The London School of Economics and Political Science

Essays on performance, corporate financial strategy and organization of multinational banks in Africa

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Declaration

I certify that the thesis I have presented for examination for the MPhil/PhD degree of the London School of Economics and Political Science is solely my own work.

I acknowledge doctoral funding from the London School of Economics and Political Science and fieldwork funding from the Institut Français de Recherche en Afrique in Nairobi.

I declare that my thesis consists of 73,457 words (including footnotes but excluding bibliography and appendices).

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Abstract

This thesis is composed of three stand-alone essays interlinked within the context of banking markets in sub-Saharan Africa. This research is motivated by the lack of comparative research on North-South and South-South foreign direct investment (FDI), especially on the service sector and on the African context, despite the rapid expansion of multinationals from developing and emerging countries over the last two decades. Theoretically, this thesis builds on strategy, corporate finance and organizational economics theories. The first chapter compares the financial performance of the foreign affiliates of global banks to that of regional African banks in sub-Saharan Africa over a 10-year period. The results suggest that affiliates of regional African banks are significantly less profitable (lower return on equity and higher cost income ratio) than those of global banks. Furthermore, the performance differentials are not strongly related to the quality and sectoral allocation of banks' loan portfolio but to differences in their access to funding. The second chapter examines the benefits and drawbacks of being part of a large banking group by analyzing the flows of internal capital between foreign affiliates located in an emerging economy, South Africa, and their global headquarters. It provides evidence for a support motive to internal funding, as foreign affiliates receive on average more internal group funding when their solvency ratio declines. However, using the event of the East Asian Crisis, I show that foreign affiliates' balance sheet are not immune to "reversal of fortune" when other members of their banking group need large amounts of internal capital to cushion capital losses, leading to abrupt reallocation of internal capital. Finally, using an instrument variable technique I find a positive impact of the volume of internal funding received by a foreign affiliate on its credit supply in the mortgage market. In the third chapter I examine how environmental and firm factors influence the organizational structure of multinational banks relying on survey data on commercial banks located in 14 sub-Saharan African countries. I find evidence of a positive and significant association between several indicators of environmental distance between host and home countries (institutional, economic and cultural distance) and centralization of operational processes inside multinationals. In addition, I find that lower quantity of "hard" information available on borrowers in the host markets and higher reliance on qualitative or "soft" information by bank managers is negatively and significantly associated with centralization.

To my parents, Jean-Claude and Dominique.

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Introduction

"They call it Africa. We call it home."
Standard Bank marketing campaign, 2013-2014

The slogan of the marketing campaign of the South African bank Standard Bank appearing on the billboards in the business districts of Nairobi, Dar es Salaam or Accra provides an excellent illustration to the area of research of this thesis and its core hypotheses. What the South African giant advocates, implicitly, is that it has a "home market advantage" in operating in Africa, enabling the group to understand well the particularity of the region's institutional and economic context, which may constitute an advantage over other foreign banks from developed countries. Conducting banking activities in sub-Saharan Africa poses several challenges, especially for banks accustomed to operate in wealthier and less volatile environments. A bank manager appointed by his multinational bank from London to head a newly opened subsidiary in Nairobi may ponder the following questions: How to operate in an environment where less than 20 percent of households have access to formal financial services[1], only 5 countries have credit reference bureaus[2] and 4 countries have deposit insurance schemes[3], and yet there may be up to 50 banks competing for the same customers in a given market? Are the size of your balance sheet and technical support from your group the key to unlock firm performance in these markets, or is ability to manage environments characterized by weak governance, lack of infrastructure and low GDP per capita the main driver of success? For the global headquarters the question of the best organizational form to operate in such environments poses itself: How much autonomy should they give to the subsidiary managers in Nairobi or Lagos with respect to strategic decisions such as opening new branches, or launching new banking products? Furthermore, should they provide

[1]Source: Making Finance Work For Africa, http://www.mfw4a.org/access-to-finance/access-to-finance.html

[2]These are Botswana (2006), Kenya (2007), Namibia (2006), South Africa (2007) and Swaziland (2006). Source: Triki and Gajigo (2012).

[3]Kenya (since 1988), Nigeria (1988-1989), Tanzania (1994), Zimbabwe (2003). Interestingly, South Africa has no explicit depositors' insurance scheme.

them with financial support through internal deposit or loans at favorable terms, and, if so, in which conditions?

These are important questions with practical applications that this thesis aims to answer.

Area of research and motivation

This research is motivated by the emergence over the last two decades of South-South foreign direct investment (FDI), from developing countries to other developing countries. After a "first wave" documented by scholars such as Kumar and Mc Leod (1981), Lall (1983) and Wells (1983), who focused on multinationals from South America and South and Southeast Asia, a "second wave" of developing country multinational enterprises (MNEs) has emerged from economies as diverse as China, Malaysia, Nigeria or Russia. Some of these multinationals have become household names, such as the conglomerate Tata, which has made acquisitions in different parts of the world, venturing from India to developed countries. Other, smaller groups, have embarked on an internationalization process over the last decade by focusing on their region, looking first for opportunities in their neighboring countries. This research analyzes the new phenomenon of developing multinationals by focusing on a specific sector, the banking industry, and a specific geography, sub-Saharan Africa.

As the internationalization of multinationals from developing countries and their implantation in other developing countries is gathering momentum, scholar research has started to re-examine South-South FDI, concentrating primarily on the manufacturing sectors and in particular the pharmaceutical and automotive industries (Bartlett and Ghoshal, 2000; Bhaumik, Driffield and Pal, 2010) and the white good (or home appliance) industry (Bonaglia, Goldstein and Mathews, 2007). It has often relied on case study methods (Ramamurti and Singh, 2009) examining strategies of multinationals from selected emerging countries, in particular India (Garg and Delios, 2007; Elango and Pattnaik, 2011), China (Child and Rodrigues, 2005; Li, 2007) and Brazil and Mexico (Casanova, 2009; Ramsey, Resende and Almeida, 2009), with only a few focused on Africa, essentially examining Chinese firms' investments in the region (Kaplinsky and Morris, 2006; Broadman, 2007). Furthermore, most of the literature on South-South FDI has focused on motives for internationalization, entry mode and location (Filatotchev, Strange, Piesse and Lien, 2007; Luo and Tung, 2007; Rui and Yip, 2008), or on the role of home country effects on internationalization and firms' capabilities (Yiu, Lau and Bruton, 2007; Cuervo-Cazurra and Genc, 2008; Khanna and Palepu, 2006, 2010; Gammeltoft, Pradhan and Goldstein, 2010), without directly comparing the performance and strategies of developed and

developing multinationals in a third country. As such, the literature in international business and strategy, which is the field of research that has been most vividly interested in developing and emerging multinationals, has neglected both the African region and the banking sector, the body of research being focused mostly on large manufacturing firms from emerging economies. In addition, scholars have tended to either adopt a very micro approach, focusing on one country or one firm, which limits external validity and generalizability of findings, or a very macro approach, analyzing aggregate FDI to developing countries, which makes difficult the examination of potentially important industrial and regional effects.

As mentioned above, service firms, and especially banks, which have different production and consumption characteristics from manufacturing firms, have seldom been studied from a South-South perspective. The literature on banking multinationals, which tends to be distinct from that of the international business and strategy literature, being more grounded in the fields of international economics and finance, has focused on the internationalization of banks from industrialized countries (Guillén and Tschoegl, 1999; Engwall and Wallenstål, 1988; Slager, 2005), and on the impact of foreign banks on competition in host countries' financial services from a developed country perspective (de Carmoy, 1990). Furthermore, academic research on the banking sector in developing countries has mainly focused on the impact of developed foreign banks on small and medium enterprise (SMEs) financing (Clarke, Cull, Martinez Peria and Sanchez, 2005; Detragiache, Tressel and Gupta, 2008; Gormley, 2007).

The gaps in the literature on South-South banking are very significant. Only a handful of economic studies have analyzed this phenomenon. The main questions addressed by these studies concern the motivations and determinants of developing country banks' entry into other developing countries (The World Bank, 2006; Van Horen, 2007; Petrou, 2007). For example, Van Horen (2007) and the Global Development Finance 2006 report of the World Bank both use Bureau Van Dijk's BankScope database to test the differences in the determinants of foreign entry into developing countries between banks from developing countries and banks from developed countries. Both studies find that banks from developing countries are more likely to invest in developing countries with weak institutions, where developed countries' banks are reluctant to go. In addition, Van Horen (2007) shows that foreign banks from developing countries are less profitable than foreign banks from high-income countries. Petrou (2007) uses a different approach by measuring managers' international strategic motivations using a survey of 112 new foreign venture banks worldwide. He finds that multinational banks from developing coun-

tries are more likely to follow clients from home, whereas multinational banks from developed countries tend to enter developing countries in search of foreign market opportunities.

While these first empirical studies are important in that they offer glimpses into the locational determinants and performance of South-South banking, they do not adequately address the question of the cause of the performance differential observed between foreign affiliates of developed and developing multinationals, neither do they examine the related questions of the corporate and organizational strategies of these developing banks when they enter foreign markets. This present research aims to do so by adopting an industrial and regional (meso-level) lens, with a comparative approach. More specifically, it explores empirically the financial performance as well as the corporate and organizational strategies of multinational banks with foreign affiliates in sub-Saharan Africa. It compares practices of global multinational banks from developed countries to that of multinational banks from Africa and from other emerging countries. In so doing, this research recognizes that foreign firms are an heterogeneous group and explores how the capabilities of multinational banks are related to their country of origin and international experience.

Objectives of the research and research questions

As this research aims to examine banks with different levels of firms' capabilities in sub-Saharan Africa I define three different categories of foreign banks based on their country of origin and degree of internationalization: global multinational banks from developed countries (Global MNB), multinational banks from emerging countries (Emerging MNB) and regional multinational banks operating in only one region, here sub-Saharan Africa (regional African MNB). Three sets of questions will be addressed.

Firstly, the question of the capabilities of these multinational banks. Compared to large global groups, on which types of firm capabilities do (regional) African MNB rely on to start and expand their international operations? Do these capabilities translate into sustainable competitive advantages?

Secondly, the question of the performance of these groups. How do African MNB compete with larger groups from developed countries? Do they compete in the same economies? Or do they internationalize at the geographic peripheries, in economies relatively shielded from global competition? And inside these markets, do they adopt a niche strategy or do they compete in the same segments as domestic banks and Global MNB? Finally, which group of banks obtains superior financial performance in sub-Saharan African markets?

Thirdly, the question of the internal organization of these multinationals. To what extent do foreign affiliates of the different categories of banks rely on the internal knowledge and financial resources of their banking group? What type of organizational structures do multinationals put in place? First, to what extent are foreign affiliates of multinational banks financially integrated to their group through internal capital markets? Are the flows of internal capital from headquarters to foreign affiliates primarily determined by support motives, prompting transfers of capital when the affiliates face funding constraints, or by investment opportunities in the host country? Second, do multinationals have centralized operational systems or do they tend to decentralize their organization so that subsidiaries managers, who are closer to the local information, have more control over decisions? What is the role of the institutional and economic environment in shaping the organizational structure that these multinationals adopt abroad?

Not only do these questions require a rigorous empirical analysis, with the collection of new data, they also call for the construction of a theoretical framework which incorporates firms' capabilities in a developing environment.

Theoretical framework

The emergence of multinationals from developing countries undertaking FDI in other developing countries poses a theoretical challenge as most researchers have studied multinational enterprises without differentiating between developing and developed countries MNEs (Dunning, 1977; Caves, 1996). According to the eclectic paradigm of Dunning (1977), multinationals are associated with three types of advantages: ownership-specific, location-specific and internalization-specific ("O.L.I." advantages). These "O.L.I." are the three conditions that must be met in order for firms to have a strong incentive to undertake foreign direct investments.[4] The O and L explain the reasons of the foreign activity of the enterprise. The I explains its form: internalizing the foreign activity in fully-owned subsidiaries or carrying it out through arm's length agreements in the market. The literature on MNEs has identified three types of ownership advantages (see Dunning, 2000):

1. Those related to the possession and exploitation of monopoly power, studied

[4]The *Ownership* and *Location* advantages must be considered together: first, the specific ownership of this firm compared to the ownership advantages of the other firms in the host L, and second, how the host L matches with the O of the firm: "Only if both of the right dispositions of resource endowments exist between countries and firms of different nationalities will international production take place [...] There is one final strand to the eclectic theory of international production. The possession of ownership advantages determines which firms will supply a particular foreign market, whereas the pattern of location endowments explains whether the firm will supply that market by exports (trade) or by local production (non-trade)." (Dunning, 1980:11).

by the industrial organization scholars (Bain, 1956; Caves, 1971; Porter, 1980, 1985).

2. Those related to the possession of a bundle of scarce resources and capabilities that are valuable, rare, inimitable and non-substitutable, such as presented in the resource based view of the firm (Barney, 1991) and the evolutionary theories of the firm (Nelson and Winter, 1982).
3. Those related to the competencies of the managers of the firms to identify, evaluate and coordinate resources and capabilities in the most efficient way. These advantages, that are more management than firm specific, are stressed out by organizational scholars such as Prahalad (1987).

However, as Bonaglia, Goldstein and Matthews (2007) observe, "the striking feature of internationalization by latecomer MNEs from emerging economies is that they do not have these O.L.I. advantages to start with" (2007:371). Recently, two explanations have emerged as an attempt to explain the increase of South-South FDI, which can both be included within the O-L part of the eclectic paradigm. These explanations are outlined below:

Ability to manage "institutional voids" as an ownership advantage. The idea that multinationals from developing countries have an "institutional voids" advantage has been initially developed by Khanna and Palepu (2006, 2010). Multinationals from emerging or developing countries are better able to navigate business environments characterized by institutional voids, defined as the absence of specialized intermediaries, regulatory systems and contract-enforcing mechanisms. Because multinationals from developed countries are used to operating in economies with well-developed institutional infrastructures, they find it difficult to deploy their business models in developing countries. By contrast, managers of multinationals from developing countries are more familiar with the context of institutional voids and are better able to identify and meet customers' needs. International business and strategy scholars such as Cuervo-Cazurra and Genc (2008) have provided econometric tests of the hypothesis that the disadvantage of dealing with poor governance at home can turn into an advantage when making FDI. Their findings indicate that multinationals from developing countries are more prevalent among the largest foreign firms in least developed countries that have weaker regulatory quality and more corruption.

The "similar demand composition" argument. The second explanation for South-South FDI goes back to the Linder hypothesis (Linder, 1961) in international trade according to which countries will trade intensively with others that share similar consumption patterns. In a recent paper Fajgelbaum et al. (2011) develop a theoretical model to show that given that countries tend to specialize in goods with large

domestic markets and that these are likely to be higher quality goods in countries with many high-income consumers and lower quality goods in countries with many low-income consumers, firms serve destinations that have a similar demand composition to their home market via FDI and destinations that have a different demand composition from their home market via export sales. Using data for a broad sample of countries, they show that both the volume of subsidiary sales and the stock of FDI originating in a country and destined for another are negatively related to the difference in per capita income between the pair, after controlling for fixed effects in the origin and destination countries and the geographic distance between them.

Both concepts can be easily integrated in an O.L.I. framework where firms with firm-specific ownership advantages ("O") decide to locate their production in countries ("L") where they will be better able to exploit this advantage. However, these two strands of research while useful to examine and explain the emergence of South-South FDI are less relevant when one analyzes the co-presence of multinationals from developed and developing countries in a third host developing country. More specifically, while they explain why multinationals from developing countries may have an advantage over those from developed countries in operating in other developing countries, either related to an ability to navigate institutional voids or to the similarity of the demand, and in so doing provide an explanation for the observed South-South FDI pattern in some industries, they do not explain the specific pattern that we observe in the banking industry in sub-Saharan Africa, which is the coexistence of North-South and South-South FDI.

Furthermore, theories of multinational enterprises (MNEs) and their empirical examinations have traditionally been based on FDI between industrialised countries in the manufacturing sector (cf. "OLI" framework of Dunning, 1977; Markusen and Venables, 1998; Helpman, Melitz and Yeaple, 2004), and as such may be ill-adapted to the analysis of multinational banks in sub-Saharan Africa.

In a way, focusing on the banking sector adds a layer of difficulty over the developing context: banks do not behave as manufacturing firms. Firstly, the trade-off between trade and FDI is not very relevant for retail and commercial banks given that most of their banking products (consumer loans, demand deposits, etc.) are generally not tradable across borders. In addition the banking industry is characterized by the typically low costs of establishing a presence in a new foreign market relative to the resources of the organization (Gray and Gray, 1981), while this cost is an important factor in the trade versus FDI decision for manufacturing firms. Secondly, multinational banking firms are characterized by a second type of asymmetry of information, that between bank managers and their clients, on top of the infor-

mational asymmetry issues and principal-agent conflicts between headquarters and subsidiaries that multinational firms from all sectors have to deal with. Thirdly, unlike the manufacturing sector, product differentiation in banking only offers a short-term competitive edge because new banking products are easy to imitate (Gray and Gray, 1981:42-43). The lack of opportunities for product differentiation is however mitigated by the fact that consumer switching costs are high.

These characteristics specific to the banking sector will modify or alter the factors influencing the internationalization decision. Despite posing theoretical challenges, the banking sector offers advantages for empirical research given the large availability of data. Indeed, contrary to manufacturing firms, most commercial banks are large firms with financial information that is available publicly.

This research builds on this previous literature both in the field of international economics, international business and strategy to construct a theoretical framework in order to make predictions on the performance and organizational strategies of foreign banks from developed and developing countries in sub-Saharan Africa. More specifically, this research rests on the idea that firms are heterogeneous in their possession of capabilities, and that the possession of higher capabilities translates into superior performance. While we owe to an extensive literature in strategy the concept of capabilities (Penrose, 1959, 1960; Wernerfelt, 1984; Barney, 1991; Teece, Pisano and Shuen, 1997; Winter, 2003), papers in this tradition lack an operational definition of capabilities with which one could formulate predictions. To this end I rely on Sutton (2012) theoretical framework, which defines firms' capability as a combination of quality and productivity and which integrates the fact that capabilities are clustered geographically. Sutton (2012) postulates that some firms are more productive than others, and this tends to be observed at a geographic level, for instance along the traditional divide developing countries (firms)/developed countries (firms). I incorporate both the "institutional voids advantage" and the "similar demand" arguments to the concept of capabilities by hypothesizing that originating from a developing country mitigates the sunk cost of adaptation into a new host country for developing country firms engaging in South-South FDI.

More specifically, I define two types of capabilities. I label vertical capabilities those that enhance firms' productivity and product quality. Firms can be ranked by their level of vertical capabilities. I label horizontal capabilities those that reduce adaptation costs related to entry into a new foreign country due to prior experience in operating in a similar environment. The possession of horizontal capabilities depends on firms' international experience and the characteristics of the institutions and of the demand in their home countries. The exploitation of horizontal capabil-

ities is context-specific. While vertical capabilities affect prices and marginal cost, horizontal capabilities affect the sunk adaptation cost of FDI incurred at entry.

Finally, this research uses the literature on internal capital markets (Stein, 1997 and Morgan, Rime and Strahan, 2004) to examine internal capital allocation inside multinational banks with foreign affiliates in Africa. It also relies on the organizational economics literature concerned with decision-making and transfer of authority in organizations (Aghion and Tirole, 1997, Dessein, 2002, Stein, 2002, Alonso, Dessein and Matouschek, 2008) to explore the roles of (external) environmental and (internal) firm factors on centralization of authority inside multinationals.

Table 1 below summarizes the theoretical space this research uses.

Table 1: **Theoretical space**

Chapter 1 **Firms' capabilities and performance**	Chapter 2 **Internal capital allocation inside multinationals**	Chapter 3 **Organizational Structure: (de-)centralization**
Sutton (2012) Khanna and Palepu (2006, 2010) Winter (2003) Teece, Pisano and Shuen (1997) Amit and Schoemaker (1993) Barney (1991) Wernerfelt (1984) Penrose (1959)	Morgan, Bertrand and Strahan (2004) Stein (1997, 2002) Williamson (1970)	Dessein and Santos (2006) Dessein (2002) Baker, Gibbons and Murphy (1999) Stein (1997, 2002) Aghion and Tirole (1997)

Hypotheses

The central hypothesis of this research is that banks from developed countries operating in developing countries have a productivity advantage derived from scale economies, automated processes and large access to bank funding, while banks from developing countries have a local information and managerial advantage, related to their ability to navigate "institutional voids" (Khanna and Palepu, 2006) which facilitates their adaptation in other developing countries. This will have consequences both for the financial performance of foreign affiliates of multinational firms in host countries and for the organizational strategies of multinational firms. In terms of performance, institutional voids advantage should reduce the adaptation cost of foreign affiliates of banks from developing countries when they enter other developing markets. However, once foreign affiliates of developed country firms have incurred this cost and managed to adapt their products and processes to the host developing

environment, they should record higher financial performance than foreign affiliates from developing countries, related to their productivity advantage. Furthermore, the fact that the possession of capabilities is heterogeneous among firms will have implications for their organization. As will be further detailed in the following chapters, I hypothesize that foreign affiliates of banks from developing countries have more autonomy from their headquarters over operational processes and rely less on internal funding, while foreign affiliates of banks from developed countries have less autonomy and rely more on parent bank funding.

Data sources

I rely on four different sources of data. The first one is the Bureau Van Dijk's BankScope database, from which banks' financial and ownership information is collected. I obtain a panel of 657 banks (foreign and domestic) operating in sub-Saharan Africa over a 10-year period. In addition, I complement this data with loan data obtained directly from banks' annual reports on sectoral loan portfolio allocation, for a sample of 106 banks publishing this information.

Two other databases are constructed to examine banks' internal processes and organizational structure. First, to analyze internal capital markets inside multinational banks, on which data is rarely available, I rely on quarterly data of internal funding flows between foreign affiliates located in South Africa and their group. This data is available on the South Africa's Central Bank (Resbank) website, for the 82 banks operating in South Africa during the sample period of 1993q1-2007q4. In addition, to further examine the relations between headquarters and their foreign affiliates in Africa, especially the degree of autonomy of affiliates vis-à-vis their headquarters, I use proprietary bank survey data. Most of this data was collected during fieldworks in Kenya, Tanzania and Ghana, which are among the countries with the highest number of foreign banks in sub-Saharan Africa. 59 banks were surveyed during these three fieldworks, representing on average over 65% of the banks in these three countries. This fieldwork data is completed by data from 18 banks in 11 other sub-Saharan African countries to which I distributed the survey questionnaire by email. In total, I obtain a sample of 77 banks in 14 countries.

Banking markets in sub-Saharan Africa

The research is focused on the context of banking in sub-Saharan Africa. As will be further explained in Chapter 1, this region is an ideal setting to test the research hypotheses. First, Africa is often described as the "last frontier market", transitioning

from very low levels of developments through rapid economic growth, with a fast-changing private sector and a rising middle class. As such, it provides an extreme variation in institutional and economic environments, between host African countries and home (developed) countries. This variation, coupled with intra-regional differences in growth and development between African economies allows me to examine how the local context influences the exploitation of capabilities and as such, the performance and internal organization of foreign affiliates.

Second, acquisition of information is at the core of the banking activity. This requires a good knowledge of the local context, especially of customers and local practices. This is a particularly strong challenge in Africa where information on borrowers often lacks transparency, especially for organizations used to operating in developed markets, with well-established information agencies such as credit reference bureaus or credit rating agencies. In this sector, experience of the local environment should confer strong advantages. As an illustration, when asked about the possibility to expand their lending activities into the micro and small entrepreneurs segment, the CEO of the Kenyan subsidiary a large Anglo-Saxon bank interviewed for this research replied: "Banks that are able to do it well are doing it [micro-SME lending], but you need to be on the ground. They have good Monitoring and Information Systems. If we were to do it here, we would need to do it as well "on the ground". The worst we could do would be to hire a bunch of MBAs and to put them in charge of the job." In other words, being able to understand the local context, to navigate "institutional voids" and to understand the characteristics of the local demand should constitute key capabilities, even more salient than in developed environments where information is more transparent and readily accessible to all.

Furthermore, the choice of this geographic and sectoral context is also based on the fact that sub-Saharan Africa is the developing region of the world that has the largest proportion of foreign-owned banks (Claessens and Van Horen, 2012) and that many African banks have started their international expansion in their home region over the last decade. The co-existence of foreign affiliates of global banks, emerging banks and regional African banks in the region provides the variation in foreign firms' capabilities necessary for the research. Banking markets in Africa have evolved rapidly over the last decades, with financial innovations and regulatory changes, and they have become stronger and more competitive (see Chapter 1). As a result, banks' performance should be more tightly linked to their capabilities than in markets where a handful of participant banks enjoy monopoly advantages.

As mentioned above, this research has a regional focus. Sub-Saharan Africa is admittedly a highly diverse region and the presence of foreign banks in sub-Saharan

Africa is heterogeneous and depends on factors such as banking regulations and strength of the local economy (see Chapter 1). Managing a bank in Liberia is not the same as managing it in Kenya. However, despite important legal, cultural and institutional differences between East, West or Central Africa, these countries face common challenges with regards to their banking markets, among which highly concentrated banking markets, low levels of intermediation and the small size of banks' balance sheet, as will be further detailed in Chapter 1. In addition to these commonalities, a regional level of analysis is adopted in this research given that African banks tend to expand regionally across the continent and that global and emerging banks tend to administer their operations on a regional basis.

As evoked above, it is a particularly interesting time to examine banking markets in sub-Saharan Africa. The combination of financial innovation, banking reforms aimed at consolidating the sector and increasing information on borrowers via licensing of credit reference bureaus, and more generally bank competition, is changing the banking landscape by helping to close the financing gap for Small and Medium Enterprises (SMEs) and increasing the offering of banking products to retail customers (Lhonneur; 2013). While it is true that banking markets in Africa are still relatively underdeveloped, with only four countries having explicit depositors insurance scheme[5], significant efforts have been made to improve the quality of the banking sector and regulations have been developed to reinforce the financial sector's stability, especially through increases in minimum capital requirements (see Chapter 1). An important movement of privatization has taken place in the 1990s to improve banks' efficiency (Allen, Otchere and Senbet, 2010) and new opportunities have opened up for foreign banks as important barriers to investment have been removed.

However, banks are still facing many constraints. Competition and access to customer deposits were the two top challenges most often cited by bank managers surveyed for this research. 87% of the banks interviewed perceived competition in the deposit segment to be strong or intense, while in the corporate segment 82% of the bank managers evaluated the competition as strong or intense. Banking regulations are generally not perceived as creating obstacles for banks' activities (62% of the banks considered that banking regulations were not or were only a minor obstacle to their business operations) and neither are employment laws (79% of respondents considered that they did not constitute an obstacle or only constituted a minor obstacle to their operations). However, the court system was often cited as an obstacle by bank managers due to its bureaucratic procedures and the overall

[5]Kenya, Tanzania, Nigeria, Zimbabwe.

slowness of the judiciary process. Indeed, 62% of the respondents considered that the court system was an important or extreme obstacle for their activities. In terms of skills, most of the respondents indicated that there is a large pool of skilled people, especially in Kenya, but that retention of talent could be challenging, as there is a strong competition for skills, especially in key sectors such as risk management. In total, 32% of the bank managers interviewed considered that the difficulty to hire managers with the right skills was an important or extreme obstacle to their business, while 25% considered that it was a moderate obstacle. Finally, the views expressed by the bank managers interviewed may give hope for the future of SME financing and the general deepening of the sector. 70% of the respondents considered that SMEs offered good financing opportunities. In fact, despite obstacles such as the lack of collateral, the lack of information or the lack of strong SME management, some respondents mentioned that their bank was disengaging from the corporate segment, due to the toughness of its competition, to reallocate their loan portfolio towards the SME segment which offers higher returns.

Contributions

The main contributions of this research are the following:

Firstly, it is, to the best of my knowledge, the first comparative analysis of the performance of North-South and South-South FDI in the banking sector in sub-Saharan Africa. It offers an in-depth empirical analysis of the drivers of banks' performance. Theoretically, it poses the question of the source of capabilities, and proposes a new way to analyze capabilities in relation to foreign direct investments, distinguishing between capabilities that increase productivity and capabilities that decrease the sunk cost of adaptation when operating in a new (foreign) economic environment. Secondly, this research analyzes the relation between headquarters and their foreign affiliates relying on direct observations. First, by tracking net internal capital flows from headquarters to their foreign affiliates, thanks to rarely available internal capital data, it analyzes financial relations that take place inside multinationals. Second, it examines the transfer of authority from headquarters and subsidiaries, relying on unique survey data on banks located in 14 countries in sub-Saharan Africa. While a very rich theoretical literature exists on these aspects, it is one of the first empirical analysis of (de-)centralization between headquarters and their foreign affiliates in developing countries. Finally, one of the overall contribution of this research with respect to the literature on banking and finance in developing countries is precisely its focus on the supply-side of bank financing, on which evidence has been limited especially concerning Africa, while the demand side of bank finance

is much better known, especially concerning the obstacles faced by firms to access capital (Schiffer and Weder, 2001; Beck, Demirgüç-Kunt, and Maksimovic, 2005; and Beck, Demirgüç-Kunt, Laeven, and Maksimovic, 2006).

Structure of the thesis and overview of the main findings

While the first chapter examines the impact of ownership on banks' revealed capabilities as measured by different indicators of banks' performance one has to look "inside the firm" to examine corporate strategies. This task is carried out in the second and third chapters. The second chapter focuses on the allocation of a specific resource, internal capital, inside multinational banks and examines how parent bank support can effectively constitute a source of advantage, by reducing interest expenses for the foreign affiliate, and constituting a source of extra capital in times of crisis. The third chapter focuses on the organizational structure of multinationals, examining the transfer of decision-making from headquarters to subsidiaries in sub-Saharan Africa.

Findings from these three chapters highlight the fact that developing multinationals do not necessarily have *per se* an institutional voids' advantage, defined as the ability to operate in weak institutional environment. Global banks from developed countries, which have been operating in Africa for several decades, are well-equipped to overcome institutional voids problems. On a regional scale, controlling for time and host country effects, the foreign affiliates of Global MNB consistently outperform those of regional African MNB, along several financial performance measures (especially return on equity and cost income ratio). Furthermore, I find little evidence of market segmentation along customer niches. Although foreign affiliates of African MNB tend to offer relatively more loans to the SME segment than Global MNB, the difference is not significant. I find evidence of self-selection into host countries, with African MNB more likely to operate in countries with weaker banking regulations, and Global MNB being more present in countries with higher GDP growth, but these differences in geographic prevalence explain only a small part of the performance differences between these two groups of banks. Overall, I find that the performance differences between Global and African MNB do not lie in quality differences of their loan portfolio but in their differential access to low cost sources of funding, in particular customer demand deposits.

Evidence from South Africa indicates that foreign affiliates of Global MNB tend to receive more funding from their parent bank than Emerging MNB[6], which might

[6]Note that there are unfortunately no affiliate of regional African banks in South Africa during the sample period.

also be another source of strength for foreign affiliates of Global MNB. Concerning the organizational structure that these multinationals adopt, the empirical results indicate that when institutional distance (or asymmetry) between host and home countries is high multinationals tend to opt for a more centralized organization, with control over operational processes and decisions retained at the top of the hierarchy. As such, Global MNB have a much more centralized organization than Emerging MNB and regional African MNB. Furthermore, Global MNB also tend to establish intermediate regional headquarters, often located in South Africa, which allows headquarters to retain enough control, while making sure that the decision-maker is sufficiently close to the local information.

Finally, while this thesis focuses on questions of firm performance, organizational structure and internal capital market, in other words focuses on firms, it has also implications for the financial development of host countries. The banking sector is often the most important element of financial system in developing economies, as stock markets tend to be underdeveloped. Financial development and economic growth are robustly correlated, although the question of causality is difficult to approach empirically (see Levine, 1997 for a discussion). In any case, to which sector banks lend to, how they screen and monitor borrowers will affect the economies, especially in developing countries where the SME sector is the backbone of the economy and a large purveyor of formal (and informal) jobs (see research by Ayyagari, Beck, and Demirgüç-Kunt, 2007). This thesis, by examining the locational, loan portfolio and organizational strategies of different groups of multinational banks provides some guidance for policy-making which will be detailed in each of the three chapters.

Chapter 1

Financial performance of foreign banks in developing countries

Evidence from sub-Saharan African banking markets

1.1 Introduction

The last two decades have been marked by the steady rise in foreign direct investment (FDI) flows from developing countries to other developing countries (UNCTAD, 2011)[1]. These FDI flows between developing countries (South-South FDI) challenge traditional theories of multinational enterprises (MNEs) based on FDI between developed countries (North-North FDI) in the manufacturing sector (Dunning, 1977; Markusen and Venables, 1998). Studies both in the field of international business and economics have highlighted the link between firms' productivity and their FDI activities (Dunning (1977); Melitz (2003); Helpman, Melitz and Yeaple (2004)). These analyses suggest that firms engaged in foreign activities (and especially firms undertaking foreign direct investments) are more productive than purely domestic firms in their home country (Helpman et al., 2004). In addition, according to the OLI paradigm (Dunning, 1977; 2000), the greater the competitive advantages of the foreign investing firms, *ceteris paribus*, relative to those of other firms Ů and particularly those domiciled in the country in which they are seeking to make their foreign investments Ů the more they are likely to be able to engage in, or increase, their foreign production.

[1]"In 2010, for the first time, developing economies absorbed close to half of global FDI inflows. They also generated record levels of FDI outflows, much of it directed to other countries in the South. This further demonstrates the growing importance of developing economies to the world economy, and of South-South cooperation and investment for sustainable development" (UNCTAD, 2011:2).

However, the coexistence of South-South FDI and North-South FDI[2] in a same developing market is not well explained by these theories if we consider that MNEs from developing countries should have lower levels of firm's capabilities than MNEs from developed countries (Sutton, 2012), and therefore should find the competition of these developed-country MNEs in developing host countries very challenging. Indeed, the recent literature on developing-country MNEs has shown that these multinationals face various additional firm-specific obstacles when going abroad: they lack experienced international executives (Ghemawat and Hout, 2008; Luo and Tung, 2007; Ramsey, Resende and Almeida, 2009) due to their position of late-movers compared to developed-country MNEs (Bartlett and Ghoshal, 2000), they have weak corporate governance systems (Luo and Tung, 2007; Sauvant, Mendoza and Ince, 2008) and they lack firm-specific advantages such as technology and innovation (Luo and Tung, 2007). These perceived relative disadvantages are evident in the low prevalence of developing-country MNEs among the largest firms in the world listed in the *Fortune Global 500* (Cuervo-Cazurra and Genc, 2008).

However, an alternative view, reflected in the "institutional voids' advantage" hypothesis (Khanna and Palepu, 2006, 2010), is that MNEs from developing countries undertaking South-South FDI have an adaptation advantage over MNEs from developed countries undertaking North-South FDI. This advantage comes from their ability to deal with difficult institutional environments, characterized by "institutional voids" defined by Khanna and Palepu (2006) as the absence of specialized intermediaries, regulatory systems and contract-enforcing mechanisms; ability that they have developed in their home (developing) country. In addition to an institutional voids' advantage related to specific managerial abilities, MNEs from developing countries operating in other developing countries could also benefit from an advantage related to the similarity of the demand (determined by per capita income levels) between their home and their host countries[3]. This should make them better able to offer products that are well-adapted to the characteristics of the demand in their host countries.

By contrast, multinationals from developed country tend to focus exclusively on the smaller top market segment in host developing countries, finding it difficult to serve the middle or bottom segment, composed of customers only able to afford less

[2]Multinational firms from developed countries undertaking direct investments in developing countries.

[3]This is similar to the Linder hypothesis (Linder, 1961) in international trade according to which countries will trade intensively with others that share similar demand or consumption patterns. Recently, Fajgelbaum, Grossman and Helpman (2011) have shown both empirically and theoretically that FDI is more likely to occur between countries with similar per capita income levels.

sophisticated and expensive products (Khanna and Palepu, 2006). Furthermore, expatriate managers of developed multinationals are more used to operating in markets with stronger governance. However, this potential adaptation disadvantage which affects developed MNEs could be mitigated by previous experience in similar developing markets, or by the passage of time. High sunk adaptation costs incurred in the first operating years to learn how to circumvent institutional voids and to adapt their products to the local demand could progressively be offset by the cost advantages offered by scale and efficiency that characterize high productivity firms. These two opposite forces, adaptation costs versus productivity level, and how they interact with environmental experience to impact firms' performance is the focus of this chapter.

This research will examine the following questions: Can experience in operating in environments with weak institutions and low GDP per capita compensate for lower levels of productivity when operating in other developing environments? If so, is it sustainable? How does the possession of specific capabilities translate into particular foreign strategies? In particular, do developing MNEs self-select into specific host countries and, within these countries, into specific market segments? This chapter aims to answer these questions by focusing on the banking sector in sub-Saharan Africa and by comparing the financial performance of foreign affiliates of multinational banks from different home countries and with different degrees of internationalization.

Building on the capabilities literature (Wernerfelt, 1984; Barney, 1991; Teece, Pisano and Shuen, 1997) and on recent theoretical development in the economics literature integrating the management concept of capabilities to analyze competition between firms (Sutton, 2012), I develop a theoretical framework to analyze and compare the performance of foreign-owned affiliates of multinationals from developing and developed countries. More specifically, I define two types of capabilities. I label vertical capabilities those that enhance firms' productivity and product quality. I label horizontal capabilities those that lower adaptation costs related to entry into a new foreign country due to prior experience in operating in a similar environment. The possession of horizontal capabilities depends on firms' international experience and the characteristics of the institutions and of the demand (determined by the level of income) in their home countries. While vertical capabilities affect prices and marginal cost, horizontal capabilities affect the sunk adaptation cost of FDI incurred at entry. I then formulate two sets of hypotheses, predicting (1) the higher operational performance of multinational firms with higher vertical capabilities, controlling for their horizontal capabilities in a given host country, and (2) the

negative (positive) effect of institutional and demand difference (similarity) between host and home country on foreign affiliates' performance.

As this research focuses on comparing the performance of foreign affiliates of developed and developing MNEs in a same developing market, the sub-Saharan African region is a particularly good setting to test the hypotheses. First, this context offers an "extreme case study" (Gerring, 2007). African economies are often at the bottom of the world rankings of countries in terms of GDP per capita, human development or governance (see World Bank, World Development Indicators). Given that "concepts are often defined by their extremes" (Gerring, 2007:101), the exacerbated environmental asymmetry between host and home countries for developed MNEs in sub-Saharan Africa facilitates the empirical examination of the theory. In addition, while African countries face many similar economic and institutional issues, they are also at different stages of development. This intra-regional heterogeneity offers variation in host environment, which allows for an examination of the relative advantage conferred by experience of the local environment. In particular, developing MNEs' ability to manage institutional voids should manifest itself more clearly in countries where governance is extremely weak.

In addition, I adopt a sectoral lens to increase the homogeneity of the sample given that the exploitation of vertical capabilities and horizontal capabilities are sector-specific. The banking sector is an interesting and appropriate industry to test the hypotheses. First, contrary to sectors such as the extractive industry or the telecommunication industry, barriers to entry are relatively low. As such, there is a relatively high number of participant firms in the market, with different levels of capabilities. In particular, the financial sector is an important recipient of FDI in Africa, representing 80% of total cross-border M&A purchases in the region in 2010 and 7% of total greenfield FDI projects in 2011 (UNCTAD, 2012:40). Sub-Saharan Africa is the developing region of the world that has the largest proportion of foreign-owned banks.[4] More importantly, African banking markets over the last 10 to 15 years have been characterized by the increased presence of foreign banks from the African region itself, often prompted by privatization programs targeting state-owned banks. As a result of these new flows of FDI, several types of banks now co-exist in sub-Saharan African markets, possessing varying levels of vertical capabilities and horizontal capabilities: global multinational banks from developed countries, emerging banks from Asia or the Middle East, regional African banks and

[4]In 2009, 54% of banks in sub-Saharan Africa were foreign banks (from 32% in 1995), while this percentage was only 25% in East Asia and Pacific (from 20% in 1995), 14% in South Asia (from 7% in 1995), 42% in Latin America and the Caribbean (from 28% in 1995) (Claessens and Van Horen, 2012).

domestic African banks (Table A.1 in the Appendix). This provides the variation in firms' capabilities necessary to test the research hypotheses. In addition, the core of the banking activity deals with gathering and assessing information on borrowers to mitigate risk. In this sector, knowledge of the local environment and ability to negotiate institutional voids is crucial, especially, as is the case for Africa, in low-transparency economies with a large informal sector and limited or non-existent formal documentation (Beck, Maimbo, Faye and Triki, 2011). As a consequence, in this sector the advantages conferred by local experience ("horizontal capabilities") should be particularly salient.

Finally, given the low level of development of stock and bond markets in sub-Saharan Africa, banks play a crucial intermediation role, and represent the main source of external capital for companies. The region is characterized by a large unbanked population, partly related to the difficulty to access banking services, especially in rural areas, and to the cost of these services. If regional African banks are better able to operate in these markets, and in particular to cater to low-income populations, entry of this group of foreign banks may alleviate local credit constraints. By comparing the financial performance of foreign banks in sub-Saharan Africa, this research hopes to shed light on the implication of the competition between banks with different levels of capabilities for the financial development of the host banking markets. As such, sub-Saharan Africa may offer lessons for other regions of the world with respect to foreign banks' entry and financial deepening.

I use panel data from the Bureau Van Dijk's BankScope database to obtain financial information on banks located in sub-Saharan Africa over the 2003-2012 period. Comparing the performance of the subsidiaries of global banks from developed countries to that of the subsidiaries of regional African banks I find that the former perform significantly better than the latter, using return on equity as the dependent variable, even after controlling for entry and exit of banks, and including a set of firm and host country controls as well as time and host country fixed effects. This result supports the first hypothesis. Furthermore, and consistent with expectations, I find that the lower financial performance of regional African banks is related to lower operational efficiency, as measured by the cost income ratio. However, contrary to the second hypothesis, I find that regional African banks do not perform relatively better than global banks in sub-Saharan African countries with weaker institutional environment and lower levels of per capita income. As such, for regional African banks, the "institutional voids' advantage" hypothesis (Khanna and Palepu, 2006, 2010) does not seem to hold. Examining separately banks' income and expenses, I find that the differences between global banks and regional African banks in profit

before tax is primarily related to differences in their ability to control expenses, while I find no significant differences in their ability to generate interest revenue. Differences in interest expenses (as a percentage of interest-bearing liabilities) are driven by a different composition of the liability mix: global banks have better access to low-interest bearing short term funds. I further investigate alternative reasons that might drive the results, more specifically composition effects related to the geographic location of banks across the region and the allocation of their loan portfolio. I find evidence of self-selection of banks into host countries, regional African banks having higher market shares in countries with weaker banking regulation, and global banks being more present in countries with higher GDP growth. However I find that characteristics of the host countries in which these two groups of banks are located explain only about 10% of the performance difference between these two groups. Finally, comparing the loan portfolio allocation of the different groups of banks along three dimensions (maturity of loans, business segment or type of customers, and economic sectors) I do not find any strong evidence of market segmentation.

This chapter offers three contributions to two different fields. First it contributes theoretically to the strategic management literature by offering a new approach to examine multinational firms' capabilities, differentiating between capabilities affecting firms' productivity, and capabilities affecting their adaptation cost when operating abroad. This distinction is relevant as these two types of capabilities, which I have labeled vertical and horizontal capabilities, are unequally distributed across firms and the possession of one type of capabilities may, to a certain extent, compensate for the lack of another type of capabilities, with consequences for the growth of firms.

Second, it contributes empirically to the international banking literature. More specifically, this chapter offers a first analysis of the performance of foreign multinational banks in sub-Saharan Africa. So far the literature on banking in sub-Saharan Africa has been very limited, despite the rapid evolution and recent dynamism of the banking sector in the region. Studies have often focused on a specific country, such as Uganda (Beck and Hesse, 2009), Kenya (Beck and Fuchs, 2004) or Nigeria (Beck, Cull and Jerome, 2005) or on the demand side of the banking market in sub-Saharan Africa, especially through the World Bank's Enterprise Surveys[5]. This research offers a regional perspective on the performance of banks which have a presence across the continent.

Third, it also contributes to the international banking literature by offering a comparison of the performance, as well as of the lending and location strategies (in

[5] http://www.enterprisesurveys.org/

terms of loan portfolio allocation and geographic location) of different categories of foreign banks, especially comparing the performance of global banks to that of the more recently expanding regional African banks. Empirical research on the banking sector in developing countries has mainly focused on the impact of foreign banks from developed countries on small and medium enterprise (SMEs) financing in host developing countries (Clarke, Cull, Martinez Peria and Sanchez, 2002; Detragiache, Tressel, and Gupta, 2008; Giannetti and Ongena, 2009), and very few studies have compared the performance of different types of foreign banks as those have traditionally been examined as a homogeneous group, without distinguishing between developing and developed MNEs. However, this comparison matters as the strategies and performance of foreign banks have implications for the development of host banking markets, and both elements may differ between developing and developed foreign banks. Recently, economists such as Van Horen (2007), Claessens, Van Horen, Gurcanlar and Mercado (2008) and Claessens and Van Horen (2012) have used the BankScope database from Bureau van Dijk to examine the issue of foreign banks' entry in a more refined manner, by looking at the origin of foreign banks in developing countries. The present research contributes to this recent strand in the banking literature by focusing on sub-Saharan African banking groups and by providing a detailed examination of the drivers of bank performance.

The rest of the chapter proceeds as follows. Section 1.2 introduces the theoretical framework and develops the hypotheses to be tested. Section 1.3 describes the sample and presents summary statistics of the data. In Section 1.4 I test the hypotheses in the context of banking in sub-Saharan Africa. In Section 1.5 I further examine the channels of bank performance by decomposing the profit measure into its accounting components. Section 1.6 investigates alternative explanations, investigating whether banks' performance is driven by composition effects related to differences in the geographic presence of banks across the region and to segmentation in the loan market. Section 1.7 discusses the results and Section 1.8 concludes.

1.2 Theoretical framework and hypotheses development

1.2.1 Vertical and horizontal firms' capabilities

At the root of this research lies the idea that firms are heterogeneous in their possession of resources and capabilities[6] and that the possession of better capabilities translates into superior performance, which explains empirical evidence of persistent performance differences between firms within the same industry (Rumelt, 1991). The vast literature on the resource based view of the firm (Penrose, 1959, 1960; Wernerfelt, 1984; Barney, 1991) and theories of organizational knowledge, learning and capabilities (Teece, Pisano and Shuen, 1997; Winter, 2003) have posited that performance differences arise from firm-specific capabilities that cannot be easily diffused to other firms. According to the resource-based view, the superior performance enjoyed by some firms does not rely on the building up of barriers to entry or other strategic investments as elaborated in the Strategy-Conduct-Performance paradigm (Bain, 1956), but on the possession of resources or capabilities that are firm-specific and scarce. The broad definitions offered by the resource-based view literature hints at the difficulty to identify them in the first place. According to Wernerfelt, (1984:172) by resource is meant "anything which could be thought of as a strength or weakness of a given firm". Barney, in a subsequent paper, refines slightly the concept by defining resources as "all assets, capabilities, organizational processes, firm attributes, information, knowledge, etc. controlled by a firm that enable the firm to conceive of and implement strategies that improve its efficiency and effectivenes" (1991:101). Despite the broadness of these definitions, a key element for the analysis of firms' performance is that these resources are difficult to imitate and that they confer firm-specific advantages that are sustainable.

Vertical capabilities and productivity. I follow Sutton's theoretical framework on firms' capabilities (2012), as it examines firms' capabilities in an international setting, and offers a simple way to modelize the fuzzy concept of capabilities. In this framework, the level of capability achieved by a firm is determined by the pair (u, c) formed by the quality of its products, labeled u, and its cost, with c rep-

[6] In this research, I follow Amit and Shoemaker (1993:35) definition of resources as the stock of available factors that the firm owns and of capabilities as the firm's capacity to deploy these resources: "The firm's Resources will be defined as stocks of available factors that are owned or controlled by the firm. [...] Capabilities, in contrast, refer to a firm's capacity to deploy Resources, usually in combination, using organizational processes, to effect a desired end. They are information-based, tangible or intangible processes that are firm specific and are developed over time through complex interactions among the firm's Resources.".

resenting the number of units of labour per unit of output. There is a lower curve in the quality-productivity space $(u, 1/c)$ which determines the minimum threshold a firm must pass to be active. Furthermore, the capabilities can be ranked, with the firm at the top having the highest capability pair (u, c). For the purpose of the present research, I label these capabilities *vertical capabilities* as they can be (vertically) ranked. If the ratio of price to quality p_i/u_i, with i being a firm subscript, is constant across firms, as customers would not want to buy for the same price a product of lower quality, and if the level of unit cost (the productivity parameter c) is the same for all firms, the firm with the highest quality level u will be able to enjoy a price greater than the common level of marginal cost, and therefore be able to enjoy higher profits, even if its rivals sell at their unit marginal cost (Sutton, 2012).

Following Sutton (2012) in assuming that capabilities are clustered geographically, with some firms located in specific regions or countries having higher levels of capabilities than other firms, the coexistence of firms with different capability levels (coming from countries with different levels of capabilities) selling internationally a similar type of product, can be explained by differences in labor costs[7] and the existence of a quality range. In other words, firms with lower levels of capabilities, that is, with lower productivity levels and lower product quality, will be able to offset their capability disadvantage to the extent that they can benefit from lower wages in their home countries. These firms compensate lower productivity $1/c$ by lower wage unit level w so as to reduce their marginal cost wc for a given quality of product u. As shown in the example presented in Figure 1 below, a firm from a developing country should have a lower level of vertical capabilities than a firm from a developed country, while a firm from an emerging country should occupy an intermediate level.

— Figure 1 insert here —

Now, what happens if these firms with different levels of *vertical capabilities* undertake market-seeking foreign direct investment in the same host country and therefore face the same local wage? I am especially referring to the service sector and particularly the fact that in certain industries, such as banking, some services can only be produced locally (and therefore there is no export versus FDI trade-off). For a given level of quality u, the foreign multinational firm with the highest level of capability, coming from a developed country, and which I label *firm A* will produce

[7] Assuming that the cost of material is internationally fixed and the same for everyone.

goods (services) at a lower cost than *firm B*, a multinational firm coming from a developing country. Firm A should then enjoy higher profits than firm B through higher productivity levels. However, it does not necessarily drive firm B out of the market as long as firm B has at least the minimum productivity-quality combination required to satisfy the demand in the host country, represented in Figure 1 by the bottom capability curve.

Horizontal capabilities and adaptation costs in a new environment. So far I have examined capabilities corresponding to the quality and productivity determinants of the firm, which I have labeled *vertical capabilities*. The other factors to take into account when examining the performance of multinational firms undertaking foreign activities correspond to the external environment, how it shapes the competition between firms and how it affects firms' use of their operational capabilities. What is argued here, and suggested by the institutional voids' advantage hypothesis, is that the institutional environment and the characteristics of the demand in the host market will influence the exploitation of vertical capabilities. Experience of a certain environment confers a specific type of capabilities that are adapted to this particular milieu and which, by definition, have limited use in another environment. These capabilities correspond to firms' ability to navigate a specific institutional environment and to offer products that are adapted to local tastes or demand. I label these capabilities *horizontal capabilities*. I use the term "horizontal" because I consider that there are not *per se* capabilities that are better than others, only capabilities that correspond better to the specific preferences of each environment[8].

Firms have horizontal capabilities that are adapted to the requirements of their home country. When operating in a new foreign country, multinational firms will incur an adaptation cost[9] to adjust their operational and managerial methods to the requirements of the new environment. The first cost is incurred by the firm when adapting its production to the characteristics of the host country's demand, as determined by its average per capita income level (technological adaptation cost); the second cost is related to the need to adapt to the host country's institutional environment (managerial adaptation cost)[10].

[8]To use Rugman and Verbeke (2001) concept, they fall into the category of "location-bound firm specific advantage".

[9]This cost is similar to the notion of "liability of foreignness" (Zaheer, 1995), which describes the additional costs that firms operating outside their home countries experience above those incurred by local firms.

[10]These two costs correspond to those referred to by Dixit (2011) as the costs of "coping with the bad governance" and the cost of "adapting the technology to the local condition", when the firm has a level of technology that is in excess of what is used in the host country.

Concerning the technological adaptation cost (adaptation to local demand), if the characteristics of the host country's demand are such that only lower quality products with cheaper price will be bought due to a higher budget constraint of the host population compared to that of the home population, then developed country firm A will need to adjust its production technology to produce goods of lower quality and cheaper price than those that it produces in its home country. This is the situation faced by a developed country MNE operating in a developing country. Firm A can thus produce goods requiring a lower vertical capability level, but it has to incur a sunk cost to "adapt down" its technology to produce goods of lower quality.[11] The goods that the lower vertical capability firm, which I have labeled firm B, can produce is a subset of the goods that firm A can produce. Considering that firm B does not need to adapt down its technology because its home demand is similar to the host demand, in other words, because it possesses adapted horizontal capabilities, it will not incur this cost. However, if the productivity of firm A is strictly superior to that of firm B for a similar quality, and the labour cost is the same for all firms in a given host country, then once this sunk cost is paid, firm A should enjoy higher profit than firm B[12].

I now turn to the second adaptation cost related to managerial knowledge of the host country institutional environment (adaptation to local institutions). Because the ranking of countries in terms of vertical capabilities of firms also tends to correspond to the ranking of countries in terms of the strength of the institutional environment, then there might be an advantage of coming from a developing country when operating in another developing country, which might (partially) offset productivity disadvantages due to a lower level of vertical capabilities. As suggested in the introduction, firms from developing countries may find it easier to operate in other developing countries as they also face a difficult institutional environment at home. They have experience in operating in environments where regulatory quality is low, or where corruption is omnipresent in business activities. As is the case for the adaptation of the technology to host country demand, this managerial adaptation cost can be thought of as a sunk cost: once "learned" (or incurred), firm A should be able to enjoy the profit corresponding to its vertical capability level.

The central problem, as hinted in the capability literature is that this managerial

[11]This is the idea suggested by Dixit (2011) who models the excess of the level of technology used by the multinational firm in its home country over the appropriate technology level in the host country as directly entering the production cost function with a positive parameter.

[12]Note: This is similar to what Dunning argues in his 1980 empirical test of the OLI paradigm: "Similarly, the advantages of size, of being part of a larger organization, and of being able to internalize external economies will affect a firm's competitive situation independently of the location of its activities." (Dunning, 1980:15)

know-how is not easily identified. One could argue that by favoring local management over expatriate management a foreign multinational could quickly adapt to local circumstances. However, the organizational capital literature has shown the importance of organizational routines within the firm (Nelson and Winter, 1982) and relational contracts (Gibbons and Henderson, 2011) which make it challenging for firms to copy and adopt new practices. As a consequence, it should be relatively more difficult for higher vertical capabilities firms to understand what to do when operating in developing countries and dealing with weak governance frameworks.

Building horizontal capabilities through environmental experience. The possibility to exploit horizontal capabilities is linked to the existence of incomplete markets, with assets that are non-appropriable, as is the case with vertical capabilities, but maybe even more so due to their absolutely intangible nature, often embodied in human capital. If these assets are not tradeable, firms will have no choice but to build them, which may take a considerable amount of time[13] (Dierickx and Cool, 1989). Firms can build horizontal capabilities through international experience, and a firm's portfolio of horizontal capabilities is determined by the variety of environments in which the firms operate. As a consequence, a multinational firm should have a larger portfolio of horizontal capabilities than a purely domestic firm. A large portfolio of horizontal capabilities does not ensure the possession of the necessary managerial skills and appropriate products when entering a new country. What matters is the relevance of the firm's prior international experience to a potential new host country. Building horizontal capabilities through (relevant) international experience will thus contribute to the reduction of the adaptation costs mentioned above. The firms which do not possess these specific horizontal capabilities may still be able to build them, and how fast they manage to adapt their "bundle of resources" to the new host market will depend on their dynamic capabilities, defined by Teece, Pisano and Shuen (1997:516) as "the firm's ability to integrate, build, and reconfigure internal and external competences to address rapidly changing environments". As such I posit that horizontal capabilities are associated with higher order horizontal dynamic capabilities. The notion of dynamic capabilities builds a bridge between the internal environment of the firm and its external environment, as they determine how fast firms can adapt to changes in the external environment by renewing their competences[14].

[13]"[..] a firm which does not own a non tradeable asset which it requires for the implementation of its product market strategy is constrained to 'building' this asset", Dierickx and Cool (1989 :1506).

[14]This change may not necessarily have a temporal dimension but may as well be, as it is the case in this research, spatial.

I posit that these dynamic horizontal capabilities are determined by the size of the portfolio of horizontal capabilities, given by the number of countries in which a firm already operates, and the variance of the portfolio of horizontal capabilities, which reflects the heterogeneity of the countries in which it operates in terms of institutional development and characteristics of the demand. The importance of the variance of the portfolio of horizontal capabilities in explaining firm performance abroad goes back to research by Ghoshal (1987) and Kim, Hwang, and Burgers (1989), Barkema and Vermeulen (1998) who have shown how the diversity of the international experience, by exposing a firm to a rich array of countries with different demand and institutional characteristics, allows it to develop more diverse capabilities, to achieve higher innovation levels than a purely domestic firm and to facilitate new ventures in a foreign country.[15] It will take less time for a multinational firm with a portfolio of horizontal capabilities of higher size and variance to learn to operate in a new country. Finally, a last point to consider is that horizontal capabilities offer a time advantage, which is sustained until other firms build these capabilities. Crucially, the sustainability of the competitive advantage offered by horizontal capabilities depends on the speed of learning of other firms, itself determined by their dynamic horizontal capabilities. Once these horizontal capabilities are acquired, firms with higher levels of vertical capabilities should out-perform their rivals with lower vertical capabilities but a better initial fit of horizontal capabilities. In other words, the horizontal capability advantage of firm B over firm A is short lived and is essentially a time advantage. However, it also means that as long as the wealth of the host country and consequently its average technology level and the characteristics of the demand do not evolve, and therefore do not require higher quality product, firm B may enjoy time advantages to build its vertical capabilities and improve its productivity.

1.2.2 Predictions on the performance of foreign affiliates

The implication of horizontal capabilities for firm performance is that the adaptation cost that multinational firms face when entering a new country, which, *in fine*, corresponds to a sunk entry cost, is endogenous and depends on its international experience, as well as on the institutional environment and characteristics of the demand in the firm's home country. While vertical capabilities affect the quality of the products and the productivity of the firm (its price and its marginal cost),

[15] As Ghoshal(1987:431) points out, "the enhanced organizational learning that results from the diversity internalized by the multinational may be a key explanator of its ongoing success, while its initial stock of knowledge may well be the strength that allows it to create such organizational diversity in the first place."

horizontal capabilities affect the sunk cost it incurs when entering a new country. To further analyze theoretically the implications of vertical and horizontal capabilities for the performance of multinational firms, I model the sunk adaptation cost that multinational firms incur when entering a new host country as follows:

$$d_i^c \delta(H_i) \tag{1.1}$$

d_i^c represents the institutional and economic (per capita income level) distance between multinational firm i's home country and host country c. It determines by how much a multinational firm needs to adapt (down) its technology and business practices, and therefore incur an adaptation cost[16]. δ is an attenuation factor which is a function of the portfolio of horizontal capabilities of firm i, H_i. Crucially, it is assumed that δ gets closer to zero as the fit between the horizontal capabilities in the portfolio H_i and the requirements of the new host country increases and as the level of horizontal dynamic capabilities (determined by the size and the variance of H_i) increases. Now, I can rewrite the total profit P_i^c the foreign affiliate of a multinational firm i in a host country c as follows:

$$P_i^c = \pi_i^c(V_i) - [F_0^c + d_i^c \delta(H_i)] \tag{1.2}$$

The vertical capabilities level V_i determines the operating profit of the foreign affiliate. F_0^c represents the fixed cost of setting up a plant abroad, which is assumed to be the same for all firms in a given host country c. The second term in bracket is the adaptation cost detailed above.

From this follows the first set of hypotheses related to the influence of vertical capabilities on the performance of firms in a given host environment.

Hypothesis 1a *The higher the level of a multinational firm's vertical capabilities V_i, the higher the total profit P_i^c of its foreign affiliate, controlling for the adequacy of the multinational firm's portfolio of horizontal capabilities with its host environment $d_i^c \delta(H_i)$.*

More specifically, I hypothesize that this higher total profit is related to operational efficiency advantages offered by the possession of higher levels of vertical capabilities[17]:

[16]Note that I assume that a firm will not enter a country for which its productive capabilities are below that country's threshold.

[17]By opposition, for instance, to advantages offered by monopoly power.

Hypothesis 1b *The higher the level of a multinational firm's vertical capabilities (V_i), the higher the operational efficiency of its foreign affiliate $\pi_i^c(V_i)$, controlling for the adequacy of the multinational firm's portfolio of horizontal capabilities with its host environment $d_i^c\delta(H_i)$.*

Of particular interest is the parameter d_i^c, which captures the institutional voids' advantage enjoyed by firms from developing countries undertaking foreign direct investments in other developing countries as well as the advantages related to the similar composition of the demand. This parameter should be relatively lower for developing countries' multinational firms than for developed countries' multinational firms when they operate in a host developing country. Controlling for their portfolio of horizontal capabilities H_i, the adaptation cost should be higher for developed countries multinationals. As a consequence, I formulate the following hypothesis:

Hypothesis 2 *The institutional and economic distance (proximity) (d_i^c) between the home and the host country of a multinational firm exerts a negative (positive) effect on the performance of its foreign affiliate.*

In the following sections, I test the hypotheses in the context of banking in sub-Saharan Africa. As mentioned in the introduction, this sector is particularly appropriate for this research given the high number and heterogeneity of foreign banks in African economies, which provides variation both in horizontal and vertical capabilities. In addition, experience in operating in markets with low transparency, and in particular in dealing with credit risk when information on borrowers is limited, is crucial to conduct banking activities in Africa. This context should reinforce the advantages provided by the possession of horizontal capabilities adapted to the local (host) environment.

1.3 Empirical methodology and data description

1.3.1 Capabilities in the banking sector

To illustrate the concepts and before turning to the econometric tests, I first examine vertical and horizontal capabilities in the banking sector. The production of loan services entails screening, monitoring and funding activities[18]. The first two types of activities relate to the asset side of banks' balance sheet: better screening

[18]See Freixas and Rochet (1997) for a detailed literature review and presentation of models of banks' production functions.

and monitoring should decrease the proportion of non-performing loans, while the third type of activity relates to the liability side of the balance sheet and supposes imperfect competition in input markets: getting funding to finance loans through deposit, wholesale markets or internal markets for corporate groups. The performance of these activities is based on the possession of vertical capabilities: the ability to accurately assess loan applicants' risks by reducing the asymmetry of information between them and the bank, the ability to process financial information effectively inside the bank, and the ability to secure funding in sufficient quantity and at low cost. The possession of vertical capabilities impacts the efficiency with which screening and monitoring is performed, in other words, it impacts the quality of the loan portfolio and the cost of performing these activities and, more generally, of extending loans. The possession of horizontal capabilities affects the way these activities are performed by the bank in different environments and the adaptation cost it incurs to build new horizontal capabilities to fit into a new environment. With relation to developing countries, a key horizontal capability in the banking sector is the ability to screen and monitor borrowers with very limited information. Sophisticated credit scoring methods may not be useful in the absence of credit registries or audited financial statements. As a consequence, foreign banks may need to adapt their screening technology to these new local conditions. Relationship lending, which refers to the investment in "providing financial services that will allow dealing repeatedly with the same customer in a more efficient way" (Freixas and Rochet, 1997:99), may prove a more appropriate method of dealing with asymmetry of information than the use of systematised lending based on credit scoring. Relationship lending involves the acquisition of soft information, which is of a qualitative nature and which includes opinions, ideas and rumours[19]. The ability to engage effectively in relationship lending to screen and monitor borrowers constitutes an horizontal capability.

1.3.2 Banking markets in sub-Saharan Africa

As mentioned in the introduction, the geographical choice is motivated by the fact that sub-Saharan Africa is the developing region of the world that has the largest proportion of foreign-owned banks (Table A.1 in the Appendix). Indeed, a closer look at the data reveals that many of these "South" foreign banks are regional African banks, with large groups such as First Bank (Nigeria) or Ecobank Transnational

[19]Contrary to hard information, such as financial statements, stock returns, soft information is difficult to summarize in a numeric score, and therefore more difficult to communicate and transmit (Petersen, 2004).

(Togo) (Table A.2 in the Appendix). Undeniably, sub-Saharan African countries are very diverse and the challenges they face may differ importantly. Differences in terms of population density, economic development, legal institutions[20], and abundance of natural resources make the situation of each country unique. However, there are important similarities which make the case for a regional view of banking markets. Sub-Saharan African banking systems are characterized by their small size[21], high concentration[22] and high degrees of foreign ownership. Banks operating in these markets tend to have high levels of capitalization and liquidity, which helped them withstand the 2007-08 financial crisis, but low levels of intermediation, as characterized by low deposit to loan ratios and high interest rate margins[23].

In addition to the common characteristics of sub-Saharan Africa banking markets, the regional perspective is motivated by the fact that most of the multinationals have primarily a regional scope (Rugman and Verbeke, 2005)[24]. Therefore the portfolio of horizontal capabilities of banks has a highly regional component, implying higher adaptation costs for operating outside the home region than inside. While global banks are still very important players in the region, the emergence of regional African banks, with a clear pan-African ambition (United Bank for Africa vision statement is "To be the undisputed leading and dominant financial services institution in Africa"; Intercontinental Bank ambitions to be "To be the Number One Financial Institution in Nigeria, Number One in Africa and among the top 100 in the world, with Strong Global Presence"[25]) have modified the banking landscape. Some regional African banks enjoy a significant presence in a large number of countries, such as Ecobank Transnational (from Togo) which has operations in thirty countries, in West Africa, Central Africa and East Africa. The largest banking groups in South Africa have also started to invest outside the region, setting up branches or

[20]La Porta, Lopez-de-Silanes, Shleifer and Vishny (1997) have shown that the legal rules and their enforcement matters for the development of capital markets. In addition, Beck, Maimbo, Faye and Triki (2011) also emphasize the relevance of the distinction between common law countries (all former British colonies) and civil law countries in Africa, as common law countries typically have a more flexible legal and regulatory framework than civil code countries and enjoy on average a higher level of financial development.

[21]According to Beck, Maimbo, Faye and Triki (2011:37), the total assets of African banks is on average US$220 million, while for an average non-African bank it almost reaches US$1 billion.

[22]Beck et al. (2011: 43-44) found that 50 per cent of the countries with a Herfindahl index above 2,000 are in Africa, while only a fifth of the countries with a Herfindahl index below 2,000 are in Africa.

[23]Beck et al. (2011:51) found that the interest margin of banks in Africa was 482 basis points on average, against 334 basis points on average for banks in the rest of the world.

[24]Rugman and Verbeke (2005) show that the vast majority of the world's 500 largest MNEs operate on an intra-regional basis.

[25]From their websites: http://www.ubagroup.com/group/; http://www.intercontinentalbankplc.com.

subsidiaries in developed countries and in other emerging countries: Standard Bank has operations in Asia, the U.S. and Europe and has made important acquisitions in Argentina and Turkey.

1.3.3 Sample selection and descriptive statistics

Testing the research hypotheses requires data providing financial information on banks with variation across home and host environments. I use panel data from BankScope database to obtain financial and ownership information on foreign and domestic banks operating in sub-Saharan Africa. The sample consists of annual financial data for the 10-year period 2003-2012 for all the banks active at some point during this period, included in BankScope database in 47 sub-Saharan countries (all African countries excluding Morocco, Algeria, Tunisia, Libya, Egypt and Sudan). The sample contains 657 banks in total, and includes banks that became inactive during the period. In 2012, 76% of the banks in the sample were active, 16% were dissolved (of which 10% due to mergers or take over), 0.15% were bankrupt, 3% were in liquidation and, for 5% of them, their situation was unknown. I address the problem caused by endogenous entry and exit of firms in the next section. Banks included in the sample are commercial banks (97%), cooperative banks (1%) and savings banks (2%)[26].

1.3.4 Variables of interest: bank ownership dummies

Considering that multinational firms' capabilities are determined in large part by their home market and their exposure to other foreign markets, and that for a given home country only the most productive firms self-select themselves as candidates to internationalization (Melitz, 2003), I then consider that the level of development of the home country is a good proxy for firms' level of vertical capabilities. The degree and diversity of internationalization are proxies for the size and variance of the portfolio of horizontal capabilities that the firms possess and which determines their dynamic horizontal capabilities. Based on these two characteristics (home country's level of development and multinational firm's international experience), I define three different categories of foreign banks operating in developing countries as follows: Global banks are banks founded in a developed country and have foreign activities both in their home region and outside their home region. Emerging banks

[26]To reduce the heterogeneity of the sample, I have excluded from the sample of banks all investment banks, Islamic banks, micro-finance institutions, private banks, real estate and mortgage banks, and development banks given that they operate in different market segments than those of commercial banks.

originate from an emerging country and have foreign activities both in their home region and outside their home region. Regional developing banks are banks founded in a developing country and with foreign activities only in their home region. The group composed of domestic banks can be further subdivided into two sub-groups: Domestic multinational banks with operations abroad and purely domestic banks only operating in their home country. These four categories of banks define different configurations of capabilities, as shown in Table 1 below.

— Table 1 insert here —

Banks' ownership is defined as follow: I use the Global Ultimate Owner indicator of BankScope database and update it using the same definition by looking on banks' website when the information is missing in BankScope. A company is a Global Ultimate Owner (GUO) if it controls at least 50.01% of the entity and has no identified shareholders or if its shareholder's percentages are not known. For banks which have a dispersed ownership and for which there is no ultimate owner controlling at least 50.01% of the company, I determine the country of origin of the bank by aggregating the shares of the owners by country of origin and attribute bank ownership based on the nationality of the owners with the highest total percentage of shares[27]. Given that ownership information is only available for the most recent year in the Bankscope database I take into account changes of ownership which have taken place during the sample period through mergers or acquisitions by tracking each bank's Bureau Van Dijk's ID number (BVD ID) in the Zephyr database of Bureau Van Dijk, which records M&As. The ownership indicator changes over the sample period for 8% of the banks in the sample. In addition, to avoid double counting I checked all the mergers and acquisition that occurred during the sample period to ensure that only the merged entity or the acquiring bank remained in the sample

[27]Note that I differ slightly from Claessens et al. (2008) who first attributed foreign ownership to banks for which at least 50% of the shares were held by foreigners and then, summed the percentages of shares held by foreigners by country of residence, with the country with the highest percentage of shares considered the source country. For instance, if a bank is held at 60% by 3 foreigners and the highest percentage of shares owned by one of the 3 foreigners is 39%, and the remaining shares are domestically-owned, then Claessens et al. (2008) attribute the ownership of the bank to this foreigner, while I would consider that the bank is a domestic bank. This methodology was chosen given that for many banks with dispersed ownership in sub-Saharan Africa, while it was relatively easy to identify the nationality of the largest owner through cross-checking online sources, it was much more difficult to accurately identify all the minority owners, even for large ones, especially when they were individuals. However, this difference in methodology only affects 5 banks in the sample, which I have classified as domestic, whereas they would have been classified as foreign following Claessens et al. (2008) methodology. Given that this study focuses on foreign banks, this classification difference is unlikely to affect results.

after the take-over.

The dummy *Global MNB* equals 1 if the bank is from a developed country with operations on a global scale. The dummy *Regional African MNB* equals 1 if the bank is either owned by a sub-Saharan African group, excluding South Africa, or a North African group[28] with foreign operations only on a regional (African) scale. I also include a dummy *Emerging MNB* which equals 1 if the country of origin of the bank is an emerging country and if this bank has also operations outside of its home region. I group together South African multinational banks and banks from other emerging countries with foreign operations on a global scale, both inside and outside their home region. I first included a separate category for South African multinational banks, but the differences in terms of financial performance between South African multinational banks and other emerging banks were not statistically significant, therefore I grouped them in the same category.[29] Finally, the dummy *Domestic bank* equals 1 if the bank is from the host country of interest.[30]

— Figure 2 insert here —

Figure 2 indicates that 50% of the banks fall in the category *Domestic banks*, 16% in the category *Global MNB*, 25% in the category *Regional African banks* (African MNB ex-South Africa), and 9% in the category *Emerging MNB* (including South African banks). Among global multinational banks, 34% are from the U.K., 25% from France and 16% from Portugal (Figure A.1 in the Appendix). Concerning emerging multinational banks, 42% are from South Africa, 20% from India and 15% are from Malaysia (Figure A.2 in the Appendix). Most of the foreign affiliates of regional African banks belong to Nigerian banking groups (25%), followed by

[28]From Morocco, Algeria, Tunisia, Libya, Egypt and Sudan.

[29]Including South African banks in the regional African MNB group (and excluding them from the Emerging MNB group) does not change qualitatively the results: the coefficients on the regional African MNB dummy have the same level of significance and sign than when South African banks are excluded from this category, although the size of the coefficient of the regional African MNB dummy is slightly smaller. Similarly, excluding North African banks from the regional African MNB category does not change qualitatively the results, but the size of the coefficient of the regional African MNB dummy becomes slightly larger.

[30]19% of these domestic banks are also multinational banks and as such are not purely domestic players. Regrouping purely domestic players and multinational (domestic) banks should, in theory, move the average productivity of this group up, compared to a group only composed of purely domestic players (Melitz, 2003). Given that this research is focused on comparing foreign banks, I look at domestic banks as a group without distinguishing between purely local and domestic banks. I have also run regressions with separate dummies for purely domestic banks and domestic banks that are multinational. The latter perform better than the former, with slightly higher return on equity, higher cost efficiency and lower level of bad loans. I do not report these regressions as the ranking of banks according to their performance is not affected by whether or not I distinguish between purely domestic banks and multinational domestic banks.

Togolese banks[31] (20%) and Moroccan banks (19%) (Figure A.3. in the Appendix). Global banks are the largest by assets (average assets of US$2.91 billions over 2003-2012), followed by domestic banks (US$983 millions excluding South Africa, US$2.32 billions including it) and emerging banks (US$466 millions), while regional African banks have the lowest amount of total assets (US$262 millions). Most of the foreign banks have expanded throughout sub-Saharan Africa in the form of subsidiaries. Only 7 banks in the sample are operating under the form of branch. As Beck et al. (2011) point out, setting up a subsidiary implies higher cost than a branch, but it is also easier for the supervisor to overview as a subsidiary is organized and regulated according to the laws of the host country (see also Casu, Girardone and Molyneux, 2006). As such, according to the World Bank's Bank Regulation and Supervision 2008 database[32], a third of the host African countries in the sample prohibited entry via branches in 2008, which might explain the prevalence of subsidiaries as an organizational form.

1.4 Banks' ownership and financial performance

1.4.1 Econometric specification

Testing H1a and H1b. I use an OLS regression model to estimate the impact of banks' ownership on several indicators of financial performance. The baseline equation is the following:

$$y_{it}^c = \beta_1 \text{Regional African MNB}_{it} + \beta_2 \text{Domestic bank}_{it} + \beta_3 \text{Emerging MNB}_{it} + \rho X_{it} + \delta Z_t^c + \alpha_t + \gamma^c + \epsilon_{it}^c \quad (1.3)$$

y_{it}^c is the dependent variable, an indicator of financial performance. I include the dummies *regional African MNB*, *Emerging MNB* and *Domestic Banks* and exclude the dummy *Global MNB*, hence the interpretation of the results for the three ownership categories is relative to global banks. X_{it} represents a vector of time-varying firm-level controls and Z_t^c a vector of time-varying country controls. ϵ_{it}^c is an error term. I relax the assumption of identical and independent distribution of the errors and I cluster the standard errors at the firm level to allow for possible correlations between residuals of a firm across time. The residuals are correlated across two

[31] Essentially subsidiaries of the large pan-African group Ecobank.

[32] http://econ.worldbank.org/WBSITE/EXTERNAL/EXTDEC/EXTRESEARCH/0,,contentMDK:20345037~pagePK:64214825~piPK:64214943~theSitePK:469382,00.html

observations of the same firm, but are assumed to be independent across firms (Petersen, 2005). The standard errors are also corrected for heteroskedasticity. Year fixed effects α_t are introduced to take into account aggregate (regional) macroeconomic shocks and host country c fixed effect γ^c are included to take into account country specific omitted variable that are time invariant. In alternative specifications I also control for heterogeneity in the cross-section with year-host country fixed effects, in order to compare firms' performance within year-host countries. I do not include firms' fixed effects given that for 92% of the banks in this sample the ownership dummy variables do not change over the period studied, leaving too little variation in the data. I control for many firm, time and host country factors, but the possibility of omitted variable bias, related to omission of variables affecting both performance and ownership, remains. The objective of this research is thus to find whether there are significant and robust correlations between the bank ownership dummies and the indicator of financial performance, but it does not attempt to prove causality. The possibility of reverse causality (performance affecting ownership) is not excluded, although it is relatively low, as it would primarily be driven by acquisitions of a lower-performing group of banks by another group of banks, but, as mentioned above, changes in ownership only concern less than 10% of the banks in the sample. In addition, while it may be that performance at time t affects ownership at time $t+1$, it is less likely that it affects ownership at time t, as specified in equation (1.3).

Dependent variables: Measures of financial performance. To test Hypothesis 1a I employ the return on equity using income before tax (ROE). I do not use the traditional return on equity based on net income to avoid accounting differences being driven by different tax regulations. In addition, I do not use market to book value as a measure of financial performance, despite a long tradition in the literature on bank performance to use this measure, given that only 57 banks in the sample are listed. To test Hypothesis 1b I use the cost income ratio, calculated as Overheads / (net Interest Revenue + Other Operating Income), which is traditionally used in banking to measure operational efficiency. I focus on the comparison of performance between regional African banks and global banks (the latest being the omitted dummy in equation (1.3)), which lie at two extremities of the horizontal/vertical capabilities configuration. For Hypothesis 1a I expect $\beta_1 < 0$ (ROE is lower on average for regional African banks than for global banks) and for Hypothesis 1b I expect $\beta_1 > 0$ (The cost income ratio is higher on average for regional African banks than for global banks). To mitigate the problem of outliers the dependent variables ROE and cost/income ratio are winsorized at 1%.

Testing H2. To test Hypothesis 2 according to which institutional and economic distance, or asymmetry, between the host and the home country exerts a negative influence on the performance of foreign affiliates, I interact measures of host countries' institutional and economic development with the bank ownership dummies. As such, the baseline equation (1.3) is modified as follows:

$$\begin{aligned} y_{it}^{c} = {} & \beta_1 \text{Regional African MNB}_{it} + \beta_2 \text{Domestic bank}_{it} + \beta_3 \text{Emerging MNB}_{it} \\ & + \beta_4 \text{Institutions (Demand)}_{t}^{c} \\ & + \beta_5 \text{Regional African MNB}_{it} * \text{Institutions (Demand)}_{t}^{c} \\ & + \beta_6 \text{Domestic bank}_{it} * \text{Institutions (Demand)}_{t}^{c} \\ & + \beta_7 \text{Emerging MNB}_{it} * \text{Institutions (Demand)}_{t}^{c} \\ & + \rho X_{it} + \delta Z_{t}^{c} + \alpha_t + \gamma^{c} + \epsilon_{it}^{c} \end{aligned} \tag{1.4}$$

I use the return on equity before tax as the financial measure of performance. Institutions_t^c captures institutional quality in the host country c. I use two indicators of institutional environment obtained from the Worldwide Governance Indicators database provided by the World Bank. The first one, *Corruption* is an indicator of corruption which ranges from -2.5 (low corruption) to 2.5 (high corruption)[33]. The second indicator, the *Bad Governance index*, is a composite measure of the following governance indicators: rule of law, control of corruption, political stability, no violence, regulatory quality, all obtained from the Worldwide Governance Indicators database (see Table A.3 in the Appendix for the definition of variables). Again, I reverse-code the indicators so that when the index of Bad Governance is high, the governance is weak and when it is low, the governance is strong. The index ranges from -2.5 (strong governance) to 2.5 (weak governance). I expect a positive sign on the coefficient of the two interaction terms between regional African banks and corruption and the Bad Governance index ($\beta_5 > 0$). In other words, I expect regional African banks to perform relatively better in environment with high corruption and weak governance. Similarly, Demand_t^c captures characteristics of the demand, and more specifically the income level in the host country, which I proxy by the GDP per capita. I expect regional African banks to perform relatively worse in countries with higher GDP per capita, in other words, I expect $\beta_5 < 0$ when the African MNB dummy is interacted with GDP per capita. Because of potential multi-collinearity between the two alternative indicators of institutional environment (Bad Governance index and Corruption Index) (correlation close to 1, see correlation Table A.5

[33]For ease of interpretation, I reverse-code the "control of corruption" indicator of the World Bank.

in the Appendix) I examine the effect of these variables on performance in separate regressions.

1.4.2 Control variables

The nature of the ownership variables is restrictive concerning the inclusion of other firm controls. Indeed, the ownership indicator does not only represent banks' category of ownership but is also a broader proxy for banks' capabilities, operational and management practices, which are likely to be outcomes of banks' ownership[34].

Bank controls. I proxy the portfolio of (relevant) horizontal capabilities, which mitigates the adaptation cost of entering into an unfamiliar host environment, with the relevant country experience of the bank measured by the number of foreign subsidiaries of the parent company (the "General Ultimate Owner") in sub-Saharan Africa[35]. In doing so, I follow Barkema and Drogendijk (2007) who operationalize the concept of international experience by using the log of number of subsidiaries in countries in host country region in the year of host country entry. Given the limited information on the year of entry of subsidiaries in sub-Saharan Africa, I do not consider the year of host country entry but use the number of subsidiaries of the parent in the region in 2012. Admittedly, this imperfectly accounts for experience prior to entry in a country, however given that most of the subsidiaries for which information on experience is available were set up before the sample starting date, 2003, this gives a relatively accurate measure of the regional coverage and experience of the parent. Among the bank characteristics, I also include two dummies indicating the listed status and government ownership status of the bank. Finally, in some regressions I also control for the year of entry of the bank (date of incorporation), as it may affect performance especially if substantial costs are incurred by recent entrants to adapt to the new host country. I do not control systematically for the year of entry given that it is only available for 303 banks in the sample out of 657 banks, resulting in an important loss of information.

Host country controls. Among host countries' characteristics I include GDP per capita in U.S. dollars obtained from the IMF World Economic Outlook[36], which

[34]The category of ownership might influence banks' practices such as asset-liability management, risk management, and also bank variables such as bank size. As such, I do not include these financial variables as controls in the regression of financial performance as they would be bad controls, that is, variables that are themselves outcome variables (Angrist and Pischke, 2009).

[35]Here, and in contrast to Lu and Beamish (2001) and Fang, Wade, Delios and Beamish (2007), who use a general concept of internationalization experience, I consider a specific internationalization experience: that of the host region as a whole. In so doing, I follow authors such as Barkema and Drogendijk (2007) and Brouthers, Brouthers and Werner (2003) who have examined the location-bound experience (Clarke, Tamaschke, Liesch, 2012) at the host regional level.

[36]Other host country indicators were initially included, such as the level of banking sector devel-

proxies the level (and sophistication) of the demand in the host market. I also control for banking regulations. More specifically, I include indicators of entry barriers in the banking sector for foreign banks (prohibition of entry via joint venture and via branch) which are obtained from the World Bank's Bank Regulation and Supervision survey. Regulation indicators, the minimum capital adequacy ratio and the minimum capital requirement, are obtained directly from central banks' websites. In addition, I introduce an indicator of market concentration, the Herfindahl-Hirschman Index, or HHI[37], which I lag by one year to address the potential reverse causality between concentration and profits[38]. Finally, I introduce three regional dummies: East Africa, West Africa, and Central Africa (the omitted dummy being Southern Africa), which capture regional differences in terms of culture, institutions and level of development. A summary table of the different variables and their sources is presented in Table A.3 in the Appendix. Summary statistics for banks' financial variables and a correlation matrix are presented in Table A.4 and Table A.5 respectively in the Appendix.

1.4.3 Preliminary graphical analysis: Survivorship bias

Given that this research focuses on multinational banks that have succeeded in their internationalization, it is necessary to control for banks' survival when examining banks' performance. Indeed, one crucial element to consider in this analysis is the persistence of firms' heterogeneity. Assuming that firms know their productivity before taking their decision to enter a foreign market, they could still be wrong in their estimates and exit the market in the short term. As such, firms' heterogeneity at a specific point in time may only be the consequence of their inexact forecast and would not constitute persistent differences in performance. In the present analysis, we then need to rule out that heterogeneity between foreign firms is a result of mere ignorance over productivity before entering the host country. Indeed, even assuming that firms' decision to internationalize occurs after it gains knowledge of its productivity (Melitz, 2003), there remains uncertainty over productivity in the foreign host country as the entry decision of firms facing sunk entry cost is forward looking and

opment, population density, FDI inflows, but these variables were dropped due to multi-collinearity. Including them does not change qualitatively the main results on the coefficient of the ownership dummies.

[37]According to the Structure Conduct Paradigm (Bain, 1956), banks operating in more concentrated markets are able to set higher loan rates as a result of non-competitive behavior or collusion: higher market concentration thus generates more market power and higher bank profits.

[38]The idea is the following: high profit margins at time $t = 0$ allow firms to build barriers to entry which determines concentration at $t = 1$. However, profits at $t = 0$ do not influence concentration at $t = -1$.

rests on expected future probabilities of exit related to random productivity draws with unknown mean but known variance (Jovanovic, 1982; Hopenhayn, 1992).

I first proceed to a graphical analysis examining entry and exit of banks (Figures 3 and 4), following the descriptive industry dynamics tradition (Dunne, Roberts and Samuelson, 1988). I use the year of incorporation of domestic banks or subsidiaries of foreign banks, which is available for a sub-sample of 303 banks, as the year of entry. Similarly, I use the last date for which accounts are available in BankScope as the reference point for the year before exit for banks that are inactive. Figure 3 on banks' entry shows that African banks started their internationalization in sub-Saharan Africa around the mid-1980s. South African banks, such as Absa and Standard Bank, started their regional expansion after the end of Apartheid, two decades ago (Beck et al., 2011). Nigerian banks have started to expand throughout West Africa as a consequence of the consolidation wave in Nigeria following the banking reforms in 2005. Concerning non-African emerging banks, their experience of sub-Saharan Africa markets vary importantly. While Indian banks have had a long presence in East Africa, especially in countries with an important population of ethnic Indians -for instance the Ugandan subsidiary of Bank of Baroda was incorporated in 1953-, the presence of Chinese banks is more recent, as illustrated by the purchase of a 20 percent stake by Industrial and Commercial Bank of China in Standard Bank in South Africa in 2007. For global banks, their presence in sub-Saharan Africa is often much older, starting in the colonial period (Figure 3). Concerning domestic banks, we note two peaks, one around the 1970s, period during which African banking systems, previously dominated by colonial banks, were nationalized; and another in the 1990s around the time of the liberalization and privatization programs in sub-Saharan Africa.

— Figure 3 insert here —

Turning to banks' exit (Figure 4), the graph shows that foreign banks' exit is relatively low, especially compared to the higher exit pattern of domestic banks[39]. In this sample, five subsidiaries of global banks, five subsidiaries of regional African banks and four subsidiaries of emerging banks became inactive between 2003 and 2012[40]. This graphical analysis is a first evidence that any significant difference between foreign banks in terms of financial performance is unlikely to be driven by

[39]Given incomplete information on year of entry for banks, I do not compute entry and exit rate.

[40]Note that for simplicity I do not distinguish between exit through M&A and exit through bankruptcy or liquidation, although exit through M&A does not necessarily imply a below-average performance, while it is most often the case for exit through bankruptcy.

disproportionate exit of specific categories of foreign banks.

— Figure 4 insert here —

1.4.4 Empirical Results

Given that the panel is largely unbalanced, I look at three different samples: the first one includes all active and inactive banks included in BankScope. The second one only includes active firms, thus excluding firms that have exited the market. The third one is a balanced panel of banks that are active and have no missing data for book assets for the five year period 2007-2011[41].

Testing Hypothesis 1a: Return on Equity as the dependent variable. I proceed to the testing of the first set of hypotheses which examines the relation between vertical capabilities and firms' performance, controlling for horizontal capabilities.

— Table 2 insert here —

Table 2 reports the results on the determinants of banks' performance in sub-Saharan Africa for the three different samples. The dependent variable is the return on equity using income before tax (ROE). As mentioned above, I control for the fitness of the portfolio of adaptation capabilities by including a variable indicating the number of foreign subsidiaries owned by the parent group in sub-Saharan Africa. I examine first the sample containing both currently active and inactive firms. In model 1, the coefficient on the regional African MNB dummy is negative and significant at the 1 percent level indicating that regional African MNB have significantly lower ROE than global banks. While in model 1 I use several host country controls capturing the level of development of the country (GDP per capita), the degree of market competition (lagged HHI index), indicators of banking regulation and African areas dummies, in model 2 I apply host country fixed effects. The increase in the R-squared between the two models suggests that there are indeed significant country effects affecting the performance of banks that are not totally captured by the control variables in model 1. In model 3 I include year-host country fixed effects instead of separate year and host country fixed effects, which would capture any cross-section heterogeneity at the year-host country level. As such, instead of con-

[41]Given the high proportion of banks with missing data on the last available year of 2012 related to the fact that some banks had not yet reported results for 2012 at the time when the data was downloaded, the estimation is carried on the 2007-2011 period.

trolling for regional, sub-Saharan, macro-economic shocks, as in model 2, model 3 controls for temporal variations in macro-economic conditions at the country level. The R-squared of model 3 compared to model 2 increases slightly; the parameter estimates of the ownership dummies also change, but marginally. Overall, being a regional African bank is associated with a ROE between 18 percentage points to 23 percentage points lower on average than that of a global bank, depending on whether host country dummies or year#host country dummies are included. Concerning the other groups of banks, we note that the coefficient on domestic bank is also significantly negative in the three models considered, although the coefficients are nearly half the size of those of regional African banks. Finally, the difference between emerging banks and global banks in terms of ROE is not significant, although the sign of the coefficient is negative for the dummy emerging MNB.

Turning to the second panel consisting exclusively of active firms, the results are qualitatively similar but the coefficients are higher for the three ownership dummies. This suggests that the lower performance of regional African banks relative to global banks in the sample including all firms is not due to a higher number of non-performing regional African banks which are then forced to exit the market. On the contrary, when I exclude firms which have exited at one point during the 10-year period (2003-2012), regional African banks are performing even worse relative to global banks. In the 5-year balanced panel (2007-2011), which controls for both time of entry and exit of firms, the coefficients on the regional African MNB dummies are smaller in the three specifications, suggesting that the results obtained on the two other panels may be in part driven by more recent entry of regional African banks (after 2007), and thus less experience and time for those banks to adjust to their host countries.

Finally, given that global banks entered African host countries on average two decades before African banks they might have had time to build the required adaptation capabilities. As such, in columns (10) and (11) I control for the year of entry as it might influence the possession of adaptation capabilities. In column (10) the estimation is done on the sample with all firms. The sample is smaller than in columns (1)-(3) given that information on the year of entry (date of incorporation) is missing for more than half of the banks. The year of entry enters negatively but it is only significant at the 10% level. In column (11) I restrict the sample to the banks that entered after 1994, given that the median year of entry for African banks is 1995 (see Table A.4 in the Appendix). In other words, this sample excludes global banks (as well as other banks) which had entered prior to 1995 and which might have had enough time to adapt to the local environment and to build their adap-

tation capabilities. The sample size is much smaller (395 observations). We note that regional African banks are still associated with ROE on average 19 percentage points smaller than global banks.

Overall, the finding that regional African banks are performing worse than global banks, as measured by ROE, is robust across different samples and different specifications. It is consistent with the first Hypothesis 1a, according to which the higher the level of a multinational firm's operational capabilities, the higher its total profit, controlling for its portfolio of adaptation capabilities. Concerning the control variables, I first note that the coefficient on the proxy variable for the portfolio of adaptation capabilities, the number of foreign African subsidiaries of the parent group, is negative and not significant across the different specifications, which may be interpreted as evidence of the short-lived advantages of adaptation capabilities when competing with firms with higher levels of operational capabilities. This result is similar to Fang et al. (2007) who found no significant association between performance and internationalization experience in the long term. I also find that listed banks[42] are on average associated with higher ROE, which is not surprising if we consider that these banks are on average larger and more experienced than non-listed banks. Finally, it is worth mentioning that the explanatory variables reproduce, at best, around 20% of the variation in ROE in column (1)-(10), suggesting the presence of important time-invariant bank fixed effects.

To sum up, these first results lend support to Hypothesis 1a according to which higher operational capabilities are associated with higher profits, controlling for adaptation capabilities.

Testing Hypothesis 1b: Cost income ratio as the dependent variable. I now turn to Hypothesis 1b according to which regional African banks should record lower operational efficiency than global banks. The dependent variable is the cost income ratio and the estimation is done on the three panels. The results are reported in Table 3.

— Table 3 insert here —

The coefficient on the dummy regional African banks is positive and significant in model 1 (without host country fixed effects) and model 2 (including host country fixed effects) across the three panels, which supports Hypothesis 1b. Being a regional African bank is associated on average with a cost income ratio between 18

[42]In 2011, 10% of the domestic banks, 13% of the subsidiaries of global banks, 3% of the subsidiaries of regional African banks and 8% of the subsidiaries of emerging banks were listed.

percentage points and 27 percentage points higher than that of a global bank, depending on the sample chosen and on whether host country fixed effects are included. The association is significant at the 5% level across all specifications and samples. Domestic banks are also associated with lower efficiency than global banks, but the dummy coefficient is much lower than that of regional African banks. Finally, the difference in operating efficiency between global banks and emerging banks is not significant. Overall, the results presented in Table 3 are consistent with Hypothesis 1b and are robust to the inclusion of host country and bank controls as well as to year and host country fixed effects.

Testing Hypothesis 2: Interacting bank ownership dummies with institutional quality and GDP per capita. I then examine whether regional African banks might in fact, within sub-Saharan Africa, perform better in countries where the institutional environment is weaker and per capita income levels are lower. The results are reported in Table 4.

— Table 4 insert here —

Columns (1) and (2) in Table 4 report the estimates of the relation between financial performance and control of corruption. The sign on the ownership dummies are similar to those reported in Table 2, with regional African banks and domestic banks on average associated with significantly lower ROE than global banks. The coefficient on corruption, which captures the association between corruption and the performance of global banks, the omitted bank ownership dummy, is negative, which is consistent with expectations, but not significant. The interaction term between the dummy regional African banks and control of corruption has a negative sign, which is contrary to expectations, as it indicates that higher corruption affects even more negatively the performance of regional African banks, relative to global banks. However, the coefficient is not significant. These results are robust to alternative specifications, using time fixed effects and host country fixed effects as well as different firm and host country control variables.

Columns (3) and (4) which include a broader measure of institutional environment, the *Bad Governance index*, report results that are qualitatively similar to those using the indicator of control of corruption. The bad governance variable has a negative coefficient, which is consistent with expectations as it indicates that global banks perform worse in environments with weaker governance, but it is not significant. Concerning the interaction term between the dummy regional African banks and the governance index, the coefficient has the expected positive sign but

it is not significant. When additional controls are included, this result does not change. To sum up, these results do not support Hypothesis 2 according to which regional African banks should be better able to perform than global banks in countries where corruption is more prevalent, or where governance is weak. The results suggest that the institutional environment does not have a significant impact on financial performance when other factors are controlled for and that there are no significant differences between regional African banks and global banks on the effect of institutional environment quality on their performance. In other words, the institutional voids' advantage hypothesis is not supported by these results as regional African banks do not seem to have an advantage over global bank in operating in markets with low institutional quality. If they do, this advantage does not translate into significantly higher performance.

Finally, the last two columns, (5) and (6), investigate whether regional African banks are better able to perform in countries with low GDP per capita, relative to global banks. Contrary to expectations, the sign on the interaction variable GDPc#Africa is positive in column (5), indicating that African banks are relatively better able to perform when the host country GDP per capita is higher. The coefficient is however only significant at the 10% level. When further controls and fixed effects are included, the significance drops below conventional levels (column (6)).[43]

1.5 Channels at work: Investigating the drivers of performance differences

I further investigate the drivers of financial performance by decomposing the profit measure into its accounting components. Banks' profits are driven by net interest margins and non interest expenditures. Indeed, banks' profit before tax satisfies the following accounting identity:

$$\begin{aligned}\text{Profit before tax} = \text{Net interest margin} + (\text{noninterest income} - \text{overheads} \\ - \text{other noninterest expenditures} - \text{loan loss provisioning})\end{aligned} \tag{1.5}$$

As such, I re-estimate equation (1.3) with alternatively interest income and interest expenses (the difference between these two elements constituting the net interest

[43]The different specifications were also estimated on the sub-sample of survivor firms and on the 5-year balanced panel, but the results were not qualitatively different, in particular, the coefficient on the interaction terms were not significant.

margin) and bad loans (which impacts profit through lower interest income and higher loan loss provisioning) as dependent variables. The results for the three different samples of firms are presented in tables 5, 6 and 7.

1.5.1 Interest income vs. interest expenses

No significant differences between regional African banks and global banks in interest income, but significant differences in interest expenses. The results in Table 5 indicate that while there are no significant differences between global banks and regional African banks in terms of interest income generated by average earning assets, there is however a significant difference between these two groups of banks concerning interest expenses generated by average interest bearing liabilities. Indeed, once host country fixed effects are included, regional African banks have interest expenses that are on average two percentage points higher than global banks. This indicates that regional African banks have higher funding costs as interest expenses comprise interests paid on deposits and borrowings to fund the loan portfolio[44]. This result is not surprising if we consider that global banks have better access to international capital markets, and should therefore have lower cost of funding than regional African banks. Subsidiaries of these global banks may also benefit from internal loans at lower cost and higher quantity than subsidiaries of regional African banks. At the same time this result may also suggest that regional African banks and domestic banks offer higher interest rate for customer deposits than global banks[45]. Unfortunately, we do not have detailed data on interest expenses by customer segment or direct information on deposit interest rates charged by each bank to examine whether the difference in the overall cost of funding is related to (input) price differences between banks for a particular source of capital.

— Table 5 insert here —

1.5.2 Explaining differences in interest expenses: the liability mix

Another possibility is that the lower cost of funding of global banks is due to differences in the liability mix: banks with a larger proportion of their funding composed

[44]Note that this result also suggests the existence of important geographic, or location, effects on banks' interest expenses.

[45]Research done by Cull and Trandafir (2010) comparing foreign and domestic banks in Uganda indicates that the latter indeed have higher average deposit rate than the former, although the authors do not compare between different categories of foreign banks.

of current deposits have a lower total interest charge because these current deposits generally pay lower interests than savings or term deposits. I use data from BankScope to investigate further this issue. Given the smaller number of banks reporting a detailed liability break-down, the sample size is reduced to 287 banks in total. Table 6, which reports the liability mix of regional African banks relative to global banks indicates that a composition effect related to the liability mix may be driving the results. The results indicate that regional African banks have a significantly lower share of their funding composed of (low-cost) short-term capital, compared to global banks. In particular, more detailed data indicate that regional African banks have a significantly lower current deposit base than global banks (see Table A.3 in the Appendix for definitions of the funding categories). Regional African banks are also more reliant on more costly customer term deposits. Anecdotal fieldwork evidence from Kenya, Tanzania and Ghana corroborates this finding: some global banks benefit from a large deposit base through financing large corporates and institutional clients. In addition, large global banks tend to be very well established in the retail market and therefore have easy access to current customer deposits. Regional African banks, on the other hand, tend to be newcomers and need to open additional bank branches and establish trust in order to increase their deposit base. Access to current customer deposit was a concern for a significant number of foreign regional African banks and small domestic banks surveyed during the fieldwork.[46]

— Table 6 insert here —

1.5.3 Differences in credit quality

I further investigate whether the difference in performance between global and regional banks is related to the quality of their loan portfolio as identified by their level of bad loans. I use two different measures of bad loans, the ratio of non-performing loans to gross loans and the ratio of impaired loans to equity. The results are reported in Table 7. While I find that regional African banks have significantly higher levels of non performing loans compared to global banks in the baseline equations, the difference disappears when firm and host country controls as well as year fixed effects are included. Given that non-performing loans reduce interest income for banks, this corroborates the previous finding that there are no significant differ-

[46]Indeed, a little under 50% of the domestic and regional African banks surveyed considered that it was easy to access customer deposits, whereas this number was close to 90% for the foreign affiliates of global banks. See Chapter 3 for more details on the survey.

ences between global and regional African banks in their ability to generate interest income once additional controls are included. Impaired loans (see Table A.3. in the Appendix for definitions) have an impact on the income statement through an increase in the provision for loan losses (see equation 1.5). In the first panel with all firms, we note that regional African banks have significantly higher levels of impaired loans than global banks. However, the difference is only significant at the 10% level when host country fixed effects are included. In the sample with survivor firms and in the 5-year balanced panel the difference between African banks and global banks in their level of impaired loans is robust to the inclusion of host country fixed effects. Overall, this suggests significant differences between global banks and African banks in the quality of their loan portfolio when one considers impaired loans, that is, loans for which it is probable that all amounts due will not be collected. One should be cautious in interpreting these results however. Indeed, the change in the point estimates and significance of the coefficient when host country controls are included could be due to cross-country differences in accounting systems and definitions of impaired loans, on top of potential variation in the average quality of credit in the different host countries.

— Table 7 insert here —

Overall, these additional findings suggest that the lower ROE of the foreign affiliates of regional African banks relative to those of global banks is due to higher interest expenses, related to the composition of their liability mix, as a significantly lower proportion of their funding base is constituted of low cost demand deposit compared to global banks. In other words, the lower performance of regional African banks is due to higher cost of funding, while there is no strong evidence of significant differences in the quality of the loan portfolio as measured by the ratio of non-performing loans to gross loans, once host country controls or fixed effects are included. In the next section I test the robustness of these results to two potential composition effects: the first one related to the geographic choices of location of foreign banks and the second one related to segmentation in the loan market.

1.6 Alternative explanations: geographic composition and market segmentation

1.6.1 Geographic location of foreign banks in sub-Saharan Africa

The difference in performance between foreign banks in sub-Saharan Africa could also be driven by self-selection of foreign banks into specific host countries. Previous literature (The World Bank, 2006; Van Horen, 2007, Cuervo-Cazurra and Genc, 2008) has shown that the determinants of foreign firms' entry in developing countries differed between developing and developed country multinationals. In particular, multinational firms may self-select into host markets depending on their vertical capabilities and their portfolio of horizontal capabilities. Firms with lower levels of vertical capabilities may not be able to enter certain countries if their vertical capabilities are below a certain threshold determined by the characteristics of the demand and the intensity of competition in the host country. They may be more likely to enter countries where the demand is less sophisticated, the institutional environment is weaker and the degree of regulation is lower. Similarly, firms with the highest levels of vertical capabilities and with a larger international presence may have a higher opportunity cost to invest abroad and may prefer to direct their resources to fast-growing economies where they can enjoy higher profits. If country characteristics such as culture or regulation have an impact on firms' performance beyond what can be taken into account by additive host country fixed effects or by two-way host country-time fixed effects (as included in the different performance regressions), then the differences in firms' performance could be driven by a composition effect (see Blundell, Macurdy and Meghir, 2007). I first examine the geographic location of regional African banks and global banks by analyzing the host country determinants of the market shares of global banks and regional African banks. I then proceed to examine how much of the difference in performance between these two groups is explained by host country characteristics using the Oaxaca-Blinder decomposition technique.

1.6.1.1 Host country determinants of foreign banks' market shares

I examine separately the host country determinants of the total market shares of global banks and of regional African banks in sub-Saharan African host countries to assess whether there are significant locational differences between these two groups of banks. Given that the dependent variable of market share is censored below by

0 and above by 1, I use a two-limit Tobit model for the estimations. The two-limit Tobit model can be represented as:

$$y^*_{it^c} = \beta X^c_t + \epsilon^c_{it} \tag{1.6}$$

where $y^*_{it^c}$ is a continuous latent variable (unobserved for values smaller than 0 and greater than 1) representing the total market share of each group of bank i (global banks or regional African banks) in country c at time t, X is a vector of host country time-varying explanatory variables, β is a vector of coefficients to be estimated ϵ^c_{it} is an error term.

If we denote the observed dependent (censored) variable as y_{it^c} (market share of group i at time t in host country c), then

$$y^c_{it} = \begin{cases} 0 & \text{if } y^*_{it^c} \leq 0 \\ y^*_{it^c} & \text{if } 0 < y^*_{it^c} < 1 \\ 1 & \text{if } y^*_{it^c} \geq 1 \end{cases} \tag{1.7}$$

The host country variables are similar to those included in previous regressions. They include a measure of concentration in the banking market (HHI lagged), indicators of the strength of regulation in the banking sector (minimum capital requirements and minimum capital adequacy ratio), the bad governance index to capture institutional quality, and measures of income level (GDP per capita) and macroeconomic growth (GDP growth). I cluster the standard errors at the host country level. The results are reported in Table 8.[47]

There are a few significant associations between the market shares of each two groups of banks and country characteristics, once year fixed effects and regional dummies (East, West and Central Africa) are included. Overall, they suggest that the prevalence of regional African banks is lower in countries where minimum capital requirements are higher, while it is the contrary for global banks. These banking regulations may constitute higher barriers to entry for African banks, which have smaller balance sheets on average than global banks. These results also indicate that global banks have higher market shares in countries where GDP growth is higher, which probably reflects their higher opportunity cost.[48] Interestingly, I do

[47]In theory, the number of observations is 10 years*47 countries, however, for an important number of small African countries, there were no banks included in BankScope in the first years of the sample, and for some in the last reporting year (2012). In addition, missing values in host country characteristics are also explaining the lower sample size. As such, these results should be interpreted with caution and only considered as indicative.

[48]This result echoes findings in the international banking literature (Van Horen, 2007), according

not find that the geographic prevalence of global banks or regional African banks is significantly associated with the quality of the institutional environment in the host country, as measured by the Bad Governance Index. In particular, regional African banks are not significantly more prevalent in countries where governance is weak.[49]

— Table 8 insert here —

1.6.1.2 To what extent does geographic self-selection explain performance differences?

To further examine the extent to which performance differences may be driven by a geographic composition effect, I employ the Blinder-Oaxaca decomposition technique (Blinder 1973; Oaxaca 1973)[50] to examine how much of the difference in ROE between global banks and regional African banks is explained by characteristics of their host countries. This technique provides a decomposition of outcome variables between two groups into a part that is explained by differences in the predictors, the observed characteristics, and an "unexplained" part attributable to differences in the estimated coefficients, and which captures all the potential effects of differences in unobserved variables.[51] Given that the goal of this exercise is to determine how much of the performance differences between the two groups of banks are determined by location differences, I use a two-fold decomposition into an explained part and an unexplained part.[52] I use the set of host country characteristics included in

to which banks from industrialized countries tend to go to large developing countries, while banks from developing countries tend to enter the smaller developing countries.

[49]This result is relatively consistent with Cuervo-Cazurra and Genc (2008), who also use Tobit analyses but include each World Bank Governance variables (non reverse-coded) separately and find that the prevalence of developing-country MNEs among the largest foreign affiliates is, as expected, negatively related to regulatory quality and the control of corruption, but, contrary to expectations, positively related to the rule of law. In other words, while developing-country multinationals may be better able than developed-country multinationals to deal with political instability, they still prefer to operate in countries where the rule of law applies.

[50]The Blinder-Oaxaca decomposition methodology is often used in labor economics to decompose mean differences in wages between two groups (for instance male/female). In particular Blinder (1973) and Oaxaca (1973) used this technique to examine wage discrimination. It divides the wage differential into a part that is explained by group differences in productivity characteristics, for instance education, and a residual part which cannot be accounted by such differences and is often used as a measure for discrimination. While it has mainly been used in the labor market literature, it can be applied to study group differences in any outcome variable.

[51]Given are two groups, A and B; an outcome variable, Y; a set of predictors and a constant X; slope parameters and intercept β and a nondiscriminatory coefficient vector β^*. We have: $E(Y_A) - E(Y_B) = Q + U$. Q is the explained part: $Q = \{E(X_A) - E(X_B)\}' \beta^*$ and U is the unexplained part: $U = E(X_A)'(\beta_A - \beta^*) + E(X_B)'(\beta^* - \beta_B)$.

[52]Note that a three-fold decomposition technique is also frequently used. In the three-fold decomposition the outcome difference is divided into a first component, which is the part of the differential that is due to group differences in the predictors (the "endowments effect"), a second

the previous Tobit regressions as predictors. I employ the package Oaxaca in Stata (see Jann, 2008) and the results are reported in Table 9. They indicate that the average difference in ROE between the two groups over the sample period is 24 percentage point, of which only 12% (1.953/24.142) is explained by group differences in characteristics of their geographic location.

— Table 9 insert here —

Overall, these results indicate that the differences between global banks and regional African banks in the characteristics of their geographic location account for only a small part of the performance differential.

1.6.2 Is segmentation in the loan market driving the results?

A second potential composition effect that might account for the difference in performance between groups of banks is related to the existence of market segmentation and stable differences in the composition of the loan portfolio between banks. Indeed, if some banks have a portfolio which primarily consists of loans to sectors with high return and/or low risk with low levels of bad loans, then these banks might have a competitive advantage which then translates into higher profits. In other words, if different categories of foreign banks cater to different market segments then foreign banks' heterogeneity in a host country could be explained, and sustained, by product differentiation and niche markets. However, the fact that I did not find any significant differences between global and regional African banks in terms of interest income and non performing loans, and that the performance differences seemed to be driven by banks' liability mix may already suggest that regional African banks and global banks are not operating in separate markets on the asset side of their business. In this sub-section I test the robustness of my results by further examining the existence of market segmentation.

1.6.2.1 Bank performance and market segmentation

I explore the possibility that the difference in performance is due to the existence of different market niches, or strategic groups (Cool and Schendel, 1988; Dranove, Peteraf and Shanley, 1998), consisting of firms following similar competitive strategy

component measuring the contribution of differences in the coefficients (including differences in the intercept) (the "coefficient effect") and a third component, which is an interaction term accounting for the fact that differences in endowments and coefficients exist simultaneously between the two groups (See Blinder, 1973; Oaxaca, 1973 and Jann, 2008).

and which are relatively stable over time. In the commercial banking industry, these strategic groups are likely to be defined along customers' lines, with banks catering to specific customers or products, such as corporates, SMEs or retail customers. The existence of strategic group, which implies market segmentation, would have two likely consequences. The first one is that there would be performance differences between groups, which may be large, and the second one is that performance differences in the same strategic group would likely be small (see Rumelt, 1991). The existence of mobility barriers (Caves and Porter, 1977) guarantees a relative permanence in observed performance differences. If we are trying to isolate the relation between firms' capabilities and performance, we need to examine whether the mechanism at play is primarily that of the division of firms into specific strategic groups, with high mobility barriers between them. More specifically, what I want to examine here is the possibility of an overlap between the proxy for firm's underlying capabilities, the "ownership dummies", and possible strategic groups defined along product lines, explaining significant and stable differences in performance. In sub-Saharan Africa, strategic groups could exist if global banks systematically cream-skimmed the best borrowers, without offering loans to lower ranked customers, in other words if there were systematic and stable differences in the customers that global and regional African banks target.

To illustrate this issue with a theoretical example applied to the commercial banking sector, I consider three different pools of borrowers: Pool A consists of borrowers for which information is readily available and accurate, generally large firms with credit history. Pool B consists of returning applicants to the loan markets for which financial information is limited. Pool C comprises primo applicants with no credit history or former borrowers with default history or rejected borrowers. Given that the quality of type A borrowers can be assessed easily, banks with high operating processes and able to offer lower prices due to lower cost of funding, in other words, higher level of vertical capabilities, will be at an advantage. Global banks should then have an advantage over other categories of banks. A portion of these perfect information firms are large firms requiring large loans. As such, smaller banks cannot finance them. In countries with low capital requirements and a large unbanked population, small local banks will be unable to supply these firms with the amount of loan required. Global and regional firms will thus compete on price. If global banks are relatively more efficient to screen firms with perfect information they will be able to push down prices, that is, interest rates on loans, further, even if we take the conservative view that global banks do not get more favorable terms to finance themselves on the wholesale market than regional banks or obtain internal

funding at a lower cost and/or in a higher quantity.

Concerning firms for which financial information is limited, type B borrowers, relationship lending dominates as a screening method. To the extent that relationship lending is intrinsically linked to the knowledge of the local environment, it can be considered as a specific horizontal capability. I consider that domestic banks have an advantage over both regional and global banks due to cultural factors and stronger presence in the market. As such, for type B borrowers, the amount of labour required to screen and monitor a loan B should be the lowest for domestic banks, and the highest of the three for global banks. The pool of type C borrowers then consists of a higher percentage of risky firms, those rejected by other banks and/or those which have previously defaulted on their loans. Regional banks then need to screen carefully to reject the "lemons". Given that there is no information readily available, they will take more time to screen and monitor these projects. Having to tap into the type C pool of borrowers should imply higher overhead costs and potentially higher levels of bad loans (lower interest income), which could translate into systematic performance differences in ROE and cost income ratio, all else equal.

1.6.2.2 Loan portfolio of foreign banks in sub-Saharan Africa

As suggested in the above example, the observed difference in financial performance between foreign banks might be driven by the fact that different categories of banks extend loans to different types of clients. In this section I investigate empirically the possible existence of market segmentation along customer niches. I look at three different aspects of the composition of banks' portfolio: its maturity profile, the allocation of loans by business segments (corporate, retail), and the allocation of loans by economic sectors. The econometric specifications are based on equation (1.3), with a measure of loan portfolio allocation as the dependent variable and the same three ownership dummies as explanatory variables. I obtain data on loans from three different sources. The first source is the BankScope database, which provides information on loan maturity and on loans to the retail and corporate sectors. I then complement this data with information on loan portfolio allocation by economic sector, which I hand collected from banks' annual reports. I obtain information on a subsample of 106 banks which publish data on the sectoral allocation of their loans in their annual reports. I have sectoral loan data for around 21% of banks included in the BankScope sample (Table A.6 in the Appendix). This sample of banks reporting the allocation of loans by sector is an unbalanced panel over the period 2003-2012. The third data source that I use to further examine the differences

in loan portfolio within the corporate segment (SMEs vs. large corporates)[53], is the survey data that I collected mainly during fieldworks in Kenya, Tanzania and Ghana, which are among the countries with the highest number of foreign banks in sub-Saharan Africa. This fieldwork data is completed by data from banks in 11 other sub-Saharan African countries to which I distributed the survey questionnaire by email. I obtain a sample of 74 banks (Panel A) with non missing information on loan portfolio allocation by segment, including 59 banks (Panel B) which were surveyed during the three fieldworks and representing on average over 60% of the banks in Kenya, Tanzania and Ghana.[54] More details on the survey methodology, sample description and representativity are presented in Chapter 3, Section 4.

Maturity profile of banks loan portfolio. Examining loan maturity of banks' portfolio using OLS regression, the results presented in Table 10 show that regional African banks tend to have a lower percentage of long term loans - riskier than the shorter term loans- than global banks. This is consistent with Beck et al. (2011) who find that almost 60% of loans in Africa are for less than one year and less than 2 percent of loans are for more than 10 years[55]. The difference is however only significant at the 10% level and disappears when additional controls are included. The difference between global banks, emerging banks and domestic banks is not significant.

— Table 10 insert here —

Allocation of loans by business segment. I then use information obtained from BankScope on the type of customers to which banks extend their loans. The results are reported in Table 11. Regional African banks have a lower percentage of their loan portfolio exposed to the residential mortgage and to the corporate sectors than

[53]As mentioned in the introduction, a significant literature has examined the impact of foreign banks' entry on local credit. The comparison was generally between global banks from developed countries and domestic banks from developing countries. An important debate has focused on whether foreign banks decreased the credit available to SMEs via cream-skimming the best clients thus preventing local banks from cross-subsidizing SMEs with more secure loans to large corporates. These studies often rely on data on loan size as a proxy for the type of firms (see Clarke et al. (2005)), but it is not unfortunately not always an appropriate proxy (Stein, 2010).

[54]Rather than giving banks a predetermined size classification of firms, the survey questionnaire directly asks banks their definition of SMEs. In that respect, it follows the methodology employed by Beck, Demirgüç-Kunt and Martínez Pería (2008) for their survey of bank SME financing around the world. Most of the banks surveyed during the fieldworks define SMEs according to their annual turnover (77%), the rest of the banks defining them according to their transaction amount. On average, the annual turnover varies between US$200000 and US$5 millions and the transaction amount varies between US$3,000 to US$300,000 depending on the client and the bank. These numbers are consistent with Beck, et al. (2008) banks' SME definitions.

[55]The authors use the database Making Finance Work for Africa (http://www.mfw4a.org/).

global banks, however the difference disappears once firm and host country controls are included as well as year fixed effects. Domestic banks have a higher share of their portfolio invested in residential mortgages than global banks and other foreign banks. The result is significant at the 5% level and robust to the inclusion of additional controls. This can be explained by better knowledge of local conditions by domestic banks allowing them to extend more retail mortgage loans while foreign banks may be more reticent to provide loans to retail customers to finance housing projects[56].

— Table 11 insert here —

Allocation of loans by type of corporate customers. I further investigate the differences between banks in terms of the type of corporate customers in their loan portfolio, distinguishing between small and medium enterprises (SMEs) and large corporates relying on the survey data presented above. The results, reported in Table 12, indicate that there are no significant differences between the four categories of banks (global, emerging, regional African and domestic banks) in the share of their portfolio allocated to large corporates. Concerning loans to SMEs, the coefficient on the regional African dummy is positive, but only significant at the 10% level, while the coefficient on the domestic bank dummy is positive and significant at the 5% level in column (1). However, once further firm and host country controls are included, both coefficients become insignificant. This data is admittedly limited but it further suggests that there are no significant differences between foreign banks in their allocation of loans by business segment, especially no significant differences between global banks and regional African banks in the share of their loan portfolio allocated to the SMEs segment.

— Table 12 insert here —

Allocation of loans by economic sectors. Finally, I examine the sectoral allocation of loans in Table 13 using data obtained directly from banks' annual reports. As reported in Table A.6 in the Appendix, only 21% of the banks in the BankScope sample report the sectoral allocation of their loan portfolio. A comparison of means between the group of banks which reports this sectoral loan data and the one which

[56]This was confirmed by anecdotal evidence from fieldwork in Kenya and Tanzania. The managers of global banks interviewed in these countries reported that their headquarters were reluctant to have a high exposure to the local mortgage market, while domestic banks were much more willing to finance this sector given the high return that it offered.

does not indicate that the reporting banks are significantly larger (by total assets). The means differences between the two groups in terms of financial performance indicate that the reporting banks tend to record higher ROEs over the sample period. However, this difference is not significant at the 5% level for foreign banks, which suggests that potential sampling biases are not strongly affecting performance measures.

The results of the OLS estimations reported in Table 13 indicate that both regional African banks and emerging banks have a significantly higher share of their loan portfolio invested in extractive industries. The result is especially significant for emerging multinationals, at the 1% level, while the result is only significant at the 10% level for regional African banks. Another significant result is the higher exposure of regional African banks, relative to global banks, to the transport and communication sector. In addition, both domestic and regional African banks offer significantly less loans to the manufacturing sector than global banks. As such, although I do not find strong evidence of market segmentation with respect to types of loans (retail vs. corporate) and maturity of loans, I do find that global banks finance the manufacturing sector more than other banks do and that regional African banks and emerging banks offer relatively more loans to the extractive industries sector, as a percentage of their total loans. This is consistent with the fact that FDI from China and India began their expansion in Africa in the natural resource extraction industry (Beck et al., 2011). I do not find any significant difference between banks with respect to the agriculture sector, community and social sector, and government sector. The findings also corroborate Beck et al. (2011:43) findings that the agricultural sector is significantly underrepresented in the loan books of all banks, while trade and commerce and construction are overrepresented on the loan books of African banks.

— Table 13 insert here —

To sum up, I find only weak evidence of market segmentation along customer niches, and more specifically, I do not find that global banks offer significantly more loans to corporate clients than regional African banks. As such, with the limitation of the data at hand, I do not find strong evidence that the heterogeneity of foreign banks' performance is driven by market segmentation on the asset side of the business: once again, the performance differential between these two groups of banks seems to be driven by differences in interest expenses (the cost of capital), rather than differences in interest income.

1.7 Discussion

The theoretical framework developed in this research examined how host country environment impacted the exploitation of multinational firms' capabilities. Testing the hypotheses in the context of banking in sub-Saharan Africa, I found empirical support to the first two hypotheses: firms with lower levels of vertical capabilities (regional African banks) are less profitable than firms with higher levels of vertical capabilities (global banks), controlling for the fitness of the portfolio of horizontal capabilities (proxied by the number of foreign subsidiaries of the general ultimate owner or parent company) [H1a]. The lower performance of firms with low levels of vertical capabilities (lower return on equity of regional African banks) is driven by lower operational efficiency (higher cost/income ratio) [H1b]. However, contrary to Hypothesis 2, I do not find that regional African banks are significantly better able to navigate institutional voids than global banks or that they perform relatively better in countries with low income levels. Decomposing the measure of profit before tax, most of the evidence pointed to significant differences in interest expenses between global banks and regional African banks, related to the composition of the liability mix, while differences in interest income were not significant.

I further examined whether the performance differences were driven by two potential composition effects, the first one related to the geographic location of banks and the second one related to the composition of banks' loan portfolio. While there is evidence of self-selection into host countries, with a higher prevalence of global banks in African countries with high GDP growth and a lower prevalence of regional African banks in countries with high minimum capital requirements, I find that host country characteristics explain little of the performance difference between global and regional African banks. Finally, I find only weak evidence of market segmentation which suggests that the results are not primarily driven by the existence of market niches. To answer the research question ("Can experience in operating in environments with weak institutions and low GDP per capita compensate for lower levels of productivity when operating in other developing environments?") it seems that the answer is no. A more nuanced interpretation is that the potential adaptation cost advantages provided by well-adapted horizontal capabilities when operating in a host market are limited. In addition, relevant experience is a potent mitigating factor for high adaptation costs when horizontal capabilities have to be built. This answer raises a second question.

Why do regional African banks survive despite facing strong competition from global and emerging banks? A first potential explanation could be that most of the regional African banks have in fact a higher exit rate and most of them do not

survive very long, which would explain the negative and significant coefficient on the dummy *Regional African MNB* in the performance regressions. Considering that the large majority of firms exits within five years after their entry[57], if the majority of regional African banks have entered in the last five years and therefore face a high probability of exit within a few years after entry, it could explain their relatively lower performance. In the sample, and with the limitation that I do not have complete information on the date of incorporation of banks, no global banks have opened up a branch or subsidiary in sub-Saharan Africa after 2007, while six regional African banks did, out of a total of 161 regional African banks in 2007. However, it is unlikely that these few last comers are driving the differences in performance. In addition, as shown previously in Table 2, the difference in performance between regional African and global banks is still significant in the 5-year balanced panel.

A second explanation could be be that there are important quality differences between customers inside each market segments: although there are very few differences between global banks and regional banks in terms of maturity, business and sectoral allocation of their loan portfolio, and therefore little evidence of market segmentation, it could be that, in a second layer, these banks differ by the quality of their customers within their portfolio. In other words, there is still the possibility of cream-skimming by global banks of the best borrowers within each economic sector and business segment, without observing significant differences between foreign banks in terms of overall sectoral and business allocation of their loan portfolio. Variations in the quality of customers and their associated costs, especially cost of screening and monitoring, could then translate into significant variations of performance between firms. Indeed, although I have found weak evidence of higher level of bad loans for regional African banks relative to global banks once additional control and country fixed effects are included, the results indicated a significantly lower operational efficiency of regional African banks. One potential reason could be that they incur higher costs of screening and monitoring than global banks due to their dealing with more difficult borrowers. As the data suggested that regional African banks have a slightly (but not significantly) higher part of their portfolio allocated to SMEs than global banks, they may need to set up strong monitoring and information systems, which is costly and pushes the cost to income ratio up, at least until the system is amortized. If global banks offer large loans and rely more heavily on commission and fees to increase their revenues they economize on operating costs

[57]Dunne et al. (1988 : 510) examining patterns of firm entry and exit in the manufacturing industry found that "on average across four-digit industries, 61.5% of all firms exit in the five years following the first census in which they are observed. On average, 79.6% of all firms exit within ten years".

and as a consequence are more efficient. It is thus possible that the coexistence of banks with different levels of performance is related to market segmentation at the sub-sector level, in the type of customers to which banks cater within each business segment.

Finally, and probably more convincingly, as Bloom and Van Reenen (2007) have shown, in countries with low competition the dispersion of firms' productivity tends to be higher. Given that most sub-Saharan African banking markets are characterized by high level of concentration and relatively low market competition, this may also explain why lower-performing (regional African) banks do not exit the market. In addition, it is important to note that even in the most competitive markets, such as Kenya where more than 40 banks operate and compete for the same customers, all the banks are actually generating important profits. In this market interest spreads, especially in the SME segment, are still very high and the banks have not reduced them despite a reduction in operational costs over the years (see Osoro (2013)).

In fine, the higher performance of global banks is due to higher levels of vertical capabilities, embedded in their organizational capital, allowing them to benefit from lower operating and funding costs. The reason why regional African banks may not benefit from the same organizational capabilities may be related to advantages purely conferred by size. In other words, for overhead costs of regional African banks to decrease to the level of that of global banks, economies of scale need to be achieved, which may only be done through a growth in size of regional African banks. Given the small size of African banking markets, it is possible that such economies of scale may only be achieved through international expansion. Similarly, access to lower cost sources of funding will predominantly be achieved with growth in size and increased presence in international wholesale markets.

From a theoretical perspective, the finding that regional African banks are on average associated with lower performance than domestic banks poses the question of the relevance of superior "ownership advantages" to explain FDI as postulated in the OLI framework (Dunning, 1977). In addition, the results do not confirm the "institutional voids' advantage" hypothesis. On the contrary, I find that the performance of regional African banks relative to that of global banks is not significantly affected by the quality of the institutions in the host country. There may be several reasons for the absence of evidence of institutional voids' advantages. The first reason may be that as global banks have set up subsidiaries in sub-Saharan Africa decades before regional African banks started their expansion in the sub-continent, they may have had enough time and experience to adjust adequately to their host environment. This would reduce significantly global banks' adaptation cost (increase

the adequation of their horizontal capabilities with their host environment), and therefore reduce the supposed "institutional voids' advantage" of regional African banks. The second reason may be that the measures of institutional voids used in this study do not accurately capture this concept. It is for instance possible that institutional voids manifest themselves at a more micro-economic level than what is captured by the Worldwide Governance Indicators. A third reason may be, simply, that in the context of banking in sub-Saharan Africa, institutional voids' advantages are very limited or even non-existent. To examine whether this is the case and to understand why if it is so would require further research, not only empirical, but also theoretical to further refine the concept of institutional voids and explore more in-depth the channels through which it could confer advantages to multinationals.

Limitations. One limitation of this research concerns the availability and quality of financial data on banks and the problems associated with using accounting data which can be manipulated, or which may be affected by different reporting standards. Financial data is missing for a few banks in years in which they are active (most often the latest years) and not all the commercial banks in Africa are included in BankScope, although this non-reporting only concerns the smaller banks and those which were incorporated most recently[58]. These omissions however are unlikely to affect substantially the results, and may in fact indicate that they are conservative estimates: given that most of the omitted banks in BankScope are banks which were only recently incorporated and that foreign affiliates of regional African banks are those which have most recently entered new markets in their neighboring countries, including these banks may lower the average measures of financial performance of regional African banks, if we consider that new entrants tend to face higher risk of exit due to lower performance.

A second data limitation concerns the lack of detailed information on loan portfolio of banks, and more specifically the lack of information on the firms to which the different categories of banks lend money. Ideally, I would have data on the amount of the loans, the interest rates, as well as on the size and nationality of the

[58]For a review of the BankScope database and its limitations, see Bhattacharya (2003). A comparison of the number of commercial banks licensed in three of the largest banking markets in sub-Saharan Africa, Kenya, Tanzania and Ghana (which are also those with the largest number of foreign banks) as recorded by the central banks' websites, and those recorded by BankScope suggests that BankScope coverage is very large and that selection bias due to under-reporting is not an important concern. The comparison indicated that out of the 43 active licensed commercial banks in Kenya, only 2 small domestic banks and one small foreign-owned affiliate of a banking group headquartered in Switzerland were not reported in BankScope. For Tanzania, out of the 34 licensed commercial banks, two domestic banks (one licensed in 2009 and another 2011) and one small Indian bank were not reported in BankScope. Finally, in Ghana, out of the 27 licensed commercial banks, two domestic banks (one incorporated in 2009 the other one in 2011) and a subsidiary of an Indian bank incorporated in 2008 were not reported in BankScope.

borrowing firms to which the banks lend. This data would be important to examine whether lower performance of regional African banks is due to specific borrowers' characteristics, beyond loan portfolios' sectoral allocation and loan maturity. As mentioned above, there is still the possibility that these results are driven by market segmentation by type of borrowers (cf. "cream-skimming" of the best clients by large foreign banks). In addition, having more detailed information at the borrower level would allow us not only to have a more in-depth understanding of the drivers of performance but also to examine the welfare implication for host markets of the presence of foreign banks. Indeed, from a policy perspective, the performance of foreign banks matters as it has repercussions on the path of financial development in host countries. The results obtained in this study may be interpreted as evidence that regional African banks increase the fragility of the host banking system as they are associated with lower performance while global banks may improve the stability of the banking system. At the same time, it may be that regional banks are also the ones lending relatively more to small enterprises and non traditional borrowers excluded by global banks, which face high financing constraints despite being crucial for economic development. As such, the impact of these banks on local financial development cannot be adequately inferred from financial statements if it is not associated with a better understanding of the customers to which they lend. This preliminary analysis of the drivers of banks' performance needs to be complemented with further information on banks' lending pattern and behaviour to infer policy implications for FDI in the banking sector.

A third limitation is the quality of proxies for vertical and horizontal capabilities of multinational firms. I have used dummies capturing both the level of vertical capabilities and the characteristics (in terms of size and variance) of the portfolio of horizontal capabilities of firms, but more direct measures would be welcome to assess more accurately the relative impact of vertical and horizontal capabilities on performance. Assessing precisely vertical capabilities would require data on input prices (essentially cost of funding), while measuring horizontal capabilities would require to capture both the foreign experience duration and foreign experience variety of each bank group, taking into account all its foreign subsidiaries. Finally, because of insufficient data on the date of entry of banks, I have not been able to assess the extent to which horizontal capabilities confer time advantages. Ideally, I would have compared the performance of subsidiaries of multinationals with different horizontal capabilities at different time intervals after entry, controlling for vertical capabilities, to examine the sustainability of advantages conferred by horizontal capabilities. With these caveats in mind, it is, to the best of my knowledge,

the first study which has conducted a rigorous comparison of the performance of North-South versus South-South FDI in the banking sector, and put to the empirical test the advantages conferred by the ability to navigate institutional voids.

1.8 Conclusion

This chapter contributes theoretically to the strategic management literature by taking into account foreign firms' heterogeneity when examining multinationals' international performance. The theoretical framework posited the existence of two different types of firms' capabilities: vertical capabilities, which impact the price and marginal cost of firms' product, and horizontal capabilities which impact firms' sunk adaptation cost when operating abroad. I tested the hypotheses in the context of banking sector in sub-Saharan Africa, both an under-studied sector and under-studied location despite being a fast-growing recipient of banking FDI. In so doing this chapter also contributes empirically to the international banking literature.

I found that banks' heterogeneity in their possession of vertical capabilities translated into sustainable differences in performance, while I found no evidence that horizontal capabilities conferred any competitive advantage. In particular the foreign affiliates of regional African banks systematically under-perform those of global banks, and they are not better able to perform in weaker institutional environments and poorer countries. These results are robust across different samples of firms, controlling for entry and exit, for firm and host country characteristics and including year and host country fixed effects. Moreover, the findings are unlikely to be primarily driven by banks' self-selection into host markets and by the existence of market niches. An important message of this chapter is that it is very difficult, or even impossible, to compensate lower vertical capabilities by a better fit of horizontal capabilities with the local host environment: no evidence was found in this research of the existence of "institutional voids' advantage". In other words, the potential advantages provided by lower adaptation costs are short lived when competing with firms with high vertical capabilities.

The implications for future research of these findings are twofold. First, the empirical results have shown that developing and developed country MNEs are associated with different strategies, and perform differently in the host markets. As a consequence, they do not have the same impact on the host economies. This stresses the need to take into account the level of development of the country of origin of foreign firms when examining foreign multinational's entry into host markets. This distinction is particularly important when researchers examine the welfare impact

of foreign firms' entry. Secondly, this research poses the question of the sustainability, or even existence, of potential advantages provided by the ability to navigate institutional voids. This research suggests that "home country" or "home region" advantages are limited when foreign competitors are highly productive and global. This implies a need to reconsider both the concepts of "institutional voids advantage" (Khanna and Palepu, 2006) and that of "liability of foreignness"[59] (Zaheer, 1995). In particular, it is important to acknowledge that there are situations in which the liability of foreignness does not manifest itself, and in which institutional voids advantages are not sufficient to compensate for productivity disadvantages. Understanding how time, as well as host and home countries specific factors, affect the prevalence of these advantages and disadvantages constitutes an avenue for future research.

One potential lesson for developing countries' firms embarking on an international expansion in other developing countries is that to catch up with developed country firms they should build on their knowledge of developing environments by further specializing in niche customer markets, untapped by developed countries' multinationals. In the banking sector in particular, this research suggests that access to low-cost deposit is the key to unlock performance. Given the large unbanked population in African markets, there are still many opportunities for regional African banks to tap into local deposits. For host countries' policy makers, this research suggests that the expansion of regional African banks will not have the same impact on domestic banks than that of global banks. Indirectly testing for the existence of cream-skimming of the best customers by global banks and regional African banks, which would affect negatively domestic banks, this research suggests that so far the expansion of regional African banks does not seem to have threaten the performance of domestic banks, as these enjoy superior average performance relative to the foreign affiliates of regional African banks. The fact that regional African banks are not significantly associated with higher levels of non performing loans once host country characteristics are controlled for might reassure policy-makers when designing banking regulations for increased financial stability. But, as mentioned above, more data is required to assess whether these regional African banks might help close the financing gap which is acute for small and medium entrepreneurs. Finally, more research on the organizational capital of multinational firms, especially examining the relation between the headquarters and the subsidiaries in terms of transmission of information, lending practices and capital, would be necessary to identify the sources of the efficiency advantages enjoyed by the subsidiaries of global banks.

[59]The additional cost incurred by foreign firms over local firms when operating abroad

Table 1: **Vertical and horizontal capabilities of banks operating in a developing country**

		Foreign banks			**Domestic developing banks**	
		Global bank	Emerging bank	Regional developing bank	Domestic multinational bank	Purely domestic bank
Vertical capabilities		High	Medium	Low to medium	Low to medium	Low
Dynamic horizontal capabilities (HC)	Size of the HC portfolio	Large	Medium	Small to medium	Small to medium	1
	Variance of the HC portfolio	High	Medium to high	Low to medium	Low to medium	0
Institutional and income level distance [Home-Host]		High	Medium	Low to medium	0	0

Table 2: **Bank financial performance and bank ownership in sub-Saharan Africa [Hypothesis 1a]**
This table presents the results of multivariate regression analyses of bank performance using OLS estimation. The dependent variable is return on equity using income before tax. The excluded ownership dummy is Global MNB. Variable definitions are in Table A.3 in the Appendix. Constants are included but not reported. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis. The dependent variable is Winsorized at 1%. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively. [a] sample with all firms, [b] sample with firms incorporated after 1994.

	All firms (657)			**Survivor firms (495)**			**5-year Balanced panel (217)**			**Control for year of entry[a]**	**Entry after 1994[b]**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
Regional African MNB	-17.661***	-23.397***	-22.219***	-19.378***	-25.450***	-24.325***	-14.098***	-20.607***	-20.595***	-19.873***	-18.664**
	(4.641)	(4.267)	(4.376)	(4.700)	(4.302)	(4.400)	(4.651)	(4.495)	(4.832)	(5.998)	(7.702)
Domestic bank	-11.676***	-15.113***	-15.507***	-12.868***	-16.003***	-16.020***	-10.771***	-13.346***	-13.380***	-13.145***	-12.077*
	(3.657)	(3.354)	(3.423)	(3.773)	(3.492)	(3.544)	(3.539)	(3.417)	(3.685)	(3.821)	(6.306)
Emerging MNB	-2.391	-2.583	-2.776	-2.853	-2.990	-3.040	0.277	-0.476	-0.612	-1.766	-18.080***
	(5.058)	(4.371)	(4.501)	(5.155)	(4.438)	(4.598)	(5.123)	(4.190)	(4.501)	(5.141)	(5.286)
Listed company	11.528***	10.712***	11.683***	12.488***	12.060***	12.298***	8.527***	9.777***	9.865***	5.029*	4.436
	(2.460)	(2.368)	(2.431)	(2.536)	(2.465)	(2.502)	(2.677)	(2.577)	(2.785)	(2.807)	(5.801)
# foreign subs. in SSA of GUO	-0.001	-0.033	-0.030	-0.012	-0.041	-0.038	-0.031	-0.064**	-0.063*	-0.013	0.067
	(0.036)	(0.039)	(0.039)	(0.036)	(0.038)	(0.039)	(0.030)	(0.032)	(0.034)	(0.052)	(0.049)
HHI(t-1)	15.745*	8.396	2.776	18.477**	9.269	3.341	20.487**	-3.521	-7.673	13.090***	8.983
	(8.812)	(6.684)	(7.786)	(9.193)	(6.803)	(7.912)	(10.016)	(6.305)	(9.955)	(4.932)	(9.200)
GDP per capita (host) '00 USD	0.112	0.121		0.122	0.114		0.134	-0.110		0.089	0.065
	(0.077)	(0.110)		(0.078)	(0.112)		(0.098)	(0.148)		(0.107)	(0.198)
Minimum cap. requirements	0.151*	-0.172		0.107	-0.130		0.069	-0.446		-0.245*	-0.106
	(0.080)	(0.164)		(0.076)	(0.170)		(0.096)	(0.356)		(0.133)	(0.172)
Min. capital adequacy ratio	-88.267			-122.507			-167.894				
	(99.301)			(97.673)			(114.395)				
Prohibition entry via JV	-3.696			-3.477			-5.452				
	(3.954)			(4.025)			(4.321)				
Prohibition entry via branch	7.171*			7.943**			7.486*				
	(3.926)			(3.881)			(3.971)				
East Africa	0.634			0.754			0.020				
	(3.687)			(3.727)			(5.016)				
West Africa	-5.592			-6.841			-8.354*				
	(4.233)			(4.320)			(4.943)				
Central Africa	9.555**			9.922**			6.332				
	(4.126)			(4.226)			(5.863)				
Year of entry										-0.068*	-2.764***
										(0.040)	(0.703)
Observations	1,662	2,025	2,025	1,572	1,935	1,935	697	829	829	1,354	395
Adjusted R-squared	0.105	0.172	0.222	0.119	0.183	0.231	0.124	0.234	0.237	0.247	0.456
Year FE	✓	✓		✓	✓		✓	✓		✓	✓
Host country FE		✓			✓			✓		✓	✓
Year#Host country FE			✓			✓			✓		

Table 3: **Bank operational efficiency and bank ownership in sub-Saharan Africa [Hypothesis 1b]**

This table presents the results of multivariate regression analyses of bank performance for three different samples (all firms, survivor firms, and 5-year balanced panel), using OLS estimation. The dependent variable is the cost to income ratio. The excluded ownership dummy is Global MNB. Variable definitions are in Table A.3 in the Appendix. The following controls are included the regressions: listed company, # foreign subsidiaries in sub-Saharan Africa of GUO, GDP per capita (host), HHI (t-1), minimum capital requirements (host). Model 1 include additional controls: minimum capital adequacy ratio (host), prohibition of entry via JV (host), prohibition of entry via branch (host), East Africa, West Africa, and Central Africa. All models include a constant and year fixed effects. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis. The dependent variable is Winsorized at 1%. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)
	All firms (657)	
Regional African MNB	19.882***	25.686***
	(6.568)	(6.389)
Domestic bank	12.465**	14.143***
	(4.848)	(4.659)
Emerging MNB	-0.946	1.348
	(6.136)	(6.105)
Observations	1,622	1,979
R-squared	0.097	0.133
Host Country fixed effects		✓
	Sample with survivor firms (495)	
Regional African MNB	20.924***	27.137***
	(6.815)	(6.656)
Domestic bank	12.813**	14.167***
	(4.958)	(4.784)
Emerging MNB	-0.822	1.455
	(6.191)	(6.157)
Observations	1,528	1,885
R-squared	0.098	0.137
Host Country FE		✓
	5-year balanced panel (217)	
Regional African MNB	18.189***	22.391***
	(5.966)	(5.889)
Domestic bank	14.107***	15.231***
	(5.224)	(4.884)
Emerging MNB	-0.377	-1.399
	(5.598)	(4.963)
Observations	694	823
R-squared	0.121	0.214
Host Country FE		✓

Table 4: **Bank performance - institutional and economic environment [H2]**
This table presents the results of multivariate regression analyses of bank performance over the 2003-2012 sample period, including all firms, using OLS estimation. The dependent variable is the return on equity using income before tax. The excluded ownership dummy is Global MNB. The following firm and host country controls are included in 2, 4, and 6: listed company, # foreign subsidiaries in sub-Saharan Africa of GUO, HHI (t-1), minimum capital requirements (host). Constants are included but not reported. Variable definitions are in Table A.3 in the Appendix. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis. The dependent variable is Winsorized at 1%. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

		Institutions			**Income level**	
	(1)	(2)	(3)	(4)	(5)	(6)
Regional African MNB	-18.222***	-23.500***	-20.922***	-26.682***	-22.659***	-25.139***
	(2.308)	(5.157)	(5.022)	(5.324)	(4.189)	(4.928)
Domestic bank	-9.198***	-16.216***	-9.444***	-16.254***	-9.260***	-14.810***
	(1.838)	(4.226)	(3.299)	(3.989)	(3.352)	(3.869)
Emerging MNB	-4.000*	-3.871	-4.960	-4.161	-3.585	-1.527
	(2.218)	(4.784)	(4.359)	(4.582)	(5.274)	(5.809)
Corruption	-0.926	-6.113				
	(1.780)	(5.723)				
Africa#corrupt	-3.197	0.231				
	(2.988)	(6.566)				
Domestic#corrupt	0.159	1.817				
	(2.221)	(4.216)				
Emerging#corrupt	-6.047**	4.240				
	(3.084)	(6.198)				
Bad Governance (BG)			-1.468	-13.581*		
			(3.178)	(7.800)		
Africa#BG			1.536	6.282		
			(6.260)	(7.082)		
Domestic#BG			0.734	1.646		
			(3.636)	(4.304)		
Emerging#BG			-3.167	7.071		
			(6.471)	(6.183)		
GDP per capita (host)					0.014	0.112
					(0.078)	(0.113)
Africa#GDPc					0.238*	0.132
					(0.122)	(0.120)
Domestic#GDPc					-0.012	-0.006
					(0.094)	(0.088)
Emerging#GDPc					-0.021	-0.035
					(0.143)	(0.127)
Observations	2,606	2,014	2,606	2,014	2,554	2,025
Adjusted R-squared	0.064	0.171	0.062	0.173	0.069	0.173
Firm controls		✓		✓		✓
Host country controls		✓		✓		✓
Year FE		✓		✓		✓
Host Country FE		✓		✓		✓

Table 5: **Interest income vs. interest expenses and bank ownership**
This table presents the results of multivariate regression analysis of operating performance for three different samples (all firms, survivor firms, 5-year balanced panel), using OLS estimation. The dependent variables are the ratio of interest income to average earning assets and the ratio of interest expenses to average interest bearing liabilities. The excluded ownership dummy is Global MNB. The following controls are included in all models: listed company, # foreign subsidiaries in sub-Saharan Africa of GUO, GDP per capita (host), HHI (t-1), minimum capital requirements (host). All models include time fixed effects. Models 1 and 3 include additional controls: minimum capital adequacy ratio (host), prohibition of entry via JV (host), prohibition of entry via branch (host), East Africa, West Africa, and Central Africa. Constants are included but not reported. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis. The dependent variables are Winsorized at 1%. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Interest income /avg earning assets		Interest expenses /avg int bearing liabilities	
	(1)	(2)	(3)	(4)
	All firms (657)			
Regional African MNB	-0.283	0.540	1.141***	1.716***
	(1.132)	(0.942)	(0.380)	(0.372)
Domestic bank	2.459**	2.055**	2.308***	1.864***
	(1.177)	(0.861)	(0.344)	(0.327)
Emerging MNB	-2.570*	-1.954*	-0.144	-0.258
	(1.437)	(1.073)	(0.469)	(0.382)
Observations	1,469	1,791	1,464	1,787
Adjusted R-squared	0.242	0.354	0.346	0.436
Host country FE		✓		✓
	Sample with survivor firms (495)			
Regional African MNB	-0.491	0.435	1.102***	1.687***
	(1.145)	(0.966)	(0.381)	(0.375)
Domestic bank	1.841	1.700*	1.981***	1.699***
	(1.204)	(0.876)	(0.349)	(0.319)
Emerging MNB	-2.800*	-2.084*	-0.265	-0.332
	(1.432)	(1.073)	(0.465)	(0.377)
Observations	1,390	1,712	1,384	1,707
Adjusted R-squared	0.244	0.344	0.359	0.428
Host country FE		✓		✓
	5-year balanced panel (217)			
Regional African MNB	0.373	1.343	1.369***	1.630***
	(1.417)	(1.369)	(0.430)	(0.469)
Domestic bank	1.619	1.524	1.751***	1.589***
	(1.358)	(1.128)	(0.378)	(0.385)
Emerging MNB	-2.464*	-2.590**	-0.299	-0.501
	(1.426)	(1.234)	(0.461)	(0.423)
Observations	665	785	662	782
Adjusted R-squared	0.253	0.305	0.500	0.507
Host country FE		✓		✓

Table 6: **Banks' funding profile (in % of total funding)**
This table presents the results of multivariate regression analyses of banks' funding profile for two different samples (all firms, and 5-year balanced panel), using OLS estimation. Each dependent funding source variable is in % of total funding. The excluded ownership dummy is Global MNB. The following controls are included in all models: listed company, # foreign subsidiaries in sub-Saharan Africa of GUO, GDP per capita (host), HHI (t-1), minimum capital requirements (host), minimum capital adequacy ratio (host). All models include time fixed effects and host country fixed effects. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	SHORT-TERM FUNDING (total)	**Customer Deposits** current	saving	term	**Deposits from banks**
	(1)	(2)	(3)	(4)	(5)
		PANEL A: All firms (287)			
Regional African MNB	-0.026**	-0.106***	-0.044	0.097**	0.003
	(0.012)	(0.041)	(0.035)	(0.039)	(0.024)
Domestic bank	-0.029**	-0.158***	0.065*	0.066	-0.014
	(0.012)	(0.042)	(0.036)	(0.04)	(0.029)
Emerging MNB	0.002	-0.017	-0.075**	0.043	-0.047*
	(0.013)	(0.055)	(0.031)	(0.051)	(0.026)
Observations	1,823	1,518	1,161	1,561	1,346
Adjusted R-squared	0.167	0.223	0.432	0.423	0.156
		PANEL B: 5-year balanced panel (197)			
Regional African MNB	-0.041*	-0.091	-0.052	0.135***	-0.003
	(0.022)	(0.062)	(0.043)	(0.051)	(0.041)
Domestic bank	-0.048**	-0.236***	0.084**	0.093*	-0.015
	(0.021)	(0.058)	(0.042)	(0.051)	(0.033)
Emerging MNB	-0.003	0.003	-0.041	0.092	-0.033
	(0.021)	(0.066)	(0.031)	(0.065)	(0.032)
Observations	727	655	501	654	567
Adjusted R-squared	0.169	0.238	0.480	0.342	0.151

Table 7: **Level of bad loans and bank ownership**
This table presents the results of multivariate regression analyses of bad loans for three different samples (all firms, survivor firms, 5-year balanced panel), using OLS estimation. The dependent variables are the ratio of non-performing loans to gross loans and the ratio of impaired loans to equity. The excluded ownership dummy is Global MNB. The following controls are included in models 2, 3, 5 and 6: listed company, # foreign subsidiaries in sub-Saharan Africa of GUO, GDP per capita (host), HHI (t-1), minimum capital requirements (host). Models 2 and 5 include additional controls: minimum capital adequacy ratio (host), prohibition of entry via JV (host), prohibition of entry via branch (host), East Africa, West Africa, and Central Africa. Constants are included but not reported. Variable definitions are in Table A.3 in the Appendix. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis. The dependent variables are Winsorized at 1%. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	NPL/gross loans			Impaired loans/equity		
	(1)	(2)	(3)	(4)	(5)	(6)
			All firms (657)			
Regional African MNB	3.270***	1.941	1.693	15.173**	25.366***	14.377*
	(1.166)	(1.628)	(1.568)	(5.984)	(8.072)	(7.871)
Domestic bank	4.442***	3.653***	2.554**	6.590	9.582*	10.376*
	(1.123)	(1.303)	(1.281)	(4.877)	(5.446)	(5.679)
Emerging MNB	-1.662	-0.247	0.001	-14.731***	-3.473	-1.718
	(1.098)	(1.309)	(1.192)	(4.862)	(5.947)	(5.428)
Observations	1,435	969	1,121	1,477	995	1,150
Adjusted R-squared	0.047	0.156	0.223	0.032	0.101	0.167
Controls		✓	✓		✓	✓
Year FE		✓	✓		✓	✓
Host Country FE			✓			✓
			Sample with survivor firms (495)			
Regional African MNB	2.964**	1.660	1.546	15.953***	28.716***	16.609**
	(1.171)	(1.677)	(1.641)	(6.143)	(8.199)	(8.098)
Domestic bank	3.735***	3.533***	2.471*	3.161	7.898	6.922
	(1.141)	(1.319)	(1.272)	(4.850)	(5.333)	(5.337)
Emerging MNB	-1.662	-0.329	-0.112	-14.731***	-3.605	-2.407
	(1.098)	(1.278)	(1.158)	(4.863)	(5.948)	(5.438)
Observations	1,358	901	1,053	1,401	928	1,083
Adjusted R-squared	0.040	0.140	0.227	0.036	0.107	0.177
Controls		✓	✓		✓	✓
Year FE		✓	✓		✓	✓
Host Country FE			✓			✓
			5-year balanced panel (217)			
Regional African MNB	2.337*	3.432*	3.175	11.949*	24.919***	18.147**
	(1.368)	(1.903)	(2.026)	(6.464)	(8.195)	(9.069)
Domestic bank	0.863	1.262	1.209	-1.046	8.712*	9.543**
	(1.043)	(1.031)	(0.994)	(4.765)	(4.773)	(4.539)
Emerging MNB	-0.813	0.492	1.563	-8.415	2.381	6.730
	(1.531)	(1.409)	(1.448)	(6.848)	(6.082)	(6.898)
Observations	705	480	550	718	491	561
Adjusted R-squared	0.015	0.098	0.173	0.033	0.116	0.175
Controls		✓	✓		✓	✓
Year FE		✓	✓		✓	✓
Host Country FE			✓			✓

Table 8: **Determinants of the presence of banks by category of ownership**
This table presents the results of regression of the total market shares of regional African banks (models 1-3) and global banks (models 4-6) in each host country for each year over the 2003-2012 sample period, including all firms, using tobit maximum likelihood estimation. Variable definitions are in Table A.3 in the Appendix. Standard errors are robust to heteroskedasticity and are clustered at the host country level with values reported beneath each coefficient estimate in parenthesis.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

Market Shares of:	**Africa MNB**			**Global MNB**		
	(1)	(2)	(3)	(4)	(5)	(6)
HHI (t-1)	0.213	0.198	0.366	-0.253	-0.228	-0.299
	(0.463)	(0.464)	(0.396)	(0.448)	(0.432)	(0.417)
Min. capital requirements	0.000	0.001	-0.006***	0.002	0.001	0.006***
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
Min. capital adequacy ratio	-4.001	-3.970	-2.041	1.472	1.165	-0.080
	(3.951)	(3.966)	(2.995)	(2.658)	(2.436)	(2.118)
Bad Governance	-0.019	-0.016	-0.161	0.042	0.019	0.090
	(0.145)	(0.145)	(0.103)	(0.106)	(0.111)	(0.116)
GDP per capita	-0.004*	-0.004*	-0.003	0.003	0.003	0.003
	(0.002)	(0.002)	(0.003)	(0.002)	(0.002)	(0.002)
GDP growth		-0.006	-0.005		0.022**	0.020**
		(0.010)	(0.007)		(0.009)	(0.009)
East Africa			0.104			-0.011
			(0.138)			(0.144)
West Africa			0.543***			-0.321**
			(0.165)			(0.152)
Central Africa			0.291**			-0.103
			(0.135)			(0.151)
Observations	278	278	278	278	278	278
Pseudo R2	0.247	0.247	0.247	0.247	0.247	0.247
Year FE			✓			✓

Table 9: **Blinder-Oaxaca two-fold decomposition**
This table presents a two-fold decomposition of the ROE of global banks and regional African banks, using the Blinder-Oaxaca method.

ROE	Coef.	Std. Dev.	$P > \|z\|$
Overall			
Global MNB (439 obs.)	29.074	1.325	0.000
Regional African MNB (579 obs.)	4.933	2.552	0.053
Difference	24.142	2.876	0.000
Explained	**1.953**	1.384	0.158
Unexplained	**22.189**	2.651	0.000
Explained			
HHI (t-1)	-0.470	0.271	0.083
min. capital requirements	-0.159	0.338	0.638
min capital adequacy ratio	0.421	0.379	0.267
Bad Governance	-0.032	0.125	0.798
GDP per cap	0.686	0.600	0.253
GDP growth	0.012	0.157	0.937
East Africa	-0.072	0.179	0.688
West Africa	1.446	1.491	0.332
Central Africa	0.121	0.282	0.669
Unexplained			
HHI (t-1)	0.447	3.641	0.902
min. capital requirements	-0.514	0.582	0.377
min capital adequacy ratio	57.698	15.003	0.000
Bad Governance	-5.023	3.505	0.152
GDP per cap	-2.994	1.643	0.068
GDP growth	-2.336	3.452	0.499
East Africa	8.519	2.003	0.000
West Africa	14.060	2.591	0.000
Central Africa	4.498	1.583	0.005
constant	-52.164	16.419	0.001

Table 10: **Allocation of loans by maturity (long term loans in % of total loans)**
This table presents the results of multivariate regression analysis of banks' loan portfolio allocation by maturity over the 2003-2012 sample period, including all firms, using OLS estimation. The dependent variable is loans with maturity over one year in percentage of total loans. The excluded ownership dummy is Global MNB. Variable definitions are in Table A.3 in the Appendix. The following controls are included in model 3: listed company, government ownership, # foreign subsidiaries in sub-Saharan Africa of GUO, GDP per capita (host), HHI (t-1). Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
Regional African MNB	-0.095*	-0.050	0.049
	(0.052)	(0.051)	(0.057)
Emerging MNB	-0.012	-0.053	0.032
	(0.064)	(0.056)	(0.049)
Domestic bank	-0.001	-0.028	0.023
	(0.052)	(0.046)	(0.051)
Observations	519	519	456
Adjusted R-squared	0.015	0.282	0.340
Firm and host country controls			✓
Year FE		✓	✓
Host Country FE		✓	✓

Table 11: **Allocation of loans by business segment**

This table presents the results of multivariate regression analysis of banks' portfolio allocation by business segment (in % of total loans) over the 2003-2012 sample period, including all firms, using OLS estimation. The excluded ownership dummy is Global MNB. The excluded ownership dummy is Global MNB. Variable definitions are in Table A.3 in Appendix. The following controls are included in models 2, 4, 6 and 8: listed company, government ownership, # foreign subsidiaries in sub-Saharan Africa of GUO, GDP per capita (host), HHI(t-1). All models include a constant. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	RETAIL						CORPORATE	
	Residential mortgage		**Other mortgage loans**		**Other retail loans**			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Regional African MNB	-0.015**	0.004	0.000	0.007*	0.009	0.018	-0.070*	-0.003
	(0.007)	(0.011)	(0.003)	(0.004)	(0.027)	(0.028)	(0.036)	(0.048)
Emerging MNB	-0.012*	-0.000	-0.001	-0.005	-0.048**	-0.019	0.004	-0.066
	(0.007)	(0.014)	(0.002)	(0.004)	(0.021)	(0.024)	(0.053)	(0.066)
Domestic bank	0.033***	0.041**	0.001	0.004	-0.021	-0.004	0.049	-0.024
	(0.012)	(0.018)	(0.002)	(0.003)	(0.018)	(0.025)	(0.041)	(0.053)
Observations	2,469	2,022	2,469	2,022	2,469	2,022	2,469	2,022
Adjusted R-squared	0.036	0.258	-0.000	0.074	0.008	0.351	0.022	0.414
Firm and host country controls		✓		✓		✓		✓
Year FE		✓		✓		✓		✓
Host Country FE		✓		✓		✓		✓

Table 12: **Allocation of loans by type of corporate customers**

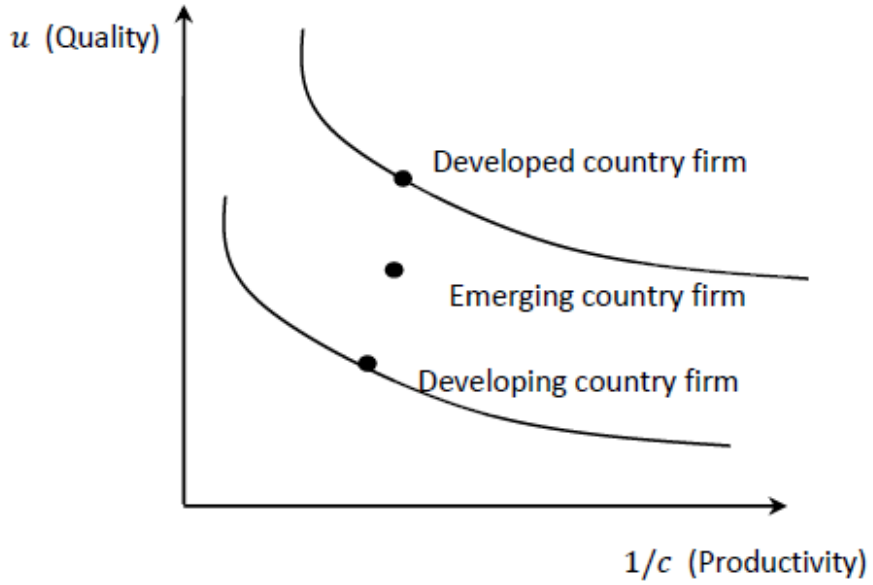
This table presents the results of multivariate regression analysis of banks' loan portfolio allocation by type of corporate customer (in % of total loans) in 2013, using OLS estimation. The dependent variable is the share of total loans for three types of customer (SME loans, retail loans and large corporates loans as a percentage of total loans, the omitted category being "Other" (microfinance, savings and credit cooperatives, etc.). The excluded ownership dummy is Global MNB. Panel A includes all the banks surveyed (74). Panel B includes only data on the three countries where fieldwork has been conducted (Kenya, Tanzania and Ghana), and which is more representative of the bank population, and contains 59 banks. Variable definitions are in Table A.3 in the Appendix. The following firm and host country controls are included: listed company, government ownership, # foreign subsidiaries in sub-Saharan Africa of GUO, GDP per capita (host), HHI (t-1), and regional dummies (East Africa, West Africa and Central Africa). Constants are included but not reported. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	CORPORATE SEGMENT						RETAIL		
	SMEs			**Large Corporates**					
Panel	A		B	A		B	A		B
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Regional African MNB	0.101*	0.102	0.133	0.020	-0.065	-0.082	-0.106*	-0.031	-0.068
	(0.053)	(0.090)	(0.098)	(0.095)	(0.154)	(0.173)	(0.056)	(0.096)	(0.098)
Emerging MNB	0.082	0.014	0.034	0.089	0.067	0.054	-0.176**	-0.097	-0.120
	(0.105)	(0.119)	(0.111)	(0.125)	(0.176)	(0.176)	(0.066)	(0.109)	(0.101)
Domestic bank	0.134**	0.120	0.169	-0.129	-0.175	-0.229	-0.010	0.071	0.025
	(0.056)	(0.122)	(0.124)	(0.085)	(0.166)	(0.170)	(0.059)	(0.091)	(0.085)
Observations	74	74	59	74	74	59	74	74	59
R-squared	0.058	0.236	0.175	0.085	0.244	0.185	0.115	0.456	0.326
Firm and Host country controls		✓	✓		✓	✓		✓	✓
Host Country Dummies		✓			✓			✓	

Table 13: **Sectoral repartition of loans (% total loans) using data compiled from banks' annual reports**
This table presents the results of multivariate regression analysis of banks' loan portfolio allocation by economic sector over the 2003-2012 sample period, including all active banks which report sectoral breakdown of loans, using OLS estimation. The excluded ownership dummy is Global MNB. All regressions have a total of 398 observations. Variable definitions are in Table A.3 in the Appendix. The following controls are included in all models: listed company, government ownership, # foreign subsidiaries in sub-Saharan Africa of GUO, GDP per capita (host), HHI(t-1). All models include a constant as well as year and host country fixed effects. Constants are included but not reported. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values reported beneath each coefficient estimate in parenthesis.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

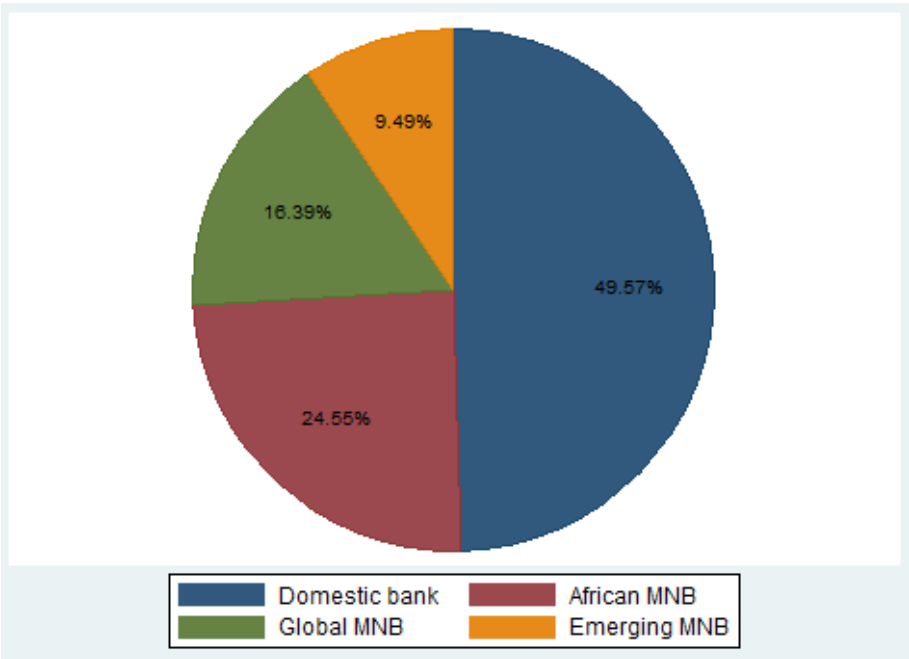
	Agriculture, forest. & fishing	**Public utilities**	**Extractive industries**	**Manufactur.**	**Transport & communication**	**Trade accomo & tourism**	**Construction**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Reg. Afr. MNB	0.002	0.009	0.021*	-0.063*	0.037**	-0.036	-0.022
	(0.020)	(0.018)	(0.011)	(0.035)	(0.017)	(0.065)	(0.029)
Emerging MNB	-0.017	0.009	0.043***	-0.044	0.033**	-0.010	0.031
	(0.020)	(0.007)	(0.016)	(0.033)	(0.015)	(0.077)	(0.027)
Domestic bank	-0.009	-0.003	0.006	-0.104***	0.002	0.008	0.030
	(0.014)	(0.006)	(0.006)	(0.026)	(0.013)	(0.030)	(0.028)
Adj. R-squared	0.320	0.088	0.679	0.304	0.246	0.195	0.216
	Finance, ins., real estate	**Social & education**	**Government & para-statal**	**Individuals**	**Foreign trade**	**Micro small business**	
	(8)	(9)	(10)	(11)	(12)	(13)	
Reg. Afr. MNB	-0.022	-0.004	0.001	0.030	-0.004	0.006	
	(0.029)	(0.017)	(0.005)	(0.058)	(0.005)	(0.008)	
Emerging MNB	0.031	-0.004	-0.001	0.002	0.005	0.005	
	(0.027)	(0.014)	(0.007)	(0.061)	(0.007)	(0.005)	
Domestic bank	0.030	0.006	0.002	0.080	-0.000	0.006	
	(0.028)	(0.017)	(0.004)	(0.056)	(0.003)	(0.007)	
Adj. R-squared	0.216	0.141	0.871	0.521	0.808	-0.026	

Figure 1: **Ranking of firms by their level of vertical capabilities**



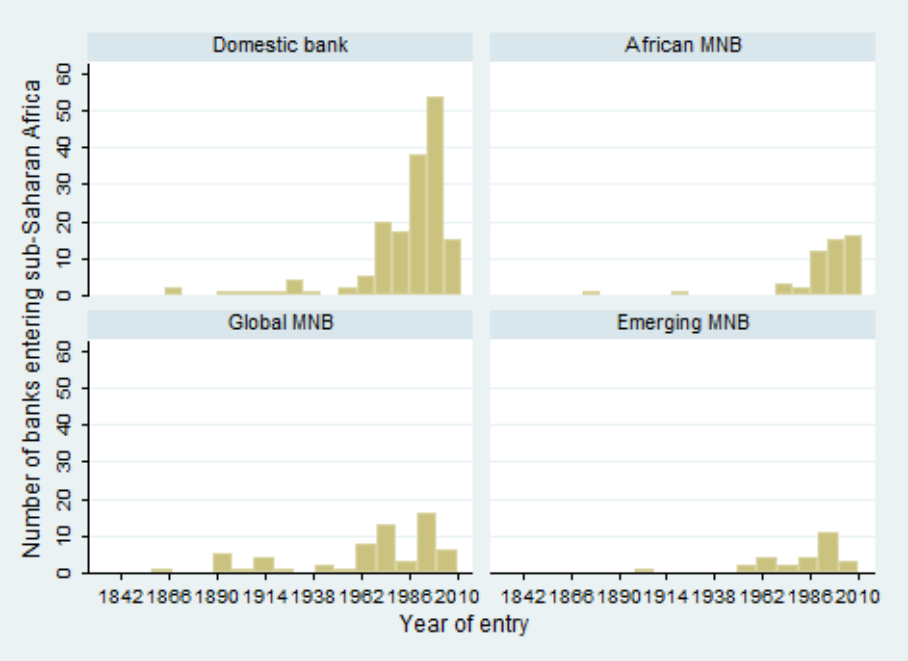
Adapted from Sutton (2012)

Figure 2: **Banks by category of ownership**



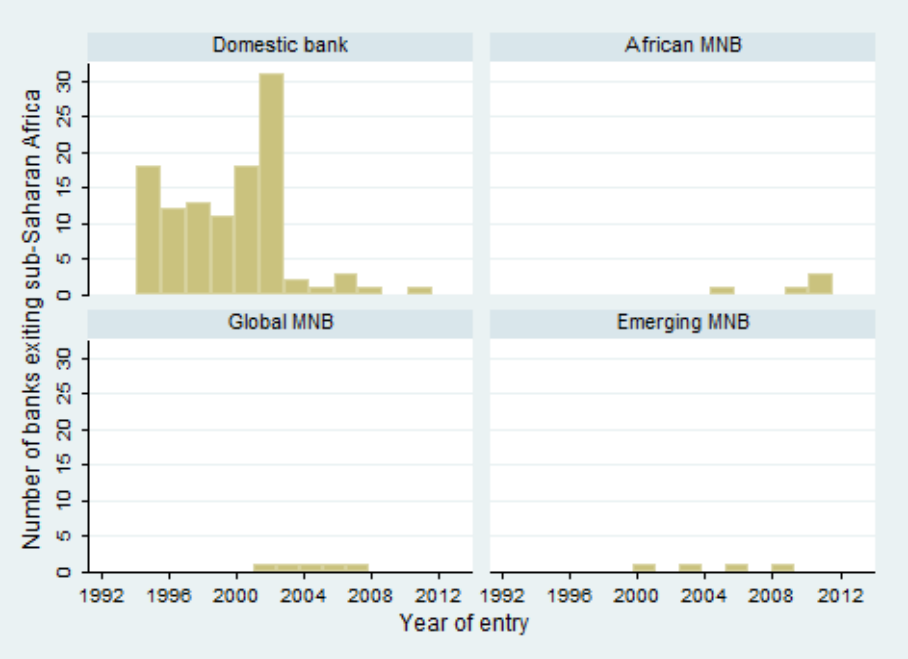
Source: Author calculations based on BankScope database

Figure 3: **Banks' entry by year**



Note: information only available for 303 banks out of 657.
Source: BankScope database and banks' websites.

Figure 4: **Banks' exit by year**



Source: BankScope database and banks' websites

Appendix 1

Table A.1: **Host country banking sector in 2012 as reported in BankScope database**

	Global MNB MNB	**Regional African MNB**	**Emerging MNB**	**Domestic bank**	**Total**
Angola	7	0	2	8	17
Benin	0	11	0	0	11
Botswana	3	2	4	7	16
Burkina Faso	2	7	0	1	10
Burundi	0	2	0	5	7
Cameroon	6	5	0	5	16
Cape Verde	4	2	0	1	7
Central African Republic	0	3	0	0	3
Chad	1	5	0	0	6
Comoros	1	0	0	0	1
Congo Dem. Rep.	4	4	2	4	14
Congo, Rep.	1	6	0	1	8
Cote d'Ivoire	4	9	0	6	19
Djibouti	2	2	0	0	4
Equatorial Guinea	2	2	0	0	4
Eritrea	0	0	0	2	2
Ethiopia	0	0	0	10	10
Gabon	1	3	0	2	6
Ghana	3	8	3	10	24
Guinea	3	5	2	0	10
Guinea-Bissau	0	1	0	0	1
Kenya	5	4	7	40	56
Lesotho	1	0	2	1	4
Liberia	0	3	0	2	5
Madagascar	3	5	0	0	8
Malawi	1	1	1	5	8
Mali	0	7	0	4	11
Mauritania	2	1	0	6	9
Mauritius	5	0	6	11	22
Mozambique	6	3	4	3	16
Namibia	2	0	2	5	9
Niger	1	5	1	2	9
Nigeria	5	2	1	72	80
Rwanda	1	3	0	7	11
Sao Tome and Principe	1	2	0	1	4
Senegal	2	8	0	4	14
Seychelles	1	1	1	3	6
Sierra Leone	2	5	1	3	11
Somalia	0	0	0	1	1
South Africa	9	0	4	47	60
Swaziland	1	0	2	1	4
Tanzania	5	10	6	10	31
The Gambia	1	5	2	1	9
Togo	0	3	0	5	8
Uganda	4	10	2	8	24
Zambia	3	5	6	5	19
Zimbabwe	2	2	1	17	22
Total	**107**	**162**	**62**	**326**	**657**

Source: Author calculations based on Orbis database

Table A.2: **Top 10 banking groups by assets in sub-Saharan Africa (2011)**

Company name	**Country**	**Total assets** mns USD 2011	**Operating revenue** (Turnover) mns USD 2011	**Number of employees** Last avail. yr
Standard Bank Group Ltd.	South Africa	183,329	9,037	52,127
Firstrand Ltd.	South Africa	102,390	6,263	36,398
ABSA Group Ltd.	South Africa	96,614	5,616	35,200
Nedbank Group Ltd.	South Africa	79,594	4,113	28,494
Investec Ltd.	South Africa	45,362	1,249	7,237
First Bank of Nigeria Plc.	Nigeria	18,136	1,608	n.a.
Ecobank Transnational Inc.	Togo	17,162	1,196	23,355
Zenith Bank Plc.	Nigeria	14,701	1,198	8,812
United Bank for Africa Plc.	Nigeria	12,295	815	n.a.
Banco Angolano de Investimentos	Angola	11,876	525	n.a.

Source: BankScope database

Table A.3: **Variable definitions**

Variable	Description	Source
	Dependent variables	
ROE	(Income before tax/equity)*100.	BankScope
Cost income ratio	Measure of efficiency: Overheads/ (Net interest revenue + other operating income)* 100.	BankScope
Interest income/avg earning assets	Ratio of interest income to average earning assets (%).	BankScope
Interest expenses/avg int bearing liabilities	Ratio of interest expenses to average interest bearing liabilities (%).	BankScope
Non-Performing Loans to Gross Loans[60]	Ratio of non-performing loans to gross loans (%).	BankScope
Impaired loans to equity	Ratio of impaired loans to equity (%).	BankScope
Customer deposits − Current	Current accounts, which may or may not be interest bearing, are subject to immediate and unlimited withdrawal at the option of the customer. Non-interest bearing deposits are treated by Fitch as interest-bearing at a zero rate.	BankScope
Customer deposits − Savings	Savings accounts place some limitation on the frequency of withdrawals. They generally pay higher interest than current accounts.	BankScope
Customer deposits − Term	Term deposits have a fixed maturity date.	BankScope

Continued on next page

[60]**Note on non-performing loans and impaired loans**:
Non-performing loan: A loan is nonperforming when payments of interest and, or principal are past due by 90 days or more, or interest payments equal to 90 days or more have been capitalized, refinanced, or delayed by agreement, or payments are less than 90 days overdue, but there are other good reasons − such as a debtor filing for bankruptcy −to doubt that payments will be made in full. (IMF's Compilation Guide on Financial Soundness Indicators 2004 Guide).
Impaired loan: The Basel Committee on Banking Supervision, Sound Practices 7 and 11, refer to loan impairment occurring when it is probable that all amounts due on a loan will not be collected. The amount of this impairment should be recognized by reducing the carrying amount of the loan through an allowance, which will be reflected in the income statement of the bank.

Table A.3 – continued from previous page

Variable	Description	Source
Deposits from banks	Deposits and short-term placements from other banks, including those not licensed to take deposits, also include cash owed to banks under repurchase agreements.	BankScope
Short-term funding (total)	Customer deposits (current, saving and term) plus deposits from banks and other short term funding.	BankScope

Continued on next page

Table A.3 – continued from previous page

Variable	Description	Source
	Ownership dummies	
Regional African MNB	Dummy equals 1 if the bank's largest shareholder is from North Africa or sub-Saharan Africa (excluding South Africa).	BankScope, banks' websites
Global MNB	Dummy equals 1 if the bank' s largest shareholder is from a developed country.	BankScope, banks' websites
Emerging MNB	Dummy equals 1 if the bank's largest shareholder is from an emerging country outside Africa or is from South Africa.	BankScope, banks' websites
Domestic bank	Dummy equals 1 if the bank is a domestic bank (in the host country). Domestic banks can be purely domestic or multinationals.	BankScope, banks' websites
	Bank controls	
# foreign subsidiaries in sub-Saharan Africa of GUO	Number of foreign subsidiaries in sub-Saharan Africa of the General Ultimate Owner (GUO).	BankScope
Listed company	Dummy equals 1 if the bank is listed, 0 otherwise.	BankScope
Government ownership	Dummy equals 1 if the largest shareholder is a public authority, state or government (note: a foreign bank owned by a foreign government will also have a value of 1 for this variable).	BankScope
Tier 1 ratio	Banks' core equity capital/Risk weighted assets.	BankScope

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Table A.3 – continued from previous page

Variable	Description	Source
	Host country variables	
HHI (Herfindahl - Hirschman Index)	Herfindahl - Hirschman Index of banks' market shares by assets in the host country.	Computed from BankScope database
Corruption	Estimate of corruption, ranges from -2.5 (low corruption) to 2.5 (high corruption). Reverse coded the "Control of corruption" indicator provided by the Worldwide Governance Indicators database.	World Bank
Bad Governance index	Reverse coded the annual mean of the following Worldwide Governance Indicators: rule of law, control of corruption, political stability no violence, regulatory quality. The index ranges from -2.5 (strong governance) to 2.5 (weak governance).	Computed from Worldwide Governance Indicators, World Bank
GDP per capita	Gross domestic product per capita, current prices, '00 US dollars.	IMF, World Economic Outlook
GDP growth	Annual growth rate of gross domestic product (%), constant prices.	IMF, World Economic Outlook
Minimum capital requirement	Minimum capital requirement imposed on banks by the regulatory authority of the host country, in bns USD (nominal).	Central Banks' websites
Minimum Capital Adequacy Ratio (CAR)	Minimum capital adequacy ratio imposed on banks by the regulatory authority of the host country.	Central Banks' websites
Prohibition of entry via joint-venture	Dummy equals 1 if foreign entities are prohibited from entering through Joint-venture.	World Bank's Bank Regulation and Supervision database
Prohibition of entry via branch	Dummy equals 1 if foreign entities are prohibited from entering through branch.	World Bank's Bank Regulation and Supervision database

Continued on next page

Table A.3 – continued from previous page

Variable	Description	Source
East Africa Dummy	Dummy equals 1 if the host country is in East Africa (Burundi, Kenya, Rwanda, Tanzania, Uganda, Djibouti, Eritrea, Ethiopia, Somalia).	
Central Africa	Dummy equals 1 if the host country is in Central Africa (Angola, Burundi, The Democratic Republic of the Congo, Rwanda, Sao Tome and Principe, Cameroon, Central African Republic, Chad, Congo, Equatorial Guinea, Gabon).	
West Africa	Dummy equals 1 if the host country is in West Africa (Gambia, Ghana, Guinea, Liberia, Nigeria, Sierra Leone, Benin, Burkina Faso, Cote d'Ivoire, Guinea-Bissau, Mali, Niger, Senegal, Togo).	

Table A.4: **Summary statistics for banks' financial variables by category of bank**
Note: for # foreign subs. in SSA, the dummies listed and government ownership and year of entry the number of observations is the number of banks for which the information is available.

Variable	Obs.	Mean	Std Dev.	25%	Median	75%
			Global Banks			
ROE	555	29.10	27.00	16.55	28.64	41.05
Cost income Ratio	537	61.78	32.55	45.45	56.93	71.49
Interest income/avg earning assets	490	11.37	7.15	7.93	10.16	13.23
Interest expenses/avg int bearing liabilities	485	3.29	2.18	1.78	2.84	4.29
Non-Performing Loans to Gross Loans	315	6.36	6.35	1.83	4.39	8.58
Impaired loans to equity	318	32.99	36.40	8.25	21.74	45.43
Total Assets (US$ mns)	562	2907.93	12500.00	168.86	398.29	873.84
Tier 1 ratio	206	18.23	10.84	11.57	14.00	20.60
# foreign subsidiaries in sub-Saharan Africa of GUO	65	46.65	67.84	6	17	95
Listed	106	13%	34%	0%	0%	0%
Government ownership	106	8%	27%	0%	0%	0%
Year of entry	61	1967	36	1962	1977	1994
			Regional African Banks			
ROE	657	3.94	61.44	0.76	15.95	29.84
Cost income Ratio	636	91.10	96.69	56.81	68.74	87.53
Interest income/avg earning assets	563	10.76	4.88	7.37	9.62	12.93
Interest expenses/avg int bearing liabilities	563	3.71	2.59	1.91	3.18	4.63
Non-Performing Loans to Gross Loans	320	9.80	11.46	2.80	6.86	12.03
Impaired loans to equity	345	48.73	83.02	10.78	29.53	60.94
Total Assets (US$ mns)	667	261.81	716.14	48.61	107.51	247.92
Tier 1 ratio	177	28.81	37.16	14.28	18.95	27.00
# foreign subsidiaries in sub-Saharan Africa of GUO	110	11.08	9.52	3	8	17
Listed	160	3%	17%	0%	0%	0%
Government ownership	160	9%	28%	0%	0%	0%
Year of entry	49	1989	26	1988	1995	2003

Summary statistics (continued)

Variable	Obs.	Mean	Std Dev.	25%	Median	75%
			Domestic Banks			
ROE	1096	19.02	24.69	8.83	19.13	30.20
Cost income Ratio	1066	66.03	39.37	48.85	60.72	75.34
Interest income/avg earning assets	963	13.32	15.15	7.97	10.89	14.52
Interest expenses/avg int bearing liabilities	961	5.22	6.99	2.37	4.03	6.24
Non-Performing Loans to Gross Loans	617	11.16	13.74	2.48	6.00	14.47
Impaired loans to equity	631	41.24	86.96	8.72	21.86	48.54
Total Assets (US$ mns)	1113	2324.46	10500.00	90.78	229.43	792.35
Tier 1 ratio	372	21.51	17.49	12.13	17.10	24.82
# foreign subsidiaries in sub-Saharan Africa of GUO	318	0.82	5.24	0	0	0
Listed	327	10%	30%	0%	0%	0%
Government ownership	327	10%	31%	0%	0%	0%
Year of entry	163	1978	28	1971	1988	1995
			Emerging Banks			
ROE	306	22.78	32.27	10.09	24.10	38.04
Cost income Ratio	303	64.48	43.87	46.62	58.68	72.09
Interest income/avg earning assets	272	10.62	4.60	7.83	10.30	13.01
Interest expenses/avg int bearing liabilities	271	4.02	2.51	2.12	3.65	5.77
Non-Performing Loans to Gross Loans	179	4.69	7.01	0.93	2.26	4.64
Impaired loans to equity	179	18.13	28.83	3.25	9.49	19.33
Total Assets (US$ mns)	307	466.73	635.59	85.60	211.57	570.71
Tier 1 ratio	148	21.48	20.38	13.59	16.10	23.00
# foreign subsidiaries in sub-Saharan Africa of GUO	39	19.79	26.43	0	7	61
Listed	63	8%	27%	0%	0%	0%
Government ownership	63	21%	41%	0%	0%	0%
Year of entry	27	1983	21	1969	1990	1996

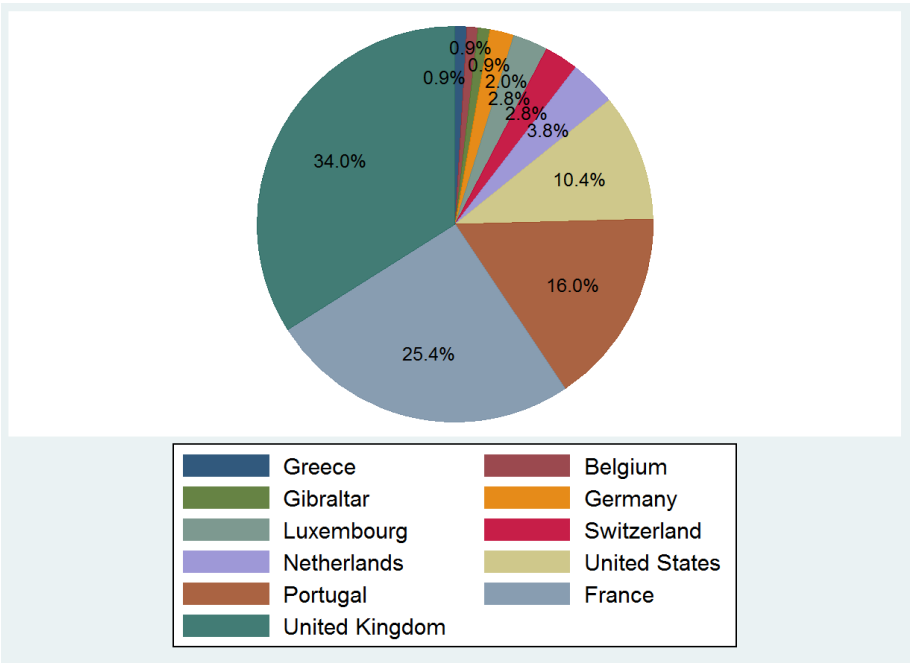
Table A.5: **Correlation matrix. Obs=3745**

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17
1	Regional African MNB	1.00																
2	Domestic Bank	-0.63	1.00															
3	Emerging MNB	-0.13	-0.34	1.00														
4	Listed company	-0.11	0.02	0.04	1.00													
5	# foreign subs. Africa	0.04	-0.41	0.12	0.09	1.00												
6	HHI (t-1)	0.09	-0.08	0.00	-0.05	0.09	1.00											
7	GDP per capita	-0.16	0.06	0.05	0.02	0.03	0.02	1.00										
8	Minimum cap. req.	0.06	-0.06	0.03	0.04	-0.01	-0.08	-0.06	1.00									
9	Minimum CAR	-0.18	0.06	0.10	0.10	-0.03	-0.10	0.34	0.06	1.00								
10	Prohibition entry JV	-0.19	0.18	-0.07	-0.02	0.06	0.02	0.54	-0.07	0.13	1.00							
11	Prohibition entry branch	0.14	-0.07	-0.02	0.08	-0.03	-0.02	-0.44	0.15	0.27	-0.44	1.00						
12	East Africa	-0.02	-0.01	0.02	0.00	-0.02	-0.20	-0.35	-0.10	0.00	-0.21	-0.11	1.00					
13	West Africa	0.16	0.02	-0.11	0.00	-0.10	-0.16	-0.36	0.24	-0.13	-0.29	0.65	-0.41	1.00				
14	Central Africa	0.18	-0.12	-0.06	-0.12	-0.03	0.15	0.02	-0.06	-0.15	-0.13	-0.39	-0.06	-0.25	1.00			
15	Bad governance index	0.00	0.14	-0.14	-0.03	-0.10	0.03	-0.68	-0.14	-0.27	-0.45	0.31	0.14	0.35	0.22	1.00		
16	Corruption	0.06	0.08	-0.14	-0.05	-0.10	0.02	-0.70	-0.16	-0.39	-0.50	0.25	0.21	0.29	0.28	0.96	1.00	
17	GDP Growth	0.00	-0.01	0.03	-0.02	-0.03	-0.46	-0.11	0.11	0.07	-0.13	0.07	0.10	0.16	0.06	0.02	0.06	1.00

Table A.6: **Comparison between total sample from BankScope and sub-sample of banks with sectoral loan information**
The means differences reported in columns 4 and 5 compare the mean of total assets (in millions US$) and ROE of the active banks contained in BankScope with sectoral loan data available in their annual reports to that of the active banks also contained in BankScope but with no information available on sectoral allocation in their annual report, over the period 2003-2012. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

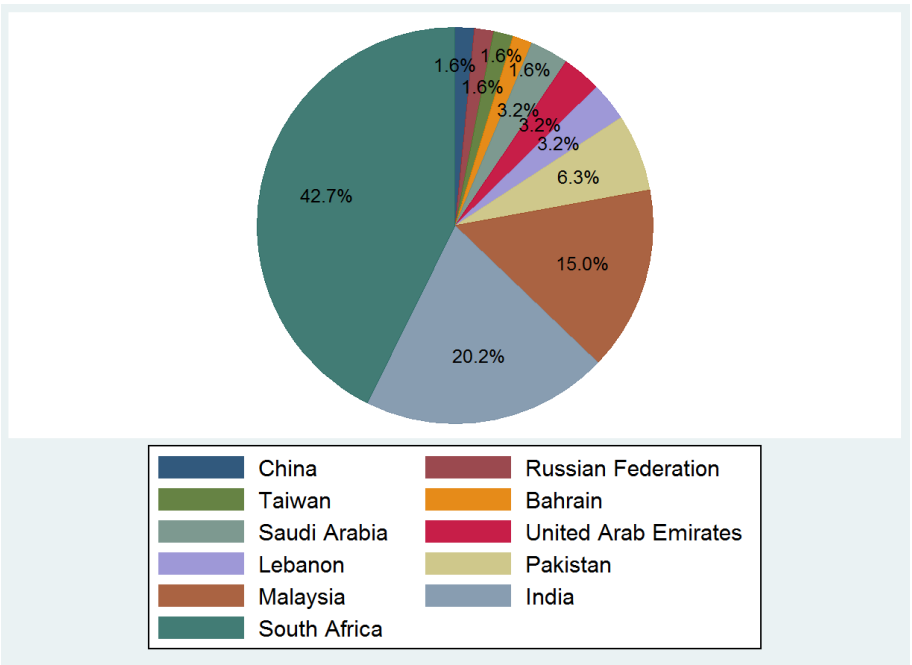
	Nb of active banks in BankScope sample	Nb of banks with sectoral loan data obtained from annual reports	Nb of banks with sectoral loan data as a % of banks in the BankScope sample	Means difference Total Assets	Means difference ROE
	(1)	(2)	(3)	(4)	(5)
Domestic bank	193	59	30.57%	3660***	3.95**
African MNB	149	13	8.72%	129**	-4.69
Global MNB	97	25	25.77%	5489***	5.44*
Emerging MNB	56	9	16.07%	744***	13.38*
Total	495	106	21.41%	3904***	6.76***

Figure A.1: **Global banks by country of origin**



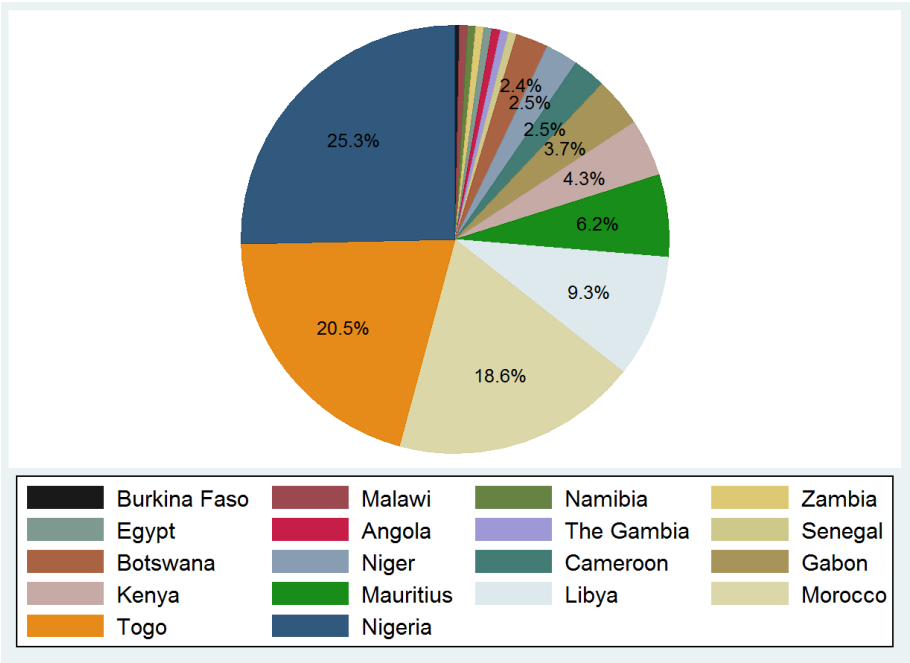
Source: BankScope database and banks' websites

Figure A.2: **Emerging banks by country of origin**



Source: BankScope database and banks' websites

Figure A.3: **Regional African banks by country of origin**



Source: BankScope database and banks' websites

Chapter 2

Internal capital market practices of multinational banks

Evidence from South Africa

2.1 Introduction

This chapter examines the financial advantages and drawbacks of being part of a large multinational group by analyzing the flows of internal capital between foreign affiliates of multinational banks located in an emerging economy, South Africa, and their headquarters. It discusses under which conditions parent banks are a source of financial support for their foreign affiliates, and under which conditions group affiliation may represent a source of vulnerability.

The literature on business groups has provided significant theoretical and empirical evidence on the advantages of being part of a large group. Although this literature focuses on diversified groups, it also offers important insights into multinational banking groups with affiliates engaged in very similar activities. First, this literature has emphasized that the benefits of group affiliation depend on the institutional context. Khanna and Palepu (2000), using the transaction cost theory developed by Coase (1937) and Williamson (1985), suggest that in countries where market failures (or "institutional voids") are important -limited enforcement of contracts, inadequate rule of law, lack of financial intermediaries-, and especially where capital markets are not functioning well, affiliation to a large group can provide benefits as economies of scale and scope allow large business groups to replicate internally intermediation functions. Furthermore, the benefits of affiliation to business groups extend beyond internal capital markets to also include internal labor markets both for skilled employees and executives when skills are scarce in an economy

(Khanna and Yafeh, 2007). However, as Khanna and Rivkin (2001) point out, group affiliation entails costs and the effect of affiliation on members' profits is ambiguous. Some of the costs are directly related to the sharing of profit and risks by group members. Other costs are related to agency issues leading to mis-allocation of capital, tunneling of resources by owners of business groups (see Bertrand, Mehta and Mullainhathan (2002)) and suboptimal decisions due to centralization of decisions. Despite the costs associated with business groups, the payoffs may be sufficiently high at an aggregate level to encourage the formation of such organizations. In addition, while some papers have pointed to a diversification discount[1] in developed economies, especially the United States (Montgomery, 1994; Rajan, Servaes and Zingales, 2000), in emerging markets, the evidence provided so far have suggested the existence of a diversification premium when capital markets are sufficiently weak (Khanna and Palepu, 2000; Khanna and Rivkin, 2001).

As suggested by the business groups literature, in developing countries where interbank and capital markets are underdeveloped and a large part of the population is unbanked, the ability to receive funding through internal capital markets at low cost and in large quantity might present a significant advantage for foreign banks' affiliates. In other words, internal capital may substitute for external capital when local market conditions are weak. However, these financial inter-linkages among group members also imply that foreign affiliates may become a source of internal funds in case of an adverse shock to the balance sheet of the head office or of another group member. In such case, abrupt capital reallocation to another part of the group may alter the financial position of a lending affiliate, which might consequently lead to a reduction of its credit to local customers. In this scenario, an outflow of capital will have consequences not only for the foreign affiliate but also for the host country where it is located.

I consider two different motives for the transfer of funds across a group, following the Morgan, Rime and Strahan (2004) model of interstate banking, where internal capital flows across affiliates of a banking group. The first motive is a "support" motive: the parent bank transfers more funds to its subsidiaries when there is a tightening of the conditions in the host external capital markets or when the foreign bank affiliate is under financial distress (stretched liquidity or solvency position). The second motive is related to investment considerations. It posits that the parent bank transfers more funds when there are more investment opportunities or faster growth in a foreign affiliate's host country, relative to the other countries where the

[1]The "diversification discount" refers to the loss of firm value associated with group diversification.

banking group is present. I then examine whether these additional internal funds are used to increase the supply of credit locally. As such, this research aims to (1) examine the internal capital market strategies of parent companies in relation to their foreign affiliates by examining simultaneously firm factors as well as home and host country factors: is parent bank primarily driven by investment considerations when allocating its internal funding (which could exacerbate macroeconomic procyclicality in the host country) or by support considerations (which would be anticyclical)? (2) document how funding shocks such as experienced during banking crises affect reallocation of internal capital and (3) examine the link between internal funding and bank credit: do transfers of internal funds help recipient banks' affiliates to expand local credit?

Much of the empirical literature on business groups has relied on lending and financial performance comparison between affiliated and unaffiliated firms to examine the existence and mode of operations of internal capital markets, without directly observing this channel. In this chapter, I revisit this issue by using a novel database on banks operating in South Africa which records stocks of internal funds. This data is provided by the South African central bank which publishes on its website detailed information on the balance sheet of banks operating in South Africa, including information on internal loans and deposits from and to the banking group. To the best of my knowledge, this data on internal group loans and internal group deposits of banks located in South Africa have never been explored for research on internal capital markets. This data allow me to examine directly the transfers of internal capital within multinational banking groups, focusing on the benefits of group affiliation for foreign affiliates located in South Africa. Furthermore, South Africa is a particularly appropriate place to examine the issue of internal capital allocation for two main reasons. First, as an emerging economy its external capital markets are not as developed as those of developed economies, and as such internal capital might be an important source of funding for foreign banks. Second, a large variety of foreign banks operate in South Africa, both from developed and emerging countries, with important heterogeneity in terms of home countries' macroeconomic conditions and groups' international exposure. This heterogeneity allows me to examine how internal capital flows are impacted by changes in macroeconomic conditions in the other countries where a banking group operates. In particular, it is an interesting setting to examine how a banking crisis in a developing/emerging region (east Asia) impacts the funding position of foreign banks in another emerging economy (South Africa).

The empirical analysis provides evidence for a support motive to internal fund-

ing, as foreign affiliates receive on average more funding when their solvency ratio declines. However, when we take into consideration the macroeconomic environment of the host country and the investment opportunities in the other countries where a group operates, which I label the "Outside Option", the results indicate that the parent bank is particularly responsive to macroeconomic conditions in its other locations. In other words, when conditions in the home country and in the other countries of operation of the parent bank are improving, the volume of internal funding received by a foreign affiliate decreases. To further examine the implication of a systemic banking crisis in the "Outside Option" for foreign affiliates' access to internal capital I use the event of the 1997 Asian financial crisis. I estimate a difference in difference model and find that South African affiliates belonging to banking groups with high exposure to East Asian Crisis countries experienced a significant drop in their net internal funding position during the crisis, relative to South African affiliates of less exposed groups. This result suggests that parent bank of more exposed groups reallocated capital away from South Africa to support their affiliates in east Asia. Finally, I proceed to examine the link between the reception of internal funding and the expansion of local bank credit, using an instrumental variable technique. I find a positive impact of internal funding on bank credit expansion in the mortgage market, suggesting that foreign affiliates do not only use this capital to acquire government securities or to invest abroad, as it has often been reported in Africa (see Demetriades and Fielding, 2009; Andrianova et al., 2011; Beck, Maimbo, Faye and Triki, 2011), but also "pass it on" to the local economy by expanding their domestic lending.

This chapter makes three contributions. First, it contributes to the literature on the benefits of internal capital markets (Gopalan, Nanda and Seru, 2007; De Haas and Van Lelyveld, 2010) by relying on direct internal transactions, instead of indirectly relying on an investment-cash flow sensitivity approach (e.g., Hoshi, Kayshap, and Scharfstein, 1991) about which some doubts have been raised (Kaplan and Zingales, 1997). Furthermore, it examines internal lending in an international setting, examining affiliates of companies from different countries of origin, while most of the literature has focused on internal capital markets inside groups from a single country of origin (Gopalan et al., 2007; Cetorelli and Goldberg, 2012). In so doing, it contributes to the international strategy literature, examining an alternative channel (internal capital) that might affect the international competition between multinational firms, distinct from firms' productive capabilities or operational processes.

Second, this research examines the internal fund channel for bank credit, instead

of relying on comparisons between credit growth of foreign affiliates of multinational banks and of domestic banks to infer internal capital market practices as has traditionally be done in the literature (Popov and Udell, 2012).

Third, this research also provides evidence on the relationship between the organizational form of the foreign affiliates (as branches or subsidiaries) and their integration with the rest of the group through participation in internal capital markets. The foreign banking literature has traditionally relied on Orbis or BankScope balance sheet information (Allen, Jackowicz and Kowalewski, 2013) which tends to under-report financial information on bank branches, and has focused instead on subsidiaries' lending, therefore overlooking lending by branches. However, the organizational form of foreign affiliates has important implications for the financial stability of both host and home countries as it determines, to a certain extent, foreign affiliates' ability to tap into internal funds (Fiechter et al., 2011).

The remaining part of the chapter is organized as follows. Section 2.2 presents the traditional approaches adopted in the empirical literature to examine internal capital market. Section 2.3 develops the research hypotheses. Section 2.4 presents the data and provides some descriptive statistics. Section 2.5 examines empirically the motives for intragroup transfer of funds. Section 2.6 analyzes the impact of a systemic banking crisis (the 1997 east Asian financial crisis) in countries where a group has foreign affiliates on reallocation of internal capital inside the group, while Section 2.7 documents the relation between internal group funding and bank credit. Section 2.8 concludes.

2.2 Empirical literature on internal capital markets: direct and indirect evidence

The empirical literature has attempted to examine the role and functioning of internal capital markets by first demonstrating the existence of such a market through evidence of cross-subsidization (Lamont, 1997) and then by answering the question of whether or not this reallocation of capital is efficient (Shin and Stulz, 1998; Scharfstein and Stein, 2000; Rajan, Servaes and Zingales, 2000). However, most of the empirical research has been hampered by the difficulty to obtain information on financial flows between group affiliates. As a consequence, the evidence on the functioning of internal capital market has mainly been indirect, based on comparisons between investment behavior of conglomerates and stand-alone firms (Rajan et al., 2000) or investment behavior of firms before and after being spun off from their parent firms (Gertner, Powers and Sharfstein, 2002). More specifically on banking

groups, work by Campello (2002) has relied on differences in responses to exogenous shocks to external capital markets across small stand-alone banks and banks that are affiliates of financial conglomerates to draw inferences about the role of internal capital markets. Related work in the international banking literature by De Haas and Van Lelyveld (2010) has examined how financial characteristics of the parent bank influence their subsidiaries' credit growth, controlling for subsidiaries' characteristics as well as home and host country factors. The authors find that multinational bank subsidiaries with financially strong parent banks are able to expand their lending faster. By comparing the lending behavior of domestic banks to that of the subsidiaries of foreign banks, the authors in this empirical tradition indirectly infer the internal capital practices of multinational banks.

Research using direct evidence on internal capital markets has only emerged recently due to the availability of specific datasets allowing researchers to directly track internal flows of capital. Few papers, so far, have provided direct evidence on internal lending. Gopalan, Nanda and Seru (2007) exploit time-series variation in internal loans of Indian business group to examine the motives for the transfer of resources across group firms. They find evidence of support motives, with group extending loans to financially weaker firms to avoid default by a group firm and the resulting negative reputational spillovers to the rest of the group. More recently, Glaser, Lopez-de-Silanes and Sautner (2013), using a dataset drawn from the internal accounting system of a large multinational conglomerate, examine planned and actual internal capital allocation to its 20 business units. They provide empirical evidence that internal capital allocations are affected by managerial power and connections, especially in times of financial slack, producing inefficiencies in resource allocation. In the banking literature, recent work by Cetorelli and Goldberg (2012) also uses internal capital data to examine internal capital practices in US banks during the latest financial crisis. They find evidence of a locational pecking order, whereby parents draw more intensively on funds from traditional funding locations to buffer shocks, while leaving affiliate locations that are important for the parent bank revenues relatively protected from liquidity reallocation inside the group. Finally, Cremers, Huang and Sautner (2013) look at capital allocation data in a retail banking group consisting of 181 members banks, in which bank members cannot access the external capital market. They find that capital transfers from the headquarters compensate for deposit shortfalls, thus suggesting that the headquarters provide an inter-temporal insurance function. They also find, like the subsequent work of Glaser et al. (2013), that the headquarters allocate more funds to more influential banks. Moreover, they find that the loan growth of more-influential banks

is much less sensitive to their own deposit growth, suggesting that their deposit smoothing is facilitated by internal financial transfers.

In sum, the recent empirical literature on internal capital markets suggests that the support motive is an important driver for internal capital allocation, but that group members do not face equal access to internal capital. Indeed, empirical evidence available so far has shown that access is also partly driven by connections and managerial influence, as well as by the importance of the bank for group revenues.

As direct empirical evidence on internal capital market has so far been limited to groups from the same country of origin, it has precluded an analysis of the competitive advantage provided by internal capital flows to subsidiaries operating in a same host country but with different conditions in their home country. In addition, internal capital markets when operated across national borders have repercussions that go beyond the reputational effects caused by the default of a group member on the rest of the group, as documented by Gopalan et al. (2007). In the banking sector, depending on whether or not the parent bank repatriates liquidity from its subsidiaries to the headquarters in times of crisis, internal capital markets can either accelerate or dampen the transmission of financial and economic crises, beyond the effects of the cross-border claims channel. For instance, Popov and Udell (2012) show that foreign banks' affiliates reduced their lending more aggressively than domestic banks in the CEE countries during the global financial crisis of 2008. At the same time, these financial inter-linkages can have a positive and stabilizing effect on the host country credit market if the parent bank supports its foreign affiliates when local conditions in the host countries worsen and external capital is scarce. For instance, De Haas and Van Lelyveld (2004) examining foreign banks in CEE countries found that the credit supply of foreign banks' subsidiaries did not decrease during financial crises or economic downturns, contrary to domestic bank. The dataset used in this research allows these issues to be revisited by directly examining the functioning of internal capital markets inside multinational banks and their repercussions on host credit markets.

The following section presents the research hypotheses before turning to the presentation of the dataset.

2.3 Research hypotheses

Theoretically, the question of the allocation of funds by corporate headquarters across business and geographic units has been extensively analyzed from an information and agency perspective. However, no clear answer has emerged on how well

internal capital markets perform in the theoretical literature. On the "bright side", Williamson (1970) argues that internal capital markets are more efficient than external markets because corporate headquarters are better informed about investment opportunities than external capital suppliers. Essentially, internal capital markets are formed by the pooling of internally generated cash flows and allocation to units is optimally determined by units' investments prospects. The headquarters are then engaged in winner-picking activities, with larger allocations granted to units with better investment opportunities (Stein, 1997). On the "dark side", Meyer, Milgrom and Roberts (1992), Scharfstein and Stein (2000), Rajan, Servaes and Zingales (2000) and Wulf (2009) argue that internal capital markets may be distorted by rent seeking behavior of divisional managers. Motivated by rent-seeking or empire-building, unit CEOs try to obtain larger capital allocations and use their managerial influence in order to obtain more funds. As a consequence of influence, allocations of capital to these units are larger than what they would be if allocations were only based on investment opportunities, and internal capital markets are inefficient.

In this chapter, I follow de Haas and Van Lelyveld (2010) in relying on the interstate banking model developed by Morgan, Rime and Strahan (2004) to examine internal capital allocation by multinational banks. Morgan et al. (2004) extend the Holmström and Tirole (1997) model to a two-state version where capital can flow between the two states.[2] This model can easily be adapted to an inter-country setting to examine the international allocation of internal capital by multinational banks. In such a setting, multinational banks are capital constrained and risk neutral and they re-allocate capital between countries to equalize the rate of return on capital across countries. The model generates two propositions.

The first one is that the impact of a bank capital crunch on its lending in one

[2]This model was initially developed by Morgan et al. (2004) to investigate how integration of bank ownership across states in the U.S. in the early 1980s affected economic volatility within states. The authors compare the impact of collateral and bank capital shocks under an *interstate* banking regime, where capital can flow freely across states, versus an *intrastate* regime, where capital flows across states are restricted. Building on Holmström and Tirole (1997), their basic model comprises risk neutral firms, banks and investors. Firms choose between a good project and two bad projects, with one bad project having higher private benefits to the firm than the other. Furthermore, the good project has a relatively higher likelihood of success than the two bad projects, and all the projects return R if they succeed, 0 otherwise. Through monitoring banks can prevent investments with large private benefits for the firm to occur, but not those with small private benefits. As such, banks incur monitoring costs and they must invest enough of their own capital in the project to be credible monitors. Firms borrow both *informed capital* from the bank and *uninformed* capital from investors. The authors show that in the interstate model, where informed capital can move freely to equalize the equilibrium rate of return in informed capital markets, bank capital shocks have a smaller impact on investment than in the intrastate model, while the impact of firm collateral shocks gets amplified (see appendix in Morgan et al. (2004) for proofs).

country A is mitigated by the availability of additional bank capital from country B. As a consequence of this extra capital inflow, bank lending in country A decreases by a lower amount than in the situation where there would not be extra capital available from another state[3]. The intuition is the following: a reduction in bank loan supply in country A increases bank returns in A, which attracts credit from country B and eventually equalizes rates of return on capital between the two countries (Morgan et al., 2004).[4] From this inter-state model, I derive the following hypothesis, which reflects the "support motive" for the allocation of internal funds:

Hypothesis 1a *The quantity of internal group funding from a parent bank to its foreign affiliate is negatively related to this affiliate's financial strength.*

I define financial strength broadly, both in terms of capital and liquidity position[5]. A sharp decline in a foreign bank affiliate's capital position, related for instance to a systemic banking crisis in the host country leading to a large share of non-performing loans in the bank's balance sheet, should prompt the parent bank to transfer internal funds to this affiliate in order to avoid bank's insolvency. Furthermore, in case of high refinancing constraints in the host country's wholesale market, leading to a stretched liquidity position, bank affiliates of a large group should be able to tap into internal market to avoid default. In both cases, internal capital markets should reduce volatility in the host country.

The second proposition is that a collateral squeeze in country A will have a negative impact on bank lending in that state because the decrease in the rate of return on capital after the collateral squeeze will lead to a capital flight to the bank in country B[6]. The idea is that a weak demand in country A, due to declines in borrower wealth or collateral, will lead to an outflow of capital from country A to country B, where the rate of return on capital is higher (Morgan et al., 2004). A collateral squeeze could be related to real-economic shocks such as a sharp reduction in economic growth in the country of operation. The parent bank reallocates its

[3]The authors also show how this positive effect on lending is reinforced by the smaller reduction in pledgeable income that can be promised to uninformed investors by firms in country A, given that the amount lent by banks to firms in country A decreases less.

[4]Note that if capital could not fow from one country to another, the authors show that the borrowers would bear the full brunt of the shock, with lower loan quantities and higher loan interest rates.

[5]While bank capital and liquidity are two different concepts in practice there are important interplay between risks to a bank's capital and liquidity positions, and changes in a bank's capital position can affect its liquidity position and *vice versa* (Farag, Harland and Nixon, 2013).

[6]Similarly to proposition 1, this reduction in informed capital available to firms is exacerbated by a reduction in uninformed capital, due to the reduction of pledgeable income that can be promised by firms to uninformed investors.

capital where it is more profitable, from low-return to high-return countries: this is the "investment" motive[7]. As such, I formulate the following hypothesis:

Hypothesis 1b *The quantity of internal group funding from a parent bank to its foreign affiliate is positively related to the economic growth (lending opportunities) in the affiliate's host country and negatively related to the economic growth in the other countries where the group is operating.*

In this situation, the reallocation of internal capital by multinational banks may amplify business cycles, the group transferring more funds to foreign affiliates located in host countries with strong macro-economic environments and lending opportunities.

Furthermore, and as an extension of the first set of hypotheses, a capital squeeze faced by affiliates located in the other countries of operations of the banking group, such as may occur during systemic banking crises, should lead to a reallocation of internal group funding away from foreign affiliates in non-crisis countries to support foreign affiliates located in countries where the crisis is occurring. The existence of financial inter-linkages between entities of a same group leads to the following hypothesis:

Hypothesis 2 *The quantity of internal group funding to a foreign affiliate decreases when other group affiliates face a systemic banking crisis leading to rapid reallocation of internal funding inside the group.*

Two remarks are important at this point. The first one is that the "investment" motive and the "support" motive are not necessarily exclusive, although one may predominate over the other. The second one is that these hypotheses are based on the assumption of a "bright side" view of internal capital market allocation and do not take into account the impact of managerial influence on capital allocation. Although the Morgan et al. model is based on the incentive model of Holmström and Tirole it does not include influence considerations in capital allocation. I do not control for managerial influence by the foreign affiliate due to the difficulty to capture this variable in this particular dataset and the difficulty to compare influence across groups using a single measurement[8]. Failure to confirm empirically

[7]In the literature, this has also been referred to as a "substitution effect" whereby parent banks allocate more internal capital to their subsidiiaries in fast-growing economies. See De Haas and Van Lelyveld (2010).

[8]In the recent empirical literature on internal capital markets, Cremers et al. (2013) examine the role of influence in internal capital allocation in one large retail banking group. They measure the influence of a bank in the organization by the ratio of a bank's share of voting rights divided by

these hypotheses could be related to managerial influences leading to sub-optimal internal capital allocation, distorting the motives of transfer. However, given that most of the South African foreign affiliates in the sample represent only a small portion of the total assets of their group, these affiliates are unlikely to be able to significantly influence capital allocation in their favor and the estimates in this research can therefore be considered as conservative.

Finally, the mechanism that underlies the two propositions is the group's response to variation in its foreign affiliates' investment prospects or solvency, *ceteris paribus*, through the channel of internal capital. In other words, foreign affiliates use internal capital to compensate for a reduction in their capital base, to profit from higher return on capital in their host country or, more generally, to compensate for the insufficiency of available external capital. Either way, an increase in internal capital should result in an expansion of bank credit to firms, or at least should help avoid declines in the credit supply when the capital position of the affiliate is weak[9]. This will need to be tested empirically. The advantage of the data is that instead of making a conjecture on the inflow of internal capital from the observed variation in bank credit as a result of an exogenous shock, I can directly examine the internal capital channel.

Hypothesis 3 *An increase in (net) internal funding to a foreign affiliate leads to an expansion of this affiliate's lending in its host country, ceteris paribus.*

In the next section, I present the data and empirical framework on which I rely to examine directly the functioning of internal capital market inside multinational banks.

2.4 Data, empirical framework and descriptive statistics

2.4.1 Data

The data on internal loans come from the central bank of South Africa (Resbank). The Resbank requires all banks operating in South Africa to provide detailed balance

its share of ownership rights in headquarters; a member bank with more voting rights relative to its ownership rights is perceived as more influential because it can bargain for more favors relative to its ownership share.

[9]Given the fungibility of capital it is not possible to track the specific uses of internal funds, however, what the model implies is that variation in internal capital causes variation in bank credit, *ceteris paribus*.

sheet information on a monthly basis. The banks have to disclose information on group bank loans and deposits, under both assets and liabilities categories. This data, collected under the format Banks DI900 Returns is available from January 1993 to December 2007. After this date, the reporting format changes (BA900), with the categories "bank group funding" and "interbank funding" being merged into a single category, and it becomes impossible to isolate the stock of internal bank funding (see Table 1 for an overview of a simplified DI900 reporting format of the Resbank). Therefore, I only use the files for the 1993-2007 period. The data are stored in separate excel spreadsheets for each month and each bank. I only compile the information for the end-of-quarter months of March, June, September and December. This information is available to the public on the website of the Resbank (http://www.resbank.co.za) but to the best of my knowledge, this data on internal loans and deposits have never been explored for research on internal capital market.

This dataset is completed by financial and ownership information on banks from Bureau Van Dijk's BankScope database. Banks' ownership is defined as follow: I use the global ultimate owner indicator of BankScope database and update it using the same definition by looking on banks' websites when the information is missing in BankScope. A company is an Ultimate Owner (UO) if it controls at least 50.01% of the entity and has no identified shareholders or if its shareholder's percentages are not known. For banks which have a dispersed ownership and for which there is no ultimate owners controlling at least 50.01% of the company, I then determine the country of origin of the bank based on the country of the owner with the highest percentage of shares.

I obtain an unbalanced panel of 82 banks, consisting both of domestic banks and of foreign banks' affiliates. 80% of these banks are commercial banks or saving banks while the rest are either investment banks or securities firm. These banks have a unique bank identification number provided by the Resbank. The names of some of the banks in the sample have changed over time due to mergers, acquisitions or divestments at the group level (for instance ING Baring became ING in 2004), but the unique number ensures that we can follow the same bank over time (see Table 2 for a list of the banks included in the sample). For mergers or acquisitions between banks in South Africa, the acquiring bank keeps its identification number, while the target bank ceases to report financial information.[10] Mergers and acquisitions may

[10]For instance Nedcor Group was formed on 1 January 2003, combining Nedcor Bank Ltd. (acquirer), BoE Bank and Cape of Good Hope Bank into one legal entity and it was subsequently renamed Nedbank Group in 2005. Nedbank Ltd. and Nedcor Bank Ltd. have thus the same identification number, while BoE and Cape of Good Hope Bank do not report any financial information

overstate the role of internal capital market in the expansion of domestic lending; however, over the sample period mergers and acquisitions mainly concern domestic banks which are not the focus of the empirical analysis. Figure 1 maps the geographic distribution of the country of origin of banks operating in South Africa. In the sample, 60% of the banks are domestic, 27% are global multinational banks from developed countries (henceforth, Global MNB) and 13% are multinational banks from emerging countries (henceforth, Emerging MNB).

Concerning the organizational form of the foreign affiliates in the sample, branches are the most common organizational form.[11] In 2007, among the 22 foreign affiliates, 14 were organized as branches and 7 as subsidiaries.[12] Branches tend to be preferred as a form of foreign bank expansion given their lower cost of establishment compared to a wholly owned subsidiary, while still allowing the bank to conduct a full range of banking businesses (Casu, Girardone and Molyneux, 2006). Furthermore, the level of development of the local markets also drives the organizational choice of foreign banks: when it is easier for foreign affiliates to raise wholesale funding locally to supplement retail deposits, a decentralized organization is favored, whereas the foreign affiliate relies much more on its parent's funding when local markets are weak (Fiechter et al., 2011).

2.4.2 Measuring internal group funding

I use two main variables to examine internal capital markets. The first variable, *internal funding* is a liability item reported on the balance sheet and indicates the funding that the bank owes to its group, either in the form of deposits or loans. In Table 1, internal funding corresponds to the sum of items [A], [B], [C] and [D]. Loans or deposits denominated in foreign currency are reported in South African Rands so there are no currency conversion issues. The reporting banks also make deposit and loans to the rest of the group, reported under item [E] in Table 1. This corresponds to internal lending and it is reported as an asset item on the bank balance sheet. The difference between internal lending and internal funding indicates the net internal funding position of the affiliate in relation to its group. If the net position is positive, the affiliate is a net receiver of internal funds from its

after 2002, which avoids double counting.

[11]Foreign affiliates are organized differently according to their level of commitments to the host country. Several organizational options exist, ranging from the representative office which cannot provide banking business, the branch which is a key part of the parent bank and acts as a legal and functional part of the parent's headquarters, to the subsidiary which is a separate legal entity from the parent bank with its own capital and is under the regulation of the host country (Casu, Girardone and Molyneux, 2006).

[12]Foreign representatives are not included in the sample.

group. If it is negative, the affiliate is a net provider of internal funds to its group. I present below the calculation of these two variables:

$$\text{internal funding} = \text{internal loans} + \text{internal deposits} \tag{2.1}$$

$$\begin{aligned}\text{net due internal funding} = {} & \text{internal funding (liabilities)} \\ & - \text{internal lending (assets)}\end{aligned} \tag{2.2}$$

Note that I focus here on internal transfers of liquidity in the form of loans or deposits. I do not take into account transfers of equity capital from a parent bank to its subsidiaries which often occur in the first few months or years following licensing or in some instances when minimum capital requirements are increased in the host country. The reason for this choice is that, with the data at hand, it is difficult to precisely identify the source of variation in core capital, and as such to observe when increases in core capital are due to transfers from the parent bank, as it regroups shares, retained earnings and other comprehensive income. This research thus provides a conservative analysis of the role of parent banks as purveyors of bank capital.

2.4.3 Descriptive statistics

In this section I examine the funding model of banks operating in South Africa to understand the role played by internal funding. Specifically, I evaluate the importance of the group as a source of funding, compared to wholesale funding and customer deposits. I also examine the net internal funding position of the banks in relation to their group. Table 3 provides detailed definitions and sources of the variables used in the empirical analysis. Table 4 provides descriptive statistics on selected bank financials for the sample period 1993q1-2007q4. All nominal values are deflated by the consumer price index (CPI) of South Africa provided by the IMF. The first half of Table 4 groups banks in three different ownership categories: Domestic banks, Global MNB and Emerging MNB. Domestic banks are the largest by assets, closely followed by Global MNB while Emerging MNB have a much smaller size. The table shows that the net internal funding position of the three categories of banks is on average positive over the sample period, indicating that the banks are on average net receivers of internal funds. The second half of Table 4 groups foreign banks according to their organizational form: bank branches and bank subsidiaries. The statistics reveal a much more limited participation of foreign bank subsidiaries in the

internal capital markets of their group compared to foreign bank branches, which is consistent with both the organizational set up and the legal commitments implied by each structure.

Table 5 provides more detailed information on the funding model of the three different categories of banks (Domestic, Global MNB and Emerging MNB). It presents the different sources of funding of each bank in the sample, as a percentage of their liabilities for the period 1993q1-2007q4.

The table shows that internal group funding represented 6% of total liabilities for domestic banks, while it was 9% for Global MNB and 3% for Emerging MNB, over the sample period. While clearly not as important as customer deposits, this source is however non-negligible and often more significant, in terms of amount, than interbank funding. This suggests that the traditional interbank wholesale market is underdeveloped in South Africa, in comparison to developed countries and that internal funding might represent an alternative to interbank funding. On average for all banks, interbank liabilities represented 4% of total assets over the period studied.[13]

Finally the second half of Table 5 compares the funding model of foreign bank branches to that of foreign bank subsidiaries. The difference in organizational structure is translated into sharp differences in funding patterns. Indeed, the subsidiaries of foreign banks in the sample are heavily reliant on deposits from other parties (close to 90% of their liabilities), while interbank and internal funding are negligible sources of funding. On the contrary, the branches of foreign banks have a more balanced funding model, with internal funding representing around 10% of their liabilities over the sample period. This suggests that foreign bank subsidiaries are relatively insulated from internal capital reallocations by their parent bank, while branches are much more financially integrated to their group.

Most of internal funding is received in the form of internal bank deposits, while only a small percentage is received in the form of bank loan. The fact that most of the internal funds are under the form of deposits suggests that they are a very cheap, if not free, source of liquidity. This is in line with Gopalan et al. (2007) analysis of the terms of intragroup loans, who find that intragroup loans are extended at an interest that is significantly below the corresponding borrowing rate in the market and that these loans are negative net present value for the groups that provide them. Grant (2011) also reports results from a survey of 38 banks from nine countries indicating that most banks surveyed lacked a liquidity transfer pricing policy and that

[13]As a comparison, in Europe, interbank liabilities stood at around 30% of total assets for banks in the Euro area pre-crisis (end of 2007 to third quarter of 2008) followed by a drop in the median values to around 22% in 2011 (European Central Bank; 2012:10).

liquidity was considered as a free good, with providers of liquidity within the groups typically underpaid for their liquidity creation and liquidity users receiving free liquidity. Furthermore, the distinction between loan and deposit has also implications in terms of regulation. So far, most of the literature has assumed that the internal funds are transfered in the form of loans. However, internal deposits are also an important channel to transfer funds (Allen, Gu and Kowaleski, 2011). While both internal loans and deposits serve the same function, they are not regulated in the same way. In Europe, for instance, internal loans face important regulations that restrict their use[14], while internal deposits are generally not covered by any regulation and disclosure requirements (Allen, Gu and Kowaleski, 2011), which could then encourage the use of internal deposits over internal loans.

The empirical results are presented in the following three sections. Section 2.5 provides tests for hypotheses 1a and 1b on the determinants of internal funding. Section 2.6 examines how systemic banking crises in other countries where the parent bank has operations influence the reception of internal group funding by South African affiliates, thus providing a test for Hypothesis 2. Section 2.7 tests Hypothesis 3 on the relation between reception of internal funding and bank lending.

2.5 Support and Investment motives

2.5.1 Estimation strategy

I analyze jointly support motives (Hypothesis 1a) and investment motives (Hypothesis 1b) for internal funds transfer for the sample of foreign affiliates, examining three sets of independent variables: the macroeconomic conditions in the host country, the macroeconomic conditions in the home country, and the macroeconomic conditions in the "Outside Option" of the headquarters, defined here as the set of countries in which the group already operates and which reflects alternative investment opportunities for the parent bank.

I first examine the probability of being a net receiver vs. a net provider and then, given a positive net internal funding position, I examine the determinants of the volume of funds received. The goal of conducting these two different estimations is to examine whether the probability of being a net receiver ("intensive margin") is driven by different factors than the volume of fund received ("extensive margin"). I create a dependent variable *Internal Funding Status* which has three categories:

[14]See Section 5 Large Exposures, Directive 2006/48/EC of the European Parliament and of the Council of 14 June 2006 relating to the taking up and pursuit of the business of credit institution, Official Journal L 177 , 30/06/2006. Cited in Allen, Gu and Kowaleski, 2011.

Receiver, *Provider* and *Zero Activity*. More specifically, for each time period (year-quarter) I classify banks into *Receiver* if their net group funding position is positive and into *Provider* if their net group funding position is negative in a specific year-quarter. *Zero Activity* regroups banks which neither receive nor lend internal funds to their group[15]. Over the sample period, 13% of foreign banks' affiliates are net provider and 37% are net receiver of funds. The remaining 50% have a net group funding position equal to zero. I estimate a multinomial logit model with *Internal Funding Status* as the dependent variable. The explanatory variables include foreign affiliates factors (solvency), home country and host country factors, as well as the Outside Option variable. I choose *Receiver* as the baseline comparison group and I focus on the log-odds of Receiver vs. Provider:

$$\log\left(\frac{\Pr(\text{Internal Funding status=Receiver})}{\Pr(\text{Internal funding status=Provider})}\right) = \alpha + \beta_1 \text{Solvency}_{it} + \beta_2 \text{Host}_{it} + \beta_3 \text{Home}_{it} + \beta_4 \text{Outside Option}_{it} + \gamma \text{Controls}_{it} + \alpha_c + \delta_t + \gamma_i \quad (2.3)$$

I then examine the determinants of the volume of internal funding given a non-zero net internal funding position, that is excluding the group of "zero activity" banks from the sample. The dependent variable is the ratio of internal funding to total assets. I create a dummy *Receiver* which equals 1 if the bank is a net receiver of funds, and zero if it is a net provider. The other explanatory variables are the same as in equation (2.3). I estimate the following model:

$$\begin{aligned} y_{it} = {} & \beta_1 \text{Solvency}_{it} + \beta_2 \text{Host}_{it} + \beta_3 \text{Home}_{it} + \beta_4 \text{Outside Option}_{it} \\ & + \beta_5 (\text{Solvency * Receiver})_{it} + \beta_6 (\text{Host * Receiver})_{it} + \beta_7 (\text{Home * Receiver})_{it} \\ & + \beta_8 (\text{Outside Option * Receiver})_{it} + \gamma \text{Controls}_{it} + \alpha_c + \delta_t + \gamma_i + \varepsilon_{it} \quad (2.4) \end{aligned}$$

Independent variables of interest.

Testing H1a: $Solvency_{it}$ is bank (foreign affiliate)'s solvency ratio. This variable measures a bank's ability to meet its long-term financial obligations and is calculated as the ratio of equity to asset.[16] According to Hypothesis 1a, internal funding will

[15]There is no bank in the dataset for which internal funding and internal lending exactly cancel each other out. As such the "zero activity" category only includes banks which are not active in internal capital markets.

[16]In unreported regressions I have also added two other variables to examine the relation between bank affiliate's financial strength and reception of internal group funding, beyond capital constraints: *Liquidity constraint* and *Tangibility*. Banks' liquidity constraint was measured as the ratio of loans to deposits, which is commonly used to assess a bank's liquidity position. Tangibility was measured as the firm's tangible assets (property, plants and equipment) and is measured as the ratio of tangible assets to the book value of total assets. However, these variables were not

flow to support affiliates with a weak balance sheet (low solvency ratio). As such, I expect $\beta_1 < 0$ in equation (2.3) and $\beta_5 < 0$ in equation (2.4).

Testing H1b: $Host_{it}$ is an indicator of host country investment opportunities which I proxy by the real GDP growth in South Africa. $Home_{it}$ is an indicator of home country macroeconomic conditions, which I proxy by the growth of GDP in the foreign affiliate's home country. Outside Option$_{it}$ represents the alternative investment opportunities for the parent bank, located in the other countries of operation. This variable is calculated as the sum of GDP growth in the other countries of operation of the parent (excluding its home country and South Africa), weighted by the assets of the foreign subsidiaries in each host country as a percentage of the total assets of the foreign portfolio of the parent. According to Hypothesis 1b, higher GDP growth in South Africa should be associated with an increase in the relative probability of being a net receiver ($\beta_2 > 0$ in equation (2.3)) and an increase in the volume of internal funding received given a net receiver position ($\beta_6 > 0$ in equation (2.4)). In addition, higher GDP growth in the home country and in the Outside Option should be associated with a decrease in the relative probability of being a net receiver ($\beta_3 < 0$ and $\beta_4 < 0$ in equation (2.3)) and a decrease in the volume of internal funding received given a net receiver position ($\beta_7 < 0$ and $\beta_8 < 0$ in equation (2.4)).

Figure 2 plots the evolution of the Outside Option for Global MNB and Emerging MNB over the sample period. One striking feature of this graph is that in the 1993q1-2007q4 period, the Outside Option of Emerging MNB was on average higher than that of Global MNB. This is due to the relatively higher exposure of Emerging MNB, a group essentially composed of Indian and Chinese banks, to fast-growing Asia. Moreover, we notice a dip around 1998 in the Outside Option of Emerging MNB: this reflects the impact of the East Asian Crisis on the GDP growth rate of countries in this region to which Emerging MNB are highly exposed.

Controls. The dummy *Branch*, taking the value of 1 if the foreign affiliate is a branch and 0 if it is a subsidiary, is included to take into account the fact that different organizational structures translate into varying degrees of centralization of decision-making and restrictions on internal transfer.[17] As mentioned above, one of the main distinctions between a branch and a subsidiary is that the parent is legally inseparable from its branch and is responsible for its financial commitments,

significant and did not improve the fit of the model, and as a consequence they were not included in the reported estimations.

[17]Under a centralized form, which is often associated with a foreign branch structure, internal group funds flow freely within the group and organizational and risk management functions are integrated. Under a decentralized model, which corresponds to the subsidiary organizational form, foreign affiliates are financially, as well as operationally, independent.

while it has no legal obligation to support a subsidiary that is financially distressed (Fiechter et al., 2011). As such, I expect this dummy to be positively associated with the reception of intragroup funding. I include a dummy *Commercial* which is equal to one if the main business line of the bank is retail and commercial banking, and 0 if it engages primarily in wholesale or investment banking. Investment banks may prefer to adopt a more centralized model to be flexible globally in their liquidity management and services to large corporate clients (Fiechter et al., 2011). I thus expect this dummy to be negatively associated with the reception of internal group funding.

I then include two control variables, *Size*, calculated as the log of total book assets deflated by the CPI index and *Age*, measured as the bank's age since the date of incorporation, as both variables may affect the degree of integration of the foreign affiliate with its banking group and drive internal funding and lending. For instance, Gopalan et al. (2007) show that larger firms are more likely to be providers of funds to their group than receivers.[18]

An important factor to consider is the tax effect of internal capital allocation. Indeed, Cerutti, Dell'Ariccia and Martinez Peria (2007) have found evidence of a positive and significant relationship between the top corporate tax rate in a host country and the decision of banks to incorporate their local businesses as branches, given that it would ease profit shifting across borders to avoid tax burden. Desai, Foley and Hines (2004) also found that internal borrowing is particularly sensitive to local taxes. Furthermore, different tax treatments by home regulatory authorities of repatriated profits from overseas could differ between branches and subsidiaries, which would not only influence the group's choice of organizational form abroad but also drive the observed variation in internal funding. One way to control for that is to include home country fixed effects. As such, I include home country fixed effects α_c to capture any difference in tax regimes between home countries that could affect the reception of internal funds by the foreign affiliates, and time fixed effects δ_t to control for variations in local conditions. I finally include firm fixed effects γ_i to control for any unobserved time-invariant difference between bank affiliates.

The standard errors reported are corrected for heteroskedasticity and clustered at the firm level, that is at the (foreign) affiliate level.[19]

[18]In unreported preliminary analysis I also included control variables capturing cultural links such as common language or former colonial links between host and home countries, which might indicate the strategic importance of the foreign affiliate for the group or might capture the ability of the affiliates' managers to influence outcomes of internal capital allocation (for instance if they share the same language as global headquarters' managers). However, these variables were not significant and did not change the point estimates of the variables of interest once included, therefore I chose not to add them as controls in the following empirical analysis.

[19]In so doing I follow the method used in related empirical literature, where standard errors are

At this stage, and before turning to the estimations, it is important to note that these results are only intended to be suggestive and that their interpretation should be taken with caution. Indeed, a limit of this analysis is that the relation between the measure of financial strength, solvency calculated as the ratio of equity to asset, and the dependent variable of internal funding is relatively mechanical, linked to accounting identities. As such, the aim of this first exercise is only to provide preliminary insights into the drivers of internal funding, which will be conducted more in-depth in Section 2.6.

2.5.2 Supporting parent or opportunistic investor?

Probability of being a net receiver vs. a net provider. I first examine the probability of being a net receiver vs. a net provider, including host and home country variables as well as the Outside Option variable, following equation (2.3). The results are reported in Table 6.[20] They indicate that bank's solvency is negatively associated with the odds of being a net receiver vs. a net provider. The coefficient is statistically significant at the 1% level and the result is robust to the inclusion of home and host country controls, as well as firm, time and home country fixed effects. This is consistent with Hypothesis 1a. However, contrary to the prediction of Hypothesis 1b, the results suggest that the probability of being a net receiver vs. a net provider is not related to macroeconomic conditions in South Africa, as

clustered at the firm level to reduce the bias in OLS standard errors when residuals are correlated across observations (Petersen, 2005). However, given the small number of clusters (below 30) the method may not be appropriate as asymptotic inference supposes that we have a large number of clusters (Angrist and Pischke, 2009). I have tried an alternative method to correct for standard errors, namely bootstrapping as suggested by Cameron et al. (2008). To do so I have used the bootwildct.ado command for Stata which implements the wild-cluster bootstrap-t procedure, with a specified null hypothesis, as described in Cameron et al. (2008). This procedure is shown to improve inference in cases with few clusters. However, it only works for linear models with clustered standard errors and with simple hypotheses. As such I was not able to implement fixed effects or estimate a logit model under this method. Given that the standard errors using bootstrapping on linear models were of similar size to the ones calculated with the cluster option with stata, I decided to report the latter, that is, the standard errors corrected for heteroskedacitity and firm clustering.

[20] I have preliminary examined whether the data meet the assumption of independence of irrelevant alternatives (IIA) which underlies the multinomial logit model. This assumption implies that the probability ratio between two given alternatives is not different whether or not the other alternatives are included. I performed a Hausman and McFadden (1984) test to check the validity of the assumption. The test is based on the idea that if a subset of the location choice set is irrelevant, its omission from the model will not systematically change the estimates. I tested whether the odds ratio receiver/provider is really independent from the presence of the "zero activity" alternative. To do that I first estimated the model on the full set of three alternatives and re-ran it on the subset of two alternatives, provider and receiver (excluding the "zero activity" alternative). The results obtained indicated that the model meets the IIA assumption: the results of the Hausman tests indicated that I could safely accept H0 [Prob > Chi2= 0.8934], indicating that the two sets of estimates were not statistically different.

the coefficient on GDP growth is not significant at conventional levels.[21] Regarding conditions in the home country of the foreign bank's affiliate, the results show that GDP growth in the home country increases the odds of being a net receiver of fund vs. a net provider, and the coefficient turns significant when firm controls and fixed effects are included. This finding is not consistent with Hypothesis 1b which would have predicted a negative sign. This positive association between GDP growth in the home country and the probability of being a net receiver may actually signal that higher growth in the home country translates into stronger balance sheet for the parent bank and thus a higher financial capacity to redistribute funds across the group[22]. Finally, the results show a positive association between (weighted) GDP growth in the other countries of operation of the parent (the "Outside Option") and the odds of being a receiver vs. provider, but the coefficients are not significant in the three models estimated.

In sum, these results suggest that support motives are important determinants of the probability of a foreign affiliate to be a net receiver vs. a net provider, which is consistent with Hypothesis 1a. However, at this stage the findings do no support Hypothesis 1b. While the results provide some evidence that investment opportunities in the host country may drive allocation of internal group funding, which is consistent with expectations, the coefficients are not significant at conventional levels. In addition, the signs of the coefficients on GDP growth in the other countries of operation are positive, which is not consistent with Hypothesis 1b, which would have predicted a negative association.

Determinants of the volume of internal funding for net receivers. I turn to the analysis of the determinants of the volume of internal funding given a non-zero net internal funding position, that is excluding the group of "zero activity" banks from the sample, following equation (2.4). The results are reported in Table 7.

[21]In unreported results I have also include measures of monetary conditions in South Africa, proxied by the interbank rate and the inflation rate, and alternative measures of investment opportunities and macroeconomic expansion in South Africa, such as the growth in industrial production, or growth in household consumption expenditures, but the coefficient on these variables was not significant either.

[22]This result may also partly be driven by omitted variable bias, in particular the solvency position of the parent group. If the solvency position of the parent is positively correlated with the probability of a foreign affiliate of being a net receiver, the correlation between GDP growth in the home country and solvency of the parent bank is positive, and if the product of these two coefficients is superior to the coefficient on GDP growth in the home country, then it is possible that the coefficient on GDP growth in the home country turns negative when parent bank solvency is controlled for. Unfortunately, the data at hand does not allow me to control for parent banks' solvency position as very little information is available on a quarterly basis in BankScope for the parent bank of these South African foreign affiliates over the study period, with less than 50 observations available.

First, the coefficient on solvency is negative but not significant and when interacted with the dummy receiver, the coefficient becomes positive, but it remains insignificant. The sign on the interaction terms of *Outside Option*Receiver* is negative and significant in models 1 and 2, which is consistent with Hypothesis 1b. The results of these two models indicate that, for net receivers, a one unit increase in the Outside Option is associated with a 3.1% decrease in the ratio of internal funding to total assets. The coefficient on the interaction terms with GDP growth in the home country is negative in models 1 and 2, which is consistent with expectations, but not significant. Similarly, the coefficient on the interaction terms with GDP growth in South Africa is positive, which is consistent with hypothesis 1b, but not significant. When firm fixed effects are included (model 3), the statistical significance of the coefficient on the variable *Outside Option*Receiver* drops below conventional levels, while the coefficient on the interaction term *GDP growth Home*Receiver* becomes significant. The smaller and less significant coefficient on the interaction term with Outside Option may partly be due to a worsening of the attenuation bias when including fixed effects due to classical measurement error in the variable *Outside Option*[23]. Furthermore, the F-stat of the model is reported as missing by Stata due to lack of degrees of freedom. When variances are adjusted for clustering, the rank of the variance-covariance matrix is limited by the number of clusters; in this case the maximum number of constraints that can be tested is 19 (20-1). In addition, Stata reports the existence of multicollinearity among the firm (bank) dummies. The models in column (1) and (2) are therefore preferred.

To sum up, the results presented in Table 7 are partially consistent with Hypothesis 1b: while there are some evidence that investment opportunities in the Outside Option and in the home country, as proxied by the growth in GDP, are negatively associated with the volume of internal funding to net receivers, macroeconomic conditions, or investment opportunities, in South Africa seem to be irrelevant factors in internal capital allocation decisions.

Overall, the results of these two preliminary exercises indicate that the factors influencing the probability of being a net receiver and those influencing the volume of internal funding received, given that a foreign affiliate is a net receiver, are different. While the solvency ratio (Hypothesis 1a) is an important factor influencing the probability of being a net receiver vs. a net provider, it is not a significant determinant of the volume of internal funding received by net receivers. Furthermore, while there is little evidence that investment opportunities in the host country drives the

[23]Indeed, it is likely that the serial correlation in the measurement error is lower than the serial correlation in the signal given that GDP growth is relatively persistent.

reception of internal funding (at least in the South African case), there is some evidence that the volume of funding received is driven by investment opportunities in the other countries of operation (Hypothesis 1b). The link between macroeconomic developments in the Outside Option and internal funding is examined more in-depth in the next section.

2.6 Internal capital lending in times of crisis

In this section I illustrate the importance of the evolution of the Outside Option to the internal funding position of a bank and provide a test for Hypothesis 2. More specifically, I examine how the internal bank funding position of foreign banks' affiliates changes when other affiliates of the group are affected by a sudden reversal of fortune, affecting their capital and liquidity position and prompting the banking group to reallocate rapidly its internal capital. The East Asian Crisis which started in summer 1997 offers a sort of quasi-natural experiment on the functioning of internal capital market. East Asian economies which had been attracting significant amounts of short term foreign capital in the early 1990s faced a large and sudden reversal of capital flows in the second half of 1997 (Radelet and Sachs, 1999). As such, according to Hypothesis 2, the group should reallocate internal capital from non-crisis countries to crisis countries. I first provide a brief summary of the East Asian Crisis and its potential implications for internal capital markets and I then proceed to the presentation of the identification strategy and estimations.

By the end of 1996, the majority of the east Asian countries had a share of short term foreign liabilities above 50%, and the ratio of foreign liabilities to assets relative to BIS (Bank for International Settlements) reporting banks was extremely high, close to 2.0 for the majority of the countries, and reached a factor of 11 in the case of Thailand (Corsetti, Pesenti and Roubini, 1998). The exchange rates appreciated in real terms[24] and investors anticipated a depreciation[25]. Strong speculative attacks led to the flotation of the Thai baht on the 2nd of July 1997. This was followed by a speculative attack on the Korean won in October 1997 (Corsetti et al. 1998). While the causes were varied and debatable[26] the crisis had significant macroeco-

[24]Real exchange rates appreciated by more than 25% in the four southeast Asian countries between 1990 and early 1997 (Radelet and Sachs, 1998)

[25]Several factors sparked investors' concern that the currencies might be devalued. In Thailand and Korea large current account deficit and the general weakness of the Thai financial system were sources of concern.

[26]Corsetti et al. (1998) cite over-borrowing in foreign currency in Thailand and Indonesia, bankruptcy of the large domestic conglomerate chaebols in South Korea, and financial difficulties in the real estate sector in Malaysia as the origin of the crisis.

nomic effects, including sharp currency devaluations, drops in stock markets prices, and other asset prices of east Asian economies. The East Asian Crisis developed into a twin crisis, characterized by the simultaneity of a currency crisis and a banking crisis, with the two reinforcing each other. Given weaken macroeconomic conditions in 1997, national stock markets started to drop and currencies came under attack, starting with the Thai Baht and then followed by the currencies of Malaysia, Indonesia and Philippines, countries which shared similar economic fundamentals and export structures than Thailand. The devaluation of these currencies in the summer of 1997, in a context of low interest rates, had negative spill-over effects on the currency of the other economies of the region, Singapore, Taiwan and Korea. The crisis intensified during 1998: as the east Asian economies slowed down sharply, the recession spread from the crisis countries (Korea, Indonesia, Thailand and Malaysia) to the other neighboring east Asian economies (Hong Kong, Philippines, Singapore and Taiwan). The IMF stepped in and several conditional agreement with financial aid packages where concluded in the year following the third quarter of 1997. Strict fiscal discipline and high interest rates were imposed.

I conjecture that the sudden reversal of capital flows of short term foreign debt and the reluctance of foreign creditors to extend new loans and roll over existing loans, which led to a severe banking crisis and the sharp contraction of the economy, created a funding shock for the south east Asian foreign affiliates of banking groups present in the region. Cetorelli and Goldberg (2012) have shown how global banks respond to such shocks by activating internal capital markets to reallocate funds across locations in response to their relative needs, while also creating another channel of international transmission of financial crises (see also Peek and Rosengren (2000) on the role of global banks in international shock transmission, with the case of Japanese banks in the U.S.). This should lead to an increase in internal capital flows from foreign banks' affiliates located outside the crisis region to those operating in countries affected by the crisis in order to support the affiliates' solvency and more importantly their liquidity positions[27]. Furthermore, even though the subsidiaries of foreign banks in east Asia may not have been as reliant as domestic intermediaries on short-term, unhedged, foreign currency denominated debt, they also faced higher funding constraints both on the domestic and international wholesale market as a result of the crisis. As such, following Hypothesis 2, I expect the net internal funding

[27]Radelet and Sachs (1998) estimating a simple probit model on a panel of data for the years 1994-97 for 22 emerging markets in which the onset of a financial crisis depends on a vector of economic and institutional variables show that the defining element of such crises was illiquidity as measured by a high ratio of short-term debt to short-term assets, rather than a crisis of fundamental solvency.

position of South African affiliates belonging to a group very exposed to east Asia to decline more during the crisis, relative to before, compared to affiliates of groups with little or no exposure to east Asia.

2.6.1 Estimation strategy

I estimate a difference-in-difference model on the period 1996q4-1998q3, with a continuous treatment variable which is the exposure of the parent to the Asian crisis that started in the third quarter of 1997. The variable *Asian Exposure* is calculated as the weighted number of subsidiaries of the same parent (or "General Ultimate Owner" following BankScope's terminology) that are located in Thailand, Indonesia, Malaysia, Philippines, Singapore, South Korea for each year in the sample. The weight is calculated as the assets of the subsidiaries in the above-mentioned Asian countries divided by the total assets of the foreign subsidiaries (excluding South Africa) of the parent. This number is thus bounded below by zero (the group does not have any subsidiary in these east Asian countries) and above by one (all the other foreign subsidiaries of the group are located in these east Asian countries). As there was no foreign affiliate in South Africa over the sample period that was part of a banking group originating from one of these six Asian countries, excluding the assets of the parent bank from the variable of interest is not biasing the results through under-reporting of exposure to the crisis.

I consider that the East Asian Crisis started in the third quarter of 1997, after the Thai Prime Minister said on the 30th of June 1997 that the Thai baht would not be devalued, despite the speculative attacks on the currency on the 14 and 15 of May 1997 (see Corsetti, Pesenti and Roubini (1999) and Radelet and Sachs (1998, 1999) for a more detailed macroeconomic analysis of the East Asian Crisis). The fact that the crisis was largely unanticipated and that high levels of capital continued to flow into east Asia until the very brink of the crisis itself (Radelet and Sachs, 1998) helps the identification exercise by limiting the potential existence of a pre-crisis trend. Figures 3 and 4 chart the evolution of the ratio of net internal funding to asset for two different levels of exposure to East Asian Crisis country: "High east Asian exposure" regroups foreign affiliates which banking group has above average exposure to east Asian Crisis countries (more than 2.5% of total assets of foreign subsidiaries ex. South Africa are in east Asia) and "Low east Asian exposure" regroups banks with below average exposures. Of these graphs, three features are worth mentioning. The first one is that until 2000q4, and with the exception of the period immediately after the start of the East Asian Crisis in 1997q4-1998q1, the net internal funding position of the "high exposure" group is always higher than that

of the "low exposure" group (see Figure 3, which graphs the evolution of the ratio over the long period 1993q1-2007q4). This suggests that banks are not randomly assigned into these groups. The second one is that 1998q1 is the only quarter, with the exception of 2007q1, in which the net internal funding position of the "high exposure" group becomes negative (-3% of total assets on average), meaning that the South African affiliate of these exposed groups becomes a net provider of internal funding to its group shortly after the start of the East Asian Crisis. The third one is that despite important and stable differences in the level of their net internal funding position, both groups follow relatively similar trends in their reception of internal funds prior to 1997q3 (see Figure 4), which is important given the common trend (or parallel) trend assumption underlying difference in difference estimations. The classification into Low and High exposure to east Asia being arbitrary I use instead the continuous variable "Asian Exposure", which is an indicator of the weight of east Asian countries (in terms of assets) in the total foreign exposure (ex. South Africa) of the banking groups. I estimate the following model:

$$\begin{aligned}\text{Net internal funding/assets} = \alpha_0 + \beta\text{Asian Exposure}_{it} + \\ \gamma\text{Post}_t + \lambda\text{Asian Exposure}_{it}.\text{Post}_t + \delta\text{Controls}_{it} + \varepsilon_{it} \quad (2.5)\end{aligned}$$

The dummy *Post* is equal to one for the period 1997q4-1998q3, and zero for the period prior to 1997q4. The estimation period is 1996q4-1998q3, that is, on the four quarters leading up to the financial crisis and the four quarters after. The parameter of interest is λ, which measures the difference in the effect of the East Asian Crisis on net internal funding for a one percentage point increase in *Asian Exposure*[28]. I include the following variables as control: *Size*, the dummy *Branch*, the dummy *Commercial*. I cluster the standard errors at the (South African) foreign affiliate level to correct for the presence of within cluster correlation. The results are reported in Table 8.

2.6.2 Estimation results

The results indicate that banks belonging to groups more exposed to East Asian Crisis countries show a significant drop in their net internal funding position. Affiliates of banking groups with higher exposure to East Asian Crisis countries experienced a drop in their net internal funding position of 25 percentage points relative to other foreign affiliates. In columns (2) and (3) I exclude banks that entered or exited

[28]That is, a one percentage point increase in the total assets of the subsidiaries in east Asia of the group, relative to the total assets of all the foreign subsidiaries, ex-South Africa.

during the 1996q4-1998q3 period. In addition, in column (3) I also include time fixed effects to control for changes in the local demand of credit, firm fixed effects and home country fixed effects. The results are still significant and qualitatively similar to the ones reported in column (1) of Table 8, however the point estimate of the impact of the Asian crisis on net internal funding drops by 10 percentage points, which might be due to the fact that exposure to East Asian countries is not randomly assigned, therefore controlling for unobservables captures part of the difference. That said, the coefficient on the interaction term is still significant at the 1% level.

Finally, in column (4) I collapse time into into one pre- and one post-shock periods to avoid serial correlation problems (see Bertrand, Duflo, and Mullainathan, 2004, for the methodology) and I control for entry and exit. The results are robust and the point estimates do not change significantly between models 1, 2 and 3.

These results could suggest either a lower reception of internal loans as a consequence of the East Asian Crisis or higher remittance of internal funds to the group. In unreported regression, I re-estimated the empirical model (2) of Table 8 using alternatively internal funding/assets and internal lending/assets as independent variables. The interaction term was negative in both models and statistically significant at the 1% level. I find that a one percentage point increase in *Asian Exposure* was associated with a decrease in the internal funding ratio of 11.7 percentage points in the *Post* period relative to the *Pre* period, while it was associated with an increase in the internal lending ratio of 13.3 percentage points. In other words, the South African foreign affiliates of highly exposed multinational banks both received less internal funding from their group during the East Asian Crisis period than before, and lent more to their group, relative to the affiliates of less exposed groups. Consistent with Hypothesis 2, this suggests that the headquarters of groups highly exposed to the East Asian Crisis countries altered their internal capital allocation, diverting their internal funds from South Africa to support their affiliates in east Asia.

2.6.3 Robustness tests

As a robustness test, I show that the results are not qualitatively affected by changes in the end date of the *Post* period. In Table 9 I investigate further the lasting effects of the East Asian Crisis by extending by one quarter the end of the *Post* period. I control for entry and exit by only examining the banks that were present during the entire period 1996q4-1998q3. The signs of the interaction term *Asian Exposure*Post* are negative and significant until the first quarter of 2000, however

the point estimates decrease progressively, from -0.25 for the period ending in 1998q3 to -0.04 for the period ending in 1999q4. The results indicate that the transmission of the shock was rapid and it was mostly felt during the first year post the start of the crisis. Two years after, most of the effects had disappeared.

One of the limits of this estimation is that Asian Exposure is not randomly assigned. In addition, and as mentioned before, one of the key identification assumptions of the difference-in-difference model is the so-called parallel-trend assumption according to which in the absence of the treatment, the unobserved differences between treatment and control groups are the same over time. I explore the possibility that a bank belonging to a group that was more significantly exposed to the East Asian Crisis was on a different internal funding path than those that were less significantly exposed. If this was the case, my estimates could be capturing such pre-existing differences across the two groups of banks and not the effect of the East Asian Crisis shock on internal funding. I perform the following falsification placebo test: I estimate equation (2.5) over the period 1995q3-1997q2, by lagging the internal funding measure by one year, as if the East Asian Crisis had started in the third quarter of 1996 instead of the third quarter of 1997. The placebo test is estimated over the period $t = (\text{Pre-1}, \text{Pre})$ where *Pre* is the period 1996q3-1997q2, the same as in our baseline estimation, and *Pre-1* corresponds to the 4 previous quarters, 1995q3-1996q2. The results are presented in Table 10. The coefficient on the interaction terms of the placebo "post" dummies and Asian Exposure are not significantly different from zero. Furthermore, these different outcomes are driven by changes in the point estimates themselves. These results provide some additional reassurance on the validity of the exercise, indicating that banks that belonged to a group significantly exposed to the East Asian Crisis did not face any differential supply of internal funding prior to the crisis period.

2.7 From internal loans to domestic credit

In this section I provide a test for Hypothesis 3, investigating the impact of the reception of internal funding on banks' credit. According to Hypothesis 3, an increase in (net) internal funding to a foreign affiliate should, *ceteris paribus*, lead to an increase in bank credit. I examine whether foreign banks' affiliates use these additional internal funds to increase their credit to domestic firms and individuals in South Africa using an instrumental variable technique.

2.7.1 Estimation strategy

I want to estimate β, the elasticity of credit to internal funding using the following empirical model[29]:

$$\text{Credit}_{it} = \beta \text{Internal funding}_{it} + \gamma \text{Controls}_{it} + \delta_t + \varepsilon_{it} \tag{2.6}$$

However, identifying the causal effect of internal funds on banks' credit is problematic as it may be influenced by the same unobservable factors affecting bank credit and therefore be endogenous. Indeed, apart from internal group funding, banks' supply of credit is determined by the demand for credit, by domestic macroeconomic conditions but also by the availability of external bank funding (customers' deposit, interbank markets). The identification problem is that the availability of internal funding may be itself a function of local (i.e. host country) demand of credit and of local supply of external funding. The identification strategy relies on the exploitation of an instrumental variable technique. I use the variable *Outside Option* as an instrument for the volume of internal funding in the affiliate bank's balance sheet. The identification reposes on the assumption that the Outside Option is uncorrelated with any other determinant of the foreign affiliate's local supply of credit, especially uncorrelated with the local demand of credit, or more generally, with local macroeconomic conditions.

I use two dependent variables. The first one is the outstanding volume of mortgage advances. In DI900 reporting format, the category mortgage advances includes farm mortgages, mortgages to companies and close corporations, to unincorporated businesses and to individuals as well as to non-profit institutions. The second one is the outstanding volume of private sector loans[30]. The category private sector loans and advances includes overdrafts and loans to companies, unincorporated businesses, individuals as well as non-profit institutions[31]. I employ the same bank controls as in the preceding estimations, *Size*, the dummy *Branch*, the dummy *Commercial*, and in some models I also control for the bank's age. I also include time fixed effects δ_t to control for variations in local market conditions, such as variation in credit demand.

[29] *Credit* and *Internal funding* are in log so that β is an elasticity.

[30] As mentioned previously, both variables are deflated by the CPI.

[31] Due to the small number of observations, I have not disaggregated further the measures of credit.

2.7.2 Estimation results

I have performed a preliminary Hausman test for endogeneity of the variable internal funding which rejected the null hypothesis of the exogeneity of this variable at the 5% confidence level. The results of the first stage are reported in Table 11 in the Appendix. For the instrument to be valid it needs to be relevant and to satisfy the exclusion restriction. The first stage shows that the coefficient on the variable *Outside Option* is negative and statistically significant in model 1. In model 2, I add a set of firm controls: *Size*, *Commercial*, *Branch* and *Age*. The number of observations drops due to missing age information for several banks. Outside Option enters negatively and significantly at the 1% level, although the point estimate is lower and the F-statistic is also lower (dropping from 22.29 to 14.78). These first results indicate that the volume of internal funding is negatively associated with the GDP growth of countries in the Outside Option. This is in line with the precedent analysis on the economic determinants of the reception of internal funding. The F-statistics of the first stage are above 10, which provides reassurance about the strength of the variable *Outside Option* as an instrument. In columns (3) and (4) I investigate the potential use of a second instrument, *GDP Growth Home*, as it has been identified previously as a predictor of the probability to be a net receiver of funds (see Table 7). While the coefficient on this variable is negative and significant at the 1% level, the first stage F-statistic falls below 10, when additional controls are included, which raises concerns about the strength of the instrument. In column (5) I investigate the use of both instruments, including firm controls, but the statistic on the F-test on the excluded instruments is also below 10. I decide to use only the variable *Outside Option* as an instrument and to proceed to a just-identified instrumental variable. This choice is also based on the fact that just identified 2SLS is approximately median-unbiased (Angrist and Pischke, 2009).

To satisfy the exclusion restriction, the instrument *Outside Option* cannot be correlated with the error term. This would be the case if the weighted sum of GDP growth in the other countries of operation of the parent affected local demand of credit. This is unlikely to be the case for mortgages, but it might be the case for private sector loans if borrowers were predominantly exporters. However, they would also need to be primarily exporters in the countries of the Outside Option. Given that home countries of foreign banks, which are often the ones affecting global exports (United States, United Kingdom, China), are excluded from the Outside Option, it is unlikely that changes in the macroeconomic conditions of the Outside Option affect demand of credit in South Africa. Furthermore, I am only considering the category of private sector loans in domestic currency, not the foreign

currency loans and advances, for which demand is more likely to be determined by the conditions in the Outside Option, especially if it is driven by financing for trade activities.

The results of the Instrumental Variable (IV) estimations are reported in Table 12. Panel A presents results for mortgage advances and Panel B for private loans. I also report the OLS estimations. Concerning mortgage advances, the IV estimates reported in column (3) imply that a 10% increase in the outstanding volume of internal funding results in a 3.2% increase in the volume of mortgage advances. When controlling for banks' age, the impact is slightly lower, and a 10% increase in internal funding results in a 2.4% increase in the outstanding volume of mortgage advances. The IV estimate of the credit elasticity to internal funding is a third larger as the OLS estimate. The downward bias of the OLS estimate implies that (non-internal funding) shocks to credit are negatively correlated with changes in internal funding.

In unreported regressions, I have estimated the model in column (3) using the *net* volume of internal funding instead of the gross volume and I obtain a 3.0% (point estimate of 3.0, standard error of 0.11 and first stage F-stat of 29.9) increase in the volume of mortgage advances. However, the sample size is much reduced (159 observations) due to negative values of the net volume of internal funding which cannot be log-transformed, hence I prefer to report the results on the gross volume.

Consistent with Hypothesis 3, these first results indicate that foreign affiliates increase their mortgage advances to farms, businesses and individuals in South Africa when their volume of internal funding increases, both in gross and in net terms. Now, turning to the estimations of the outstanding volume of private sector loans, the results indicate a sensibly different relationship between internal funding and loans. Indeed, the results reported in the second half of the table (Panel B) show that the sign of the coefficient β turns negative, with an elasticity of private sector loans to internal funding between -0.32 and -0.39 depending on whether age is included as an additional control or not[32].

In other words, these results suggest that when a foreign affiliate receives more internal loans, it reduces its loans and advances to the private sector but increases its mortgages, controlling for bank's organizational form, size, and business activities and for time trends in local market conditions. The negative relation between private sector loans and internal funding may be driven by a positive correlation between the Outside Option and the demand for private sector loans, especially if the bulk

[32]In unreported regressions I have used the net outstanding volume of internal funding as the instrumented variable instead of the gross volume and I obtained a negative and statistically significant elasticity of -0.143 (standard error of 0.14, first stage F-stat of 11.09, 339 observations).

of the demand for credit comes from exporting firms to the countries in the Outside Option of foreign affiliates' groups. In a situation when the rest of the world (or the Outside Option) faces a macroeconomic downturn, it may also mean that South African exporters face hard macroeconomic conditions and as a consequence their demand for private loans is lower. If most of the firms applying for private sector loans in domestic currency (note that, as mentioned above, the supply of private sector loans examined here excludes those in foreign currency) are exporters, the exclusion restriction is violated. Unfortunately, I am not able to determine whether this is the case, as I do not have information on the firms to which the banks are lending, and the assumption on the exclusion of *Outside Option* from the causal model of private sector loans may be too strong to validate the IV analysis.

As a consequence, in this exercise, the identification strategy is more appropriate for the supply of mortgage credit. Indeed, the link between demand for mortgage loans in South Africa and the Outside Option is unlikely to be strong, especially if a large part of the demand for mortgage comes from the middle or lower class. However, if most of the mortgage demand corresponds to investment demand driven by an elite with an international portfolio, then changes in the Outside Option might cause changes in the demand for mortgage in South Africa. Indeed, this elite would reallocate their portfolio strategically in countries where real estate potential, or investment opportunities in general, are higher. If this was the case, an increase in the Outside Option would be associated with a decrease in internal funding, *and* a simultaneous decrease in the *demand* for mortgage. This would violate the exclusion restriction, as the Outside Option would be correlated with the demand for mortgages, and invalidate the use of the variable *Outside Option* as an instrument.

Access to mortgage and housing finance in general is relatively open for middle and lower income in South Africa, having dramatically improved with the signing of the Financial Sector Charter (FSC) in 2003, which promoted access to the goods and services of the financial services industry for those who had been previously excluded (CAHF, 2013a, 2013b). According to statistics from the Banking Association of South Africa (BASA), 312 703 "FSC" loans were originated between January 2004 and December 2008. These loans were issued to households with a monthly income between R1,500 and R7,500 measured in 2004 Rands. By far the greatest area of activity was in mortgage lending: 234 638 mortgage loans to a total value of R28 billion were originated in the five-year period from January 2004 to December 2008. This suggests that mortgage demand in South Africa is not predominantly captured by an elite with an international portfolio and as such it provides reassurance on the validity of the instrumental variable estimation.

To sum up these results using instrumental variable technique provide evidence that an increase in the reception of internal capital has a positive impact on banks' mortgage lending. In other words, when foreign affiliates receive more internal funds from their group they expand their local mortgage advances. This confirms the third research hypothesis.

Summary of findings. Overall, I find partial support to Hypothesis 1a and Hypothesis 1b. While the foreign affiliate's solvency ratio is negatively and significantly associated with the probability of being a net receiver vs. a net provider (H1a), it is not a significant determinant of the volume of internal funding received by net receivers. In addition, while I find some evidence that the volume of funding received is driven by investment opportunities in the other countries of operation (Hypothesis 1b), I do not find any significantly positive association between GDP growth in the host country (South Africa) and the volume of internal funding received by the foreign affiliate. Using the episode of the East Asian Crisis, which resembles a "quasi-natural experiment", to examine internal allocation of capital, I found that South African foreign affiliates of banking groups highly exposed to east Asian economies experienced a significant drop in their net internal funding, as a percentage of their assets, during the crisis. This finding supports Hypothesis 2. Finally, exploiting the macroeconomic conditions in the "Outside Option" as an instrument for the volume of internal funding received by a foreign affiliate, I find support to Hypothesis 3, according to which an increase in (net) internal funding to a foreign affiliate leads to an expansion of this affiliate's lending in its host country.

2.8 Conclusion

Exploiting a novel dataset containing information on internal funding received and sent by banks located in South Africa to their parent group abroad, this research has provided evidence on the existence of support motives for internal funding as foreign affiliates receive more internal funds when their solvency declines. As such, access to internal capital market gives an advantage to foreign bank affiliates over purely domestic banks in times of crisis. However, foreign affiliates' balance sheet is not immune to "reversal of fortune" when other parts of their banking group need large amount of internal capital to cushion capital losses, as this reallocation of capital divert internal funding to other affiliates. This research has also explored the link between internal capital and bank credit and shown that an increase in internal funding received by a bank affiliate has a positive impact on its supply of credit

in the local mortgage market. The evidence provided in this chapter suggests that foreign banks expand their mortgage loans to the local economy when they receive higher volumes of internal funding.

The evidence of a support motive to internal funding is particularly important for developing economies where sources of wholesale funding are limited and capital markets are underdeveloped. Furthermore, these results are encouraging as foreign affiliates use this extra (internal) capital to expand local credit, whereas it has often been noted that banks in Africa are highly liquid but do not recycle deposits in the form of loans, preferring instead to buy government securities or invest abroad (Beck et al., 2011).

A first message of this research is that foreign affiliates have ambiguous effects for the financial stability of the host country. On the one hand, being part of a foreign group should reduce the risk of bankruptcy by allowing for the reception of internal capital from the group. On the other hand, internal capital markets may be a channel through which financial crises are transmitted from one country to another, when abrupt capital reallocations inside the group take place. However, the strength of this channel will partly depend on the legal structure of the foreign affiliate. Indeed, the organizational form of the foreign affiliate, either as a branch or as a subsidiary will have an impact on the stability of the banking sector and the local supply of credit through the internal capital market channel, as branches are more integrated to their group via this channel than subsidiaries. The choice of a legal structure by a multinational banking group is influenced by the regulations in the host country, which varies across countries, as well as by the development of local capital markets and macroeconomic and political risks in this particular country (Fiechter et al., 2011). A potential policy implication of this research for bank regulators may be that favoring organization of foreign affiliates as subsidiaries rather than branches, through specific banking regulations, may reduce the potential transmission of foreign crises via internal capital markets. One caveat, however, is that if a banking crisis occurs in the host country a parent is fully responsible for all losses incurred under a branch structure, while its obligations are only limited to the value of the invested equity under a subsidiary structure, which makes it more likely to walk away from the operation (Cerrutti et al., 2007; Fiechter et al., 2011). That said, if a foreign affiliate has systemic importance for the health of the banking group, its parent is more likely to support it through transfers of internal liquidity, regardless of its organizational form (Fiechter et al., 2011).

One of the limitations of this research is that, with the dataset at hand, we only observe the internal funding position of one affiliate of a group, but we cannot

capture the funding position of the other subsidiaries or branches belonging to this group. As such, one can only infer that capital was diverted from one country to another. This opens an avenue for future research, conditional on access to data, which would consist in examining internal transfers between the different affiliates of a group. A second research avenue would be to obtain more qualitative data at the headquarters level through interviews with senior managers to get a better understanding of the processes and motives for internal capital allocation inside groups. These and other extensions of the empirical analysis are left for future research.

Appendix 2

Table 1: **Simplified DI900 Reporting Format**

Assets at month-end	**Liabilities and Capital at month-end**
CENTRAL BANK MONEY AND GOLD	DEPOSITS:
Cash reserve deposits Interest bearing	**Deposits denominated in Rand**
Cash reserve deposits Non-interest bearing	Bank group funding:
Other deposits	*Bank group funding NCD's* [A]
DEPOSITS LOANS AND ADVANCES	*Bank group funding other deposits* [B]
Bank group funding incl Negotiable Certificate of Deposit (NCD)'s [E]	SA Inter-bank funding:
SA Inter-bank funding incl NCD's	*Inter-bank funding NCD's*
Deposits with and loans and advances to foreign banks, in rand	*Inter-bank funding other deposits*
Loans granted under resale agreements	Government deposits
Installment debtors suspensive sales and leases	Other domestic parties
Mortgage advances	**Deposits denominated in foreign currency**
Credit card debtors	Bank group deposits [C]
Acceptances, commercial paper bills, promissory notes	SA Interbank deposits
Liquid bills notes and acceptances discounted or purchased	Government deposits
Non-liquid acceptances,commercial paper bills notes	Other domestic parties
Foreign currency loans and advances	Companies and other
Redeemable preference shares	Non-residents Banks
Other overdrafts and loans public sector	Other
Other private sector loans and advances	LOANS AND ADVANCES:
Less Specific provisions i.r.o. loans and advances	**Bank group funding** [D]
INVESTMENTS incl trading portfolio assets	**SA Inter-bank funding**
NON-FINANCIAL ASSETS	**Loans received under repurchase agreements**
Premises of bank	**Foreign currency funding**
Other fixed property	**Other loans and advances denominated in Rand**
Computer equipment	Central and provincial government
Computer software	Reserve Bank and Corporation for Public Deposits
Other tangible assets	Other residents
Intangible assets incl purchased goodwill	Non-residents
OTHER ASSETS	OTHER LIABILITIES
TOTAL ASSETS	**TOTAL LIABILITIES**
	CAPITAL AND RESERVE FUNDS

Table 2: **List of banks included in the sample**

Bank name	Bank identification
STANDARD CORPORATE AND MERCHANT BANK	1678
ING BANK	6599
ING BARINGS	6599
BANK OF TRANSKEI	24716
MEEG BANK LIMITED	24716
CADIZ INVESTMENT BANK BEPERK	24759
DISTRIKS SECURITIES BANK LTD	24759
INVESTEC MERCHANT BANK LTD	24783
FIRST NATIONAL FIN AND LEASING CO	24821
PEOPLES BANK LIMITED	24961
F B C FIDELITY LIMITED	24961
FIDELITY BANK	24961
AFRICAN BANK LIMITED	24988
UNIBANK LTD	24996
CAPE OF GOOD HOPE BANK LTD	25011
SOCIETE GENERALE JOHANNESBURG BRANCH	25046
INVESTEC BANK LTD	25054
NEW REPUBLIC BANK LTD	25062
RENNIES BANK LIMITED	25070
BIDVEST BANK LIMITED	25070
ONS EERSTE VOLKSBANK	25070
ABSA BANK LTD	34118
NBS BLOAND	34207
BOE BANK LIMITED	34207
BOE BANK LTD	34207
BANK WINDHOEK SA LTD	60062
SECURITIES INVESTMENT BANK	67083
STANDARD BANK BOPHUTHATSWANA	95524
M L S BANK LTD	103519
PRIMA BANK LTD	106674
SAAMBOU BANK LTD	106682
BANK OF LISBON INTERNATIONAL LTD	109193
ISLAMIC BANK	109193
MERCANTILE BANK LTD	109533
ALBARAKA BANK LTD	110728
INTERNATIONAL BANK OF SOUTHERN AFRICA LTD	123234
HABIB OVERSEAS BANK LTD	129593
BOE INVESTMENT BANK LTD	133930
BANK OF TAIWAN SOUTH AFRICA BRANCH	148520
FUTURE BANK	148539
THE COMMUNITY BANK	154776
GRINDROD BANK LIMITED	155438
MARRIOTT CORPORATE PROPERTY BANK LIMITED	155438

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Table 2 – continued from previous page

Bank name	Bank identification
MARRIOTT MERCHANT BANK LTD	155438
CREDIT AND SAVINGS HELP BANK	155683
CITIZEN BANK	155950
COMMERZBANK AKTIENGESELLSCHAFT	164356
CITIBANK N.A	165565
A B N AMRO BANK	165573
HBZ BANK LTD	165816
IMPERIAL BANK LTD	168114
STATE BANK OF INDIA	170798
BOPHUTHATSWANA BUILDING SOSIETY	261750
TNBS MUTUAL BANK	261777
VBS MUTUAL BANK	262293
REGAL TREASURY PRIVATE BANK LTD	286206
GENBEL SECURITIES BANK LTD	292761
GENSEC BANK LIMITED	292761
FUTURE BANK CORPORATION LTD	295019
AFRICAN MERCHANT BANK LTD	295973
TA BANK OF SOUTH AFRICA LIMITED	296228
SOUTHERN BANK OF AFRICA LIMITED	298514
BANK OF BARODA	331562
JPMORGAN CHASE BANK JOHANNESBURG BRANCH	331899
MORGAN GUARANTY TRUST CO OF NEW YORK	331899
MCCARTHY BANK LIMITED	332348
MERRILL LYNCH CAPITAL MARKETS BANK LTD - JHB BRA	332933
BUSSINESS BANK	333107
THE BUSINESS BANK LTD	333107
CAPITEC BANK	333107
CORPCAPITAL BANK	333549
DEUTSCHE BANK AG	333778
REAL AFRICA DUROLINK INVESTMENT BANK LIMITED	333808
PSG INVESTMENT BANK LIMITED	333808
SASFIN BANK LTD	335487
OLD MUTUAL BANK LIMITED	336823
BANK OF CHINA LTD JHB BRANCH T/A BANK OF CHINA	337889
CASH BANK	340081
CHINA CONSTRUCTION BANK	341037
TEBA BANK LIMITED	341894
FIRST NATIONAL BANK CO LTD	416053
FIRSTRAND BANK LIMITED	416053
THE STANDARD BANK OF S A LTD	416061
NEDBANK LTD	416088
NEDCOR BANK LTD	416088
MERCANTILE BANK LTD	416096
MERCANTILE LISBON BANK LTD	416096

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Table 2 – continued from previous page

Bank name	Bank identification
FIRST NATIONAL BANK OF SOUTHERN AFRICA LIMITED	416118
FIRSTCORP MERCHANT BANK	416118
CALYON CORPORATE AND INVESTMENT BANK	416126
CREDIT AGRICOLE INDOSUEZ LTD	416126
THE S A BANK OF ATHENS LTD	416134
NEDCOR INVESTMENT BANK LTD	416185
NIB SECURITIES	416185
RAND MERCHANT BANK LTD	416193
BOLAND BANK PKS LTD	416223
SYFRETS BANK LTD	416312
SECFIN BANK	416525
BOE PRIVATE BANK AND TRUST CO LTD	416533
CAPITAL ALLIANCE	416541
BRAIT MERCHANT BANK LIMITED	416541
GBS MUTUAL BANK	418072
HSBC BANK plc JOHANNESBURG BRANCH	535761
STANDARD CHARTERED BANK	535788
BARCLAYS BANK PLC	3068861

Table 3: **Variable definitions**

Variable	Description	Source
	Dependent variables	
Internal funding/asset	Ratio of internal funding to total assets.	Resbank
Internal lending/asset	Ratio of internal lending to total assets.	Resbank
Receiver	Dummy equals 1 if the bank is a net receiver of internal funds in a specific quarter.	Resbank
Provider	Dummy equals 1 if the bank is a net provider of internal funds in a specific quarter.	Resbank
Internal Funding Status	Multiple category variable: *Receiver*, *Provider* and *Zero Activity*.	Resbank
Net internal funding, real, log	Natural logarithm of net internal funding, deflated by the CPI index.	Resbank
Net internal funding/assets	Ratio of net internal funding to total assets.	Resbank
Mortgage advances	Total of mortgage advances (to farming, companies, individuals, public enterprises and non profit institutions), real values in log	Resbank
Private sector loans	Loans to the private sector (companies, individuals, non profit institutions), real values in log.	Resbank
	Independent variables	
Solvency	Ratio of equity to asset.	Resbank
Outside Option	Sum of growth in other countries of operation of the parent (excludes home country and South Africa), weighted by the assets of the foreign subsidiaries in each host country as a percentage of the total asset of the foreign portfolio of the parent.	BankScope, banks' websites and IMF

Continued on next page

Table 3 – continued from previous page

Variable	Description	Source
Asian Exposure	Sum of weighted assets of other subsidiaries of the same GUO located in Thailand, Indonesia, Malaysia, Philippines, Singapore, South Korea for each year in the sample. The weight was calculated as the assets of the subsidiary in the above-mentioned Asian countries divided by the total assets of the foreign subsidiaries (excluding South Africa) of the GUO. This number is thus bounded below by zero % (the group does not have any subsidiary in these east Asian countries) and above by 100% (all the other foreign subsidiaries of the group are located in these east Asian countries).	BankScope and banks' websites.
	Bank controls	
Global MNB	Dummy equals 1 if the bank' s largest shareholder is from a developed country.	BankScope, banks' websites
Emerging MNB	Dummy equals 1 if the bank's largest shareholder is from an emerging country outside Africa.	BankScope, banks' websites
Domestic bank	Dummy equals 1 if the bank is a domestic South African bank.	BankScope, banks' websites
Branch	Dummy equals 1 if the organizational form of the foreign bank's affiliate is a branch, and 0 if it is a subsidiary.	BankScope, bank's websites
Commercial	Dummy equals 1 if the foreign bank's affiliate is a commercial or a saving bank, 0 if it is an investment bank.	BankScope, bank's websites
Size	Log of total book assets deflated by the CPI index.	Resbank
Age	Bank's age since incorporation.	BankScope, bank's websites.

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Table 3 – continued from previous page

Variable	Description	Source
	Host country variable	
GDP Growth SA	GDP Growth in volume, South Africa.	IMF, International Financial Statistics
	Home country variable	
GDP Growth Home	GDP Growth in volume, home country of the foreign affiliate.	IMF, International Financial Statistics

Table 4: **Summary of selected bank financials**

Variable	Obs.	Mean	Std. Dev.
Domestic banks			
Internal funding/total assets	1633	5%	20%
Internal lending/total assets	1633	2%	7%
Net internal funding/total assets	1633	4%	20%
Total assets (in millions of Rands)	1633	13200	34200
Total capital (in millions of Rands)	1633	1059	2457
Solvency ratio	1633	19%	21%
Global banks			
Internal funding/total assets	736	6%	18%
Internal lending/total assets	736	2%	6%
Net internal funding/total assets	736	4%	18%
Total assets (in millions of Rands)	736	12900	33800
Total capital (in millions of Rands)	736	963	2869
Solvency ratio	736	8%	7%
Emerging banks			
Internal funding/total assets	374	2%	11%
Internal lending/total assets	374	0%	2%
Net internal funding/total assets	374	2%	11%
Total assets (in millions of Rands)	374	240	178
Total capital (in millions of Rands)	374	33	16
Solvency ratio	374	20%	16%
Foreign bank branches			
Internal funding/total assets	750	7%	19%
Internal lending/total assets	750	2%	6%
Net internal funding/total assets	750	5%	20%
Total assets (in millions of Rands)	750	3059	3872
Total capital (in millions of Rands)	750	166	221
Solvency ratio	750	12%	14%
Foreign bank subsidiaries			
Internal funding/total assets	360	0%	1%
Internal lending/total assets	360	1%	2%
Net internal funding/total assets	360	0%	2%
Total assets (in millions of Rands)	360	20100	47200
Total capital (in millions of Rands)	360	1654	3981
Solvency ratio	360	12%	9%

Table 5: **Bank funding model (in % of total liabilities)**

Variable	Obs.	Mean	Std. Dev.
Domestic banks			
Internal group funding	1633	6%	20%
Interbank funding	1633	5%	9%
Deposits from other parties	1633	67%	30%
Other liabilities	1633	21%	25%
Global banks			
Internal group funding	736	9%	24%
Interbank funding	736	5%	8%
Deposits from other parties	736	59%	30%
Other liabilities	736	27%	26%
Emerging banks			
Internal group funding	374	3%	14%
Interbank funding	374	7%	20%
Deposits from other parties	374	55%	38%
Other liabilities	374	36%	37%
Foreign bank branches			
Internal group funding	750	10%	25%
Interbank funding	750	8%	16%
Deposits from other parties	750	43%	30%
Other liabilities	750	39%	32%
Foreign bank subsidiaries			
Internal group funding	360	1%	2%
Interbank funding	360	1%	2%
Deposits from other parties	360	89%	7%
Other liabilities	360	10%	6%

Table 6: **Multinomial logit of internal funding status**
This table presents the results of multinomial logit analysis of net group funding position over the 1993q1-2007q4 period. The dependent variable *Internal funding status* has three categories: *Provider*, *Receiver*, *Zero activity*. Constants are included but not reported. Firm controls (bank's size, dummy commercial, dummy branch) are included in all models. Models 3 also includes the age of the bank as an additional control. Variable definitions are provided in Table 3 in the Appendix. Standard errors are robust to heteroskedasticity and adjusted for firm clustering with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Log-Odds of Receiver vs. Provider		
	(1)	(2)	(3)
Solvency	-4.656**	-9.010***	-11.905**
	(-1.839)	(-2.925)	(-5.368)
GDP Growth, vol., SA	0.157	0.442*	-0.041
	(-0.189	(-0.268)	(-0.169)
GDP Growth, vol., home country	0.182	0.434**	0.972***
	(-0.16)	(-0.198)	(-0.330)
Outside option	0.024	0.01	0.017
	(-0.063	(-0.070)	(-0.111)
Observations	838	838	497
Quarter FE		✓	✓
Home country FE		✓	✓
Firm FE		✓	✓
Age included			✓
Pseudo R2	0.163	0.511	0.602
LR Chi2	282.330	885.425	620.066
Number of clusters	22	22	14

Table 7: **Determinants of the volume of internal funding**
This table presents regression analysis of the ratio of internal funding to total asset for banks with non-zero internal funding activity. Constants and firm controls (bank's size, dummy commercial, dummy branch) are included but not reported. Variable definitions are provided in Table 3 in the Appendix. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values in parenthesis reported beneath.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Internal fund./total asset		
	(1)	(2)	(3)
Solvency	-0.031	-0.027	-0.230
	(0.079)	(0.080)	(0.137)
GDP Growth, SA	-0.004	-0.004	0.011
	(0.008)	(0.008)	(0.010)
GDP Growth, Home	0.000	0.000	0.005
	(0.005)	(0.005)	(0.004)
Outside option	-0.001	-0.001	0.001
	(0.003)	(0.003)	(0.007)
Receiver	0.155**	0.155**	0.120**
	(0.060)	(0.060)	(0.052)
Solvency * Receiver	0.318*	0.315	0.190
	(0.184)	(0.184)	(0.122)
GDP Growth SA * Receiver	0.013	0.013	-0.006
	(0.022)	(0.022)	(0.012)
GDP Growth Home * Receiver	-0.010	-0.010	-0.010**
	(0.007)	(0.007)	(0.005)
Outside Option * Receiver	-0.030**	-0.030**	-0.000
	(0.012)	(0.012)	(0.007)
Observations	476	476	476
Quarter FE		✓	✓
Home country FE			✓
Firm FE			✓
Adjusted R-squared	0.437	0.434	0.776
F stat model	9.588	9.476	.
Number of clusters	22	22	22

Table 8: **Impact of the East Asian financial crisis on South African affiliates' net internal funding**
This table presents difference-in-difference analysis of the ratio of net internal funding to total asset over the period 1996q4-1998q3. The dummy Post is equal to 1 over the period 1997q4-1998q3. Constants and firm controls (bank's size, dummy commercial, dummy branch) are included but not reported. Variable definitions are provided in Table 3 in the Appendix. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values in parenthesis reported beneath.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	All foreign affiliates	**Controlling for entry/exit**		**Collapsed panel**
	(1)	(2)	(3)	(4)
Post	-0.016	-0.018	-0.016	-0.017
	(0.017)	(0.016)	(0.070)	(0.020)
Asian Exposure	0.201***	0.195***	0.092***	0.194***
	(0.033)	(0.038)	(0.019)	(0.039)
Asian Exposure * Post	-0.250***	-0.251***	-0.159***	-0.251***
	(0.018)	(0.019)	(0.037)	(0.023)
Observations	233	182	182	28
Time FE			✓	
Country origin FE			✓	
Firm FE			✓	
Adjusted R-squared	0.118	0.111	0.182	0.368
F stat model	7464	6611	.	1148
Number of clusters	20	14	14	

Table 9: **Testing for the duration of the East Asian crisis effect**
This table presents difference-in-difference analysis of the ratio of net internal funding to total asset. Constants and firm controls (bank's size, dummy commercial, dummy branch) are included but not reported. Variable definitions are provided in Table 3 in the Appendix. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values in parenthesis reported beneath.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

From 1996q4 to	**1998q3**	**1998q4**	**1999q1**	**1999q2**	**1999q3**	**1999q4**	**2000q1**
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Asian Exposure * Post	-0.251***	-0.159***	-0.081***	-0.076***	-0.076***	-0.042**	-0.020
	(0.019)	(0.018)	(0.018)	(0.018)	(0.017)	(0.017)	(0.018)
Observations	112	126	140	154	168	182	196
Adjusted R-squared	0.145	0.122	0.146	0.162	0.173	0.204	0.234
Number of clusters	14	14	14	14	14	14	14

Table 10: **Placebo falsification test**
This table presents a falsification test of the difference-in-difference analysis of the ratio of net internal funding to total asset over the period 1995q3-1997q2. The dummy Post is equal to 1 over the period 1996q3-1997q2. Constants and firm controls (bank's size, dummy commercial, dummy branch) are included but not reported. Variable definitions are provided in Table 3 in the Appendix. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values in parenthesis reported beneath.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	1995q3-1997q2	
	(1)	(2)
Post Placebo	-0.011	-0.060
	(0.014)	(0.071)
Asian Exposure	-2.379	0.561
	(1.829)	(0.471)
Asian Exposure * Post Placebo	2.363	-0.897*
	(1.740)	(0.482)
Observations	105	105
Time FE		✓
Home country FE		✓
Firm FE		✓
Adjusted R-squared	0.0316	0.465
F stat model	26.55	.
Number of clusters	14	14

Table 11: **First stage regressions**
This table presents first stage regression analysis of the volume of internal funding, in log, deflated by the CPI index. Constants are included but not reported. All regressions include quarter fixed effects. Additional firm controls are included in models (2), (4) and (5): bank's size, dummy commercial, dummy branch and age. Variable definitions are provided in Table 3 in the Appendix. Standard errors are robust to heteroskedasticity and are adjusted for firm clustering with values in parenthesis reported beneath.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Outside option	-0.298***	-0.230***			-0.211***
	(0.063)	(0.060)			(0.060)
GDP Growth Home			-0.495***	-0.283**	-0.232**
			(0.122)	(0.098)	(0.089)
Observations	450	329	425	304	303
Adjusted R-squared	0.271	0.639	0.218	0.606	0.685
Firm controls		✓		✓	✓
First stage F-stat	22.29	14.78	16.55	8.28	9.87
Adjusted R-squared	0.241	0.373	0.0706	0.209	0.431
Number of clusters	22	15	20	13	13

Table 12: **Elasticity of bank credit to internal funding**
This table presents the results of OLS and IV estimations of equation (6) over the 1993q1-2007q4 period for the sample of foreign banks' affiliates. In panel A, the dependent variable is the volume of mortgages advances, in log and deflated by the CPI index. In panel B, the dependent variable is the volume of private sector loans, in log and deflated by the CPI index. In the IV estimations, the log of internal funding is instrumented with the variable *Outside Option*. Constants are included but not reported. Variable definitions are provided in Table 3 in the Appendix. All regressions include firm controls (bank's size, dummy commercial, dummy branch) and quarter fixed effects. Age is included as an additional control in models (2) and (4). Standard errors are robust to heteroskedasticity and are adjusted for firm clustering, with values in parenthesis reported beneath.*, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	PANEL A: Mortgage advances			
	OLS		IV	
	(1)	(2)	(3)	(4)
Internal funding (real, in log)	0.220**	0.171*	0.324**	0.236**
	(0.080)	(0.085)	(0.159)	(0.114)
Observations	231	193	231	193
Adjusted R-squared	0.951	0.956	0.948	0.954
First stage F-stat			11.855	14.857
Age included		✓		✓
	PANEL B: Private sector Loans			
	OLS		IV	
	(1)	(2)	(3)	(4)
Internal funding (real, in log)	-0.158*	-0.192*	-0.318**	-0.394***
	(0.076)	(0.096)	(0.125)	(0.143)
Observations	431	326	431	326
Adjusted R-squared	0.683	0.748	0.655	0.718
First stage F-stat			8.382	13.66
Age included		✓		✓

Figure 1: **Country of origin of banks operating in South Africa, 2007q4 (35 banks)**

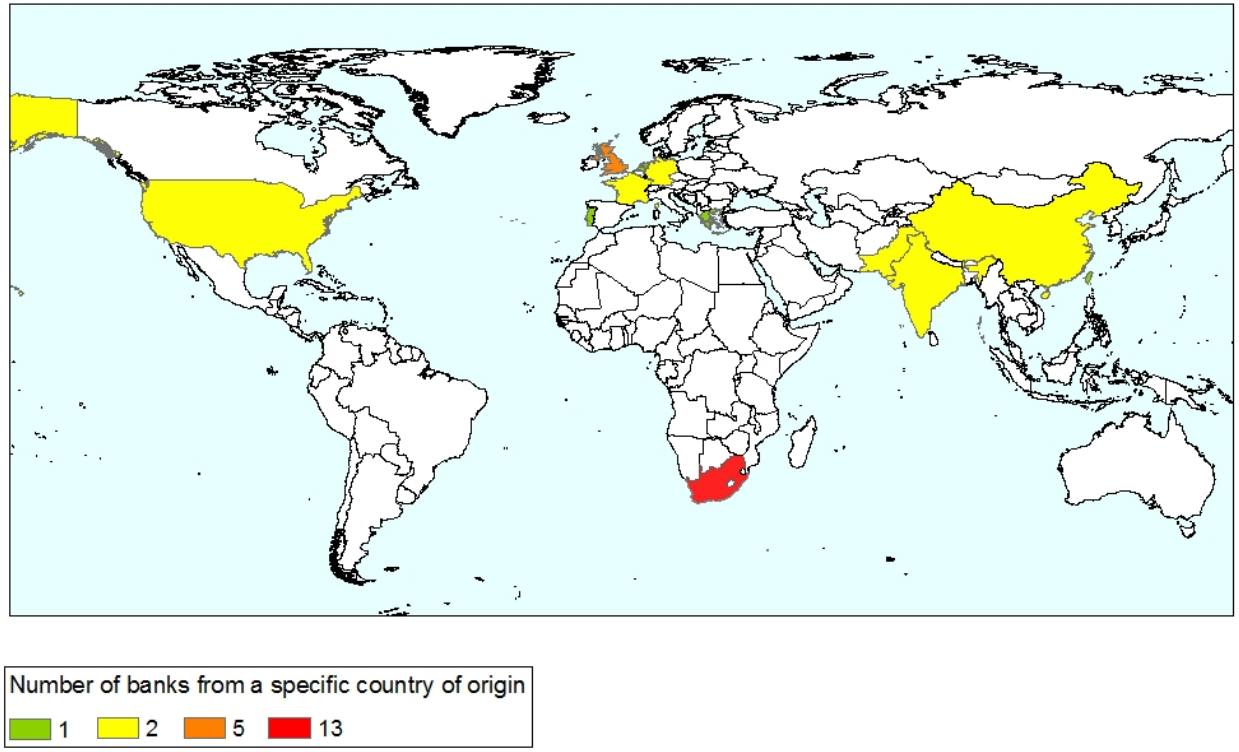
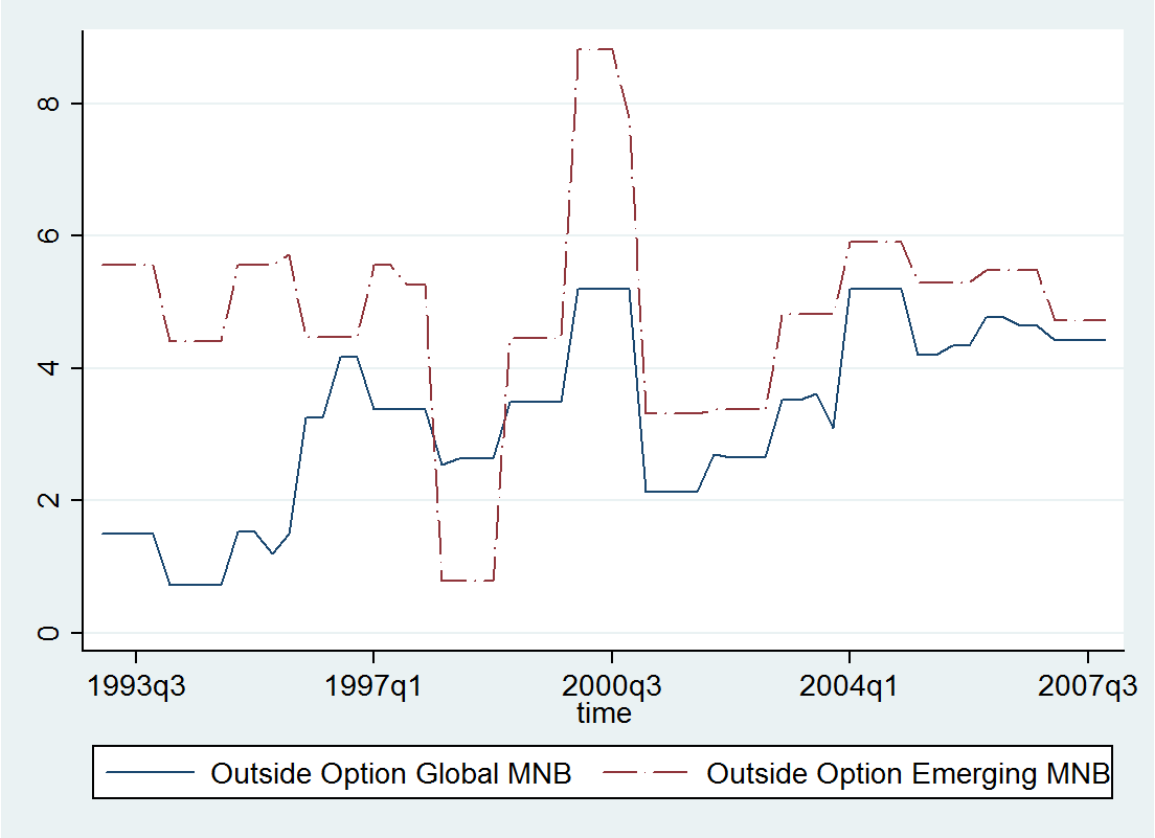
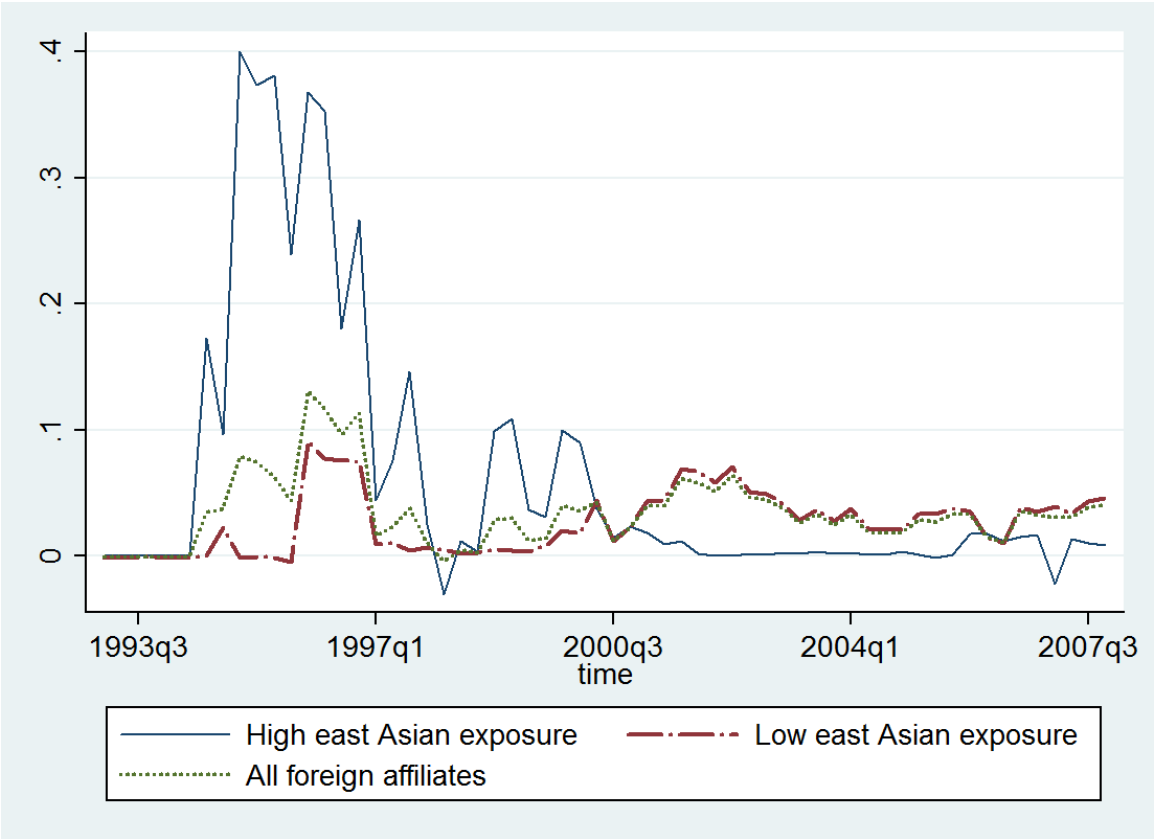


Figure 2: **Outside option of Global and Emerging multinational banks**



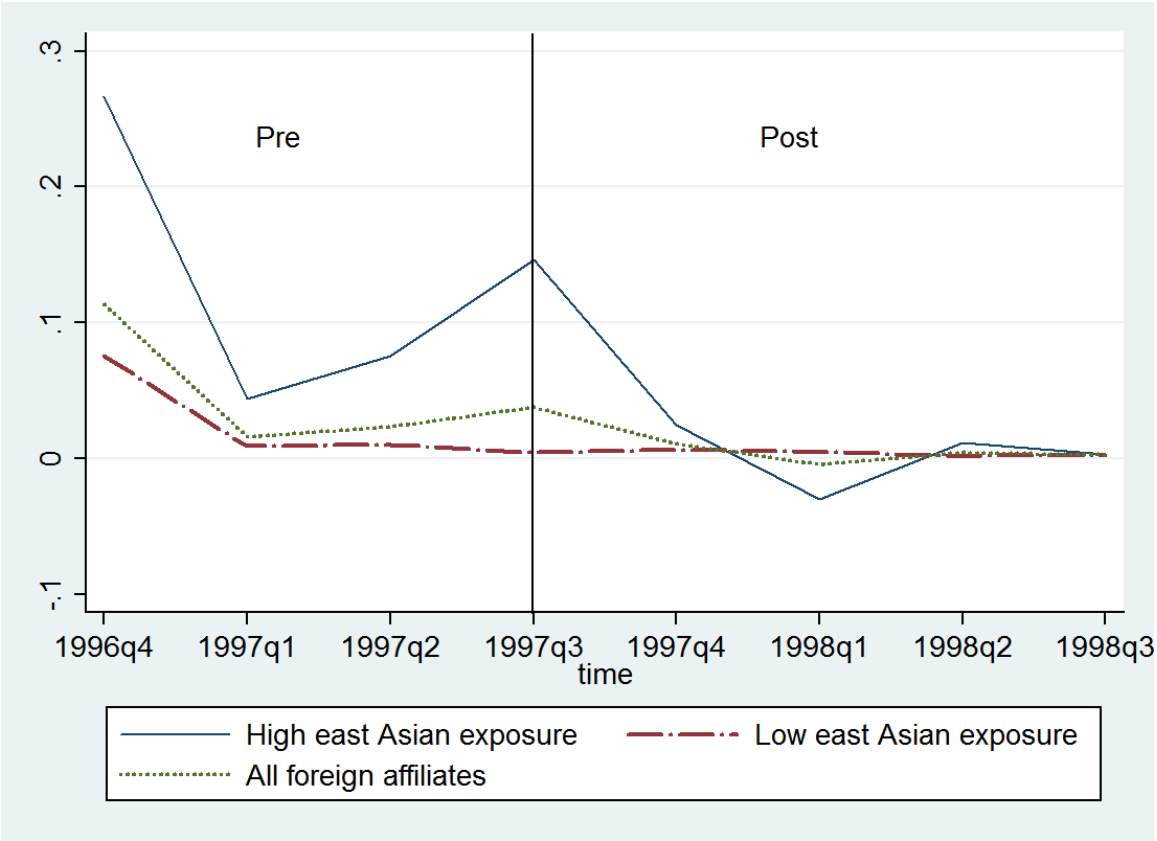
Source: Own calculation. Quarterly averages for each of the two groups of banks.

Figure 3: **Ratio of net internal funding funding to asset, 1993q1-2007q4**



Source: Resbank, BankScope and own calculations. Quarterly averages for each of the following three groups of banks: "High east Asian exposure" regroups foreign affiliates which banking group has above average exposure to East Asian Crisis countries (more than 2.5% of total assets of foreign subsidiaries ex. South Africa are in east Asia), "Low east Asian exposure" regroups banks with below average exposure, and all foreign affiliates.

Figure 4: **Ratio of net internal funding to asset, pre and post East Asian Crisis**



Source: Resbank, BankScope and own calculations. Quarterly averages for each of the following three groups of banks: "High east Asian exposure" regroups foreign affiliates which banking group has above average exposure to East Asian Crisis countries (more than 2.5% of total assets of foreign subsidiaries ex. South Africa are in east Asia), "Low east Asian exposure" regroups banks with below average exposure, and all foreign affiliates.

Chapter 3

The organization of multinational firms in uncertain environments

3.1 Introduction

Despite a number of academic work carried out over the last decade to analyze the expansion of firms from developed and developing countries into other developing countries (Aulakh, 2007; Bartlett and Ghoshal, 2000; Ghemawat and Hout, 2008; Khanna and Palepu, 2006), little is known about the organizational structure of multinational firms. However, the organization of firms matters for performance as evidenced theoretically by an important literature on transfer of authority and power (Aghion and Tirole (1997); Baker, Gibbons and Murphy (1999); Dessein (2002) and Dessein and Santos (2006); Alonso, Dessein and Matouschek (2008)). When operating in developing countries, multinational firms face the following dilemma: should they transfer more autonomy to their foreign affiliates as these are closer to local information, and thus are better able to make efficient use of local knowledge, especially when the country is characterized by important "institutional voids"[1] (Khanna and Palepu, 2006)? Or should they adopt a centralized organization, with tight control of foreign affiliates' operations by the headquarters? Preference for a centralized organization could be related to a fear of losing control when the incentives of the foreign affiliates' managers are misaligned with those of the headquarters' managers. Centralization could also be favored by headquarters adopting "winner-picking" strategies which consists in allocating scarce resources to compet-

[1]Institutional voids are defined by Khanna and Palepu (2006) as the absence of specialized intermediaries, regulatory systems and contract-enforcing mechanisms.

ing projects in an internal capital market (Stein, 1997, 2002)[2].

This research aims to explore the roles of (external) environmental and (internal) firm factors on centralization of processes inside multinationals. More specifically, this research examines the relation between centralization inside multinationals and (1) environmental distance between host and home countries (difference in institutional, economic and cultural environment between the home and host countries) and (2) foreign affiliates' managers reliance on soft information to assess local projects. To do so, I analyze the organization of commercial banks in sub-Saharan Africa, on which data has been gathered through a bank survey. The advantage provided by this particular setting for the present research is twofold. First, sub-Saharan Africa is characterized by high macroeconomic uncertainty, a relatively low level of development and scarcity of "hard" information. As a consequence, this particular context should exacerbate the environmental distance and the asymmetry of information between headquarters and their foreign affiliates, and therefore facilitate the examination of the relation between these variables and centralization. Second, a large part of the banking business consists in acquiring and processing information on borrowers. As such, acquisition of quality information is critical in this sector. The particularity of banking markets in sub-Saharan Africa is that they are rife with information issues, in particular, the difficulty to get trustworthy information on small borrowers. However, access to information in these markets varies between banks, depending on the profile of their loan portfolio and their exposure to micro, small and medium borrowers, and between countries, as the level of transparency is higher in the few African countries which have well-functioning credit reference bureaus. As such, this context is particularly appropriate to analyze the relation between quality and availability of local information and internal organization of multinationals.

To examine theoretically the relation between headquarters and foreign affiliates I rely on the organizational economics literature on transfer of authority inside firms which allows me to take into account the relative roles of information available on local projects, headquarters' knowledge of the host environment and congruence between the headquarters' and the foreign affiliates' objectives, in shaping the organizational structure. This literature focuses on the trade-off between acquisition of local information by the agent and incentives issues between principal and agents. While the theoretical contributions on transfer of authority inside firms have not specifically modeled the interaction between headquarters and foreign affiliates,

[2]The assumption made by Stein (2002) is that the CEO has better information on the prospects of the units to proceed to profit-enhancing across-unit reallocation of capital than the external market.

these models are sufficiently general to be adapted to a multinational setting.

Using this framework, I formulate two sets of empirical predictions. The first set focuses on the relation between environmental distance and centralization. I formulate two hypotheses. The first hypothesis is that higher environmental distance should decrease centralization if it reduces global headquarters' knowledge about the local environment ("information channel"). In this case, the headquarters transfer authority to their foreign affiliates, which are better placed to take decisions adapted to local conditions. The second hypothesis is that environmental distance should increase centralization if it reduces congruence of objectives between global headquarters and foreign affiliates' managers ("bias channel"). In this scenario, the headquarters prefer to retain authority as they fear that agency issues will lead to biased decisions by foreign affiliates' managers.

The second prediction focuses on the relation between local information and centralization. It predicts that the more foreign affiliates rely on soft (i.e. qualitative, or subjective) information[3] to evaluate local projects the less the organization is centralized (i.e. the more it is decentralized).

I then test these hypotheses in the context of multinational banking in sub-Saharan Africa, examining the relations between global headquarters and their African foreign affiliates. The measure of centralization employed in this research focuses on *control over operational processes* by the headquarters, measuring the degree of dependence of foreign affiliates on their headquarters in key areas of business operations (for instance, reliance on headquarters for IT systems or credit risk management software, imposition of operational guidelines by the headquarters, etc.). It is an alternative measure to that of headquarters' direct control over decisions, employed in the empirical literature on decentralization inside plants in a same country (Bloom, Sadun and Van Reenen, 2012). This focus on control of operational processes rather than on real authority over production decisions is preferred given the context of multinational enterprises. Indeed, interviews with managers have revealed that strategic decisions such as hiring of senior managers or capital management tend to result from discussions and collaboration between headquarters and subsidiaries, therefore making it difficult to clearly identify the level at which a decision is taken[4]. However, foreign affiliates' reliance on, for instance, operational

[3]Soft information tends to be communicated in texts and includes opinions, ideas, statement of management's future plans and is difficult to summarize in a numeric score, while hard information is often communicated in numbers and consists of financial statements, stock returns, etc. (Petersen, 2004).

[4]The survey instrument also collected this type of information, see question 11 in Appendix B. However, in most cases, the respondents indicated that the decisions were taken jointly, or in collaboration with their headquarters.

software developed by the headquarters, is less subjective and easier to measure, hence the choice to focus on centralization of operational processes.

The empirical results indicate the existence of a positive and significant association between environmental distance and centralization. However, while I find evidence of an information channel, I find little evidence of a bias channel. In addition, and consistent with the second prediction, lower quantity of information available on borrowers and higher reliance on qualitative, "soft", information are found to be negatively and significantly associated with centralization.

The main contribution of this research to the literature on the organization of firms is the empirical evidence it provides on the determinants of centralization inside multinationals. In particular:

1. This chapter examines the relation between headquarters and foreign affiliates. This is in contrast with most of the related empirical literature in organizational economics (Bloom, Sadun and Van Reenen, 2012; Acemoglu, Aghion, Lelarge, Van Reenen and Zilibotti (2007); Bresnahan, Brynjolfsson, and Hitt (2002)) which focuses on the interaction between local headquarters and plant managers, or between plant managers and their subordinates. This research examines the higher hierarchical level between global headquarters and foreign affiliates[5]. In so doing, it sheds light on the role of environmental, host country factors, in shaping the organizational structure of multinationals.
2. In addition, this research incorporates potential agency issues in the examination of the relation between headquarters and subsidiaries. This is in contrast with most of the literature on headquarters-subsidiaries relation, primarily in the field of international business and strategy, which has mainly concentrated on networks and knowledge flows within multinationals (Ghoshal and Bartlett, 1990; Gupta and Govindarajan, 2000; Monteiro, Arvidsson and Birkinshaw, 2008), on "parenting advantages" or headquarters' value added to their subsidiaries (Goold, Campbell and Alexander, 1998; Goold and Campbell, 2002; Nell and Ambos, 2013), as well as on subsidiaries' contribution to the firm-specific advantages of the MNC (Birkinshaw and Morrison, 1995; Birkinshaw, Hood and Jonsson, 1998) without properly including agency and incentive aspects. However, as Kaplan and Henderson (2005) argue, this separation of domains between organizational economists and organizational theorists in strategy is problematic, as both environmental changes and incentive structures shape the organizational structure.
3. This research also proposes a new approach to measuring centralization of

[5]And not between the foreign affiliates' headquarters and the local branch.

authority inside firms, recognizing that global headquarters can control foreign affiliates not only directly through controlling key decisions (such as measured by Bloom et al. 2012, between plant managers and works), but also indirectly through controlling operational processes through which these decisions are made.

4. Finally, this chapter contributes to the understanding of the headquarters-foreign affiliates relation by focusing both on a sector (banking) and on a geographic area (sub-Saharan Africa) which have never been studied previously from on organizational point of view. Indeed, most of the literature has focused on headquarters-foreign affiliates relation in advanced market economies, with a few exceptions (Luo, 2003). The primary data available for this research consists of headquarters-foreign affiliates pairs located in fourteen different host countries in East Africa, West Africa and Central Africa, with global headquarters based in a variety of home countries (African countries, as well as developed and emerging countries).

The following section (3.2) reviews the literature on transfer of authority inside organizations that is relevant to the research questions. Section 3.3 develops the theoretical framework and the research hypotheses. Section 3.4 presents the data and Section 3.5 the empirical strategy. The results are presented in Section 3.6 and discussed in Section 3.7. Section 3.8 concludes. Appendix A contains the different tables and figures and Appendix B includes the bank survey questionnaire.

3.2 Centralization in organization

3.2.1 The trade-off between local information and incentives

In this section I review the most relevant theories for organizational structure and develop a theoretical framework to analyze (de-)centralization inside multinationals. This review focuses on the organizational economics literature related to authority in organization (for a survey, see Bolton and Dewatripont, 2011), dealing with the allocation of authority among managers. These models are preoccupied with vertical allocation of authority[6] and assume that allocations of control are enforceable

[6]Following Fama and Jensen (1983), Bolton and Dewatripont give four attributes to authority: the power to initiate projects and direct subordinates, the power to exact obedience, the power to ratify and approve actions in a pre-determined area of competency, the duty to monitor subordinates and the ability to reward for good performance.

even though agreements over action choice are not. As mentioned in the introduction, while these models do not specifically examine interactions between agents and principals inside multinationals, their predictions can be easily applied to this context.

More specifically, I focus on the *incentive view on delegation*, as I consider that the most important problem for the headquarters is access to (better) local information when the congruence of objectives or preferences between headquarters (principal) and foreign affiliates (agent) is low and the principal is typically uninformed. In this case, I posit that incentives are a problem for the headquarters, especially when monitoring is difficult (due to environmental uncertainty), and the principal tends to have low access to local information.

Aghion and Tirole (1997) (henceforth AT) start by contrasting formal authority and real authority, the distinction lying in the existence of asymmetric information. Considering that knowledge is a source of power, the authors show that real authority depends on individual costs of information acquisition, objective congruence between principal and agent and the allocation of formal authority. Crucially, formal authority needs not confer real authority, as defined by an "effective control over decisions on its holder" (1997:2). Considering that information can be hard or soft, and within the basic trade-off between loss of control and initiative, they offer two views according to which *formal* authority should be delegated to the agent. According to the "incentive view of delegation", delegation increases agent's initiative (thereby increasing information acquisition by the agent), but decreases principal's control. According to the "participation view of delegation", delegation of minor decisions[7] to agents raises participation. The implication of both views is that *formal* authority should be delegated to the agent for decisions that are relatively unimportant for the principal, in order to increase participation. However, authority should remain centralized (taken by the principal) when the principal is well-informed, or when he is experienced in the specific decision area (cf. "core competencies"), as initiative becomes a minor consideration. The authors also emphasize the role of trust: when trust of the agent in the principal increases, decisions should be centralized. Furthermore, they show that centralization may jeopardize communications by making the agent concerned about being overruled. However if the objectives of the principal and the agent are sufficiently congruent, more communication may take place under centralization.

Baker, Gibbons and Murphy (1999) (henceforth BGM) depart slightly from Aghion and Tirole (1997) by considering that decision rights in organizations are

[7]Minor for the principal.

not contractible: the principal can always overturn a subordinate's decision, and as a consequence formal authority resides only at the top. As such, the main difference is that in BGM's model informal delegation can be retracted, while AT argue that the boss may choose *formal* delegation to strengthen subordinates' incentives. In BGM's paper, the principal may decide to *informally* delegate authority to the agent, in order to increase the agent's efforts. Given that formal authority cannot be delegated, and that there is always the possibility to veto subordinates actions, how can the principal credibly (informally) delegate authority? The authors show that when the principal is informed (i.e. he has the information necessary to assess a proposed project before it is ratified), informal delegation can be superior to centralization when the benefits from increased effort can outweigh the expected costs of the poor projects that are sometimes ratified. Given that the principal has always formal authority to reject a project, informal delegation is only feasible in the informed-boss model if the boss values sufficiently his reputation for delegating authority, as the authors assume that the subordinate will no longer trust a boss who has failed to commit. When the principal is uninformed, he may also informally delegate authority to the subordinate. However, given that the principal can observe the results from the project *ex-post* he can always retract the subordinate's future authority if the results from the projects are poor. In this uniformed-boss environment, it is the subordinate's reputation that is on the line. As in AT, BGM underline the key role of trust and commitment by either the agent or the principal to honor (informal) agreement.

A key assumption of the AT model is that communication between parties takes an extreme form: when uninformed, a principal with formal authority should delegate the decision to the agent. Dessein (2002) puts more emphasis on the possibility of noisy, or strategic, communication related to divergent preferences. Furthermore, he departs from the AT model and the BGM model by assuming that the agent is always better informed than the principal. He studies the trade-off between the loss of control under delegation (informed but biased decisions) and the loss of information under communication (noisy but unbiased decisions). In this model, information is soft and the objectives of the agent and the principal may differ in a systematic way (low congruence). The question then centers on the impact of allocation of authority on the use of this private information, providing a purely informational rationale for delegation. He considers two cases, with different degrees of uncertainty about the environment. The principal has the choice of either fully delegating a task to a better informed agent or to order the latter what to do after having consulted with him. Dessein shows that, in the case of a uniform distribution of the state

of nature, delegation of control is optimal as long as the divergence in preferences is not too large relative to the principal's uncertainty about the environment, the amount of private information of the agent is large and the principal is more risk-averse. For more uncertain environments, when the agent's bias is small, delegation performs better, just as with uniform distribution, or communication must be very informative to dominate delegation. For large biases, communication will dominate delegation when the uncertainty about the environment is sufficiently small.

Similarly, in the literature on capital allocation, Stein (2002) also proceeds to examine the best organizational structure for the performance of the capital allocation activity under different types and quality of information on the projects. In his 2002 model he argues that a decentralized approach is most likely to be attractive when information about projects is "soft" and cannot be credibly transmitted. In contrast, when information can be costlessly "hardened" and passed along inside the firm large hierarchies perform better. When information is soft, such as in small business lending, decentralization should be a better organizational structure because it strengthens the research incentives of line managers as they will get direct rewards from their research. However, when information can be hardened and passed over easily to superiors, line managers can increase their capital budgets by producing verifiable positive information. Managers then become advocates for their units.

Finally, Dessein and Santos (2006) (and extensions by Bolton and Dewatripont (2011) of their model) and Alonso, Dessein and Matouschek (2008) incorporate coordination costs to the analysis of delegation or decentralization inside an organization. More specifically, they examine the three-way trade-off between coordination, specialization, and adaptation. The performance of an organization is determined by its adaptation to the environment and the quality of coordination among tasks. Decentralization economizes on the costly communication, red tape, and costly bureaucracy that management of multiple agents' actions entails under a centralized command. However, in a volatile environment, the organization must be able to adapt to new circumstances, redefining agents' tasks and requiring coordination, which can be costly under a decentralized organization. Dessein and Santos (2006) show that mis-coordination costs can be reduced under centralization, given that a single individual commands the actions taken by all the agents. The authors show that the desire for adaptation will generate coordination problems when agents are specialized. As such, higher uncertainty or higher mis-adaptation costs will raise the benefits of adaptiveness (which in turn raises the benefit of communication), and therefore favor a centralized (but high communication cost) structure, with ex-post

coordination between agents. To summarize Dessein and Santos (2006), decentralization is associated with high specialization, little communication, little responsiveness to the environment and *ex-ante coordination*. Centralization is associated with high communication, little specialization, high responsiveness to the environment, and *ex-post* coordination. One of the limits of the Dessein and Santos (2006) model is that they assume away incentives. Introducing incentives and agent's bias, Alonso et al. (2008) show that centralization will outperform decentralization when agents are very biased and coordination is important.

Table 1 in Appendix A summarizes the literature reviewed by highlighting the different implications for the organization of firms, based on different assumptions about principal-agent interactions and their environment.

To sum up, with the AT (1997), BGM (1999) and Dessein (2002) models we obtain the same conclusion of decentralization as an optimal organizational structure when the agent can be trusted (higher congruence principal-agent or lower agent's bias) and the principal is uninformed. Dessein (2002) introduces the idea of volatile environment, and shows that the agent's bias cannot be too large relative to environment uncertainty. In other words, he shows that there is a upper limit on the bias of the agent (or minimum congruence threshold) above which decentralization will not work. Dessein and Santos (2006) and Alonso et al. (2008) introduce an additional problem, that of coordination, and show the non-linearity of the relation between agents' bias, coordination and adaptation. The prediction under volatile environment, with the need to respond quickly and minimize mis-coordination cost in the presence of large agents' biases changes: to save on coordination costs, the organization needs to be centralized.

How do these models relate to the organizational structure of multinational enterprises? In the analysis of centralization inside multinational firms, I consider that the global headquarters are the Principal and the foreign affiliate is the Agent. The literature surveyed teaches us that different variables need to be examined simultaneously. I review them below in the context of multinational firms. The first one is related to the external environment of the firm:
(1) The volatility of the environment. In the context of multinationals, the focus will be on the environmental uncertainty in the host countries.
The following three are related to internal firm factors:
(2) The degree of congruence between principal and agents' objectives. This captures the agency cost for the organization related to agents' biases and self-interest. This might increase with foreign affiliates' distance to headquarters. Congruence can be reinforced by strategically hiring highly congruent or trustful agents as top

managers in the foreign affiliate entity; for instance, putting in place a senior management team mainly composed of expatriates, as these may have more similar objectives to those of headquarters' managers.
(3) Whether the principal is informed or not. This will vary depending on the accumulated knowledge of the headquarters on the host environment. When a multinational has extensive (in terms of number of countries of operations) and intensive (in terms of number of years in operation) knowledge of the host country, the headquarters (Principal)'s degree of knowledge should be higher.
(4) The importance of coordination. For multinational firms, there is a trade-off between scale economies through coordination of products or services across regions and adaptation to local tastes. The potential for scale economies should increase with the size of the group. Coordination advantages should be higher for larger groups (in terms of assets or number of foreign affiliates).
(5) The type of information that the agent acquires (hard vs. soft) and the way it is processed internally. This will depend on the type of industry considered, as some are more information-intensive, and the general availability of information in the host environment.

The organizational choice will depend on both types of factors, as illustrated in Figure 1 in Appendix A. The environmental factors will determine the structure of the relation between headquarters and foreign affiliates, in conjunction with the internal factors of the multinational firm previously identified. As such, firms will not respond uniformly to a specific environmental context, assuming that they strive to find the best fit between their organizational structure and both the internal and the external context (see also Roberts and Saloner, 2013, for a review of the literature on performance, strategy and organization).

The next section formulates research hypotheses on the relation between these factors and organizational structure.

3.3 Hypotheses development

3.3.1 Presentation of the research hypotheses

In this research **centralization** is defined as the degree of headquarters' control over processes. I will examine the relation between **environmental distance** between home (global headquarters' country) and host country (foreign affiliates' country) and centralization of processes inside the multinational. Environmental distance is broadly defined and encompasses differences in institutional, economic and cultural environment between the home and the host country. This concept of distance is

distinct from geographic distance, although the two might be highly correlated. Environmental distance between home and host countries may have opposite influences on organizational structure, either pushing for more or for less centralization, essentially illustrating the trade-off between local information and incentives. I identify two main channels through which distance may influence organizational structure:

Channel 1: Environmental distance reduces headquarters' knowledge about local environment, raising the need for acquisition of local information or local adaptation. A first channel through which environmental distance could influence organizational structure is through raising the need for local adaptation. Higher environmental distance may imply that headquarters have very little knowledge of the local host environment. This may favor decentralization to increase local information acquisition by the foreign affiliates (AT, 1997), leading to informed but biased decisions (BGM, 1999). As such environmental distance may favor decentralization if the difference in local tastes or way of doing business between the home and the host country is important. However, if the principal is well informed, or in the particular case of multinationals, if the headquarters have important experience operating in a region, they may prefer to retain authority as they will have enough local knowledge or experience to take decisions that are adapted to the host environment (AT, 1997, Dessein, 2002). As such, I formulate the first hypothesis:

Hypothesis 1a *Higher environmental distance decreases centralization if it decreases headquarters' knowledge about the local environment.*

Channel 2: Environmental distance raises foreign affiliates' managers' biases. A second channel through which distance could influence organizational structure is through congruence of objectives between global headquarters' managers and foreign affiliates' managers. Higher environmental distance between home and host countries could result in lower congruence between headquarters and foreign affiliates' managers' objectives, if those managers come from very different cultures or operate in dissimilar institutional environments. According to Aghion and Tirole (1997), Dessein (2002), Baker, Gibbons and Murphy (1999), higher congruence, or lower bias, between principal-agent facilitates decentralization by attenuating the risks associated with loss of control, especially abuse of power. Furthermore, as Dessein (2002) shows, decentralization performs better when the agent's bias is small relative to environmental uncertainty. Environmental distance between headquarters and foreign affiliates may thus influence organizational structure through its impact on headquarters and foreign affiliates' managers' congruence of preferences or objectives. If distance increases agents' biases, it would push for more centralization at the top.

Hypothesis 1b *Higher environmental distance increases centralization if it increases foreign affiliates' managers' biases.*

Finally, the quality and availability of information on local projects has been shown theoretically by Stein (2002) and Dessein (2002) to impact the organizational structure of the firm. This is associated with the degree of transparency and information in an economy. According to Stein (2002), when information is soft and cannot be credibly transmitted, a decentralized approach should perform better. Empirically, Petersen and Rajan (2002) examine how the type of information available on borrowers influences the organizational structure of the firm, and more specifically the required distance between borrowers and lenders. They show that the increase in physical distance between lenders and small businesses borrowers in the 1990s was due to a higher availability of hard information on small businesses, coupled with better computer and communication tools, which reduced the need to be close to the information. Liberti (2004) and Liberti and Mian (2009) also found that reliance on soft information was higher under decentralized than centralized structures. As such, I formulate the following hypothesis:

Hypothesis 2 *Higher reliance on soft information on local projects is associated with lower centralization (i.e. higher decentralization).*

Testing the hypotheses in the context of banking in sub-Saharan Africa. The empirical setting chosen for this research is that of banking in sub-Saharan Africa. As mentioned in the introduction, this context is particularly appropriate to examine the impact of the information available on local projects and the environmental distance between headquarters and their foreign affiliates on the organizational structure of multinationals. Firstly, the volatility of the environment in sub-Saharan Africa will tend to be very high relative to the home country environment of the multinational bank, not only due to general political uncertainty or macro-economic volatility but also because of the generally weak governance environment which increases the risk of idiosyncratic shocks to a firm's profits. Secondly, given that there are often no credit registries in sub-Saharan African economies and that the availability of reliable audited accounts is limited, information on projects, especially for SMEs, tend to be soft and bank managers need to rely on relationship lending to assess them. As such, the high importance of information acquisition in banking activities and the large institutional voids which characterize African economies, coupled with significant macroeconomic uncertainty, should exacerbate the asymmetry of information between headquarters' managers and foreign affiliates' managers, making the above predictions more salient.

3.4 Data collection

3.4.1 Development of the questionnaire

The empirical testing of the two sets of hypotheses relies on bank survey data. The development of the survey questionnaire was done in several steps. The questionnaire was first developed through literature review and theory development. It was subsequently reviewed by academicians with specific experience in the topic of multinational banking or in firm survey methodology. I then proceeded to the pretesting of the questionnaire through face-to-face interviews with three managers of a foreign affiliate of an emerging multinational bank in London to clarify the phenomenon of interest and identify any relevant issue not addressed in the preliminary questionnaire. An important feedback from this pilot was to ask more open-ended questions in order to avoid respondent bias which sometimes arises with close-ended questions. In addition, the wording of several questions was changed in order to improve understanding, and to be more adapted to banking business terminology. The questionnaire focuses on three aspects. The first part focuses on the interaction between headquarters and foreign affiliates, the second part is related to bank credit practices and the third part asks managers about their perception of the local business environment. The questionnaire is presented in Appendix B.

3.4.2 Overview of the data collection and data quality

Sample size and scope. I conducted fieldwork in Kenya (October-November 2013), Tanzania (November-December 2013) and Ghana (March-April 2014) to collect data through interviews with bank managers. The choice of these three countries was motivated by the important number (and variety) of foreign banks operating in these markets as shown in Figure 2 in Appendix A. The target population included all the active commercial banks in these countries (target population of 97 banks in total), and I gathered data on 62 different banks in total during these fieldworks (obtaining an average response rate of 64%). 27 banks were located in Kenya, 19 in Tanzania and 16 in Ghana. To obtain interviews I directly contacted the headquarters by phone or introduced myself in person, and presented a letter of introduction from the London School of Economics and, in the case of Tanzania, from the International Growth Centre[8]. In addition, I collected data from Uganda

[8]The International Growth Centre aims to promote growth through policy advices based on research. It has programs in 14 countries. It is based at LSE and in partnership with Oxford University. During my fieldwork in Tanzania, I was based at the IGC offices in Dar es Salaam. On top of a letter of introduction signed by IGC Tanzania's head, Dr Pantaleo Kessy, I obtained logistical help to organize the interviews. More information: http://www.theigc.org/countries/tanzania.

(4 banks) and Zambia (2 banks) by calling the local headquarters in these countries to obtain the email of the persons in charge of the credit department and then emailing the questionnaire. I also contacted the global headquarters of foreign banks with affiliates in Africa to ask for their help to distribute the questionnaire to their African subsidiaries. Through this channel I obtained 9 additional questionnaires from foreign affiliates of global banks in Mali, Ivory Coast, Congo, Burkina Faso, Cameroon, Senegal, Equatorial Guinea, Madagascar and Chad (see Figure 3 for a graphical representation of the distribution of banks in the sample by host countries). In total, I obtained a sample of 77 banks from 14 sub-Saharan African countries. 33 questionnaires were filled in by me during an interview, 36 questionnaires were completed directly by the respondents and 8 questionnaires were completed by the respondents and followed by a shorter interview. The interviews were conducted in English and lasted 45 minutes on average, ranging from 90 minutes to 15 minutes (shorter interviews in the case of follow-up interview, after the respondents had completed the questionnaire). The language of the questionnaire and/or interview was English (89% of the sample) and French (11%).

The size of the sample is admittedly small. However this sample size needs to be put into perspective. First, banking markets in developing countries, and especially in Africa, tend to be relatively small in terms of number of banks operating in a given market[9], compared to more developed countries. As such, the target population itself is relatively limited. Secondly, survey data on banking focusing on banks' practices and organization is commonly very scarce, with limited sample size. For instance, Beck, Demirgüç-Kunt and Martínez Pería (2008) conducted a World Bank survey on banks' SME lending practices in 2008 which covered 91 banks from 45 countries around the world, but included only 15 sub-Saharan African banks from 7 countries[10]. Another more recent survey of SME financing in four East African countries[11], conducted by the African Development Bank in 2012 (see Calice, Chando and Sekioua, 2012) was based on interviews at 16 different banks. Apart from the small target population, the small size of these samples is also related to sectoral factors, in particular concerns about confidentiality in the banking industry.

Respondents' characteristics. The respondents were mainly head or manager of credit (retail, SMEs or corporates) (35%), followed by head of credit risk or credit administration (26%) and CEO (14%). The rest of the respondents were

[9]Rarely more than 30 banks operate in a given sub-Saharan country; in addition, according to Bureau Van Dijk's BankScope database, in 2012 the average number of foreign banks in sub-Saharan African countries was 7, ranging from 21 (Tanzania) to 1 (Comoros).

[10]Kenya, Malawi, Sierra Leone, South Africa, Swaziland, Zambia, Zimbabwe.

[11]Kenya, Tanzania, Uganda and Zambia.

branch manager or relationship officer (9%), Chief Financial Officer (CFO) (1%), Chief Operating Officer (COO) (1%) or general managers (13%). I aimed to obtain information from the heads of credit, heads of risk, or their superiors (COO, CFO, CEO). Sometimes these persons were not available or were not willing to speak to me for confidentiality reasons, but recommended me to speak directly to a branch manager or a relationship officer. While branch managers have less first-hand experience of the global operations and strategy of their group, they have very detailed knowledge of loan monitoring and screening practices. However, for foreign affiliates, as a large part of the questionnaire concerns interactions between headquarters and foreign affiliates, all the respondents occupied a higher position (Head of risk, Head of credit, COO, CFO or CEO). On average the respondents had been in the bank for 7.5 years at the time of the survey, with a minimum of 6 months and a maximum of 42 years. Concerning the quality of the interviews, I gave scores ranging from 1 (poor) to 5 (very good) regarding interviewee's knowledge, patience and willingness to reveal information. The average respective scores were 4.0 (knowledge), 4.3 (patience) and 4.4 (willingness to reveal information). Overall, getting the interviews was the most difficult part, but once an interview was scheduled, it was seldom rescheduled or canceled and respondents were relatively open to share information. I gave a survey information sheet to each of them, explaining the research and ensuring confidentiality of the data. I committed to conceal the name of the respondents or the bank, as well as any information that may help identify the respondent or his bank.[12]

Construction of the database. The data were transferred to Stata for statistical analysis. Using unique identifiers, banks in the survey dataset were matched with the Bureau Van Dijk's BankScope database, which provides additional bank financial information. At the country level, indicators of governance from the Worldwide Governance Indicators dataset of the World Bank and GDP measures from the IMF's World Economic Outlook were used to construct measures of distance.

Non-response bias analysis. I conduct an analysis of non-response rate to examine the possibility of sampling bias. To do so, I compare the means of several key financial indicators of participant and non-participant banks (both domestic and foreign) surveyed in Kenya, Ghana and Tanzania. I focus on banks located in these three countries, which constitutes 81% of the sample, given that the number of participant banks in the 11 other countries is very small (between one and four respondent banks) and therefore not representative, while the survey covers 66% of

[12]Note that most of the respondents refused to have the interview taped, in which case I took notes. Given the highly structured format of the interview, errors due to interviewer's note-taking are relatively low.

the commercial banks in Kenya, 59% in Tanzania and 67% in Ghana. The results are reported in Table 3 in Appendix A.[13] They indicate that although participant banks are on average larger by asset, with higher net income and higher capital ratio, the differences are not significant at the 10% level. These results give confidence that the data do not suffer from major sampling biases due to banks' self-selection, at least concerning the bank population in the countries in which fieldwork has been conducted. Of course, other biases related to the selection of countries for fieldwork cannot be excluded, however, efforts have been made to obtain data on different regions of Africa, and the sample includes all the largest banking groups present in Africa, originating from France, the U.K., the U.S., India as well as from North Africa and sub-Saharan Africa.

3.4.3 Empirical setting: sub-Saharan Africa

As mentioned previously, Africa is a particular environment, especially with respect to institutional quality and transparency of information in banking markets. In this section I shed more light on this environmental context by reviewing the main characteristics of the banking markets in the three countries where fieldwork has been conducted (Kenya, Tanzania and Ghana). Kenya is the dominant banking center in East Africa with 43 commercial banks. Some local banks (Kenya Commercial Bank, Equity bank) are growing larger than global multinationals such as Barclays or Standard Chartered which were previously number one or two in terms of assets[14]. These large domestic banks have expansion strategies in East Africa, and more widely in the sub-continent having set up foreign affiliates in Uganda and Tanzania, emulating the regional expansion of Nigerian banks such as United Bank for Africa. With new models based on technology platforms with mobile phones and agency banking, they are expanding fast and generating high profits. Tanzania is a less sophisticated market than Kenya with a higher proportion of foreign banks (71% of the commercial banks are foreign in Tanzania, against a third in Kenya). While all the banks surveyed use the services of the credit reference bureaus in Kenya, most of the banks surveyed in Tanzania were not using these bureaus as they were licensed only a few months prior to the administration of the survey. Mobile banking is also prevalent in Tanzania and most of the banks surveyed offered these services

[13]Note that the total number of banks presented in this table is lower than the target population as a few of the banks surveyed are not included in the BankScope database.

[14]In 2012, the total assets of Standard Chartered in Kenya amounted to 195B Kshs, against 91B Kshs in 2007. For Barclays these numbers were 185B Kshs in 2012 against 158B Kshs in 2007. Kenya Commercial Bank recorded 304B Kshs of total assets in 2012 against 120B Kshs in 2007 while for Equity Bank these numbers were 216B Kshs in 2012 against 53B Kshs in 2007. Source: Banking Survey 2013, Kenya Bankers Association (2013).

to their customers.

Ghana, an English-speaking country located in West Africa and surrounded by Francophone countries, represents with Nigeria the most dynamic banking market in its region. Half of the banks operating in Ghana are foreign, with a large presence of Nigerian banks (representing a third of foreign banks). Mobile banking technology is less diffused in West Africa and only a few banks offer mobile banking services in Ghana while most of them operate electronic banking services, mainly through the Internet. There are two licensed credit reference bureaus and all the banks are using them, as it is mandatory per the Bank of Ghana's guidelines. While Kenya and Tanzania have explicit deposit insurance protection system, Ghana has not developed one yet, though it is scheduled to be in place at the end of 2014. In terms of capital requirements, the three countries have considerably increased their minimum core capital requirements over the last 5 years, which have now reached USD 12mns (KSH 1 bn) for Kenya, USD 9 mns (TZS 15bns) for Tanzania and USD 45mns (GHC120 mns) for Ghana. As a consequence, the markets are more consolidated compared to the previous decade. Finally, concerning the use of financial services and geographic outreach, Kenya leads in terms of deposit accounts, while Tanzania has a better developed network of ATMs: there were 662.26 deposit accounts with commercial banks per 1000 adults and 9.94 ATMs per 100,000 adults in 2012 in Kenya, 186.71 and 14.57 respectively in 2012 in Tanzania, and 479.47 and 5.47 respectively in 2012 in Ghana (Source: IMF, Financial Access Survey). Although these countries compare favorably with other, less financially developed African countries, the use of financial services is still very low compared to other developing countries[15].

In terms of the business environment, these banks face similar structural challenges in all the 14 countries from which data has been gathered: slow pace of the judiciary system impeding a quick recovery of collateral in case of default (for instance, 84% of the respondents in Tanzania, 62% in Kenya and 37% in Ghana considered that long processes in Court were an important or extreme obstacle to their operations), lack of information regarding SMEs (including poor financial reporting, lack of identity documents, poor address system), lack of collateral, and generally weak institutions, high informality and high credit risk. Over 80% of the bank managers interviewed also considered that the business environment was very competitive, especially in the corporate lending segment and in the deposit segment. While access to information and intensity of competition seem to be major obsta-

[15]As an example, there were 1042 deposit accounts with commercial banks per 1000 adults in India in 2012 and 934 in Peru.

cles for banks, this is not the case of banking regulations and employment laws: the large majority of bank managers surveyed considered that these regulations did not constitute obstacles, or only minor obstacles to their activities[16].

3.4.4 Characteristics of banks in the sample

Table 4 in Appendix A presents selected statistics on banks in the sample. Out of the 77 banks surveyed, 36 are domestic banks, 14 are affiliates of regional African multinational banks including North Africa but excluding South Africa ("African MNB"), 19 are affiliates of global multinational banks (from France, U.S., Germany, the U.K.) ("Global MNB") and 8 are affiliates of multinational banks from other emerging or developing countries (from India, Malaysia, South Africa) ("Emerging MNB"). 61% of the banks (domestic or foreign) are multinationals. Concerning the foreign affiliates, which form the sample of banks examined in this chapter, 38 were organized as subsidiaries and only 3 as branches. In terms of entry mode, foreign banks tend to favor greenfield entry. 64% of African MNB, 63% of Global MNB and 75% of Emerging MNB entered these markets through a greenfield operation. The banks were 27 years old on average in 2014, the average incorporation date being 1987, but important variations exist between banks, depending on the country of origin of the parent bank. The oldest group is constituted by the foreign affiliates of the Global MNB (39 years old on average), followed by Emerging MNB (37 years old) and domestic banks (24 years old). The foreign affiliates of regional African MNB are the last entrants (8 years old), which is consistent with the fact that the expansion of regional African MNB is a relatively recent phenomenon. In terms of size as measured by the number of employees, domestic banks are the largest (1022 employees on average), followed by Global MNB (650 employees), Emerging MNB (243 employees) and regional African MNB (233 employees). The ranking remains the same in terms of bank branches in the country of operation, with on average 40 branches for domestic banks, 26 branches for Global MNB, 13 branches for regional African MNB and 10 branches for Emerging MNB.

Box 1: Two cases of the organization of multinational banks in sub-Saharan Africa

Group G ("Global") is a large global multinational banking group. Group A ("African") is a regional African multinational banking group. They both have operations in several countries across Africa. These two groups represent relatively typical cases of the organization and mode of

[16] 62% of the banks considered that the banking regulations were not or were only a minor obstacle to their business operations and 79% of respondents considered that employment laws were not or were only a minor obstacle to their business operations.

operation in Africa of global banks and regional African banks, respectively. The qualitative data was collected during interviews (1-hour long on average) with two CEOs of two foreign subsidiaries of Group G and two heads of credit of two foreign subsidiaries of Group A. The two subsidiaries are located in Kenya and Tanzania.

Overall organizational architecture

The organizational architecture at Group G could be described as one of concentric hierarchic circles. At the bottom of the hierarchy lies the country entity, one level up are the clusters (for instance the East Africa cluster, with headquarters in Kenya, or the West Africa cluster, with headquarters in Senegal), then the regional divisions (for instance Africa with headquarters in South Africa) and finally the macro regional division (Africa being integrated in the Europe - Middle East - Africa "EMEA" macro-regional division).

Group A has subsidiaries across Africa both in francophone and English-speaking countries, but does not have such a formal hierarchical structure. Subsidiaries in English-speaking countries tend to cooperate more predominantly with subsidiaries in English-speaking countries, and similarly for francophone countries, and for East Africa, the Kenyan subsidiary constitutes the "point of reference" for the other East African subsidiaries. Nevertheless, the East African subsidiaries of Group A directly report to the global headquarters, while the East African subsidiaries of Group G first report to the headquarters of their cluster in Kenya, or for the Kenyan subsidiary, to its regional headquarters in South Africa.

Training and knowledge received from headquarters

Both respondents at Group G indicated that group support was very strong with regular exchange of best practices between foreign affiliates. Most of the processing systems are centralized and the respondents indicated that they leverage regional structures for administrative work. For marketing, the campaigns are developed at the cluster and regional level. For more technical aspects such as IT systems, Operational Risk Management and Credit Risk Management, systems are developed centrally and adapted to local needs. For instance, the group has a global system of financial reporting, which is then easily adapted to host countries' regulations. The fact that they leverage global platforms has a direct impact on revenues, as it decreases operating costs through economies of scale.

Subsidiaries of Group A also receive some support from their group, with quarterly training focusing on sales and risk. For instance, a marketing team is sent by the global headquarters to provide training to the subsidiaries. Adverts and branding are also centralized, which has sometimes led to misalignment with local context. Concerning IT and software, the subsidiaries' Monitoring and Information Systems (MIS) are received from the headquarters. Group involvement is also important regarding operational risk management, both respondents indicating that they receive guidelines from the group. Concerning credit risk management, the headquarters monitor their overall loan portfolio and send reports on a monthly basis to the subsidiaries.

Autonomy of subsidiaries

Generally speaking, the degree of decentralization of decision-making at Group G depends on the type of banking products considered but the decision is often made in partnership between the local entity and the different echelons up the hierarchy. Concerning credit approval, Group G does not set limits for each entity, instead approval limits increase over time for each manager. One of the particularities of Group G is that its subsidiaries do not set up credit committees to approve loans. Instead, there are two credit officers working together in-country, with some loans requiring

in-country Board approval. The hiring of senior managers is done in partnership with the cluster but the country CEO has the final say. Concerning the introduction of new banking products, the decision is also made in collaboration with the hierarchy.

On the contrary, at Group A, subsidiaries have local limits for loan approval, and for loans above this limit the subsidiaries need to receive approval from the group. For decisions regarding introduction of new banking products and local expansion (opening of new branches), these tend to be made in partnership with the global headquarters, while for hiring of top managers or decisions regarding the allocation of the portfolio of loans, decisions tend to be made mostly or exclusively by the subsidiary.

Collaboration between subsidiaries

At Group G, collaboration between subsidiaries occurs to provide necessary facilities to the clients, but foreign subsidiaries rarely partner to provide specific funding facilities. One of the respondents noted that communication can be sometimes difficult with the regional headquarters, due to disagreement over business decisions, but that there are important interactions with other cluster countries. In addition, some functions are primarily performed at the headquarters of the cluster, such as human resources and legal functions.

The Tanzanian subsidiary of Group A indicated that they receive training from Kenya on a regular basis, and that it indirectly comes from the global headquarters (the global headquarters first train the managers at the Kenyan subsidiary who then train the managers in Tanzania). Contrary to Group G where loan syndication between African subsidiaries is very limited, both the Kenyan and the Tanzanian managers of the subsidiaries of Group A indicated that they regularly partner with other affiliates of their banking group to offer loans to corporates, essentially sharing facilities with other subsidiaries located in East Africa or in the fast-growing English-speaking West African countries. The head of credit of the Tanzanian subsidiary indicated that they often partner with Kenya given the Tanzania's regulatory reserve limit. When a loan is above the regulatory local limit they obtain some additional funds from the Kenyan subsidiary to provide the facility.

Management of people

Group G relies heavily on local skills as most of the top management team in the two subsidiaries surveyed is composed of local managers, although the CEOs are expatriates (one from the home country, one from a third country). To a certain extent this local profile of Group G's top management (which is also observed in other global banks) is due to the fact that banks have to demonstrate to the host country's Central Bank that they could not find the appropriate skills in the market, which, as a result, tends to favor local staff. The respondents interviewed also felt that there were enough qualified local senior bankers to fulfill their need, which was not the case in the past decades when there were many more expatriates among top managers. In addition, expatriates package are expensive for banks. As a consequence, there is a general trend among Group G to reduce the number of expatriates and rely on local workforce as much as possible. The general human resources management at Group G is focused on cross-fertilization and regular rotation of personnel, both across Africa and also across the different regions. They have specific programs for senior managers which aim to identify talent and to expose these top managers to different environments, rotating them across the group. As a consequence, expatriates are not necessarily from the group home country, and some African managers are CEOs of subsidiaries in African countries other than their home country.

The top management (COO, CFO, Head risk) in the foreign subsidiaries of Group A is also

mainly local, but both subsidiaries have CEOs which come from a third African country (i.e. neither home nor host country). While not having specific training programs for top management such as the one at Group G, Group A nevertheless also favors rotation of top managers across subsidiaries.

3.5 Empirical strategy

3.5.1 Econometric specification

I estimate the following two models to test empirically the first set of hypotheses concerning the relation between environmental distance and centralization, and the second hypothesis concerning the relation between information on local projects and centralization[17]:

$$\text{CENTRALIZATION}_{igc} = \alpha\text{DISTANCE}_{igc} + \beta_1 X_i + \beta_2 Y_g + \delta Z_c + \gamma^c + \epsilon_{igc} \tag{3.1}$$

$$\text{CENTRALIZATION}_{igc} = \alpha\text{SOFT INFO}_i + \beta_1 X_i + \beta_2 Y_g + \delta Z_c + \gamma^c + \epsilon_{igc} \tag{3.2}$$

$\text{CENTRALIZATION}_{igc}$ is the dependent variable, an indicator of centralization of processes for the foreign affiliate i of a multinational group g located in country c. In equation (3.1) DISTANCE_{igc} is a measure of environmental distance between the foreign affiliates' country and the home (parent group) country. I examine three alternative measures of distance: institutional distance, economic distance and cultural distance. In equation (3.2), SOFT INFO_i is a vector of variables indicating the degree to which foreign affiliates rely on soft information to evaluate local projects (screen borrowers). X_i represents a vector of foreign affiliate-level controls, Y_g is a vector of group-level controls and Z_c is a vector of host country controls. I also include a full set of host country dummies γ^c. ϵ_{igc} is an error term. I relax the assumption of identical and independent distribution of the errors and I cluster the

[17] I choose to examine the two independent variables of interest (Environmental Distance and Soft Information) in separate regressions given the potentially high multicollinearity between them and the fact that reliance on soft information is likely to be partly driven by institutional or economic environment of the host country, and therefore be an outcome of distance. An additional motivation for using two different equations is the fact that I lose degrees of freedom when including both types of variables in the regressions, which restricts the number of controls I can include given the small size of the sample.

standard errors at the group level to allow for possible correlations between residuals of foreign affiliates from a same multinational group. The residuals are correlated across two observations (foreign affiliates) of a same group, but are assumed to be independent across groups.

I expect $\alpha > 0$ or $\alpha < 0$ for the coefficient on the distance variable in equation (3.1) depending on the main channel at work. Theoretically, I identified two channels through which distance could influence centralization. The first one was through the impact of distance on headquarters' knowledge of the local environment and the second one was through the impact of distance on foreign affiliates' managers' bias. After examining the relation between environmental distance and centralization, I will examine separately these two potential channels by including two "channel variables" (which are supposedly outcomes of institutional distance, and therefore "bad control") in the regression of centralization. I will first include an indicator of headquarters' knowledge of the local environment, which I expect to be positively correlated with the centralization index. I will then include a proxy variable for the degree of congruence between headquarters and foreign affiliates, which I expect to be negatively correlated with the centralization index. In so doing, I follow the methodology employed by Maccini and Yang (2009). More specifically, the approach involves regressing the centralization index on the indicator of distance, and then successively including as controls key variables representing managers' biases and headquarters' knowledge about the local environment. I then compare results across specifications to gain insight on the intermediate channels that are operative. If inclusion of a set of variables X leads to important changes in the size of the coefficient on distance (decline in magnitude if the channel variable is positively correlated with distance and centralization, or negatively correlated with both and increase in magnitude if it is negatively correlated with distance or with centralization) and substantial increases in the R-squared, this would suggest that the variables in X represent an important channel towards centralization. However, and as Maccini and Yang (2009) note, these results should only be taken as suggestive given the potential concerns about omitted variables, data quality, and reverse causality.

Finally, I expect $\alpha < 0$ for the coefficient on soft information in equation (3.2), higher reliance on soft information being associated with less centralization. I detail in the next sub-section the construction of the indicator of centralization as well as the different control variables employed in the regression analysis.

3.5.2 Measuring Centralization

One approach to measuring centralization is to examine the organization charts of firms, as a way to identify *formal authority* of structures. Using a database of job descriptions of top managers, reporting relationships, and compensation structures in over 300 large U.S. firms over a 13-year period, Rajan and Wulf (2006) document a flattening of the senior management hierarchy. Acemoglu, et al. (2007) also use formal measures of whether firms are organized into profit centers or cost/production centers. Another, more direct, approach, adopted by Bloom, Sadun and Van Reenen (2012), consists in focusing on *real authority* by directly asking plant managers about where decisions are effectively made (at the plant or at the central headquarters) regarding hiring, capital expenditure, marketing, and product innovations decisions. The authors take the average across the four Z-scored measures and obtain an indicator of decentralization (or equivalently, autonomy of the plant manager).

In this research I also focus on real autonomy of foreign affiliates vis-a-vis their headquarters, but I differ slightly from Bloom, Sadun and Van Reenen (2012) by focusing on centralization of processes, instead of centralization of decisions. More specifically, I consider that an alternative to direct control by headquarters over foreign affiliates' decisions is for the headquarters to control operational processes through which these decisions are made. For instance having software for loan appraisal or monitoring that are created centrally by the headquarters and then transferred to the foreign affiliates will ensure that the criteria by which loans are appraised are set by the headquarters. Box 1 which provides an overview of the organization of multinationals and headquarters-foreign affiliates relationship through two case studies of multinational banks operating in sub-Saharan Africa reveals the importance of controlling operational processes in multinationals to ensure headquarters' control over operations and decisions in foreign affiliates, and more generally, group's operational continuity or homogeneity of practices across entities. Compared to focusing on strategic decisions, this measure will put less emphasis on a particular individual's autonomy and more on the foreign affiliate, as an entity. For instance, limits on loan approval authority may vary from one individual to the other, while the use of a particular software will be uniformly imposed to all staff of a foreign affiliate.[18]

[18]As mentioned in the introduction, the survey also asked managers about their authority over strategic decisions such as introduction of new banking products, opening of local branches, hiring of senior managers. However, the respondents often indicated that the decision was taken "in collaboration with headquarters", generally proposed by the foreign affiliates and then ratified by the headquarters, which left little variation across banks in the data. As a consequence, focusing on authority over strategic decisions did not allow me to clearly identify (de-)centralization of authority.

As such, the indicator **Centralization of Processes** focuses on *control of operational processes*, directly asking foreign affiliates' managers about their entity's autonomy from their headquarters concerning five key operational processes areas[19]. The 5 areas of business operations covered are the following: Marketing knowhow, IT and technological know-how, Operational Risk management techniques (Fraud and corruption and process management), Credit Risk management techniques, and Lending Technology. I convert managers' answers regarding the 5 domains of headquarters' influence into four scores, from 0 "none" to 3 "a lot". I take the unweighted average across all 5 areas or items as the primary measure of Centralization of Processes (henceforth, COP index). A higher score indicates higher centralization. I obtain a Cronbach's alpha of .86 for the 5 items of centralization which indicates high reliability and also suggests that the set of 5 items measures a single unidimensional latent construct.[20] Note that in this research I am only concerned with the relation between global headquarters and foreign affiliates, which is distinct from that between local headquarters in the host country and their local branches. The survey instrument also collected this information, but in more than 90% of the organizations surveyed the decision related to loan approval, targets for credit growth and risk management were centralized at the local headquarters level and performed by a dedicated team. Anecdotal evidence, obtained through discussion with local headquarters' managers, has revealed the existence of large "agents' biases", leading branches' relationship managers to approve loans that were in fact "bad projects"[21]. This has motivated, in part, banks' decision to regroup all key loan functions at the local headquarters, even for relatively small loans, with little or no autonomy left to branches' relationship managers.

Measurement Error and Quality control. Given that the dataset relies on individual respondents to provide information, the data potentially suffer from

[19]The survey question is: "To what extent does your branch/subsidiary depend on the global or regional headquarters for information and technical support in the following domains".

[20]Cronbach's alpha is an index of reliability associated with the variation accounted for by the true score of the underlying construct, that is, the underlying variable that is being measured. It is a measure of squared correlation between observed scores and true scores. The alpha may be used to describe the reliability of factors extracted from dichotomous and/or multi-point formatted questionnaires or scales (Santos, 1999). The alpha coefficient ranges in value from 0 to 1 and a higher score indicates a higher reliability of the generated scale. Nunnaly (1978) has indicated 0.7 to be an acceptable reliability coefficient. Note that the Cronbach's alpha has three underlying assumptions. First, it is assumed that each item's observed score is the result of adding the item's true score and an error. Second, the items should be Tau equivalent, in other words, all items should carry equal loadings. Third, the mean of the measurement error should be zero. These are often violated in practice, especially the second assumption, and as such, the alpha should be considered as a lower bound to the reliability (Cronbach, 1951).

[21]Often due to collusion between relationship managers and prospective borrowers, e.g. "lending to your friends" type of behavior.

several types of measurement error which are likely to increase the standard errors when centralization is used as a dependent variable, resulting in less precise estimates. Bloom et al. (2007, 2012) evaluated measurement error in their management and decentralization measures by performing repeated interviews on a sub-sample of firms, contacting different managers in the firm, typically at different plants, using different interviewers, and examining the degree of correlation between the measures obtained from two interviews in a same firm. However, the nature of the present research setting and the necessity to interview senior managers (by opposition to middle managers in the Bloom et al. surveys), reduce significantly the possibility to do repeat interviews given the limited availability of these top managers. That said, I can check whether the centralization measure is internally consistent with other information from the survey which should be positively and significantly correlated with the centralization measure such as frequency of communication with headquarters and frequency of training received from headquarters. Table 5 presents univariate regressions with the Centralization of Process measure (COP, unstandardized) as a regressor and with frequency of communication with headquarters[22] and frequency of training received from headquarters[23] as dependent variables. When an organization is centralized, the frequency of communication should be higher between the different entities (Dessein and Santos, 2006), as well as the frequency of training received from the headquarters. The results show positive and significant correlation between these indicators, which suggest that the COP index is internally consistent with other information contained in the survey which are more straightforward to obtain and less subject to respondents' bias. These results suggest that the centralization measure (COP index) is not only picking up noise.

3.5.3 Measuring Environmental Distance

I use three alternative indicators of environmental distance, which will be examined in separate regressions[24]. The benchmark measure of distance is *Institutional Distance*, which captures the difference between foreign affiliates and headquarters (HQ) countries in the quality of their institutions. In the management literature, Khanna and Palepu (2006) have noted that some multinational firms, from developing or emerging countries, will be better able to deal with "institutional voids" or

[22]This corresponds to Question 4. How often do you communicate with your counterparts and bosses in the global headquarters via email or phone?

[23]This corresponds to Question 5. How often do you receive training from the global headquarters?

[24]Given the high correlation between these indicators, as well as the small sample, which limits the number of explanatory variables, I choose to examine these three indicators of environmental distance in separate regressions.

environments where specialized intermediaries are absent, and regulatory or contract institutions are weak. However, for a multinational orginitating from a developed country, with higher "institutional distance" between its home and its host country, such environment might require higher adaptation to local needs, therefore favoring a decentralized organization so that foreign affiliates' managers acquire relevant local information ("information channel"). At the same time, if managers from the foreign affiliate's host country have very different ways of doing business than those of the home country, in particular due to the very different institutional environment in which they operate, congruence of preferences or objectives between headquarters and foreign affiliates may be low, in which case the headquarters may prefer to retain control ("bias channel").

Institutional distance is measured as the difference between the unweighted average of five World Governance Indicators (World Bank) (Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption) in a foreign affiliate's home country and its host country.

The second measure of distance is *Economic Distance*. It essentially captures the difference in demand between host and home countries (considering non-homothetic preferences for goods of different quality between a developing and a developed country), as well as the differences in the macroeconomic environment. Higher economic distance may imply that the headquarters are relatively uninformed about the preferences of the local population in the countries where the foreign affiliates are located, and that the need to acquire high quality local information requires transferring more authority to their foreign affiliates. This variable suffers from one disadvantage compared to the benchmark measure (Institutional Distance): although Economic Distance may adequately capture the need for adaptation to local tastes, it may not capture well environmental differences in terms of local culture or way of doing businesses, which may increase agents' biases and which is one of the identified channels through which distance may influence centralization.

Economic Distance is measured as the difference in GDP in PPP per capita ('000 international dollar) between a foreign affiliates' home country and its host country.

The third measure of distance is *Cultural Distance*. It captures cultural differences between host and home countries such as preferences for hierarchy, competition or individualism. In the theoretical management literature, Rosenzweig and Singh (1991) argue that the higher the cultural distance between the headquarters and the foreign affiliate, the higher the reliance on formal mechanisms of control. In the empirical literature, cultural factors such as bilateral trust between host and home countries have also been found to be positively associated with decentraliza-

tion (Bloom, Sadun and Van Reenen, 2012)[25]. Compared to Institutional Distance this measure suffers from two disadvantages. The first is theoretical, as this measure, which focuses on cultural values, does not adequately capture the need for adaptation to local tastes, while it may adequately capture potential foreign affiliates' managers' biases related to cultural differences between home and host countries. The second disadvantage is empirical, as comparable information on cultural values is missing for a few African countries in the sample.

Cultural distance between home and host countries is measured following Kogut and Singh (1988) methodology using the six Hofstede cultural dimensions (Power Distance, Individualism, Masculinity, Uncertainty Avoidance, Pragmatism, Indulgence)[26]. More specifically, I build the following composite index:

$$\text{Cultural Distance}_{gc} = \sum_{n=1}^{6} \{(I_{ng} - I_{nc})^2 / V_n\} / 6 \tag{3.3}$$

I_{ng} is the index for the nth cultural dimension in the home country of the foreign affiliate's group g and I_{nc} corresponds to the index for the nth cultural dimension in the foreign affiliate's i host country c. V_n is the variance of the index for the nth cultural dimension. The Hofstede cultural survey does not cover a certain number of African countries in the sample. I replace the missing values in a given country by the values for the cultural dimensions in a neighboring country, covered by the Hosftede survey, with the same official language or same former colonizer (France or U.K.), the assumption being that they will have relatively similar cultural values.[27] As such, I take the cultural values of Burkina Faso for Ivory Coast, Togo and Mali, which are not covered by the survey. I take the cultural values of Tanzania for Uganda. Finally, I take the cultural values of Libya for Chad. For a few countries in the sample not covered by the Hofstede survey (Madagascar, Equatorial Guinea, Cameroon, and Congo) there was no country from which values could reliably be taken and the Hofstede index is reported as missing, resulting in a loss of four observations.

[25]Note that their measure of decentralization is between the local headquarters and the plant manager.

[26]See Hofstede (2010) and the Hofstede Center's website (http://geert-hofstede.com/index.php).

[27]I test the robustness of the results to the exclusion of these replaced values in the empirical section.

3.5.4 Reliance on soft information

Given that the use of soft information is difficult to measure, as it plays a role along the whole loan allocation process, I employ a series of variables which provide an indication of the extent to which a banks' screening and monitoring processes rely on "soft information'. First, I use indicators of the loan portfolio allocation. A larger exposure to SMEs should indicate higher reliance on soft information, especially in Africa where information on SMEs is scarce or relatively unreliable (see Box 2), while a larger exposure to large corporates should lower managers' need to rely on soft information. Second, I use indicators of the mode of acquisition of the information, in particular through the use of personal network, which provides soft, qualitative, information. Third, I use indicators of the way banks process the information (reliance on credit scoring, as transformation into a credit score hardens the information). Given the small sample size, and therefore the limited degrees of freedom, I analyze separately the case of SMEs' and corporate loans' screening processes. Therefore, in the empirical analysis, one set of regressions will include share of loans allocated to SMEs, use of personal network for acquisition of information on SMEs and credit score for SMEs, while the other set of regressions will include these variables for corporate loans. An overview of surveyed banks' screening and monitoring practices, with a focus on their acquisition and use of information related to potential borrowers is presented in Box 2.

Box 2: Use of Soft and Hard information in bank lending

How do banks screen and monitor borrowers? What type of information do they use? This box gives an overview of banks' lending practices using qualitative and quantitative information from the survey.

Composition of banks' loan portfolio

On average loans to large corporates represent 46% of total loans, followed by loans to SMEs (30%), loans to the retail sector (20%), to microfinance (3%) and others (cooperatives, etc.) (1%). However, the composition of the portfolio varies depending on the country of origin of the bank. Indeed, foreign banks are more heavily exposed to the corporate segment than domestic banks (over 50%, against 38% for domestic banks, see Table A). In fact, some global banks only finance corporate and institutional clients. This is in line with the academic literature (Detragiache, Tressel, and Gupta, 2008; Gormley, 2007) which has pointed to a segmentation of the market in developing countries, with foreign banks mainly financing the top firms. However, the results also indicate that regional African banks have around a third of their portfolio allocated to SMEs, which is similar in proportions to domestic banks' portfolio. For Global MNB and Emerging MNB, SMEs represent a smaller portion of their portfolio, at around 20% of total loans. However the means differences in the share of loan portfolio allocated to SMEs between Global MNB and regional African MNB, and between Global MNB and Emerging MNB are not significant at the 5% level. Furthermore, both domestic banks and Global MNB have around a quarter of their loan portfolio allocated to the retail segment. Overall, this suggests that, although the portfolio of domestic banks is less concentrated on the corporate segment than that of foreign banks, foreign banks, and in particular regional African MNB and Global MNB, are also actively involved in both SME financing and retail financing.

Table A: **Portfolio allocation (% of total loans) by group of banks**
Note: The number in parenthesis for each group of banks is the number of banks in the sample with non-missing information on portfolio allocation.

	Domestic banks (33)	Regional African MNB (14)	Global MNB (12)	Emerging MNB (19)
Microfinance	3	2	4	0
SME	34	31	19	20
Corporates	38	53	51	60
Retail	23	13	24	6
Other	2	2	2	5

Constraints faced by banks in SME lending: lack of information

According to the managers interviewed, the major constraints faced by their banks in expanding their portfolio of SME loans are the lack of management capacity, or reputation of the business owner (mentioned by 35% of the respondents), the lack of reliable information (34% of the respondents) and the lack of collateral (31% of the respondents). Counterparty risk and lack of sufficient branch network are also important challenges for banks. Other constraints mentioned are administrative delays in obtaining appropriate documentation (especially with the ministries of land) and, in the case of Tanzania, Ivory Coast and Mali, the lack of fully operational Credit

Reference Bureaus. Higher exposure to SMEs thus imply higher difficulties to accurately screen and monitor borrowers, and therefore higher reliance on "soft" information.

Banks' credit management: A centralized organization for credit functions

How do banks manage credit risk in countries with low information and a deficient judiciary system? One of the first elements is that they tend to operate a very centralized organization of credit functions. Indeed, only the gathering of information and identification of clients and monitoring is devolved to branches. Very rarely do branches have the mandate to approve loans. More than 87% of the banks have centralized SME loan appraisal functions at the local headquarters, as well as the recovery functions. For corporates, only 1% of the banks in the sample grant some autonomy to branches to approve loans, while for a third of foreign banks, final approval for corporate loans is done higher up the hierarchy, above the local headquarters echelon, being either executed at the regional or global headquarters. Concerning loan recovery, banks tend to have dedicated teams at the headquarters, working in tandem with the local branch managers in charge of following-up on the clients' repayments.

Assessing borrowers' "character" in a low information environment

What sources of information on borrowers do bank managers use? Credit reference bureaus (CRBs) are regularly used by banks in Kenya, Ghana, Zambia and Uganda. In Tanzania, two CRBs have been licensed recently but very few banks were using them at the time of the survey. The other countries in the sample, all francophone, do not yet have CRBs. When CRBs are in place, all the banks are using them, as it is generally made mandatory by the Central Bank. CRBs were often lauded by the bank managers, but they also often indicated that they faced challenges related to wrong information in database, or incomplete information. Some respondents also mentioned problems with reporting, and general understanding of the system at initiation.

Table B: **Sources of information on loan applicants**

Percentage of respondents indicating that they use a particular source of information on loan applicants, by group of banks. Number of banks with non-missing data in parenthesis for each group.

	Domestic banks (35)	Regional African MNB (13)	Global MNB (16)	Emerging MNB (7)
		Small and Medium Enterprises		
Other Banks (informal)	80	92	69	67
Personal Network	60	69	69	83
Parent Bank	.	17	13	0
		Corporates		
Other Banks (informal)	82	92	50	63
Personal Network	64	71	72	75
Parent Bank	.	54	71	38

Apart from CRBs, another source of information on prospective borrowers consists of the other banks operating in the same market and with which potential borrowers had a previous banking relationship. Information on loan applicants from other banks can either be obtained informally or formally. Information is obtained informally when a bank manager has contacts in a bank in which a potential borrower has or used to have an account. However, some of the respondents have pointed out that such information may be biased or not trustworthy. Information can also be obtained formally, when a bank manager asks another bank with which a prospective borrower

has or had a banking relationship to provide certified bank account statements. Bank managers also use their personal network to obtain information on borrowers. Foreign banks may also rely on information from their parent group, when one of their clients has a pre-existing banking relationship with the group.

Once information is gathered by bank managers (generally relationship managers at the branch level), documents are assessed by credit and risk managers, generally at the local headquarters. Screening and loan appraisal rest on analysis of customers' banks' statements to identify a customer's "character" (through analyzing how a customer manages his money) coupled with indicators such as the age of the business or the managerial capacity of the owners, and regular on-site visits. For SMEs, "character" of the customer was the most important factor in loan appraisal for 71% of the banks interviewed. In this market segment, relationship lending is often the norm, with intense follow-up, weekly communication via phone, and regular on-site visits. Banks tend to require collateral for SME term loans, but they rely more on information from bank account statements to make a judgment, partly because collaterals are extremely difficult to recover in case of default. For corporates, business plans and sector of activity, along with financials, were the most often cited criteria in loan appraisal.

Table C: **Use of credit scores by group of banks and type of customers**
Note: Percentage of banks within each group using credit scores. Number of banks surveyed in parenthesis for each group.

	Domestic banks (36)	Regional African MNB (14)	Global MNB (19)	Emerging MNB (8)
SME	40	77	23	86
Corporates	42	64	21	88
Personal loans	39	57	42	63

The use of credit scoring is relatively diffused, and it might be even more prevalent when positive information sharing from CRBs is established. Generally, information contained in credit scores include financial information, information on management (experience and reputation of business owners), and on the business (age of the business, sector). Credit scores are slightly more often attributed to SME loans (47% of the respondents indicated that their bank use credit scores for SME loans) than to personal (consumer) loans (45%) and large corporates (45%). Interestingly, Global MNB tend to use less credit scoring methods than other foreign banks and domestic banks, as shown in Table C. The means differences in the use of credit scores for SMEs between Global MNB and the other two groups of foreign banks are significant at the 5% level, while there is no significant means difference between regional African MNB and Emerging MNB as the latter group also frequently uses credit scoring for SMEs. This may reflect the fact that Global MNB are slightly less exposed to the SME sector, and more to large corporates, for which appraisal decisions are less easily reduced to a score and is more often based on good judgment.

SME Loan monitoring practices of banks

Finally, loans are generally monitored directly at the branch level. For 87% of the banks, relationship managers are in contact via phone, email or in person with the borrowers at least once a month, and for 26% of them, contact is made on a weekly basis. Respondents were asked to rank by their level of importance four SME loan monitoring practices used by the branch managers in

their banks. I then created a "soft monitoring" variable which is a dummy equal to 1 if the main SME loan monitoring mechanism is via bank manager on-site visit to SME or visit to the branch by SMEs, and 0 if bank managers primarily monitor SME loans through repayment frequency or examination of cash flows.

Table D: **Use of "soft monitoring" for SME loans**
Note: Percentage of banks within each group using "soft monitoring" practices. Number of banks with non-missing data in parenthesis for each group.

	Domestic banks (34)	Regional African MNB (13)	Global MNB (17)	Emerging MNB (7)
Soft Monitoring	18	15	24	0

It is interesting to note that Global MNB rely slightly more on "soft monitoring" for SME loans than other groups of banks. However, t-test to compare means of Global MNB with the other groups indicated that differences between groups in the use of "soft monitoring" were not significant at the 5% level. Again, these small differences may reflect the fact that Global MNB are slightly less exposed to the SME sector. Generally speaking, financing SMEs requires good monitoring and information systems, which depends on the operational capacity of the bank. Banks which have been successul in lending to SMEs, such as the Kenyan Equity Bank have invested significantly in their operating software, which may also explain the differences in sophistication with regards to lending methods between regional African MNB and Global MNB.

3.5.5 Control variables

The main control variables are the proxies for the two channels through which distance can influence centralization ("information" channel and "bias channel"), as previously identified . Given that they are assumed to be outcome of distance (i.e. "bad controls" for distance), they will only be included to test empirically the validity of the channels. The other controls have been shown theoretically or empirically to influence centralization.

Headquarters's knowledge of the local environment (Channel 1 for distance): To measure how well the global headquarters (Principal) are informed I use the number of subsidiaries of the parent bank located in sub-Saharan Africa. This measures the extensiveness of the group's knowledge or degree of information it possesses on the host environment. According to the theoretical literature surveyed (AT, 1997, Dessein, 2002), I expect a positive correlation between headquarters' knowledge of the local environment and centralization. I also include the age of the foreign affiliate, which provides an indication of a group's intensity of experience in a specific country.

Foreign affiliates' managers' biases (Channel 2 for distance): A more expatriate composition of the top management may reduce headquarters' need to control processes if it implies higher congruence between headquarters' and foreign affiliates' objectives. I thus control for the composition of the top management in the foreign affiliate, and whether top managers (CEO, CFO, COO and head of credit risk) are expatriates (from the group's home country or from a third country) or local nationals. In so doing, I make the assumption that expatriates top managers are more likely to have preferences and objectives that are more congruent with those of the headquarters' managers, than affiliates' managers who are local nationals. I also assume that the bias issues between headquarters and foreign affiliates reside at the top, that is, between the top managers of the foreign affiliates and the headquarters managers, and not with middle or lower rank managers of the foreign affiliates, who execute orders from their top management team. To control for the composition of the top management I use two alternative measures. The first one reflects the importance of strategically placing an expatriate CEO at the top, and distinguishes between an expatriate CEO from the home country (i.e. country where the global headquarters of the banking group are located) and an expatriate CEO from a third country (i.e. from a country that is neither the home nor the host country)[28]. The second one reflects the overall expatriate composition of the

[28]Placing an expatriate CEO from a third country is relatively common in large banking groups (see Box 1).

top management (nationality of the CEO, but also of the COO, CFO and head of credit/risk). According to the theoretical literature reviewed (AT, 1997, BGM, 1999, Dessein, 2002), I should expect a negative correlation between the proportion of expatriates in the top management and centralization, assuming that expatriates have more congruent objectives with headquarters' managers than local managers of foreign affiliates, leading to more decentralization. In addition, the skills of an expatriate CEO are likely to be more adapted to the firm's operations and routines, which might reinforce the decentralization decision: in the empirical literature, Caroli and Van Reenen (2001) have shown that skills have been associated with more decentralization, through the ability to take on more responsibility.

Other firm controls:

At the foreign affiliate level: I include the size of the foreign affiliate, a large firm being more likely to be decentralized (Penrose, 1959). In addition, I have used so far the word "foreign affiliate" as a general term for different types of foreign organizations. However, in the banking sector the legal organization of the foreign affiliate, as a branch or as a subsidiary may impact its relation with its headquarters (Fiechter et al., 2011). The branch is a key part of the parent bank and acts as a legal and functional part of the parent's headquarters, while the subsidiary is a separate legal entity from the parent bank with its own capital and is under the regulation of the host country (Casu, Girardone and Molyneux, 2006). As a consequence, a subsidiary tends to be a more decentralized organization, compared to a branch. A dummy taking the value of 1 if the foreign affiliate is a subsidiary and 0 if it is a branch is included. I expect the coefficient on this variable to have a negative sign. A last firm control is the mode of entry of the banking group in the host country, using a dummy for entry by acquisition, versus greenfield entry. Acquisitions may increase the need to control the acquired subsidiary, by centralizing operational processes and transfering strategic decision-making to the global headquarters of the acquiring group.

At the group level: In some estimations of equation (3.2) I include parent group's size (total asset) to capture the importance of coordination and potential for scale economies inside a group, which should favor centralization (Dessein and Santos, 2006; Alonso et al., 2008). I also include the dummies for the categories of banks Global MNB and Emerging MNB (the excluding dummy being African MNB), to control for coordination needs and for the fact that country of origin may influence both operational practices and organizational practices.

Environmental controls: Finally, I control for environmental factors. Theoretically, Doz and Prahalad (1984) have suggested that diversity among national market struc-

tures will contribute towards more national responsiveness. More recently, Bloom, Sadun and Van Reenen (2012) and Acemoglu et al. (2007) have found empirically a significant and positive association of competition and decentralization. As such, I will control for the degree of competition in the host country, using the Herfindhal-Hirschman index of concentration (HHI). I lag the HHI by one year compared to the survey year as an attempt to prevent reverse causality. I also control for regional African zones (East Africa vs. West Africa), as they may differ in terms of culture, economic development or institutions. In some specifications I also further control for host countries' characteristics by using a full set of host country dummies. Finally, in equation (3.2), examining the relation between local information and centralization, I control for the presence of Credit Reference Bureaus, which indicates the overall availability of hard information on borrowers in the host economy.

More detailed definitions of the variables used and their sources is presented in Table 2 in Appendix A.

3.5.6 Descriptive statistics and graphical analysis

Summary statistics of the indicator of centralization for the three types of foreign affiliates considered (affiliates of Global MNB, Regional African MNB and Emerging MNB) are presented in Table 6 in Appendix A. The centralization of processes (COP index) ranges from 0 to 3. The results indicate that processes are more centralized within Global MNB than within African MNB and within Emerging MNB. T-test to compare means of the COP index between Global MNB and Emerging MNB and between Global MNB and African MNB revealed that the difference was significant at the 5% level. However, there was no significant difference in the mean of the COP index between African MNB and Emerging MNB. Figure 4 represents the 5 components of the centralization of process (COP) index by categories of banks. Overall, banks tend to be more dependent on their group for IT systems, with scores between 2 (some) and 3 (a lot), while they are much less reliant on their group for marketing. I now turn to the empirical analysis of the determinants of centralization.

3.6 Empirical results

3.6.1 Principal Component analysis

Given that the two indicators are constructed as averages of different variables, I first proceed to a Principal Component analysis (PCA)[29]. The goal of this analysis is twofold. First, it aims to explore the relation between the items that compose the index of centralization; second it aims to assess whether the index actually captures several different aspects of the relation between headquarters and foreign affiliates, which should be further dis-aggregated into different sub-indices. Indeed, the index of centralization may not be strictly unidimensional and the variables used to construct it may measure more than a single latent trait or construct.

The correlation table (see Table 7 in Appendix A) shows that the variables are all positively correlated with relatively high correlations (most are above 0.50) between the 5 items of the centralization of process index. I standardize the different variables that compose the centralization of process index to facilitate the interpretation of the magnitudes, and I proceed to the analysis of the principal components. As shown in Table 8, the first component has an eigenvalue much greater than the cutoff of 1.0 and reproduces 65% of the variance in the 5 items, while the second component has an eigenvalue of only 0.8, below the cutoff value. Table 9 shows the factor loadings of the first and second components. The factor loadings are the parameters relating the original variables to the principal components. For the first component the loadings are all positive and have all approximately the same size (factor loadings of around 0.70-0.93), expressing that all the 5 items are important. In other words, this component expresses an organization in which the 5 business operations items are important aspect of the relation between headquarters and foreign affiliates. The second component is dominated by IT systems, while the loading for marketing is large and negative. This second component thus represents the contrast between foreign affiliates' technical dependence on their headquarters and marketing or brand control by the headquarters. Given the low eigenvalue of this second component, and therefore its lower explanatory power, I decide to keep only the first component which contains most of the variance.

I create the measure of centralization of processes using the factor loadings of

[29]The Principal Component analysis estimates linear combinations of the underlying variables that explain the highest possible proportion of the remaining variance. The first component is estimated to explain the highest possible proportion of the total variance, while the second component explains the highest proportion of the remaining variance, not explained by the first component, etc.

the first component as follows:

$$\begin{aligned}\text{CENTPROCESS} = 0.701\,\text{Marketing} + 0.702\,\text{IT} + 0.926\,\text{Operisk} \\ + 0.894\,\text{CreditRisk} + 0.774\,\text{LendingTech} \quad (3.4)\end{aligned}$$

Note that each item of the index is standardized into a Z-score, so that the orders of magnitude of the effects of each variable are comparable.

3.6.2 Regression analysis

I empirically examine the first set of hypotheses (1a and 1b) concerning the relation between environmental distance and centralization. I use three alternative measures of distance: Institutional Distance (Table 12), Economic Distance (Table 13) and Cultural Distance (Table 14). Summary statistics of key explanatory variables and of the dependent variable CENTPROCESS are presented in Table 10. Before turning to the results I examine the correlation matrix presented in Table 11. A first observation is that the measures of institutional and economic distance are highly correlated (correlation coefficient of 0.89), suggesting that they capture the same underlying phenomenon. The correlations between cultural distance and institutional and economic distance are also high, but of a lower magnitude (correlations of 0.56 and 0.69 respectively). The matrix of correlation suggests potential multicollinearity issues between the indicators of distance and three variables: the size of the parent group, the Global MNB dummy and the regional African MNB dummy with correlations close to or above 0.70. By construction, the environmental distance variables are highly and positively correlated with the Global MNB dummy, given that the home country of these multinationals is a developed country, while their host countries are developing countries, which translates into important environmental differences. Adding dummies for the category of banks (Global MNB, Emerging MNB, Regional African MNB) as well as the size of the parent group would control for coordination needs or the potential for scale economies inside a group, which has been found theoretically to influence centralization (Dessein and Santos, 2006, Alonso et al. 2008). However, given the potential for multicollinearity between these variables and the regressor of interest, I will not include them in the main regressions. I will deal with the potential relation between centralization, institutional distance and coordination needs in the robustness section.

In Table 12 I regress centralization of processes (using CENTPROCESS, the first component) on the benchmark measure, Institutional Distance. The baseline result in column (1) shows a positive and significant correlation between Institu-

tional Distance and Centralization. This result is robust to the inclusion of firm and host country controls as specified in column (2). Furthermore, the size of the coefficient on the distance variable increases from 0.756 to 0.858 once these controls are included, while the R-squared increases from 0.263 to 0.342, indicating the existence of omitted variable bias with the first specification. These first results provide preliminary evidence of a positive and significant association of Institutional Distance with centralization. In column (3) I investigate the "information channel" by controlling for the degree of headquarters' experience in sub-Saharan African, proxied by the number of subsidiaries of the group in the region. The only difference between the specification in model 2 and model 3 is thus the addition of this experience variable. The coefficient on parent group's experience in sub-Saharan Africa enters significantly into the regression, and with the expected positive sign: when the parent bank (the "Principal") is informed, centralization is favoured. The R-squared increases by almost 50%, from 0.342 to 0.498 indicating a better fit of the model. The size of the coefficient on the distance measure also increases (from 0.858 to 0.899), due to a negative correlation between distance and parent bank's local experience. This suggests the presence of an information channel. However, the fact that the coefficient on distance remains significant at the 5% level after the inclusion of the parent bank's experience variable indicates that the effect of institutional distance on centralization is not only through parent bank's experience. The two models reported in columns (4) and (5) explore the "bias channel", including the two dummy variables CEO (expatriate from the home country and expatriate from a third country) and the percentage of top managers who are expatriates. The results in columns (4) and (5) indicate that the effects of these three human capital variables on the coefficient of distance and on the R-squared are very small. In addition, the coefficients on these three variables are not significant, and one variable (the CEO is an expatriate from the group's home country) does not have the expected negative sign. As such, I find little evidence that the effect of distance on centralization operates through foreign affiliate managers' bias, at least when proxied by the nationality of the top management.

Finally, in column (6) I include all the control variables (excluding the percentage of expatriates in top management, due to multicollinearity). I also include a full set of host country dummies to address the concern that there might still be many omitted unobserved country-level factors generating a spurious positive correlation between distance and centralization. The coefficient on the distance variable is significant and increases to 0.934 (from 0.756 in the baseline regression) and the R-squared increases to 0.750 (from 0.263 in the baseline regression). The coefficient on

parent group's experience in sub-Saharan Africa increases and remains significant at the 5% level. The coefficient on home expatriate CEO is negative and non-significant, while the coefficient on third country expatriate CEO is negative and turns significant at the 5% level. This result may suggest that headquarters perceive expatriate CEOs from a third country to be less biased than home country expatriate CEOs, and are therefore more willing to transfer authority to the foreign affiliate. However, this may also capture the fact that African MNB (a dummy which is not included in the model due to the multicollinearity issues mentioned above), are both more decentralized and have a higher proportion of their CEO who are from third countries (57% of the CEOs) than Global MNB (32%) and Emerging MNB (29%). In terms of magnitude, the variable Institutional Distance has the largest impact. Indeed, a one standard deviation increase in Institutional Distance is associated with a 0.63 standard deviation increase in centralization, while a one standard deviation increase in group's experience in Africa is associated with a 0.57 standard deviation increase in centralization in model 6.

The results in Table 13, examining the relation between Economic Distance and Centralization of Processes are very consistent with those obtained in Table 12 using Institutional Distance. I estimate the same six different specifications as those in Table 12. The coefficient on Economic Distance is positive and significant at the 5% level in all specifications. The magnitudes of the coefficients of Economic Distance are very similar across specifications, from 0.043 to 0.048. In model 6, a one standard deviation in Economic Distance is associated with a 0.45 standard deviation increase in centralization. The results also indicate that parent group's experience in sub-Saharan Africa is positively and significantly associated with centralization, while the human capital variables (expatriate CEO and expatriate top management) do not enter significantly into the regressions.

Finally, turning to Table 14 which examines the relation between Cultural Distance and centralization of processes, the results also indicate a positive association between Cultural Distance and centralization. However, the results are less robust, as the size of the coefficient varies importantly between specifications (from 0.457 to 0.825) as well as their significance. The coefficient on the Cultural Distance variable is neither significant in the baseline regression (column (1)) nor in the regression with added firm and host country controls (column (2)). It turns significant once the experience of the parent group in sub-Saharan Africa is included as a control. The sample size is smaller (33 observations, against 38 for the two precedent panels) given that the measure of cultural distance is missing for several African countries in the sample. Given that I replaced the missing cultural values of five of the host

or home countries in the sample, for which cultural values from the Hofstede survey were not available, by the values of neighboring countries, I test the robustness of these results to the exclusion of these five host or home countries with missing cultural values. As such, in column (7), I re-estimate the model of column (6) only on the sub-sample of banks for which cultural values of their host and home countries are available in the Hofstede survey (i.e. excluding the replaced values). The main result of a negative association between cultural distance and centralization of processes remains significant at the 5% level, with a similar magnitude (0.83 in column (6) vs. 0.80 in column (7)). However the sample size is reduced by a third (24 observations in the sub-sample) and the significance of other control variables, notably parent group's experience in Africa, falls below the 5% level.

Finally, concerning the control variables, most of them have the expected signs, but only a few enter significantly into the regressions. The subsidiary dummy is negatively correlated with centralization, which is consistent with the fact that subsidiaries are a more independent form of organization than branches, with their own capital. We also note that higher market concentration (HHI lagged) is associated with higher centralization, which echoes Acemoglu et al. (2007) and Bloom et al. (2012) results of a positive and significant association between competition and decentralization.

To sum up, this first set of results indicates the existence of a positive and significant association between environmental distance and centralization. While I find evidence of an information channel (measured by parent group's experience in sub-Saharan Africa), consistent with Hypothesis 1a, I find little evidence of a bias channel (measured by expatriate composition of top management), and therefore little support for Hypothesis 1b.

I now turn to the results concerning the relation between the use of soft information and centralization. Hypothesis 2 predicts a negative association between the use of soft (qualitative) information on local projects and centralization. Table 15 presents the cross-correlations of variables and Table 16 reports the regression results. The sample sizes are smaller than in the previous estimations for two reasons: the first one is that some of the banks surveyed did not disclose their allocation of loans by business segments, the second one is that some banks do not offer loans to one of these two business segments.

As explained in section 3.5, I analyze separately the case of SMEs' and corporate loans' screening processes. First, examining column (1), which concerns SME loans, we note that the percentage of SME loans in the portfolio is negatively and significantly associated with centralization. To the extent that higher exposure to

SMEs imply higher reliance on soft information in sub-Saharan Africa, given the lack of reliable financial and basic personal information on borrowers in the region (see Box 2), this result supports Hypothesis 2. However, this result is not robust to the inclusion of further firm controls (both at the foreign affiliate and group level). The coefficient on the dummy indicating whether bank managers use information from personal network for SME loans is significant at the 5% level and robust to the addition of bank and host country controls. Given that information from personal networks tends to be of a qualitative nature, and employs branch managers' discretion and inputs, this result is consistent with Hypothesis 2 according to which higher reliance on soft information favors a decentralized organization. In column (3) I replace the firm controls by two bank category dummies: Global MNB and Emerging MNB (the omitted category being regional African MNB), as country of origin might influence both corporate loan practices and organizational practices[30]. Contrary to the regressions with the measures of distance, the inclusion of the two dummies is permitted here by the low correlation they have with the information variables (see the correlation matrix, Table 15). The coefficient on the dummy indicating use of information from personal networks conserves the same negative sign and remains significant at the 5% level. The coefficient on credit score is negative in the three models, which is contrary to the theoretical literature reviewed (Stein, 2002), but it is only significant at the 10% level in model 1 and not robust to the inclusion of additional controls. In fact, the relation between credit scores and centralization is controversial. While theoretically, Stein (2002) argues that hard information (such as credit scores) favors centralization, empirically Paravisini and Schoar (2013) find a positive association between credit scores and decentralization. Indeed, the authors suggest that credit scores may "increase the number and difficulty of tasks that can be delegated to lower level loan officers by making them easier to monitor and incentivize" (2013:6).

Columns (4), (5) and (6) in Table 16 focus on screening and monitoring of corporate loans. The results indicate that a higher share of corporate loans in the total loan portfolio is associated with higher centralization of processes, however the coefficient only turns significant at the 5% level when additional host country and firm controls are included. Similarly to the results related to screening of SMEs, I find that the use of information from personal networks for corporate loans is negatively and significantly associated with centralization. This result is also robust to additional host country and firm controls. I further control for group of banks,

[30]Given the small sample size of 33 observations, I exclude the other firm controls in model 3, however I keep them in model 6 concerning corporate loans as the sample size is larger, with 38 observations.

adding the Global MNB and Emerging MNB dummies (regional African MNB being the excluded group dummy) in column (6). The sign of the coefficients on the use of information from personal network and on the share of corporate loans in the total loan portfolio are unchanged and they both remain significant at the 5% level.

Overall the examination of the relation between centralization of processes and use of soft information in loan allocation practices supports Hypothesis 2, and the results are particularly robust for the variable indicating managers' use of (soft) information from their personal network. I find significant and positive associations between indicators of managers' reliance on soft information in loan allocation and centralization. In terms of magnitudes, reliance on personal network for information on SMEs is associated with a 1.28 (-2.283/1.780) to 1.35 (-2.403/1.780) standard deviation decrease in centralization (depending on the specification) while reliance on personal network for information on large corporates is associated with a 1.17 (-2.077/1.780) to 1.21 (-2.176/1.780) standard deviation decrease in centralization. This suggests that the potential effect on organizational structure of using soft information to screen borrowers is large.

3.6.3 Robustness checks

First robustness test: Measure of centralization. I first test the robustness of the results to the construction of the indicator of Centralization of Processes. I re-estimate the model in column (6) in Table 12, 13 and 14 (model with host and firm controls and with regional and country dummies) using the unweighted average of the scores on the 5 business operations (the COP index). The results are reported in Table 17. They are consistent with those obtained in Table 12, 13 and 14, namely a positive and significant correlation between the three indicators of distance and the measure of centralization. Using the COP index, the results indicate that a one standard deviation increase in Institutional Distance is associated with a 0.65 standard deviation increase in the predicted COP index, and a 0.45 and 0.63 standard deviation increase in the COP index for a one standard deviation increase in, respectively, the Economic Distance and the Cultural Distance measures. These magnitudes are very close to the ones obtained in column (6) in Table 12, 13 and 14, using the first component as the dependent variable, which were 0.63, 0.45 and 0.62 for the beta coefficients of Institutional, Economic and Cultural Distance, respectively.

At this stage it is important to clarify the interpretation of these results. The evidence shows that the measures of distance are positively and significantly associated with the index of centralization of processes, after controlling for a set of bank

and host country characteristics. It does not mean that higher distance "causes" centralization. One potential source of endogeneity is the possibility that an omitted bank variable is both correlated with the distance measure and the centralization index. Given the low sample size and the fact that the data is cross-sectional and is not a panel we cannot employ firm fixed effects to control for time-invariant bank effects. I address such concerns in the second robustness test.

Second robustness test: distance and omitted variables. The second robustness test concerns the distance measures, and addresses the concern that they might be correlated with the error term. While concerns of reverse causality (centralization influencing distance) are mild given that distance is a relatively exogenous variable[31], potential for omitted variable biases, especially at the group level, should be further examined. The measure of distance so far was between global headquarters and foreign affiliates. However, certain groups of banks, especially Global MNB, might be highly centralized due to high potential for scale economies and need for coordination across the groups' entities, and, by construction, are institutionally, economically, and potentially even culturally distant from their African affiliates given that their headquarters are based in developed countries. Due to the high correlation between the bank group dummies Global MNB, African MNB, Emerging MNB and the three measures of distance, and the impossibility of using firm fixed effects in the cross-section to control for time-invariant bank omitted variables, I examine an alternative way of measuring distance, which would partially eliminate the bias due to the potential correlation between distance from home country and an omitted parent group variable. More specifically, to test the robustness of the results I investigate whether the association between distance and centralization remains significant when the organization has set up an intermediate regional headquarters in sub-Saharan Africa and the environmental distance measured is the one between this regional headquarters to which the foreign affiliate directly reports and the host country. Theoretically, and as mentioned above, higher institutional and economic asymmetry between host and home countries raise the need to increase environmental adaptiveness (Dessein and Santos, 2006). As such, it may push organizations to have intermediary centers of control, with a regional headquarters. Indeed, as Melumad, Mookherjee and Reichelstein (1992) show, creating an intermediary responsibility center, between the principal and the agent, or three-tier hierarchy, can improve flexibility over the two-tier arrangement when communication is limited[32].

[31]Unless, for instance, the location of foreign direct investment is driven by the degree of centralization of a multinational, which is relatively unlikely.

[32]The intermediary agent 1 can use the exact information about his own environment when allocating the production tasks between agent 2, his subordinate, and himself. In contrast, in a

This three-tier hierarchy should increase adaptiveness, while breaking the span of control, especially when the organization is large[33] with important geographic dispersion. In practice, it is quite common for large multinational banks to break down their organization into regional areas (see Box 1). In the sample of foreign banks, 16% of the banks (32% of Global MNB) have set up intermediary headquarters in sub-Saharan Africa, more specifically in South Africa and in Kenya.

I examine the relation between institutional, economic and cultural distance between the country in which the direct (regional or global) headquarters is located and the foreign affiliate's host country on centralization of processes. To fix ideas, Figure 5 represents two examples of multinational banks' organization and their associated distance measure: one in which the "direct headquarters" is an intermediate regional headquarters, and one in which there is no such intermediary level. For organization A, the foreign affiliates' managers directly report to the global headquarters, and the distance is measured between home and host countries, whereas for organization B the foreign affiliates' managers first report to the regional headquarters, and the distance is measured between the country of the regional headquarters and the host country.

The results are reported in Table 18. The host country and firm controls are the same as in Tables 12, 13 and 14, and I also add a dummy which equals one when the foreign affiliate directly reports to an intermediate headquarters. The results confirm the finding of a positive and significant association between distance and centralization. In terms of magnitudes, a one standard deviation increase in institutional distance with the direct headquarters is associated with a 0.57 standard deviation increase in the predicted centralization of processes once controls are included (column (2)). The respective beta coefficients for economic distance and cultural distance are 0.50 (column (4)) and 0.24 (column (6)). The magnitudes of the effect are very close to the ones observed for institutional distance and economic distance with global headquarters in tables 12 and 13. However, the effect is much smaller when cultural distance with direct HQ is used, compared to cultural distance with global headquarters (Table 14), which might be due to a relative cultural homogeneity between African countries.

Third robustness test: Coordination needs: omitted variable or outcome variable?

centralized mechanism, the principal has to base those decisions on limited information reports of agents 1 and 2. There is still a control loss for the principal, but the authors show that it does not necessarily imply a loss of performance, as long as the principal can monitor some financial performance measure, such as cost or profit (Melumad et al., 1992).

[33]For instance, Stein (1997) points to the limits of headquarters' monitoring efforts when the number of projects it oversees is too large.

Finally, given the potential importance of coordinating activities between entities of a multinational, I conduct a third robustness test to further examine the relation between group's coordination needs and centralization. In particular, if coordination needs are both related to distance and centralization, then omitting this variable in the regression of centralization on distance will result in biases. The theoretical literature (Dessein and Santos, 2006, Alonso et al., 2008) has shown the existence of an inverted-U shaped relation between coordination needs and gains of centralization relative to decentralization. However, the interaction between distance and coordination needs is not straightforward, and it is also possible that coordination needs are an outcome of distance rather than the contrary[34]. This robustness test will shed more light on the relation between centralization, coordination and distance, and how controlling for coordination needs affects the relation between distance and centralization.

I use two different types of proxies to control for coordination needs at the group level. The first ones are the two dummies Global MNB and Emerging MNB (Regional African MNB being the omitted dummy), as these two groups of banks, and especially Global MNB, should have higher coordination needs or potential for scale economies given that they are large groups operating over several continents. Furthermore, I also proxy for group's coordination needs using the size (log of total assets) of the parent group, as coordination needs should rise with the size of the group. Given that the correlation between Global MNB dummy and Economic Distance is almost 1.00 (0.95), and that the sample size using the Cultural Distance index declines to 33 observations, I only conduct this third robustness test using the benchmark measure of distance, that is, Institutional Distance. As expected, the results reported in Table 19 (column (2)) show that the Global MNB dummy is positively associated with centralization, however, the coefficient is not significant. The size of the parent group (column (3)), as a proxy for coordination needs, enters positively and significantly into the regression, which is consistent with expectations. The results reported in column (4) show that Institutional Distance is robust to the inclusion of proxies for coordination needs, while the size of the coefficient on the distance variable more than doubles once these controls are included. In column (5), both types of control variables are included in the regression as well as the

[34]Higher environmental distance could produce uncertainty which increases the cost of mis-coordination between entities of a multinational, and therefore increases the need for coordination. To the extent that environmental distance increases environmental uncertainty, and therefore increases the need for adaptiveness, it will increase the benefits of communication, that is, centralization. This will be so in order to avoid mis-coordination costs, or mis-adaptation costs, if the agents who observe the local information choose not to be responsive to improve coordination (see Dessein and Santos, 2006; Bolton and Dewatripont, 2011).

information and bias channel variables. Unsurprisingly, coefficient estimates on all the control variables become smaller in magnitude and generally see declines in their levels of statistical significance. The coefficient on Institutional Distance increases slightly and remains significant at the 1% level. Overall, these robustness tests suggest that distance is significantly associated with centralization, beyond effects related to headquarters' local knowledge, managers' biases and coordination needs.

3.7 Discussion

3.7.1 Interpretation of the results

The results have shown the existence of positive and significant correlations between environmental distance and centralization of processes, which are robust to a series of controls. Furthermore, the magnitudes of the coefficients on distance suggest that the statistical associations documented in Table 12, 13 and 14 are economically as well as statistically significant. The R-squared are also high. The baseline models including only the Institutional or the Economic Distance variable and a constant reproduced over 20% of the variance. Hypothesis 1a posited that distance influences centralization through the information channel, that is through decreasing headquarters' knowledge of the local environment, or raising the need for local information. The results indicate that the information channel is important, as shown by the significant association between the parent group's experience in sub-Saharan Africa (as measured by the number of subsidiaries in the region) and centralization. This supports Hypothesis 1a and is consistent with the theoretical literature surveyed in this chapter and in particular Aghion and Tirole (1997). However, the coefficient on distance remains significant even after including the experience variable, suggesting that the effect of distance on centralization is not only through the information channel. Hypothesis 1b posited that distance influences centralization through its effect on congruence between global headquarters' managers and foreign affiliates' managers' objectives. Although I find negative correlations between centralization and expatriates in top management, consistent with the hypothesis that expatriates top managers have more congruent objectives with their headquarters compared to local national CEOs, thereby reducing the need for headquarters to control foreign affiliates' operations, the results are not significant at conventional levels. This suggests that human capital at the top management level in foreign affiliates does not influence, or at least, is not significantly associated, with organizational structure.

Overall, these results suggest that multinationals adapt their organization to the environmental context, and that they favor a centralized organization when the

environmental distance is higher, in other words, when the host country is much less developed economically and institutionally, or very different culturally, beyond reasons purely related to headquarters' level of information on the host country or characteristics of the human capital at the foreign affiliate level. In particular, even when the size of the parent group and its international exposure are controlled for, which indicate higher coordination needs pushing for more centralization, more distant foreign affiliates are still found to be more centralized.

Three related interpretations of these results, non exhaustive and non exclusive, are possible. The first one is based on the "parenting advantages" literature (Goold, Campbell and Alexander, 1998; Goold and Campbell, 2002), which emphasizes the influence that the parent has on its businesses or affiliates leading to better performance than they would otherwise achieve as independent entities (see Goold et al., 1998). Following this line of research one could interpret the positive relation between environmental distance and centralization as an indication that foreign affiliates in developing countries require more support from their parent for their operations, thereby pushing for more centralization of processes at the headquarters level. This parenting factor would play a role in explaining centralization beyond coordination needs at the group level and support needs at the affiliate level related to the size of the subsidiary, which is controlled for in the estimations.

Another interpretation is that incentive issues related to the host environment are at play, beyond principal-agent issues at the foreign affiliate level. In particular, countries with "bad" contracting institutions will suffer more from the "hold-up problem" as defined by Williamson (1985)[35] and it will be more difficult for firms to operate in this environment, especially when the products are contract-intensive. As banking activities rely heavily on contracts, when the quality of contracting institutions in the host country is significantly lower than in the home country, multinationals may favor a more centralized organization to avoid relying on costly relationship-specific investments by the foreign affiliate (for instance contracting locally to develop IT systems) in its host country.

Finally, as mentioned in the robustness section, distance could also capture general volatility or environment uncertainty. To the extent that economic, cultural and institutional distance translate into higher environmental uncertainty, the finding that higher distance is associated with more centralization is in line with the theoretical literature which has examined the triple trade-off coordination-adaptation-specialization (Dessein and Santos, 2006; Alonso et al., 2008). Indeed, when co-

[35]See Nunn and Trefler, 2014, for a review of papers on domestic institutions as a source of comparative advantage.

ordination needs within the organization become important - which is likely to be the case for large multinationals - environmental uncertainty should lead to centralization at the top of the hierarchy, to reduce mis-coordination costs. In such case, local information is transmitted vertically up the hierarchy and the principal (headquarters) take the decision. In particular, macroeconomic uncertainty, both in terms of economic cycle but also in terms of weak institutional framework might lead the headquarters to favor an organization where control is kept at the top.

The results suggest that institutional weakness and economic uncertainty in the host environment *per se* may actually be more potent factors than the information and bias channel in explaining centralization.

Hypothesis 2 suggested that the use of soft information locally was associated with lower centralization (higher decentralization). Empirical findings lend support to this hypothesis, especially with respect to managers' use of information from their personal network, which is negatively and significantly associated with centralization, both with respect to SMEs and corporate loans' screening, and is robust to the inclusion of firm and host country controls. This is consistent with theoretical findings (Stein, 2002) as well as with empirical findings by Petersen and Rajan (2002), Liberti (2004) and Liberti and Mian (2009). Although the analysis aimed at finding robust correlations, rather than identifying causal effects, it is worth mentioning that there is potential reverse causality between the use of soft information and centralization. In this scenario, organizational structure would determine which type of information (hard or soft) is primarily used by relationship managers or credit officers. For instance individuals who receive more authority would rely relatively more on soft information compared to individuals in more centralized organizations given the difficulty to communicate soft information up the hierarchy. It is indeed what Stein (2002) suggests, although the direction of the causality is not clear, as banks relying more *ex-ante* on soft information would prefer to decentralize (use of soft information causes decentralization), and at the same time decentralization increases managers' incentives to acquire soft information as they have authority over how capital is allocated in their own unit (decentralization causes use of soft information). Empirically, research by Liberti (2004) and Liberti and Mian (2009) have shown how greater hierarchical or geographical distance between the information collecting agent and the loan approving officer (or lesser authority delegated to the agent) leads to less reliance on subjective information and more on objective information. In the context of multinational groups, and the relation between foreign affiliates and their headquarters, one could argue that headquarters decide on the optimal degree of transfer of authority to foreign affiliates only after having

observed how much hard versus soft information is produced in a given host country environment.[36] Furthermore, it is likely that multinationals first make strategic decisions such as loan portfolio allocation and use of credit scoring before deciding on an organizational structure for the foreign affiliate. As such given the nature of the variables I use as proxies for reliance on soft information, it is probable that the potential causal effect goes from reliance on soft information to centralization than the reverse. However, once an organizational structure is set, higher transfer of autonomy to the foreign affiliates (lower centralization) should lead to higher managerial incentives and efforts to acquire soft information.

3.7.2 Implications of the research

Overall, the results have shown that:

(1) Availability of information, both in terms of experience of the headquarters and quality and quantity of local information, is significantly and robustly associated with centralization.

The implication for empirical research of this finding is that more care needs to be taken to integrate this information variable, as it is often absent in studies in the field of international business and strategy focusing on headquarters-subsidiaries relations (Gupta and Govindarajan, 2000, Luo, 2003, Nell and Ambos, 2013). Indeed, while this literature examines knowledge flows inside the firm it does not take into account the availability of information in the host environment (external to the firm), which may influence the quality and intensity of these internal knowledge flows.

(2) The local environment and more specifically the environmental distance between home and host countries is a potent factor shaping organizational structure.

In particular, an interesting finding is that multinationals adopt a centralized organization when the local host environment is very different from the home environment, even after controlling for coordination needs, while a coordination/adaptation trade-off would suggest that a decentralized organization should be favored by the headquarters in order to adapt to (very different) local conditions. In other words, this research suggests that centralization can be optimal, even when adaptation is important. One implication for research of this finding is that the theoretical models of transfer of authority reviewed in the previous section should pay more attention to the role of environmental uncertainty on transfer of authority, as they have been mainly preoccupied with incentive considerations and principal-agent issues, while

[36]If this is the case, it would also imply that the amount of authority transferred to foreign affiliates depends on the environmental conditions of their host countries, and therefore that some foreign affiliates are delegated more authority than others.

this research suggests that local environment plays a role in the decision to centralize, beyond scale economies and agency issues.

In terms of managerial implications, the results suggest that organizational alignment is needed between use of information and autonomy given to foreign affiliates. This implies that managers should take into account the conditions in their external host environment, and in particular the quantity and quality of information available locally, when designing an organizational structure for their foreign affiliates.

Finally, in terms of policy implications, these results may suggest, once more, the important need to reinforce local institutions and to increase transparency and availability of information locally, via the development of credit reference bureaus. If institutional distance is reduced and organizations become more decentralized, this may have positive effects for host banking markets. Indeed, foreign affiliates, depending less on their headquarters for organizational processes, may be better able to adapt their products or services to local needs, to incorporate more rapidly new information and to develop innovations based on the local context. This is particularly important in the banking sector in sub-Saharan Africa given the large unbanked population and the lack of specific banking products offered to lower-income individuals, especially by foreign banks.

3.7.3 Limitations

Small sample size and external validity. The first type of limitation of this study is related to the small number of observations, which limits the number of controls that can be included and the extent to which one can conduct econometric analyses. In addition, and as mentioned previously, the small sample size raises questions about the external validity of the research. Sub-Saharan Africa was chosen given that it constitutes an extreme case where the asymmetry of demand and environmental conditions are likely to be more acute, therefore exacerbating the potential influence of the environment on the organizational structure. However, this raises the question of whether these results are generalizable to other regions of the world. If the results are mainly related to the degree of institutional or economic development of Africa, and the quantity and quality of information available in these markets, the relation between centralization, environmental distance and information should also be observed in other settings. However, if the results are mainly related to specific African factors which are partly captured by the measures of institutional, economic and cultural environment then the external validity may be limited. In this case, further research incorporating additional data collection would be welcome to examine whether the relation between centralization and

environmental distance holds in non-African contexts.

Quality of proxies. The second type of limitation is related to the use of proxies, in particular to measure managers' biases. First, the fact that there is little evidence of potential managers' biases at the foreign affiliates' level being associated with the strength of headquarters' control might be reassuring as far as organizational efficiency is concerned. However, it is not clear whether this is due to the non-existence of such biases, to the fact that they are not concentrated at the foreign affiliates' senior management level, therefore not captured by the variables used, or even whether this is due to headquarters' blindness towards the potential existence of such biases. In addition, the fact that the measure of centralization focuses on dependence over headquarters for operational processes, rather than on decentralization of key decisions, may make identification of the relation between decentralization of authority and individual (managers) specific characteristics more difficult. Indeed, given that risk management procedures or software for lending, for instance, are imposed in a uniform fashion across or within group affiliates, whereas delegation of authority on specific decisions may depend more strongly on the individuals who are managing the foreign affiliate. Finally, there are potential reverse causality between the composition of the top management and centralization, which are more severe than between centralization and parent group's experience in Africa (the "information channel"). Indeed, it is possible that the composition of the top management is driven by *ex-ante* organizational preferences for centralization. In this case, organizations would first decide on the degree of authority to transfer to foreign affiliates, and then choose to place less biased (i.e. expatriates) top managers. That said, the potential for reverse causality is less acute for the variable capturing the expatriate composition of top management than for the CEO dummies, as in the majority of the cases decisions regarding top managers recruitment were mainly made at the foreign affiliate level[37] , and therefore less likely to be determined by headquarters' *ex-ante* preferences for centralization.

Potential measurement errors. Furthermore, this research may suffer from potential measurement error in the dependent variable and in some regressors of interest. Concerning the first one, if the measurement error is "classical", that is, the dependent variable is measured with random errors, this simply reduces precision of the estimates and results in higher standard errors but does not lead to bias. If measurement error concerns the measure of distance, or the variables indicating reliance on soft information, then the regression coefficient of the variables

[37]For 70% of the foreign bank affiliates surveyed, hiring decisions concerning senior managers such as CFO, COO or heads of credit or risk, were mostly taken by the foreign affiliates' top management team.

of interest should be biased towards zero ("attenuation bias", Angrist and Pischke, 2009). If this is the case, it would mean that the significance and magnitude of the effects observed are conservative estimates. A more serious concern is if measurement error is non-classical, that is, measurement error is correlated with the true variables. It could be the case, for instance, if managers at Global MNB systematically under or over-reported the extent of their dependence on their group for business operations which are components of the centralization of process. If it was the case, identification could be done through the existence of an auxiliary dataset containing correctly measured observations (Chen, Han and Tamer, 2005)[38], or the use of instrumental variable techniques for discrete or continuous regressors (see Hu and Schennach, 2008, for the latter approach and a review of previous methods). However, the existence of such auxiliary dataset or of good instruments is more the exception than the rule. With these limitations in mind, the fact that the control variables have the expected sign and that the results are broadly consistent with the theoretical and empirical literature should provide reassurance about the quality of the measure of centralization.

3.8 Conclusion

Using detailed data from a survey on commercial banks in fourteen sub-Saharan African countries, this research has examined how centralization of processes at the headquarters level inside multinational banks was influenced by environmental distance between headquarters and foreign affiliates and by the nature of the information on projects available in the host country. The geographic context of sub-Saharan Africa and that of banking were particularly appropriate settings to examine this issue, exacerbating the potential manifestation of the information and bias channel. I found evidence of a positive and significant association between the measures of environmental distance and centralization. The results have suggested that one of the channels through which distance influences centralization is the degree of information the parent group has on the host environment. However, distance was still a significant regressor even after controlling for this channel, suggesting that there are also other operative pathways through which distance influences centralization. Another significant result of this research is the negative association between

[38]To solve the identification problem, Chen, Han and Tamer (2005) require the existence of an auxiliary data-set that contains information about the conditional distribution of the true variables given the mis-measured variables. Their main assumption requires that the conditional distribution of the true variables given the mis-measured variables is the same in the primary and auxiliary data.

reliance on qualitative, "soft", information and centralization, consistent both with the theoretical and empirical literature reviewed. The results have thus provided evidence of robust and significant correlations between organizational structure (degree of centralization) and firm factors (acquisition and processing of information inside banks) as well as environmental factors (institutional, cultural and economic environment). As such, a multinational will try to optimally adapt its organizational structure to a series of internal and external factors, to obtain the best performance in a specific setting.

The analysis in this chapter can be extended in several directions. Given that one of the limitation of this work is the small sample size and the difficulty to control for foreign affiliates or parent group fixed effects, a further avenue for research would be to obtain more data at the group level, in order to make intra-group comparisons to examine the relation between local environment and centralization, thus avoiding omitted variables issues at the banking group level.

Furthermore, this research has relied on proxies to examine the relation between managers' biases at the subsidiary level and centralization. As such, another avenue for research would be to examine more in detail the potential existence of biases and mis-alignment of interests between headquarters and subsidiaries. Such work could be conducted via in-depth qualitative interviews or case studies examining the relation between top managers of several foreign affiliates of a multinational enterprise and their superiors at the global headquarters to examine the potential existence of agency issues and their impact on organizational structure. Some work has already been done in that direction in the international management literature, such as Birkinshaw, Holm, Thilenius and Arvidsson (2000) research on the consequences of perception gaps on the headquarters-subsidiaries relationship, specifically in terms of headquarters' control and subsidiaries' cooperation. However, more work should be done to understand how these perception gaps and biases vary over time and across different environments, and to what extent they depend on the human capital (both in terms of nationality and experience) of managers in charge of the foreign subsidiaries. Finally, another avenue for research would be to examine more closely the link between organizational structure, environment and firm performance, to examine whether mis-alignment between organizational structure and environmental circumstances leads to lower performance. Given that for many banks in the sample income statement information is not available, it was not possible to analyze the relation between organizational structure and bank performance. However, recent empirical research (Thomas, 2011) suggests that organizational structure affects product market outcomes and firm performance. In particular, Thomas (2011) has

shown that in decentralized organizations local foreign subsidiaries are manufacturing too many products, and that increasing standardization (reducing the number of products manufactured in each country of operation) would reduce total costs and increase firm-level profits. Further empirical research based on firm data with variation both in organizational structure and host environment would be needed to better understand the relation between organizational form and performance, and how it is mediated by local conditions.

Appendix 3.A

Table 1: **Literature summary**

Papers	**Uncertain environment**	**Incentives**	**Communication**	**Trade-off**	**Centralization**	**Decentralization**
Aghion-Tirole (1997)	No	Yes	Strategic	Loss of control vs. initiative.	When the principal is well informed.	When decisions are minor or the principal is uninformed (the agent is well informed and can be trusted). Formal delegation.
Baker, Gibbons and Murphy (1999)	No	Yes	Strategic	Loss of control (accepting some bad decisions) vs. initiative (search intensity).	When the principal is informed and his temptation to renege is too high.	Both informed and uninformed principal delegates (informally) to the agent, provided the probability of a good outcome for the principal is sufficiently high and private costs to the principal of a bad outcome are sufficiently low.
Dessein (2002)	Yes	Yes	Strategic	Informed but biased decision (loss of control) vs. noisy but unbiased decision (loss of information).	When bias is large and environment uncertainty sufficiently small (high ratio bias to uncertainty).	Delegate when environment is uncertain but bias is small (low ratio bias to uncertainty).
Stein (1997, 2002)	No	Yes	Strategic	Higher-powered research incentive vs. loss of internal capital allocation mechanism	When information can be hardened.	When information is soft.
Dessein and Santos (2006); Alonso et al. (2008)	Yes	No (DS, 2006); Yes (Alonso et al. , 2008)	Costly (DS, 2006); Costly and Strategic (Alonso et al., 2008)	Triple trade-off coordination-adaptation-specialization.	In volatile environment, centralize to obtain higher adaptiveness, without increasing miscoordination costs (DS, 2006). Centralize when bias is large and coordination important (Alonso et al., 2008).	When mis-coordination costs become too large, decentralize (coordinate ex-ante) and benefit from higher specialization (at the cost of minimal responsiveness to local environment).

Table 2: **Variable definitions**

Variable	Description	Source
	Dependent variables	
Centralization of Processes (COP index)	Unweighted average of the scores on the 5 business operations items (unstandardized)	Bank survey Question 6
CENTPROCESS	First component of the 5 business operations items	Bank survey Question 6
	Independent variables	
Institutional Distance with Global HQ	Difference between the unweighted average of the 5 WGI governance indicators (Political Stability and Absence of Violence, Government Effectiveness, Regulatory Quality, Rule of Law, Control of Corruption) in the country where the global HQ is located and the host country.	Worldwide Governance Indicators, The World Bank
Institutional Distance with direct HQ	Difference between the unweighted average of the 5 WGI governance indicators in the country where the direct (intermediate) HQ is located and the host country.	Worldwide Governance Indicators, The World Bank
Economic Distance with Global HQ	Difference between the GDP per capita in PPP ('000 international dollar) in the global HQ country and the host country.	World Economic Outlook, IMF
Economic Distance with direct HQ	Difference between the GDP per capita PPP ('000 international dollar) in the country where the direct (intermediate) HQ is located and the host country.	World Economic Outlook, IMF
Cultural Distance with Global HQ	Composite index of cultural distance between the country where the global HQ is located and the host country along six cultural dimensions.	Culture Compass survey, The Hofstede Centre

Continued on next page

Table 2 – continued from previous page

Variable	Description	Source
Cultural Distance with direct HQ	Composite index of cultural distance between the country where the direct (intermediate) HQ is located and the host country along six cultural dimensions.	Culture Compass survey, The Hofstede Centre
SME loans, % total loans	Percentage of loans allocated to the SME segment in bank's total loan portfolio.	Bank survey
Use info from personal network - SME	Dummy equals 1 if the bank managers rely on their personal network to gain information on SME borrowers.	Bank survey
Use credit scores for SMEs	Dummy equals 1 if the bank uses credit scoring for SME loan appraisal.	Bank survey
Corporate loans, % total loans	Percentage of loans allocated to the Corporate segment in bank's total loan portfolio.	Bank survey
Use info from personal network - Corpo	Dummy equals 1 if the bank managers rely on their personal network to gain information on corporate borrowers.	Bank survey
Use credit scores for corporates	Dummy equals 1 if the bank uses credit scoring for corporate loan appraisal.	Bank survey
	Bank and host country controls	
Parent group's experience in SSA	Number of subsidiaries of the General Ultimate Owner (i.e. parent bank) located in sub-Saharan Africa.	Bankscope and banks' websites
Parent group's size (total asset)	Log of total book assets of a foreign affiliate's parent group.	BankScope and banks' annual reports
Foreign affiliate's size (total asset)	Log of total book assets of a foreign affiliate.	BankScope and banks' annual reports
Age of the foreign affiliate	Years since date of incorporation.	Banks' websites

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Table 2 – continued from previous page

Variable	Description	Source
Subsidiary dummy	Dummy equals 1 if the organizational form of the foreign bank's affiliate is a subsidiary, and 0 if it is a branch.	Bank survey
Entry by acquisition	Dummy equals 1 if the group entered the host country through acquisition of an existing bank, 0 if it was a greenfield operation.	Bank survey
Expatriates in top management, in%	Percentage of top managers (CEO, COO, CFO, head of credit) who are expatriates.	Bank survey
CEO is expat from home country	Dummy equals 1 if the CEO of the subsidiary or branch is an expatriate from the home country of the parent's group.	Bank survey
CEO is expat from third country	Dummy equals 1 if the CEO of the subsidiary or branch is an expatriate from a third country (neither home nor host country).	Bank survey
Directly report to intermediate HQ	Dummy equals 1 if the foreign affiliate directly reports to intermediate (i.e. not global) headquarters.	Bank survey
African MNB	Dummy equals 1 if the parent group's home country is in Africa (including North Africa but excluding South Africa).	BankScope and banks' websites
Global MNB	Dummy equals 1 if the parent group's home country is a developed country.	BankScope and banks' websites
Emerging MNB	Dummy equals 1 if the parent group's home country is an emerging country, including South Africa.	BankScope and banks' websites
HHI (lagged)	Herfindahl-Hirschmann Index of market concentration, based on banks' total assets, in 2012 (lagged by one year from the survey's year).	Own calculations, based on BankScope data
CRB	Dummy equals 1 if the host country has licensed Credit Reference Bureaus.	Central Bank websites

Continued on next page

Table 2 – continued from previous page

Variable	Description	Source
East Africa	Dummy equals 1 if the host country is located in east Africa (Kenya, Tanzania and Uganda in the sample).	
West Africa	Dummy equals 1 if the host country is located in west Africa (Burkina Faso, Ivory Coast, Ghana, Mali and Senegal in the sample).	
Central Africa	Dummy equals 1 if the host country is located in central Africa (Congo, Equatorial Guinea, Chad and Cameroon in the sample).	

Table 3: **Analysis of non-response bias - Means comparison of participant vs. non-participant banks**
This table presents an analysis of non-response bias, using T-test to compare the means of several key financials of participant and non-participant commercial banks in the survey in Tanzania, Kenya and Ghana. Financials are from the BankScope database, for the last year available. NS: Non Significant.

Financials	**Participant**		**Non-Participant**		**Difference in Means**
	Mean	Obs.	Mean	Obs	T-test
			ALL BANKS		
Total Assets (millions USD)	710	48	536	28	0.88^{NS}
Net Income (thous. USD)	20415	48	15077	28	0.67^{NS}
Net Interest Margin (%)	7.9	47	8.3	27	-0.54^{NS}
Total Capital Ratio (%)	24.0	36	23.7	16	0.05^{NS}
Number of employees	406	20	458	11	-0.26^{NS}
			FOREIGN BANKS		
Total Assets (millions USD)	577	24	447	17	0.70^{NS}
Net Income (thous. USD)	14154	24	15541	17	-0.17^{NS}
Net Interest Margin (%)	7.7	23	9.2	16	-1.04^{NS}
Total Capital Ratio (%)	26.4	22	20.5	12	0.73^{NS}
Number of employees	274	13	532	9	-1.32^{NS}

Table 4: **Selected statistics of the sample of banks**
This table presents selected statistics of banks in the sample, grouped in three categories: Domestic banks, and foreign affiliates of African MNB, Global MNB and Emerging MNB. The statistics are group averages, unless stated otherwise (frequencies and percentages).

	Domestic banks	African MNB	Global MNB	Emerging MNB	All Banks
Frequencies (nb of banks in the sample)	36	14	19	8	77
Age (years since incorporation, avg)	24	8	39	37	27
Total assets (millions USD, avg)	751	237	660	694	633
Number of employees (avg)	1022	233	650	243	705
Number of branches (avg)	40	13	26	10	29
Entry mode greenfield (%)	.	64	63	75	63

Table 5: **Assessing internal consistency**
This table presents the results of univariate regression analysis with centralization of process (Centralization of Process (COP), unstandardized) as a regressor. Variable definitions are provided in Table 2 in the Appendix. Standard errors are robust to heteroskedasticity and adjusted for clustering at the banking group level with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

VARIABLES	Frequency communication with HQ (1)	Frequency training from HQ (2)
Centralization of Process	0.703**	0.925**
	(0.303)	(0.350)
Observations	38	32
R-squared	0.153	0.201
Number of clusters	18	15

Table 6: **Centralization of processes: Descriptive statistics**
Note: The measure is calculated as an unweighted average of the 5 business operations items (unstandardized).

Variable	**Obs.**	**Mean**	**Std. Dev.**	**Min**	**max**
Centralization of Processes					
African MNB	13	1.74	.88	.20	3.00
Global MNB	18	2.33	.47	1.00	3.00
Emerging MNB	7	1.69	.50	1.00	2.40
All banks	38	2.01	.70	.20	3.00

Table 7: **Cross-correlation table - Centralization of Processes (Obs=38)**

Variables	Marketing	IT systems	Operational risk techniques	Credit risk management	Lending technology
Marketing	1.00				
IT systems	0.23	1.00			
Operational risk mgt	0.66	0.58	1.00		
Credit risk mgt	0.52	0.60	0.80	1.00	
Lending technology	0.43	0.44	0.63	0.61	1.00

Table 8: **Principal components/correlation**
This table presents the principal component analysis of the 5 business operations items of the centralization of processes variable (standardized). 38 observations, 5 components (unrotated).

Component	**Eigenvalue**	**Difference**	**Proportion (%)**	**Cumulative (%)**
Component 1	3.239	2.456	0.648	0.648
Component 2	0.782	0.273	0.157	0.804
Component 3	0.509	0.209	0.102	0.906
Component 4	0.301	0.132	0.060	0.966
Component 5	0.169	.	0.034	1.000

Table 9: **Factor Loadings of the first and second component**

	Factor loading	
	First Comp.	Second Comp.
Marketing	0.701	-0.632
IT systems	0.702	0.605
Operational risk management	0.926	-0.089
Credit risk management	0.894	0.087
Lending technology	0.774	0.029

Table 10: **Summary statistics of key variables**
This table presents summary statistics of key variables by group of banks: foreign affiliates of African MNB, Global MNB and Emerging MNB. The statistics are group averages, unless stated otherwise (frequencies and percentages).

	African MNB		**Global MNB**		**Emerging MNB**		**All banks**	
	Obs	Mean	Obs	Mean	Obs	Mean	Obs	Mean
CENTPROCESS	13	-0.71	18	0.84	7	-0.85	38	-0.68
Institutional Distance	14	-0.58	19	1.92	8	0.29	41	0.75
Economic Distance	14	1.18	19	35.56	8	6.16	41	18.09
Cultural Distance	14	1.00	14	3.29	8	1.61	36	2.03
Parent experience in SSA	14	12.14	19	10.79	8	10.38	41	11.17
CEO is expat from home country	14	29%	19	47%	7	57%	40	43%
CEO is expat from third country	14	57%	19	32%	7	29%	40	40%
Expats in top management	14	38%	19	43%	7	54%	40	43%

Table 11: **Correlation table - Centralization and distance (Obs=33)**

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Centralization (CENTPROCESS)	1.00																			
2	Institutional Distance	0.59	1																		
3	Economic Distance	0.47	0.89	1																	
4	Cultural Distance	0.34	0.56	0.69	1																
5	Experience in SSA	0.28	-0.06	-0.08	0.01	1															
6	Parent group's size	0.52	0.74	0.75	0.71	0.2	1														
7	CEO home country expat	-0.03	-0.12	-0.13	-0.14	-0.27	0.07	1													
8	CEO third country expat	-0.02	-0.02	-0.01	-0.17	0.29	-0.08	-0.65	1												
9	Expat in top management	-0.09	-0.29	-0.31	-0.09	-0.13	0.04	0.63	-0.14	1											
10	Entry by acquisition	0.21	0.02	-0.09	-0.13	-0.11	0	0	0.17	0.02	1										
11	Subsidiary dummy	-0.11	-0.17	-0.09	0.09	0.32	0.12	-0.07	0.22	0	0.18	1									
12	Foreign affiliate's Size	0.15	0.22	0.22	0.37	0.39	0.45	-0.21	-0.04	-0.17	0.19	0.31	1								
13	Foreign affiliate's Age	0.21	0.62	0.5	0.43	-0.05	0.56	0.04	-0.32	-0.14	-0.05	-0.19	0.4	1							
14	HHI (lagged)	0.28	0.38	0.25	0.06	-0.06	0.29	0.17	-0.03	-0.08	0.25	0.15	-0.07	0.14	1						
15	East Africa	0.01	0.02	-0.12	-0.36	0.13	-0.28	-0.27	0.22	-0.28	-0.05	-0.18	-0.2	-0.06	-0.32	1					
16	West Africa	-0.07	-0.13	0.06	0.38	-0.13	0.22	0.19	-0.17	0.32	-0.05	0.17	0.22	-0.02	0	-0.93	1				
17	Central Africa	0.16	0.28	0.16	-0.04	-0.02	0.2	0.23	-0.15	-0.09	0.25	0.04	-0.04	0.21	0.89	-0.25	-0.12	1			
18	Regional African MNB	-0.31	-0.78	-0.71	-0.62	0.12	-0.74	-0.09	0.19	-0.04	0.09	0.2	-0.16	-0.61	-0.17	0.18	-0.13	-0.14	1		
19	Global MNB	0.51	0.87	0.95	0.74	-0.07	0.8	-0.09	-0.06	-0.23	-0.04	-0.06	0.31	0.53	0.34	-0.22	0.14	0.22	-0.65	1	
19	Emerging MNB	-0.24	-0.1	-0.29	-0.15	-0.06	-0.07	0.22	-0.15	0.33	-0.05	-0.18	-0.18	0.1	-0.2	0.05	-0.02	-0.09	-0.42	-0.42	1

Table 12: **Institutional Distance and Centralization of Processes**
This table presents the results of OLS regression of centralization of processes (CENTPROCESS). Variable definitions are provided in Table 2 in the Appendix. Regional dummies are East and West Africa. Standard errors are robust to heteroskedasticity and adjusted for clustering at the banking group level (18 clusters) with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Baseline	Adding controls	Channel 1: Acquisition of local info	Channel 2: Managers' bias		All variables
				CEO	Top Managers	
	(1)	(2)	(3)	(4)	(5)	(6)
Institutional Distance	0.756**	0.858**	0.899**	0.888**	0.857*	0.934***
	(0.270)	(0.363)	(0.318)	(0.391)	(0.417)	(0.265)
Parent group's experience in SSA			0.137***			0.160**
			(0.039)			(0.059)
CEO is home country expat				0.040		-0.455
				(0.654)		(0.855)
CEO is third country expat				-0.258		-1.628**
				(0.950)		(0.750)
Expatriates in top management, in %					-0.013	
					(1.025)	
Entry by acquisition		0.599	1.139	0.645	0.600	1.564
		(0.657)	(0.662)	(0.783)	(0.655)	(1.000)
Subsidiary dummy		-0.759	-1.654**	-0.652	-0.761	-0.971
		(0.600)	(0.603)	(0.647)	(0.608)	(0.964)
Foreign affiliate's size (total asset)		0.094	-0.267	0.101	0.094	-0.392
		(0.247)	(0.211)	(0.282)	(0.254)	(0.240)
Age of the foreign affiliate		-0.006	-0.001	-0.008	-0.006	-0.011
		(0.016)	(0.015)	(0.017)	(0.017)	(0.012)
HHI (lagged)		5.686*	5.999*	5.732*	5.704*	127.936
		(2.802)	(3.063)	(2.940)	(3.179)	(118.445)
Observations	38	38	38	38	38	38
R-squared	0.263	0.342	0.498	0.346	0.342	0.750
Regional dummies		✓	✓	✓	✓	✓
Host country dummies						✓

Table 13: **Economic Distance and Centralization of Processes**
This table presents the results of OLS regression of centralization of processes (CENTPROCESS). Variable definitions are provided in Table 2 in the Appendix. Regional dummies are East and West Africa. Standard errors are robust to heteroskedasticity and adjusted for clustering at the banking group level (18 clusters) with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Baseline	Adding controls	Channel 1: Acquisition of local info	Channel 2: Managers' bias		All variables
				CEO	Top Managers	
	(1)	(2)	(3)	(4)	(5)	(6)
Economic Distance	0.048**	0.043***	0.048***	0.045**	0.043**	0.046***
	(0.017)	(0.014)	(0.009)	(0.017)	(0.017)	(0.010)
Parent group's experience in SSA			0.143***			0.163***
			(0.041)			(0.056)
CEO is home country expat				0.043		-0.621
				(0.722)		(1.023)
CEO is third country expat				-0.203		-1.784*
				(1.053)		(0.940)
Expatriates in top management, in %					-0.026	
					(1.061)	
Entry by acquisition		0.759	1.340*	0.800	0.760	1.826*
		(0.726)	(0.706)	(0.888)	(0.731)	(0.989)
Subsidiary dummy		-1.083	-2.008**	-1.006	-1.086	-1.114
		(0.674)	(0.703)	(0.731)	(0.653)	(0.859)
Foreign affiliate's size (total asset)		0.103	-0.279	0.110	0.102	-0.400*
		(0.286)	(0.269)	(0.322)	(0.292)	(0.197)
Age of the foreign affiliate		0.001	0.006	-0.001	0.001	-0.005
		(0.013)	(0.012)	(0.012)	(0.013)	(0.012)
HHI (lagged)		7.506*	7.588**	7.574*	7.543**	141.954
		(3.676)	(3.462)	(3.811)	(2.978)	(123.954)
Observations	38	38	38	38	38	38
R-squared	0.221	0.305	0.474	0.308	0.305	0.738
Regional dummies		✓	✓	✓	✓	✓
Host country dummies						✓

Table 14: **Cultural Distance and Centralization of Processes**
This table presents the results of OLS regression of centralization of processes (CENTPROCESS). Variable definitions are provided in Table 2 in the Appendix. Regional dummies are East and West Africa. Standard errors are robust to heteroskedasticity and adjusted for clustering at the banking group level (18 clusters) with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	Baseline	Adding controls	Channel 1: Acquisition of local info	Channel 2: Managers' bias		All variables	Robustness: non-missing Hofstede
				CEO	Top Managers		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Cultural Distance	0.457*	0.531	0.539**	0.588	0.548	0.825***	0.797**
	(0.240)	(0.306)	(0.229)	(0.368)	(0.350)	(0.207)	(0.301)
Parent group's experience in SSA			0.131***			0.137***	0.120
			(0.038)			(0.047)	(0.082)
CEO is home country expat				0.595		-0.239	-0.328
				(0.960)		(0.871)	(0.923)
CEO is third country expat				0.177		-1.222*	-1.136
				(0.953)		(0.648)	(0.761)
Expatriates in top management, in %					0.520		
					(1.172)		
Entry by acquisition		0.827	1.374*	0.799	0.799	1.737*	1.723*
		(0.810)	(0.764)	(0.932)	(0.801)	(0.853)	(0.841)
Subsidiary dummy		-2.212**	-2.939***	-2.315**	-2.246**	-1.136	-1.412
		(0.789)	(0.911)	(0.923)	(0.938)	(1.031)	(1.123)
Foreign affiliate's size (total asset)		0.259	-0.155	0.330	0.291	-0.378	-0.317
		(0.315)	(0.235)	(0.336)	(0.346)	(0.339)	(0.318)
Age of the foreign affiliate		-0.005	0.004	-0.006	-0.005	-0.014	-0.012
		(0.013)	(0.011)	(0.013)	(0.014)	(0.011)	(0.015)
HHI (lagged)		16.366**	17.026*	16.766**	16.709**	132.127	-14.437
		(7.205)	(8.544)	(7.597)	(7.229)	(107.556)	(19.563)
Observations	33	33	33	33	33	33	24
R-squared	0.118	0.373	0.527	0.386	0.377	0.746	0.685
East Africa dummy		✓	✓	✓	✓	✓	✓
Host country dummies						✓	✓

Table 15: **Correlation table - Centralization and information on borrowers (Obs=33)**

		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
1	Centrtalization (CENTPROCESS)	1.00																			
2	SME loans, % total	-0.14	1.00																		
3	Info personal network (SME)	-0.34	0.12	1.00																	
4	Credit scores for SMEs	-0.28	-0.12	0.02	1.00																
5	Corporate loans, % total	0.16	-0.73	-0.06	-0.07	1.00															
6	Info personal network (Corpo)	-0.21	0.08	0.82	0.12	-0.02	1.00														
7	Credit scores for corpo	-0.27	-0.07	0.09	0.92	-0.08	0.19	1.00													
8	CRB	-0.30	0.26	0.50	-0.03	-0.04	0.32	0.08	1.00												
9	Experience in SSA	0.23	-0.15	-0.16	-0.08	0.07	-0.15	-0.05	0.16	1.00											
10	Parent group's size	0.40	-0.45	-0.49	0.03	0.17	-0.33	-0.05	-0.65	0.05	1.00										
11	Global MNB	0.41	-0.34	-0.58	-0.05	0.03	-0.40	-0.12	-0.67	-0.18	0.81	1.00									
12	Emerging MNB	-0.16	0.19	0.30	0.08	0.00	0.33	0.11	0.29	-0.03	-0.03	-0.43	1.00								
13	Entry by acquisition	0.13	-0.41	0.10	0.20	0.28	0.15	0.25	-0.16	-0.15	0.07	0.08	-0.09	1.00							
14	Subsidiary dummy	-0.10	-0.59	0.01	0.45	0.39	-0.01	0.41	-0.16	0.34	0.17	-0.02	-0.21	0.22	1.00						
15	Foreign affiliate's Size	0.08	-0.45	-0.16	0.17	0.21	-0.03	0.27	0.05	0.33	0.32	0.22	-0.16	0.30	0.37	1.00					
16	Foreign affiliate's Age	0.18	-0.18	0.09	-0.04	0.01	0.27	-0.09	-0.15	-0.12	0.46	0.43	0.14	-0.02	-0.18	0.29	1.00				
17	HHI (lagged)	0.18	-0.10	-0.48	0.10	-0.06	-0.32	0.07	-0.82	-0.09	0.51	0.55	-0.27	0.25	0.16	0.00	0.02	1.00			
18	East Africa	0.01	0.24	0.39	-0.12	-0.05	0.21	-0.05	0.63	0.22	-0.48	-0.45	0.14	-0.03	-0.25	-0.14	-0.07	-0.48	1.00		
19	West Africa	-0.08	-0.18	-0.09	0.10	0.08	-0.04	0.00	-0.14	-0.18	0.19	0.13	0.00	-0.22	0.18	0.11	0.03	-0.21	-0.73	1.00	
20	Central Africa	0.13	-0.05	-0.38	-0.01	0.01	-0.17	0.02	-0.61	-0.06	0.37	0.41	-0.18	0.24	0.09	-0.04	0.11	0.78	-0.38	-0.26	1.00

Table 16: **Soft information and Centralization of Processes**
This table presents the results of OLS regression of centralization of processes (CENTPROCESS). Variable definitions are provided in Table 2 in the Appendix. Firm controls are firm's age, size, entry by acquisition, subsidiary dummy, parent group's experience in SSA and parent group's size. Host country controls are HHI (lagged), Credit Reference Bureau dummy and two regional dummies (East Africa and West Africa). In addition, all regressions include a full set of host country dummies. Standard errors are robust to heteroskedasticity and adjusted for clustering at the banking group level with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	SME loans			**Corporate loans**		
	(1)	(2)	(3)	(4)	(5)	(6)
SME loans, % total loans	-4.798**	-3.373	-4.621**			
	(2.166)	(3.791)	(2.073)			
Use credit scores for SMEs	-1.128*	-1.398	-1.096			
	(0.623)	(1.188)	(0.964)			
Use info from personal network - SME	-2.403***	-2.282**	-2.449***			
	(0.560)	(0.817)	(0.781)			
Corporate loans, % total loans				2.620	2.831**	2.567**
				(1.510)	(1.224)	(1.206)
Use credit scores for corporates				-0.854	-0.192	0.260
				(0.796)	(1.011)	(1.173)
Use info from personal network - Corpo				-2.176***	-2.142***	-2.077***
				(0.492)	(0.513)	(0.416)
Global MNB			0.391			1.296
			(0.862)			(1.421)
Emerging MNB			0.514			-0.117
			(0.787)			(0.843)
Observations	33	33	33	38	38	38
Adjusted R-squared	0.567	0.534	0.531	0.415	0.590	0.599
Firm controls		✓			✓	✓
Host country controls		✓	✓		✓	✓
Host country dummies	✓	✓	✓	✓	✓	✓
Number of clusters	16	16	16	18	18	18

Table 17: **Robustness Test 1: Using the COP index**
This table presents the results of OLS regression of centralization of processes using the unweighted average of the scores on the 5 business operations (COP index). Variable definitions are provided in Table 2 in the Appendix. All regressions include firm controls (CEO is home country expat, CEO is host country expat, firm's age, size, subsidiary dummy, entry by acquisition, parent group's experience in SSA) and host country controls (HHI lagged and two regional dummies, East Africa and West Africa). In addition, all regressions include a full set of host country dummies. Standard errors are robust to heteroskedasticity and adjusted for clustering at the banking group level (18 clusters) with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)
Institutional Distance	0.369***		
	(0.102)		
Economic Distance		0.018***	
		(0.004)	
Cultural Distance			0.327***
			(0.079)
Observations	38	38	33
Adjusted R-squared	0.446	0.414	0.514

Table 18: **Robustness Test 2: Distance with direct HQ**

This table presents the results of OLS regression of centralization of processes (CENTPROCESS). Variable definitions are provided in Table 2 in the Appendix. Firm controls include CEO home country expat dummy, CEO host country expat dummy, firm's age, size, subsidiary dummy, entry by acquisition, parent group's experience in SSA. Host country controls include HHI lagged. Regional dummies are East Africa and West Africa. Standard errors are robust to heteroskedasticity and adjusted for clustering at the banking group level (18 clusters) with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

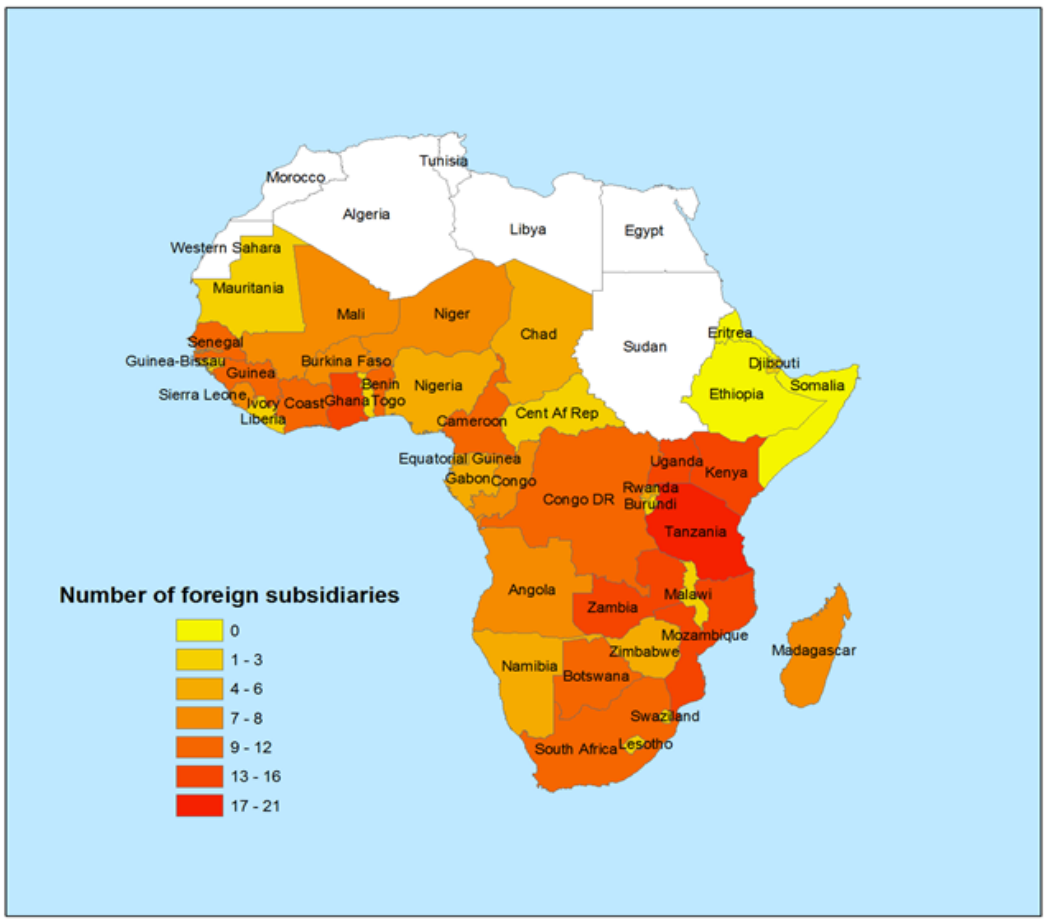
	(1)	(2)	(3)	(4)	(5)	(6)
Institutional Distance with direct HQ	0.963***	0.886**				
	(0.304)	(0.320)				
Economic Distance with direct HQ			0.070***	0.062***		
			(0.022)	(0.020)		
Cultural Distance with direct HQ					0.833**	0.400*
					(0.364)	(0.196)
Directly report to intermediate HQ	0.495	1.674**	0.837	1.802**	0.398	1.546
	(0.547)	(0.780)	(0.568)	(0.728)	(0.630)	(0.978)
Observations	38	38	38	38	33	33
Adjusted R-squared	0.207	0.303	0.173	0.262	0.126	0.348
Firm controls		✓		✓		✓
Host country controls		✓		✓		✓
Regional dummies	✓	✓	✓	✓	✓	✓

Table 19: **Robustness Test 3: Controlling for coordination needs**
This table presents the results of OLS regression of centralization of processes (CENTPROCESS). Variable definitions are provided in Table 2 in the Appendix. All regressions include HHI (lagged) as a host control as well as regional dummies (East Africa and West Africa). Standard errors are robust to heteroskedasticity and adjusted for clustering at the banking group level (18 clusters) with values in parenthesis reported beneath. *, ** and *** indicate statistical significance at the 10%, 5%, and 1% levels, respectively.

	(1)	(2)	(3)	(4)	(5)
Institutional Distance	0.806**			1.797***	1.889***
	(0.288)			(0.617)	(0.571)
Global MNB		1.706*		-4.533***	-3.613**
		(0.818)		(1.492)	(1.689)
Emerging MNB		-0.024		-2.521***	-2.202**
		(0.979)		(0.735)	(0.834)
Parent group's size (total asset)			0.348***	0.372*	0.148
			(0.111)	(0.183)	(0.254)
Parent group's experience in SSA					0.080
					(0.052)
CEO is home country expat					0.347
					(0.695)
CEO is third country expat					-0.443
					(0.679)
Observations	38	38	38	38	38
Adjusted R-squared	0.224	0.143	0.203	0.295	0.291

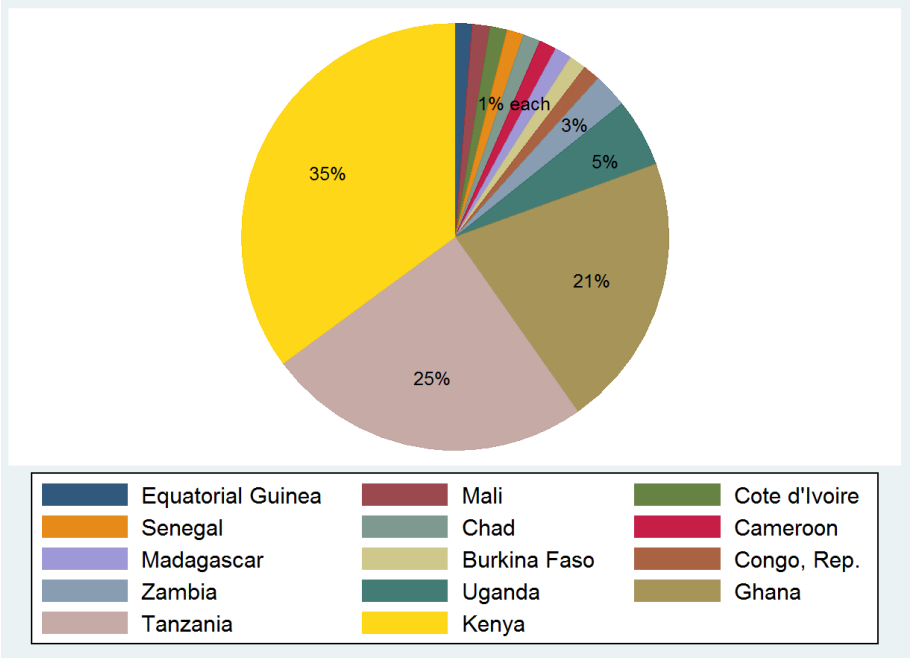
Figure 1: **Organizational fitness**

Figure 2: **Foreign Subsidiaries in sub-Saharan Africa**



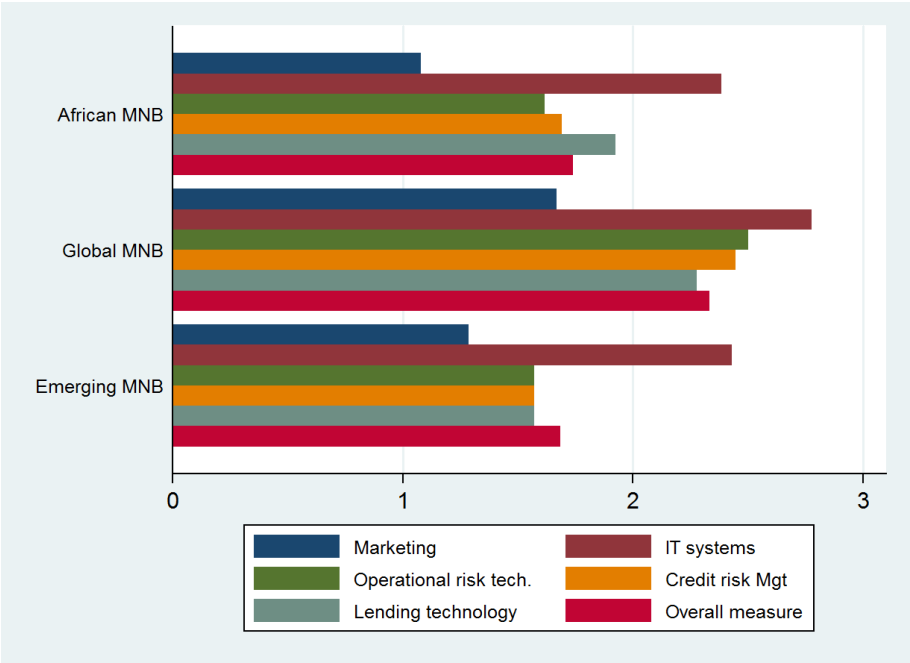
Source: Central banks' websites

Figure 3: **Distribution of banks by host countries**



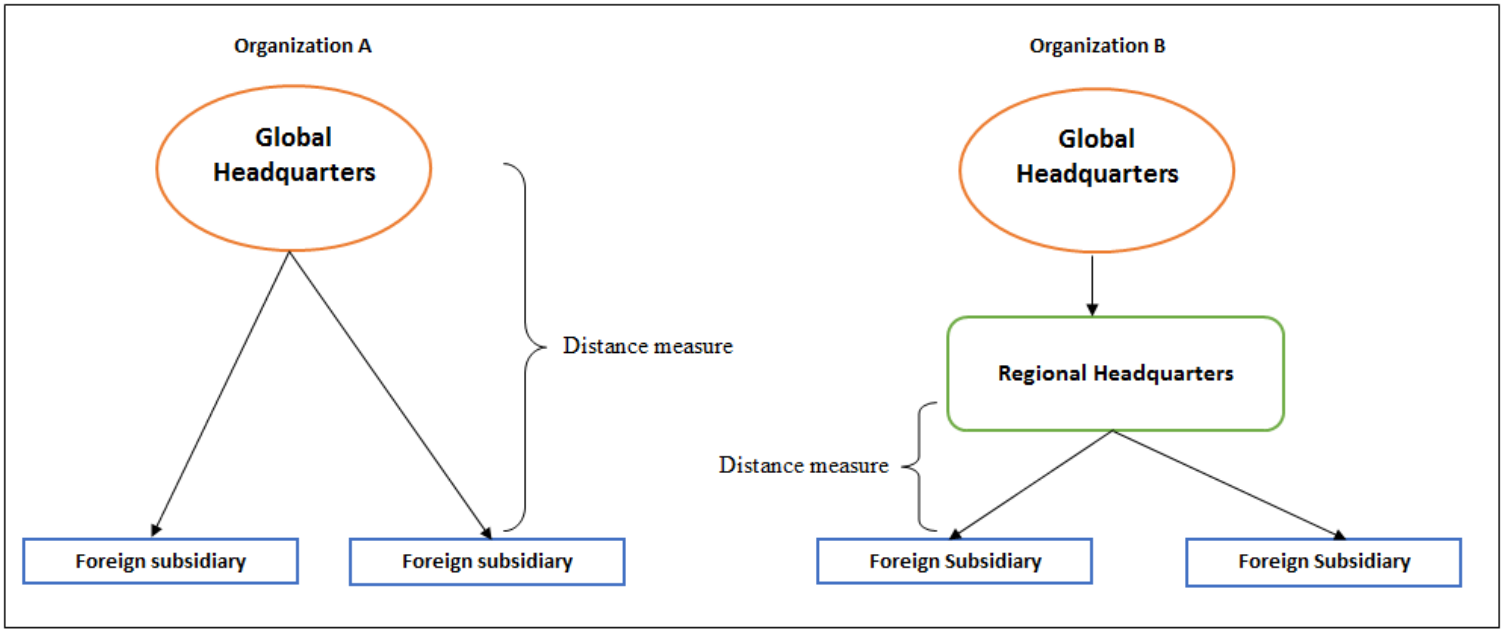
Source: Bank Survey data

Figure 4: **Components of COP index by categories of banks (unweighted)**



Source: Bank Survey data

Figure 5: **Variety of organizational structures**



Appendix 3.B

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Foreign Affiliates –Survey Questionnaire

The goal of this study is to better understand conditions for banking activities in sub-Saharan Africa and to compare these conditions with other countries that have been assessed through the same survey. The best way to obtain this data is to talk directly with bank managers. In that perspective, we are contacting managers of banks in sub-Saharan Africa to ask about their perception of the business environment and several credit risk management aspects. Results from this study will provide important feedback to the banking community and policy makers and your opinion will be highly valued. Your answers should reflect only your perception and experience of banking in your country.

Answering the questionnaire should only take 15 minutes. Your responses are voluntary and you may skip any questions you do not wish to answer. The data will be used for statistical analysis only and your personal details will remain strictly confidential. Your answers will never be associated with your name, mailing address or organization. For public dissemination of the survey results, the data will be aggregated so individual banks responses cannot be identified.

Once completed, please return this questionnaire by email to Ms Adeline Pelletier: a.g.pelletier@lse.ac.uk. If you have any question, please feel free to contact her.

Alternatively, you can fill in the questionnaire online. To take the survey, please copy and paste the URL below into your internet browser https://lse.qualtrics.com/SE/?SID=SV_9t92eB31D39wF0h

PART I: GENERAL INFORMATION

Question 1. Please indicate below the name of the bank for which you are currently working:

Question 2. Please indicate below your current position in this bank:

Question 3a. What is the organisational form of your bank in this country?

- ❍ Representative Office
- ❍ Branch
- ❍ Subsidiary

Question 3b. What was the mode of entry of your bank in this country?

- ❍ Greenfield (the structure and facilities of the bank were entirely set up by the parent)
- ❍ Joint Venture with a local partner
- ❍ Acquisition of an existing local bank

Question 3c. Please indicate the nationality of the following managers working in your branch/subsidiary:

	Local national	Home country expatriate	Third country expatriate	n.a. (position doesn't exist)
Managing Director/CEO of the branch/subsidiary	❍	❍	❍	❍
Head of finance (CFO)	❍	❍	❍	❍
Head operation (COO)	❍	❍	❍	❍
Head of credit risk/management	❍	❍	❍	❍

PART II: KNOWLEDGE FLOWS

Question 4. How often do you communicate with your counterparts and bosses in the global headquarters via email or phone?

- ❍ Daily
- ❍ 2-3 Times a Week
- ❍ Once a Week
- ❍ 2-3 Times a Month
- ❍ Once a Month
- ❍ Less than Once a Month
- ❍ Never

Question 5. How often do you receive training from the global headquarters?

- ❍ Once a month or more
- ❍ Between once or twice every quarter
- ❍ Between once or twice every 6 months
- ❍ Once a year
- ❍ Less than once a year
- ❍ Never

Question 6. To what extent does your branch/subsidiary depend on the global headquarters for information and technical support in the following domains?

	A Lot	Some	Little	None	Not Available
Marketing know-how	❍	❍	❍	❍	❍
IT and technological know-how	❍	❍	❍	❍	❍
Operational Risk management techniques (Fraud and corruption, process management)	❍	❍	❍	❍	❍
Credit Risk management techniques	❍	❍	❍	❍	❍
Lending Technology	❍	❍	❍	❍	❍
Other domain, specify below:	❍	❍	❍	❍	❍

Question 7. Do you receive or provide training to a sister foreign affiliate?

Note: Here a "sister foreign affiliate" refers to another affiliate of the group located in a foreign country which is not the country of origin of the group. For instance, the group you are working for is British, with global head office located in London, your branch/subsidiary is located in Ghana, and you receive technical assistance from another branch/subsidiary located in Kenya, or in India. This other foreign branch/subsidiary is what is referred to here as a "sister foreign affiliate".

	Yes	No	not available
Provide training to a sister foreign affiliate	❍	❍	❍
Receive training from a sister foreign affiliate	❍	❍	❍

Question 8. If Yes, please specify the location of the sister foreign affiliate from which you receive or provide training? You may refer to several sister foreign affiliates:

	Receive training from the following affiliates	Provide training to the following affiliates
	Location of the sister foreign affiliates	Location of the sister foreign affiliates
Country 1		
Country 2		
Country 3		

Question 9. How often do you communicate with your counterparts in the sister foreign affiliate with which you have the most interaction?

- ❍ Daily
- ❍ 2-3 Times a Week
- ❍ Once a Week
- ❍ 2-3 Times a Month
- ❍ Once a Month
- ❍ Less than Once a Month

Question 10. Now, considering the sister foreign affiliate from which you receive more knowledge, skills or training: To what extent does your organisation depend on that sister foreign affiliate for information and technical support in the following domains:

	A Lot	Some	Little	None	Not Available (don't receive skills from sister foreign affiliate)
Marketing know-how	❍	❍	❍	❍	❍
IT and technological know-how	❍	❍	❍	❍	❍
Operational Risk management techniques (Fraud and corruption and process management)	❍	❍	❍	❍	❍
Credit Risk management techniques	❍	❍	❍	❍	❍
Lending Technology	❍	❍	❍	❍	❍
Other, specify below:	❍	❍	❍	❍	❍

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PART III: ORGANISATION QUESTIONS

Question 11. What is the influence of the headquarters (HQ) to which your organisation directly reports (i.e. either regional headquarter or global headquarter) on the following decisions:

	Decision made exclusively by HQ	Decision made mostly by HQ	Decision-making is about equal	Decision made mostly by your branch/ subsidiary	Decision made exclusively by your branch/subsidiary	n.a.
Hiring of senior managers (level just below CEO; ex: COO, CIO, Head of Legal, Head of Compliance)	❍	❍	❍	❍	❍	❍
Introduction of a new banking products	❍	❍	❍	❍	❍	❍
Local expansion (opening of new branches)	❍	❍	❍	❍	❍	❍
Portfolio allocation	❍	❍	❍	❍	❍	❍
Operational Risk management	❍	❍	❍	❍	❍	❍
Asset-Liability management	❍	❍	❍	❍	❍	❍
Capital management	❍	❍	❍	❍	❍	❍
Other, specify below:	❍	❍	❍	❍	❍	❍

PART IV: FINANCIAL RELATIONSHIPS BETWEEN THE HEADQUARTERS AND THE FOREIGN AFFILIATE

Question 12. Did your parent bank provide you at least once with internal capital (loans, deposits, liquidity) over the last two financial years?

❍ Yes
❍ No

Question 13. Did your parent bank provide you at least once with equity capital over the last two financial years?

❍ Yes
❍ No

Question 14. Why did your parent bank provided you with funding? Please tick all that apply:

- ❑ to help us bridge unexpected negative shock to our deposit base
- ❑ to help us bridge shortfalls in wholesale funding
- ❑ to help us meet credit growth targets
- ❑ to help us take advantage of new lending opportunities
- ❑ Other: please specify below:

_____

Question 15. Has your branch/subsidiary provided your parent bank at least once with internal capital (loans, deposits, liquidity) or remitted dividends to your parent bank over the last 2 financial years?

- ❍ Yes
- ❍ No

Question 16a. Do you sometimes partner with other foreign affiliates of your banking group or with your parent bank to offer loans to corporates?

- ❍ Never
- ❍ Rarely
- ❍ Sometimes
- ❍ Often
- ❍ Most of the time

Question 16b. If over the last 12 months you have partnered with other affiliates of your banking group to offer loans to corporates, please indicate below the location (name of the country) of these affiliates:

Countries:

_____

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PART V: BANK FUNDING

Question 17. Please indicate below from which sources your bank obtain funding (liabilities):

- ❑ Customer deposits
- ❑ Domestic wholesale market
- ❑ Short-term interbank borrowing
- ❑ International wholesale funding (bonds and loans)
- ❑ Parent bank funding
- ❑ Other, specify below: _____

Question 18. How easy is it for your bank to obtain domestic funding?

	Very Easy	Easy	Somewhat Easy	Neutral	Somewhat Difficult	Difficult	Very Difficult
Interbank borrowing	❍	❍	❍	❍	❍	❍	❍
Local customer deposits	❍	❍	❍	❍	❍	❍	❍

Question 19. If your access to domestic funding (interbank or deposits) is difficult, could you please explain why?

PART VI: PORTFOLIO PROFILE, LOAN APPLICATION AND APPROVAL

Question 20a. Could you give an indication of the percentage of your loan portfolio attributed to the following categories: Note: you may provide an estimate

_____ Micro-finance
_____ Small and Medium Enterprises
_____ Large corporates
_____ Retail customers (mortgage, consumer lending, etc.)
_____ Other, specify below:

Question 20b. Please could you provide your bank's definition of Small and Medium Enterprises (SMEs) below (e.g. in terms of maximum turnover, or number of employees, or loan size, etc.):

Question 21. Could you explain briefly the reasons behind the composition of your loan portfolio?

Question 22. What are the three (3) main industrial sectors to which you provide loans or credit?

- ❍ Agriculture, forestry and fishing
- ❍ Public utilities
- ❍ Extractive industries
- ❍ Manufacturing
- ❍ Transport and communication
- ❍ Construction, Real Estate
- ❍ Finance, insurance
- ❍ Trade
- ❍ Social and education
- ❍ Other, Please specify below: _____

Question 23. Could you explain briefly the main reasons behind this particular sectoral allocation of your loan portfolio?

Question 24. What are your views on the Small and Medium Enterprises segment (opportunities, constraints)? Do you actively engage with this segment (Why/Why not)?

Question 25. Origination of loans. How do you identify potential SME clients? Please indicate below which of the possible ways of identifying SME clients you most typically use:

- ❑ Rely on existing deposit clients
- ❑ Use information from existing firm databases (credit reference bureaus, etc.)
- ❑ Attract clients with bank credit
- ❑ Focus on attracting SMEs that are clients/suppliers of your existing clients
- ❑ Other, please indicate below: _____

Question 26. Do loan officers (or branch managers) in your organisation use internal credit scores (credit scoring models developed by your bank) in any aspect of extending credit or loans?

	For small and medium business loans			For large corporates			For personal loans		
	Yes	No	Don't know/n.a.	Yes	No	Don't know/n.a.	Yes	No	Don't know/n.a.
Credit scores calculated for the business or owner	❍	❍	❍	❍	❍	❍	❍	❍	❍

Question 27. If you use credit scores for SMEs, could you indicate briefly the main elements that you take into account in the computation of the score?

Question 28. Do prospective SME borrowers typically need to provide the following to apply for a term loan or for asset financing with your bank?

	SME term loan			SME asset financing		
	Yes	No	not available	Yes	No	not available
Bank account statements	❍	❍	❍	❍	❍	❍
Collateral or security	❍	❍	❍	❍	❍	❍
Audited accounts	❍	❍	❍	❍	❍	❍

Question 29a. Would you extend a loan to a SME with no collateral or security?

❍ Yes
❍ No
❍ n.a. (product not offered by your bank)

Question 29b. If Yes, how would you ensure that the SME has the ability to repay?

Question 30. Loan approval

What are the three (3) most important factors for deciding whether to approve a loan:

	For small and medium business loans	For large corporates
Characteristics of the borrower	❑	❑
Credit score	❑	❑
Financial assessment of the business	❑	❑
Quality of collateral (personal assets pledged by entrepreneur)	❑	❑
Sector of activity	❑	❑
Previous relationship with business owner	❑	❑
Business plan	❑	❑
Other, specify below:	❑	❑

Question 31. How long does it take, on average, to reach a decision on a loan application?

	1 or 2 days	A week or less	A month or less	Between 1 and 2 months	Over 2 months
For personal loans	❍	❍	❍	❍	❍
For small and medium business loans	❍	❍	❍	❍	❍
For large corporates	❍	❍	❍	❍	❍

Question 32. Approval rate of loan applications: Please could you provide an estimate below of the approval rate for the following categories: On average, the percentage of total loan applications that are approved is:

_____ For personal loans

_____ For small and medium business loans

_____ For large corporates

Question 33. What are the most frequent reasons for rejecting loans applications from SMEs?

Question 34. What do you, as a senior manager, perceive as the main constraints on your bank's ability to expand the volume of SME loans in this country?

Question 35. What do you, as a senior manager, perceive as the main constraints on your bank's ability to expand the volume of large corporate loans in this country?

Question 36. How do the loan officers (or branch managers) in your bank obtain information on loans applicants (other than from the loan applicant him/herself)?

	For small and medium business loans			For loans to large corporates		
	Yes	No	Don't know/n.a.	Yes	No	Don't know/n.a.
Through private credit reference bureaus	❍	❍	❍	❍	❍	❍
Through public credit registries	❍	❍	❍	❍	❍	❍
Through informal relations with other banks	❍	❍	❍	❍	❍	❍
Personal network	❍	❍	❍	❍	❍	❍
The parent bank or the Group in general	❍	❍	❍	❍	❍	❍

Question 37. If you did not use a credit bureau over the last 12 months, what were the main reasons?

Question 38a. Have you faced any challenges with using information from credit reference bureaus?

❍ Yes
❍ No
❍ n.a. (do not use credit reference bureau)

Question 38b. If you answered Yes to the previous question (Q38a), could you please elaborate below:

Question 39a. The following refers to the organisation of loan approval and credit risk management at your bank. Please indicate at which organisational level the following functions are most often performed:

Note:

- *Local branch is a branch of your bank in the country of operations*
- *Local head office (HO) is the headoffice of your bank in the country of operations*
- *Regional headquarter (HQ) is an headquarter responsible for a world's region (for instance, Europe, Middle East, Africa)*
- *Global headquarter (HQ) is the headquarter of the banking group*

	Credit risk management				Final approval for loans is typically done			
	Local branch	Local HO	Regional HQ	Global HQ	Local branch	Local HO	Regional HQ	Global HQ
For SME loans	❍	❍	❍	❍	❍	❍	❍	❍
For large corporates loans	❍	❍	❍	❍	❍	❍	❍	❍

Question 39b. The following refers to the organisation of loan approval and credit risk management at your bank. Please indicate at which organisational level the following functions are most often performed:

	Determination of targets for credit growth				Loan recovery			
	Local branch	Local HQ	Regional HQ	Global HQ	Local branch	Local HO	Regional HQ	Global HQ
For SME loans	❍	❍	❍	❍	❍	❍	❍	❍
For large corporates loans	❍	❍	❍	❍	❍	❍	❍	❍

Question 40. Could you explain briefly what happens in your bank when a loan is non-performing?

Question 41. Monitoring of loans. Concerning the monitoring of SME loans, could you indicate which ones are the most important practices used by the loan officers (or branch managers) in your bank?
Rank from 1 to 4 (with 1 being the most important) the importance of the following possible ways of monitoring SME loans:(Please skip this question if you do not offer SMEs products)

_____ Repayment frequency
_____ Deterioration of cash flows
_____ Regular visits to SMEs
_____ Regular visits from SMEs
_____ Other, specify below:

Questions 42. How often on average do loan officers in your bank have contacts with SME clients (phone, letter, visits), once the loan has been approved? (Please consider a typical loan to an SME, this question does not refer to the cases of non-performing SME loans).

- ❍ Daily
- ❍ 2-3 Times a Week
- ❍ Once a Week
- ❍ 2-3 Times a Month
- ❍ Once a Month
- ❍ Less than Once a Month
- ❍ Never
- ❍ Not available

Question 43. **Syndicated loans** with other banks in your country of operations (A loan offered by a group of lenders who work together to provide funds for a single borrower)
How often does your bank participate in syndicated loans?

- ❍ Often
- ❍ Sometimes
- ❍ Rarely
- ❍ Never

Question 44. How difficult is it for your bank to find bank partners to syndicate a loan?

- ❍ Very Difficult
- ❍ Difficult
- ❍ Somewhat Difficult
- ❍ Neutral
- ❍ Somewhat Easy
- ❍ Easy
- ❍ Very Easy

PART VI: BUSINESS ENVIRONMENT

Question 45. What do you think might constrain improving the performance of operations in your bank? Looking at the few options below, could you tell me if these constitute an obstacle?

	Extreme obstacle	Important obstacle	Moderate obstacle	Minor obstacle	Not an obstacle at all
Hiring managers with the right skills	❍	❍	❍	❍	❍
Employment laws	❍	❍	❍	❍	❍
Banking regulations	❍	❍	❍	❍	❍
The Court system	❍	❍	❍	❍	❍
Any other? Please, specify below:	❍	❍	❍	❍	❍

Question 46. Mobile Banking

What is in your view the impact of the increase of mobile phone banking for your business? How are you responding to that?

Question 47. What are, in your view, the main challenges that your company is facing in this country?

Question 48. How many direct local competitors do you have in the commercial banking segment? Out of the total number of banks in your country, indicate the number of banks which are directly competing with the types of product you are offering:

- ❍ No competitors
- ❍ Less than five competitors
- ❍ Five or more competitors

Question 49. In your view, what is the intensity of the local competition in the banking segments in which you operate?

	None	Light	Moderate	Strong	Intense	Not Available
Deposit market	❍	❍	❍	❍	❍	❍
Micro-finance lending	❍	❍	❍	❍	❍	❍
Small and Medium Enterprises lending	❍	❍	❍	❍	❍	❍
Large corporates lending	❍	❍	❍	❍	❍	❍
Other, please specify below:	❍	❍	❍	❍	❍	❍

PART VIII: INFORMATION ON THE ORGANISATION

Question 50. How many people are working in total in your bank?
Please indicate an estimate of the total number of people working for your company in this particular country (includes local headquarters and local branches):

Question 51. Manager's personal information.
Please could you indicate below for how long you have been working for this bank (number of years or months)?

Question 52. Is there any further area that we have not touched on upon which you may wish to comment?

Tick YES if you would you like a copy of the survey results' report when it is written:

❍ Yes

THANK YOU

Thank you very much for having taken the time to complete this questionnaire. The information on your perceptions is a very important input for the evaluation of conditions in the banking environment in sub-Saharan Africa, as well as the formulation of policy advice.

Conclusion

This chapter will summarize how this research has extended theoretical and empirical knowledge in the field of international business, corporate strategy and multinational banking. First, this chapter will present an overview of findings made by this dissertation, linking them back to the original research questions posed in the introduction. Next, the contributions made by this dissertation will be discussed in the context of the relevant empirical and theoretical literature. Specific implications for academic research practice and policy implications relating to these questions will be discussed. Finally, further avenues of research either extending the dissertation or presenting another facet of the issue of multinational banking in developing countries will be presented.

This thesis has set out to explore the corporate and organizational strategies, as well as the performance of foreign multinational banks in developing countries by recognizing and emphasizing the heterogeneity of foreign banks operating in these countries. It aimed to explore three related sets of questions, within the context of banking in sub-Saharan Africa. The first set of questions concerned the nature and exploitation of multinational banks' capabilities. The second set of questions concerned the corporate strategies and performance of banks in host African markets. Finally the third set of questions asked about the internal organization of these banks, how they are determined by environmental factors, and how they could provide sources of competitive advantages for foreign affiliates of multinational banks.

This dissertation has proceeded to examine banks' capabilities and organization in two ways. First, indirectly, by examining the differences in performance between different groups of foreign affiliates. Second, directly, by exploring the internal capital allocation strategies and the organizational strategies, with respect to centralization of processes, of these multinationals. In so doing it has provided a supply-side analysis of banking markets in sub-Saharan Africa. This research was motivated theoretically by the absence of a theoretical framework which would help analyze the impact of heterogeneity in foreign firms' capabilities on competition and

firm performance in a given market. Empirically, the research motivation stemmed from the lack of comparative analysis of North-South vs. South-South FDI in similar host countries as well as the lack of empirical knowledge on the internal capital allocation and internal organization of multinational firms with foreign affiliates in developing countries, especially in the service sector. Such empirical analysis has required the use of large financial databases combined with a collection of primary data on banks' internal organization and lending operations.

Main findings

The main empirical findings are the following:

1. *Lower performance of regional African banks' affiliates (South-South FDI) relative to those of global banks (North-South FDI) in sub-Saharan Africa, mainly driven by higher cost of capital.*
   The foreign affiliates of regional African MNB are under-performing (in terms of Return on Equity) relative to those of Global MNB in sub-Saharan Africa. This finding is robust to a set of host country controls, time and host country fixed effects, as well as controls for entry and exit of banks. The results indicate that this lower performance is not primarily due to higher levels of non-performing loans or worse top-line performance (interest revenues), but is related to a higher cost of funding. Essentially, regional African MNB are more reliant on the more-expensive time deposits than global MNB, which have a larger current deposit base. Investigating the existence of market segmentation, I do not find significant differences in terms of maturity of the portfolio, customer profile or sectoral allocation. However, the presence of banks in specific sub-Saharan African countries tend to be statistically significantly associated with several country determinants among which GDP growth and banking regulations. Regional African MNB tend to be more present (in terms of market shares) in countries with with weaker banking regulations, while Global MNB favor countries with higher GDP growth. This suggests that African MNB tend to internationalize at the periphery, in countries with weaker competition.
2. *No clear institutional voids' advantage for multinational firms from developing countries operating in other developing countries*
   Indeed, the results of the first chapter also show that regional African MNB are not better able to operate in weaker institutional environments than Global MNB. One of the lessons learnt during this academic journey is that there is

no institutional voids' (operating) advantage *per se*, or if there is, it cannot be sustained for a long time.

3. *High financial integration of global banks' foreign affiliates to their group.* Focusing on internal capital markets practices of foreign banks towards their affiliates in South Africa, the results of the second chapter indicate that Global MNB tend to be more financially integrated to their group than Emerging MNB[1].
4. *While higher financial integration implies more support from the parent bank when foreign affiliates are financially fragile (i.e. when the solvency ratio declines), this also implies supporting "group effort" when other affiliates are facing capital crunches, by sending capital back to the group.*

   This has implications both for the strength of foreign affiliates and for the host market. First, parent groups support their affiliates when their solvency ratio declines, thereby strengthening host markets' banking stability. Second, increases in internal funding tend to be transmitted to the local market via increases in the supply of domestic credit by these banks. However, when a part of the group is exposed to a funding shock, other foreign affiliates may be required to help by increasing their net lending to their group, in other words by remitting capital back to the group. This may be at the expense of the local supply of credit.
5. *Higher centralization of operational processes inside Global MNB compared to regional African MNB and Emerging MNB.* Using fieldwork data on the internal organization of foreign banks, I examined the centralization inside multinationals and more specifically the dependence of sub-Saharan African foreign affiliates on their headquarters for operational processes such as risk management and lending technology. I find that Global MNB adopt more centralized organizations than African MNB and Emerging MNB. The difference between Global MNB and these two groups in the mean of the index of centralization of processes was found to be significant at the 5% level. However, there is no significant difference in the means of the centralization index between African MNB and Emerging MNB. This result is related to two other key findings:
6. *Positive and robust association between environmental distance and centralization.*

   I find evidence of a positive and significant association between institutional, economic and cultural distance and centralization of processes. In other words,

[1]Note that there are unfortunately no regional African banks in this sample, the reason simply being that African MNB have not established branches or subsidiaries as yet in South Africa.

the larger the difference between the home and the host country environment, the more the organization is centralized. Another significant result is the robust and positive association between headquarters' experience in sub-Saharan Africa (as measured by the number of subsidiaries owned by the parent group in the African region) and centralization. When parent banks have acquired sufficient local knowledge on the host country environment, the organization is centralized and global headquarters retain control over operational processes.

7. *Negative and robust association between the use of soft information on borrowers and centralization.* The empirical results also indicate that higher reliance on qualitative or soft information is negatively and significantly associated with centralization, consistent with the theoretical literature in corporate finance (Stein, 2002).

By comparing different groups of foreign firms, this research has highlighted the alignment between foreign multinationals' capabilities, their location strategies, their customer or market segment strategies, as well as their internal organization. In particular, global banks, which have higher productive capabilities and a wider international exposure, perform better than regional African banks in Africa (Chapter 1) and are also organized differently (Chapter 3). Moreover, this organizational set-up, measured in the research by the degree of centralization of operational processes by the global headquarters, varies depending on the host country environment, and the institutional distance between host and home countries. In so doing, this research provides a bridge between the organizational economics literature and the strategy literature, as both fields have evolved separately without paying much attention to each other (Roberts and Saloner, 2013). Only very recently research has been developed to examine these two aspects jointly, with the assumption that firm performance is determined by three broad factors: its external environment, the strategy it adopts to deal with this environment and the organization it sets up to implement this strategy (Roberts and Saloner, 2013). This research provides an empirical examination at the industry level of how these different elements are integrated, starting from the standpoint of the resources and capabilities of firm, that is, considering that the initial source of observed differences between firms lie in their unequal possession of inputs. In particular, the research has identified two advantages of being part of a global group, embedded in the internal resources and internal organization of the group, with direct impacts on foreign affiliates' performance. The first one is the possibility to rely on internal capital in cases of funding shock (Chapter 2). The second one is the ability to rely on operational platforms created centrally by the headquarters and deployed across the group (Chapter 3).

Foreign affiliates of Global MNB are more financially integrated to their group and they depend more on their headquarters for operational processes relative to Emerging MNB and African MNB. The fact that foreign affiliates of Global MNB have a relatively significant share of their liabilities composed of group loan or deposit (Chapter 2) could also explain their comparatively lower ratio of interest expenses to interest bearing liabilities (Chapter 1), to the extent that internal capital tend to be provided to affiliates at low cost. In addition, the finding that Global MNB rely more on group support (Chapter 3) than African MNB for operational processes could explain the low cost income ratio observed in Chapter 1, through group-level scale economies in operational platforms. The result that differences in performance are tightly linked with group membership, rather than primarily driven by the structure of the market, is strengthened by the lack of evidence of market segmentation in the lending market, and the finding that the differences between Global MNB and African MNB in the quality of their loan portfolio and in their ability to generate interest income are not significant.

Overall, this research has not find any strong empirical evidence that capabilities conferred by experience in similar markets ("institutional voids advantage", or similarity of the composition of the demand) led to sustainable competitive advantages. The question of the value (in Barney's 1991 sense)[2] of this "institutional voids advantage" can therefore be posed, with theoretical implications that will be examined further below.

Finally, the finding that foreign affiliates of Emerging MNB (from South Africa or other emerging markets outside of Africa), while relying less on groups' operational platforms and internal funding than foreign affiliates of Global MNB, do not record significantly lower financial performance (both in terms of ROE and in terms of cost income ratio) may suggest that although being potentially less stronger groups in terms of productive capabilities or size of their balance sheet these banks are able to catch up with Global MNB within the African context. While the rationale to include South African groups with other emerging groups (generally from South Asia and South East Asia) was motivated by their similar degree of international experience and level of development of their home country, fieldwork research has revealed that they have in fact rather different strategies within African host markets. While emerging groups from South Asia (especially India) tend to have a niche (Asian) clientèle, and operate in a relatively decentralized fashion, the mode of operation of South African groups is more similar to that of Global MNB, with strong group

[2]"Resources are valuable when the enable a firm to conceive of or implement strategies that improve its efficiency and effectiveness" (Barney, 1991:).

integration, a large business scope, targeting retail, SME and corporate segments, and important brand development and marketing in host African countries. While performance of Asian banking groups may be related to their niche strategy, it is less the case for South African groups. It is thus possible that for South African groups, "institutional voids advantages" create enough value so as to compensate for lower levels of vertical capabilities, while for other African groups, vertical capabilities are too low to be compensated by higher horizontal capabilities, and as a consequence the performance of these African latecomers is significantly lower.

This begs an additional question: how can we explain the co-existence of Global MNB, African MNB and Emerging MNB and domestic banks in most sub-Saharan African countries, if some groups of banks record much lower financial performance, suggesting that they do not have the required capabilities to compete effectively? Little evidence has been found empirically to suggest that these within-sector performance differences are related to initial firms' initial uncertainty about their productivity[3], as performance differences are still significant in a 5-year balanced panel (Chapter 1), or that they are due to the existence of strategic groups or market segmentation (Chapter 1). While attempts to answer this question have been made in Chapter 1, evidence form the three chapters, and especially from fieldwork interviews with key stakeholders of the banking sector in Africa has provided additional perspective. The first part of the answer, suggested in Chapter 1, lies in the existence of geographic self-selection according to which some groups of banks will be more present in specific countries, depending on their capabilities. Furthermore, the fact that no African MNB is present in South Africa (Chapter 2) is also telling about the obstacles that this group of banks faces in expanding to the more advanced, emerging economies. In other words, there is a range of countries into which African MNB are not able to expand (the most developed African countries) due to high barriers to entry or high degree of competition, while there is a range of countries in which Global MNB opt out or are much less present (least developed countries with low GDP growth) due to the limited opportunities offered by these markets. The second part of the answer is related to the fact that by focusing on differences in performance, one might forget that on average, over the 10-year study period, all groups of banks recorded ROE well above the break-even point (see summary statistics in Chapter 1). Despite the fact that a very large majority of the managers surveyed considered that competition, especially in the corporate segment,

[3]In fact, according to Melitz (2003), while firm heterogeneity among domestic firms can be explained by this initial uncertainty this is not the case for firms expanding abroad, as they are assumed to make the decision to operate abroad after they have gained knowledge of their productivity.

was intense (Chapter 3), most if not all banks in the countries where fieldwork was conducted, which are among the most developed and competitive banking markets in the region, reported positive net profits, with high interest margins. This suggests that it is the lack of maturity of the market itself which allows groups with different levels of capabilities to co-exist, survive, and thrive. Understanding further how African MNB could catch up with Global MNB when operating in the same host markets, through, for instance, knowledge spill-overs would offer fascinating avenues for future research which will be further discussed below.

Key contributions

The object of the research (multinational enterprises) as well as its sectoral and geographic context (banking in Africa) and the theoretical framework used (essentially the strategy literature on firms' capabilities) imply that this dissertation has relevance for three separate fields of research. The first one is the literature on international business and strategy, which has been particularly interested in the emergence of multinational firms from developing and emerging countries (Khanna and Palepu, 2006, 2010; Cuervo-Cazurra and Genc, 2008; Aulakh, 2007; Bonaglia et al., 2007). The second one is the literature on foreign banking in developing countries, which has focused on the impact of developed foreign banks on SME financing and on the determinants of developing country banks' entry into other developing countries (The World Bank, 2006; Van Horen, 2007; Petrou, 2007). The third one is the empirical literature on firms' internal organization, and more specifically their degree of centralization (Acemoglu et al., 2007, Bloom, Sadun and Van Reenen, 2012) and their internal capital markets (Stein, 2002; Morgan et al., 2004). This work has made several, mostly empirical, contributions to these three fields of research, which are detailed below. While the key contributions of this PhD lie in its empirical analysis, often relying on new databases, I will start by outlining the theoretical contribution that this dissertation has brought.

Theoretical contributions. To examine banks from different countries of origin and with different degrees of internationalization, and as such, with different sets of capabilities, this dissertation has proposed a simple framework in which to compare the strategies and performance of banks with heterogeneous capabilities in foreign host markets. This framework was motivated by the lack of appropriate models or theories on which one could rely to examine the co-existence of firms from developing and developed countries into third host countries. The international business literature in the tradition of the O.L.I. paradigm of Dunning (1977, 1980) has highlighted that firms engaged in foreign activities need to have unique advan-

tages (ownership advantages) to be able to compete with firms in foreign markets. Furthermore, these advantages need to be considered in relative terms: the competitive advantages of the investing firms need to be superior to those of other firms, and particularly those domiciled in the country in which they are seeking to make their investments. The literature in international economics, following Melitz (2003) has also emphasized the fact that firms are heterogeneous with respect to their productivity, and that only the most productive firms were engaged in foreign direct investment. While the ownership advantages of Dunning, based on industrial organization theories, explain why the affiliates of foreign firms can compete successfully with domestic firms in supplying the host markets and the Melitz model (2003) can explain the heterogeneity in international activity among firms from a same home country, none of these literatures help explain the sustainable heterogeneity in capabilities and performance of foreign affiliates in a same industry and country as observed in African banking markets. The theoretical contribution of this research was to propose a simple theoretical framework which could help explain the co-existence of North-South and South-South FDI as observed in sub-Saharan Africa, and formulate predictions on the international performance of different categories of firms. I built on the capability literature and recent advances led by Sutton (2012) in the industrial economics literature which has integrated both the international economics on quality and trade and the management concept of capabilities to propose two types of capabilities which could explain the co-existence of firms with different set of capabilities. The first type of capability identified (and labeled "vertical capability") was related to productivity advantages. The second type of capability identified (and labeled "horizontal capability") drew on the notion of "institutional voids advantage", provided by the international business and strategy literature (Khanna and Palepu, 2006, 2010) and on the related one of similarity of the composition of demand, from the international economics literature (Linder, 1961, Fajgelbaum et al., 2011). These two concepts illustrate a simple trade-off between adaptation cost and productivity advantages in developing countries which help explain the empirical patterns observed in the context of banking in sub-Saharan Africa, but could also be useful to analyze international expansion of firms from developing countries in other sectors and geographic areas.

Empirical contributions. As suggested, most of this thesis has provided empirical evidence on the phenomenon of banking in sub-Saharan Africa. At the moment, and despite the fact that the banking sector in Africa is growing fast and innovating rapidly, scholarship has remained very limited on this particular topic. Furthermore, the fieldwork data collection has tried to adopt a macro view by going

beyond the specificities of a single host country, to bring together a regional view of banking markets, which was required by the regional perspective that banks adopt themselves in the organization of their international operations. While identifying causal effect in econometrics with a panel of country is often difficult, the analysis has suggested several very robust correlations and in so doing has evidenced empirical patterns which should motivate further research.

First, it has provided a very detailed empirical analysis of the drivers of performance in banking, conducting a comparative analysis of three groups of foreign banks from countries with different levels of development, while most of the literature on multinational banking has examined foreign banks as a single group (Clarke, Cull, Martinez Peria and Sanchez, 2005; Detragiache, Tressel and Gupta, 2008; Gormley, 2007). In so doing, it has shown that foreign banks constitute a relatively heterogeneous group, with differences in terms of locational strategies, as well as different asset-liability mixes leading to sustainable differences in performance. These different strategies will have implications for policy-making which are detailed further below.

Second, using an unexploited database recording internal capital in the balance sheet of foreign banks located in South Africa, this research has contributed to the literature on the benefits of internal capital markets by relying on direct internal transactions. It has examined internal lending in an international setting, examining affiliates of companies from different countries of origin, while most of the literature has focused on internal capital markets inside groups from a single country of origin (Gopalan et al., 2007; Cetorelli and Goldberg, 2012). Furthermore, this research has examined the internal fund channel for bank credit, instead of relying on comparisons between credit growth of foreign affiliates of multinational banks and of domestic banks to infer internal capital market practices as has traditionally be done in the literature (Popov and Udell, 2012). Finally, it has also contributed to the international strategy literature, examining an alternative channel (internal capital) through which headquarters may support their foreign affiliates, distinct from headquarters' knowledge transfers to their subsidiaries.

Third, this research has drawn on new data collected through a survey of banks in Africa to examine internal organizational aspects of multinational firms. In so doing, it has contributed both to the organizational economics literature and the strategy and international business literature on headquarters-subsidiaries relations. The organizational economics literature has tended to focus on transfer of authority inside firms, examining the relation between plant managers and central headquarters or between plant managers and workers located in the same region, but not

bringing the analysis to the higher level of global headquarters-foreign affiliates relation. The international strategy or business literature has focused more on networks and knowledge flows within multinationals (Ghoshal and Bartlett, 1990; Gupta and Govindarajan, 2000; Monteiro, Arvidsson and Birkinshaw, 2008), "parenting advantages" or headquarters' value added to their subsidiaries (Goold, Campbell and Alexander, 1998, Goold and Campbell, 2002), as well as subsidiaries' contribution to the firm-specific advantages of the MNC (Birkinshaw and Morrison, 1995; Birkinshaw, Hood and Jonsson, 1998) without properly including agency and incentive aspects. However, as mentioned in Chapter 3, this separation of domains between organizational economics and organizational theorists in strategy is problematic, as both environmental changes and incentive structures shape organizational structure (Kaplan and Henderson, 2005). Furthermore, the nature of the data collected contributes greatly to our understanding of banks' mode of operations and organizations in Africa, as well as bank managers' perception of the business environment. This effort to collect data is important given the scarcity of information on the topic, with only a limited number of empirical studies (Beck, Demirgüç-Kunt and Martínez Pería, 2008; Calice, Chando and Sekioua, 2012), despite the existence of a strong relation between financial growth and development (see Levine, 1997, for a discussion).

Theoretical implications

The first theoretical implication of this research is the need to define more clearly "institutional voids advantages" and to identify the channels through which they may affect firm performance as this research has found little evidence that these advantages were competitive and sustainable. A resource must enable firms to deploy a strategy that creates value (Barney, 1991). The fact that (potential) institutional voids advantages do not translate into performance advantages for African MNB could be either because they do not create enough value to compensate for productivity weaknesses, or because Global MNB which did not initially possess such advantages have had enough time to build them before the African late-movers have expanded into these particular host markets. While it is true, as Cuervo-Cazurra and Genc (2008) show, that multinationals from developing countries tend to be more present than developed multinationals in countries with low GDP per capita, this does not necessarily mean that it is because they have a competitive institutional voids advantage to do so. It might just be because, as argued in Chapter 1, they have a lower outside option and therefore lower opportunity cost with regards to foreign developing markets, and because they do not have the necessary

capabilities to compete in more developed markets.

If institutional voids advantages, or, similarly, advantages provided by the similarity of the composition of the demand between home and host countries, are not sustainable, then do developing multinationals possess any superior advantage at all compared to developed multinationals? And in fact do firms need ownership advantages or superior productivity to expand abroad? In the international business literature, an asset-augmenting perspective has been proposed to explain the rise of multinationals from emerging or developing countries, according to which firms engage in FDI to enhance their competitiveness by acquiring knowledge or resources abroad, rather than to exploit their existing advantages (Makino, Lau, Chung-Ming and Yeh, 2002; Child and Rodrigues, 2005; Mathews, 2002). However, this does not mean that these multinationals do not have or need sustainable advantage to guarantee the success of their internationalization (Dunning, 2006). In fact, the majority of African banking multinationals are from the most developed regional countries, such as Nigeria, which is the home of large banking groups fostered by the important increases in capital requirements over the last few years leading to market consolidation. Other African banking groups are supported by strong regional organizations, such as Ecobank Group, from Togo which was initiated and promoted by the Federation of West African Chambers of Commerce and Industry, with the support of the Economic Community of West African States (ECOWAS). Furthermore, if foreign activities were essentially impulsed by asset-seeking strategies in the banking sector in sub-Saharan Africa, one would expect to see regional African banks entering significantly more through acquisition than through greenfield compared to global banks, but this is not the case (Chapter 3). In fact, if the co-existence of foreign firms with different levels of capabilities in a same host country cannot only be explained by the possession of capabilities providing sustainable advantages, the theoretical implication of this research is that one may have to go back to a market structure explanation: while the differences in performance between foreign firms are explained by their capabilities, the fact that these differences are sustainable (i.e. no large intra-sectoral inter-firms reallocation towards the more productive firms, à la Melitz (2003)) without finding strong evidence of market segmentation or strategic groups, may be explained by the structure of the market: the lack of strong competition between banks both on prices and on quantity especially in the SME segment allows less-performing banks to remain active. This is conform to what Bloom and Van Reenen (2007) observed in their analysis of the productivity of manufacturing firms around the world, namely that in countries with low competition the dispersion of firms' productivity tends to be higher.

The second message of this thesis is that there is no foreign "representative firm" *per se*, but a variety of foreign firms, with different strategies based on a varied set of capabilities. Theoretically, it implies that researchers need to incorporate foreign firms' heterogeneity in models of foreign banks' entry, such as the ones developed by Detragiache, Tressel and Gupta (2008), Gormley (2011), Dell'Ariccia and Marquez (2004) and Sengupta (2007). The premises of these models is that the cost of capital of foreign banks is lower than that of domestic banks, but that they face informational disadvantages compared to local banks. This induces cream-skimming of the best firms by foreign banks and may reduce funding to small firms if it impairs domestic banks ability to cross-subsidize lending. However, while broadly true for foreign affiliates of global banks, it does not capture well the strategies and expansion of regional African banks. As a consequence, these models should try to integrate two different levels of informational advantage and cost advantage for foreign banks, as regional African banks are much closer operationally to domestic banks, especially in terms of their ability to obtain information on SMEs and their cost of funding. For instance, the Tanzanian foreign affiliate of large Kenyan bank may operate in a manner that is more similar to that of a large domestic (multinational) bank in Tanzania than to that of a subsidiary of a global bank. This matters as regional African banks' presence in some foreign markets is large enough to have an impact on the overall local credit allocation.

Policy implications

The strategies of banks as well as their performance, especially in developing countries where capital markets tend to be underdeveloped, have implications for the growth of the economy in general. The first policy implication concerns the heterogeneity of the impact of foreign banks on host country markets. Indeed, if a country implements policies to encourage foreign banks' entry, the impact of these policies on local banking markets will depend on which groups of banks are entering this market. Indeed, regression analysis of the market shares of Global MNB and of African MNB by host country has shown that the presence of these two groups of banks varies depending on country characteristics among which GDP growth and and banking regulations such as minimum capital requirements. Furthermore, both the primary and secondary data collected for this research have shown that foreign affiliates of global banks tend to be less exposed to the SME segment, relative to regional African banks. In other words, if a country primarily attracts regional African banks into its economy, SMEs' access to bank loans may increase relatively more than if new foreign banks are mostly from developed countries. At the same

time global banks benefit from a larger customers' current deposit base and can rely relatively more on group funding in case of capital crunches, which may reinforce host markets' financial stability. A related policy message is that the organizational form of the foreign affiliates, either as a branch or as a subsidiary will also have an impact on the stability of the banking sector and the local supply of credit through the internal capital market channel (Chapter 2). Overall, although the impact of foreign banks on host banking market is ambiguous and depends on a series of bank factors, distinguishing between different groups of banks increases the precision of policy recommendations.

Secondly, a clear message from the survey results and interviews conducted with bank managers is the urgent need to reform the court system, along with the reduction of red tape at the ministries of land for land collateral registration, and the implementation and further development of credit reference bureaus (CRBs). This should have positive effects on lending. Improving the court system, and especially reducing red-tape, on top of general positive effects on the business environment, should facilitate banks' lending to SMEs. Many banks mentioned that collateral was not the first criteria that they considered when appraising loans. This is partly related to the quality itself of available collaterals, but also to the fact that most of the collaterals are difficult to recover in case of default due to long court procedures. As a consequence, banks tend to require SMEs to build cash collateral (effectively building up deposits) and also charge high interest rates on loans. Improving the court system could create both a more strict repayment culture among SMEs and lower interest rates charged by banks by increasing the potential recovery value of collaterals. In addition, developing CRBs should increase the availability of information in the market, reduce asymmetry of information, and, if positive information is also included (i.e. information on borrowers who have repaid on time and are therefore "good borrowers"), it should give more bargaining power to SMEs when negotiating loans with banks. Both take time, although CRB initiatives are currently developed in many countries. Encouragingly, and as mentioned in Chapter 3, banking regulations and employment laws do not seem to create obstacle for banks which suggests that it is more a question of building up infrastructure and institutions than a question of changing the regulations. Furthermore, the findings from the bank survey also suggest that furthering specialized local skills, especially in risk management, is another potential area for policy improvement. As many managers mentioned the difficulty to retain skills due to competition between banks, or in some countries the lack of local skills itself, improving human capital and banking knowledge could not only strengthen the banking sector if it ensures that appropri-

ate risk management systems are put in place, but also develop knowledge to further financial innovation. In fact, banking innovation could be brought about in domestic markets through knowledge spillovers from foreign banks, which constitutes a further avenue of research which will be discussed below.

Thirdly, this thesis may also provide some suggestions for bank managers themselves. The research carried out in Chapter 1 has found that over a 10-year period the main determinant of bank performance was the composition of the liability mix while there were no significant quality differences in banks' portfolio once host country fixed effects were included. For African MNB, this suggests that a way to improve their financial performance is to attract more customer deposits, for instance by developing products that are more appealing to low-income customers. This was the model successfully followed by **Equity Bank**, the largest bank by customer number in Kenya, which started as a building society in 1984, developed into a micro-finance institution and eventually becoming a commercial bank. Equity Bank focuses on providing retail services to average Kenyans, creating retail products which make it affordable and attractive for customers both to borrow money, but also, and importantly, to deposit money. This endeavor to target geographic areas and population which were neglected by traditional banks, coupled with a developed Universal Banking Software which provides efficient screening and monitoring of retail and SME clients have helped the bank to generate strong performance. The Equity Bank case is considered by many bankers and practitioners in Africa and the West as a true "success story" (see Equity Bank Case Study, Stanford GSB, prepared by Saloner and Coates, 2007). In other words, the implication of the empirical findings of this thesis for bank managers, which, to a certain extent are illustrated in Equity Bank's story, could be that regional African banks should go more "local" by reducing their concentration in the corporate segment and increasing their exposure to the SME and retail segment. This movement is in fact already happening in the most competitive African markets: in Kenya, some respondents of foreign affiliates of regional African banks and of domestic banks mentioned that their bank was disengaging from the corporate segment to reallocate their loan portfolio towards the SME segment which offers higher returns than corporates, due to high competition at the top. However, and as evidenced by Equity Bank, to be successful this strategy requires good monitoring and information systems, which depends on the operational capacity of the bank and can be costly to implement for smaller banks.

Limitations

The main limitation of this research concerns the quality and availability of the data, especially in the third chapter, given the difficulty, both for logistical and confidentiality reasons, to obtain primary data on banks' organization and credit practices in Africa. As such, the sample size of the survey is relatively small. This limitation is shared by much of the academic research on sub-Saharan Africa, and is related to the difficulty to conduct research in developing markets with limited infrastructure, not only in terms of communications and transport but also governmental infrastructure, as developed statistical organizations such as offices of national statistics are often lacking. Other limitations are common to all surveys which is that of getting accurate, unbiased information, although the survey methodology employed has tackled these issues directly.

The second limitation concerns the external validity of the research. As explained in the first chapter, the choice of sub-Saharan Africa, apart from motivations specifically related to the evolution of the banking sector over the last decade and the internationalization of regional African banks, was justified by the fact that sub-Saharan Africa constitutes an "extreme case study", in which foreign banks' specific capabilities should manifest themselves more clearly. However, the extent to which the research findings are generalizable to other developing regions is an open question. Do global banks also outperform regional banks in Asia? Are the financial and organizational links between headquarters and subsidiaries also determined by the same factors when affiliates are located in Latin America rather than in sub-Saharan Africa? The results should be valid in other developing countries if they are mainly related to economic development factors, such as lack of information, weak institutional environments, low level of demand. If they are primarily driven by Africa-specific cultural factors, the question of external validity becomes more acute.

The third limitation concerns the fact that this research has only focused on the supply-side of banking markets, without examining demand-side elements beyond general economic characteristics of the host country. Integrating the demand-side to the equation would allow for a more comprehensive examination of the strategies of multinational banks, as well as their impact on local host markets.

To overcome these limitations would require more time, and more capacity, both financial and human, which is beyond the scope of this PhD project. However, these limitations indicate the direction to go for further research on this topic.

Future research

A first avenue of research, which is a direct extension of the present research, would be to extend the geographic focus to other developing markets and to adopt a group-level analysis. Employing empirical methods such as econometric "case studies" where variation in the data is not across firms but across entities of a same firm, which is popular within "personnel economics" (for instance, Lazear, 2000), to analyze the relations between subsidiaries situated in different countries and regions of the world and their parent bank would allow for a further examination of the extent to which groups' organizational form and internal allocation of resources between subsidiaries are determined by environmental (host country) factors.

A second avenue of research, extending the third chapter and linking it back to the first chapter would be to examine the link between performance and organizational form. It was unfortunately not possible to do so given the limitation of the data at hand, but ideally, with time series data, one could examine the relation between organizational form and performance, and how this relation varies depending on external, environmental, factors.

A third avenue of research would be to go one step further and examine the impact of foreign banks on domestic markets by analyzing the knowledge spillovers of these banks, which could also considerably further our understanding of the impact of foreign banks on local banking markets. This research has found that global banks tend to adopt centralized organizations, and that their foreign affiliates receive important operational and technical support from their group, suggesting a significant concentration of banking knowledge within these foreign affiliates. Furthermore, fieldwork data has also shown that a large majority of regional African banks and emerging banks rely on technical methods of appraising SME loans such as credit scores (around 80% of the emerging and regional African banks surveyed), while less than half the domestic banks have adopted them. Given the relatively high turnover of managers mentioned by respondents in the survey, especially in Kenya, which could be an important channel of diffusion of managerial practices and banking technology in a market, it would be interesting to examine the differential impact of foreign penetration of global, regional African and emerging banks on knowledge spillovers and the adoption of banking innovations by domestic banks with respect to lending, risk or banking products.

A natural fourth avenue of research would consist in examining the demand-side of banking markets to further understand the implications of foreign banks' presence on host countries' financial development. This research has found that global banks can get better access to customers' demand deposit than regional African banks.

Why is it the case? Is it due to brand loyalty, trust, or ease of access to branches and ATMs by the local population? Interviews with bank managers of regional African banks have suggested that the lack of branch network is a contributing factor, but by learning more about consumers' preferences and their access to financial services one may be able to shed more light on the dynamics of banking competition.

This thesis has shown the existence of robust correlations between banking regulations and the presence of different groups of banks (Chapter 1). This suggests a last avenue for research with a more macro-economic perspective, consisting in examining more closely banking regulations in sub-Saharan Africa and their role in promoting access to finance and stability in the banking sector. Many African countries are progressively increasing the capital requirements to operate in their banking market. As a consequence, a movement of consolidation bringing higher concentration has been observed in some markets (especially in Nigeria), which may increase interest rates for borrowers if it entails lower competition; but could also reduce lending interest rates if economies of scale and lower operational costs prevail or if it leads to oligopolistic competition between a few large banks. Examining how these regulatory changes affect different categories of banks and also to what extent consumers benefit from the strengthening of banking regulations would be of particular interest both for academic research and policy-makers.

Banking markets in sub-Saharan Africa have not yet reached maturity, even in the most advanced economies. The banking environment of the region has evolved considerably over the last 10 to 15 years with the regional expansion of African banks, coupled with financial innovations and regulatory changes. As a result, banking markets have progressively become more competitive, but banks, even in the most advanced banking markets such as Kenya or Nigeria, still enjoy large interest margins and are very profitable. The extent to which they will generate benefits to the local population, mainly through a reduction in interest rate spreads and an increase in affordable banking products to the poorer groups will depend on the competitive pressure to innovate and on judicious banking regulations. Competition will be strengthened by the foreign expansion of African banks and their further market penetration which will continue due to their need to expand cross-border to achieve economies of scales. This foreign penetration should provide incentives for domestic banks to develop their capabilities, especially on the operational side of their business, and in so doing, lower their operating costs. The recent and renewed interest of investors in Africa, considered the "last frontier market", has been partly due to the decline of the rate of return of developed countries' assets. However this

is not enough to drive long-term sector growth: investors' sentiment shifts quickly. But, and this is the reassuring part, the boom in Africa's banking is mainly due to concrete opportunities and positive changes in the macroeconomic conditions at home. This should eventually be to the financial benefit of all, for economic growth in Africa.

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