and over 200 million customers in 140 different countries) or HSBC (330,000 employees, 8,500 offices, 128 million customers in 86 countries) were viewed as the trademarks of the worldwide integration of financial markets: They were also considered powerful and profitable companies with growing influence in nearly every corner of the world. The recent financial crisis has put many global banks in the verge of collapse. Massive liquidity problems and substantial losses suggested that they were much weaker players than they pretended to be. Were all these just castles built on sand?

Quite surprisingly, a large number of studies of the rapid growth of multinational banks in the last decades have been unable to provide clear evidence of the profitability of this process from a firm's perspective. Domestic and cross-border expansions of financial intermediaries have been shown to be beneficial (Jayaratne and Strahan, 1996, and Hauswald and Bruno, 2009) but most analyses have found weak evidence of economies of scale or scope, efficiency improvements and, more in general, increase in shareholder value (DeLong, 2001, and Cornett et al., 2003). Whether geographic diversification and cross-border expansion increase shareholder value is a question still lacking a neat answer.

The debate on the costs and the benefits of focusing or diversifying the activities of firms has a long tradition in the economic and business literatures. From a theoretical point of view, it has been argued that diversification can augment firm value thereby increasing firms' market power and enable more efficient use of physical and human resources; but it can also diminish the mentioned benefits as a result of stronger agency problems (Montgomery, 1994, and Martin and Sayrak, 2003). At the same time, the empirical literature has been unable to draw conclusive evidence on what forces prevail, although it mostly points towards a diversification discount, driven by powerful agency problems.

In the case of financial intermediaries, the causes and the consequences of product and geographic diversification can be rather different from those of manufacturing firms, because of the overwhelming role of regulation, the importance of intangible assets such as soft information and reputation, and the necessity of a physical presence for selling retail financial services. For

all these reasons, some recent studies have watched more specifically at banks: Laeven and Levine (2007) and Schmidt and Walter (2009) find a significant corporate diversification discount for banking activities, while Deng and Elyasiani (2008) find a geographic diversification premium in the U.S. banking industry. To the best of our knowledge, a study of the effect of international diversification on shareholder value is still missing.

In this paper we fill this gap comparing the value of internationally diversified commercial banks with that of purely domestically focused banks. Our methodology follows Laeven and Levine (2007) in constructing a measure of each bank's excess value, and relates it to different indices of the international geographic diversification whilst controlling for a host of other possible influences as well. Studying a large sample of more than 500 large banks from 56 countries between 2001 and 2007, we find robust evidence of a statistically and economically significant diversification premium. Well diversified international banks can have an excess Tobin's *q* that is nearly twice as big as that of more domestically focused intermediaries. Our findings are consistent with the results of Deng and Elyasiani (2008) for geographic diversification within the U.S., and suggest that the benefits of scale and scope economies generated by multinational banks more than offset the agency costs, thus providing a strong rationale for the rapid growth of the international activity of banks during the last couple of decades.

The rest of the paper is organized as follows. Section 2 relates our research to the previous literature on firm diversification and multinational banking. Section 3 presents our empirical strategy. Section 4 presents our data sources and describes the measures of firm value and geographic diversification used in the empirical analyses. Results are presented in Section 5. The final section concludes and discusses some open issues.

2. Related Literature

Our paper relates to the general literature on the costs and benefits of focusing versus diversifying firms' activities, and more specifically to the recent analyses watching at financial intermediaries. At the same time, it is also linked to the literature on multinational banking.

The debate on focus versus diversification has a very long tradition, shared by both the economic and the management literature. From a theoretical point of view, a large number of

motivations have been put forward both in favor and against diversification. Most of them can be applied also to the case of financial intermediaries, although with some important qualifications.

The arguments in favor of diversification can be broadly grouped into three categories: increased market power, better resource management, and reduction of agency problems. According to the market power view (Edwards, 1955), firms' incentives to diversify their lines of business come from the possibility of extending their market power from one sector to another, through predatory pricing in other sectors, collusion with other large and diversified companies, and the exclusion of smaller size competitors (Montgomery, 1994; Villalonga, 2004a and 2004b). Clearly, this analysis applies also to the case of financial intermediaries. Sharpe (1990) and Rajan (1992), in particular, show how lending relationships give banks a monopoly on information about their borrowers, that can be exploited to gain monopoly power (e.g., Petersen and Rajan, 1994).

The resource management argument hinges essentially on the presence of economies of scope, and suggests that firms can profitably readdress their unused resources to business activities that are somehow linked to those of their core business. Clearly, also this argument applies to banks expanding their activities, for example cross-selling financial products (Saunders, 1994) or following their clients abroad (Focarelli and Pozzolo, 2005). A parallel justification, hinging more on the financial aspects of firm management, is that diversification reduces the effect of idiosyncratic shocks on cash flow variance, therefore increasing the stock market value (Lewellen, 1971).

A more recent strand of literature has analyzed the problem of corporate diversification applying the tools of agency theory to the analysis of the functioning of firms' internal capital markets (Houston et al., 1997). The key insight of this line of research is that a firm's internal cash flows are a less expensive source of funds than external capital. Better informed internal managers can therefore increase firm value by selecting the most remunerative projects, instead of paying out dividends that would be invested elsewhere by less informed externals (Stein, 1997; Cremers et al., 2010).

This positive view of firm diversification is opposed by an equally large amount of arguments against it. From a general perspective, the increase in firm value due to stronger market power comes at the customers' expense, and therefore it is not socially optimal. From a firm specific perspective, it has been forcefully argued that agency problems can have a huge

negative impact on the allocation of resources with respect to what is optimal for shareholders. Most problems come from the well known conflict of interest between insiders (managers) and outsiders (shareholders), that exacerbate the well known problem of overinvestment. Building on the seminal contribution of Jensen and Meckling (1976), this literature has stressed that diversification can have a negative impact on firm value if this is the result of managers' desire to: a) increase their compensation (Jensen and Murphy, 1990) and make their human capital more essential to the firm (Shleifer and Vishny, 1990a and 1990b); b) increase their personal perquisites (Jensen, 1986); c) make their result based compensation more stable by reducing the company's cash flow volatility (Amihud and Lev, 1981). In addition to the motivations based on the conflict of interests between managers and shareholders, diversification may also negatively affect the value of a firm by reducing its efficiency, for example introducing expensive additional layers of administrative and corporate control and allocating resources inefficiently across different activities. Clearly, all these problems are even more relevant in the case of financial intermediaries, whose activities are typically less based in hard information, and more opaque and difficult to monitor by external investors (Morgan, 2002).[1]

Since the theoretical literature has provided a large number of explanations of why diversification can either increase or decrease the value of a firm, only the empirical analysis should be able to provide the ultimate answer on its actual effects. Unfortunately, also the empirical literature provides a rather mixed picture. The typical exercise compares the value of a conglomerate (e.g., the Tobin's *q* or its stock price) with the value imputed considering each segment of its activities as a stand-alone firm, using the so called "chop-shop" approach initially proposed by LeBaron and Speidell (1987). Martin and Sayrak (2003) identify three rounds of results. A first group of papers shows that corporate diversification destroys value, reducing Tobin's *q* (Berger and Ofek, 1995; Rajan et al., 2000; Lamont, 1997), productivity (Maksimovic and Phillips, 2001), and stock market prices around M&A announcements (Bradley et al., 1988). A second round of literature questions the previous findings, showing that the estimated discount is explained by other firm characteristics that are themselves associated with a higher probability that a firm diversifies its activities. In other words, previous analyses were biased by endogeneity problems. Indeed, Lang and Stulz (1994) and Campa and Kedia (2002) show that diversified

[1] See, for example, the literature on the negative effects of functional distance in bank lending (Alessandrini et al., 2009).

firms were poor performers also before diversification. While later analyses carefully controlling for endogeneity still found a diversification discount (Lamont and Polk, 2002), the issue is not yet settled. Finally, a third round of literature has argued that the previous findings were flawed by data problem, because firms erroneously self-report their segments of economic activities. Indeed, using more reliable census information, Villalonga (2004a and 2004b) finds that diversified firms trade at a significant premium, not at a discount.[2]

In the case of financial companies, the empirical literature has taken a more diverse approach, often studying very specific issues, such as the pros and cons of narrow versus universal banking. Indeed, in most cases the objective was more to understand the effects of bank diversification on risk taking or lending activities, rather than the consequences for shareholder value. For example, in the thriving strand of literature that has originated from the repeal of the Glass-Steagall Act in the U.S. in 1999, the maintained assumption is that commercial banks diversify their activities into investment banking because they find it profitable, while the focus is in ascertaining the presence of conflicts of interest coming from the coexistence of investment and commercial banking activities within the same company (Kroszner and Rajan, 1994; Puri, 1996; Focarelli et al., 2010).[3]

More interesting results for the debate on focus versus diversification come from the rich strand of empirical literature that has studied the effects of bank M&As, mostly pointing towards a significant diversification discount. Product and geographically focused mergers increase overall efficiency (Cornett et al., 2006; Altunbas and Marqués-Ibanez, 2008) while diversifying deals often have a negative impact. The literature on optimal bank size also found results consistent with this view, with very weak evidence of economies of scale (Amel et al., 2004).[4] Studies of the stock market reactions of M&A announcements give more mixed results. DeLong (2001 and 2003) and Cornett et al. (2003) find a diversification discount for the U.S., while Cybo-Ottone and Murgia (2000) find positive abnormal returns for the combined performance of M&A bidders and targets, driven by domestic bank to bank deals and by diversification of banks into insurance businesses.

[2] In a partly related literature, Rowland and Tesar (2004) find that stock returns of multinational corporations significantly shift the investros' domestic portfolio frontier.
[3] For a recent survey of this literature, see Drucker and Puri (2006).
[4] A noticeable exception to these results is Vander Vennet (2002), who finds that European conglomerates are more cost efficient than specialized banks.

Only recently, a few papers have studied the link between diversification and the value of firms in the financial sector using the methodology followed by the literature on manufacturing firms. Again, most of the results point towards a discount. Laeven and Levine (2007), using a large set of banks from over 40 countries, find that financial conglomerates engaging in multiple activities have a significantly smaller Tobin's *q* than less diversified institutions. Schmid and Walter (2009) confirm this result for a large sample of U.S. financial corporations, with the only noticeable exception of investment banks.

Results focusing on European financial markets are more mixed. Baele et al. (2007) find a positive and strong relationship between banks' Tobin's *q* and measures of income or balance sheet diversification between lending and non-lending activities, and a non-linear relationship between diversification and bank-specific risk, measured by banks' stock market excess returns. Further, studying a sample of European financial corporations, van Lelyveld and Knot (2009) find no evidence of a structural diversification discount, although they present some evidence that the largest conglomerates have more opportunities for inefficient cross-subsidization across different business lines.

A parallel important dimension is geographical diversification. The literature on the effects of plant and cross-border expansion of manufacturing firms is huge, and it has analyzed nearly all possible dimensions of firm's performance. In the recent past a thriving literature has emerged studying these issues within the framework of the incomplete contract theory, providing a sound theoretical background for the empirical analysis.[5]

On the specific issue of firm value, a seminal paper by Morck and Yeung (1991) shows that multinationality has no direct significant impact on a firm's Tobin's *q*, although it may enhance the positive impact of investment in intangible assets on firm's value. Denis et al. (2002) provide further evidence of a weak effect of internationalization, documenting that globally diversified firms are traded at a discount. Similarly, Moeller and Schlingemann (2005) find worse stock market reactions to M&A announcements of cross-border deals than of domestic acquisitions.

In the case of financial intermediaries, geographical diversification can have rather different motivations than for manufacturing firms. In particular, analyzing the benefits of internalizing existing and new bank-customer relationships (Buckley and Casson, 1976;

[5] For recent surveys see Caves (1996), Markusen (2004), Barba Navaretti and Venables (2004), and Helpman (2006).

Williams, 1997) is rather complex, due to the confusing effects of regulation, to the value of intangible assets such as reputation, and to the importance of a physical presence for developing the personal relationships that are essential to supply most retail financial services (Rajan, 1998).

Bank geographic diversification has been analyzed thoroughly also for its effects on real economic growth, especially after the passing in 1994 of the Riegle-Neal Interstate Banking and Branching Efficiency Act in the U.S. allowed nationwide banking. In particular, two seminal papers by Jayaratne and Strahan (1996) and Morgan and Strahan (2004) show convincingly that the increase in competition induced by the entry of new players boosted economic growth and reduced output volatility.

The evidence of effects on firms' value seems instead much less conclusive. Rose (1996) and Hughes et al. (1996 and 1999) show that geographic expansion has mixed effects on risk and efficiency of U.S. banks. Zhang (1995) finds that geographical diversification leads to lower risk through a reduction in income variability, but Morgan and Samolyk (2005) find a U-shaped relationship between geographic diversification and risk-adjusted returns.[6] Moreover, Deng et al. (2007) show that domestically diversified banks both on the assets and on the liabilities side pay lower bond spreads, and Deng and Elyasiani (2008), in a paper more closely related to ours, provide evidence that geographically diversified banks have a higher Tobin's *q* and a lower stock price variability, but at the same time an increase in distance between the holding company and its branches has instead a negative effect on company's value.

Finally, an important dimension of bank geographical diversification is the international arena. Financial companies have expanded their cross-border activities tremendously in recent years, favored by deregulation in the U.S. and in Europe and, more in general, as part of the widespread process of economic globalization. The empirical literature in this context has studied thoroughly this phenomenon, analyzing the determinants of foreign expansion (Buch, 2003; Focarelli and Pozzolo, 2001), the patterns of internationalization (Buch and DeLong, 2004; Berger et al., 2003 and 2004; Focarelli and Pozzolo, 2005; Claessens and Van Horen, 2007), the specific characteristics of the bidders in international M&As (Caiazza et al., 2009; Correia, 2009) and those of the targets (Caiazza et al., 2010). However, with the exception of few studies finding a negative or null effects of M&A announcements on stock market prices

[6] Studying a sample of the 50 largest banks in the world between 2003 and 2006, Outreville (2010) also finds a cubic relationship between profitability and international diversification.

(Amihud et al., 2002, Cybo-Ottone and Murgia, 2000, and Campa and Hernando, 2006) the effects of international diversification on firm value have not been analyzed in detail.[7] In the following, we will begin filling this gap in the literature.

3. Empirical strategy

Our empirical model is designed to test whether bank's excess value is in fact an increasing function of its international diversification. The general specification that we test is the following:

$$Excess\ value_{jt} = \alpha + \beta\, geo\ div_{jt} + \gamma\, controls_{jt} + \varepsilon_{jt}, \quad (1)$$

where the measures of excess value and geographic diversification refer to bank *j* at time *t*, the controls include time-varying bank-specific characteristics, time-varying country-specific characteristics, and time and country dummies, and ε_{jt} is an error term. The model is estimated using robust regression techniques, because we are interested in keeping all the sampled values but we want to be sure that our results are not driven by extreme values. In unreported OLS regressions we found qualitatively similar results. In the following we discuss in detail our measures of excess value and geographic diversification, and the controls introduced in our specifications.

Dependent variable: Excess value. For each bank *j*, excess value is defined as a bank's Tobin's *q* minus its imputed or adjusted *q*. As it is common in the literature (see for example Linderberg and Ross (1981) for an early reference), we compute Tobin's *q* as the ratio of the sum of market value of common stocks, book value of preferential shares and minority interests, and book value of debt, to the book value of total assets.[8] For the imputed or adjusted *q* we adapt the methodology of Laeven and Levine (2007) to study geographic diversification.

In the "chop-shop" approach of LeBaron and Speidell (1987), the Tobin's *q* of each firm is compared with an imputed *q* obtained if the firm were "chopped" into separate "shops". In our framework, we must therefore compare a bank's *q* with the imputed *q* that it would have if it were "chopped" in two into a geographically diversified bank and a domestic, undiversified, bank.

[7] Amihud et al. (2002) also find no effects of cross-border M&As on bidders' systematic risk, but Focarelli et al. (2008) question this result showing instead that bidders experience a reduction in their beta (the correlation of their returns with stock market returns).

[8] The use of the book value of debt is quite customary in the empirical literature because of the lack of data on the large share of non-tradable debt, but it is unlikely to affect significantly our estimates: according to Sweeney et al. (2001), who have analyzed 15 manufacturing and financial industry portfolios between 1978 and 1991, the correlation between book value and market value of debt is 0.95.

If we knew the Tobin's *q* of the geographically diversified bank (that we can call q_1) and of the domestic bank (q_2), the imputed *q* of a bank with a share φ of internationally diversified activities and a share (1 – φ) of domestic activities would be: $\varphi q_1 + (1-\varphi)q_2$. Since in practice we have not a precise measure of the Tobin's *q* of geographically diversified and domestic banks, we use an approximation. For each bank *j*, we compute an index of foreign geographical dispersion, defined as $\alpha_j = \frac{n_j}{n_{\max,}}$, where n_j is the average number of foreign countries where the bank *j* has a subsidiary during our sample period and n_{max} is the same number for the most internationally diversified bank. We then define Tobin's *q* of a geographically diversified bank (q_1) as the average of the *q*s of banks with α_j above a given threshold, and that of a domestic bank (q_2) as the average of the *q*s of banks with α_j lying at or below the same threshold. Excess value is therefore defined as:

$$Excess \quad value = \alpha_j q_1 + (1-\alpha_j)q_2 \tag{2}$$

Following Laeven and Levine (2007), in our baseline specification we define internationally diversified banks as those having an index of geographical dispersions above a threshold of 70%, but we also verify that our results are confirmed when using thresholds at 60%, 80% or 90%. Unlike plain Tobin's *q*, this measure built as a deviation from the benchmark of multinational banks permits a better identification of the effects of geographical diversification.

Key independent variable: Geographical diversification. The variables used in conventional empirical studies to measure geographic diversification, for example the number of subsidiaries, or the number of locations or binary variables indicating cross-border presence, fail to capture the level and the intensity of banks' diversification in terms of the geographic dimension (Deng and Elyasiani, 2008). For this reason, we construct three different measures of geographic diversification, each one allowing to position banks over a continuum, with the lower bound corresponding to purely non-diversified (domestic) banks and the upper bound to the most geographically diversified banks (similar to the approach used by Laeven and Levine, 2007, for corporate diversification).

Our first measure, that we label geographical reach, is the index of foreign geographical dispersion defined above, but computed for each bank in each year. Formally, it is given by:

$$\frac{n_{j,t}}{n_{\max,t}} \tag{3}$$

where $n_{j,t}$ is the number of foreign countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of foreign countries where the most diversified bank has subsidiaries, in year *t*. Geographic diversity is a stock variable, continuous, and bounded between 0 and 1. Purely domestic banks take the value 0 (i.e., no geographical diversification); values close to 1 indicate more geographically dispersed banks. An advantage of this index is that it normalizes the measure of geographic diversification by accounting for the yearly variation of the most diversified banks.

Our second measure proxies geographic diversification through the share of assets on a country by country basis, taking therefore into consideration the asset dispersion across subsidiaries (similar to Buch and Lipponer, 2007). Formally, this is computed as:

$$1-\left(\frac{\text{total subsisiaries assets - foreign subsidiaries assets}}{\text{total subsidiaries assets}}\right) \tag{4}$$

and it is therefore bounded between 0 and 1, with values close to 0 indicating low geographic diversification and values close to 1 indicating high geographic diversification.

Our third measure proxies geographic diversification through a transformed Hirsch-Herfindhal Index (Mercieca et al., 2007) computed for each bank and on a country by country basis.[9] Formally, the index is:

$$1-\sum_{j=1}^{n_j}\left(\frac{\text{subsidiary}_j\ \text{assets}}{\text{total subsidiaries assets}}\right)^2 \tag{5}$$

This measure is again bounded between 0 and 1, with values close 0 indicating low geographic diversification and values close to 1 indicating geographically dispersed banks.

We consider a geographically diversified (global) bank as one for which geographic diversity takes values above a given threshold. In our baseline specification a geographically diversified bank is one for which geographic diversity ($\alpha_j = \frac{n_{j,t}}{n_{\max,t}}$) takes values above 0.7. We test for robustness by specifying alternative thresholds in latter sections of this paper.

[9] Similar concentration measures can be found in the work of Acharya et al. (2006) and Stiroh and Rumble (2006).

Bank controls. We include a set of time varying bank-specific controls. First, we consider two measures related to bank size: the logarithm of total assets (log assets) and that of total operating income (log income). Larger banks are typically more diversified than smaller institutions, and this has an impact on their value independent of their geographic reach. Moreover, as shown during the recent crisis, size is also a good proxy of the value of the implicit insurance guarantee granted to "too-big-to-fail" institutions, that also has an impact on company value. Moreover, although the value of total assets is the standard measure of size in banking, we also consider total income because it is better suited to capture also the weight of off-balance sheet activities.

Besides size, access to funding can limit geographic diversification. We proxy access to funding with the ratio of deposits to liabilities, since this ratio affects the cost of funding which in turn impacts geographic diversification. In addition, stock market capitalization and profitability could also influence geographic diversification: more capitalized banks are more probable candidates for diversifying across borders; profitable banks seek opportunities abroad to benefit from non-tradable, proprietary knowledge. In addition to these two effects, we also control for how easily banks can access stock market funding, including two dummy variables for companies included in the S&P financial listings and for those listed at the New York Stock Exchange.

To account for the recent findings of the literature on corporate diversification, following Laeven and Levine (2007) and Schmid and Walter (2009), we construct four corporate diversification measures, which stem from the broad taxonomy in which commercial banks' activities are classified between traditional (taking deposits and making loans) and non-traditional (e.g., security and foreign exchange trading and provision of fee-based services). First, we consider income diversity, computed as:

$$1-\left|\frac{\text{net interest income - other operating income}}{\text{total operating income}}\right| \qquad (6)$$

where other operating income is the sum of investment income, foreign exchange income, gain (or loss) on sale of securities, trading account income and commissions and fees. This index takes values between 0 and 1. Second, as a control for the previous measure, we consider the ratio of net interest income to total operating income, gauging the mixture of income generating activities carried on by each bank.

Third, we estimate asset diversity, a stock variable measuring diversification across different types of bank assets, computed as:

$$1 - \left| \frac{\text{net loans} - \text{other earning assets}}{\text{total earning assets}} \right| \qquad (7)$$

and also taking values between 0 and 1. And fourth, as a control for the previous stock measure, we consider the ratio of loans to total earning assets.

Finally, although bank risk is not crucial for our analysis and, as argued by Laeven and Levine (2007) "one of the advantages of using *q* is that there is no theoretical reason to adjust for risk or leverage to compare firms", in a number of robustness checks we also control for a number of measures of bank risk. Our preferred risk measure is the logarithm of the Z-score, that following the banking literature (Laeven and Levine, 2009) we define as the number of standard deviations that a bank's ROA has to drop below its expected value before equity is depleted and is therefore a negative function of the risk of default (i.e, banks with a higher Z-score are less likely to default). In addition, we also control for the incidence over total assets of loan loss reserves, charge offs and problem loans.

Country controls. Previous studies have found that the characteristics of the country of origin significantly influence a bank's ability to expand cross-border (Focarelli and Pozzolo, 2001, and Buch, 2003). Following this literature, we include among our controls GDP per capita and the rate of inflation of the home country, using information from the World Bank databases. In addition, as a proxy of all the unobservable characteristics that might affect the ability of the banks in a given country to expand abroad, we include the share of diversified banks in the home country. We use the data from the 577 sampled banks with a known value for geographic diversification and then compute the percentage of banks with foreign subsidiaries in each country of origin, on a yearly basis.

4. Data and sources

4.1. Sources and definitions of variables

We collected bank level data from Bankscope (Fitch Ratings, Bureau van Dijk), considered the most comprehensive database for bank cross-country analyses (see, among others, Claessens et al., 2001; Barros et al., 2007; Laeven and Levine, 2007).

We focus on a particular type of financial institution, commercial banks, that have been found to have compelling reasons to internalize banking activity across borders (Focarelli and Pozzolo, 2005). To assemble our data, we first extracted yearly account and market data for the 2001-2007 period on all listed commercial banks available on Bankscope with total assets in excess of US$ 100 million. We excluded smaller banks to avoid introducing noise in the sample, as they may face additional challenges in diversifying across borders when compared to large banks. We also excluded banks headquartered in off-shore financial centers such as Bermuda, Gibraltar, the Virgin Islands or the Cayman Islands, as this would hinder comparability across countries. We then populated the missing values from Worldscope and bank websites. We went through a painstaking effort to clean and complement the information downloaded from Bankscope, to avoid incongruent and missing data on crucial account and market variables. Our data assembling exercise yielded a sample of 577 commercial banks and 4,039 bank-year observations. In matching our initial 577 publicly traded banks with yearly data on bank subsidiaries, we ended up with 384 banks headquartered in 56 countries for which time-varying data on subsidiaries is available.[10] The countries with the larger relative number of banks in our sample are the U.S. and Japan with 9.4% and 17.0%, respectively.

In constructing our measures of the dependent and independent variables, including corporate diversification measures, bank- and country-specific controls, we followed the extant literature on diversification and bank internationalization (see, among others, Berger and Ofek, 1995; Rajan et al., 2000; Campa and Kedia, 2002; Lamont and Polk, 2002; Villalonga, 2004a and 2004b; Laeven and Levine, 2007; Focarelli and Pozzolo, 2005).

[10] The 56 countries in our sample are: Australia, Bangladesh, Belgium, Brazil, Canada, China, Colombia, Croatia, Czech Republic, Denmark, Egypt, Estonia, Finland, France, Germany, Greece, Hong Kong, India, Indonesia, Ireland, Israel, Italy, Japan, Jordan, Kenya, Rep. of Korea, Kuwait, Lebanon, Lithuania, Malaysia, Netherlands, Oman, Pakistan, Peru, Philippines, Poland, Portugal, Qatar, Romania, Saudi Arabia, Singapore, Slovakia, Slovenia, South Africa, Spain, Sri Lanka, Sweden, Switzerland, Taiwan, Thailand, Tunisia, Turkey, United Arab Emirates, United Kingdom, United States, Venezuela.

4.2. Summary statistics

Summary statistics are presented in Table 1. Our baseline dependent variable, excess value evaluated at the 0.7 (and at the 0.9 thresholds), and the independent variable of interest, geographic diversity, are presented along with various variables that we introduce as controls for country and bank traits in the different econometric specifications presented below. These measures along with the bank and country-specific controls yield high variability for the 4,039 bank-year observations, resulting from the combination of the 577 sampled banks for the seven year period (2001-2007).

Excess value, our dependent variable is smaller than what found in other industries, because in banking the book value of total assets is relatively high when compared to Tobin's *q* numerator. Nevertheless, our measure exhibits high variability and our data on excess value for the 0.7 and 0.9 thresholds yield a range from –0.75 do +1.89, with a marginally positive mean which represents a heterogeneous difference of bank Tobin's *q* to the imputed *q*.

The more geographically diversified commercial banks in our sample, with geographic diversity in excess of 0.75, are for example ABN Amro (Netherlands), BNP Paribas and Société Générale (France), Citibank (U.S.) and the HSBC (U.K.). Our sample also includes pure domestic banks, for which geographic diversity is 0, as for example 1st Source Bank, Citizens Bank and City National Bank (U.S.), Banca Italalease (Italy), Canadian Western Bank (Canada), and Howa Bank and Daishi Bank (Japan). When measuring geographic diversification in terms of asset dispersion across subsidiaries, the most geographically dispersed banks are found to be Deutsche Bank (Germany), Unicredit (Italy) and Royal Bank of Scotland (U.K.), while using the modified Hirsch-Hirfindhal Index, the largest values are for BBVA (Spain), ING (Netherlands) and the National Bank (Greece). BNP Paribas, Deutsche Bank, HSBC, ING, Santander (Spain) and UBS (Switzerland) are the largest sampled banks in terms of total assets; on the opposite side of the range lay small banks such as Citizens Bank, Sunwest Bank and First California Bank (U.S.) and Howa Bank (Japan). Using other measures, for example the ratio of deposits to total liabilities, Banca Carige (Italy), BNP Paribas, Deutsche Bank and HSBC, exhibit high values, which correspond to high levels of funding originating from deposit-taking activities. As for corporate diversification, the more diversified banks are Howa Bank and Mittsubishi UJF (Japan) and BNP Paribas in terms of income sources; and HSBC, Royal Bank of

Canada (Canada) and Commerzbank AG (Germany) in terms of assets. Country controls also exhibit high cross-country dispersion.

Table 2 presents the mean and median differences of the excess values of geographically diversified banks. In the first row of Table 2 the t-statistic of 0.33 and its large *p*-value of 0.74 do not allow to reject the null hypothesis that the mean excess value for diversified and non-diversified banks is the same, at the 5% level of confidence. As the distribution of excess value is skewed to the right, we present in the second row the results of a non-parametric test for differences in medians, showing that the median excess values for diversified and non-diversified banks are significantly different, at the 1% level. However, sample statistics are not fully informative on the relationship between firm value and diversification, as they could simply reflect spurious correlations. In the following section, we therefore estimate a multivariate empirical model.

5. Empirical findings

5.1. Baseline specification

In our baseline specification we analyze geographical diversification estimating robust regressions (Li, 1985) with excess value as the dependent variable and geographic diversity as the explanatory variable of interest, including country fixed effects to account for differences in the economic environment where banks operate, and year dummies. We use a robust regression technique because we are interested in keeping all the sampled values but we do not want our results to be driven by extreme values.[11]

The results of Table 3 reveal a geographic diversification premium, both economically and statistically significant, suggesting that the benefits of geographic diversification, such as economies of scale and scope, outweigh the costs, such as organizational complexity and agency problems. The coefficient of our preferred measure of geographic diversification is positive and significantly different from zero in all our specifications. In Panel 1, where we control for size (log assets), returns on assets, and leverage, the coefficient of diversification is 0.027 and significantly different from zero at the 1% level.[12] In Panel 2, where we also control for total income, as an additional measure of size which also captures off-balance sheet activities, the

[11] In unreported OLS regressions we found qualitatively similar results.
[12] All specifications also include country and year dummies.

coefficient is 0.025 and it is significantly different from zero at the 5% level. In Panel 3, where we further control for the ratio of deposits to total liabilities, a proxy of the funding structure, the coefficient is 0.060 and also significantly different from zero at the 1% level. The magnitude of the coefficients suggest that an increase of one standard deviation in geographic diversity leads to an increase of 0.004 to 0.010 in excess value, more than duplicating its sample mean value of 0.004, therefore suggesting an economically relevant impact.[13]

Among our additional controls, size measured by total assets has an insignificant effect on excess value. This is not entirely surprising, since our measure of excess value is a deviation from a benchmark, and therefore already accounts for the fact that multinational banks are larger than domestic institutions. Total income has instead a positive and significant effect on excess value, consistent with the role of off-balance sheet activities. However, its inclusion turns the sign of the coefficient of total assets negative and statistically significant. In both cases, the effects on our variable of interest are substantially unchanged. As expected, more profitable banks tend to be more valued by the market, as shown by the positive and statistically significant of ROA, consistently estimated in all our specifications. The coefficient of equity to total assets is instead weakly significant and its sign is inconsistent across the different specifications, suggesting a weak link between banks capitalization and their market value, possibly because of the confounding effects of regulation. Finally, access to funding, proxied by the ratio of bank deposits to total liabilities, has a positive and statistically significant coefficient in all our specifications, consistent with the hypothesis that the market attributes a premium to banks with a large internal funding base.

5.2. Robustness checks

Table 4 presents the results of five robustness tests: a) using the alternative measures of geographical diversification described above (each bank's share of foreign assets and the transformed Hirsch-Herfindhal Index calculated for each bank using the country specific share of foreign participations); b) adopting alternative thresholds to build the diversification benchmark (0.9, 0.7, and 0.5); c) excluding influential countries (U.S. and Japan); d) controlling for M&A; e) controlling for corporate diversification (income and asset). The results of these additional specifications confirm and strengthen our previous findings.

[13] Results are obtained multiplying the coefficients to the sample standard deviation of excess value.

Panels 1 to 4 present the results using two alternative measures of geographic diversification: the share of assets deployed in foreign subsidiaries relative to the total assets of the bank (share) and the concentration of foreign subsidiaries assets proxied by a modified Hirsch–Herfindhal Index. For each measure, we estimate two alternative specifications, including a different set of controls. The results confirm a significant diversification premium, with estimates ranging from 0.010 to 0.030, all statistically significant at the 1% level of confidence.

Panels 5 and 6 present the results using the baseline measure of geographical diversification, but calculated at different thresholds: Panel 5 presents the results using a more demanding 0.9 threshold; Panel 6 those using a lower value of 0.5. We still find a highly statistically significant diversification premium using both alternative thresholds, with estimates of 0.047 and 0.065, respectively.[14]

In Panels 7 and 8 we exclude alternatively U.S. and Japan from the sample, as they represent respectively 9.4% and 17.0% of the sampled banks, and maintaining the global benchmark. The results suggest that these countries are not driving our findings. Also in this case geographic diversity is associated with a premium, with estimated coefficients of 0.076 and 0.041, both statistically significant at the 1% level. Further, in Panel 9 we show that the results hold also when excluding both U.S. and Japan at the same time, with coefficient of 0.058, statistically significant at 1% level, despite the smaller sample size available to estimate this specification.[15]

Next, we control for major changes in banks' total assets, since these are typically the results of corporate operations, typically M&A that could introduce confounding effects, biasing our results. We therefore computed the rate of change of total assets between years *t-1* and *t*, and excluded observations for which the rate of growth exceeds 30%. The results reported in Panel 10 confirm the diversification premium, with a coefficient of 0.076, significant at 1% level.[16]

In Panels 11-14 we also present the results controlling for income and asset diversification using the indices developed by Laeven and Levine (2007) and described in more detail in

[14] In unreported regressions we also replicated our results using excess market to book value as a measure of firm value.

[15] In unreported regressions we also studied separately diversification in developed countries and in developing countries, finding no significant differences between the two cases.

[16] In unreported regressions we verified that our results are confirmed excluding observations with a rate of growth of total assets of 40% and 25%, or excluding observations for banks that had been involved in M&As: a) in the previous year, b) in the previous two years and c) in the previous four years; d) in any previous year.

Section 3. Reassuringly, in all four regressions we find a statistically and economically significant premium for geographic diversity, with coefficients ranging from 0.021 to 0.062. The estimates of the measures of asset and income diversification give instead more mixed results, with a discount for the former but a premium for the latter. Since in a number of unreported regressions,[17] where we used the measures of excess value adopted by Laeven and Levine (2007), we also found a statistically significant discount for asset and income diversification, we believe that the differences with respect to their results depend on the different benchmark that we adopt to calculate excess value, since we focus on geographical rather than functional diversification.[18]

Finally, we checked that our results are also confirmed using profitability as a measure of bank value. In Table 5 we present the results obtained using excess returns on assets (ROA; the ratio of net income to total assets) and returns on equity (ROE; net income divided by common's stockholders equity), defined in a similar way as excess Tobin's *q*. The results confirm in both cases the presence of an economically and statistically significant geographic diversification premium.

5.3. Non linearity

The link between market value and the degree of geographic diversification of banks might be non-linear, increasing or decreasing with the level of diversification. To test this hypothesis, in Panel 1 of Table 6 we present the results of the estimates splitting our measure of diversification in 6 quantiles (Geographic diversity Geon1 to Geographic diversity Geon6). The results clearly show an inverse U-shaped pattern, with the strongest effect of diversification occurring for the medium ranges. In Panel 2 we aggregate quantiles delivering similar diversification premia, i.e., quantiles 2 and 3 and 4 and 5. In both cases we verify that the linear restriction cannot be rejected at the traditional significance levels. The inverse U-shaped pattern is still confirmed.

These results suggest that the market attributes greater costs to geographic diversity above a certain level, which can be attributed to larger perceived complexity and agency costs that require additional layers of corporate control, thereby reducing firm efficiency, and its value.

[17] Available from the authors upon request.

[18] In unreported regressions we also used an alternative measure of bank size that is less sensitive to the skewness of the distribution of (log) total assets (Dastidar, 2009). We therefore computed a measure of relative size, bounded between 0 and 1, as a ratio of each bank's total assets to those of the largest bank in the sample, on a year-by-year basis (for similar approaches, see Bodnar et al., 1997; Denis et al., 2002; Fauver et al., 2004). Also in this case, we find a diversification premium, with a coefficient of 0.095, significant at the 1% level.

Over-diversifying does not pay as costs grow steadier than benefits do. These results accord with the lower excess values observed for more geographically diversified sampled banks as Deutsche Bank, BNP Paribas and Société Générale as compared to less diversified banks, as Cofitem-Cofimur in France or DAB Bank in Germany.

5.4. Endogeneneity

As argued in the most recent literature on corporate diversification, the factors underpinning the decision to diversify across-borders can be the same that cause the change in the market value of the bank (Lang and Stulz, 1994; Campa and Kedia, 2002; Deng et al., 2007; Laeven and Levine, 2007). Finding that more diversified banks are more valued by the market than less diversified or domestic banks does not constitute sufficient proof *per se* of the causality effect, as overvaluation could precede diversification (Goddard et al., 2008). In other words, geographic diversification itself may be an endogenous choice, since commercial banks that are more valued by the market, correspondingly with a Tobin's *q* larger than the benchmark, may be more likely to diversify their activities entering foreign countries. For instance ABN Amro, BBVA, BNP Paribas, CIT Group Inc, Goldman Sachs, and UBS, all exhibit positive excess values and are present in more than 40% of the sampled countries.

To address this endogeneity issue, we re-estimated our baseline specification using the instrumental variables (IV) method. As instruments for our key explanatory variable we use some proxies of how much the institutional environment is favorable to international diversification. First we consider an index of regulatory quality, a dimension of governance broadly defined as the process by which authority in a country is exercised, and it captures governmental policies and regulations underpinning private sector development (Kaufman et al., 2009).[19] For instance, Luxembourg, Singapore, Finland, Hong Kong, Denmark, and U.K. get higher scores of regulatory quality. As expected, our unreported first stage regressions show a positive and statistically significant relationship between regulatory quality and geographical diversification.[20] Second we consider an index of economic freedom, proxied by the annual score based on 10 measures of economic openness, regulatory efficiency, the rule of law, and

[19] Regulatory quality is from the World Bank data base (Worldwide Governance Indicators, available at www.worldbank.org/wbi/governance), as in Kaufman et al. (2009) and is averaged from 2002 to 2006 to avoid year specific events. It ranges from -1.094 (Venezuela) to 1.906 (Luxembourg) with a mean of 0.745. Higher values pertain to better governance outcomes.

[20] Available from the authors upon request.

competitiveness.[21] The basic principles of economic freedom emphasized in the score are individual empowerment, equitable treatment, and the promotion of competition. A higher score represents countries with higher economic freedom, where government intervention in the labor, capital and goods market is more limited, as in Hong Kong, Singapore, Ireland, U.S., U.K., Australia, Switzerland, and Luxembourg. And third we include the share of geographically diversified banks in the country, as an indirect evidence of an environment that favors internationalization. Panel 1 of Table 7 presents the results of the instrumental variable estimates that confirm a significant diversification premium.

Finally, we considered an alternative way to address the problem of non-random or self selection of banks into diversification, using a Heckman two-step selection model, as in Campa and Kedia (2002), Laeven and Levine (2007) and Dastidar (2009). In the first step of the Heckman procedure we estimate the probability that a bank is diversified, according to our baseline threshold, using a probit specification. We then calculate the inverse Mill's ratio and include it in our baseline specification estimating the effect of geographic diversification on bank's excess value. In the selection model we include as explanatory variables the same institutional characteristics used as instruments and described above, together with each bank's size, market share and a dummy coded one if the bank is included in the S&P financial index. The results reported in Panel 2 of Table 7 show that the selection parameter *lambda* is negative but it is not statistically significant. Reassuringly, the coefficient of geographic diversification is also in this case positive and statistically significant at the 1% level.

5.5 Bank risk

Tobin's *q* already incorporates the market's evaluation of each bank's riskiness. However, as an additional check of the robustness of our results, we also controlled that they are confirmed also explicitly controlling for bank risk. We measured bank risk using the Z-score, that is commonly defined in the banking literature as the number of standard deviations that a bank's ROA has to drop below its expected value before equity is depleted (Laeven and Levine, 2009), and it is

[21] The source is the Heritage Foundation (http://www.heritage.org/Index/). Economic freedom is an average of the scores of ten country indicators: Business Freedom, Trade Freedom, Fiscal Freedom, Government Spending, Monetary Freedom, Investment Freedom, Financial Freedom, Property rights, Freedom from Corruption, Labor Freedom. They are scaled from 0 to 100, where 100 represent the maximum freedom. The sampled values range from 49.77 (Venezuela) to 89.58 (Hong Kong). Again we take the averaged value from 2002 to 2006 to smoothen the effect of year specific events (e.g. Slovakia has experienced significant yearly changes).

therefore a negative function of the risk of default (i.e, banks with a higher Z-score are less likely to default). Reassuringly, the results reported in Table 8 show that the coefficient of geographic diversification is also in this case positive and statistically significant, confirming the existence of a geographic diversification premium also after controlling for risk. The coefficient of the logarithm of the Z-score is negative, although statistically significant only in two cases, suggesting that a lower probability of default is associated with a value discount. Adding additional controls for bank risk taking (loan loss reserves, charge offs and problem loans) does not alter our results.

6. Conclusions

The recent financial crisis has cast massive doubts on the role of large multinational banks, suggesting that they are too risky, too interconnected, and that they pose gigantic moral hazard problems. In other words they are too big. While a mounting political consensus is building around this view (but see Dermine and Schoenmaker, 2010, for an influential opposite perspective), even before the crisis, the economic literature had not analyzed the pros and cons of international bank diversification from the shareholders' point of view. In this paper we have filled this gap providing robust evidence that multinational banks create economic value. Contrary to the recent findings that asset-and income-diversified banks trade at a discount with respect to their more focused peers (Laeven and Levine, 2007, and Schmid and Walter, 2009), we show that internationally diversified banks trade at a premium, similar to the domestically diversified banks in the U.S. (Deng and Elyasiani, 2008). Our estimates of the impact of international diversification on banks' excess value are both economically and statistically significant, and they are robust to the use of different definitions of diversification, to the possible effects of outliers, and to controlling for potential endogeneity problems.

Our findings provide a sound rationale for the momentous process of bank internationalization over the last decades. However, while we show that these operations were value enhancing for the shareholders, we have not the pretence of arguing that this was without consequences. As the recent financial crisis is suggesting, the benefits of geographic diversification might have come from easier access to risk-taking activities that have not been properly appraised by external investors. Although our results are confirmed also controlling for bank risk, a more careful analysis of the links between geographic diversification and risk-taking seems a promising field for future research.

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Table 1
Summary statistics

We use excess value as the dependent to proxy for market value and for bank *j* it equals its Tobin's *q* minus its adjusted *q*. Adjusted $q_j = \alpha_j\ q_1 + (1 - \alpha_j)\ q_2$, where q_1 is the average of the *q*s of above the threshold (highly) geographically diversified multinational commercial banks and q_2 represents the average *q*s for banks equal or below the threshold (we present statistics for 0.7 and 0.9 thresholds). For bank *j* α is the index of foreign geographical dispersion, where $\alpha j = n_j / n_{max}$, n_j is the number of foreign countries where the bank *j* has a subsidiary, and n_{max} is the maximum number of foreign countries where the most diversified bank has subsidiaries. Geographic diversity is the ratio ratio of $n_{j,t}$ *to* $n_{max,t}$, where n_{jt} is the number of foreign countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of foreign countries where the most diversified bank has subsidiaries, in a year *t*. Two controls for geographic diversification are: (i) the subsidiaries concentration, proxied by a transformed Hirsch-Herfindhal index (HHI): $1 - \sum_j(\text{subsidiary}_j \text{ assets/total subsidiaries assets})^2$; (ii) the geographic dispersion of subsidiaries (geographic share): 1 – [(total subsidiaries assets – foreign subsidiaries assets) / (total subsidiaries assets)]. Bank controls: (i) the logarithm of total assets (log assets); (ii) the logarithm of total operating income (log income); (iii) access to funding is proxied by deposits to liabilities; (iv) capitalization is proxied by equity to assets; (v) ROA as a proxy for profitability; (vi) a dummy variable for whether the bank is in the S&P financial listings; (vii) a dummy variable for whether the bank in listed in the New York Stock Exchange. Home country controls: (i) size proxied by gross national income per capita; (ii) annual inflation; (iii) share of diversified banks, for which we use the data from the 577 sampled banks with a known value for geographic diversification and then compute the percentage of banks with known foreign subsidiaries in each country of origin, on a yearly basis. We plug-in additional variables to proxy for bank asset and income diversification: (i) asset diversity: 1- |(net loans – other earning assets)/ total earning assets| [(a)]; (ii) loans to total earning assets (loans to assets); (iii) income diversity: 1- |(net interest income – other operating income) / total operating income|[(b)]; (iv) net interest income to total operating income. Bank risk controls: (i) logarithm of Z-score; (ii) loan loss reserves; (iii) net charge offs; and (iv) problem loans: ratio of non-performing loans to total loans.

	2001	2002	2003	2004	2005	2006	2007	2001-2007		
Variable	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Min.	Max.
Excess value 07	-0.02	-0,04	-0.02	0.00	0.03	0.02	0.00	0.004	-0.75	1.89
	0.19	0.15	0.16	0.17	0.21	0.13	0.12	0.16		
Excess value 09	-0.02	-0,04	-0.02	0.00	0.03	0.02	0.00	0.004	-0.75	1.89
	1.94	0.15	0.16	0.17	0.21	0.13	0.12	0.16		
Geographic diversity (n / n_{max})	0.10	0.09	0.11	0.11	0.06	0.06	0.04	0.070	0.00	1.00
	0.19	0.17	0.19	0.19	0.14	0.16	0.10	0.16		
Hirsch-Herfindhal Index (HHI)	0.16	0.16	0.17	0.16	0.18	0.17	0.17	0.17	0.00	0.88
	0.25	0.23	0.25	0.24	0.26	0.26	0.24	0.25		
Geographic diversification (share)	0.17	0.18	0.17	0.17	0.18	0.16	0.18	0.17	0.00	1.00
	0.32	0.31	0.30	0.32	0.32	0.30	0.32	0.31		
Log assets	6.73	6.77	6.84	6.90	6.94	7.03	7.13	6.91	3.89	9.45
	0.89	0.88	0.88	0.87	0.85	0.83	0.82	0.87		
Log income	4.88	4.95	5.02	5.14	5.22	5.27	5.35	5.14	1.63	7.56
	0.87	0.88	0.86	0.85	0.81	0.82	0.83	0.86		
Deposits to liabilities	0.90	0.90	0.90	0.88	0.88	0.87	0.86	0.88	0.00	5.74
	0.15	0.14	0.25	0.14	0.14	0.15	0.15	0.16		
Equity to assets	0.08	0.08	0.08	0.09	0.09	0.09	0.09	0.09	-0.31	0.77
	0.07	0.06	0.06	0.06	0.07	0.07	0.06	0.06		
ROA	0.53	0.41	0.38	0.36	0.34	0.30	0.16	0.36	-1.34	1.50
	0.50	0.49	0.49	0.48	0.47	0.46	0.37	0.48		
Dummy (S&P listed)	0.69	0.75	1.06	1.09	1.26	1.26	1.12	1.04	0.00	1.00
	1.56	1.63	1.39	1.18	1.31	1.50	1.29	1.42		
Dummy (NYSE listed)	0.07	0.10	0.10	0.10	0.10	0.10	0.10	0.10	0.00	1.00
	0.30	0.30	0.30	0.30	0.30	0.30	0.30	0.30		

Table 1 Continued

	2001	2002	2003	2004	2005	2006	2007	2001-2007		
Variable	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Mean St. Dev	Min.	Max.
Per capita GNI growth	-0.01 0.06	0.09 0.07	0.16 0.07	0.13 0.06	0.08 0.07	0.08 0.08	0.09 0.07	0.09 0.08	-0.42	0.42
Inflation	2.89 6.73	3.26 6.11	3.12 5.36	4.02 4.93	4.31 6.01	4.06 4.56	3.36 3.91	3.58 5.48	-8.00	53.00
Share of diversified banks	0.07 0.19	0.07 0.17	0.07 0.19	0.07 0.19	0.07 0.14	0.07 0.16	0.07 0.10	0.07 0.16	0.00	1.00
Income diversity	0.58 0.28	0.59 0.28	0.61 0.26	0.65 0.25	0.66 0.24	0.67 0.24	0.66 0.24	0.63 0.26	0.00	1.00
Net interest income to total operating income	0.70 2.35	0.47 2.28	0.64 2.15	0.66 1.78	0.56 1.77	0.55 1.71	0.63 1.76	0.60 1.96	-9.70	9.49
Asset diversity	0.58 0.28	0.60 0.28	0.61 0.28	0.61 0.27	0.60 0.25	0.59 0.25	0.58 0.25	0.60 0.26	0.00	1.00
Loans to assets	0.65 0.21	0.64 0.20	0.64 0.20	0.64 0,19	0.64 0.19	0.66 0.18	0.67 0.18	0.65 0.19	0.00	1.00
Log Z-score	0.74 1.23	0.80 1.17	0.86 1.10	0.85 1.05	0.97 0.99	1.01 0.96	0.93 1.04	0.88 1.08	-6.73	2.86
Loan loss reserves	2.32 1.90	2.50 2.14	2.38 2.11	2.12 1.92	1.88 1.77	1.69 1.58	1.45 1.27	2.05 1.87	0.00	12.34
Charge offs	0.39 0.62	0.38 0.60	0.41 0.69	0.31 0.47	0.28 0.51	0.24 0.46	0.20 0.38	0.31 0.54	-0.26	4.16
Problem loans	9.81 13.68	9.62 13.64	8.12 13.32	6.72 12.14	5.47 9.13	4.75 8.08	3.92 6.35	6.84 11.37	0.00	100.0

[a] Other earning assets include securities and investments.
[b] Other operating income includes investment income, foreign exchange income, gain (loss) on sale of securities, trading account income, commissions and fees.

Table 2

Excess value differences for diversified and non-diversified commercial banks

In our base case a geographically diversified bank is one for which $n_{j,t}$ *to* $n_{max,t}$ is above 0.7, where $n_{j,t}$ is the number of foreign countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of foreign countries where the most diversified bank has subsidiaries, in year *t*. We use excess value as the dependent to proxy for market value and for bank *j* it equals its Tobin's *q* minus its adjusted *q*. Adjusted $q_j = \alpha_j\, q_1 + (1 - \alpha_j)\, q_2$, where q_1 is the average of the *q*s of above the 0.7 threshold (highly) geographically diversified multinational commercial banks and q_2 represents the average *q*s for banks equal or below the 0.7 threshold. For bank *j* α is the index of foreign geographical dispersion, where $\alpha j = n_j / n_{max}$, n_j is the number of foreign countries where the bank *j* has a subsidiary, and n_{max} is the maximum number of foreign countries where the most diversified bank has subsidiaries. To compute *q* we use the ratio of the sum of market value of common stock, book value of preference shares and minority interests, and book value of debt, to the book value of total assets. Significance at the 1 % level is denoted by *****.**

Variable				Test for differences
Mean excess value 07 (*t*-statistic for mean differences)	Diversified banks	Mean	-0.005	0.0093
	Non-diversified banks	Mean	0.005	(0.33)
Median excess value 07 (*p*-value for signed-rank test)	Diversified banks	Median	-0.340	4 .825 ***
	Non-diversified banks	Median	0.023	(0.000)

Table 3

Baseline specification for geographic diversity with country and year fixed effects – robust regressions

We estimate robust regressions with country and year fixed effects for listed commercial banks around the globe for 2001-2007. We use excess value as the dependent to proxy for market value and for bank *j* it equals its Tobin's *q* minus its adjusted *q*. Adjusted $q_j = \alpha_j\, q_1 + (1 - \alpha_j)\, q_2$, where q_1 is the average of the *q*s of above the 0.7 threshold (highly) geographically diversified multinational commercial banks and q_2 represents the average *q*s for banks equal or below the 0.7 threshold. For bank *j* α is the index of foreign geographical dispersion, where $\alpha j = n_j / n_{max}$, n_j is the number of foreign countries where the bank *j* has a subsidiary, and n_{max} is the maximum number of foreign countries where the most diversified bank has subsidiaries.Geographic diversity is the ratio ratio of $n_{i,t}$ *to* $n_{max,t}$, where n_{jt} is the number of foreign countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of foreign countries where the most diversified bank has subsidiaries, in a year *t*. We plug-in control variables some to proxy for bank characteristics: (i) size: log assets, the logarithm of total assets; (ii) profitability: ROA; (iii) capitalization, proxied by equity to assets (iv) access to funding: deposits to liabilities. The *p*-values are in parentheses. Significance at the 1%, 5%, and 10% level is denoted by *******, ******, and *****, respectively.

dependent: excess value			
	(1)	(2)	(3)
Geographic diversity	0.027 ***	0.025 **	0.060 ***
	(0.010)	(0.019)	(0.000)
Log assets	0.002	-0.016 ***	-0.016 ***
	(0.384)	(0,000)	(0.000)
Log income		0.015 ***	0.014 ***
		(0.000)	(0.000)
ROA	0.012 ***	0.018 ***	0.014 ***
	(0.000)	(0.000)	(0.000)
Equity to assets	0.067 *	-0.075 *	0.007
	(0.087)	(0.097)	(0.870)
Deposits to liabilities			0.064 ***
			(0.000)
Constant	-0.001	0.119 **	-0.014
	(0.975)	(0.013)	(0.768)
Country effects	Yes	Yes	Yes
Year effects	Yes	Yes	Yes
Number of observations	1,522	1,414	1,409
Adjusted R^2	0.79	0.79	0.79

Table 4

Robustness tests for geographic diversity

We estimate robust regressions with country and year fixed effects, for the period 2001-2007 and listed commercial banks around
as the dependent to proxy for market value and for bank *j* it equals its Tobin's *q* minus its adjusted *q*. Adjusted $q_j = \alpha_j q_1 + (1 - \alpha_j$
the *q*s of above the threshold (highly) geographically diversified multinational commercial banks and q_2 represents the average *q*
threshold (in Panels 1-4 and 8-14 we use the 0.7 threshold; in Panel 5 we use the 0.9 threshold; and in Panel 6 the 0.5 threshold
foreign geographical dispersion, where $\alpha j = n_j / n_{max}$, n_j is the number of foreign countries where the bank *j* has a subsidiary, and n
foreign countries where the most diversified bank has subsidiaries. Geographic diversity is the ratio ratio of $n_{i,t}$ *to* $n_{max,t}$, whe
countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of foreign countries where the most divers
year *t*. We use two alternative measures: geographic share and a modified Hirsch-Herfindhal index (geo_HHI). We plug-in cont
bank characteristics: (i) size: log assets, the logarithm of total assets; (ii) profitability: ROA; (iii) capitalization, proxied by equi
funding: deposits to liabilities. Columns 11-14 include other corporate diversity controls: (i) income diversity a proxy for d
activities is computed as 1- |(net interest income – other operating income (investment income, foreign exchange income, gain (los
account income, commissions and fees)/total operating income|; (ii) net interest income to total operating income is used as a con
of income-based activities; (iii) asset diversity a proxy for diversification of asset-based activities is computed as 1- |(net loan
earning assets; loans to total earning assets; (iv) (loans to assets) is an activity measure is used as a control variable for diversifi
The *p*-values are in parentheses. Significance at the 1%, 5%, and 10% level is denoted by *******, ******, and *****, respectively.

dependent: excess value												
	Alternative measures of geographic diversification				0.9 threshold	0.5 threshold	without US	without Japan	without US, Japan	excluding M&A	with income	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Geographic diversity					0.047 ***	0.065 ***	0.076 ***	0.041 ***	0.058 ***	0.070 ***	0.062 ***	0
					(0.000)	(0.000)	(0.000)	(0.007)	(0.000)	(0.000)	(0.000)	(0
Geographic share	0.011 **		0.010 *									
	(0.028)		(0.053)									
Geo_HHI		0.029 ***		0.030 ***								
		(0.000)		(0.000)								
Log assets	0.009 ***	0.005 *	0.010 ***	0.005 ***	0.002	0.002	0.000	0.001	0.002	0.003	0.001	-0
	(0.000)	(0.071)	(0.000)	(0.000)	(0.429)	(0.437)	(0.945)	(0.827)	(0.443)	(0.223)	(0.619)	(0
ROA	0.0013 ***	0.011 ***	0.013 ***	0.011 ***	0.009 ***	0.009 ***	0.004 ***	0.014 ***	0.009 ***	0.017 ***	0.010 *	0
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)	(0.000)	(0.000)	(0.000)	(0.010)	(0
Equity to assets	-0.092	-0.128 *	-0.095	-0.132 *	0.122 ***	0.122 ***	0.231 ***	0.093	0.119 ***	-0.037	0.095 **	0
	(0.135)	(0.059)	(0.127)	(0.053)	(0.002)	(0.002)	(0.000)	(0.102)	(0.002)	(0.323)	(0.013)	(0
Deposits to liabilities			0.016	0.027 **	0.063 ***	0.062 ***	0.055 ***	0.062 ***	0.062 ***	0.061 ***	0.050 ***	0
			(0.120)	(0.014)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0
Income diversity											0.007	0
											(0.108)	(0

Table 4 Continued

dependent: excess value												
	Alternative measures of geographic diversification				0.9 threshold	0.5 threshold	without US	without Japan	without US, Japan	excluding M&A	with income	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	
Net interest income to operating income												-(
Asset diversity												((
Loans to assets												
Constant	0.046	0.018	-0.130 ***	-0.112 **	-0.052	-0.056	-0.038	-0.051	-0.054	-0.048	-0.045	-(
	(0.249)	(0.673)	(0.002)	(0.014)	(0.244)	(0.214)	(0.339)	(0.423)	(0.232)	(0.241)	(0.306)	((
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	
Number of observations	899	806	895	801	1,516	1,506	1,355	1,160	1,516	1,186	1,500	1

Table 5
Robustness tests with profitability measures as the dependent

We estimate robust regressions with country and year fixed effects for listed commercial banks around the globe for 2001-2007. We use excess value as the dependent to proxy for market value and for bank *j* it equals its actual value minus its adjusted value. In panels 1-3 the dependent is excess value of ROA, the Ratio of net income to total assets. Adjusted $ROA_j = \alpha_j\ ROA_1 + (1 - \alpha_j)\ ROA_2$, where ROA_1 is the average of the *ROA*s of above the 0.7 threshold (highly) geographically diversified multinational commercial banks and ROA_2 represents the average *ROA*s for banks equal or below the 0.7 threshold. In panels 4-6 the dependent is excess value of ROE, the ratio of total earnings to equity. Adjusted $ROE_j = \alpha_j\ ROE_1 + (1 - \alpha_j)\ ROE_2$, where ROE_1 is the average of the *ROE*s of above the 0.7 threshold (highly) geographically diversified multinational commercial banks and ROE_2 represents the average *ROE*s for banks equal or below the 0.7 threshold. For bank *j* α is the index of foreign geographical dispersion, where $\alpha_j = n_j / n_{max}$, n_j is the number of foreign countries where the bank *j* has a subsidiary, and n_{max} is the maximum number of foreign countries where the most diversified bank has subsidiaries. Geographic diversity is the ratio ratio of $n_{i,t}$ to $n_{max,t}$, where $n_{i,t}$ is the number of foreign countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of foreign countries where the most diversified bank has subsidiaries, in a year *t*. We plug-in control variables some to proxy for bank characteristics: (i) size: log assets, the logarithm of total assets; (ii) profitability: ROA; (iii) capitalization, proxied by equity to assets (iv) access to funding: deposits to liabilities. The p-values are in parentheses. Significance at the 1%, 5%, and 10% level is denoted by ***, **, and *, respectively.

dependent	excess ROA						excess ROE					
	(1)		(2)		(3)		(4)		(5)		(6)	
Geographic diversity	0.480	***	0.482	***	0.508	***	1.927	*	2.221	**	2.043	**
	(0.000)		(0.000)		(0.000)		(0.052)		(0.027)		(0.043)	
Log assets	0.146	***	0.014		-0.004		1.889	***	1.430	***	1.420	***
	(0.000)		(0.687)		(0.906)		(0.000)		(0.000)		(0.000)	
Log income			0.140	***	0.152	***			0.421		0.412	
			(0.000)		(0.000)				(0.164)		(0.180)	
ROA							8.878	***	8.548	***	8.593	***
							(0.000)		(0.000)		(0.000)	
Equity to assets	8.642	***	7.989	***	7.797	***						
	(0.000)		(0.000)		(0.000)							
Deposits to liabilities					0.132						-0.902	
					(0.129)						(0.338)	
Constant	-1.310	***	-1.116	***	-1.164	***	-14.383	***	-20.766	***	-11.959	***
	(0.000)		80.001)		(0.001)		(0.000)		(0.000)		(0.003)	
Country effects	Yes		Yes		Yes		Yes		Yes		Yes	
Year effects	Yes		Yes		Yes		Yes		Yes		Yes	
Number of observations	1,146		1,062		1,058		1,132		1,051		1,047	

Table 6
Geographic diversity with country and year fixed effects – non linearity

We estimate robust regressions with country and year fixed effects for listed commercial banks around the globe for 2001-2007. We use excess value as the dependent to proxy for market value and for bank *j* it equals its Tobin's *q* minus its adjusted *q*. Adjusted $q_j = \alpha_j\, q_1 + (1 - \alpha_j)\, q_2$, where q_1 is the average of the *q*s of above the 0.7 threshold (highly) geographically diversified multinational commercial banks and q_2 represents the average *q*s for banks equal or below the 0.7 threshold. For bank *j* α is the index of foreign geographical dispersion, where $\alpha j = n_j / n_{max}$, n_j is the number of foreign countries where the bank *j* has a subsidiary, and n_{max} is the maximum number of foreign countries where the most diversified bank has subsidiaries. Geographic diversity is the ratio ratio of $n_{i,t}$ *to* $n_{max,t}$, where n_{jt} is the number of foreign countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of foreign countries where the most diversified bank has subsidiaries, in a year *t*. We compute six quantiles for geographic diversity. We also include some control variables to proxy for bank characteristics: (i) size: log assets, the logarithm of total assets; (ii) profitability: ROA; and (iii) capitalization, proxied by equity to assets. The *p*-values are in parentheses. Significance at the 1%, 5%, and 10% levels is denoted by *******, ******, and *****, respectively.

dependent: excess value					
	(1)			(2)	
Geographic diversity Geon1			Geographic diversity Geon1		
Geographic diversity Geon2	0.313		Geographic diversity Geon23	0.012	
	(0.185)			(0.935)	
Geographic diversity Geon3	-0.091				
	(0.602)				
Geographic diversity Geon4	0.216	***	Geographic diversity Geon45	0.154	***
	(0.005)			(0.000)	
Geographic diversity Geon5	0.162	***			
	(0.000)				
Geographic diversity Geon6	0.038	***	Geographic diversity Geon6	0.034	***
	(0.001)			(0.002)	
Log assets	-0.002		Log assets	-0.001	
	(0.475)			(0.650)	
ROA	0.012	***	ROA	0.011	***
	(0.000)			(0.000)	
Equity to assets	0.059		Equity to assets	0.069	*
	(0.132)			(0.080)	
Constant	0.023		Constant	0.019	
	(0.610)			(0.678)	
Country effects	Yes			Yes	
Year effects	Yes			Yes	
Number of observations	1,522			1,522	

Table 7

Geographic diversity – controlling for endogeneity with instrumental variables and Heckman selection model

We run instrumental variables regressions to control for the endogeneity of the diversification decision with year fixed effects, for listed commercial banks around the globe for 2001-2007. We use excess value as the dependent to proxy for market value and for bank *j* it equals its Tobin's *q* minus its adjusted *q*. Adjusted $q_j = \alpha_j q_1 + (1 - \alpha_j) q_2$, where q_1 is the average of the *q*s of above the 0.7 threshold (highly) geographically diversified multinational commercial banks and q_2 represents the average *q*s for banks equal or below the 0.7 threshold. For bank *j* α is the index of foreign geographical dispersion, where $\alpha j = n_j / n_{max}$, n_j is the number of foreign countries where the bank *j* has a subsidiary, and n_{max} is the maximum number of foreign countries where the most diversified bank has subsidiaries. Geographic diversity is the ratio ratio of $n_{i,t}$ *to* $n_{max,t}$, where n_{jt} is the number of foreign countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of foreign countries where the most diversified bank has subsidiaries, in a year *t*. We use regulatory quality, economic freedom and the share of diversified banks in the country as instruments in Panel 1. In Panel 2 we present the results of a Heckman selection model to control for the self-selection, using as selecting variables the same instruments of the IV regression and each bank's logarithm of total assets, its market share and a dummy coded one if the commercial bank is included in the S&P financial index. The *p*-values are in parentheses. Significance at the 1%, 5%, and 10% level is denoted by *******, ******, and *****, respectively.

dependent: excess value					
	(1)			(2)	
Geographic diversity	0.492	***		0.060	***
	(0.003)			(0.000)	
Log assets	-0.106	***		-0.070	
	(0.000)			(0.262)	
Log income	0.031	**		0.071	*
	(0.034)			(0.099)	
ROA	0.050	***		-0.007	
	(0.000)			(0.389)	
Equity to assets	-0.266			0.106	
	(0.134)			(0.795)	
Lambda (λ)				-0.007	
				(0.717)	
Constant	0.543	***		0.046	
	(0.001)			(0.905)	
Country effects	No			Yes	
Year effects	Yes			Yes	
Number of observations	1,396			2,761	
Adjusted R^2	0.03				

Table 8

Robustness tests for geographic diversity with bank risk measures

We estimate robust regressions with country and year fixed effects, for the period 2001-2007 and listed commercial banks around
as the dependent to proxy for market value and for bank *j* it equals its Tobin's *q* minus its adjusted *q*. Adjusted $q_j = \alpha_j q_1 + (1 - \alpha_j$
the *q*s of above the 0.7 threshold (highly) geographically diversified multinational commercial banks and q_2 represents the average
threshold. For bank *j* α is the index of foreign geographical dispersion, where $\alpha j = n_j / n_{max}$, n_j is the number of foreign countries wh
and n_{max} is the maximum number of foreign countries where the most diversified bank has subsidiaries. Geographic diversity is
where n_{jt} is the number of foreign countries where the bank *j* has a subsidiary in year *t*, and $n_{max,t}$ is the maximum number of fo
diversified bank has subsidiaries, in a year *t*. We plug-in control variables some to proxy for bank characteristics: (i) size: log asse
and log income, the logarithm of total operating income; (ii) profitability: ROA; (iii) capitalization, proxied by equity to assets; and
by deposits to liabilities. We include alternative bank risk measures: (i) log Z-score, the logarithm of Z-score, equaling log[(ROA
(capital adequacy ratio) represents the ratio of equity to total assets; (ii) loan loss reserves; (iii) charge offs; and (iv) problem loans
non-performing loans to total loans. The *p*-values are in parentheses. Significance at the 1%, 5%, and 10% level is denoted by ***,

dependent excess value							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Geographic diversity	0.029 ***	0.027 **	0.053 ***	0.019 *	0.015	0.061 ***	0.030 *
	(0.009)	(0.025)	(0.000)	(0.098)	(0.240)	(0.000)	(0.009)
Log assets	0.009 ***	0.002	0.001	0.009 ***	0.007	0.004	0.010 *
	(0.002)	(0.690)	(0.878)	(0.003)	(0.198)	(0.428)	(0.001)
Log income		0.005	0.006 *		0.003	0.004	
		(0.148)	(0.067)		(0.448)	(0.229)	
ROA	0.028 ***	0.025 ***	0.023 ***	0.043 ***	0.043 ***	0.039 ***	0.028 *
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Equity to assets	-0.173 ***	-0.165 **	-0.102	-0.333 ***	-0.309 ***	-0.195 ***	-0.151 *
	(0.003)	(0.010)	(0.109)	(0.000)	(0.000)	(0.003)	(0.012)
Deposits to liabilities			0.066 ***			0.079 ***	
			(0.000)			(0.000)	
Log Z-score	-0.003 *	-0.002	-0.002	-0.002	-0.001	-0.002	-0.003 *
	(0.050)	(0.316)	(0.276)	(0.208)	(0.547)	(0.357)	(0.047)
Loan loss reserves							0.001
							(0.579)
Charge offs				0.003	0.004	0.007 *	
				(0.304)	(0.315)	(0.074)	

Table 7 Continued

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Problem loans	-0.000	-0.000	-0.000	0.000	0.000	0.000 *	-0.000
	(0.308)	(0.247)	(0.565)	(0.155)	(0.141)	(0.086)	(0.236)
Constant	-0.117 ***	-0.089 **	-0.149 **	-0.219 ***	-0.010	-0.074 *	-0.223 *
	(0.003)	(0.039)	(0.001)	(0.000)	(0.811)	(0.086)	(0.000)
Country effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Year effects	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Number of observations	963	908	908	761	718	718	937