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EFFICIENCY OF MULTINATIONAL BANKS: IMPACTS OF GEOGRAPHIC AND PRODUCT LOCI

Canan Yildirim^a
Rennes School of Business

Adnan Kasman^b
Adnan Menderes Üniversitesi

Mohamed Azzim Gulamhussen^c
ISCTE-IUL Instituto Universitário de Lisboa

ABSTRACT

This paper explores the impact of geographic diversification strategies on multinational banks' operational performance within the context of research on globalization and regionalization. We employ a sample of the 49 largest banks from 16 European countries over the period 2011-2018 and proxy operational performance by technical efficiency. We find the impact of geographic diversification on operational performance depends on the locus of geographic diversification, home-regional vs. inter-regional, and the interplay between geographic diversification and banks' functional focus. More specifically, home-regional diversification with a concentration on non-interest income (i.e., fee and commission and trading income) generating activities worsens performance, while diversification across regions alongside a focus on non-interest income generating activities improves performance. That distinct product characteristics can facilitate different regional dispersions has important managerial implications for enhancing the success of geographic diversification strategies, which continues to be a central but unresolved issue in global banking.

Keywords: Multinational banking, technical efficiency, regional diversification, product diversification. **JEL Classification:** D20, F23, G21, L25.

^a Corresponding author. Address: Rennes School of Business, 2 Rue Robert d'Arbrissel CS 76522 35065 Rennes Cedex, France; Tel.: +33 (0) 299 546 363; Email: canan.yildirim@rennes-sb.com

^b Address: Adnan Menderes Üniversitesi, İktisat Fakültesi, İktisat Bölümü, Merkez Kampüsü, Kepez Mevkii Efeler, Aydın, Turkey. Email: adnan.kasman@adu.edu.tr

^c Address: ISCTE-IUL Instituto Universitário de Lisboa, Portugal. Email: mohamed.azzim@iscte-iul.pt

1. Introduction

How geographic diversification affects bank performance is a central question in the academic and business literature. The dramatic increase in the internationalization of banks under advancing financial globalization and technological developments and up until the onset of the Global Financial Crisis (GFC) led to an extant literature offering insights into the motivations and the performance benefits of internationalization in banking. It has been noted that internationalization offers significant benefits for banks, including enhanced managerial efficiency as well as scope and scale economies through leveraging resources and capabilities across broader geographic markets (Berger & DeYoung, 2001), improved risk diversification (García-Herrero & Vazquez, 2013), access to markets offering better growth and profitability prospects (Miller & Parkhe, 1998; Focarelli & Pozzolo, 2005), and opportunities for regulatory and tax arbitrage (Frame, Mihov, & Sanz, 2020; Merz, Overesch, & Wamser, 2017). However, it has been difficult to empirically establish the presumed positive performance benefits from internationalization such as higher profitability or improved risk diversification (Grant & Venzin, 2009; Venzin, Kumar, & Kleine, 2008). Indeed, previous studies report efficiency disadvantages due to additional agency costs and heightened risks associated with banks' geographic expansion (Berger & DeYoung, 2001; Deng & Elyasiani, 2008; Berger, El Ghouli, Guedhami, & Roman, 2017).

More recent literature notes that the GFC has been transformational in banking across many dimensions (Llewellyn, 2013; Caparusso, Chen, Dattels, Goel, & Hiebert, 2019). While banks relied on expanding geographical coverage and product diversity to grow and achieve global competitiveness in the pre-GFC period, the post-GFC viability of “do[ing] everything for everyone everywhere” has been questioned by the industry observers (see, for instance, Economist 2015). Accordingly, the geographic footprint of global banks has been adjusting to the new international financial architecture. While some global banks retrenched from several

foreign markets due to lower margins on foreign business in countries where they lacked scale and expertise and in view of strengthened regulations which made international banking more costly, some increased their international focus as they seek higher returns abroad (Caparusso et al., 2019). At the same time, global bank presence has become more regionalised with the majority of foreign banks originating from their home regions (Claessens, 2017; World Bank, 2018). Hence, an empirical question is raised here: what is the impact of geographic diversification strategies on multinational banks' operational performance? This paper attempts to answer this question by employing recent data on the largest European banks and drawing on the research on globalization and regionalization.

Research on internationalization has increasingly focused on how and why geographic regions matter. Rugman and Verbeke (2004; 2008) argued that most multinational enterprises (MNEs) are not global but regional; in other words, they limit their geographic scope to the proximate markets in their own home regions. Region refers to “a grouping of countries that are relatively similar to each other and relatively dissimilar to countries in other regions” (Verbeke & Asmussen, 2016: 1054). The essence of the (home) regionalization hypothesis is that regional boundaries separate lower-distance environments from higher-distance ones (Rugman, Verbeke, & Nguyen, 2011). Therefore, in contrast to the home-region, inter-regional environments are “higher distance” environments in that MNEs face greater difficulty in managing various dimensions of distance -economic, cultural, institutional, and geographic-simultaneously. As a result, firm specific advantages (FSAs) “can be relatively easily transferred, deployed, recombined and profitably exploited throughout the home region compared to between regions” (Rugman et al., 2011: 770).

Regionalization hypothesis provides essential insights to the lack of robust findings on the impact of multinationality on performance (Hennart, 2007; Verbeke, Li, & Goerzen, 2009; Kirca et al., 2011). Hence, the current research shows increasing attention to the implications

of the (home) regional focus on MNEs' performance (Banalieva & Dhanaraj, 2013; Demirbag, Glaister, & Sengupta, 2020). This is particularly relevant in the case of financial services MNEs, which face tougher internationalization challenges, principally when expanding inter-regionally (Bhaumik, Owolabi, & Pal, 2018; Yildirim and Efthyvoulou (2018).

Banks differ from their industrial counterparts in the intensity and diversity of information embedded in their products and the nature of their FSAs. The knowledge-intensive nature of the banking industry leads to high transaction costs and imperfect markets, and the market failure for the transaction of information inhibits transaction-based internationalization and renders direct overseas presence imperative (Williams, 1997; Qian & Delios, 2008). However, compared to industrial firms, internationalizing banks face additional strategic complexities due to the distinctive features of local national markets relating to regulations and demand characteristics, and sources of cross-border value creation varying across individual products (Qian & Delios, 2008; Grant & Venzin, 2009). Furthermore, greater opaqueness of banks and regulatory intensive nature of the industry inhibit standard corporate governance mechanisms and allow for non-value creating internationalization drivers in the sector (Levine, 2004; Grant & Venzin, 2009). As such, empirical findings from industrial as well as non-bank services MNEs cannot be applied to banks compelling their separate analyses.

Our study, hence, contributes to the regionalization vs. globalization debate in the literature primarily by focusing on multinational banks. The existing research on multinational banking has paid limited attention to the existence of regional boundaries and regional strategies at multinational banks. This is curious given the observation that multinational banks have a strong home-regional focus traditionally (Grosse, 2005; García-Herrero & Vazquez, 2013) and the recent trend towards greater regional activity in global banking (Claessens, 2017; World Bank, 2018). Therefore, in our study, we draw on the internalization/transaction cost economics (TCE) theory and the home regionalization research and differentiate between the performance

impacts of the two types of geographic diversification: within the home region (home-regional diversification) and across geographic regions (inter-regional diversification). We employ a continent-based regional classification based on geographic proximity due to its managerial relevance rather than, for instance, a cultural or political grouping of countries (Rugman & Verbeke, 2007). Next, we employ technical efficiency as our operational performance proxy and posit that multinational banks derive technical efficiency benefits when expanding in their home regions rather than inter-regionally. The technical efficiency of a firm means its ability to obtain maximal output using a given set of inputs and ultimately affects its profits, risks, and market valuations. As such, achieving technical efficiency is a fundamental issue for the MNEs, which need to manage efficiently a diverse array of inputs, technologies, and business processes (Li, 2008). Most importantly, the concept of technical efficiency represents an “appropriate ... way to directly test the TCE theoretical predictions about firms’ possible efficiency gains” from a regional strategy (Banalieva, Santoro, & Jiang, 2012; 494). Finally, we test whether the functional focus of banks moderates the relationship between geographic diversity and operational performance as we suggest that the functional focus of banks affects the efficiency benefits and costs associated with the two types of geographic diversification.

Our empirical analysis uses data from the largest European banks over the period 2011-2018. The recent international reconfiguration in European banks that took place through retrenchment from several markets renders European banking a suitable and valuable context to study the impact of geographic diversification strategies on performance. Financial liberalization, increased economic and financial integration, and technological advances have transformed modern banking in Europe since the 1990s. Under the universal banking model, the banking business expanded to contain all aspects of financial services, including securities operations and investment banking. In response to the resulting high competition and limited growth opportunities at home, several European banks diversified functionally and

internationally (Larson, Schnyder, Westerhuis, & Wilson, 2011). However, the GFC and the following sovereign debt crisis have negatively affected financial integration in Europe and the subsequently introduced extensive regulatory overhaul created disincentives for European banks to maintain large and complex foreign operations (Claessens, 2017, Schoenmaker, 2017). Several studies have examined the recent retrenchment in cross-banking in Europe and highlighted weak profitability, worsening asset quality due to the debt crisis, and new regulations as potential drivers (Cheng & Mevis, 2019; McCauley, Bénétrix, McGuire, & von Peter, 2019). European banks continue suffering from low profitability and cost-efficiency, which contribute towards low market values (Detragiache, Tressel, & Turk-Ariss, 2018; Simoens & Vander Vennet, 2021). However, to the best of our knowledge no study has yet examined the impact of the locus of geographic diversification together with functional focus on operational performance, an ever more critical value driver in the post-GFC period.

Our analysis follows a two-step approach. In the first step, we employ a parametric distance function and generate technical efficiency measures as a proxy for operational performance. In the second stage, we investigate the impact of home-regional and inter-regional diversification on operational performance. Our results show that there is an interplay between the two geographic diversification strategies and the functional focus of the banks. Home-regional focus, together with a concentration on non-interest income-generating activities, hurts performance. However, following a diversification strategy across regions and a bias towards non-interest income-generating activities improves performance.

The remainder of the paper is organized as follows. The next section presents an overview of the related literature and the main hypotheses to be tested. The subsequent section describes our empirical methodology and the data used. We then report the empirical results, followed by the study's conclusions in the final section.

2. Literature review and hypotheses development

Different theoretical frameworks have been advanced to explain multinational banking: internalization/transaction cost economics theory (Tschoegl, 1987; Williams, 1997; Qian & Delios, 2008), eclectic paradigm (Cho, 1986; Williams, 1997), and sequential internationalization theory (Parada, Alemany, & Planellas, 2009; Ekman, Hadjikhani, Pajuvirta, & Thilenius, 2014; Lee, Song, & Kwak, 2014). While these theories advocate internationalization or international expansion or geographic diversification (used interchangeably in this paper) of firms based on closely related contentions, internalization theory presents a framework with greater internal consistency for studying the multinational bank (Williams, 1997).

Internalization theory supports the combination of FSAs and location-specific advantages (LSAs) for the international expansion of firms. Firms are likely to internationalize up to a point where the benefits derived from FSAs and LSAs are outweighed by the costs of organizing their internal market at the multinational level (Buckley & Casson, 1976; 2009). FSAs are divided into non-location-bound (NLB-FSAs) and location-bound (LB-FSAs). NLB-FSAs can be exploited globally and lead to scale and scope economies and benefits of exploiting national differences. They may include managerial capabilities, R&D knowledge, and easy access to capital. LB-FSAs, in contrast, benefit a company only in a specific country (or set of countries or region), such as an excellent local reputation, a well-developed retail network and special relations with domestic actors. Hence, they lead to benefits of national responsiveness (Rugman & Verbeke, 1992; Rugman et al., 2011).

Internalization is likely to predominate in vertically integrated, knowledge-intensive, quality reliant, and communication driven industries (Buckley, 1988) of which banking is a notable example. The principal activity of banks involves gathering, processing, storing, and distributing specialized information on clients and markets. These information flows constitute key inputs of banking activity, and the failure of the market for knowledge is a crucial factor in

motivating banks to become international (Qian & Delios, 2008). Therefore, banking is an industry envisaged by internalization theory to be dominated by multinationals due high transaction costs resulting in imperfect markets (Williams, 1997).

There is extant literature examining the impact of geographic diversification on banks' performance, assessed via various metrics. García-Herrero and Vazquez (2013), studying a sample of global banks from advanced countries, observe that banks with a higher share of assets in emerging market subsidiaries have higher risk-return profiles. Schmid and Walter (2012) consider data from U.S. financial intermediaries and find that although overall geographic diversification is not associated with a valuation discount, the value impact of geographic diversification depends on the firms' main activity areas (i.e., credit intermediation, insurance carriers, and securities broker-dealers). In a similar analysis for a cross-country sample of banks, Gulamhussen, Pinheiro, and Pozzolo (2017) report that international diversification creates shareholder value that is slightly larger for banks in the middle range of geographic diversification and in the case of expansion towards emerging countries. Curi and Murgia (2018) provide supporting evidence to Gulamhussen et al. (2017) findings in a study of divestitures in a global sample of financial conglomerates. They observe that while domestic divestitures are positively associated with conglomerate excess value, cross-border ones are negatively associated. On the other hand, Yildirim and Efthyvoulou (2018) find a significant geographic diversification effect on value only for banks originating from emerging countries but not for banks originating from advanced countries. Furthermore, the study shows that the locus of geographic diversification matters in that a regionally concentrated strategy leads to value enhancement while diversification across regions seems to harm value.

Several studies examined the risk implications of geographic diversification. Berger et al. (2017) offer two alternative hypotheses on the link between bank internationalization and risk. The diversification hypothesis states that international banks may have lower risks as they have

diversified portfolios as long as foreign assets' risk is not too high relative to domestic assets. The market risk hypothesis, in contrast, proposes that international banks may have higher risks due to market-specific factors rendering foreign assets relatively risky unless they are offset by a low correlation in asset returns. Market-specific factors, in turn, may include foreign exchange risk on foreign assets, political and economic instability, and learning and adjusting costs to different formal and informal institutional settings. Their empirical analysis of U.S. commercial banks reveals that internationalization is associated with higher risk. A similar positive relationship between geographic diversification and bank risk is found for a cross-country sample of commercial banks by Gulamhussen, Pinheiro, and Pozzolo (2014). Agency problems associated with poor governance; in other words, managerial inefficiencies, are argued to be the source of increasing risks in both studies. In contrast, Fang and van Lelyveld (2014) report that geographic diversification benefits can be substantial depending on location choices in a cross-country sample of the largest banking groups. Likewise, Duijm and Schoenmaker (2020a), using a sample of large European banks over the period 2010-2017, show that geographic diversification decreases insolvency risk and generates more stable returns.

While the potential for efficiency gains has been a major driver for banks' geographic diversification, very few studies examined its impact on operational performance at the consolidated or group bank level.¹ Berger and DeYoung (2001) state that geographic diversification may involve both efficiency benefits and costs. On the one hand, it may allow efficient banks to spread their superior managerial efficiency over more resources; and exploit scale and scope economies. On the other hand, it can also be detrimental to efficiency. Expanding banks may have low managerial efficiency or lack local knowledge and necessary skills. Difficulties in managing a large and widely spread organization can produce scale and

¹ There are ample studies comparing the efficiency of foreign-owned banks with that of domestically owned banks. See, for example, Miller and Parkhe (2002), Havrylchyk (2006), and Davutyan and Yildirim (2017).

scope as well as managerial inefficiencies from increased agency costs. Analyzing U.S. commercial banks, they provide evidence for both positive and negative links between local and regional geographic diversification and efficiency. They conclude that while the distance between parent and affiliate creates efficiency costs, efficient organizations can export their efficient practices to their affiliates. The empirical evidence on the link between geographic diversification and efficiency in a cross-border setting has been limited. In an early comparative study of U.S.-owned and foreign-owned multinational banks in the U.S., Chang, Hasan, and Hunter (1998) observe that higher levels of foreign assets are associated with higher inefficiency. In contrast, Cheng, Liang, and Huang (2014) report for Taiwanese banks that expanding overseas banking services and offshore banking units is associated with efficiency improvements.

The above review shows that existing studies do not provide a conclusive answer to the impact of geographic diversification on banks' performance. Moreover, despite the findings suggesting that the link between multinationality and performance varies depending on banks' location choices, the existence of regional boundaries is not explicitly controlled for, except for Yildirim and Efthyvoulou (2018). Furthermore, the studies fail to undertake a joint analysis of the two fundamental dimensions of diversification, geographic and product type (Hitt, Hoskisson, & Kim, 1997; Peng & Delios, 2006), even though across product lines and geographic markets diversifications have been prominent strategies for achieving growth and competitive advantages in the industry. Hence, we employ a home regionalization perspective and develop our hypotheses on how the operational performance of multinational banks might differ across their geographic and product loci.

2.1. Home-regional versus inter-regional geographic diversification in banking

Employing the internalization/transaction cost economics perspective, Rugman and Verbeke suggest that the home-regional bias is caused by the limits to "the MNE's ability to adapt

successfully the deployment of its existing FSAs to the specific circumstances of foreign markets” (2005: 12). Accordingly, as the distance from home increases with its spatial, regulatory/institutional, cultural, and economic components, the exploitation potential of NLB-FSAs declines, and the need increases to create new LB-FSAs to overcome the liability of foreignness (Zaheer, 1995). On the other hand, NLB-FSAs can be exploited profitably without incurring significant location-specific adaptation costs in the home region as the countries involved share institutional and economic proximity. Furthermore, LB-FSAs can be made region-bound and deployable in the entire region with some limited adjustments. Firms face the liability of inter-regional foreignness when expanding outside their home regions (Rugman & Verbeke, 2008), whereas “home regions confer efficiency” (Rugman & Verbeke, 2005: 13).

Compared to manufacturing MNEs, services MNEs face even more complex internationalization challenges due to distinctive characteristics of services: intangibility, inseparability, heterogeneity, and governmental regulations. Intangibility means that services are more like experiences rather than objects. Inseparability refers to the fact that services are produced and consumed simultaneously, and hence they require direct contact between producer and consumer and local responsiveness. Heterogeneity means services need to be created and delivered differently depending on each individual customer’s needs which creates quality control problems (Buckley, Pass, & Prescott, 1992; Li, 2005). Inter-regional expansion is likely to be more challenging in services MNEs due to (i) difficulty of simultaneously adapting upstream and downstream activities and (ii) difficulty of achieving supply-side autonomy in location choices (Rugman & Verbeke, 2008). Customer characteristics, in particular, are critical factors in geographic diversification decisions of services MNEs, supporting home-region orientation in the services industry (Oh, Sohl, & Rugman, 2015).

We can distinguish two separate functions of multinational banking: Multinational retail banking and multinational investment and wholesale banking (Grubel 1977; Petrou 2009).

Retail banking includes providing individuals and small and medium sized enterprises with financial services including traditional loan and deposit accounts, transaction services and consumer finance products. Investment and wholesale banking, in contrast, comprises corporate finance, and underwriting and financial advisory services provided to large corporations. Provision of services to corporates internationally has been the traditional focus of multinational banking. What is known as the defensive expansion approach to multinational banking suggests that banks follow their customers abroad to continue providing banking services to foreign subsidiaries of home country firms. As banks develop valuable knowledge on their client and expertise on how to cater to their needs, which is an LB-FAS, by following the client to overseas markets via foreign direct investment, the bank internalizes the exchange of client information (Qian & Delios, 2008).

Classified as soft-services, retail banking is knowledge-intensive, subject to heavy regulations, and has been at the core of banks' recent internationalization drives (Venzin et al., 2008). These services are produced and consumed simultaneously, and hence proximity to the customer and organizational presence are essential (Tschoegl, 1987). The diverse characteristics of national markets concerning regulations and customer demand features create high local adaptation needs, making reputation, customer base, and local market knowledge critical for success (Grant & Venzin, 2009; Petrou, 2009). Being local by its very nature, retail banking requires the development of selling points and customizing products to meet local culture or specific needs in each market (Parada et al., 2009). Consequently, there would be a significant need for 'melding investments' in host markets, meaning complementary investments in new LB-FSAs are needed in host markets where NLB-FSAs, such as managerial capabilities and R&D knowledge, are to be exploited (Rugman et al., 2011).

Home-regional institutional similarities and spatial proximities allow regional MNEs to access and integrate location-specific resources readily, for instance, knowledge about local

institutions and market conditions, which are critical success factors in banking (Qian, Khoury, Peng, & Qian, 2010; Banalieva et al., 2012). Moreover, formal and informal regional integration contributes to increasing scale benefits (Oh & Contractor, 2014). Accordingly, we can argue that multinational banks can achieve efficiency benefits due to reduced coordination, control, and knowledge sharing costs when expanding intra-regionally where they are more familiar with the demand and customer characteristics (Yildirim & Efthyvoulou, 2018). Informational asymmetry with local borrowers compared to local banks that foreign banks have can be relatively lower intra-regionally (Bhaumik et al., 2018). On the other hand, inter-regional diversification involves higher environmental complexity and market risks, and hence requires more location-specific investments in learning and control (Qian et al., 2010; Oh et al., 2015; Yildirim & Efthyvoulou, 2018). Operating in diverse geographic environments gives rise to amplified governance and administrative costs as well as agency problems and lowers efficiency (Berger & DeYoung, 2001; Li, 2008).² Therefore, we propose:

H1. *Home-regional geographic diversification is positively related to operational performance.*

H2. *Inter-regional geographic diversification is negatively related to operational performance.*

2.2. *The moderating effect of product diversification*

It is widely suggested that geographic diversification and product diversification are interdependent, and product and geographic scope interact with one another (Peng & Delios, 2006). Product diversification can positively moderate the impact of international diversification on performance since structures and capabilities developed for product

² We should note that this view of intra- and inter-regional markets is consistent with the sequential diversification of multinational banks in which they first service geographically and culturally closer markets within a region and subsequently expand to geographically and culturally distant regions (Parada et al., 2009; Ekman et al., 2014).

diversification can also help international diversification (Hitt et al., 1997). Conversely, high levels of diversity in products and markets can increase coordination and control costs, and hence result in poor performance (Elango, 2004). Taking a regional MNE perspective, Elango (2004) reports empirical evidence that confirms the former argument and suggests that the flexibility to reduce risks and gain synergies in operations may not be available in MNEs with international operations that are regional. Oh and Contractor (2014) propose and find supporting evidence that as product diversification increases, the resulting higher governing costs and complexity reduce the benefits of geographical integration while interdependencies between product diversity and geographic diversity lead to synergy benefits. On the other hand, Oh, et al. (2015) report for retail firms that product diversity has a negative moderating effect on the relation between inter-regional diversification and performance due to increased complexity arising from operating in dissimilar markets and diverse products.

Banks' functional focus or business mix can be broadly divided into two activity or revenue classes: focus on interest income generating activities and focus on non-interest income (i.e., fee and commission and trading income) generating activities. The former refers to products and services primarily associated with traditional banking activities, in other words, accepting deposits and transforming them into loans. The latter, in contrast, include financial advisory services, underwriting of securities issues, trading and investment in securities on behalf of the bank or for clients, and other securities services like brokerage.³

The functional focus of banks affects efficiency benefits as well as learning, adjustment, coordination, and control costs associated with each type of geographic diversification. Deposit-taking and lending services require heavy local presence, resulting in higher costs associated with regulations and increased managerial and operational complexity (Schmid &

³ While agreeing with the empirical approaches commonly taken in the banking literature, we acknowledge that this is an over-simplification since several banking products and services generate both types of revenues. For instance, banks may generate fee income while providing consumer loans.

Walter, 2012). Therefore, focusing on traditional banking activities reinforces the efficiency advantages of home-regional diversification. In contrast, fee and trading income-generating activities allow the inter-regional deployment of home-developed technologies more easily due to their relatively lower local specificity. Providing familiar clients (e.g., home- and host-country large and multinational corporations) with similar services involves little local adaptation needs. It hence allows more scope for cross-border scale and scope economies (Grant & Venzin, 2009). Provision of trading and securities services requires presence only in the key financial centers, whereas establishing a viable presence in host markets involves high costs and complexity (Schmid & Walter, 2012). Furthermore, as the development of such activities requires heavy fixed investments, which may increase operational risks, focusing on non-interest income generating activities strengthens strategic flexibility benefits from inter-regional diversification (Elango, 2004; Qian et al., 2010). Hence, we hypothesize:

H3. *Greater emphasis on non-interest income generating activities negatively moderates the relationship between home-regional geographic diversification and operational performance.*

H4. *Greater emphasis on non-interest income generating activities positively moderates the relationship between inter-regional geographic diversification and operational performance.*

3. Methodology

3.1. Sample and data

We constructed a panel data sample of the largest European banks by employing several data sources to test our hypotheses. Estimating our key variable of interest, the degree of geographic diversification, requires data on banks' foreign operations, which is challenging due to the lack of uniform standards for reporting foreign exposures across countries. Hence, we employ Duijm

and Schoenmaker's data set on cross-border exposures of the largest European banks (Duijm & Schoenmaker, 2020).⁴ The main advantage of this data set, hand collected primarily through annual reports, is that it provides a complete picture of banks' cross-border exposures split by host countries for 2010-2017. Consequently, we are able to develop geographic diversification measures that capture banks' total exposures across countries rather than exposures through foreign subsidiaries only, which has been the approach taken in most of the previous literature due to data limitations.⁵

Next, we extract yearly accounting data (consolidated basis) on these banks for 2011-2018 from BankFocus, an international database provided by Bureau van Dijk. After excluding banks classified as specialized governmental credit institutions by BankFocus, we are left with 49 banks from 16 European countries.⁶ As a result, similar to the previous literature on global banking, our final sample covers large banks that are the most important players with the most geographically diversified operations (see, for example, Gulamhussen et al., 2014; Curi and Murgia, 2018).⁷ We should note that our sample size is comparable to that of Curi and Murgia (2018) and Fang and van Lelyveld (2014) concerning the number of countries and banks. Country-level data are collected from the World Bank's World Development Indicators (WDI).

3.2. Measures

We employ a parametric distance function and generate technical efficiency measures as a proxy for *operational performance*, our dependent variable. More specifically, we model bank production by following the intermediation approach, which is argued to be preferable when

⁴ Defined as banks with total assets of EUR 100 billion in either 2017 or 2010.

⁵ See, for instance, Yildirim and Efthyvoulou (2018) and Gulamhussen et al. (2014, 2017), which employ geographic diversification measures based on foreign subsidiary data only.

⁶ The distribution of our sampled banks by specialization (number of banks) is as follows: Bank holding and holding company (15), commercial bank (26), cooperative bank (6), real estate and mortgage bank (1), and savings bank (1). The distribution by country (number of banks) is as follows: Austria (2), Belgium (2), Switzerland (3), Germany (3), Denmark (2), Spain (6), Finland (2), France (6), Great Britain (6), Greece (1), Ireland (2), Italy (5), Netherlands (4), Norway (1), Portugal (1), and Sweden (3).

⁷ Table A3 in Appendix 3 presents the full list of sampled banks.

analyzing the economic viability of banks (Ferrier & Lovell, 1990). We include personnel expenses, total interest expenses, and other operating expenses as inputs. We differentiate between net loans, securities, and non-performing loans as outputs. The significant role of loan impairments in determining the recent banking performance in the European context induces us to include non-performing loans as an “undesirable” output in our model (Cheng & Mevis, 2019). We employ impaired loans provided by BankFocus as a proxy for non-performing loans, as in Matousek, Rughoo, Sarantis, and Assaf (2015). We use the methodology proposed by Cuesta, Knox Lovell, and Zofio (2009) to estimate the technical efficiency by combining both desirable and undesirable outputs. We provide further details on the estimation of technical efficiency for each bank in Appendix 1.

The measurement of the degree of *geographic diversification* has been challenging in the banking literature due to the difficulty of obtaining data on foreign operations of financial institutions. Simple measures such as international share (in terms of assets, loans, or deposits) or simple indicator variables controlling for the existence of foreign operations have been commonly used even though they fail to reflect the spatial distribution of a bank’s operations.⁸ Other studies, however, employed the Herfindahl-Hirschman Index (HHI) to measure geographic diversification to assess the geographic dispersion of a bank’s operations.

We measure *geographic diversification* (**GD**) using the entropy index expressed by the following equation:

$$GD_{it} = \sum_m^M P_{imt} \ln(1/P_{imt})$$

where P_{imt} is the exposure (in percentage) of bank i in year t to country m for a bank with operations in M different countries. The measure, therefore, considers both the number of

⁸ See, for example, Berger et al. (2017) and Schmid and Walter (2012).

countries in which a bank operates (breadth of geographic diversification) and the relative importance of each country (depth of geographic diversification) (Hitt et al., 1997; Oh et al., 2015). We classify geographic diversification into home-regional (intra-regional) diversification and inter-regional diversification, following Oh et al. (2015) and Qian et al. (2010). Home-regional diversification measures a bank's degree of diversification within its home region, Europe, whereas inter-regional diversification captures a bank's diversification across geographic regions. For calculating inter-regional diversification, we employ six continent-based regions: Africa, Asia, Europe, Latin America and the Caribbean, North America, and Oceania, as in Yildirim and Efthyvoulou (2018). We allocated countries to geographic regions according to the U.N. classification.⁹

We use the share of non-interest income to total operating income to measure *product diversification* (PD), as commonly done in the banking literature (see, for example, Gulamhussen et al., 2014; Yildirim and Efthyvoulou, 2018).

Consistent with prior literature, we control for various bank-level and country-level factors (see, for example, Yildirim and Efthyvoulou, 2018; Gulamhussen et al., 2017; Demirgüç-Kunt and Huizinga, 2010). Bank-level controls include capitalization (*capitalization*), defined as total equity to total assets to take into account that higher capitalization can lead to better efficiency through alleviated agency problems and restrained risk-taking incentives (Cheng & Mevis, 2019); share of customer deposits in total assets (*deposits*) to capture funding strategy which is a fundamental aspect of bank business models and proven to affect bank risk and performance (Demirgüç-Kunt & Huizinga, 2010); a dummy variable to identify banks classified as Global Systemically Important Banks (*GSIB*) which face additional regulatory scrutiny and additional capital requirements; and bank size measured by binary variables that group banks into total asset quartiles. While larger size may confer efficiency advantages such as the ability to

⁹ Available at: <https://unstats.un.org/unsd/methodology/m49/>

undertake costly technological investments and favorable access to resource markets, it can also create efficiency disadvantages due to increased organizational complexity, coordination costs, and agency problems (Elyasiani & Wang, 2012).¹⁰ As country-level controls, we employ GDP growth (*growth*) and rate of inflation (*inflation*). Economic growth and price stability are expected to bring about plentiful investment opportunities while reducing impairment costs (Cheng & Mevis, 2019).¹¹

3.3. Models

3.3.1. Quantile Regression

The Bootstrapping Quantile Regression technique is used to estimate our models presented in the following section since the distribution function of the dependent variable (technical efficiency) is asymmetric around its mean.¹² The Quantile Regression methodology introduced by Koenker and Bassett (1978) is a generalization of median regression analysis to other quantiles. The median regression fits a regression line through all observations by minimizing the sum of absolute errors. That is, it estimates the median of the conditional distribution. The τ -th quantile of the conditional distribution is estimated by minimizing:¹³

$$\phi_{\tau}(Y - X\beta)$$

With respect to β , which is solved via linear programming. This function can be interpreted as the representation of technical efficiency (Y), which is dependent on observed variables (X) and a random error (u). The conditional quantile function can then be formally expressed as:

¹⁰ These variables also capture FSAs.

¹¹ These variables also capture LSAs.

¹² We employ various tests of distributional heterogeneity, including the Chen-Shapiro test (Chen & Shapiro, 1995) and the skewness-kurtosis test (D'Agostino, Belanger, & D'Agostino, 1990) to test whether our dependent variable (technical efficiency score) is non-normal. These tests suggest the hypothesis that the dependent variable is normally distributed is rejected at the 5% significance level. The test results are not reported but available upon request.

¹³ The median estimator (i.e., quantile regression estimator for $\tau = 0.5$) is similar to the least squares estimator for Gaussian linear models, except that it minimizes the sum of absolute errors rather than the sum of squared errors.

$$Q_Y = (\tau|X) = X'\beta(\tau)$$

While standard regression estimators are not robust to modest departures from normality, Quantile Regression results are robust to outliers and distributions with heavy tails. Furthermore, the Quantile Regression approach avoids the restrictive assumption that the error terms are identically distributed at all points of the conditional distribution.

3.3.2. Efficiency model specification

We employ the following empirical specification to test Hypotheses 1 and 2 (Model 1):

$$Q_\tau(E_{int}|X_{int}) = \alpha + \beta_1 \mathbf{GD}_{int-1} + \beta_2 PD_{int-1} + \gamma \mathbf{Z}_{int} + \delta \mathbf{Y}_{nt} + \varphi_n + \mu_t + \varepsilon_{int}$$

where $Q_\tau(E_{int}|X_{int})$ is the τ -th quantile regression function. E refers to technical efficiency as defined above; $\mathbf{GD}$ is a vector of geographic diversification measures as introduced above; PD is product diversification proxy; $\mathbf{Z}$ represents the vector of bank-level control variables; $\mathbf{Y}$ is a vector of country-level control variables; i and t index bank and time, respectively; φ and μ represent country-specific and year-specific effects, respectively, and ε is the error term.¹⁴ Year-specific effects are included to control for global shocks common to all banks, like changes in global risk perceptions.

To determine whether the nexus between geographic diversification and efficiency depends on banks' business focus, as suggested by Hypotheses 3 and 4, we define the following extension of our base model (Model 2):

$$Q_\tau(E_{int}|X_{int}) = \alpha + \beta_1 \mathbf{GD}_{int-1} + \beta_2 PD_{int-1} + \beta_3 (\mathbf{GD}_{int-1} \times PD_{int-1}) + \gamma \mathbf{Z}_{int} + \delta \mathbf{Y}_{nt} + \varphi_n + \mu_t + \varepsilon_{int}$$

Following Francis, Hasan, Küllü, and Zhou (2018), the median is used as the quantile (i.e., $\tau=0.5$), and hence we have Bootstrapping Median Regressions. Because our technical efficiency

¹⁴ We include country dummies for countries with three or more banks and hence a sufficient number of bank-year observations.

measures are estimated, we use bootstrapping to obtain consistent standard errors.¹⁵ The regressions are bootstrapped 50 times, and all converged before we reached 50. Finally, we employ one-year lagged terms of geographic and product diversification measures to address the potential endogeneity of these proxies, as in Francis et al. (2018).

Table 1 presents variable definitions and data sources. Descriptive statistics of model variables are given in Table A1, and the cross-correlation matrix for all model variables is displayed in Table A2 in Appendix 2.

<Insert Table 2 here>

4. Results

4.1. *Evolution of geographical diversification over time*

Before examining the link between geographic diversification and operational performance, we present our sampled banks' geographical exposures over time in Table 2. We can see our banks are clearly home-region oriented; hence, their foreign exposures are mainly due to their investments in the rest of the European markets. We also display in Table 2 the evolution of geographic diversification using the two entropy measures described above. We can observe that geographic diversification within Europe (home-regional diversification) is substantially higher than across regions (inter-regional diversification). Furthermore, home-regional diversification displays a slightly declining trend over time, which seems to be due to increasing exposure to the home market. Table A3 in Appendix 3 presents yearly averages of geographic

¹⁵ Bootstrapping is employed to create an empirically generated sampling distribution, which is then used to construct confidence intervals and create an inference to the unknown population parameters (see, Efron, 1979; Efron and Stein, 1981; Efron, 1981). Without relying on prior probability distributions, bootstrapping assists researchers with outlining the unknown population parameters. In short, this technique resamples the distribution of the observed data to construct new bootstrapped samples and calculates a value for the estimator for each of these samples. The distribution of these estimates approximates the true sampling distribution of the estimator as the number of bootstrapped samples becomes large.

diversification together with product diversification and technical efficiency measures for each bank in the sample.

<Insert Table 3 here>

4.2. Main results (Model 1 and Model 2)

We present the results of estimating Model 1 and Model 2 in Table 3. First, we test Hypothesis 1 and find a positive and statistically significant relationship between home-regional diversification and efficiency. *Ceteris paribus*, a one standard deviation increase in the level of home-regional diversification increases efficiency by 0.027 (0.052×0.528). With an average efficiency of 0.696, this figure corresponds to a 3.95% increase in efficiency. Next, testing Hypothesis 2, we show that the coefficient on inter-regional diversification is positive and statistically significant. *Ceteris paribus*, a one standard deviation increase in the level of inter-regional diversification increases efficiency levels by 0.056 (0.153×0.369), representing an 8.11% increase in efficiency.

<Insert Table 4 here>

Hypotheses 3 and 4 predict that the impact of geographic diversification on efficiency depends on banks' business focus. Testing first Hypothesis 3, we find a negative and statistically significant coefficient on home-regional diversification $\times$ product diversification. This suggests that high levels of home-regional diversification combined with high levels of non-interest earnings harm bank efficiency. The results further show that, on average, the marginal impact of home-regional diversification on efficiency is $\frac{dE}{dGD} = 0.201 - 0.004\overline{PD}$. Hence, the marginal impact on average is $\frac{dE}{dGD} = 0.044$ ($p = 0.066$). We also show graphically in Figure 1 the interaction effect following Meyer, Van Witteloostuijn, and Beugelsdijk (2017).

<Insert Figure 1 here>

Next, testing Hypothesis 4, we find that the coefficient on inter-regional diversification $\times$ product diversification is positive and statistically significant. This indicates that higher levels of inter-regional diversification contribute to higher efficiency when combined with a focus on non-interest income-generating activities. Interestingly, while the coefficient on inter-regional diversification is positive and statistically significant in Model 1, when we control for the interaction effect, the coefficient on inter-regional diversification becomes statistically insignificant. The results additionally show that, on average, the marginal impact of inter-regional diversification on efficiency is $\frac{dE}{dGD} = -0.156 + 0.007\overline{PD}$. Hence, the marginal impact on average is $\frac{dE}{dGD} = 0.143$ ($p = 0.000$). Figure 2 displays the interaction effect graphically.

<Insert Figure 2 here>

Concerning the control variables, we find evidence that higher capital levels are associated with higher efficiency.

Overall, our findings largely support our hypotheses. Regarding home-regional diversification, consistent with H1 and H3, we show that while the home-region focus is associated with higher efficiency, together with a concentration on non-interest income-generating activities, it hurts efficiency. Considering inter-regional diversification, we fail to find support for H2. However, in line with H4, we find that following a strategy of diversification across regions and a bias towards non-interest income-generating activities improves efficiency.

4.3. Further results on the performance effect of home regional diversification

We further explore the impact of home regional diversification on bank efficiency to better understand the performance implications of geographic diversification strategies. Our sampled banks all originate from advanced European countries. However, Europe as a region contains several countries with distinct market conditions and institutional structures. As grouping these

diverse countries in the same regional category can potentially mask important differences among them (Kim, Wu, Schuler, & Hoskisson, 2019), we investigate the robustness of our findings with respect to our definition of Europe as the home region in two further extensions of our models.

First, to take into account the formal institutional differences in European countries, we use the Heritage Foundation's financial freedom index (FFI) of the and collect yearly FFI of all the European countries where our sampled banks have exposures. We prefer to use the FFI rather than a broader measure of institutional development since it is intended to measure both banking efficiency and independence from government control and interference in the financial sector.

¹⁶ We then define two new intra-regional diversification measures: High Financial Freedom (HFF) home-regional diversification and Low Financial Freedom (LFF) home-regional diversification. The former is the entropy measure of intra-regional diversification within the European countries that have average FFI higher than the European average (over 2011-2017) while the latter is the entropy measure of intra-regional diversification within the European countries that have FFI lower than the European average. Next, in view of the fact that emerging European countries' banking markets may be significantly different than those of advanced European countries with respect to competitiveness and growth prospects, we split our home region into two categories: advanced Europe and emerging Europe, and calculate two entropy measures of home regional diversification: within advanced Europe (AE) and within Emerging Europe (EE).

The estimates with these alternative sets of home-regional diversification definitions, as presented in Table 4, are very similar to our baseline estimates. Yet, they provide additional insights into the impact of home regional diversification strategies on bank efficiency. Focusing on the full model (Model 2) and the first set of results, we see that the positive impact on

¹⁶ See, for further information, <https://www.heritage.org/index/financial-freedom>.

efficiency from a home-regional diversification strategy is driven mainly by diversification within the less institutionally developed European countries (column 2, Table 4). Furthermore, this positive impact is negatively moderated by a greater focus on fee and commission income-generating activities. Employing advanced European (AE) and emerging European (EE) home-regional diversification definitions and the full model, we again find that both home-regional diversification strategies are positively related to efficiency (column 4, Table 5). However, the coefficient on EE home regional diversification is larger in size and statistical significance than that on AE home regional diversification. Likewise, a greater focus on fee and commission generating activities negatively moderates the impact on the efficiency of the two home-diversification strategies.

<Insert Table 4 here>

4.4. Robustness tests

To assess the robustness of the above findings, we perform several checks. First, while we use one-year lagged terms of geographic and product diversification measures to address endogeneity concerns in our regressions, we re-estimate our models with instrumental variable regressions. Following Laeven and Levine (2007), we employ as instruments for each bank's geographic and product diversification, the average diversification measures of its peers. Peers, in turn, are defined in two alternative ways like Francis et al. (2018): Banks in the same (i) asset size quantile and (ii) one-year-lagged efficiency quantile.¹⁷ As displayed in Table 5, using Model 1, our results, in general, remain similar to those reported in Table 3. Next, when using Model 2 we find that while only the coefficients on inter-regional diversification and inter-regional diversification $\times$ product diversification are significant when peers are created

¹⁷ We acknowledge that creating peers based on each bank's home country, as in Laeven and Levine (2007), would be more appropriate. However, we could not follow this approach since we have several countries in our sample with very few banks.

according to the previous period's efficiency (column 4), the signs of both diversification effects and the interaction effects are in line with our main results.

<Insert Table 5 here>

Next, we explore our results' sensitivity to our choice of geographic diversification measures, and we employ as alternatives the measures developed by Banalieva and Santoro (2009). More specifically, we define home-regional orientation as home-region exposure minus home-country exposure and global orientation as the difference between global (total) exposure minus home-region exposure. In this way, we can distinguish between home-country focus and the rest of home-region focus strategies, both of which would result in a higher home-regional exposure but involve different costs and benefits - depending on the share of the home country in the home-region exposure. The estimated coefficients on our variables of interest, as displayed in Table 6, retain their signs in both models. Furthermore, in the full specification (Model 2), global orientation is significantly and negatively related to efficiency supporting H2. Hence, the results overall lead to the same inferences as reported above.

<Insert Table 6 here>

Furthermore, we acknowledge that tax arbitrage is a significant driver for bank internationalization and hence exposure to low-tax markets may improve bank performance (Merz et al., 2017; Rusina, 2020).¹⁸ To address this matter, we create a new variable, tax-haven exposure, and test whether our results persist when we include it as an additional control in our models. We define tax-haven exposure as the ratio of banks' total exposure in tax-haven countries to total foreign country exposures. For identifying tax-haven countries, the EU list of non-cooperative jurisdictions for tax purposes is employed.¹⁹ Whereas the coefficient on tax-

¹⁸ We are thankful to an anonymous referee for raising this point.

¹⁹ More specifically, we have included the 17 original countries identified in the first list in 2017 and the three countries added in the 2018 revision (see, for further information, <https://www.consilium.europa.eu/en/policies/eu-list-of-non-cooperative-jurisdictions/>).

haven exposure turns out to be positive and statistically significant, suggesting that banks derive efficiency benefits from expanding in low-tax countries, our findings remain robust (See Table 7, column 1).^{20 21}

Finally, we check the sensitivity of our results to the European sovereign debt crisis and the significant restructurings that some of the European banking groups went through in its aftermath. For this, we employ three alternative specifications, as displayed in Table 7 (columns 2-4). First, we augment our full specification (Model 2) to control for the impact of abnormal changes in the total assets because of acquisitions or divestments on operational performance. Specifically, we employ two indicator variables following Li (2008): superior growth, which takes the value 1 if the annual growth rate of bank assets is above 20 percent, and downsize, which takes the value 1 if the annual growth rate of assets is below 20 percent. Neither superior growth nor downsize reach statistical significance, and our findings remain robust to the inclusion of these additional variables (see column 2, Table 8). Second, we exclude the years 2011 and 2012, during which the European sovereign debt crisis intensified, and the impairment costs peaked in the periphery countries (Cheng & Mevis, 2019). We re-estimate our efficiency measures using this sub-sample and re-run Model 2. The estimates based on this shorter sample (Table 7, column 3) are very similar to our baseline estimates reported above. Third, we exclude banks from Greece, Ireland, Italy, Portugal, and Spain, the so-called GIIPS countries. These countries were the worst affected by the European sovereign debt crisis, and hence the crisis might have affected their banks' financial statements (Duijm & Schoenmaker, 2021). The results based on this sub-sample (Table 7, column 4) confirm our baseline results largely.

²⁰ For brevity, we present in Table 7 only the results of robustness tests implemented on Model 2. However, running the same tests using Model 1 does not change the findings reported and discussed in this section. These results are available upon request.

²¹ We also recognize that some of our sampled banks originate from European countries which are considered as low-tax countries, such as the Netherlands. Our home-country dummies, included in all our specifications but not reported for brevity in regression tables, control indirectly for such home-country-driven benefits.

Interestingly, inter-regional diversification turns out to be statistically significantly and negatively related to efficiency in specifications reported in columns 3 and 4.

<Insert Table 7 here>

5. Discussion

5.1. Contributions

In this study, we examine the performance implications of geographic diversification strategies on multinational banks' operational performance. Using a sample of the largest European banks, we show how the interplay between the home- and inter-regional diversification strategies and the functional focus of the banks affects operational performance. More specifically, we hypothesize and find that while home-regional diversification is positively related to operational performance, inter-regional diversification is negatively related to operational performance. In addition, we show that home-regional focus, together with a focus on non-interest income-generating activities, hurts performance. However, inter-regional diversification strategy and focusing on non-interest income-generating activities improve performance.

Our study makes three main contributions. First, we contribute to the significant research on multinational banks, which has focused on the 'why' and the 'where' of their global footprint (Sabi, 1988; Nigh, Cho, & Krishnan, 1986; Miller & Parkhe, 1998; Focarelli & Pozzolo, 2005). We help extend this literature by focusing on the efficiency of the 'where', 'why', and 'where and why' of multinational banks. We do so by building on the internalization/transaction cost theory (Buckley, 1988; Buckley & Casson, 1976; 2009) that explains the 'why' and 'where', and the regionalization hypothesis (Rugman & Verbeke, 2004; 2008) that augments the 'regional/global where' to study the footprint of multinational banks.

Internalization theory indeed advocates organizational efficiency by balancing the benefits of dispersion stemming from the deployment of FSAs that cannot be transacted via markets and the costs of managing dispersed activities. Our study equates the organizational efficiency predicted in internalization theory through [operational performance, proxied by technical efficiency](#). The regionalization hypothesis advocates home-region bias due to the higher costs of adaptation of the organization to distant economic, institutional, geographic, and cultural [environments](#) in inter-regional dispersion. The banking industry represents an interesting setting to combine the internalization/transaction cost theory with regionalization research due to the distinct features of its products, namely interest-bearing services that facilitate home-region dispersion due to their lower adaption costs within the home-region and fee and trading income-bearing services that facilitate inter-regional or global dispersion due to their lower adaptation costs across regions. [As such, our findings help advance our understanding of the role of contingencies or moderators in the link between geographic diversification strategies and performance](#) (Kirca et al., 2011; Aguilera, Flores, & Kim, 2015). In particular, our study generates relevant knowledge and adds to the limited existing empirical findings on services MNEs that [operate in knowledge-intensive and institutionally sensitive industries](#) and face high location-specific adaptation investment needs (Kundu & Lahiri, 2015; Oh et al., 2015).

Second, our study integrates banking literature with insights from the home regionalization research to help resolve the non-conclusive findings on the link between multinationality and bank performance in past studies. Banking literature has paid limited attention to the fact that “multinationality is a multidimensional concept” (Verbeke et al., 2009: 150) and commonly employed proxies that measure only the level of multinationality, such as the share of foreign assets (sales) to total assets (sales). Relatedly, it has ignored that regional boundaries separate lower-distance environments from higher-distance ones and treated various distance attributes independently of each other (Rugman et al., 2011). In our analysis, we build on the

regionalization/globalization stream in the international business literature and differentiate between the two types of geographic diversification: home-regional and inter-regional diversification. In addition, we examine the interaction effects between functional focus and geographic diversity on operational performance. Our findings reveal that it is not the level of multinationality per se that matters for operational performance but instead the interactions between the geographic and product loci. Thus, our findings provide supporting empirical evidence to Venzin et al., (2008), who suggest that generalization of the relationship between multinationality and performance is difficult as it differs significantly depending on various strategic characteristics of banks, including branch network configurations and product portfolios.

Third, we employ technical efficiency as our operational performance proxy, which allows us to directly assess the TCE predictions on the efficiency gains from a home-regionalization strategy as opposed to a globalization strategy (Banalieva, et al., 2012). While organizational efficiency, which is traded off against the benefits of internationalization as suggested in the internalization theory, is better captured by the operational side of the organizations, efficiency gains in operations due to different internationalization strategies have rarely been tested explicitly in the literature (Nguyen & Kim, 2020; Banalieva, et al., 2012). Hence, we expand the research context by employing operational performance as our metric rather than a metric focusing on the financial side, such as stock market valuations or various accounting measures. The technical efficiency of a firm ultimately affects its profits, risks, and market valuations. Hence our study complements and provides insights to the empirical findings on the impact of international diversification on such performance measures reported in the previous studies. In particular, our study's findings suggest that distinct product or functional focus of banks moderating efficiency benefits from different regional dispersions could be a contributing factor

to the lack of value gains from higher geographic diversification reported for developed banks by Yildirim & Efthyvoulou (2018).

5.2. Managerial and policy implications

Our findings are relevant to managerial practice. Our study confirms that advanced European banks are home-region oriented; their foreign exposures are mainly due to their investments in the rest of the European markets. This agrees with the observed internationalization trends in European banking since the 1990s, as discussed elsewhere (see, for example, Larson et al., 2011; Ekman et al., 2014). Our findings suggest that the efficiency gains derived from combining home-regional diversification with traditional banking activities could have been motivating the expansion of European banks, particularly into the emerging and institutionally less-developed European countries.

More recently, multinational banks' troubles in several markets have led them to initiate refocusing strategies. Global retail closures undertaken by several banking groups, such as Citi and HSBC, in the aftermath of the GFC have also been noted commonly (Financial Times, 2015). HSBC in Turkey represents a relevant case here. Its Turkish operations have continuously underperformed since its entry in the country. Unable to sell its loss-making subsidiary as part of its global refocusing and restructuring policy, HSBC announced in 2016 that it decided to retain and restructure it, focusing on wholesale banking (Anadolu Agency, 2016). Our study provides valuable insights into these recent evolutions in business models and points at operational inefficiencies from combining retail and consumer banking with diverse geographic expansion as the underlying force.

Bank managers and policymakers can detect from our study the extent to which bank-level internationalization can be moderated by product-level internationalization to improve efficiency. They can also use the efficiency scores to benchmark the positions of different banks vis-à-vis their domestic and regional peers. For policymakers, in particular, FSAs could be

helpful in gauging the extent to which banks have competitive advantages to operate within and outside their home regions. The absence of advantages to operating within and outside the home region could be interpreted as an early warning signal of a potential exit or failure.

5.3. Limitations and future research directions

As in other studies, our study is not without its limitations. First, our sample size is relatively small and covers only the largest banks. However, focusing on large banks is especially relevant for our research objectives since these banks are the main drivers of the globalization of financial systems, and small banks are less likely to internationalize significantly across regions and within regions (Gulamhussen, et al., 2014; Yildirim & Efthyvoulou, 2018).²² Second, our analyses consider banks from a single region: Europe. Focusing on a particular geographic market ensures that we have a relatively homogenous sample of banks with respect to economic, institutional, geographic, and cultural features (Rugman & Verbeke, 2004; 2008). However, it may also limit the generalizability of our findings, and hence it would be interesting to replicate this study with a broader sample, including banks from other geographic regions. Future studies could focus on emerging country banks since they have been expanding significantly in their home regions in recent years ([World Bank, 2018](#)).

Going forward, digitalization and technological innovation are expected to be transformational for multinational banks and the financial sector overall. Reducing transaction costs and providing banks with new ways of interacting with their customers, digitalization may lead to broader and deeper internationalization with FDI-light footprints in banking (Verbeke & Hutzschenreuter, 2021). However, the success of banks expanding internationally on the strength of their digital assets and capabilities depends on their ability in bundling NLB-digital

²² We should also note that previous studies on the regional diversification-performance relationship in the broader international business literature employ data from the world's largest firms (see, for instance, Rugman and Oh, 2010; Oh et al., 2015).

assets with other non-digital assets. Furthermore, this asset-bundling process needs to consider significant variations in technological progress, regulatory infrastructure, and customer preferences across geographic markets (Verbeke & Hutzschenreuter, 2021; Murinde, Rizopoulos, & Zachariadis, 2022). Hence, the globalization-regionalization debate may serve as a valuable lens to examine interactions between different international diversification strategies and digital assets in determining the operational performance of multinational banks in future studies.

5.4 Conclusions

We build on the research on globalization and regionalization and complement and extend previous research on the impact of geographic diversification on multinational banks' performance, which generally failed to consider the existence of regional boundaries. Our results show that bank-level dispersion is moderated by product-level dispersion and hence it is not the level of multinationality per se that matters for operational performance but instead the interactions between the geographic and product loci. Our study informs both internalization theory and regionalization hypothesis to the extent of how distinct product characteristics can facilitate different regional dispersions. Future developments of the theories should encompass this feature in addition to the risks that internationalization may represent for multinational banks.

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Figure 1 The marginal effect of home-regional diversification on efficiency (product diversification as the moderator)

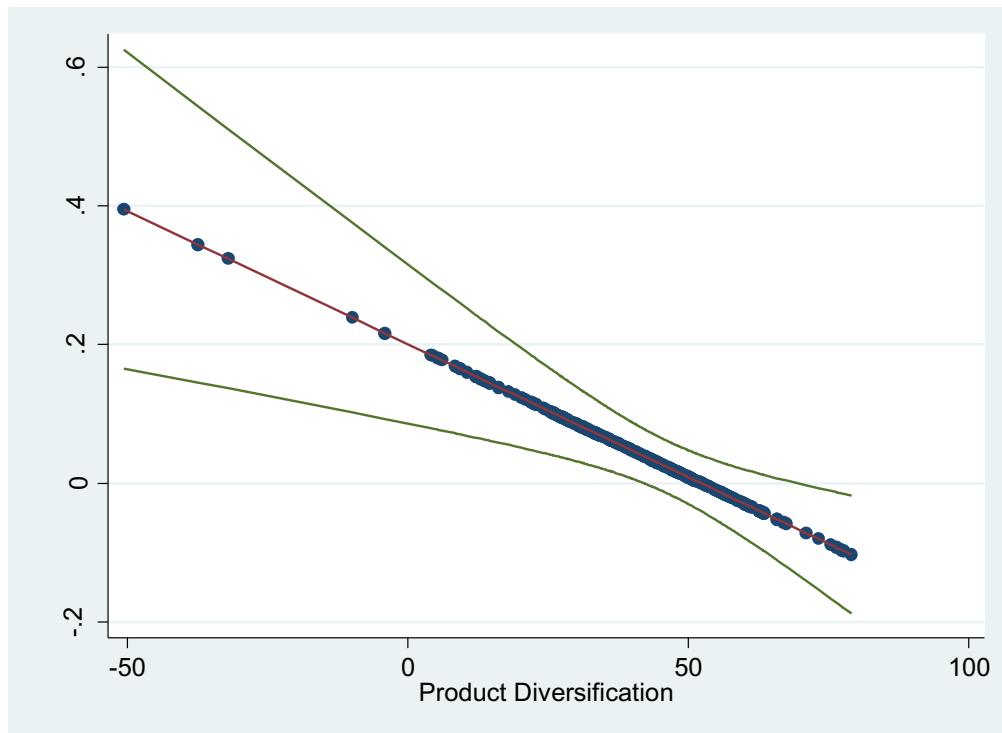


Figure 2 The marginal effect of inter-regional diversification on efficiency (product diversification as the moderator)

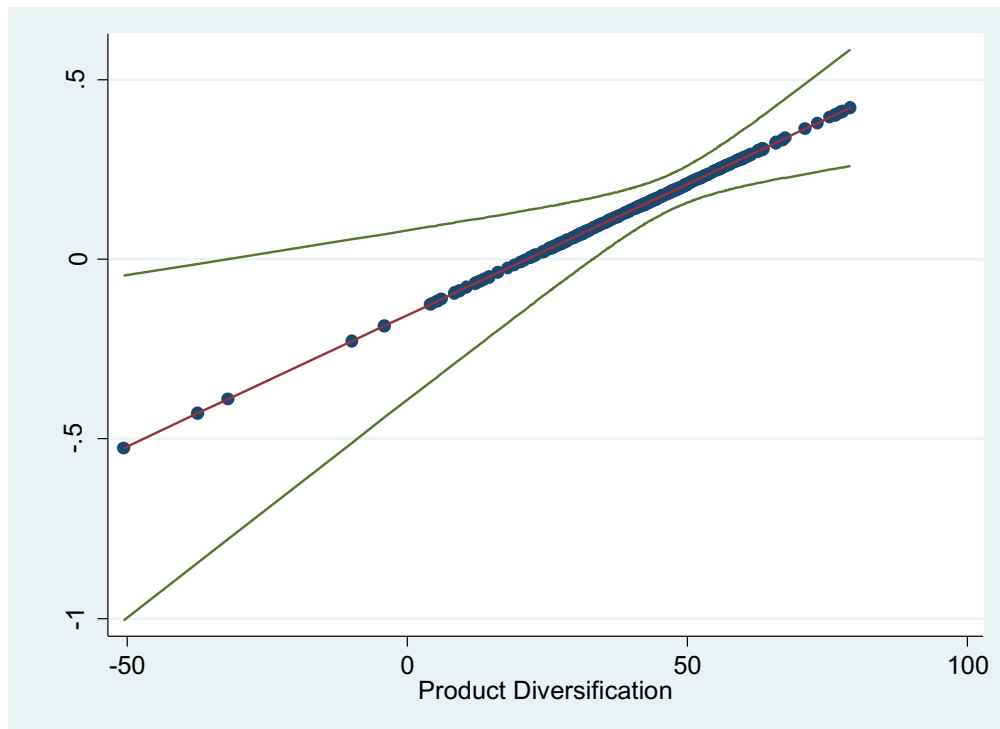


Table 1 Description of variables and data sources

Variable	Definition	Source
Panel A. Variables used in the technical efficiency estimation		
Personnel expenses	Total staff expenses ¹	BankFocus
Interest expenses	Total interest expenses ¹	BankFocus
Other operating expenses	Other administrative expenses plus other operating expenses ¹	BankFocus
Net loans	Net loans & advances to customers ¹	BankFocus
Securities	Total financial assets ¹	BankFocus
Non-performing loans	Impaired loans ¹	BankFocus
Panel B. Variables used in the analysis of technical efficiency		
Technical efficiency	Technical efficiency estimated by employing an enhanced hyperbolic distance function	AC
Home-regional diversification	Entropy measure of intra-regional diversification within the home region which is defined as Europe	AC & Duijm and Schoenmaker (2020)
Inter-regional diversification	Entropy measure of inter-regional diversification across six geographic regions	AC & Duijm and Schoenmaker (2020)
AE home-regional diversification	Entropy measure of intra-regional diversification within the home region which is defined as Advanced Europe	AC & Duijm and Schoenmaker (2020)
EE home-regional diversification	Entropy measure of intra-regional diversification within the home region which is defined as Emerging Europe	AC & Duijm and Schoenmaker (2020)
HFF home-diversification	Entropy measure of intra-regional diversification within the European countries which have financial freedom index higher than the European average	AC & Heritage Foundation
LFF home-diversification	Entropy measure of intra-regional diversification within the European countries which have financial freedom index lower than the European average	AC & Heritage Foundation
Home-regional orientation	Home-region exposure minus home-country exposure	AC & Duijm and Schoenmaker (2020)
Global orientation	Global exposure net of home-region exposure	AC & Duijm and Schoenmaker (2020)
Product diversification	Ratio of non-interest operating income to total operating revenues (x100)	BankFocus
Deposits	Ratio of customer deposits to total assets (x100)	BankFocus
Capitalization	Ratio of total equity to total assets (x100)	BankFocus
Bank size dummies	Binary variables that group banks into total asset quartiles	AC
GSIB	0–1 Dummy variable; takes value 1 if the bank is classified as GSIB in any year by FSB.	AC & FSB
Growth	GDP growth (annual %)	WDI
Inflation	Consumer prices (annual %)	WDI
Tax-haven exposure	The ratio of banks' total exposure in tax-haven countries to total foreign country exposures (x100)	AC & EC
Superior growth	0–1 Dummy variable; takes value 1 if the annual growth rate of bank assets is above 20 percent	AC
Downsize	0–1 Dummy variable; takes value 1 if the annual reduction rate of bank assets is below 20 percent	AC

¹ in millions of euros at constant 2015 prices; AC: Authors' Calculations; EC: European Council; FSB: Financial Stability Board; WDI: World Bank's World Development Indicators.

Table 2 Evolution of geographical exposures (in percent)

year	Home (x100)	Rest of Europe (x100)	Rest of world (x100)	Home-regional diversification (x100)	Inter-regional diversification (x100)
2011	63.99	22.69	13.32	83.90	38.08
2012	65.63	21.53	12.84	80.86	36.65
2013	66.38	21.19	12.43	80.36	36.34
2014	65.33	21.26	13.41	80.88	38.04
2015	65.76	21.60	12.64	81.53	36.63
2016	66.56	21.09	12.35	79.16	35.35
2017	66.03	21.06	12.90	79.27	36.39

Home is the percentage of exposures in the home country; Rest of Europe is percentage of exposure in Europe excluding the home country and Rest of word is the percentage of exposure to the foreign countries excluding Europe.

Table 3 International diversification and efficiency

Dependent variable: Technical efficiency		
	Model 1	Model 2
Home-regional diversification _{t-1}	0.052** (2.501)	0.201*** (2.904)
Home-regional diversification _{t-1} × Product diversification _{t-1}		-0.004** (-2.552)
Inter-regional diversification _{t-1}	0.153*** (5.434)	-0.156 (-1.216)
Inter-regional diversification _{t-1} × Product diversification _{t-1}		0.007*** (2.747)
Product diversification _{t-1}	0.001 (1.526)	0.003** (2.307)
Deposits	0.001 (0.904)	0.002** (2.305)
Capitalization	0.014*** (3.466)	0.019*** (3.846)
GSIB	-0.023 (-0.621)	-0.015 (-0.486)
Growth	-0.001 (-0.460)	-0.000 (-0.045)
Inflation	0.002 (0.221)	-0.004 (-0.300)
Constant	0.325*** (5.114)	0.201* (1.906)
No of observations	324	324
Pseudo R ²	0.490	0.523

This table presents bootstrapping quantile regression for the 50th quantile. Columns report estimated coefficients (t-statistics, based on standard errors obtained via bootstrapping with 50 replications). All financial variables are winsorized at the 1st and 99th percentiles. All specifications include bank size, country, and year dummies.

*, **, and *** represent significance levels of 10%, 5% and 1% respectively.

Table 4 Alternative home region definitions

Dependent variable: Technical efficiency	Model 1	Model 2	Model 1	Model 2
HFF home-regional diversification _{t-1}	0.048* (1.737)	0.022 (0.244)		
LFF home-regional diversification _{t-1}	0.004 (0.085)	0.755*** (3.876)		
AE home-regional diversification _{t-1}			0.002 (0.115)	0.154** (2.223)
EE home-regional diversification _{t-1}			0.115*** (5.172)	0.498*** (3.284)
HFF home-regional diversification _{t-1} × Product diversification _{t-1}		0.000 (0.038)		
LFF home-regional diversification _{t-1} × Product diversification _{t-1}		-0.018*** (-4.074)		
AE home-regional diversification _{t-1} × Product diversification _{t-1}				-0.004** (-2.305)
EE home-regional diversification _{t-1} × Product diversification _{t-1}				-0.009** (-2.197)
Inter-regional diversification _{t-1}	0.143*** (4.925)	-0.208** (-2.259)	0.166*** (5.465)	-0.208** (-2.105)
Inter-regional diversification _{t-1} × Product diversification _{t-1}		0.008*** (4.245)		0.009*** (4.451)
Product diversification _{t-1}	0.001* (1.687)	0.003*** (2.980)	0.001* (1.671)	0.003*** (2.677)
Deposits	0.001 (1.081)	0.003*** (2.897)	0.000 (0.307)	0.001 (1.374)
Capitalization	0.013*** (3.448)	0.012** (2.491)	0.012** (2.113)	0.013* (1.959)
GSIB	-0.015 (-0.417)	0.027 (0.800)	-0.008 (-0.302)	-0.007 (-0.258)
Growth	-0.001 (-0.455)	0.000 (0.169)	0.000 (0.115)	0.002 (0.877)
Inflation	0.001 (0.071)	-0.005 (-0.368)	-0.014 (-1.434)	-0.019* (-1.875)
Constant	0.340*** (5.127)	0.202** (2.498)	0.422*** (5.425)	0.266** (2.448)
Number of observations	324	324	324	324
Pseudo R ²	0.489	0.542	0.509	0.566

This table presents bootstrapping quantile regression for the 50th quantile. Columns report estimated coefficients (t-statistics, based on standard errors obtained via bootstrapping with 50 replications). All financial variables are winsorized at the 1st and 99th percentiles. All specifications include bank size, country, and year dummies.

*, **, and *** represent significance levels of 10%, 5% and 1% respectively.

Table 5 International diversification and efficiency: Instrumental variable regression results

Dependent variable: Technical efficiency				
	Model 1	Model 2	Model 1	Model 2
	(1)	(2)	(3)	(4)
Home-regional diversification _{t-1}	0.505** (2.221)	0.559 (1.024)	0.379 (1.027)	2.624 (0.924)
Home-regional diversification _{t-1} × Product diversification _{t-1}		-0.009 (-1.016)		-0.064 (-0.971)
Inter-regional diversification _{t-1}	4.313** (2.365)	-0.280 (-0.334)	0.459*** (4.054)	-4.091* (-1.688)
Inter-regional diversification _{t-1} × Product diversification _{t-1}		0.018 (0.901)		0.089* (1.690)
Product diversification _{t-1}	0.023*** (2.810)	0.001 (0.157)	0.002 (0.491)	0.018 (0.343)
Deposits	0.006*** (2.702)	0.002 (0.600)	-0.001 (-0.306)	0.005 (1.062)
Capitalization	-0.130** (-2.540)	0.018 (0.785)	0.008 (0.501)	0.083* (1.749)
GSIB	-1.621*** (-2.908)	-0.157 (-0.475)	-0.217** (-2.477)	0.163 (0.678)
Growth	0.053** (2.270)	-0.006 (-0.453)	0.003 (0.626)	-0.042* (-1.865)
Inflation	-0.125*** (-3.821)	-0.033 (-1.062)	-0.034 (-1.148)	-0.052 (-0.560)
Constant	-1.384** (-2.178)	0.077 (0.140)	-0.033 (-0.098)	-0.689 (-0.400)

This table presents two-step IV Bootstrapping Quantile Regressions where instruments are defined as the average of diversification measures of each bank's peers. Peers are created according to total assets in columns 1 and 2, and the previous period's efficiency in columns 3 and 4. Columns report estimated coefficients (t-statistics, based on standard errors obtained via bootstrapping with 50 replications). All financial variables are winsorized at the 1st and 99th percentiles. All specifications include bank size, country, and year dummies.

*, **, and *** represent significance levels of 10%, 5% and 1% respectively.

Table 6 Alternative geographic diversification measures

Dependent variable: Technical efficiency		
	Model 1	Model 2
Home-regional orientation _{t-1}	0.040 (0.748)	0.426*** (2.945)
Home-regional orientation _{t-1} × Product diversification _{t-1}		-0.009*** (-3.100)
Global orientation _{t-1}	0.337*** (7.447)	-0.425** (-2.178)
Global orientation _{t-1} × Product diversification _{t-1}		0.018*** (4.210)
Product diversification _{t-1}	0.003*** (3.601)	0.003*** (2.900)
Deposits	0.000 (0.268)	0.002** (2.271)
Capitalization	0.013*** (2.704)	0.014*** (2.845)
GSIB	0.016 (0.419)	0.003 (0.128)
Growth	-0.000 (-0.164)	-0.002 (-0.644)
Inflation	-0.001 (-0.104)	-0.002 (-0.221)
Constant	0.375*** (6.498)	0.269*** (3.060)
No of observations	324	324
Pseudo R ²	0.494	0.533

This table presents bootstrapping quantile regression for the 50th quantile. Columns report estimated coefficients (t-statistics, based on standard errors obtained via bootstrapping with 50 replications). All financial variables are winsorized at the 1st and 99th percentiles. All specifications include bank size, country and year dummies.

*, **, and *** represent significance levels of 10%, 5% and 1% respectively.

Table 7 Additional controls and sub-samples

Dependent variable: Technical efficiency				
	Model 2			
	(1)	(2)	(3)	(4)
Home-regional diversification _{t-1}	0.213*** (3.250)	0.209*** (3.213)	0.239*** (3.468)	0.242*** (5.269)
Home-regional diversification _{t-1} × Product diversification _{t-1}	-0.004*** (-2.822)	-0.004*** (-2.811)	-0.004*** (-2.982)	-0.004*** (-3.974)
Inter-regional diversification _{t-1}	-0.155 (-1.212)	-0.156 (-1.370)	-0.296* (-1.822)	-0.341*** (-2.978)
Inter-regional diversification _{t-1} × Product diversification _{t-1}	0.007*** (2.633)	0.007*** (3.086)	0.010*** (2.963)	0.011*** (4.513)
Product diversification _{t-1}	0.003*** (2.901)	0.003** (2.483)	0.003** (2.212)	0.003*** (4.150)
Deposits	0.002** (2.074)	0.002** (2.055)	0.002** (2.083)	0.002*** (3.029)
Capitalization	0.019*** (4.144)	0.018*** (3.854)	0.019*** (5.137)	0.029*** (3.516)
GSIB	-0.029 (-1.110)	-0.014 (-0.462)	0.002 (0.067)	0.007 (0.242)
Growth	-0.000 (-0.062)	0.000 (0.000)	-0.001 (-0.189)	-0.006 (-0.807)
Inflation	-0.003 (-0.239)	-0.001 (-0.087)	-0.008 (-0.588)	0.011 (1.173)
Tax-haven exposure _{t-1}	0.010*** (3.069)			
Superior growth		-0.028 (-1.434)		
Downsize		0.064 (1.266)		
Constant		0.193* (1.876)	0.134 (1.467)	0.084 (1.203)
No of observations	324	324	279	225
Pseudo R ²	0.534	0.528	0.538	0.603

This table presents bootstrapping quantile regression for the 50th quantile. Columns report estimated coefficients (t-statistics, based on standard errors obtained via bootstrapping with 50 replications). All financial variables are winsorized at the 1st and 99th percentiles. All specifications include bank size, country, and year dummies. The specification in column (3) is estimated for the sample period 2013-2018. The specification in column (4) is estimated for the sample excluding banks from the GIIPS countries.

*, **, and *** represent significance levels of 10%, 5% and 1% respectively.

APPENDIX 1. ESTIMATION OF OPERATIONAL PERFORMANCE

Although we do not provide the technical details of the methodology, which are well explained in Cuesta et al. (2009), we present the enhanced hyperbolic distance function that is used to estimate the technical efficiency of each bank as follows:

$$\begin{aligned}
 -\ln(y_{Q,it}) = & \alpha_0 + \sum_{p=1}^P \alpha_p \ln x_{p,it}^* + \frac{1}{2} \sum_{p=1}^P \sum_{l=1}^P \alpha_{pl} \ln x_{p,it}^* \ln x_{l,it}^* + \sum_{q=1}^{Q-1} \beta_q \ln y_{q,it}^* + \\
 & \frac{1}{2} \sum_{q=1}^{Q-1} \sum_{m=1}^{Q-1} \beta_{qm} \ln y_{q,it}^* \ln y_{m,it}^* + \theta_r \ln z_{r,it}^* + \frac{1}{2} \theta_{rn} \ln z_{r,it}^* \ln z_{n,it}^* + \\
 & \sum_{p=1}^P \sum_{q=1}^{Q-1} \omega_{pq} \ln x_{p,it}^* \ln y_{q,it}^* + \sum_{p=1}^P \psi_{pr} \ln x_{p,it} \ln z_{r,it}^* + \\
 & \sum_{q=1}^{Q-1} \varphi_{qr} \ln y_{q,it}^* \ln z_{r,it}^* + \sum_{i=2011}^{2018} \delta_i \text{year}_i + v_{it} + u_{it}
 \end{aligned} \tag{A1}$$

Since $y_{1,it}^* = y_{1,it}/y_{1,it} = 1$ variable involving y_1 , net loans, is null; $z_{it}^* = z_{it} \times y_{1,it}$, where z is undesirable output (non-performing loans); $y_{2,it}^* = y_{2,it}/y_{1,it}$, where y_2 represents securities; and $x_{p,it}^* = x_{p,it} \times y_{1,it}$, where x represents interest expenses, personnel expenses, and other operating expenses.

To derive technical efficiency scores for each bank in the sample, we estimate the production function specified in Eq. (A1) by employing the stochastic frontier model of Battese and Coelli (1992). The additive error term $(v_{it} + u_{it})$ includes the standard symmetric noise component $v_{i,t}$ distributed around zero (i.e., iid). The one-sided component u_{it} is assumed to be independent and identically distributed as a truncated normal with mean μ and variance σ_u^2 .

APPENDIX 2

See Table A1 and A2.

Table A1 Descriptive statistics

Variable	No of Observations	Mean	Std. Dev.	Min	Max
Panel A. Variables used in the technical efficiency estimation					
Net loans	378	278,469.10	211,040.90	45,375.00	837,804.20
Securities	378	117,387.50	127,918.50	5,553.37	589,072.40
Non-performing loans	378	14,265.55	13,742.33	519.38	63,380.00
Personnel expenses	378	4,642.15	4,501.30	383.88	16,801.03
Interest expenses	378	7,029.85	7,076.97	262.66	36,046.40
Other operating expenses	378	4,449.74	4,387.92	295.16	17,926.75
Panel B. Variables used in the analysis of technical efficiency					
Technical efficiency	378	0.696	0.128	0.385	0.980
Home-regional diversification	328	0.808	0.528	0.018	2.592
Inter-regional diversification	328	0.368	0.369	0.000	1.291
AE home-regional diversification	328	0.648	0.412	0.011	1.573
EE home-regional diversification	328	0.172	0.294	0.000	1.786
HFF home diversification	328	0.655	0.428	0.018	1.703
LFF home diversification	328	0.204	0.198	0	1.040
Home-regional orientation	328	0.215	0.184	0.003	0.803
Global orientation	328	0.128	0.176	0.000	0.748
Product diversification	378	40.859	16.654	-50.593	80.184
Deposits	378	45.018	14.417	5.107	83.203
Capitalization	378	5.933	1.734	1.182	15.143
GSIB	378	0.381	0.486	0	1
Growth	378	1.509	2.519	-9.133	25.163
Inflation	378	1.265	1.133	-1.736	3.856
Tax-haven exposure	328	0.618	1.657	0	11.757
Superior growth	329	0.015	0.123	0	1
Downsize	329	0.015	0.123	0	1

Note: The description of the variables is given in Table 2.

Table A2 Cross-correlation matrix for variables used in the analysis of operational performance

	1	2	3	4	5	6	7	8	9	10
1 Technical efficiency	1									
2 Home-regional diversification	0.142	1								
3 Inter-regional diversification	0.312*	0.316*	1							
4 AE home-regional diversification	-0.003	0.840*	0.479*	1						
5 EE home-regional diversification	0.261*	0.615*	-0.118	0.092	1					
6 HFF home diversification	0.083	0.951*	0.380*	0.888*	0.458*	1				
7 LFF home diversification	0.217*	0.620*	-0.062	0.241*	0.811*	0.387*	1			
8 Home-regional orientation	0.026	0.910*	0.034	0.745*	0.592*	0.864*	0.597*	1		
9 Global orientation	0.337*	0.219*	0.929*	0.370*	-0.141	0.280*	-0.108	-0.031	1	
10 Product diversification	0.379*	0.002	0.196*	0.025	-0.040	0.021	-0.083	-0.086	0.198*	1
11 Deposits	0.091	-0.208*	-0.089	-0.345*	0.129	-0.198*	-0.022	-0.127	-0.029	-0.168*
12 Capitalization	0.257*	-0.127	-0.092	-0.286*	0.181*	-0.180*	0.111	-0.065	-0.008	0.020
13 GSIB	0.142*	0.304*	0.658*	0.455*	-0.119	0.345*	-0.099	0.178*	0.626*	0.224*
14 Growth	-0.104	0.008	-0.006	0.073	-0.095	0.094	-0.217*	0.058	0.016	-0.068
15 Inflation	-0.091	0.077	0.017	0.018	0.119	0.079	0.079	0.072	0.020	-0.102
16 Tax-haven exposure	0.118	-0.011	0.441*	0.041	-0.091	0.014	-0.140	-0.142*	0.648*	0.059
17 Superior growth	-0.030	-0.105	-0.081	-0.102	-0.042	-0.089	-0.063	-0.069	-0.075	0.020
18 Downsize	0.133	-0.002	0.108	0.020	-0.038	-0.007	-0.024	-0.048	0.088	0.030
	11	12	13	14	15	16	17	18		
11 Deposits	1									
12 Capitalization	0.336*	1								
13 GSIB	-0.184*	-0.145*	1							
14 Growth	0.135*	0.265*	-0.009	1						
15 Inflation	-0.071	-0.165*	0.030	-0.269*	1					
16 Tax-haven exposure	0.063	0.030	0.342*	0.037	0.106	1				
17 Superior growth	0.045	-0.014	-0.098	-0.060	-0.038	-0.029	1			
18 Downsize	-0.064	-0.008	0.107	-0.011	-0.053	-0.011	-0.015	1		

Note: The description of the variables is given in Table 2. * Statistically significant at 1%.

APPENDIX 3

See Table A3.

Table A3 Average technical efficiency, product and geographic diversification per bank

Bank name	Home country	Technical efficiency	Product diversification	Home-regional diversification	Inter-regional diversification	Home-regional orientation	Global orientation
Raiffeisen Zentralbank Oesterreich Ag-Rzb	Austria	0.98	43.88	2.42	0.39	0.70	0.11
Erste Group Bank Ag	Austria	0.80	33.44	1.64	0.05	0.56	0.01
Belfius Banque Sa/Nv	Belgium	0.65	10.39	1.02	0.14	0.28	0.03
Kbc Groep Nv/ Kbc Groupe Sa	Belgium	0.74	40.32	1.40	0.25	0.43	0.05
Nykredit A/S	Denmark	0.40	11.45	0.24	0.00	0.05	0.00
Danske Bank A/S	Denmark	0.55	30.06	1.35	0.01	0.47	0.00
Nordea Bank Abp	Finland	0.53	46.84	1.59	0.12	0.73	0.02
Op Financial Group	Finland	0.71	57.72	0.60	0.06	0.12	0.01
La Banque Postale	France	0.63	47.78	0.06	0.02	0.01	0.00
Societe Generale	France	0.77	57.17	0.90	0.47	0.15	0.11
Bnp Paribas Sa	France	0.74	48.02	1.70	0.88	0.46	0.26
Credit Agricole	France	0.62	37.04	0.61	0.36	0.11	0.08
Bpce Group	France	0.70	53.70	0.24	0.32	0.03	0.07
Credit Mutuel	France	0.67	54.51	0.43	0.14	0.09	0.03
Commerzbank Ag	Germany	0.72	44.21	1.14	0.47	0.35	0.13
Deutsche Bank Ag	Germany	0.84	51.02	1.36	1.11	0.26	0.43
Dz Bank Ag	Germany	0.64	47.34	0.66	0.29	0.14	0.06
National Bank of Greece Sa	Greece	0.96	8.99	0.59	0.35	0.10	0.14
Allied Irish Banks Plc	Ireland	0.83	34.73	0.45	0.01	0.18	0.00
Bank of Ireland	Ireland	0.73	30.02	0.64	0.00	0.35	0.00
Unicredit Spa	Italy	0.69	47.55	1.77	0.13	0.56	0.02
Intesa Sanpaolo	Italy	0.64	46.13	0.63	0.17	0.11	0.03
Banca Monte Dei Paschi Di Siena Spa	Italy	0.84	52.44	0.37	0.05	0.09	0.00
Unione Di Banche Italiane Spa	Italy	0.83	52.09	0.12	0.05	0.02	0.01

Banco Popolare - Societa Cooperativa	Italy	0.91	55.78	0.10	0.04	0.02	0.01
Srh Nv	Netherlands	0.62	56.37	0.09	0.00	0.02	0.00
Cooperatieve Rabobank U.A.	Netherlands	0.61	30.47	0.55	0.72	0.07	0.19
Ing Bank Nv	Netherlands	0.60	2.84	1.57	0.60	0.47	0.15
Abn Amro Bank Nv	Netherlands	0.60	27.35	0.73	0.41	0.15	0.09
Dnb Asa	Norway	0.56	33.05	0.89	0.48	0.21	0.11
Caixa Geral De Depositos	Portugal	0.84	53.98	0.47	0.47	0.13	0.11
Banco De Sabadell Sa	Spain	0.71	43.03	0.41	0.24	0.13	0.06
Caixabank, S.A.	Spain	0.68	47.07	0.45	0.18	0.11	0.03
Bankia, Sa	Spain	0.62	37.01	0.38	0.06	0.13	0.01
Banco Popular Espanol Sa	Spain	0.74	34.87	0.26	0.05	0.07	0.01
Banco Santander Sa	Spain	0.68	33.18	1.07	0.74	0.44	0.28
Banco Bilbao Vizcaya Argentaria Sa	Spain	0.72	36.69	0.82	1.07	0.12	0.43
Svenska Handelsbanken Ab	Sweeden	0.48	28.59	1.13	0.16	0.33	0.04
Swedbank Ab	Sweeden	0.54	39.99	0.64	0.09	0.18	0.02
Skandinaviska Enskilda Banken Ab	Sweeden	0.60	55.58	1.36	0.31	0.33	0.07
Credit Suisse Group Ag	Switzerland	0.90	64.61	1.08	1.13	0.22	0.52
Raiffeisen Schweiz Genossenschaft	Switzerland	0.55	24.22	0.20	0.00	0.05	0.00
UBS Group Ag	Switzerland	0.98	77.55	1.18	0.97	0.23	0.44
Barclays Plc	U.K.	0.74	55.46	1.19	0.95	0.23	0.39
HSBC Holdings Plc	U.K.	0.68	42.09	0.69	1.24	0.07	0.57
Standard Chartered Plc	U.K.	0.79	41.90	0.67	0.94	0.10	0.73
Nationwide Building Society	U.K.	0.47	14.10	0.13	0.00	0.02	0.00
Royal Bank of Scotland Group Plc	U.K.	0.68	37.50	0.40	0.52	0.04	0.18
Lloyds Banking Group Plc	U.K.	0.57	43.62	0.23	0.11	0.04	0.02

Note: U.K.: United Kingdom.