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# Geographical Diversification Effects on Banks' Performance: Evidence from Islamic Banks of some Selected Countries

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## Abstract

This paper investigates the impact of geographic diversification on the performance of Islamic banks. Using an unbalanced panel dataset of 54 Islamic banks implemented in the GCC and Southeast Asia regions, during the 2004-2016 period, the core question is to analyze the effect of both diversification intra and beyond home countries on Islamic banks credit risk, stability, and profitability. This research asserts that geographical diversification within the home country seems to enhance Islamic bank stability, profitability but does not improve loan quality. More pronounced results are reported when banks expand intra and beyond the home country frontier. These findings are consistent with the view that geographic expansion helps to strengthen stability through diversification of the specific region risk, but the related loan growth makes it more difficult to assess and monitor credit risk. These findings have strategic implications for bank managers, regulators, and supervisors about the consequences of Islamic bank geographic expansion.

**Keywords:** Islamic banking, bank credit risk, bank profitability, bank stability, and bank geographic expansion.

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## I. INTRODUCTION

Geographic diversification is a strategic growth solution widely adopted by many banks throughout the world. This strategy consists in spreading bank operations across many markets within and across countries. The banking industry's steady shift from the local region to other foreign regions has been at the heart of a large body of literature in corporate and banking finance. Nevertheless, theories provide competing hypotheses about the implications of such changes on bank performance.

In 1952, Nobel Laureate Harry Markowitz demonstrated mathematically why putting all your eggs in one basket is an unacceptably risky strategy and how diversification leads to a consistent reduction of idiosyncratic risk. Shifting this theorem to the banking industry, Markowitz recommends that banks spread their activities through diversified and uncorrelated markets, to improve efficiency and reduce their exposure to the local idiosyncratic shocks. Other traditional arguments were forwarded by Diamond (1984) and Boyd and Prescott (1986), suggesting that banks should be as diversified as possible, this precludes any agency problem between the bank owners and the bank creditors. Diversification also implies benefits in terms of reduced agency costs of managerial discretion by lowering the cash-flow volatility (Stulz, 1990), or creating internal capital markets (Gertner et al., 1994; Stein, 1997).

The economic theory also supports the diversification strategy since it improves firm efficiency through cost savings or revenue improvement thanks to the spreading of fixed costs, economies of scope from using the same information and customer cost

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economies (Berger et al., 1987). Specifically, geographic diversity could enhance a market valuation through the economies of scale (Chandler, 1977; Gertner et al., 1994; Houston et al., 1997; and Berger et al., 1999). Moreover, geographical diversification may provide opportunities to exploit more markets, spread market risks, and seek less expensive inputs and less price-sensitive markets (Buckley & Casson, 1976; Delios & Beamish, 1999).

Nevertheless, another trend of the economic literature argues that geographic diversification may lead to value-destruction, leading to what is known as the “diversification discount”. The corporate governance theories (Jensen & Meckling, 1976; Jensen, 1986; and Scharfstein & Stein, 2000) suggest that if small shareholders find it difficult to monitor and govern geographically dispersed corporations, then corporate insiders will have greater latitude to extract private benefits from geographically diversified firms, implying adverse effects on firm valuations.

Furthermore, Brickley et al. (2003) and Berger et al. (2009) stress that distance can hinder the ability of a bank’s headquarters to monitor its subsidiaries, with potentially adverse effects on asset quality. And, if ever diversification engenders more complexity, the bank’s monitoring effectiveness may be lower in newly entered and competitive markets, and thus, may increase the downside risk of the bank’s loan portfolio (Winton, 1999). According to transaction cost theory (Williams et al., 1988), geographic diversification will incur heavy costs including market entry costs, coordination costs among business units in different countries, and information processes. Salas and Saurina (2002) suggest that when a bank enters a new market, it may incur higher risks given the adverse selection problems to the extent that existing intermediaries abandon the riskiest and least profitable customers.

To shed light on these theoretical tensions, this paper investigates the merits of geographic strategy, particularly, among Islamic banks. Specifically, it examines the impact of intra home country and beyond home frontier expansion on Islamic banks' profitability, stability, and credit risk. Compared to previous research on bank diversification, our paper might be considered as one of the first attempts to directly assess the relative impact of geographic diversification on Islamic bank performance. We think that this puzzling issue is particularly important in the context of Islamic banks for several reasons. First, taking into account the vast empirical works on the impact of geographic diversification on the conventional banking industry, to our knowledge, no previous research has addressed this question among Islamic banks; second, the Islamic banking industry remains deeply anchored primarily in oil-exporting Muslim countries: the Gulf cooperation council (GCC) countries, along with Malaysia and Iran, account for more than 80% of the industry's assets (S&P, 2017)<sup>1</sup>. Moreover, Wouters (2008) has noticed that Islamic banks have only developed in the big cities of the countries where they have established themselves. So spreading the bank's operations across many markets, within and across countries may contribute to some renewed era of growth of the Islamic finance industry, and it might be useful then, to ask if Islamic banks will benefit or get hurt from the geographic diversification of their operations. Specifically, the Islamic banks face several (often conflicting) regulations that often push them to focus their operations on the local market rather than develop activities within other countries.

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<sup>1</sup> In 2009, there were 180 Islamic banks, located in 39 different countries: the Gulf countries alone had 138 banks (standard and poor global ratings report 2017).

Using a comprehensive dataset of 54 Islamic banks mainly, from the GCC and South Asia regions, over the period 2004-2016, we show that both geographic diversification strategies improve the Islamic bank stability and profitability. However, they seem to increase their respective exposure to credit risk, suggesting cautious and different geographic diversification strategies for different banks, depending on their related effectiveness to manage such an increased risk.

The rest of the paper is organized as follows: section 2 relates our work to previous empirical literature and discusses our research focus. Section 3 details the applied data and methodology. Section 4 reveals the study results and discusses them. The paper's main conclusions and recommendations are suggested in the final section.

## **II. LITERATURE REVIEW**

Despite extensive research on the economic consequences of geographic diversification, the empirical literature does not provide clear evidence as to whether diversification generates net benefits or costs. The first group of research mainly argues that banks that attract deposits and loans from local customers may have significant idiosyncratic risks. An important implication of a geographically non-diversified banking system is that negative local shocks can have severe consequences for the bank's liquidity levels and may even lead to bank failures (Calomiris, 2000). By opening branches in multiple local markets with idiosyncratic risks that are not perfectly positively correlated, a bank can reduce the liquidity and credit risks associated with its branch portfolio (Huang, 2007). Akhigbe and Whyte (2003) found that geographic diversification is associated with bank holding company (BHC) value enhancement and risk reduction. Specifically, Subsidiaries belonging to the same holding company can provide mutual-insurance to each other, because it is convenient for the holding company to move loanable funds among subsidiaries to support those relatively short of liquidity. Therefore, multi-county BHCs subsidiaries can be considered financially more robust than stand-alone local banks (Ashcraft, 2005; Holod & Peek, 2006). Moreover, Hankins (2006) showed that bank mergers are motivated by the opportunity of operational hedging across regions. In this sense, bank geographic diversification can be considered as a financial innovation that allows banks to hedge risks across regions.

On the other hand, and relying on confidential Italian data, Chionsini et al. (2003) found that diversification of loan portfolio across sectors or geographic regions, reduces credit risks, because of the diversification of idiosyncratic risks. Ogden et al. (1989) stated that geographic diversification can reduce mortgage portfolios for enclosure-risk exposure by 50% when compared to geographically undiversified ones. Also, Corgel and Gay (1987) and Jochem (2013) showed that greater bank geographic diversification leads to a sizable decline in bank failure rates, which is most pronounced for smaller banks. Consistent with the view that geographic expansion offers large risk diversification opportunities that reduce funding costs; Levine et al. (2016) report a positive impact of geographic expansion of banks across the U.S. that lowered their funding costs, especially when banks are headquartered in states with lower macroeconomic covariance with the overall U.S. economy. Using a sample of Italian banks covering the 1993-1999 period, Acharya et al. (2006) found that geographical diversification results in an improvement in the risk-return tradeoff for banks with low levels of risk. As for Brighi and Venturelli (2016), they revealed that geographical diversification within Italian banks does not seem to play a relevant role in affecting both risk and profitability except for the risk-adjusted profitability analysis. Nevertheless, a greater geographical diversification implies higher risk-adjusted profitability in particular during a post-crisis period. Using a sample of 320

banks across 29 African countries, Sissy et al. (2017) found that banks in Africa derive absolute benefits from cross-border diversification. The benefits of geographic diversification could also result from the higher competition in local banking markets. As highlighted by Evanoff and Ors (2008), geographic deregulation in the U.S. had a positive effect on bank efficiency. By increasing competition on local markets, entry of new competitors, through mergers and acquisitions, leads incumbent banks, not involved in the process, to reduce their costs and hence improve their cost-efficiency.

Alongside the positive effects, adverse implications on performance have been identified (Mazur & Zhang, 2015; Denis et al., 2002; and Jouida et al., 2017). These authors argue that corporate diversification costs may outweigh the diversification benefits. Especially, diversification can intensify agency problems between corporate insiders and small shareholders making it more difficult to design efficient managerial incentive contracts and align the incentives of outsiders with insiders (Aron, 1988; Stulz, 1990; Rotemberg & Saloner, 1994; and Goetz et al., 2012). Besides, Rajan et al. (2000) argue that increasing the size and scope of bank activities may introduce some “cost of complexity”, which at some point may outweigh the benefits that can be achieved. Also, Cai et al. (2016) show that, while geographical expansion improves the banks’ market share, net interest margin, and non-interest income, it also increases operating costs. Otherwise, Demsetz and Strahan (1997) and Kim and Mathur (2008) suggest that diversified banks suffer from a value decrease due to more intensive competition. Laeven and Levine (2007) have also reported a diversification discount in the banking industry, indicating that economies of scope are not large enough to produce a diversification premium and outweigh the costs associated with agency problems. When opening branches in a new county or state, banks face learning costs due to the lack of information on this new market. These costs can be particularly high for banks that specialize in relationship lending such as community banks. As banks geographically expand, collecting soft information becomes more expensive as the distance between the lender and the borrower increases and the transmission of this information across the different management layers becomes more difficult. Costs associated with geographic diversification could, hence, be different for banks with different business models.

Meslier-Crouzille et al. (2014) have estimated the benefits of geographic diversification within and across the states for bank risk and return for all U.S. bank holding companies over the 1994-2008 period. They assessed whether such benefits depend on bank size. For small banks, only intrastate diversification increases risk-adjusted returns and reduces default risk while for very large institutions only interstate expansions are beneficial but only in terms of default risk. In all cases, the relationship is hump-shaped indicating that at some point, the possible agency costs associated with banks getting wider and more geographically diversified outweigh the benefits. Also, Berger and DeYoung (2001) found mixed results about the impact of geographic expansion on bank efficiency; expansion to nearby states or regions tends to increase the bank efficiency, but inefficiencies tend to increase with the distance between a bank holding company’s headquarters and its subsidiaries, possibly due to increasing agency costs and the related complex organizational structure. The negative impact of distance on the diversification discount was also reported by Deng and Elyasiani (2008) in terms of a higher diversification discount and a higher risk. While increased geographic diversification enhances bank value and reduces risk, larger distance generates a diversification discount and higher risk. Hence, the diseconomies associated with distance may limit the gains from geographic diversification. Recently, Yildirim and Efthyvoulou (2018) have studied the impact of both intra and inter-region geographic

expansion on bank value across the world, originating from both developed and emerging countries. Their results suggest that the value impact of international diversification depends on a bank's home country: higher diversification levels enhance valuation only for banks originating from emerging countries. Besides, while greater intra-regional diversification leads to value enhancement, greater inter-regional diversification seems to induce a negative effect on the valuation of emerging country banks. Also, Morgan and Samolyk (2003) report mixed implications of geographic diversification. They suggest that diversification is associated with a significantly higher loan-assets ratio but not with improvement in loan performance or returns (on asset or equity). Diversification increases the lending capacity of banks but does not improve the profit of individual banks or reduce risk in their portfolios.

Despite the heightened growth and relative resilience of the Islamic banking industry to the 2008 financial crisis, the existing literature has neglected to investigate the impact of geographic diversification within the Islamic banking industry. Due to their particular practices and legal framework, Islamic bank performance may react differently to geographic diversification. It might be argued that this issue would be important and may contribute to renewing the debate about the effectiveness of this expansion strategy within the banking industry. Moreover, the Islamic banking system may be considered as an ideal experimental setting since Islamic banks are still typically geographically concentrated, showing a substantial interest in studying the effects of expanding the Islamic financial services on the bank performance, especially that the demand for these banking services has increased since the 2008 financial crisis, including Muslim and non-Muslim clientele.

To our knowledge, our paper is the first academic work assessing the impact of geographic diversification strategy on Islamic bank performance. Especially, our empirical analysis investigates how two types of geographic diversification strategies, i.e. intra home country and international geographic strategies influence the Islamic banks' profitability, stability, and loan quality. Besides, our research is among the few studies that have differentiated between expansion within the home country and that beyond home frontiers. We think that this approach is wise since both strategies may be associated with different cost structures and different risk exposures (Banalieva & Sontoro, 2009; Yildirim & Efthyvoulou, 2018).

### **III. RESEARCH SAMPLE AND METHODOLOGY**

#### **3.1. Variables Measurement**

Since our main objective was to investigate the impact of geographic diversification on the Islamic bank performance, by examining separately the impact of the intra-home country expansion and the impact of an eventual interaction between local with international geographic diversification, we refer essentially, to bank branching to measure the intra-home country geographic diversification. Besides, to approximate the international diversification orientation of a bank, we use a binary variable that takes 1 when the bank has branches beyond the home country frontiers, and 0 otherwise.

##### **3.1.1. Measurement of Geographical Diversification**

###### **1) Measurement of the local geographic diversification**

To account for the local geographic diversification of a bank, we used a revisited index based on a similar Herfindahl-Hirschman index (HHI\_GEO) used by among many others Acharya et al. (2006).

$$HHI_{i,t} = 1 - \sum_{m=1}^M S_{imt} * \ln\left(\frac{1}{S_{imt}}\right)$$

Where:

$$S_{imt} = \frac{\text{Number of branches}_{imt}}{\text{Total number of branches}_{it}}$$

Note: the i index refers to the bank and the m index to regions (or cities) related to the home country j.

The values of these two indicators range from 0 to 1, where the value 0 indicates the maximum geographical diversification and expansion within regions, while the indicator values close to 1 represents the maximum possible geographical concentration for a bank. It follows that the banks that have branches in just a few regions, that is with a limited geographical diversification, will show an HHI close to 1; alternately, the banks present in all the provinces of the national territory with an identical number of branches will show a high geographical diversification expressed with HHI values close to 0.

### 2) Measurement of international geographical diversification

We considered a binary variable to approximate the inter-regional geographic diversification (inter-geo); we allocated 1 when banks have subsidiaries beyond the national territory and 0 otherwise. Especially, we examined the impact of the interaction between geographic diversification within the home region with the international expansion on the Islamic bank performance.

### 3.1.2. Bank Performance Measure

To approximate the bank performance, we used three alternative indicators related to both profitability (returns on assets) and risks (credit risk and stability).

#### 1) Credit risk measure

We focused on credit risk because it is the main indicator of bank resilience since it is the main risk that threatens any banking industry. We noted that credit risk is the cause of 80% of bank failure cases, (Khan, 2003; Greuning & Iqbal, 2008). Also, it is commonly known in the literature that credit risk is the most important risk for banks (Khan & Ahmed, 2001; Elgari, 2003; How et al., 2005; and Ariffin et al., 2009). Moreover, the diversification strategy is primly asserted to reduce investors' risk exposure, so we thought it would be interesting to examine its empirical effectiveness on the Islamic banks' credit risks.

The credit risk is measured by the new nonperforming loans ratio as:

$$CR_{it} = \frac{\text{New nonperforming loans}_{it}}{(\text{Gross loans}_{it-1} - \text{Nonperforming loans}_{it-1})}$$

In so doing, we exclusively took into account the flow of the new non-performing loans, which allowed us to get a dual advantage: a) the elimination of the serial correlation with the datum of the previous year; and b) the sterilization of the effects of securitization or loan sale transactions that remove the non-performing loans from the balance sheet.

#### 2) Bank stability measure

We also examined the impact of this strategy on the bank fragility or default risk, measured by the Z-score (Boyd & Graham, 1986; Mercieca et al., 2007).

The Z-score is defined, over (t, t-3) as:

$$\text{Average} \frac{ROA_{it} + \text{Equity}_{it}}{\text{Asset}_{it}} \\ \sigma ROA_{it}$$

The rationale behind the Z-score is to relate the variability of a bank's return to its capital base. Hence, one gets a clear indication of how much variability in returns that can be absorbed by the capital without the bank becoming insolvent. A bank with a high

Z-score is perceived as a low-risk bank since a large number of standard deviations of the bank’s ROA need to drop in order to wipe out the capital base. We used a time-varying Z-score to face the fact that a bank’s risk profile and capital structure changes over time. In the regression analysis, we focused on using the Z-score natural logarithm (ln Z-score) to minimize the effects of higher values that could result from outliers.

3) Bank profitability

To approximate banks' profitability, we used the return on assets (ROA). It is defined as the ratio of net income to total assets. It is a commonly used performance measure and illustrates how well a firm’s management utilizes the resources available to make profits.

$$ROA_{it} = \frac{\text{Net income}_{it}}{\text{Total assets}_{it}}$$

We further allowed for factors that may influence the relationship between geographical diversification and bank performance by including two control vectors:

- a) Bank\_control<sub>i,t-1</sub> is the vector of bank portfolio characteristics. It measures for bank size proxied by the natural logarithm of total assets (Size<sub>it</sub>= ln(Total assets)<sub>it</sub>)—which may arguably increase (Houston et al., 1997; Stiroh, 2004) or decrease a bank’s stability and risk (Demirgüç-Kunt & Huizinga, 2010; Schaeck & Cihák, 2012; and Beck et al., 2013)—and by the total assets growth rate (GR<sub>it</sub>) to allow for the expansion of a bank’s balance sheet during the current year (compared to the previous year). Abedifar et al. (2013) employed this ratio as a proxy for a bank’s growth and development strategies. As they expand and develop, banks might be further exposed to information asymmetry, since the bank’s activities considerable increase may result in weaker screening standards and lower monitoring of investments. Also, we considered the Capital ratio (ER<sub>it</sub>)= Equity<sub>it</sub> on Total assets<sub>it</sub>, that approximates for the bank autonomy and resilience, Deng and Elyasiani (2008).
- b) Country\_control<sub>jt</sub> is the vector of three macroeconomic and institutional variables commonly used in the stability literature (Houston et al., 1997; Schaeck & Cihák, 2012; and Abedifar et al., 2013). It includes the GDP growth rate (GDPG<sub>jt</sub>) and the inflation rate (INF<sub>jt</sub>) to capture the general financial conditions of the home country.

The econometric analysis uses both the OLS and GMM models in panel data with fixed effects. The Hausman test was performed to choose the fixed effect model. In formal terms, the econometric equations that have been set up may be synthesized as follows:

$$\ln Z_{it} = \alpha + \beta_1 * \text{Diversification index}_{it-1} + \beta_2 * \text{Diversification index}_{it-1} * \text{International orientation} + \beta_3 * \text{Bank\_control}_{i,t-1} + \beta_4 * \text{Country\_control}_{jt-1} + \mu_{it} \dots\dots\dots (1)$$

$$CR_{it} = \alpha + \beta_1 * \text{Diversification index}_{it-1} + \beta_2 * \text{Diversification index}_{it-1} * \text{International orientation} + \beta_3 * \text{Bank\_control}_{i,t-1} + \beta_4 * \text{Country\_control}_{jt-1} + \mu_{it} \dots\dots\dots (2)$$

$$ROA_{it} = \alpha + \beta_1 * \text{Diversification index}_{it-1} + \beta_2 * \text{Diversification index}_{it-1} * \text{International orientation} + \beta_3 * \text{Bank\_control}_{i,t-1} + \beta_4 * \text{Country\_control}_{jt-1} + \mu_{it} \dots\dots\dots (3)$$

3.2. Data and Sample Characteristics

Concerning data availability, the sample includes 54 Islamic banks operating in Saudi Arabia, Bahrain, United Arab Emirates, Turkey, Qatar, Egypt, Kuwait, Malaysia, Indonesia, and Jordan from 2004 to 2016, leading to an unbalanced panel of 54 banks with a total of 702 annual observations. The Data were gathered manually from banks'



annual reports; those are available on the respective bank's website. Though the major limitations of the 2008 financial crisis event, we argued that our comprehensive sample that covers 54 Islamic banks across 10 countries and spanning 13 years, would be representative, permitting some rigorous analysis and conclusive results. The Islamic banks' subsidiaries implemented beyond their home country frontier were excluded from the sample, only the holding bank companies and local banks were considered. We measured all the variables at the holding-company level, i.e. we treated all the affiliated banks with a holding company as a single entity. Measuring at the bank level, instead, would ignore the diversification provided via the bank's affiliation in other locations. Table 1 presents the sample repartition.

**Table 1**  
**Sample Repartition**

	KSA	BAH	UAE	TUR	QAT	EGY	KUW	MAL	IND	JOR
<b>Number of Islamic banks</b>	5	4	7	3	2	4	4	16	6 <sup>1</sup>	3
<b>Number of regions</b>	20	8	24	35	17	18	10	12	11	11
<b>Mean network branches</b>	80 <sup>2</sup>	11 <sup>3</sup>	37	166	19	18	13	725	140	50
<b>Number of Islamic banks with international orientation</b>	1	2	3	1	2	1	1	12	1	0

Notes:

<sup>1</sup> I exclude from the sample the rural Islamic banks to avoid outlier's bias.

<sup>2</sup> Without considering Rajhi bank which network is counting 550 local branches.

<sup>3</sup> Without considering the baraka bank, which has the biggest Islamic banking' network with 675 branches over 3 continents and 16 countries. Its consideration may bias results since it is an outlier compared to sample means.

To assemble our dataset, we extracted yearly consolidated accounting data from the bank's reports available on the bank website. Each bank was considered once, i.e. subsidiaries of international banks beyond home frontiers were excluded from the sample. Also, only full-fledged Islamic commercial banks were considered in the sample, all Islamic windows were excluded.

From Table 1, we point out that the majority of Islamic banks in our sample are rather engaged in a local diversification strategy. Only 24 Islamic banks have tried some international orientation<sup>2</sup>. A glance at the number of branches reported to the number of regions per country, suggests that the local geographic diversification is particularly developed among South Asia and Turkish regions.

<sup>2</sup> Moreover the international expansion experience of Islamic banks remains shy and does not exceed a maximum of 5 countries, except for the Baraka bank which has a network of 675 branches spread over three continents within 16 countries.

## IV. EMPIRICAL RESULTS

### 4.1. Descriptive Statistics

Table 2 provides summary statistics of the variables we used in our analysis, whereas the correlation matrix is presented in Table 3.

**Table 2**  
**Summary Statistics for Relevant Variables in Our Regression Analysis**

	Mean	Min	Max	Std. Dev.
1. HHI index	.7438	.2251	.9043	.4374
2. CR	6.33	4.25	8.12	.2634
3. Ln Z-score	2.91	1.945	3.737	.3541
4. ROA	1.34	-.5	2.9	.1672
5. Number of branches intra home country	23.3	6	755	.8561

**Table 3**  
**Correlation Matrix**

	HHI	Int-geo	CR	Z-score	ROA	Size
1. HHI	1					
2. Inter-geo	-0.4013**	1				
3. CR	-0.2012*	0.2304*	1			
4. Ln Z-score	0.0337	0.0104*	-0.2165*	1		
5. ROA	-0.2858***	0.5225***	0.3012***	-0.2709**	1	
6. Size	-0.1938***	0.1273**	0.2889***	-0.1916***	0.2950**	1

Notes: the symbol \*\*\* indicates a significance level of 1% or less; \*\* between 1% and 5%; and \* between 5% and 10%.

The relatively large standard deviations of the measures indicate substantial individual variations among banks. Moreover, we can point out that the maximum diversification index is far from 0, and nearly the whole spectrum of possible degrees of diversification is captured in our sample as a minimum and maximum values range from 0.2251 to 0.9043. These measures indicate that Islamic banks included in the sample seem to be not sufficiently engaged in a geographic diversification strategy, and they benefit from an interesting network growth and expansion potential.

As the correlation matrix illustrates, the local and international geographic diversification measures are highly correlated which might indicate that the international and local geographic diversifications are two complementary rather than substitutable strategies. Moreover, we can state that the bank performance indicators seem to be differently correlated to international and home diversification strategies. Especially, the bank's stability seems to be positively correlated only to the banks' international orientation. The association between a bank's stability and the domestic geographic diversification is not significant. Inversely, the bank credit risk seems to be positively associated with both local international expansions (but statistically less robust effect). Nevertheless, banks' profitability seems to be highly associated with both diversification strategies.

A positive relationship is reported between size and the three bank performance indicators. Therefore, the bigger the bank is, the more it is exposed to credit risk, but the more it is stable and profitable. Also and as expected, the bank size is highly and significantly correlated with both of the diversification strategies.

## 4.2. Regression Results

To estimate the impact of both local and international geographic diversifications on banks' performance, we adopted Acharya et al. (2006) methodology and carried out both of the OLS and GMM estimations with a fixed effect. This technique allows controlling for unobserved specific effects that are thought to influence bank performance.

**Table 4**  
**Provides the Regression Results**

	Dependent variable: Credit Risk		Dependent variable: ln Z-Score		Dependent variable: ROA	
	OLS esti.	GMM esti.	OLS esti.	GMM esti.	OLS esti.	GMM esti.
	<b>Diversification<sub>it-1</sub></b>	-.0312	-.0561*	-.0146	-.0245*	-.067**
<b>Interaction Local with International Diversification<sub>it-1</sub></b>	-.0213*	-.0402**	.0651**	.0852**	.0606**	.0824***
<b>Bank Size<sub>it-1</sub></b>	.011*	.062**	.039**	.047**	.066**	.0856**
<b>Capital Ratio<sub>it-1</sub></b>	.024	.022	.010*	.030**	-.082	-.056
<b>Loans Growth<sub>it-1</sub></b>	.044***	.089**	.025	.056*	.020***	.0192**
<b>GDP<sub>it-1</sub></b>	-.036*	-.080	.012*	.081*	.017*	.046**
<b>Inflation<sub>it-1</sub></b>	.108*	.169*	.014	.025*	.002	.002
<b>Intercept</b>	.132***	.245***	.180***	.268***	.320***	.365***
<b>R-square</b>	.2119	.2046	.2576	.2023	.2515	.2067
<b>F-stat</b>	6.55***	5.934***	6.80***	5.864***	6.523***	5.989***
<b>No. observation</b>	702	702	702	702	702	702

Notes: the symbol \*\*\* indicates a significance level of 1% or less; \*\* between 1% and 5%; and \* between 5% and 10%.

Table 4 shows the results of the entire econometric model with the R-square levels ranging from 20.23% to 25.15%. Referring to the ROA dependent variable, the results reached by the two models, reveal a positive and significant association with both of the geographical diversification indices. Therefore, the analysis confirms that, as the level of geographical diversification of a bank increases, there is an increase in its overall profitability level. These findings are at odds with a few previous studies (Shiers, 2002; Morgan & Samolky, 2003; Acharya et al., 2006; and Mercieca et al., 2007) and show that geographic expansion within the home country or beyond the frontiers permits an overall profitability improvement, pointing to a positive effect of the geographic diversification on Islamic banks profitability. We may argue, then, that geographic expansion strategy enables better cost efficiency and improves the Islamic banks' market power. Since the Islamic banking industry is less competitive relative to the conventional banking industry, the geographic expansion allows the Islamic banks more freedom to practice higher margins, allowing overall higher profitability. Also, the analysis proves a positive impact of both geographic expansion strategies on bank stability approximated by the Z-score. This result argues that geographical diversification especially the international expansion improves the banks' resilience and reduces their exposure to default risk. We notice that statically speaking; the association between Islamic banks' stability and local expansion is less robust. Our results are in line with Jochem (2013), who concluded that bank geographic diversification leads to a substantial and persistent effect on bank stability. We can argue that the presence of an imperfect correlation between the economic trends

of the various settlement areas produces a favorable stabilization of bank performance. Such findings are in agreement with the portfolio modern theory established by Markowitz (1952) who established a negative association between a diversification strategy and a systematic risk. Also, such findings support the hypothesis of “too big to fail”, since the geographic diversification enhances the bank’s expansion inter and intra regions, making it more resilient to a crisis or an economic recession.

Nevertheless, the analysis documents different results related to bank credit risk. Both geographic diversification strategies seem to hurt loan quality. Such a result shows that the more the bank increases its geographic expansion, the more it is exposed to credit risk. Our analysis then corroborates the agency theory, which argues that the expansion inter and intra regions may enhance governance problems, making control, and supervision more complex. Moreover, the negative impact on credit risk is particularly significant concerning a bank’s international orientation, arguing in favor of the home biases. Specifically, the lack of knowledge of the financial and economic particularities of foreign regions could alter the procedure of loan distribution.

Considering the control variable behavior, a positive relationship is reported between size and the three bank performance indicators. Therefore, the bigger a bank is, the more it is exposed to credit risk, but the more it is stable and profitable. This result is consistent with former studies (Duqi et al., 2011). On the other hand, the capital ratio is positively related to the bank ROA, meaning that as the level of capitalization of the intermediary increases, corporate profitability rises. This result was also confirmed by previous studies (Hutchison & Cox, 2007). The GDP variable has a positive effect on the bank ROA level. Concerning the loan growth variable, it seems to positively impact all the bank performance measures. More loans lead to some higher exposure to credit risk, nevertheless, on the other hand, it seems to improve bank stability and profitability.

In short, the outcome of the analysis confirms that both local and international geographical diversification choices allow Islamic banks to improve their profitability and stability, but they lead to higher credit risk exposure.

As regards this analysis, due emphasis should be laid on an important aspect relative to the Islamic banking sector. Compared to their conventional peers, Islamic banks are still more locally concentrated, and international diversification is only limited to a few banks. So we may dare argue that a geographical diversification may be an interesting strategic solution for growth. In fact, since the demand of Islamic banking services seems to be not limited to religious clientele and as the revenue diversification is constrained by many religious limits forbidding many product classes, we strongly believe that our results may encourage banks to grow geographically whether within the home country or even beyond the frontiers.

We think that this research results may be an important contribution to academics, since and to our knowledge, the existing literature is still regarding the effectiveness of the enigmatic geographic diversification strategy within the Islamic banking industry. Also, our findings should sensitize the banking industry supervisors and managers about the potential benefits the geographic diversification may generate to the Islamic banking industry sustainability and development, knowing that the growth potential is significant with a fairly limited geographical Islamic banking service coverage and the growing number of non-religious clientele.

## V. CONCLUSION

In regards to previous research on bank diversification, our paper is one of the first attempts to directly assess the relative role of both intra home country and international geographic diversification on the Islamic banks' performance. We achieved the analysis using the methodology employed by Acharya et al. (2006) and showed positive effects on both bank profitability and stability of diversifying Islamic banking services within regions. However, the analysis results indicate that both expansion strategies seem to be associated with some heightened credit risk exposure. Therefore, regulators and researchers in Islamic finance should encourage Islamic banks to adopt this strategy and not focus only on countries where a majority of the population is Muslim taking into account that the demand for Islamic banking services seems not to be limited to a religious clientele<sup>3</sup>.

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<sup>3</sup> For example, in Malaysia, and according to official statistics, Islamic banks are successful, although half of the clients of these banks are non-Muslims.

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