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Abstract

This paper analyzes the impact of geographic diversification on bank value by employing a data set comprising the largest banks across the world, originating from both developed and emerging countries. The findings suggest that the value impact of international diversification depends on the financial development level of a bank's home country: higher levels of diversification are associated with changes in valuations only for banks originating from emerging countries. In addition, the locus of internationalization matters for the direction of effects: while markets respond positively to the intra-regional expansion activities of emerging country banks, they seem to believe that these banks cannot benefit from diversifying into far away markets.

JEL classification: F23; G21; G32; L22
Keywords: multinational banking; geographic diversification; bank value

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1 Introduction

Across-business lines and cross-border consolidations during the last two decades have led to the prominence of complex international financial conglomerates. Concerns over enhanced cross-border financial sector interdependencies and the potential systemic consequences of disruptions to large financial organizations have become a central topic of research and policy, particularly in the aftermath of the global financial crisis (Cetorelli & Goldberg, 2014). As argued by Herring & Carmassi (2012), the complexity of corporate structures adopted by international financial conglomerates is itself a significant source of systemic risk, as it can hinder timely regulatory intervention and disposition in the event of bankruptcy. This, in turn, can aggravate moral hazard problems implicit in the financial safety net, and diminish both market discipline and the ability of supervisors to substitute regulatory discipline for market discipline.

Since the mid-1990s and up until the onset of the recent financial crisis, the internationalization of financial institutions has increased dramatically (Claessens & van Horen, 2012). The main contributing factors to this phenomenon were the liberalization and deregulation of financial markets in developed countries, the higher demand for international financial services arising from increased economic and financial integration, and the mitigation of geographic distance effects on bank efficiency due to technological improvements (Berger *et al.*, 2004). Following these developments, a rich literature has emerged analyzing the determinants and consequences of foreign bank entry and acquisitions.[1] The experience from the recent global crisis has also brought to light the previously under-appreciated destabilising impact of systemically relevant global banks on host countries (de Haas, 2014).

This study seeks to undertake an up-to-date assessment of the evolution of bank-level geographic diversification and examine the relationship between geographic diversification and financial performance, using data from the largest banks across the world. The global banking system has now become more heterogeneous than ever before due to the increasingly important role of foreign banks from emerging markets and the rising trend towards greater regional[2] activity, as noted by Claessens & van Horen (2014) and BIS (2014). While the ongoing restructuring in global banking has been examined at the industry-level, it has yet to be considered at the bank-level when assessing the performance effects of geographic diversification. The present paper aims to fill this gap by focusing on the crisis and post-crisis years and by exploring the performance implications of both intra-regional and inter-regional diversification.[3] In addition, it contributes to the literature by investigating the conditionality of the resulting effects upon the financial development of a bank's home country. As argued by Claessens & van Horen (2014), banks originating from emerging markets and developing countries (ECs) have become relatively more regional over time, compared to banks originating from advanced or developed countries (DCs), because they have a stronger competitive advantage in countries which are physically closer. Consequently, a distinction between EC banks and DC banks may reveal insightful information about cross-country heterogeneities in diversification effects within and across regions.

[1] See, for instance, Berger *et al.* (2004), Buch & DeLong (2004), Magri *et al.* (2005) and Focarelli & Pozzolo (2005) on determinants of foreign bank entry; Hasan & Marton (2003), Berger *et al.* (2005) and Claessens & van Horen (2012) on the performance impacts of foreign bank entry and acquisitions; and Haselmann (2006), de Haas & van Lelyveld (2006), Maechler *et al.* (2010) and de Haas & van Lelyveld (2014) on the stabilizing and destabilizing roles of multinational banks.

[2] Regions are groupings of countries with physical continuity and proximity, and hence are economically different, geographically distant and characterized by attempts towards higher regional cohesion (Rugman & Verbeke, 2007; Arregle *et al.*, 2009).

[3] Intra-regional diversification refers to diversification within a single region and may occur in any region where the firm is already present, including its home region, whereas inter-regional diversification refers to diversification across regions (Qian *et al.*, 2013).

Our empirical analysis involves two stages. First, we construct several measures of bank-level multinationality and international diversification and document the evolution of these measures over the last decade. This allows us to examine fluctuations in geographic diversification during and in the aftermath of the global financial crisis and uncover differences in diversification trends between EC banks and DC banks. Second, we investigate the impact of intra-regional and inter-regional diversification on bank performance and test whether the resulting effects vary significantly with respect to a bank's home country. Rather than looking at the diversification impacts on bank efficiency, risk or return, we focus on the net impact on bank valuations, as in Laeven & Levine (2007) and Goetz *et al.* (2013). By doing that, we can observe how banks' diversification strategies within and across regions - which can boost economies of scale, promote bank efficiency or generate agency problems - are actually assessed by the markets. To capture the existence of rich dynamics in bank valuations and correct for potential endogeneity problems stemming from simultaneous relationships between bank value and diversification measures,[4] we use a dynamic econometric framework and employ Generalized Method of Moments (GMM) estimation techniques.

By way of preview, the main findings can be listed as follows. First, during the crisis years, there are significant shifts in the level and intensity of bank-level geographic diversification, especially for banks headquartered in ECs. Second, higher levels of geographic diversification are associated with changes in valuations for EC banks, but not for DC banks. Third, the direction of effects depends on the locus of internationalization: while higher levels of intra-regional expansion lead to value enhancement, higher levels of inter-regional expansion seem to induce a negative (but statistically unstable) impact on the valuation of EC banks. These findings are invariant to a number of alternative specifications and tests, including controlling for changes in geographic and institutional distance between headquarters and subsidiaries.

The rest of the paper proceeds as follows: Section 2 reviews the relevant literature and develops the main hypotheses to be tested; Section 3 presents alternative measures of international diversification, outlines the empirical strategy and describes the data and sampling procedure used; Section 4 reports the empirical results and investigates their robustness; Section 5 provides a discussion of the study's conclusions.

2 Literature Review and Hypotheses Development

2.1 Bank value and international diversification

Geographic diversification can enhance the valuations of financial institutions through a variety of channels. For instance, higher levels of geographic diversification may reduce the exposure to idiosyncratic local shocks (Diamond, 1984; Deng & Elyasiani, 2008), enhance managerial efficiency (or x-efficiency) and scale and scope economies (Berger & DeYoung, 2001), diversify sources of funding, and improve internal capital markets (Houston *et al.*, 1997; de Haas & van Lelyveld, 2010; Cetorelli & Goldberg, 2012). However, geographic diversification can also lead to a discount in the valuation of financial institutions. Efficiency disadvantages may occur when inferior management practices are spread over a larger amount of resources or when transfers of managerial skills to new geographic markets are not possible (Berger & DeYoung, 2001). Difficulties associated with managing a larger and geographically diverse organization may result in scale and scope diseconomies. As the physical distance between bank headquarters and local offices increases, monitoring the local economic environment becomes more challenging and costly. Agency problems can be intensified as well,

[4]Endogeneity may arise when highly valued banks are more likely to diversify regionally or globally; for instance, due to lower cost of external finance.

since geographic spread makes it more difficult for outsiders to monitor and exert effective corporate control (Deng & Elyasiani, 2008; Goetz *et al.*, 2013).[5]

Acknowledging that engaging in cross-border activities is an important strategy for diversification, a body of literature has offered insights to the international expansion - performance debate. When financial institutions expand internationally, they enjoy additional risk diversification benefits since they are better positioned to diversify away country-specific risks (García-Herrero & Vázquez, 2013). However, they are also faced with the 'liability of foreignness' (LOF), which refers to "all additional costs a firm operating in a market overseas incurs that a local firm would not incur" (Zaheer, 1995, p.343).[6] In line with the market risk hypothesis of Berger *et al.* (2014), the LOF, together with foreign exchange risk on foreign assets and other market specific conditions (such as political and economic instability), may render international banks more risky. International expansion has also been associated with banks' market power at home, and, as a result, with their valuations. For instance, Buch *et al.* (2013) show that German banks with higher foreign asset share have higher market power due to advantages in private information acquisition - obtained through international lending relations. These advantages, however, disappear and market power weakens when banks expand into too many foreign countries.

Testing whether the LOF exists in global banking, Miller & Parkhe (2002) find that foreign-owned banks are less x-efficient than host country banks. They also find that a bank's home environment has a strong impact on its efficiency abroad, as suggested by the national competitive advantage perspective. Likewise, Vu *et al.* (2015), comparing domestic and foreign bank loan syndications in Australia, report that domestic banks have home market advantages, which allow them to offer more favorable loan terms to borrowers. On a different vein, Berger *et al.* (2000) provide evidence in favor of a limited form of global advantage hypothesis. According to this hypothesis, some foreign banks can overcome distance-related organizational diseconomies and other cross-border disadvantages and achieve better efficiency compared to domestic banks, due to favorable home-country market, regulatory and supervisory conditions. It has also been suggested that the geographic, cultural and institutional proximity between the source and the host countries must be taken into account (in addition to their economic links) when assessing the effects of international expansion. Indeed, a number of studies (see, for instance, Galindo *et al.*, 2003; Buch & DeLong, 2004; Focarelli & Pozzolo, 2005) show that this proximity is correlated with banks' cross-border expansion activities - and thus their performance - as it reflects informational problems and learning costs of dealing with different institutional set-ups across countries.

More recently, scholars have focused on deciphering the impact of international diversification on risk. For example, Gulamhussen *et al.* (2014) support a positive relationship between risk and international diversification for a cross-country sample of commercial banks, while Berger *et al.* (2014) support a positive relationship between risk and internationalization (measured by a bank's foreign assets to gross total assets) for US commercial banks. The existence of agency costs is possibly, according to the authors, the driving force behind their findings. Meanwhile, Buch *et al.* (2013) show that international banks headquartered in Germany are not riskier than domestic banks, and that the degree of diversification, rather than the scale of foreign assets, matters for risk. At the same time, García-Herrero & Vázquez (2013), using data for international banks from the G7 countries, report that: (i) risk-adjusted returns increase when the allocation of assets overseas increases; (ii) regional concentration is

[5]Studies also show that other forms of diversification, such as diversification of asset portfolio and activities, are associated with more risky behavior, scale and scope diseconomies, and intensified agency problems (see, for example, Acharya *et al.*, 2006; Laeven & Levine, 2007).

[6]LOF arises mainly due to environment unfamiliarity, cultural, political and economic differences, and costs associated with spatial distance.

detrimental to risk-adjusted returns.

As the above discussion suggests, despite the voluminous research, the findings on the links between international diversification and bank performance are still inconclusive, with empirical studies depicting both positive and negative relationships. Clearly, further analysis and empirical work are needed to determine which arguments are more consistent with empirical evidence. New research in this direction should also take into account the recent trends towards greater regional concentration and the heterogeneity of diversification effects across banks headquartered in countries with different levels of financial development. The present study seeks to do this.

2.2 Regional versus global geographic diversification

Recent advances in the international business literature note that multinational enterprises (MNEs) tend to be more regional than global, in terms of breadth and depth of their market coverage, and that most of their international activity is conducted within their home regions (Rugman & Verbeke, 2004; Oh, 2009; Banalieva & Santoro, 2009; Banalieva *et al.*, 2012). Consistent with the regionalization hypothesis, this implies that the liability of intra-regional expansion is much lower than the liability of inter-regional expansion; that is, the LOF is higher when entering into other world regions relative to expanding within the home region (Rugman & Verbeke, 2007).

A consensus is yet to be reached regarding the appropriate level of geographic diversification. García-Herrero & Vázquez (2013) argue that risk diversification benefits from international expansion are limited when multinational banks follow concentrated regional strategies, due to similar economic fundamentals and exposures to common risk factors within the regions. On the other hand, studies focusing on MNEs (see Qian *et al.*, 2010; Banalieva *et al.*, 2012) report a linear positive effect of intra-regional diversification on performance. According to these studies, cost economies and efficiency benefits are more likely to occur through intra-regional expansion, due to home region similarities in terms of geography, economics, institutions and politics, and spatial proximities. At the same time, Qian *et al.* (2010) report the existence of an inverted U-shaped relationship between performance and inter-regional diversification - and hence between performance and combined total diversification. While low to moderate levels of inter-regional diversification yield positive returns to MNEs, higher levels of inter-regional diversification result in diminishing returns, due to suboptimal allocation of resources across markets and high operational costs.[7] The latter implies that MNEs can maximize their potential returns by investing intra-regionally and by pursuing a moderate path of total geographic diversification. Consequently, the locus of destination of the diversification activities (intra-regional versus inter-regional) must be carefully considered when investigating the performance effects of geographic diversification. As argued by Rugman & Verbeke (2004), failure to do so may be a plausible reason for the mixed results reported in the international business literature.

An increasing regional focus (or home bias) in multinational banks' assets and operations has been recently documented in the banking literature (see, for instance, García-Herrero & Vázquez, 2013; Cetorelli & Goldberg, 2014; Claessens & van Horen, 2014). Following the discussion above, it is rather precarious to draw conclusions about the impact of international diversification on bank performance based on past findings, since prior studies ignored the locus of geographic diversification. To address this issue, we construct a number of international diversification measures (capturing the level and intensity of diversification both within and across different regions) and test their impact on bank valuations, using recent data from

[7]Expanding into less proximate and more dissimilar markets can also increase search and deliberation costs and deteriorate efficiency performance (Banalieva *et al.*, 2012).

the largest banks across the world.

2.3 Developed country banks versus emerging country banks

It has been argued that EC firms expand internationally not only to exploit their existing competitive advantages, but also to access new markets, strategic assets and knowledge. By doing that, they can compete more effectively with global rivals and avoid institutional voids and market constraints at home (Mathews, 2006; Luo & Tung, 2007).

A number of studies have documented an upward trend in the international expansion activities of EC banks, especially since the onset of the global financial crisis (see, among others, Claessens & van Horen, 2014; BIS, 2014). EC banks are stated to have the same motivations to exploit internationalization advantages as DC banks, but, at the same time, they are found to be smaller, present in fewer countries and with more regional focus. This suggests that, while EC banks can benefit from diversifying into far away markets in search of strategic assets and capabilities, their ability to compete with DC banks in such markets and globally may be limited. Alternatively, they may have a competitive advantage over DC banks in other EC markets, due to their familiarity with similar institutional settings (Van Horen, 2007; Cuervo-Cazurra & Genc, 2008). As a result, their location choices - and hence their performance - may be more sensitive to the cultural, institutional and geographic proximity to target countries (Van Horen, 2007; Petrou, 2007; BIS, 2014).

Based on these arguments, we expect the expansion activities of DC banks and EC banks to be assessed differently by the markets,[8] and the overall impact of geographic diversification on valuations for each bank group (DC banks vs EC banks) to be conditioned by the locus of geographic diversification. We test this hypothesis in the following sections.

3 Empirical Methodology

3.1 Alternative measures of international diversification

Previous research has operationalized several alternative measures of firm-level multinationality and international diversification. In our analysis, we employ a number of these measures, first, to document the evolution of bank-level international diversification over the last decade (Section 4.1), and second, to investigate the impact of international diversification on bank value (Section 4.2).

Two of the most commonly used measures of internationalization in the banking literature are *international share* and *international concentration* (see García-Herrero & Vázquez, 2013; Berger *et al.*, 2014; Gulamhussen *et al.*, 2014). International share is computed as:

$$\text{International share}_{it} = \frac{fn_{it}}{N_{it}} \tag{1}$$

where fn_{it} is the number of foreign subsidiaries and N_{it} is the total number of subsidiaries of bank i in year t. On the other hand, international concentration is computed as a transformed Herfindahl index (H_{it}):

$$\text{International concentration}_{it} = 1 - H_{it} = 1 - \sum_{j=1}^{J} \left(\frac{n_{ijt}}{N_{it}} \right)^2 \tag{2}$$

[8] Rao-Nicholson & Salaber (2015) find that only acquisitions of DC banks by EC banks in the post-global financial crisis period created value for acquirers' shareholders.

where J is the total number of countries in which bank i has subsidiaries, and n_{ijt} is the number of subsidiaries in host country j in year t.[9] Both measures vary in the interval $[0, 1]$, with values close to 0 indicating low geographic diversification and values close to 1 indicating high geographic diversification. The advantage of the latter measure is that it takes into account both the number of countries in which a bank is present and the share of subsidiaries in each country, and thus it can better assess the geographic dispersion of the bank's operations. We calculate two versions of the Herfindahl-type measure: the first captures global-level concentration as in Eq. (2) ('International Concentration') and the second captures concentration within the region in which the parent bank is headquartered ('Regional Concentration'). To construct the regional index, we divide the countries into six continent-based regions: Africa, Asia, Europe, North and Central America, Oceania and South America.[10]

A wide range of firm-level internationalization measures has also been proposed in the international business literature, considering the locus of destination of the diversification activities. Aggarwal *et al.* (2011) develop a classification system for the degree of a firm's multinationality based on two dimensions: breadth (the extent of geographic spread of operations) and depth (the degree of engagement with and exposure to each geographic unit). Specifically, a firm whose business activities take place entirely within its home country is defined as domestic (D), a firm that conducts business only in the region in which it is headquartered (home region) is defined as regional (R), a firm that conducts business in more than one region (but not fully globally) is defined as trans-regional (T), and a firm that conducts business in all six regions is defined as global (G). R is further divided into three categories - $R1$ (less than one-third of the countries in the region), $R2$ (between one-third and two-thirds) and $R3$ (more than two-thirds) - and T is further divided into four categories - $T2$ (two regions), $T3$ (three regions), $T4$ (four regions), and $T5$ (five regions). Drawing upon the Aggarwal *et al.* (2011)'s scheme and using subsidiary presence as the diversification dimension, we classify our sampled banks into the aforementioned categories. It must be stressed that this system imposes no scale or number thresholds in determining a firm's presence in a country or region. Furthermore, it does not include any metric for distance, even though it suggests that trans-regional or global activities will generally be more distant from the firm's home base compared to domestic or home regional activities.

Banalieva & Santoro (2009) offer a finer-grained classification of a firm's geographic orientation that distinguishes between its local (home-country), regional (rest of home region), and global (rest of world) geographic segments, with the first two forming the intra-regional dimension. Based on this classification, a firm is said to have local orientation if its local-to-total sales ratio exceeds the regional-to-total sales ratio and the global-to-total sales ratio ($\frac{L}{T} > \frac{R}{T}$ and $\frac{L}{T} > \frac{G}{T}$). Likewise, a firm is said to have regional and global orientation if its regional-to-total sales ratio and global-to-total sales ratio is the highest, respectively. Following this framework, we calculate the intra-regional orientation of bank i as the difference between $\frac{R}{T}$ and $\frac{L}{T}$ based on subsidiary presence ('Intra-Regional Ratio'), with positive (neg-

[9] For a large number of subsidiaries in our sample, the value of total assets is not available for all the years under consideration, which creates problems in constructing time-varying asset-based measures of international diversification. We thus prefer to use subsidiary presence to calculate these measures, especially since we undertook a painstaking effort to identify and correct for ownership structure changes during the sampled period (see Section 3.3).

[10] Continent-based regional classification is preferable to other systems, such as using the broad 'triad' markets of NAFTA, the European Union and Asia as in Rugman & Verbeke (2004), for two reasons: first, it encompasses all the countries in the world; and second, it does not change over time as the regions are defined along geographic rather than political lines (Aggarwal *et al.*, 2011). The first attribute is particularly important for our analysis since we consider large banks from all countries, including banks headquartered or having subsidiaries in non-triad countries.

ative) values indicating regional (local) geographic orientation. Similarly, we calculate the global orientation of bank i as the ratio $\frac{G}{T}$ based on subsidiary presence ('Global Ratio'), with higher values indicating a bank focusing more on its global segment than its home-regional segment.

Finally, Qian *et al.* (2010) define total geographic diversification as the sum of two components: intra-regional (diversification across countries within a region) and inter-regional (diversification across different regions) - both measured based on entropy calculations. Following this approach, we construct inter-regional diversification ('INTER') as:

$$\text{INTER}_{it} = \sum_{m=1}^{M} s_{imt} \ln\left(\frac{1}{s_{imt}}\right) \qquad s_{imt} = \frac{n_{imt}}{N_{it}} \tag{3}$$

where M is the number of regions in which bank i has subsidiaries and s_{imt} is the proportion of the m^{th} region to the bank's total number of subsidiaries in all regions. Similarly, we construct intra-regional diversification ('INTRA') as:

$$\text{INTRA}_{it} = \sum_{m=1}^{M} s_{imt} \times \underbrace{\left[\sum_{j=1}^{J} w_{ijmt} \ln\left(\frac{1}{w_{ijmt}}\right)\right]}_{\text{INTRA}_{imt}} \qquad w_{ijmt} = \frac{n_{ijmt}}{N_{imt}} \tag{4}$$

where w_{ijmt} is the proportion of the number of subsidiaries in the j^{th} country to the total number of subsidiaries in the m^{th} region. In other words, INTRA_{it} is the weighted average of the corresponding regional-level entropy values INTRA_{imt}, the weight being previously defined as s_{imt}. We also calculate a modified intra-regional diversification measure, 'INTRA-Home', which accounts for subsidiary presence in the home regions only ($s_{imt} = 0$ if the m^{th} region is not the home region). This allows us to test whether the relationship between 'INTRA' and bank value is driven by diversification within the home region, where the parent banks have the least LOF. The Qian *et al.* (2010)'s measures reflect not only the multiplicity of the foreign markets, but also the size of the foreign operations (see also Oh, 2009). Hence, compared to the other approaches, they can more adequately capture the level and intensity of banks' international diversification within and across different regions and account for changes in the corresponding trends during the recent financial crisis. Based on these arguments, 'INTRA', 'INTER' and 'TOTAL' (the sum of 'INTRA' and 'INTER') are our preferred measures for exploring the bank value effects of international diversification, although the alternative measures discussed in this section are also used for robustness tests.

3.2 Bank value model specification

To evaluate the impact of international diversification on bank value, we employ an empirical specification that builds on the work of Laeven & Levine (2007), Caprio *et al.* (2007), Deng & Elyasiani (2008), and takes the following form:

$$Q_{int} = \alpha Q_{int-1} + \beta \text{'ID'}_{int} + \gamma \mathbf{X}_{int} + \delta \mathbf{Y}_{nt} + \mu_i + \lambda_t + u_{int} \tag{M.1}$$

where Q is the Tobin's Q ratio, calculated as the ratio of the market value of equity plus the book value of liabilities to the book value of assets; 'ID' $\in$ {'TOTAL', 'INTRA', 'INTER'} is an entropy measure of international diversification, as defined in Section 3.1; $\mathbf{X}$ is a vector of bank-level control variables; $\mathbf{Y}$ is a vector of country-level control variables; i, n, t index bank, country, and time, respectively; μ_i and λ_t represent bank-specific and year-specific effects, respectively; and u is an $i.i.d$ error term.

Vector **X** contains a broad range of bank-specific traits related to bank value commonly used in previous studies. Specifically, it includes: (i) non-interest income to assets ('Income Diversity') to account for differences in the diversity of financial activities that may affect bank risk, margins and value (DeYoung & Rice, 2004; Stiroh & Rumble, 2006; Goetz *et al.*, 2013); (ii) total equity to total assets ('Capitalization') to account for the interactions between capitalization levels and bank value, and as an indirect proxy for bank risk (Buch *et al.*, 2014); (iii) cost to income ('Operational Inefficiency') calculated as total operating expenses to total operating income (Caprio *et al.*, 2007); (iv) non-performing loans to gross loans ('NPL') as a proxy for loan quality and portfolio risk (Berger *et al.*, 2009); and, (v) bank size measured by three binary variables that group banks into total asset quartiles, calculated separately for each region to account for size-level differences across regions.[11]

On the other hand, vector **Y** includes the GDP growth rate ('Growth') and the inflation rate ('Inflation') as proxies of macroeconomic fluctuations and institutional effects in the home country of the parent bank (Demirgüç-Kunt & Huizinga, 2010), which are expected to influence not only a bank's market value, but also its capacity to diversify geographically. Vector **Y** also includes the binary variable 'EC' coding the banks headquartered in ECs to account for the positive relationship between the level of economic development and the demand for cross-border financial services (Buch & DeLong, 2004). Finally, the previous period's Tobin's Q is included among the explanatory variables to capture persistence over time.

As discussed in Section 2.3, the market's valuation of EC banks' internationalization strategies may be different than that of DC banks, and this relationship may depend on the locus of international diversification. To test this argument, we re-estimate model (M.1) with 'ID' replaced by the interaction terms 'ID $*$ EC' and 'ID $*$ DC', where 'DC' (1−'EC') is a binary variable coding banks headquartered in DCs. In this way, it is possible to estimate the impact of intra-regional, inter-regional and total diversification on bank value conditional on the origin of the parent bank (headquartered in DCs versus ECs).[12]

We estimate model (M.1) using the system GMM estimator proposed by Blundell & Bond (1998). This estimator is designed for short, wide panels (small T, large N), and to fit linear models with one dynamic dependent variable, additional controls and fixed effects, and hence, it is appropriate for our data and model. In addition, it corrects for the endogeneity of potentially endogenous explanatory variables, like the international diversification measure and the bank-level control variables included in vector **X**. To improve the precision of the two-step estimators for hypothesis testing, we apply the "Windmeijer finite-sample correction" to the reported standard errors. Furthermore, to reduce the risk of instrument proliferation and make sure that the number of instruments does not exceed the number of groups, we collapse the instrument set using the procedure described in Roodman (2009).[13] The consistency of the GMM estimator depends on the condition of no second-order serial correlation and the validity of instruments. To make sure that these conditions are met, we perform two tests: the Arellano-Bond test for second-order serial correlation of the differenced residuals, and the

[11] As suggested by Cole & Gunther (1995) and Laeven & Levine (2007), large banks can diversify risks better and enjoy economies of scale and scope. In addition, if large banks are perceived to be 'too-big-to-fail', then size would be associated with lower cost of funding and higher value (Berger *et al.*, 1999).

[12] Alternatively, one could consider separate regressions for DC banks and EC banks. However, this would reduce significantly the number of banks for each regression and would make the GMM estimation results less reliable. Specifically, it would generate a great many instruments, compared to the number of cross-sections, and weaken the Hansen test of the instruments' joint validity.

[13] The instruments used are lagged levels of the dependent variable and the endogenous covariates (bank-level controls) for the first differencing equation, and lagged differences of these variables for the level equation. The exogenous covariates (country-level control, year and size dummy variables) are instrumented by themselves in the level equation and by first-differences in the first differencing equation.

Hansen test for over-identifying restrictions.

3.3 Data sources and sampling procedure

Data are mainly retrieved from two commercial databases provided by Bureau van Dijk: BankScope and Zephyr. To assemble our dataset, we first extract yearly account data[14] over the period 2004-2013 on all publicly listed banks in BankScope with total assets exceeding US$50 million.[15] We include commercial, savings, mortgage and cooperative banks, and holding companies and exclude investment and state banks, and non-bank credit institutions, which have no compelling reasons to internationalize their activities (Focarelli & Pozzolo, 2005). We also exclude banks headquartered in off-shore centers, such as Andorra, Bermuda, Bahamas, Cayman Islands, Panama and Saint Lucia, because they typically have less standard business models (Gulamhussen *et al.*, 2014). We then match our initial sample of parent banks with the yearly data of their significant subsidiaries; that is, subsidiaries that are at least 50% owned by the parent and account for at least 0.1% of parent-bank assets in the last available year. For each subsidiary (level 1) we check whether it owns sub-subsidiaries (level 2) that are larger than 0.1% of the ultimate bank owner (level 0).[16] If it does, we include the sub-subsidiaries as a separate entities of the parent bank. Since ownership data in BankScope reflects the latest status, we use acquisition data from Zephyr to identify the ownership changes that occurred during the sampled period. More precisely, for each subsidiary we trace back in which year t it was acquired and include it in the structure of the parent bank from $t+1$ onwards. Similarly, for each parent bank we trace back which subsidiaries it sold in year t and add these subsidiaries to the structure of the parent bank from $t-1$ backwards.

This procedure results in a final sample of 156 parent banks headquartered in 56 countries (19 DC and 37 EC). Japan and China have the highest number of bank-year observations in our sample, with 10% and 6% of the total number of observations, respectively. It must be noted that we exclude parent banks from the US to make sure that our results are not driven by the US banking system, which has a large number of banks with the aforementioned characteristics. In addition, the US banking system is quite special in the sense that it is dominated by relatively smaller and non-diversified (domestic) banks (see also Laeven & Levine, 2007), and thus including these banks in a panel regression with larger and more internationally diversified banks from other countries will lead to selection bias problems and misleading inferences. We do, however, test whether our results hold when we add the ten largest US banks (see Section 4.3).

Data on macro-economic variables are collected from the World Bank's World Development Indicators (WDI). Data on bilateral geographic and institutional distances are obtained from the CEPII's GeoDist Database (Mayer & Zignago, 2011) and the Heritage Foundation's Index of Economic Freedom, respectively. Descriptive statistics for all regression variables are given in Table A.1, whereas the cross-correlation matrix for these variables is displayed in Table A.2.

4 Empirical Analysis

4.1 Evolution of international diversification: DC versus EC banks

We begin our analysis by considering the evolution of international diversification between 2004 and 2013, using the measures described in Section 3.1, for both DC banks and EC

[14] All extracted financial variables are winsorized at the 1st and 99th percentiles.

[15] Small banks may face additional challenges and costs, and thus are significantly less likely to diversify across borders.

[16] To calculate these shares, we use consolidated financial statements for parent banks and unconsolidated financial statements for subsidiaries.

banks.

Figure 1 displays the two Herfindahl-type indices of geographic concentration. Looking at 'International Concentration' (Panel (a)), a number of conclusions come to front. First, DC banks are more internationally diversified than EC banks, which is not surprising given that EC banks are relatively smaller and late-comers to the internationalization stage. Second, the degree of international diversification starts decreasing with the onset of the global financial crisis for both groups of banks. Third, EC banks experience a sharper drop in geographic diversification during the years 2008 to 2011 compared to DC banks, but manage to recover some of this reduction in the two years that follow (2012 and 2013). Focusing now on 'Regional Concentration' (Panel (b)), we can observe similar trends, even though the fluctuations during the crisis years seem to be less pronounced. Moreover, the gap in geographic diversification between the two bank groups is clearly smaller (compared to Panel (a)), suggesting that EC banks are more dispersed within their home region than internationally.

Table 1 shows the classification of our sample according to the Aggarwal *et al.* (2011)'s system of firm multinationality. Out of the 1200 bank-year observations, 300 (25%) are classified as domestic (D) and 354 (29.5%) as regional (R). Within the regional category, nearly all the observations indicate operations in less than one-third of the home-region countries ($R1$). The trans-regional category (T) is the largest one in our sample, with 546 (45.5%) bank-year observations. The most common types in the latter category are $T2$ and $T3$, indicating operations in two and three regions, respectively. No observations are categorized as type $R3$ or G, suggesting that no banks in our sample operate in more than two-thirds of the home-region countries or have full global reach. Splitting the sampled banks by origin confirms that DC banks are spread more widely across different regions compared to EC banks.

< Insert Figure 1 and Table 1 here >

Measures of geographic orientation - based on the Banalieva & Santoro (2009)'s framework - are presented in Figure 2. As a first observation, this figure illustrates that EC and DC banks focus equally on their regional and local (home country) markets, as evidenced by the 'Intra-Regional Ratio' with values fluctuating around zero (Panel (c)). In the case of EC banks, though, there is a notable jump in intra-regional orientation right before and during the global financial crisis, driven by changes in the regional and local orientations of the opposite direction (Panels (a) and (b)). This might be the result of EC banks acquiring subsidiaries of deleveraging DC banks in their home regions during this period. Figure 2 also shows that global orientation is the least popular geographic orientation for the two bank categories (Panel (d)), which reinforces the argument that a global expansion poses notable difficulties for banks in both DCs and ECs (see Rugman & Verbeke, 2004, 2007). Interestingly, the average EC bank seems to be more globally oriented than the average DC bank, even though there is evidence of convergence in their 'Global Ratio' over the sampled period. It must be stressed that these measures do not capture the intensity of banks' international diversification and are not sensitive to the size of investment. For instance, an Asian bank with one local subsidiary and one subsidiary in Europe will have the same 'Global Ratio' as a European bank with five subsidiaries in the same region and five subsidiaries spread across the other five regions.

Panels (a), (b) and (c) of Figure 3 present the three geographic diversification measures of 'TOTAL', 'INTRA' and 'INTER', whereas Panel (d) displays the modified intra-regional diversification measure 'INTRA-Home'. A number of observations emerge. First, the average level of geographic diversification of DC banks is higher than that of EC banks both within regions and across regions, which, in turn, generates a higher average level of total geographic diversification for the former group of banks. Second, all three measures show an overall declining trend during the global financial crisis period - the most prominent downturn being observed in inter-regional diversification, starting in 2008 and ending in 2011. Third, in

the last couple of years, the two groups of banks seem to pursue different strategies: while EC banks become intra-regionally and inter-regionally more diversified, DC banks engage in slightly lower levels of diversification. Finally, comparing the two intra-regional diversification measures, 'INTRA' and 'INTRA-Home', we can see that geographic diversification within the home-region accounts for almost all of the intra-regional diversification.

< Insert Figure 2 and Figure 3 here >

4.2 Bank value and international diversification

We continue our analysis by estimating model (M.1) for the period 2007-2013.[17] Columns (1) to (6) of Table 2 show the results of short specifications, as they do not include the bank-level control variables (vector **X**) and the two macroeconomic variables, 'Growth' and 'Inflation'. As a first point, we can notice that the coefficient on the previous year's Tobin's Q is positive and statistically significant, indicating the persistence in market value over time and justifying the use of a dynamic model. Furthermore, our estimates suggest that a higher degree of total diversification is not associated with changes in bank value (column (1)), and this result persists when we partition the sample into DC banks and EC banks (column (2)). Turning now to the components of total diversification, we find evidence that our sampled banks, and more precisely the banks headquartered in ECs, can benefit from intra-regional diversification: while the coefficient on 'INTRA' in column (3) and 'INTRA∗EC' in column (4) are positive and statistically significant at conventional levels of significance, the coefficient on 'INTRA∗DC' in column (4) fails to reach statistical significance. Inter-regional diversification, on the other hand, does not appear to exert a significant influence on bank value, and this finding holds for both bank groups (see columns (5) and (6)).

Including all the control variables confirms the main result reported in the previous paragraph: the value of EC banks responds positively to increasing levels of intra-regional diversification, which, in turn, produces an overall positive impact of 'INTRA' on Tobin's Q. In fact, the estimates in the full model specifications are economically and statistically more significant than those reported in the short specifications (see columns (9) and (10)), which can explain the statistically significant positive impact of total diversification on bank value (column (7)). Moreover, we now find that greater inter-regional diversification is value-destroying for EC banks (column (12)), suggesting that a broader (less concentrated) multi-regional spread during crisis years is perceived as a costly and highly risky strategy for these banks. Concerning the bank-level control variables, only the coefficient on 'NPL' is statistically significant at conventional levels of significance - with the negative sign indicating that poor asset quality is associated with lower values of Tobin's Q. Finally, among the macroeconomic variable, inflation seems to have a positive impact on bank value, although the corroborating evidence is statistically weak.

Do the reported relationships become weaker when we control for unobserved regional-level effects; for example, location-specific advantages or disadvantages of a regional market? To answer this question, we augment model (M.1) with regional dummy variables and run the same regression set-up. The estimates, presented in columns (1)-(6) of Table 3, are of a similar magnitude and statistical significance to those presented in columns (7)-(12) of Table 2, and lead to the same general conclusion: while higher values of intra-regional diversification boost EC banks' valuations, higher values of inter-regional diversification have the opposite effect. Tests of joint statistical significance reveal that the inclusion of the regional dummy

[17] We focus on the period 2007-2013 for two main reasons. First, our dataset is significantly less balanced in the pre-2007 period, and thus considering earlier years may produce misleading inferences. Second, by excluding the pre-crisis years, we avoid having to control for crisis-induced structural breaks in our model variables or endogeneity problems which may arise from the inclusion of crisis indicators.

variables does not add explanatory power to the model, and thus we omit these variables from subsequent regressions. Expanding our sample by adding the ten largest US banks, as discussed in Section 3.3, does not change our baseline estimates either - see columns (7)-(12) of Table 3. Once again, the interaction term 'INTRA $*$ EC' ('INTER $*$ EC') enters the regression with a positive (negative) sign and is statistically significant, yielding a positive and statistically significant impact of 'INTRA' on Tobin's Q.

Table 4 has the same structure as Table 2, but it shows the results for the shorter time period 2009-2013. This allows us to investigate the sensitivity of the reported effects when we exclude the two years of the global financial crisis, 2007 and 2008, which are associated with heightened risk in international financial markets. Despite the smaller number of observations and the increase in the time persistence of bank value (captured by a larger estimate of the lagged Tobin's Q), the results obtained confirm the picture emerging from Table 2 - even though the economic significance of the interaction terms 'INTRA $*$ EC' and 'INTER $*$ EC' is now smaller.

Overall, our findings suggest that the value impact of international diversification is conditioned by the home country of the parent bank: higher levels of diversification are associated with changes in valuations only for banks originating from ECs. At the same time, our findings indicate that the locus of internationalization matters for the direction of effects. While markets respond positively to intra-regional expansion activities, they seem to believe that EC banks cannot benefit from diversifying into far away markets, or that they cannot compete with DC banks at the global level, especially in periods of high risk.

< Insert Tables 2, 3 and 4 here >

4.3 Robustness tests

We perform various tests to assess the robustness of the above findings. Table 5 displays the results of alternative empirical specifications, where, for brevity and comparability, we focus on the interaction terms 'ID $*$ EC' and 'ID $*$ DC'. First, we check whether our results hold when we use a simpler bank value measure as dependent variable; that is, the ratio of the market value of equity to the book value of equity, 'Market-to-book', as in Caprio *et al.* (2007) (columns (1)-(3)). Second, we test whether our results become less pronounced when we replace 'INTRA' with 'INTRA-Home' (columns (4)-(6)). Third, we experiment by re-defining 'TOTAL', 'INTRA' and 'INTER' to capture geographic diversification across five regions, instead of six (columns (7)-(9)).[18] Fourth, we examine the sensitivity of our results to the exclusion of Chinese banks, which constitute the largest country-group of EC banks in our sample (columns (10)-(12)). Overall, the estimates obtained are in line with the main finding of the previous section: intra-regional diversification, and particularly diversification across the home-region countries, is value-creating for EC banks. The results also largely confirm the finding that greater inter-regional diversification is value-destroying for EC banks, as indicated by the negative sign and the economic significance of the interaction term 'INTER$*$EC'. However, the corresponding effects appear to be statistically less robust across different specifications. In order to address concerns about the existence of unobserved, time-invariant country heterogeneity, we also re-conduct the analysis by adding country dummies for countries with more than three banks (and thus sufficient number of country-year observations), which does not change our main results. Using weighted regressions, where the observations are weighted by the logarithmic inverse of the proportion of sampled banks from each country, does not alter the paper's findings either (results available upon request).

[18] To do that, we merge 'Asia' and 'Oceania' into one region.

Although our diversification measures implicitly take into account that inter-regional investment involves markets far away from banks' home regions, they do not explicitly utilize a metric for bilateral distance. As argued by Ghemawat (2001), distance has cultural, administrative, geographic and economic dimensions, and results in costs and risks in doing business internationally. To investigate whether our results are actually driven by distance differences between the parent bank and its subsidiaries, we augment the model specification with two distance indicators, 'Geographic Distance' and 'Institutional Distance'.[19] Each indicator is calculated as a weighted average of the logarithmic distance between the home country of the parent bank and the countries of residence of its subsidiaries, where the weight is the parent bank's share of subsidiaries in each country. For 'Geographic Distance' we use bilateral distances in kilometers, while for 'Institutional Distance' we use bilateral differences in institutional development.[20] As shown in columns (1)-(3) of Table 6, 'Geographic Distance' fails to reach statistical significance and the key findings discussed in the previous section remain essentially the same. On the other hand, 'Institutional Distance' enters with a positive sign and is statistically significant in the regressions with 'INTER' and 'TOTAL',[21] but once again, it does not change the inferences on the diversification measures.

We also consider the sensitivity of our results to employing alternative measures of international diversification, as discussed in Sections 3.1 and 4.1. Columns (1), (3), (5) and (7) of Table 7 report the estimates when 'International Concentration', 'Regional Concentration', 'Global Ratio' and 'Intra-Regional Ratio', respectively, is used as the diversification proxy, whereas columns (2), (4), (6) and (8) report the corresponding interaction terms with 'EC' and 'DC'. Despite the fact that these measures assess the geographic spread of operations in a different way, the results obtained provide evidence that supports our previous findings (that is, when using the entropy measures 'TOTAL', 'INTRA' and 'INTER' to capture diversification). Specifically, while the coefficient on 'ID $*$ EC' is statistically significant in the regressions with 'Regional Concentration' and 'Intra-Regional Ratio', it fails to reach statistical significance in the regressions with 'International Concentration' and 'Global Ratio', suggesting that, for EC banks, only a regional-based diversification strategy is value-creating.

Finally, we conduct further tests of robustness, such as excluding banks from particular countries and employing different instrument structures. Once again, estimates based on these tests are very similar to our baseline estimates (results available upon request).

< Insert Tables 5, 6 and 7 here >

5 Conclusions

The global banking system has now become more heterogeneous than ever before due to the increasingly important role of foreign banks from emerging markets and the rising trend towards greater regional activity. The existing literature on the internationalization - bank performance debate ignores the locus of geographic diversification and fails to appreciate the conditionality of effects upon the financial development level of a bank's home country. Our study fills this gap by exploring the performance implications of both intra-regional and inter-regional diversification, and by examining whether the resulting effects vary between banks headquartered in ECs and those headquartered in DCs. To this end, we consider data from

[19] The two variables are treated as endogenous, and thus instrumented by past values.

[20] Institutional development is based on four different aspects of economic freedom (rule of law, government size, regulatory efficiency and market openness) and has been used in several related studies (see, for example, Francis *et al.*, 2008; Gubbi *et al.*, 2010).

[21] Since 'Institutional Distance' is highly correlated with 'INTER' and 'TOTAL' (see Table A.2), one has to be very cautious in drawing conclusions about the impact of institutional distance on bank value.

the largest banks across the world during the crisis and post-crisis years, and employ GMM estimation techniques.

The overall picture that emerges from the comparison of a wide range of diversification measures is that level and intensity of banks' international diversification vary significantly over time, as well as between EC banks and DC banks. In particular, while the degree of international diversification starts decreasing with the onset of the global financial crisis for both groups of banks, EC banks experience a sharper drop in diversification during the years 2008 to 2011. Furthermore, EC banks manage to recover some of this reduction in the two years that follow, mostly due to increased intra-regional expansion. Concerning the valuation impacts, two key results emerge. First, higher levels of geographic diversification are associated with changes in valuations for EC banks, but not for DC banks. Given that a regional focus is becoming increasingly important in global banking, the absence of value gains for DC banks can be attributed to dismal growth prospects in the banking markets of these countries, especially since the onset of the global financial crisis. Second, while markets respond positively to the intra-regional expansion activities of EC banks, they seem to believe that these banks cannot benefit from diversifying into far away markets or that they cannot compete with DC banks in such markets.

The expansion of international financial institutions has been particularly strong since the mid-1990s, reflecting the sharp increase in financial globalization. Given the concerns about global banks serving as a risk transmission channel, the extent of international diversification gains in banking is critically important for investors, bankers and policy-makers. The design of regulatory policies and geographic expansion strategies should take into account that aggregate or total international diversification is not a sufficient indicator of bank multinationality, and that the value gains from international expansion depend on the banks' home country set-ups and the locus of international diversification, as indicated by the findings of this paper.

A Appendix

See Table A.1 and Table A.2.

Table A.1: Descriptive statistics and data sources

Variable	Obs	Mean	Std Dev	Min	Max	Source
Tobin's Q (Q)	935	1.030	0.081	0.844	1.455	BankScope
Income Diversity	910	0.397	0.175	-0.088	0.975	BankScope
Capitalization	935	0.085	0.053	0.012	0.378	BankScope
Operational Inefficiency	910	0.574	0.142	0.209	1.149	BankScope
NPL	903	0.016	0.017	0.000	0.114	BankScope
Growth	935	0.034	0.038	-0.148	0.183	WDI
Inflation	935	0.041	0.088	-0.276	1.038	WDI
TOTAL	935	0.502	0.458	0.000	1.430	BankScope & OC
INTRA	935	0.352	0.402	0.000	1.430	BankScope & OC
INTER	935	0.206	0.289	0.000	0.889	BankScope & OC
International Concentration	935	0.313	0.267	0.000	0.672	BankScope & OC
Regional Concentration	935	0.304	0.289	0.000	0.693	BankScope & OC
Global Ratio	935	0.289	0.372	0.000	1.000	BankScope & OC
Intra-Regional Ratio	935	0.040	0.690	-1.000	1.000	BankScope & OC
Geographic Distance	927	1.648	1.068	0.000	3.414	CEPII
Institutional Distance	935	7.202	1.249	4.336	9.375	IEF

WDI: World Bank's World Development Indicators; **OC**: Own Calculations; **CEPII**: CEPII's GeoDist Database (Mayer & Zignago, 2011); **IEF**: The Heritage Foundation's Index of Economic Freedom.

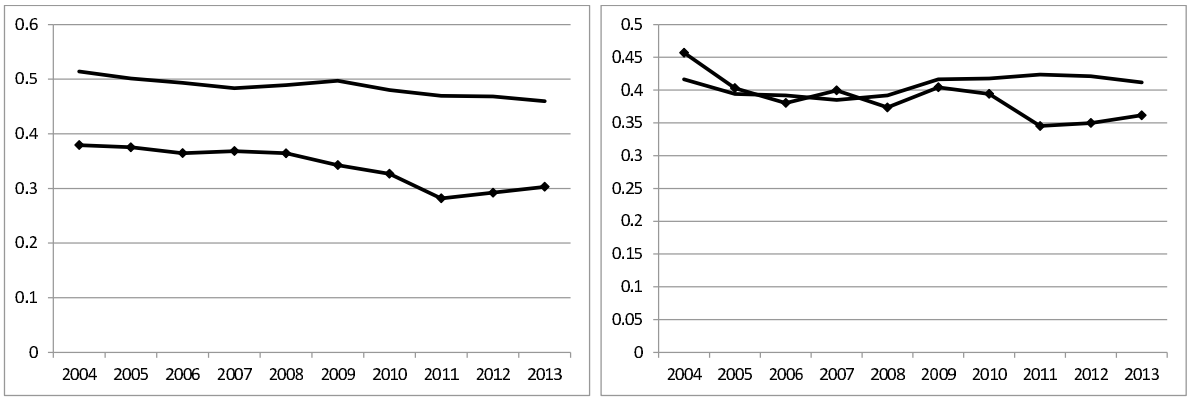
Table A.2: Cross correlation matrix for regression variables

	Tobin's Q	Income Diversity	Capitalization	Operational Inefficiency	NPL	Growth	Inflation	TOTAL	INTRA	INTER	Geographic Distance	Institutional Distance
Tobin's Q	1.00											
Income Diversity	0.08	1.00										
Capitalization	0.30	0.05	1.00									
Operational Inefficiency	-0.28	0.23	-0.30	1.00								
NPL	-0.09	-0.13	0.23	-0.04	1.00							
Growth	0.23	-0.01	0.33	-0.21	-0.06	1.00						
Inflation	0.14	0.02	0.34	-0.09	0.13	0.21	1.00					
TOTAL	-0.06	0.15	-0.32	0.05	-0.13	-0.15	-0.05	1.00				
INTRA	-0.04	0.14	-0.29	0.05	-0.07	-0.20	-0.08	0.87	1.00			
INTER	-0.08	0.12	-0.22	0.04	-0.18	-0.02	-0.01	0.61	0.17	1.00		
Geographic Distance	0.08	-0.03	-0.01	-0.20	0.09	0.09	0.09	0.46	0.33	0.38	1.00	
Institutional Distance	0.05	0.06	-0.03	-0.14	-0.05	0.22	0.06	0.38	0.13	0.57	0.73	1.00

Table 1: Classifying bank-year observations using Aggarwal *et al.* (2011)' system

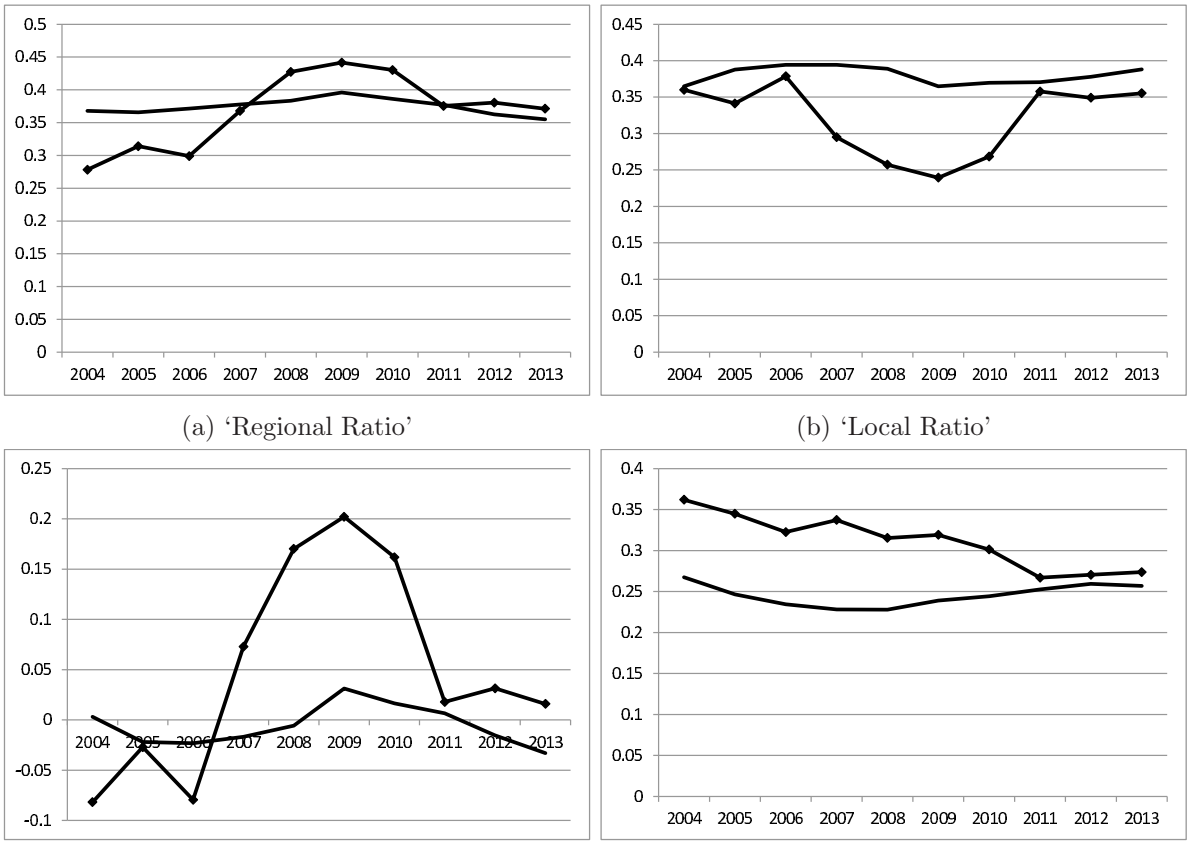
	All countries			Developed Countries			Emerging Countries		
Symbol	Count	Perc	Cum Perc	Count	Perc	Cum Perc	Count	Perc	Cum Perc
D	300	25.0	25.0	156	25.4	25.4	144	24.6	24.6
R1	344	28.67	53.67	174	28.3	53.7	170	29.1	53.7
R2	10	0.8	54.5	0	0.0	53.7	10	1.7	55.4
T2	370	30.8	85.3	144	23.4	77.1	226	38.6	94.0
T3	126	10.5	95.8	91	14.8	91.9	35	6.0	100.0
T4	30	2.5	98.3	30	4.9	96.8	0	0.0	100.0
T5	20	1.7	100.0	20	3.3	100.0	0	0.0	100.0
Total	1200	100.0	100.0	615	100.0	100.0	585	100.0	581.9

D: Banks with subsidiary presence only within their home country in year t; **R1**: Banks with subsidiary presence only in the region in which they are headquartered in year t, and in less than one-third of the countries in that region; **R2**: Banks with subsidiary presence only in the region in which they are headquartered in year t, and in one-third to two-thirds of the countries in that region; **T2**, **T3**, **T4**, and **T5**: Banks with subsidiary presence in two regions, three regions, four regions, and five regions in year t, respectively.



(a) 'International Concentration' (b) 'Regional Concentration'

Figure 1: 'International Share' and 'International Concentration' for developed countries (solid lines) and emerging countries (marked lines) over the period 2004-2013



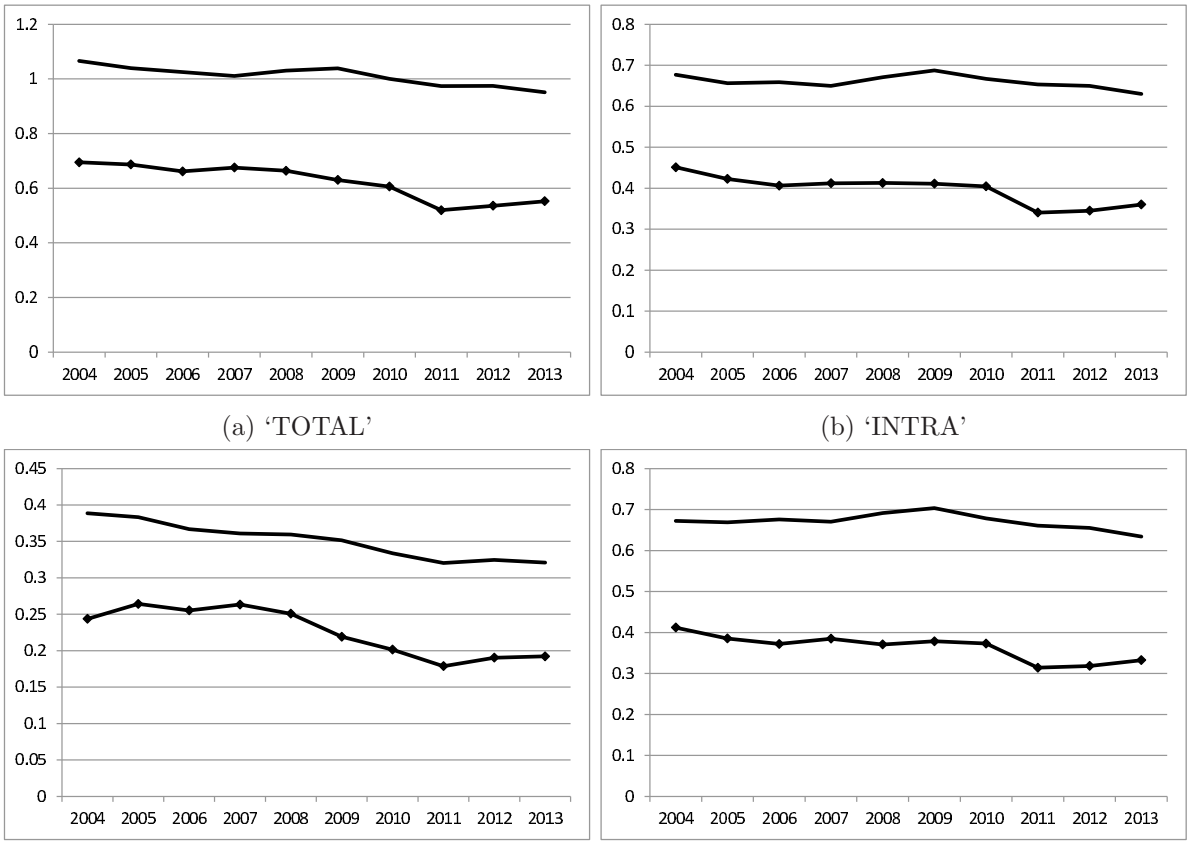
(a) 'Regional Ratio'

(b) 'Local Ratio'

(c) 'Intra-Regional Ratio'

(d) 'Global Ratio'

Figure 2: 'Intra-Regional Ratio', 'Global Ratio', 'Regional Ratio' and 'Local Ratio' for developed countries (solid lines) and emerging countries (marked lines) over the period 2004-2013



(a) 'TOTAL' (b) 'INTRA'

(c) 'INTER' (d) 'INTRA-Home'

Figure 3: 'TOTAL', 'INTRA', 'INTER' and 'INTRA-Home' for developed countries (solid lines) and emerging countries (marked lines) over the period 2004-2013

Table 2: International diversification and bank value: Basic results (2007-2013)

Dependent variable: Tobin's Q. Method: System Generalized Method of Moments.												
	Without control variables						With control variables					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lagged Tobin's Q	0.37**	0.33**	0.34**	0.38**	0.47***	0.40***	0.24**	0.25**	0.23	0.28**	0.28**	0.28*
	(2.46)	(2.08)	(2.36)	(2.62)	(3.18)	(2.70)	(2.01)	(2.21)	(1.64)	(2.26)	(2.08)	(1.78)
TOTAL	0.04						0.07*					
	(1.01)						(1.73)					
INTRA			0.08**						0.10**			
			(2.29)						(2.40)			
INTER					-0.25						-0.08	
					(1.41)						(1.26)	
ID $*$ EC[a]		0.07		0.17*		-0.14		0.11		0.20***		-0.10*
		(0.85)		(1.90)		(1.32)		(1.48)		(3.26)		(1.72)
ID $*$ DC[a]		-0.01		-0.01		-0.30		0.03		0.01		-0.08
		(0.58)		(0.15)		(1.07)		(0.41)		(0.17)		(0.84)
EC	0.03*	-0.01	0.03***	-0.02	-0.01	-0.03	0.03	-0.01	0.03	-0.04	0.02	0.02
	(1.87)	(0.34)	(2.62)	(0.92)	(0.23)	(0.48)	(1.29)	(0.19)	(1.36)	(1.29)	(0.70)	(0.99)
Income Diversity							0.01	0.01	0.02	-0.01	0.01	0.01
							(0.27)	(0.12)	(0.33)	(0.19)	(0.30)	(0.07)
Capitalization							0.11	0.15	-0.05	0.06	0.03	0.02
							(0.22)	(0.30)	(0.10)	(0.12)	(0.07)	(0.05)
Operational Inefficiency							0.03	0.02	0.04	0.03	-0.02	-0.03
							(0.55)	(0.48)	(0.62)	(0.55)	(0.23)	(0.63)
NPL							-0.94	-0.99*	-1.11*	-1.14**	-0.73**	-0.78**
							(1.57)	(1.75)	(1.94)	(2.02)	(2.04)	(2.09)
Growth							0.10	0.18	0.22	0.33*	0.03	0.02
							(0.71)	(0.92)	(1.50)	(1.84)	(0.22)	(0.12)
Inflation							0.05	0.07	0.10*	0.10	0.11*	0.10*
							(0.87)	(1.25)	(1.70)	(1.34)	(1.76)	(1.79)
Number of observations	708	708	708	708	708	708	698	698	698	698	698	698
Number of banks	141	141	141	141	141	141	139	139	139	139	139	139
Number of instruments	34	48	34	48	34	48	94	108	94	108	94	108
AR(2) p-value[b]	0.67	0.70	0.65	0.58	0.63	0.67	0.99	0.95	0.94	0.82	0.90	0.90
Hansen p-value[c]	0.12	0.19	0.28	0.22	0.09	0.15	0.38	0.60	0.60	0.73	0.13	0.18

Columns report estimated coefficients ($|z|$-statistics). All specifications include year dummy variables and size dummy variables. Equations estimated using Windmeijer WC-robust standard errors. [a] ID $\in$ {'TOTAL','INTRA','INTER'}. [b] Reports the Arellano-Bond test p-value for serial correlation of order two in the first-differenced residuals, where H_0: no autocorrelation. [c] Reports the Hansen test p-value for over-identifying restrictions, where H_0: over-identifying restrictions are valid. ***,**,* Statistically significant at the 1%, 5% and 10% confidence level respectively.

Table 3: International diversification and bank value: Including region-specific effects / Adding US banks

Dependent variable: Tobin's Q. Method: System Generalized Method of Moments.												
	Including region specific effects						Including US banks					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lagged Tobin's Q	0.30***	0.28**	0.25**	0.27**	0.31**	0.31*	0.20*	0.22**	0.18	0.27**	0.27**	0.28*
	(2.58)	(2.31)	(1.85)	(2.13)	(2.15)	(1.95)	(1.71)	(2.14)	(1.37)	(2.29)	(2.10)	(1.95)
TOTAL	0.06						0.09**					
	(1.08)						(2.03)					
INTRA			0.13*						0.10**			
			(1.75)						(2.31)			
INTER					-0.08						-0.07	
					(1.43)						(1.51)	
ID $*$ EC[a]		0.11		0.25**		-0.10**		0.13		0.23***		-0.12**
		(1.41)		(2.54)		(2.00)		(1.57)		(3.25)		(2.42)
ID $*$ DC[a]		0.05		0.06		-0.08		0.05		0.01		-0.02
		(0.84)		(0.98)		(0.88)		(0.83)		(0.14)		(0.24)
Number of observations	698	698	698	698	698	698	756	756	756	756	756	756
Number of banks	139	139	139	139	139	139	148	148	148	148	148	148
Number of instruments	99	113	99	113	99	113	94	108	94	108	94	108
AR(2) p-value[b]	0.98	0.95	0.88	0.76	0.93	0.93	0.90	0.85	0.87	0.72	0.78	0.77
Hansen p-value[c]	0.36	0.60	0.46	0.55	0.13	0.19	0.56	0.72	0.51	0.50	0.20	0.31
Joint significance test[d]	0.15	0.12	0.49	0.19	0.13	0.07						

See notes for Table 1. For brevity, the estimated coefficients on 'Emerging', 'Income diversity', 'Capitalization', 'Operational Inefficiency', 'NPL', 'Growth' and 'Inflation' are not displayed. [d] Reports the χ^2-test p-value, where H_0: the coefficients on region dummy variables are jointly equal to zero.

Table 4: International diversification and bank value: Shorter time period (2009-2013)

Dependent variable: Tobin's Q. Method: System Generalized Method of Moments.												
	Without control variables						With control variables					
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lagged Tobin's Q	0.56***	0.50***	0.49***	0.44***	0.57***	0.54***	0.39***	0.34***	0.37***	0.35***	0.42***	0.42***
	(3.25)	(3.18)	(3.83)	(3.15)	(3.33)	(3.98)	(3.48)	(3.36)	(3.64)	(3.76)	(3.49)	(3.74)
TOTAL	0.06						0.07					
	(1.41)						(1.52)					
INTRA			0.11*						0.09*			
			(2.37)						(1.82)			
INTER					-0.27						0.03	
					(1.50)						(0.26)	
ID $*$ EC[a]		0.07		0.16**		-0.21		0.08		0.12**		-0.02**
		(1.24)		(2.05)		(1.07)		(1.31)		(2.39)		(0.21)
ID $*$ DC[a]		0.25		0.01		0.02		0.03		0.03		0.06
		(1.29)		(0.31)		(0.45)		(0.40)		(0.64)		(0.62)
Number of observations	564	564	564	564	564	564	560	560	560	560	560	560
Number of banks	139	139	139	139	139	139	138	138	138	138	138	138
Number of instruments	32	46	32	46	32	46	92	106	92	106	92	106
AR(2) p-value[b]	0.49	0.48	0.45	0.42	0.47	0.47	0.90	0.90	0.88	0.86	0.94	0.91
Hansen p-value[c]	0.16	0.50	0.27	0.42	0.25	0.40	0.41	0.68	0.49	0.75	0.29	0.27

See notes for Table 1. For brevity, the estimated coefficients on 'Emerging', 'Income diversity', 'Capitalization', 'Operational Inefficiency', 'NPL', 'Growth' and 'Inflation' are not displayed.

Table 5: Robustness tests: Alternative specifications

Dependent variable: Market-to-book (columns (1)-(3)), Tobin's Q (columns (4)-(12)). Method: System Generalized Method of Moments.												
	Using alternative dependent			Using 'INTRA-Home'			Using five regions			Excluding Chinese banks		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Lagged Market-to-Book	0.39***	0.40***	0.43***									
	(4.17)	(4.18)	(4.70)									
Lagged Tobin's Q				0.26**	0.31**	0.28*	0.26**	0.28**	0.26*	0.25**	0.29**	0.25
				(2.38)	(2.46)	(1.78)	(2.25)	(2.34)	(1.73)	(2.15)	(2.27)	(1.62)
TOTAL $*$ EC	0.21			0.12			0.11			0.08		
	(1.07)			(1.47)			(1.50)			(0.79)		
TOTAL $*$ DC	0.01			0.04			0.01			0.04		
	(0.05)			(0.80)			(0.25)			(0.57)		
INTRA $*$ EC		0.42***			0.19**			0.19***			0.16**	
		(2.87)			(2.47)			(3.17)			(2.56)	
INTRA $*$ DC		-0.09			0.01			0.01			0.01	
		(0.66)			(0.45)			(0.13)			(0.27)	
INTER $*$ EC			-0.34			-0.10*			-0.11**			-0.16
			(1.38)			(1.72)			(2.02)			(1.54)
INTER $*$ DC			-0.29			-0.08			-0.13			-0.19
			(0.70)			(0.84)			(1.05)			(1.04)
Number of observations	698	698	698	698	698	698	698	698	698	652	652	652
Number of banks	139	139	139	139	139	139	139	139	139	122	122	122
Number of instruments	108	108	108	108	108	108	108	108	108	108	108	108
AR(2) p-value[b]	0.78	0.88	0.90	0.94	0.79	0.90	0.94	0.81	0.91	0.97	0.83	0.98
Hansen p-value[c]	0.54	0.48	0.35	0.49	0.52	0.18	0.60	0.73	0.15	0.46	0.72	0.29

See notes for Table 1. For brevity, estimated coefficients on 'Emerging', 'Income diversity', 'Capitalization', 'Operational Inefficiency', 'NPL', 'Growth' and 'Inflation' are not displayed.

Table 6: Robustness tests: Controlling for geographic and institutional distance

Dependent variable: Tobin's Q. Method: System Generalized Method of Moments.						
	Geographic distance			Institutional distance		
	(1)	(2)	(3)	(4)	(5)	(6)
Lagged Tobin's Q	0.35***	0.36***	0.35***	0.28***	0.32***	0.27**
	(3.94)	(3.43)	(3.03)	(2.96)	(3.17)	(2.02)
TOTAL ∗ EC	0.04			-0.01		
	(0.86)			(0.12)		
TOTAL ∗ DC	-0.01			-0.02		
	(0.16)			(0.29)		
INTRA ∗ EC		0.13***			0.14**	
		(2.80)			(2.15)	
INTRA ∗ DC		-0.02			-0.01	
		(0.51)			(0.41)	
INTER ∗ EC			-0.19*			-0.22***
			(1.69)			(3.01)
INTER ∗ DC			-0.18			-0.23
			(1.43)			(1.25)
Geographic Distance	0.02	0.01	0.03			
	(1.38)	(0.66)	(1.52)			
Institutional Distance				0.04***	0.02	0.05***
				(2.82)	(1.56)	(3.07)
Number of observations	698	698	698	693	693	693
Number of banks	139	139	139	137	137	137
Number of instruments	122	122	122	122	122	122
AR(2) p-value[b]	0.87	0.77	0.78	0.93	0.86	0.89
Hansen p-value[c]	0.35	0.18	0.34	0.56	0.56	0.53

See notes for Table 1. For brevity, estimated coefficients on 'Emerging', 'Income diversity', 'Capitalization', 'Operational Inefficiency', 'NPL', 'Growth' and 'Inflation' are not displayed.

Table 7: Robustness tests: Alternative diversification measures

Dependent variable: Tobin's Q. Method: System Generalized Method of Moments.								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Lagged Tobin's Q	2.25**	0.25**	0.28**	0.37***	0.26**	0.20	0.26*	0.24*
	(2.11)	(2.25)	(2.12)	(2.96)	(2.17)	(1.19)	(1.89)	(1.92)
International Concentration	0.12							
	(1.63)							
Regional Concentration			0.18**					
			(2.03)					
Global Ratio					0.03			
					(0.69)			
Intra-Regional Ratio							0.02	
							(1.43)	
ID ∗ EC[a]		0.18		0.20*		0.06		0.04*
		(1.44)		(1.73)		(0.69)		(2.11)
ID ∗ DC[a]		0.06		-0.05		-0.16		0.02
		(0.49)		(1.20)		(0.71)		(0.28)
Number of observations	698	698	698	698	698	698	698	698
Number of banks	139	139	139	139	139	139	139	139
Number of instruments	94	108	94	108	94	108	94	108
AR(2) p-value[b]	0.98	0.94	0.81	0.75	0.99	0.94	0.98	0.95
Hansen p-value[c]	0.41	0.61	0.28	0.35	0.28	0.25	0.30	0.36

See notes for Table 1.

[a] ID ∈ {'International Concentration', 'Regional Concentration', 'Global Ratio', 'Intra-Regional Ratio'}. For brevity, the estimated coefficients on 'Emerging', 'Income diversity', 'Capitalization', 'Operational Inefficiency', 'NPL', 'Growth' and 'Inflation' are not displayed.

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