

Finance-Growth Nexus and Dual-Banking Systems: Relative Importance of Islamic Banks

Pejman Abedifar^a, Iftekhhar Hasan^{b,c}, Amine Tarazi^d

^aCentre for Responsible Banking & Finance, School of Management, University of St. Andrews, Scotland, U.K.

^bFordham University, 5 Columbus Circle, 11th Floor, New York, NY 10019

^cBank of Finland, FI 00101, Helsinki, Finland

^dUniversité de Limoges, LAPE, 5 rue Félix Eboué, 87031 Limoges, France

Abstract. This paper investigates the relative importance of Islamic banks, alongside their conventional counterparts, in relation to banking and financial development and economic welfare. Using a sample of 22 Muslim countries, with dual-banking systems, during the period 1999–2011, this paper reports some significant positive relationship between the market share of Islamic banks and the development of financial intermediation, financial deepening and economic welfare, particularly in low income or predominantly Muslim countries, and countries with a comparatively higher uncertainty avoidance index. Additionally, the results reveal that a greater market share of Islamic banks is associated with higher efficiency of conventional banks.

JEL Classifications: G21, O16

Keywords: Banking System Structure, Financial Development, Finance-Growth Nexus, Islamic Banking.

Send all correspondence to Iftekhhar Hasan, ihasan@fordham.edu, Tel: + 1 518 892 6532.

E-mail addresses of authors: pa31@st-andrews.ac.uk, ihasan@fordham.edu, amine.tarazi@unilim.fr.

Acknowledgement: Thanks to Kose John, Philip Molyneux, and Alain Sauviat and delegates at the ERF 20th Annual Conference, Cairo, the 4th Islamic Banking conference, Lancaster University, the International Islamic Banking and Finance Conference, Riyadh, March 2016, for constructive comments on earlier versions of the paper. All errors, of course, rest with the authors.

1. Introduction

Financial systems mitigate information and transaction costs. The core functions of financial markets and institutions are to facilitate savings mobilization, information acquisition and processing, the efficient allocation of funds and to encourage effective corporate governance (Levine, 1997). A well-functioning financial market and efficient financial intermediation can spur capital productivity and foster economic growth (Rousseau and Sylla, 1999; Beck, et al., 2000 and Christopoulos and Tsionas, 2004; Levine, 2005 among others).

The extant literature discusses the importance of how differently shaped financial systems can affect economic development (e.g. Levine et al., 2000; Beck and Levine, 2004; Merton and Bodie, 2004 and Berger et al., 2004). Differences in banking industry structures can also differently impact the economy as a whole. For instance, Berger et al. (2004) study the role of community banks in the economic growth of 49 countries between 1993 and 2000. Their findings suggest that where small, private, domestically-owned banks have larger market shares and higher efficiency, this can boost economic growth. In this paper we study whether the coexistence of Islamic and conventional banking contributes to financial development and economic welfare.

According to The Banker (2013), Islamic finance is growing at the rate of 15% to 20% per annum. Globally, Islamic banking assets in commercial banks are set to exceed \$1.7 trillion in 2013 (Ernst & Young, 2013-2014).

The empirical work in this area has grown accordingly. The extant literature analyzes various features of Islamic banking and finance: investment financing (Aggarwal and Yousef, 2000), securitization (Jobst, 2007), mortgage loans (Ebrahim, 2009), stability (Čihák and Hesse, 2010), relationship banking (Ongena and Şendeniz-Yüncü, 2011), business models (Beck et al., 2013), risk (Abedifar, et al., 2013), efficiency (Johnes et al., 2014; Saeed and

Izzeldin, 2014), loan default rates (Baele et al., 2014), mutual funds (Abdelsalam et al., 2014) and valuation (Elnahass, et al., 2014)¹.

However, there are few studies on the role and relative importance of Islamic banking in the transformation of the banking and finance sectors of respective countries. Using a sample of 20 Muslim countries for the 2000-2005 period, Gheeraert (2014) shows that development of Islamic banking sector boosts the whole banking system. Gheeraert and Weill (2014) claim that the development of Islamic banking improves macroeconomic efficiency. Islamic banking has changed the financial structure of many countries by introducing a dual financial system in which both Islamic and conventional institutions operate. This paper attempts to fill the void by investigating the characteristics of Islamic banking from the finance-growth perspective.

Islamic banks offer financial products and services that are compatible with Islamic doctrine, which allows Muslim individuals and firms with religious concerns to have access to finance or move from an informal to a formal financial system. In short, Islamic banks can mitigate financial exclusion and bring financial services to a wider population. This can also promote better strategies for poverty alleviation (Rajan, 2006).

Changes in market structure may affect banks' performance. In a dual-banking system, Islamic and conventional banks do not merely play a supplementary role to one another, they compete with each other for clients and investors. Whether and how conventional banks are affected by the presence of Islamic banks is an important issue from the policy-making perspective and we examine how the efficiency of conventional banks is affected when they operate alongside Islamic banks.

We focus on commercial banking industries in 22 Muslim countries with dual-banking systems during the 1999–2011 period. Overall, we find that the effect of a dual-

¹For a review of the literature, please refer to Abedifar et al. (2015).

banking system (where Islamic banks operate alongside their conventional counterparts) on financial development, economic growth and poverty alleviation depends on the institutional environment. This is examined in our study from three perspectives: religion, wealth and culture. Our results show that a higher market share of medium-size Islamic banks is associated with: greater funding mobilization and credit allocation, economic growth and poverty alleviation in countries with relatively greater proportions of Muslims in their populations; countries with a comparatively higher uncertainty avoidance index; and countries with lower GDP per capita. Our bank-level analyses reveal a positive relationship between the presence of large Islamic banks and the efficiency of conventional banks in predominantly Muslim countries. In more religiously diverse Muslim countries, the efficiency of conventional banks is positively linked to the market share of conventional banks with Islamic window/branches.

The remainder of the paper is organized as follows. Section 2 presents the research motivation and econometric specifications, section 3 describes our sample of observations, and section 4 discusses the results. Finally, section 5 concludes.

2. Research Motivation and Econometric Specifications

2.1. FINANCIAL INTERMEDIATION AND ECONOMIC WELFARE

We study the relationship between the coexistence of Islamic banks and conventional banks and national financial development in terms of savings mobilization and funds allocation. We also explore the link between the presence of Islamic banks and economic growth, income inequality, and poverty alleviation.

2.1.1. FINANCIAL INTERMEDIATION

Many Muslims do not use traditional financial products and services, because they believe these conflict with their religious beliefs. They may use financial services provided by the informal market.² A number of surveys highlight that Muslims prefer *Sharia*-compliant financial products and services. In Algeria, for instance, a study shows that around 20.7% of micro-enterprise owners do not apply for loans primarily due to religious concerns (Frankfurt School of Finance and Management, 2006). In Indonesia, around 49% of the rural population of East Java prefers Islamic finance and believes that interest is prohibited (C.G.A.P., 2008). Honohan (2008) finds that in member countries of the Islamic Development Bank (i.e., all OIC³-member countries except Guyana) only 28 percent of the total adult population uses formal or semi-formal financial products and services for deposit and borrowing activities.

Given the relatively low access to financial institutions and products in most Muslim countries (e.g. Honohan, 2008), there is considerable potential for Islamic finance, by moving lenders and borrowers from the informal to formal markets.⁴ Hence, Islamic banks are expected to play a complementary role to conventional banks in intermediating financial resources. Islamic and conventional banking may also substitute for each other; for example, Islamic banks can absorb lenders and borrowers from conventional financial institutions. We therefore explore whether the presence of Islamic banks can increase financial intermediation. First, we investigate how the deposits in the banking industry and financial system are affected by the presence of Islamic banks. We then examine the relationship between the volume of private credit and the market share of Islamic banks.

² Often known as the curb market.

³ Organization of Islamic Conference; please refer to <http://www.oic-oci.org/oicv2/home/?lan=en>

⁴ Some economists believe that curb markets are more efficient in savings and investment intermediation (van Wijnbergen, 1983; Taylor, 1983; Buffie, 1984); however, Fry (1988) argues that informal markets are not necessarily as efficient as formal markets. Chandavarkar (1992) claims that curb markets are unorganized and do not play a substantial role in financial-resource intermediation to boost economic growth. The main problem for examining the potential contribution of informal markets to economic growth is the lack of data.

2.1.2. *Economic Growth*

Whether the presence of Islamic banks can affect economic growth is an empirical question that we attempt to address in this study. Existing studies show that religious individuals are more risk-averse than other agents (Miller and Hoffmann, 1995; Osoba, 2003; Hilary and Hui, 2009). Similarly, Islamic financial institutions might be more risk-averse than their conventional counterparts. Therefore, they might limit entrepreneurship by encouraging borrowers to select low-risk projects or to invest excessively in tangible assets. Furthermore, Islamic financiers may prefer to allocate funds to the real economy, because they are not authorized to allocate financial resources to speculative activities.

2.1.3. *INCOME INEQUALITY and POVERTY ALLEVIATION*

A profit-maximization strategy encourages financial institutions to establish branches and networks in large cities or capital-oriented areas rather than in areas with low population density or low income. This may leave the poor with relatively limited access to financial products and services such as deposits and loans. Additionally, some poor Muslims may prefer to bank with *Sharia*-compliant financial institutions. The lack of access to finance can exacerbate poverty (Ayyagari et al, 2008). The limited access of the poor to finance is addressed by the microfinance literature (see Armendariz de Aghion and Morduch, 2005 among others), where governments might be encouraged to promote financial services in rural and low income areas. The government of India, for instance, adopted a policy, during the period 1977-1990, to support the opening bank branches in areas without any bank⁵. That policy has been associated with a 60% reduction in rural poverty (Burgess and Pande, 2005).

⁵The government allowed establishment of a new branch in districts that had already benefited from bank presence provided that the bank opened four branches in areas without bank presence.

Rajan (2006) argues that it is better to focus on finance for all rather than to focus exclusively on the poor. This is more practical from the political economy perspective⁶ and a number of empirical studies show that the poor also benefits from a more general policy. Honohan (2004) finds a negative relationship between financial development and headcount ratio. Beck et al. (2007) claim that financial deepening not only has a positive effect on economic growth, but it also mitigates income inequality and reduces poverty.

Islam, like other Abrahamic religions (Judaism and Christianity), encourages lending that it is free of interest. The motivation for the prohibition of interest is to prevent the oppression of the poor. Hence, the availability of Islamic finance may lessen income inequality and alleviate poverty, given that Islamic financial institutions may incorporate poverty alleviation in their business strategies. They are expected to have a greater incentive to offer financial products and services to poor clients. We therefore expect to find that Islamic financiers contribute more to social and development activities than their conventional counterparts.

Alternatively, Islamic financial institutions may offer *Sharia*-compliant financial products and services as part of a marketing strategy to attract clients that are highly religious. They might also follow a profit-maximization approach similar to conventional financial institutions⁷, so that there would be few differences between Islamic and conventional products. Hence, Islamic financial institutions may not be more effective in reducing poverty than conventional financial institutions, so it is important to investigate the impact of Islamic financial institutions on income inequality and poverty.

⁶For instance, microfinance is well practiced only in a few countries such as Bangladesh, Indonesia and Thailand (Honohan, 2004).

⁷ We follow existing literature (see e.g. Aggarwal and Yousef, 2000 Chong and Liu, 2009; Beck et al, 2013 and Abedifar et al, 2013) and assume that Islamic commercial banks follow a profit maximization strategy similar to conventional commercial banks within the constraints imposed by Sharia, e.g. prohibition of interest-based financial activities.

2.1.4. ECONOMETRIC SPECIFICATIONS

We adopt the following panel specification for our analyses. To control for individual unobservable heterogeneity across countries, we use the fixed-effect technique in our estimation and cluster standard errors at the country level.

$$Y_{j,t} = \alpha_0 + \alpha_{11} \times \text{Small_ISB_Share}_{j,t} + \alpha_{12} \times \text{Medium_ISB_Share}_{j,t} + \alpha_{13} \times \text{Large_ISB_Share}_{j,t} + \alpha_{21} \times \text{Small_ISW_Share}_{j,t} + \alpha_{22} \times \text{Medium_ISW_Share}_{j,t} + \alpha_{23} \times \text{Large_ISW_Share}_{j,t} + \alpha_3 \times \text{Foreign_Banks_Share}_{j,t} + \alpha_4 \times \text{State_Banks_Share}_{j,t} + \alpha_5 \times \text{Inflation}_{j,t} + \alpha_6 \times \text{Per_Capita}_{j,t} + \alpha_7 \times \text{Remittance_Inflow}_{j,t} + \alpha_8 \times \text{Trend}_t + \epsilon_{j,t} \quad (1)$$

Where j subscript denotes individual countries and t denotes the time dimension.

$Y_{j,t}$ is our dependent variable. We use the following three proxies for our financial-intermediation study: total deposits of commercial banks to gross domestic product (*GDP*) ratio (*Bank Deposit*); total deposits in the financial system to *GDP* ratio (*Financial System Deposit*) representing the volume of deposits mobilization; and the ratio of private credit to *GDP* (*Private Credit*) as a proxy for credit allocation.

For our economic growth analysis, we employ the annual growth rate of *GDP* per capita, calculated using the purchasing power parity (*PPP*) method (*Economic Growth*) as the dependent variable ($Y_{j,t}$).

We explore income inequality and poverty alleviation using five proxies: the Gini index (*Gini*); the share of people with less than \$1.25 a day based on *PPP* in the total population (*Poverty Ratio International*); the percentage of people below the national poverty line (*Poverty Ratio National*); the intensity of poverty by the percentage who live on less than \$1.25 a day (*Poverty Gap International*); and the percentage of people who live below the rural poverty line (*Poverty Ratio Rural*).

ISB Share is our variable of interest and represents the assets of commercial Islamic banks as a percentage of the total assets of the whole commercial banking industry. Islamic banking can enter the financial system in two ways: The establishment of pure Islamic banks

or by launching Islamic branches/window in conventional banks. The first way increases both the size of the financial sector and the number of financial institutions, yielding higher market competition. The second way increases the size of the financial system with no increase in the number of participants, resulting in higher market power. Following Beck et al. (2013), we split Islamic banks into three categories: *Small*, *Medium* and *Large*. We define *Small banks* as those with total assets below \$100 million. *Medium banks* are those with total assets above \$100 million and below \$1 billion. *Large banks* are those with total assets above \$1 billion.

We are interested in the role of pure Islamic banks in financial systems and the economy. We control for the Islamic branches/window by including the share of *Small*, *Medium* and *Large* Islamic window banks (*ISW Share*) in the total assets of the commercial banking sector. The benchmark is then the share of pure commercial conventional banks in the total assets of the banking system.

We try to capture the heterogeneities associated with the structure of the banking sector in terms of ownership, using the share of total assets of foreign and state-owned banks in total assets (*Foreign Bank Share* and *State Bank Share*). The benchmark is the share of domestic private banks in total assets.

We use fixed effects technique for our estimation, which accounts for unobservable factors. We control for a number of macroeconomic and institutional environment factors such as inflation, remittance inflow, GDP per capita, culture and religion. Inflation is represented in our model by the annual growth rate of the GDP deflator (*Inflation*); it affects financial development and economic welfare (Rousseau and Wachtel, 2002). We also consider remittance inflow as a percentage of GDP (*Remittance Inflow*) in our model. Overseas remittance and capital inflow has been increased over time and may influence our variables of interest. Heterogeneity across countries due to differences in income is captured by introducing GDP per capita measured by the PPP approach (*Per Capita*) into our model.

Moreover, we split our sample into two groups on the basis of the median value of *Per Capita* to explore the impact of Islamic banking presence in relatively poor countries.

Religion is represented by the proportion of Muslims in the population (*Muslim Share*). This follows Abedifar et al. (2013), who find significant variations in the performance of Islamic banks across countries. We expect the presence of Islamic banks to be influential particularly in predominantly Muslim countries. We also expect that the introduction of Islamic banks can attract more people to the formal financial sector and more effectively contribute to financial deepening in Muslim countries with relatively a higher uncertainty avoidance index (*Uncertainty Avoidance*) issued by Hofstede (2001). Since religion and culture are largely time-invariant, we cannot directly use them in our model. We split our sample into two parts based on the median value of *Muslim Share* and *Uncertainty Avoidance*. From that basis, we explore how the market share of Islamic banks is linked to financial development and economic welfare in countries.⁸ Finally, we add a trend variable. Table A1 in the appendix describes the variables of interest, the control variables, and the dependent variable.

2.2. EFFICIENCY OF CONVENTIONAL BANKS

How the presence of Islamic banks may affect the efficiency of conventional banks is an interesting question which we attempt to address in this paper.

Conventional banks might operate more efficiently in a dual-banking system due to competitive pressure. The pressure might be stronger for conventional banks than Islamic banks, because of the preference of Muslims with religious concerns for Islamic financial institutions. The efficiency of conventional banks might improve with the greater competition that is implied by a rise in the market share of Islamic banks. Furthermore, Islamic banks

⁸ We are thankful to anonymous referees for their fruitful comments on our modelling.

might be inherently less efficient in offering complicated *Sharia*-compliant financial products⁹. Taken together, it is unclear whether a higher market share of Islamic banks can significantly alter the efficiency of conventional banks.

To investigate the link between the market share of Islamic banks and the efficiency of conventional banks, we estimate the following panel specification using the fixed-effect technique with standard errors clustered at the bank level. The technique accounts for individual, unobservable heterogeneity across banks.

$$\begin{aligned} \text{Inefficiency}_{i,t} = & \beta_0 + \beta_{11} \times \text{Small_ISB_Share}_{j,t} + \beta_{12} \times \text{Medium_ISB_Share}_{j,t} + \beta_{13} \times \text{Large_ISB_Share}_{j,t} + \\ & \beta_{21} \times \text{Small_ISW_Share}_{j,t} + \beta_{22} \times \text{Medium_ISW_Share}_{j,t} + \beta_{23} \times \text{Large_ISW_Share}_{j,t} + \\ & \beta_3 \times \text{HHI}_{j,t} + \beta_4 \times \text{Domestic_Interest_Rate}_{j,t} + \beta_5 \times \text{Per_Capita}_{j,t} + \\ & \beta_6 \times \text{Per_Capita_Growth}_{j,t} + \beta_7 \times \text{Capital}_{i,t} + \beta_8 \times \text{Size}_{i,t} + \beta_9 \times \text{Credit Risk}_{i,t} + \\ & \sum_{y=1}^{12} \beta_{10,y} \times \text{Year_Dummies}_{t,y} + \xi_{i,t} \end{aligned} \quad (2)$$

where the i , t and j subscripts denote individual banks, time dimension, and countries, respectively. *Small*, *Medium* and *Large ISB Share* is our variable of interest, and we study its impact on *Inefficiency* of conventional banks operating in a dual-banking system.

Inefficiency (our dependent variable) is represented by the ratio of total noninterest expense to total operating income. We control for macroeconomic factors such as market concentration together with bank-level controls. Because the Hausman test suggests the use of the fixed-effect technique, we do not include ownership dummies in our model. Besides controlling for the market share of *Small*, *Medium* and *Large ISW Share*, we introduce four country-level variables to capture cross-country variations. We control for the impact of banking-sector concentration by adding the Herfindahl-Hirschman Index (*HHI*) to our model. The relationship between market concentration and efficiency is not clear *ex ante*. On the one hand, in more concentrated markets, banks have less incentive to increase their efficiency (*Quite Life Hypothesis* proposed by Hicks, 1935). On the other hand, more efficient banks

⁹Some studies show that Islamic financial products are more expensive than conventional ones (e.g. Baele et al, 2014). This could be because of higher inefficiency of Islamic banks or extra rents that Islamic banks extract from their clients for offering *Sharia*-compliant financial products.

gain larger market shares that may lead to greater market concentration (*Efficient-Structure Hypothesis* proposed by Demsetz, 1973).

We take into account the level of domestic interest rates (*Domestic Interest Rate*). The extant literature shows the influence of domestic interest rates on banks' risk appetite (Dell'Ariccia and Marquez, 2006; Rajan, 2006; Borio and Zhu, 2008; Delis and Kouretas, 2010; Maddaloni and Peydró, 2011; Jiménez et al., 2013). On one hand, banks have a greater risk-taking appetite when interest rates are low. On the other hand, an increase in interest rates can adversely affect borrowers' ability to repay loans (Jarrow and Turnbull, 2000; Carling et al., 2007; Drehmann et al., 2010; and Alessandri and Drehmann, 2010). Finally, we try to capture the possible impact of income level and growth by including GDP per capita (*Per Capita*) and growth in GDP per capita (*Per Capita Growth*).

We also control for bank-level heterogeneities. We include the share of equity capital in total assets (*Capital*). On one hand, an increase in equity can lower moral-hazard problems and increase banks' monitoring incentives (Berger et al., 1995). On the other hand, higher equity can increase banks' risk-taking capacity. Equity capital can be considered a risk-aversion proxy (McShane and Sharpe, 1985; Maudos and De Guevara, 2004; Koetter and Noth, 2013) and banks with higher capital ratios expect higher returns. Jensen (1986) and Harris and Raviv (1990) argue that when capital is more expensive than debt (at the margin), management might reduce operating costs to offset the higher costs of the increase in capital required by regulators. Alternatively, lower interest expense may weaken attempts to control operating expenses. Therefore, the impact of capital on efficiency is unclear.

We consider the effect of size in our study by using the logarithm of total assets (*Size*) as the proxy. Larger banks can benefit from scale economies and diversification (Hughes et al., 2001). They may target riskier activities where there is a benefit from safety-net subsidies (Kane, 2010). Higher competition pressure might arise where they have larger and more

transparent clients with relatively easier access to capital markets. Larger banks may also use different technologies and business models for their operations. Thus, bank efficiency might vary across banks of different size. We also take into account credit risk as represented by non-performing loans to gross loans ratio (*Credit Risk*): a bank that does not efficiently monitor its loan activities, is unlikely to be efficient in its operations (Berger and DeYoung, 1997). Finally, we capture year fixed effects using twelve year-dummy variables.¹⁰

3. Data and Descriptive Statistics

3.1. DATA

Our empirical analysis is based on country-level and bank-level data for 22 Muslim countries¹¹ with dual-banking systems during the 1999–2011 period. We collect the data on proportion of Muslim population from the web-site of Pew Research Centre¹²; uncertainty avoidance index is obtained from Hofstede (2001); the economic freedom index is retrieved from the Heritage Foundation and the Wall Street Journal, and other country-level data are collected from the World Bank website.

The bank-level data are obtained from the Bankscope database. Bankscope classifies banks as commercial, Islamic, or other. An Islamic bank might be a commercial or a non-commercial bank. Moreover, some conventional banks have Islamic windows/branches/wings (*Islamic Window Bank*), and cannot be classified as either Islamic or conventional banks. Therefore, to ensure data accuracy, we retrieve information on bank type from each bank's website.

¹⁰ The sample covers 13 years; however, however, we drop one year-dummy to avoid perfect multicollinearity and use twelve year-dummies in our estimations.

¹¹ Among 57 Muslim countries (i.e. OIC-member countries), we find Islamic commercial banking in 24 countries. In the following 22 Muslim countries Islamic and conventional commercial banks operate alongside each other (they have a dual-banking system): Algeria, Bahrain, Bangladesh, Brunei, Egypt, Gambia, Indonesia, Iraq, Jordan, Kuwait, Lebanon, Malaysia, Mauritania, Pakistan, Qatar, Saudi Arabia, Senegal, Syria, Tunisia, Turkey, United Arab Emirates, and Yemen. In Iran and Sudan, the commercial banking system is fully Islamic.

¹² Please visit <http://pewforum.org/Mapping-the-Global-Muslim-Population.aspx>

3.2. DESCRIPTIVE STATISTICS

We use two subsamples of countries defined on the basis of the median value of *Muslim Share*. *Muslim Share* ranges from 51.9% in Lebanon to 99.8% in Tunisia. The median value is 95%. Countries below the median value are classified as “*More Religiously Diverse Countries*” and the others (in which the Muslim population is at least 95%) are called “*Predominantly Muslim Countries*”.

Table 1 presents the descriptive statistics of our samples of *More Religiously Diverse Countries* and *Predominantly Muslim Countries*. Islamic banks of different sizes have greater market shares in *More Religiously Diverse Countries* (18.54%, 25.48% and 21.13% respectively for *Small*, *Medium* and *Large* Islamic banks). In *Predominantly Muslim Countries*, the corresponding percentages are 10.68%, 20% and 8.20% respectively for *Small*, *Medium* and *Large* Islamic banks). In both samples, the market share of *Medium* Islamic banks is higher than for *Small* and *Large* Islamic banks. The market share of *Large* Islamic window banks is the highest in both sub-samples. The market shares of *Medium* and *Large* Islamic window banks are higher in *More Religiously Diverse Countries*. Foreigners have greater ownership of commercial banks in *Predominantly Muslim Countries* (29.95% versus 19.45%). However, governments in *More Religiously Diverse Countries* have slightly larger stakes in their commercial banking systems (17.23% versus 16.16%). The *HHI* index shows that commercial banking industry is less concentrated in this group of countries.

The banking system in *More Religiously Diverse Countries* is more developed than in *Predominantly Muslim Countries*. *Bank Deposit*, *Financial System Deposit* and *Private Credit* are 64.88%, 64.60% and 50.81% of GDP in *More Religiously Diverse Countries*. The corresponding percentages for *Predominantly Muslim Countries* are 35.19%, 36.96% and 28.09%.

We observe little difference between the two groups of countries in terms of the annual growth rate (*Per Capita*) i.e. 1.65% and 1.81%, respectively. We do not observe a significant difference between the two samples of countries in terms of the Gini index, *Poverty Ratio International*, and *Poverty Gap International*. However, the headcount ratio (calculated based on the national poverty line) and the poverty in rural areas are higher for *More Religiously Diverse Countries*.

The fourth part of the table reports other country-level indicators. The *Muslim Share* is on average 78.22% and 97.88% across our two sub-samples. *Per Capita* is significantly higher for *More Religiously Diverse Countries* (about \$28 thousand versus \$6.67 thousand). The *Uncertainty Avoidance* for *More Religiously Diverse Countries* is lower. We do not observe a significant difference between the two samples in terms of *Inflation* (7.5% in *More Religiously Diverse Countries* and about 9% in *Predominantly Muslim Countries*). Both samples experience almost the same level of *Remittance Inflow* (about 6% of GDP). Overall, our descriptive statistics indicate that the two samples have different institutional and economic environments. For instance *More Religiously Diverse Countries* have a more developed finance sector, a higher GDP per capita, more economic freedom, a lower uncertainty avoidance index and a higher share of Islamic banks in their commercial banking market.

The last part of table 1 describes our bank-level variables for conventional banks. Conventional banks in *More Religiously Diverse Countries* are smaller in size, are more cost-efficient, have a lower capital to asset ratio (*Capital*) and *Credit Risk*.

[TABLE 1]

Table A2 in the appendix provides the breakdowns on number and average size of different types of banks across our 22 countries. The correlation matrix presented in PANEL A of Table A3 in the appendix shows no major multicollinearity problems. We study the role

of Islamic banks in *Predominantly Muslim Countries*, low-income Muslim countries and Muslim countries with comparatively high *Uncertainty Avoidance* on the basis of the median value of *Muslim Share*, *Per Capita* and *Uncertainty Avoidance*, respectively. PANEL B in Table A3 illustrates the pair-wise correlations, which do not show any high correlations between these three sub-samples of countries¹³.

4. Empirical Results

4.1. ISLAMIC BANKING IN PREDOMINANTLY MUSLIM COUNTRIES

We explore the relationship between the presence of Islamic banks and the financial development and economic welfare for the sample of *Predominantly Muslim Countries*. We estimate Equation (1) using the fixed-effect technique, and illustrate the results in table 2. The first three columns display our results on financial development analysis (i.e. funding mobilization and credit allocation). In the first column, we use *Bank Deposit* as the dependent variable and regress it on the market share of *Small*, *Medium* and *Large* Islamic banks and a set of control variables, including *Small*, *Medium* and *Large* ISW Share, *Foreign Banks Share*, *State Banks Share*, *Inflation*, *Per Capita*, *Remittance Inflow* and *Trend*. The results show a significantly positive relationship between the market share of *Medium* Islamic banks and *Bank Deposit*. *Large* ISW Share also shows a positive and significant association with the dependent variable. As expected, *Inflation* is negatively associated with *Bank Deposit*. The *Trend* variable has a positive coefficient.

In the second column, we replace *Bank Deposit* with *Financial System Deposit* as the dependent variable. The results are in line with our finding in the first column. The market share of *Medium* Islamic banks is positively linked to the size of funding mobilization at

¹³We also consider economic freedom in our analysis but because the sample of countries below the median value of the Economic Freedom Index provided by the Heritage Foundation is highly correlated (0.81) with the sample of *Low Income Countries* we exclude this dimension per se from our estimations.

the financial system level. Column (3) presents our analysis for *Private Credit*, representing credit allocation to private sector. The results show a positive relationship between *Medium ISB* and *Private Credit*. Overall, the findings show a significantly positive link between the market share of *Medium Islamic* banks and size of financial intermediation in *Predominantly Muslim Countries*.

In columns (4) to (9), we explore the relationship between the market share of Islamic banks and economic welfare (i.e. economic growth, income inequality and poverty alleviation). In column (4), we use the annual growth rate of GDP per capita as a proxy for economic growth (*Economic Growth*) and find little relationship between the presence of Islamic banks and *Economic Growth*. However, we find a significantly positive association between *Small ISW Share* and *Economic Growth*. The results also show that *Economic Growth* increases with a rise in *Per Capita*. Column (5) presents our income inequality analysis as represented by the Gini index (*Gini*). *Medium ISB Share* shows a significantly negative link with *Gini*. We also observe that an increase in the market share of *Large Islamic Window Banks* is associated with a decrease in *Gini*, whereas *Small ISW Share* is positively linked to income inequality.

In columns (6) to (9), we examine the relationship between the market share of Islamic banks and our proxies for poverty (*Poverty Ratio International*, *Poverty Ratio National*, *Poverty Gap International* and *Poverty Ratio Rural*). Our analyses show a negative association of *Medium ISB Share* with *Poverty Ratio National* (poverty ratio defined based on national poverty line) and also *Poverty Ratio Rural* (poverty ratio in the rural area).

Overall, we find that an increase in market share of *Medium Islamic* banks in *Predominantly Muslim Countries* is associated with a higher funding mobilization and credit allocation, but lower income inequality, percentage of population below the national poverty line and headcount ratio in rural area. We carry out similar analyses for *More Religiously*

Diverse Countries and find no significant relationship between the presence of Islamic banks and our proxies for financial development and economic welfare (except for the negative link between *Medium ISB Share* and *Private Credit*)¹⁴.

[TABLE 2]

As a robustness check, we re-estimate our model using GMM panel estimation technique and find similar results¹⁵.

4.2. ISLAMIC BANKING IN LOW INCOME COUNTRIES

Table 3 illustrates the estimation of Equation (1) using the sample of *Low Income Countries* (i.e. countries with *Per Capita* below the median value \$6,364)¹⁶. The first three columns refer to our funds mobilization and credit allocation analysis. The results show that *Medium ISB Share* is positively associated with our funds mobilization proxies (i.e. *Bank Deposit* and *Financial System Deposit*). However, we find little association between the presence of Islamic banks and credit allocation as represented by *Private Credit*.

In columns (4) to (9), we explore the relationship between the market share of Islamic banks and economic growth, income inequality and poverty. The results show that a higher market share of *Medium size* Islamic banks is associated with higher *Economic Growth*, a lower percentage of people below the international poverty line (*Poverty Ratio International*), lower poverty intensity (*Poverty Gap International*) and a lower headcount ratio in the rural area (*Poverty Ratio Rural*). However, we find almost no association between our proxy for income inequality (i.e. *Gini*) and the market share of Islamic banks.

Overall, we find that the presence of Islamic banks is positively linked with financial sector development, economic growth and poverty alleviation in *Low Income Countries*.

¹⁴ The results are not reported, but are available from the authors upon request.

¹⁵ The results are not reported, but are available from the authors upon request.

¹⁶ Since we make sub-samples of countries based on *Per Capita*, we exclude the variable *Per Capita* from our model in this sub-section.

[TABLE 3]

4.3. ISLAMIC BANKING IN HIGH UNCERTAINTY AVOIDANCE COUNTRIES

Table 4 illustrates the estimation of Equation (1) using the sample of *High Uncertainty Avoidance Countries* (i.e. countries with an uncertainty avoidance index above the median value which is 68). We analyse funds mobilization and credit allocation in the first three columns. *Medium ISB Share* shows a positive association with *Bank Deposit*, *Financial System Deposit* and *Private Credit*.

In columns (4) and (5), we find no significant relationship between the presence of Islamic banks and economic growth and our income inequality index. We explore the relationship between the market share of Islamic banks and poverty indices in columns (6) to (9). We find a negative association of *Medium ISB Share* with the percentage of the population below the national poverty line (*Poverty Ratio National*) and also headcount ratio in the rural area (*Poverty Ratio Rural*).

Overall, we find that the market share of *Medium size* Islamic banks is positively linked with financial sector development. We also find some evidence, which suggests that the growth of Islamic banking is associated with poverty alleviation particularly in rural areas. As a further robustness check, we exclude Lebanon as it suffered from civil war during our period of study and investigate whether the findings still hold. The results indicate no significant change¹⁷.

[TABLE 4]

4.4. OTHER ISSUES

4.4.1. ISLAMIC BANKING IN HIGH INFLATION COUNTRIES

¹⁷ The results are not reported, but are available from the authors upon request.

It can be argued that Islamic banks might have a different impact during periods of high inflation. Islamic banks might hold more cash reserves, because they have some limitation for investment, e.g. they cannot invest in interest-base bonds (see e.g. Abedifar et al., 2013); however, they might use more commodities as collateral, because they tend to finance the real economy and tangible assets. Hence, the link between the presence of Islamic banks and financial development and economic welfare during a relatively high inflationary period is not straightforward. On the one hand, greater cash reserves holding would devalue Islamic banks' assets to a greater extent than for their conventional counterparts. On the other hand, widespread use of commodities can be a safe cushion against inflation. To address this issue, we estimate our model (Equation (1)) for a sub-sample of countries that experienced relatively high inflation (on the basis of the median value of inflation in our samples 7.09%). The results are shown in table A4 of the appendix. We find no significant relationship between the market share of Islamic banks and financial development; however, we observe a negative link between *Large ISB Share* and *Economic Growth*.

4.4.2. ISLAMIC BANKING BEFORE AND AFTER THE GLOBAL FINANCIAL CRISIS

We investigate whether and how our findings change when we exclude the global financial crisis of 2007-08 from our analysis. We consider two sub-periods for *Predominantly Muslim Countries*: the period before the global financial crisis (i.e. 1999-2007) and during the global recession thereafter (2008-2012¹⁸). The results are presented in Table A5 of the appendix. We give our estimates of the model (Equation (1)) for the two periods: columns (1) to (4) and (5) to (8). The first four columns show a positive link between *Medium ISB Share* and funds mobilization proxies (i.e. *Bank Deposit* and *Financial System Deposit*) as well as *Economic*

¹⁸ A number of countries in our sample also experienced the turmoil caused by the so-called "Arab Spring" in late 2010.

Growth. The relationship is economically stronger than for the whole period (see sub-section 4.1.)

In the recession period, we find that the market share of *Small* Islamic banks is positively associated with funds mobilization and credit allocation, whereas *Large ISB Share* shows a negative link with our proxies for financial development. The estimations show no significant link between the presence of Islamic banks and economic growth.

4.5. EFFICIENCY OF CONVENTIONAL BANKS

We estimate Equation (2) using the ratio of total noninterest expense to total operating income (*Inefficiency*) as the proxy. We estimate our model for *More Religiously Diverse Countries* and *Predominantly Muslim Countries* subsamples. Table 5 presents the estimations.

Columns (1) to (4) illustrate the analysis for *More Religiously Diverse Countries*. In the first column we regress *Inefficiency* on *Small*, *Medium* and *Large ISB Share* while controlling for *Small*, *Medium* and *Large ISW Share*. Country-level variables including *HHI*, *Domestic Interest Rate*, *Per Capita*, and *Per Capita Growth* are added to the model in column (2). In column (3), we control for *Capital*, *Size* and *Credit Risk* of conventional banks. In column (4) we add year-dummies. The results show no significant relationship between the market share of Islamic banks and *Inefficiency*. However, we find that *Medium* and *Large ISW Share* is negatively linked to *Inefficiency* which suggests that in countries with a relatively lower Muslim share in their population, conventional banks may be more influenced by *Islamic Window Banks*. We also find that an increase in *Per Capita* is associated with a decline in *Inefficiency*. However, *HHI* shows no relationship with the dependent variable and hence does not support either the *Quite-Life* or *Efficient-Structure* hypotheses.

In columns (5) to (8) we estimate our model for *Predominantly Muslim Countries* with the same specifications as columns (1) to (4). We find that *Large ISB Share* is negatively

linked to *Inefficiency*. The negative coefficient of *Medium ISB Share* becomes insignificant when we add our bank-level control variables in column (8). Contrary to our finding for *More Religiously Diverse Countries*, *Islamic Window Banks* show no significant relationship with the dependent variable. Finally, we observe that banks with more *Credit Risk* are less efficient.

[TABLE 5]

5. Summary and Conclusion

This paper investigates whether the presence of Islamic commercial banks and their conventional counterparts in the same market can foster the development of the overall commercial banking sector and economic welfare. We also explore the possible implications for conventional banks operating in a dual-banking system.

During recent decades, as Islamic banking has grown in many Muslim countries, a dual-banking system has emerged in which both Islamic and conventional banks share the market. Islamic financial institutions offer *Sharia*-compatible financial products and services. This could have lessened the potential for financial exclusion, by reaching out to Muslims who avoid conventional borrowing and lending instruments.

Islamic banks behave differently from their conventional counterparts in several ways. Specifically, they are not authorized to engage with speculative activities. They must act as agents of their investment account holders by allocating their savings to profitable projects. They tend to be more risk-averse and have a stronger preference for investing in the real economy. Moreover, the coexistence of Islamic and conventional banking could increase the efficiency of the whole banking system by improving competition.

We study 22 Muslim countries with a dual-banking system during the 1999–2011 period. Due to considerable heterogeneity, we split the countries into two subsamples based on three factors: the share of the Muslims in population, population's wealth and culture.

We find that the market share of medium-size Islamic banks in predominantly Muslim countries is positively linked with funds mobilization and private credit allocation, and negatively linked with income inequality, percentage of population below the national poverty line and headcount ratio in the rural area. The analysis of relatively low income countries shows that the presence of medium-size Islamic banks is associated with a higher level of funds mobilization, economic growth and poverty alleviation. In countries with a relatively high uncertainty avoidance index, medium-size Islamic banks have a positive relationship with funds mobilization and private credit allocation and a negative association with headcount ratio based on national poverty line and poverty ratio in rural area.

We also investigate the relationship between the presence of Islamic banks and the efficiency of conventional banks. We find that the market share of large Islamic banks is positively linked with the efficiency of conventional banks in predominantly Muslim countries. However, in more religiously diverse Muslim countries, the market share of conventional banks with Islamic window/branches is positively linked to the efficiency of purely conventional banks.

Overall, the results are consistent with the view that the presence of Islamic banks can foster access to finance and financial deepening, and improve economic welfare particularly in countries with a predominantly Muslim population, higher uncertainty avoidance index and a comparatively low GDP per capita. The findings are in line with the existing literature on finance and development.

Appendices

Table A1. Variable Description

This table presents descriptions of variables used in this study.

Variables	Description	Source
Commercial Bank Structure		
<i>Small ISB Share</i>	Small Islamic banks' assets as a percentage of total assets of all commercial banks. Small Islamic banks are Islamic banks with total assets below \$100 million.	Bankscope and banks' websites.
<i>Medium ISB Share</i>	Medium Islamic banks' assets as a percentage of total assets of all commercial banks. Medium Islamic banks are Islamic banks with total assets above \$100 million and below \$1 billion.	Bankscope and banks' websites.
<i>Large ISB Share</i>	Large Islamic banks' assets as a percentage of total assets of all commercial banks. Large Islamic banks are Islamic banks with total assets above \$1 billion.	Bankscope and banks' websites.
<i>Small ISW Share</i>	Total assets of small commercial banks offering both Islamic and conventional products as a percentage of total assets of all commercial banks. Small commercial banks are banks with total assets below \$100 million.	Bankscope and banks' websites.
<i>Medium ISW Share</i>	Total assets of medium-size commercial banks offering both Islamic and conventional products as a percentage of total assets of all commercial banks. Medium-size commercial banks are banks with total assets above \$100 million and below \$1 billion.	Bankscope and banks' websites.
<i>Large ISW Share</i>	Total assets of large commercial banks offering both Islamic and conventional products as a percentage of total assets of all commercial banks. Large commercial banks are banks with total assets above \$1 billion.	Bankscope and banks' websites.
<i>Foreign Banks Share</i>	Foreign-owned bank assets as a percentage of total assets of commercial banks.	Bankscope and banks' websites.
<i>State Banks Share</i>	State-owned bank assets as a percentage of total assets of commercial banks.	Bankscope and banks' websites.
<i>HHI</i>	Hirschman-Herfindahl index (HHI) is a proxy for market concentration: $HHI_{c,t} = 100 \times \frac{\sum_{i=1}^n (Total_Assets_{i,t,c})^2}{\sum_{i=1}^n Total_Assets_{i,t,c}}$. It has a value between 0 and 100. Higher values indicate that the market is more concentrated.	Bankscope and banks' websites.
Funding Mobilization and Allocation		
<i>Bank Deposit</i>	The ratio of commercial bank deposits to GDP.	The World Bank website.
<i>Financial System Deposit</i>	The ratio of financial system deposits to GDP.	The World Bank website.
<i>Private Credit</i>	The ratio of private credit to GDP.	The World Bank website.
Economic Growth, Income Inequality & Poverty Index		
<i>Economic Growth</i>	The annual growth rate of GDP per capita.	The World Bank website.
<i>Gini</i>	The Gini coefficient used as a measure of income inequality.	The World Bank website.
<i>Poverty Ratio International</i>	Percentage of population below the international poverty line defined as \$1.25 a day (PPP).	The World Bank website.
<i>Poverty Ratio National</i>	Percentage of population below the national poverty line.	The World Bank website.
<i>Poverty Gap</i>	The intensity of poverty at the international poverty line.	The World Bank website.
<i>Poverty Ratio Rural</i>	Percentage of rural population below the rural poverty line.	The World Bank website.
Other Country Level Heterogeneities		
<i>Muslim Share</i>	Proportion of Muslims in a country's population.	Pew Research Centre.
<i>Per Capita</i>	GDP per capita (thousands \$), measured by PPP approach (constant 2005 international).	The World Bank website.
<i>Uncertainty</i>	Society's tolerance for uncertainty and ambiguity.	The website of Geert

<i>Avoidance Index</i>		and Gert Jan Hofstede.
<i>Economic Freedom Index</i>	It measures the degree of freedom of a country.	the Heritage Foundation and the Wall Street Journal.
<i>Inflation</i>	The annual inflation rate measured by GDP deflator.	The World Bank website.
<i>Remittance Inflow</i>	Remittance inflow to GDP.	The World Bank website.
<i>Domestic Interest Rate</i>	Deposit interest rate provided by the World Bank website; for years and countries with missing observations, the data is obtained from the central bank websites.	The World Bank website and the websites of central banks.
Bank-Level Analysis		
<i>Inefficiency</i>	The ratio of total noninterest expense to total operating revenue.	Bankscope
<i>Size</i>	The logarithm of total assets.	Bankscope
<i>Capital</i>	The ratio of equity capital to asset.	Bankscope
<i>Credit Risk</i>	The ratio of non-performing loans to gross loans.	Bankscope

Table A2. Commercial Banking Market Structure across Countries

This table presents the average Muslim Share, Change in Per Capita Growth, Number and average size of Islamic, Islamic Window and Conventional Banks for our 22 countries of study.

Countries	Muslim Share	Change in Per Capita Growth	Number of Islamic Banks	Number of Islamic Window Banks	Number of Conventional Banks	Islamic Banks Average Size	Islamic Window Banks Average Size	Conventional Banks Average Size
Algeria	98.2	-0.07	2	0	8	370	--	4,520
Bahrain	81.2	-0.24	4	2	3	4,393	2,124	9,894
Bangladesh	90.4	0.20	4	7	15	695	1,081	1,575
Brunei	51.9	-0.19	2	0	1	2,838	--	856
Egypt	94.7	-0.35	2	5	17	3,696	4,024	3,750
Gambia	95.3	-0.90	0	0	3	12	--	62
Indonesia	88.1	0.47	3	6	45	891	3,752	3,732
Iraq	98.9	0.87	2	0	4	616	--	2,646
Jordan	98.8	-0.10	2	0	9	972	--	4,985
Kuwait	86.4	0.71	2	0	4	8,175	4,797	8,876
Lebanon	59.7	0.23	1	1	32	906	5,309	2,331
Malaysia	61.4	-0.02	9	8	11	4,784	8,083	6,426
Mauritania	99.2	-0.28	1	2	4	74	1,434	1,789
Pakistan	96.4	-0.01	2	8	7	1,955	3,747	1,333
Qatar	77.5	0.47	3	0	5	5,419	301	6,446
Saudi Arabia	97.1	0.75	3	6	1	12,200	15,100	14,600
Senegal	95.9	-0.38	1	0	9	498	--	888
Syria	92.8	0.01	1	0	6	931	--	12,100
Tunisia	99.8	-0.53	2	1	9	343	531	4,340
Turkey	98.6	1.02	2	0	23	4,270	--	13,600
UAE	76.0	0.03	7	2	14	4,974	8,431	7,120
Yemen	99.0	-1.49	3	0	4	777	--	702

TABLE A3. Correlation matrix

PANEL A.

This panel presents the pair-wise correlation among the independent variables used in our analysis.

	Small ISB Share	Medium ISB Share	Large ISB Share	Small ISW Share	Medium ISW Share	Large ISW Share	Foreign Banks Share	State Banks Share	Inflation	Per Capita	Remittance Inflow
Small ISB Share	1.00										
Medium ISB Share	0.22	1.00									
Large ISB Share	0.12	0.30	1.00								
Small ISW Share	-0.02	0.02	0.01	1.00							
Medium ISW Share	0.06	-0.07	0.20	0.23	1.00						
Large ISW Share	-0.04	-0.15	-0.07	0.34	0.34	1.00					
Foreign Banks Share	0.13	0.02	-0.15	-0.05	-0.18	-0.17	1.00				
State Banks Share	-0.02	0.09	0.15	-0.02	-0.01	0.03	-0.27	1.00			
Inflation Rate	0.02	-0.03	0.11	-0.01	-0.02	-0.04	-0.16	0.10	1.00		
Per Capita	0.05	0.24	0.47	-0.14	-0.05	-0.10	-0.31	0.03	0.09	1.00	
Remittance Inflow	-0.11	-0.01	-0.16	-0.13	-0.21	-0.26	-0.02	-0.24	-0.20	-0.18	1.00

PANEL B.

This panel presents the pair-wise correlation among the indicators used for our sub-sampling.

	Muslim Share Above Median Countries	Per Capita Below Median Countries	Uncertainty Avoidance Index Above Median Countries	Economic Freedom Index Below Median Countries
Muslim Share - Above Median Countries	1.00			
Per Capita - Below Median Countries	0.28	1.00		
Uncertainty Avoidance Index - Above Median Countries	0.11	-0.36	1.00	
Economic Freedom Index - Below Median Countries	0.28	0.81	-0.36	1.00

Table A4. Islamic Banking in High Inflation Countries

This table illustrates the estimation of the equation (1) for the sample of *High Inflation Countries*:

$$Y_{j,t} = \alpha_0 + \alpha_{11} \times \text{Small_ISB_Share}_{j,t} + \alpha_{12} \times \text{Medium_ISB_Share}_{j,t} + \alpha_{13} \times \text{Large_ISB_Share}_{j,t} + \alpha_{21} \times \text{Small_ISW_Share}_{j,t} + \alpha_{22} \times \text{Medium_ISW_Share}_{j,t} + \alpha_{23} \times \text{Large_ISW_Share}_{j,t} + \alpha_3 \times \text{Foreign_Banks_Share}_{j,t} + \alpha_4 \times \text{State_Banks_Share}_{j,t} + \alpha_5 \times \text{Inflation}_{j,t} + \alpha_6 \times \text{Per_Capita}_{j,t} + \alpha_7 \times \text{Remittance_Inflow}_{j,t} + \alpha_8 \times \text{Trend}_t + \epsilon_{j,t}$$

We split our sample into two groups on the basis of the median proportion of *Inflation*. Countries above the median value are classified in one group (*High Inflation Countries*). The median value is 7.09%.

We regress our dependent variables on our variable of interest (i.e., *Small ISB Share*, *Medium ISB Share* and *Large ISB Share*) and control variables. In columns (1) to (3), we study the relationship between our variables of interest and development of financial intermediation. Columns (4) to (9) present our analysis for economic growth, income inequality and poverty index.

We employ the fixed-effect technique for our estimation. Standard errors are clustered at the country level. Robust z-statistics are reported in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively. See table A1 for variable definitions.

Variables	Funding Mobilization and Allocation			Economic Growth, Income Inequality and Poverty Index				
	Bank Deposit	Financial System Deposit	Private Credit	Economic Growth	Gini	Poverty Ratio International	Poverty Ratio National	Poverty Gap International
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Small ISB Share	-0.016 (-0.72)	-0.016 (-0.65)	-0.030 (-0.82)	-0.028 (-1.54)	-0.046 (-0.94)	0.022 (1.26)	-0.016 (-1.07)	-0.041*** (-4.13)
Medium ISB Share	0.071 (1.60)	0.065 (1.17)	0.011 (0.14)	0.023 (1.00)	0.132 (0.94)	-0.139*** (-6.88)	0.048 (1.32)	0.162 (0.42)
Large ISB Share	-0.008 (-0.19)	-0.025 (-0.75)	-0.039 (-1.21)	-0.035** (-2.49)	0.099 (0.05)	0.035 (0.91)	0.097 (0.17)	-0.599 (-0.30)
Small ISW Share	0.062 (1.50)	0.067 (1.67)	0.030 (1.15)	0.018 (1.06)	-0.083** (-3.07)	-0.035** (-2.91)	-0.029** (-2.93)	-0.190 (-0.40)
Medium ISW Share	0.107 (1.50)	0.127 (1.68)	0.071 (0.67)	0.045 (1.65)	0.464*** (7.51)	-0.331*** (-24.81)	0.149*** (8.65)	-0.224 (-0.51)
Large ISW Share	0.045 (0.43)	0.053 (0.46)	0.186* (1.85)	0.028 (0.97)	0.221*** (4.26)	0.016 (1.04)	0.056** (3.13)	0.283 (0.46)
Foreign Banks Share	-0.140 (-1.70)	-0.151 (-1.58)	-0.131 (-1.23)	0.037 (1.03)	-0.221** (-3.09)	-0.079 (-1.04)	-0.062*** (-4.48)	-0.404*** (-4.09)
State Banks Share	-0.261** (-2.98)	-0.272** (-2.51)	-0.187 (-1.28)	-0.006 (-0.16)	-0.337 (-1.63)	0.256*** (5.34)	-0.110* (-2.03)	-0.049 (-0.31)
Inflation	0.986*** (2.96)	1.046*** (3.08)	0.366 (0.90)	0.272* (1.83)	1.991*** (10.17)	-3.075*** (-13.76)	0.653*** (8.40)	-5.362** (-2.53)
Per Capita	-1.038 (-0.97)	-0.604 (-0.48)	0.004 (0.00)	0.483** (2.30)	-0.961 (-0.50)	-3.111*** (-7.82)	-0.231 (-0.44)	-8.335* (-1.99)
Remittance Inflow	-0.105 (-0.15)	-0.137 (-0.18)	0.675 (1.31)	0.037 (0.21)	-2.316*** (-4.32)	0.014 (0.05)	-0.768*** (-6.72)	1.784 (1.24)
Constant	43.092*** (3.64)	42.294*** (3.45)	22.465* (2.08)	-3.375 (-1.59)	26.069 (1.34)	55.223*** (17.81)	6.373 (1.27)	89.010*** (3.78)
Observations	79	76	78	83	25	24	25	22
R-squared	0.370	0.316	0.287	0.216	0.916	0.984	0.909	0.965
Number of Country	14	14	14	15	9	7	9	7

Table A5. Islamic Banking - the Global Financial Crisis

This table illustrates the estimation of the equation (1) before and during the global financial crisis 2007-08:

$$Y_{j,t} = \alpha_0 + \alpha_{11} \times \text{Small_ISB_Share}_{j,t} + \alpha_{12} \times \text{Medium_ISB_Share}_{j,t} + \alpha_{13} \times \text{Large_ISB_Share}_{j,t} + \alpha_{21} \times \text{Small_ISW_Share}_{j,t} + \alpha_{22} \times \text{Medium_ISW_Share}_{j,t} + \alpha_{23} \times \text{Large_ISW_Share}_{j,t} + \alpha_3 \times \text{Foreign_Banks_Share}_{j,t} + \alpha_4 \times \text{State_Banks_Share}_{j,t} + \alpha_5 \times \text{Inflation}_{j,t} + \alpha_6 \times \text{Per_Capita}_{j,t} + \alpha_7 \times \text{Remittance_Inflow}_{j,t} + \alpha_8 \times \text{Trend}_t + \epsilon_{j,t}$$

We split our sample our sample of *Predominantly Muslim Countries* into two groups. The analysis of the period before the global financial crisis, i.e. 1999-2007, is presented in columns (1) to (4). Columns (5) to (8) present the study of the recent global recession, i.e. 2008-2011.

We regress our dependent variables on our variable of interest (i.e., *Small ISB Share*, *Medium ISB Share* and *Large ISB Share*) and control variables. In columns (1) to (3), we study the relationship between our variables of interest and development of financial intermediation (represented by Bank Deposit, Financial System Deposit and Private Credit). Column (4) illustrates the estimation for economic growth. Columns (5) to (8) present the analysis for the period of the global recession, i.e. 2008-2011, with the same specifications of columns (1) to (4).

We employ the fixed-effect technique for our estimation. Standard errors are clustered at the country level. Robust z-statistics are reported in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively. See table A1 for variable definitions.

Variables	Before the Global Financial Crisis (1999-2007)				The Global Recession (2008-2011)			
	Bank Deposit	Financial System Deposit	Private Credit	Economic Growth	Bank Deposit	Financial System Deposit	Private Credit	Economic Growth
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Small ISB Share	0.034 (0.66)	0.003 (0.08)	-0.026 (-1.11)	0.018 (0.76)	0.318*** (4.44)	0.309*** (3.84)	0.163** (2.42)	-0.026 (-0.47)
Medium ISB Share	0.057*** (4.94)	0.055* (2.06)	0.036 (1.72)	0.038*** (3.80)	-0.044* (-2.08)	-0.036 (-1.32)	-0.026 (-0.67)	0.023 (0.42)
Large ISB Share	0.025 (0.49)	-0.007 (-0.16)	-0.015 (-0.63)	0.025 (1.63)	-0.361*** (-4.87)	-0.361*** (-4.46)	-0.167** (-3.09)	-0.056 (-0.88)
Small ISW Share	-0.032 (-1.79)	-0.032 (-1.51)	0.031* (2.08)	-0.006 (-0.67)	-0.090 (-1.49)	-0.083 (-1.61)	-0.135*** (-3.48)	0.023 (0.48)
Medium ISW Share	0.008 (0.14)	0.026 (0.45)	0.101** (2.81)	-0.067** (-3.18)	0.191 (1.46)	0.134 (1.59)	0.078 (0.49)	0.158 (0.65)
Large ISW Share	-0.007 (-0.07)	-0.027 (-0.32)	-0.054 (-1.40)	-0.018 (-0.70)	0.259** (2.72)	-0.043 (-0.09)	0.270** (3.00)	-0.054 (-0.54)
Foreign Banks Share	-0.047 (-0.72)	-0.053 (-0.70)	0.050 (1.30)	0.040 (1.32)	0.126* (2.18)	0.116 (1.81)	0.171*** (6.38)	-0.049 (-0.63)
State Banks Share	-0.056 (-0.92)	-0.095 (-1.20)	0.011 (0.28)	0.064* (1.84)	0.432*** (4.12)	0.402** (2.87)	0.385** (3.23)	-0.058 (-0.43)
Inflation	-0.051 (-0.68)	-0.071 (-0.84)	0.064 (1.02)	-0.003 (-0.05)	-0.106 (-0.96)	-0.093 (-0.71)	-0.015 (-0.51)	-0.027 (-0.30)
Per Capita	-2.000** (-2.64)	-2.106* (-2.07)	3.793*** (3.94)	3.391** (2.84)	-0.525 (-1.80)	-0.391 (-0.92)	-1.032** (-2.45)	0.922 (1.20)
Remittance Inflow	-0.261 (-0.69)	-0.195 (-0.38)	0.221 (1.12)	0.035 (0.26)	-0.816** (-2.32)	-0.808* (-2.22)	0.223 (0.22)	0.664 (1.13)
Trend	1.544*** (4.47)	1.516*** (4.23)	0.370** (3.29)	-0.402** (-2.87)	0.939 (1.17)	0.908 (1.11)	1.459 (1.35)	-1.730 (-1.25)
Constant	44.794***	48.327***	1.555	-16.412**	28.775***	31.331***	9.825	10.399

	(8.23)	(6.53)	(0.27)	(-2.32)	(5.33)	(7.00)	(0.68)	(0.90)
Observations	71	68	68	73	37	36	39	40
R-squared	0.669	0.608	0.754	0.361	0.777	0.769	0.571	0.397
Number of Country	9	9	9	10	10	10	10	10

References

- Abdelsalam, O., Fethi, M.D., Matallin, J.C., Tortosa-Ausina, E., 2014. On the comparative performance of socially responsible and Islamic mutual funds. *Journal of Economic Behavior & Organization* 103, S108-S128.
- Abedifar, P., Ebrahim, M.S., Molyneux, P., Tarazi, A., 2015. Islamic banking and finance: Recent empirical literature and directions for future research. *Journal of Economic Surveys* 29, 637-670.
- Abedifar, P., Molyneux, P., Tarazi, A., 2013. Risk in Islamic banking. *Review of Finance* 17, 2035-2096.
- Aggarwal, R.K., Yousef, T., 2000. Islamic banks and investment financing. *Journal of Money, Credit and Banking* 32, 93-120.
- Alessandri, P., Drehmann, M., 2010. An economic capital model integrating credit and interest rate risk in the banking book. *Journal of Banking & Finance* 34, 730-742.
- Armendariz de Aghion, B., Morduch, J., 2005. *The economics of microfinance*. Cambridge, MA: MIT Press.
- Ayyagari, M., Demirguc-Kunt, A., Maksimovic, M., 2008. How important are financing constraints? The role of finance in the business environment. *World Bank Economic Review* 22, 483-516.
- Baele, L., Farooq, M., Ongena, S., 2014. Of religion and redemption: Evidence from default on Islamic loans. *Journal of Banking & Finance* 44, 141-159.
- Beck T., Demirgüç-Kunt, A., Levine, R., 2007. Finance, inequality and the poor. *Journal of Economic Growth* 12, 27-49.
- Beck T., Demirgüç-Kunt, A., Merrouche, O., 2013. Islamic vs. conventional banking: business model, efficiency and stability. *Journal of Banking & Finance* 37, 433-447.
- Beck, T., Levine, R., 2004. Stock markets, banks, and growth: Panel evidence. *Journal of Banking & Finance* 28, 423-442.
- Beck, T., Levine, R., Loayza, N., 2000. Finance and the Source of Growth. *Journal of Financial Economics* 58, 261-300.
- Berger, A.N., De Young, R., 1997. Problem loans and cost efficiency in commercial banking. *Journal of Banking and Finance* 21, 849-870.
- Berger, A.N., Hasan, I., Klapper, L.F., 2004. Further evidence on the link between finance and growth: An international analysis of community banking and economic performance. *Journal of Financial Services Research* 25, 169-202.
- Berger, A.N., Herring, R.J., Szegö, G.P., 1995. The role of capital in financial institutions. *Journal of Banking & Finance* 19, 257-276.
- Berger, A.N., Udell, G., 2004. The institutional memory hypothesis and the procyclicality of bank lending behaviour. *Journal of Financial Intermediation* 13, 458-495.

- Borio, C., Zhu, H., 2008. Capital regulation, risk-taking and monetary policy: A missing link in the transmission mechanism? Bank for International Settlements Working Paper No. 268.
- Buffie, E.F., 1984. Financial repression, the new structuralists, and stabilization policy in semi-industrialized economies. *Journal of Development Economics* 14, 305–322.
- Burgess, R., Pande, R., 2005. Can rural banks reduce poverty? Evidence from the Indian social banking experiment. *American Economic Review* 95, 780-795.
- Carbó Valverde, S., Rodríguez Fernández, F., 2007. The determinants of bank margins in European banking. *Journal of Banking & Finance* 31, 2043-2063.
- Carling, K., Jacobson, T., Linde, J., Roszbach, K., 2007. Corporate credit risk modeling and the macroeconomy. *Journal of Banking & Finance* 31, 845-868.
- C.G.A.P., 2008. Islamic microfinance: An emerging market niche, No. 49, August.
- Chandavarkar, A., 1992. Of finance and development: neglected and unsettled questions. *World Development* 20, 133–142.
- Christopoulos, D.K., Tsionas, E.G., 2004. Financial Development and Economic Growth: Evidence from Panel Unit Root and Cointegration Tests. *Journal of Development Economics* 73, 55-74.
- Chong, B.S., Liu, M.H., 2009. Islamic banking: Interest-free or interest-based? *Journal of Pacific-Basin Finance* 17, 125-144.
- Čihák, M., Hesse, H., 2010. Islamic banks and financial stability: An empirical analysis. *Journal of Financial Services Research* 38, 95-113.
- Delis, M.D., Kouretas, G.P., 2011. Interest rates and bank risk-taking. *Journal of Banking & Finance* 35, 840-855.
- Dell’Ariccia, G., Marquez, R., 2006. Lending booms and lending standards. *The Journal of Finance* 61, 2511–2546.
- Demsetz, H., 1973. Industry structure, market rivalry, and public policy. *Journal of Law and Economics* 16, 1 -9.
- Drehmann, M., Sorensen, S., Stringa, M., 2010. The integrated impact of credit and interest rate risk on banks: A dynamic framework and stress testing application. *Journal of Banking & Finance* 34, 735-751.
- Ebrahim, M.S., 2009. Can an Islamic model of housing finance cooperative elevate the economic status of the underprivileged? *Journal of Economic Behavior & Organization* 72, 864-883.
- Elnahass, M., Izzeldin, M., Abdelsalam, O., 2014. Loan loss provisions, bank valuations and discretion: A comparative study between conventional and Islamic banks. *Journal of Economic Behavior & Organization* 103, S160-S173.
- Ernst & Young, 2013-2014. World Islamic Banking Competitiveness Report.
- Fiordelisi, F., Marques-Ibanez, D., Molyneux, P., 2011. Efficiency and risk in European banking. *Journal of Banking & Finance* 35, 1315-1326.

- Frankfurt School of Finance and Management (Bankakademie International), 2006. Access to Finance Study in Algeria, Final Report. Frankfurt: Frankfurt School of Finance and Management, July.
- Fry, M.J.,1988. Money, Interest, and Banking in Economic Development. Baltimore, MD, and London: Johns Hopkins University Press.
- Gheeraert, L., 2014. Does Islamic finance spur banking sector development? *Journal of Economic Behavior & Organization*103, S4-S20.
- Gheeraert, L., Weill, L., 2014. Does Islamic banking development favour macroeconomic efficiency? Evidence on the Islamic finance-growth nexus. *Laboratoire de Recherche en Gestion & Economie Working Paper* 2014-04.
- Gonzalez, F., 2005. Bank regulation and risk taking incentives: An international comparison of bank risk.*Journal of Banking & Finance*29, 1153-1184.
- Harris, M., Raviv, A.,1990. Capital structure and the informational role of debt.*Journal of Finance*45, 321-349.
- Hicks, J.,1935. Annual survey of economic theory: The theory of monopoly.*Econometrica*3, 1-20.
- Hilary, G., Hui, K. W., 2009. Does religion matter in corporate decision making in America?*Journal of Financial Economics*93, 455-473.
- Hofstede, G.H., 2001. *Culture's Consequences: Comparing Values, Behaviors, Institutions, and Organizations across Nations*.Thousand Oaks, CA:SAGE Publications.
- Honohan, P.,2004. Financial Development, Growth and Poverty: How close are the links? In: C. Goodhart (Ed.), *Financial Development and Economic Growth: Explaining the links*, 1-37, London: Palgrave.
- Honohan, P., 2008. Cross-country variation in household access to financial services.*Journal of Banking & Finance*32, 2493-2500.
- Hughes, J.P., Mester, L., Moon, C., 2001. Are scale economies in banking elusive or illusive: Evidence obtained by incorporating capital structure and risk-taking into models of bank production.*Journal of Banking & Finance*25, 2169–2208.
- Jarrow, R.A., Turnbull, S.M., 2000. The intersection of market and credit risk.*Journal of Banking & Finance*24, 271-299.
- Jensen, M. C.,1986. Agency costs of free cash flow, corporate finance and takeovers.*American Economic Review*76, 323–29.
- Jiménez, G., Lopez, J., Saurina, J., 2013. How does competition affect bank risk taking? *Journal of Financial Stability*9, 185-195.
- Jobst, A.A., 2007. The Economics of Islamic Finance and Securitization.*Journal of Structured Finance*13, 6-27.
- Johnes, J., Izzeldin, M., Pappas, V., 2014. A comparison of performance of Islamic and conventional banks 2004-2009.*Journal of Economic Behavior & Organization*103, S93-S107.

- Kane, E., 2010. Redefining and containing systemic risk. *Atlantic Economic Journal* 38, 251–264.
- Koetter, M., Noth, F., 2013. IT use, productivity, and market power in banking. *Journal of Financial Stability* 9, 695-704.
- Kwan, S., Eisenbeis, R., 1997. Bank risk, capitalization and operating efficiency. *Journal of Financial Services Research* 12, 117-31.
- Levine, R., 1997. Financial Development and Economic Growth: Views and Agenda. *Journal of Economic Literature* 35, 688-726.
- Levine, R., 2005. Finance and Growth: Theory and Evidence. In P. Aghion and S. Durlaff (Eds.), *Handbook of Economic Growth*, 866-934. The Netherlands: Elsevier Science.
- Levine, R., Loayza, N., Beck, T., 2000. Financial Intermediation and Growth: Causality and Causes. *Journal of Monetary Economics* 46, 31-77.
- Maddaloni, A., Peydró, J., 2011. Bank risk-taking, securitization, supervision, and low interest rates: Evidence from the Euro area and U.S. lending standards. *Review of Financial Studies* 24, 2121-65.
- Maudos, J., De Guevara, J.F., 2004. Factors explaining the interest margin in the banking sectors of the European Union. *Journal of Banking & Finance* 28, 2259-2281.
- McShane, R.W., Sharpe, I.G., 1985. A time series/cross section analysis of the determinants of Australian trading bank loan/deposit interest margins: 1962–1981. *Journal of Banking & Finance* 9, 115–136.
- Merton, R.C., Bodie, Z., 2004. The design of financial systems: towards a synthesis of function and structure. *Journal of Investment Management* 3, 1-23.
- Miller, A., Hoffmann, J., 1995. Risk and religion: An explanation of gender differences in religiosity. *Journal for the Scientific Study of Religion* 34, 63–75.
- Ongena, S., Şendeniz-Yüncü, İ., 2011. Which firms engage small, foreign, or state banks? And who goes Islamic? Evidence from Turkey. *Journal of Banking & Finance* 35, 3213-3224.
- Osoba, B., 2003. Risk preferences and the practice of religion: Evidence from panel data. Unpublished Working Paper, West Virginia University.
- Pew Research Center, 2009. Mapping the global Muslim population: a report on the size and distribution of the World's Muslim population. *The Pew Forum on Religion & Public Life*, October 2009.
- Rajan, R.G., 2006. Has finance made the world riskier? *European Financial Management* 12, 499-533.
- Rioja, F., Valev, N., 2004. Does one size fit all?: a reexamination of the finance and growth relationship. *Journal of Development Economics* 74, 429-447.
- Rousseau, P.L., Sylla, R., 1999. Emerging Financial Markets and Early US Growth. National Bureau of Economic Research Working Paper No. 7448.
- Rousseau, P.L., Wachtel, P., 2002. Inflation thresholds and the finance-growth nexus. *Journal of International Money and Finance* 21, 777-793.

Saeed, M., Izzeldin, M., 2014. Examining the relationship between default risk and efficiency in Islamic and conventional banks. *Journal of Economic Behavior & Organization*.

Taylor, L., 1983. *Structuralist Macroeconomics: Applicable Models for the Third World*. New York: Basic Books.

The Banker, 2013. Islamic finance in 2013: Beyond the growth, March.

van Wijnbergen, S., 1983. Interest rate management in LDCs. *Journal of Monetary Economics* 12, 433–452.

Table 1. Descriptive Statistics

This table presents the descriptive statistics for 22 countries where commercial Islamic and conventional banks both operated for the 1999-2011 period. We split the sample into two parts on the basis of the median value of the proportion of Muslims in the population.

Variables	Countries with Muslim percentage of populations below the median (95%)					Countries with Muslim percentage of populations above the median (95%)					T-Stat. †
	Obs	Mean	S.D.	Min	Max	Obs	Mean	S.D.	Min	Max	
<i>Banking System Structure</i>											
Small ISB Share	128	18.54	35.45	0.00	100.00	143	10.68	25.89	0.00	100.00	2.07**
Medium ISB Share	128	25.48	28.97	0.00	100.00	143	20.00	22.44	0.00	83.52	1.73*
Large ISB Share	128	21.13	26.95	0.00	100.00	143	8.20	19.72	0.00	100.00	4.46***
Small ISW Share	128	4.68	15.37	0.00	100.00	143	7.40	23.26	0.00	100.00	-1.15
Medium ISW Share	128	10.04	13.66	0.00	53.33	143	8.38	21.15	0.00	100.00	0.78
Large ISW Share	128	14.02	15.78	0.00	71.66	143	13.01	26.83	0.00	100.00	0.38
Foreign Banks Share	130	19.45	19.25	0.00	92.75	136	29.95	28.17	0.00	97.23	-3.56***
State Banks Share	130	17.23	24.72	0.00	100.00	136	16.16	23.84	0.00	98.41	0.36
HHI	110	21.94	14.57	6.19	86.17	114	27.99	13.89	9.51	58.69	-3.18***
<i>Funding Mobilization and Allocation</i>											
Bank Deposit	99	64.88	27.86	25.07	139.38	130	35.19	22.17	6.98	105.91	8.71***
Financial System Deposit	87	64.60	25.55	25.07	120.93	121	36.96	22.17	8.92	105.91	8.13***
Private Credit	91	50.81	30.50	9.66	142.85	124	28.09	20.77	3.39	81.85	6.14***
<i>Economic Growth, Income Inequality & Poverty Index</i>											
Economic Growth	130	1.65	4.19	-11.99	14.18	136	1.81	3.58	-17.06	15.73	-0.34
Gini	16	35.50	5.22	28.99	46.21	31	37.91	4.59	29.63	47.28	-1.56
Poverty Ratio International	19	20.45	18.90	0.00	58.59	31	12.84	14.14	0.00	44.19	1.51
Poverty Ratio National	21	18.98	10.83	3.60	48.90	30	26.85	14.03	2.80	55.20	-2.26**
Poverty Gap International	19	5.00	5.47	0.00	18.61	31	3.37	4.20	0.00	14.34	1.12
Poverty Ratio Rural	21	23.24	10.88	7.10	52.30	24	38.28	17.00	6.80	73.90	-3.58***
<i>Other Country Level Heterogeneities</i>											
Muslim Share	130	78.22	13.48	51.90	94.70	136	97.88	1.46	95.3	99.8	-16.54***
Per Capita	130	28.05	28.06	0.93	133.73	136	6.67	7.47	1.51	49.23	8.41***
Uncertainty Avoidance Index	128	59.66	12.44	36.00	68.00	143	65.91	8.73	54.00	85.00	-4.74***
Economic Freedom Index	121	61.22	8.77	44.30	77.90	143	54.65	11.73	16.80	65.90	5.20***
Inflation	130	7.49	8.16	-24.25	29.02	136	8.99	11.23	-30.14	54.18	-1.25
Remittance Inflow	67	6.06	7.27	0.33	25.66	114	6.04	6.13	0.00	22.40	0.03
<i>Conventional Banks Characteristics</i>											
Total Assets (\$ m)	1917	4,344	8,980	6	83,000	1047	5,981	13,200	0.09	98,700	-3.59***
Inefficiency	1917	13.32	10.32	0.71	63.23	1047	14.22	11.60	0.71	63.23	-2.10**
Capital	1714	53.69	27.34	6.17	177.45	901	60.56	31.39	6.17	177.45	-5.56***
Credit Risk	1345	10.02	12.37	0.00	72.19	626	12.17	14.57	0.00	72.19	-3.19***

†T-Stat. of mean equality test. ***, **, and * indicate significance at 1%, 5%, and 10% respectively. See table A1 for variable definitions.

Table 2. Islamic Banking in Predominantly Muslim Countries

This table illustrates the estimation of the equation (1) for the sample of *Predominantly Muslim Countries*:

$$Y_{j,t} = \alpha_0 + \alpha_{11} \times \text{Small_ISB_Share}_{j,t} + \alpha_{12} \times \text{Medium_ISB_Share}_{j,t} + \alpha_{13} \times \text{Large_ISB_Share}_{j,t} + \alpha_{21} \times \text{Small_ISW_Share}_{j,t} + \alpha_{22} \times \text{Medium_ISW_Share}_{j,t} + \alpha_{23} \times \text{Large_ISW_Share}_{j,t} + \alpha_3 \times \text{Foreign_Banks_Share}_{j,t} + \alpha_4 \times \text{State_Banks_Share}_{j,t} + \alpha_5 \times \text{Inflation}_{j,t} + \alpha_6 \times \text{Per_Capita}_{j,t} + \alpha_7 \times \text{Remittance_Inflow}_{j,t} + \alpha_8 \times \text{Trend}_t + \epsilon_{j,t}$$

We split our sample into two groups on the basis of the median proportion of Muslims in a country's population. Countries above the median value are classified in one group (*Predominantly Muslim Countries*). The median value is 95%.

We regress our dependent variables on our variable of interest (i.e., *Small ISB Share*, *Medium ISB Share* and *Large ISB Share*) and control variables. In columns (1) to (3), we study the relationship between our variables of interest and development of financial intermediation. Columns (4) to (9) present our analysis for economic growth, income inequality and poverty index.

We employ the fixed-effect technique for our estimation. Standard errors are clustered at the country level. Robust z-statistics are reported in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively. See table A1 for variable definitions.

Variables	Funding Mobilization and Allocation			Economic Growth, Income Inequality and Poverty Index					
	Bank Deposit	Financial System Deposit	Private Credit	Economic Growth	Gini	Poverty Ratio International	Poverty Ratio National	Poverty Gap International	Poverty Ratio Rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Small ISB Share	0.009 (0.38)	-0.003 (-0.12)	-0.018 (-0.71)	-0.026 (-0.99)	2.606 (0.29)	-6.921 (-0.28)	69.527*** (12.80)	-4.377 (-0.58)	---
Medium ISB Share	0.040** (2.56)	0.040** (2.65)	0.066** (2.42)	0.016 (0.55)	-0.064** (-3.20)	-0.036 (-0.42)	-0.131*** (-3.50)	-0.012 (-0.44)	-0.044*** (-4.74)
Large ISB Share	0.032 (1.10)	0.004 (0.16)	0.024 (1.00)	-0.022 (-1.55)	-0.037 (-0.57)	0.057 (0.42)	-0.303*** (-5.13)	0.027 (0.68)	1.202** (3.09)
Small ISW Share	-0.005 (-0.28)	0.003 (0.20)	0.001 (0.06)	0.033* (2.14)	0.051*** (4.77)	-0.030 (-1.09)	-0.438*** (-13.00)	-0.006 (-0.75)	-0.670*** (-22.36)
Medium ISW Share	0.022 (0.64)	0.036 (0.97)	0.066 (0.74)	0.037 (1.06)	-0.017 (-0.39)	-0.045 (-0.39)	-0.975*** (-8.87)	-0.010 (-0.29)	-2.038*** (-8.02)
Large ISW Share	0.169*** (3.97)	0.169*** (3.63)	0.138*** (3.34)	-0.030 (-1.27)	-0.064*** (-5.39)	0.158*** (10.62)	0.874*** (7.88)	0.029*** (6.26)	4.422*** (5.32)
Foreign Banks Share	-0.008 (-0.16)	-0.012 (-0.19)	0.030 (0.63)	-0.018 (-0.50)	-0.023 (-0.27)	-0.064 (-0.23)	0.302** (2.53)	-0.040 (-0.47)	0.254*** (26.39)
State Banks Share	-0.052 (-1.10)	-0.076 (-1.21)	-0.017 (-0.25)	-0.040 (-1.18)	0.038 (0.38)	0.027 (0.20)	0.265** (3.19)	-0.001 (-0.02)	0.025 (1.79)
Inflation	-0.161* (-2.10)	-0.164* (-2.06)	-0.166*** (-3.36)	-0.042 (-0.86)	0.020 (1.05)	-0.060 (-1.22)	0.071** (2.51)	-0.021 (-1.52)	-0.201*** (-84.73)
Per Capita	0.217 (1.04)	0.283 (1.36)	0.299 (0.68)	0.488** (3.21)	-0.163 (-0.63)	0.194 (1.01)	-3.356*** (-16.10)	0.036 (0.65)	-5.865*** (-189.59)
Remittance Inflow	0.357 (1.17)	0.506 (1.73)	0.664 (1.56)	0.141 (1.79)	0.440** (2.95)	-0.007 (-0.01)	-2.678*** (-6.94)	-0.056 (-0.27)	-3.237*** (-7.75)
Trend	1.016*** (6.99)	0.967*** (6.43)	0.765*** (4.28)	-0.276*** (-4.88)	-0.295 (-1.26)	-0.577*** (-3.82)	0.250 (1.30)	-0.151*** (-3.71)	0.718*** (4.35)
Constant	28.011*** (8.61)	28.853*** (7.82)	15.228** (2.38)	1.287 (0.54)	40.364*** (11.62)	15.382 (1.12)	47.887*** (8.10)	5.430 (1.30)	33.752** (2.70)
Observations	108	104	107	113	28	28	27	28	22
R-squared	0.635	0.619	0.578	0.182	0.845	0.752	0.987	0.732	0.984
Number of Country	10	10	10	10	8	8	8	8	7

Table 3. Islamic Banking in Low Income Countries

This table illustrates the estimation of the equation (1) for the sample of *Low Income Countries*:

$$Y_{j,t} = \alpha_0 + \alpha_{11} \times \text{Small_ISB_Share}_{j,t} + \alpha_{12} \times \text{Medium_ISB_Share}_{j,t} + \alpha_{13} \times \text{Large_ISB_Share}_{j,t} + \alpha_{21} \times \text{Small_ISW_Share}_{j,t} + \alpha_{22} \times \text{Medium_ISW_Share}_{j,t} + \alpha_{23} \times \text{Large_ISW_Share}_{j,t} + \alpha_3 \times \text{Foreign_Banks_Share}_{j,t} + \alpha_4 \times \text{State_Banks_Share}_{j,t} + \alpha_5 \times \text{Inflation}_{j,t} + \alpha_6 \times \text{Per_Capita}_{j,t} + \alpha_7 \times \text{Remittance_Inflow}_{j,t} + \alpha_8 \times \text{Trend}_t + \epsilon_{j,t}$$

We split our sample into two groups on the basis of the median value of countries' Per Capita. Countries below the median value are classified in one group (called *Low Income Countries*). The median value is about \$ 6,300.

We regress our dependent variables on our variable of interest (i.e., *Small ISB Share*, *Medium ISB Share* and *Large ISB Share*) and control variables. In columns (1) to (3), we study the relationship between our variables of interest and development of financial intermediation. Columns (4) to (9) present our analysis for economic growth, income inequality and poverty index.

We employ the fixed-effect technique for our estimation. Standard errors are clustered at the country level. Robust z-statistics are reported in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively. See table A1 for variable definitions.

Variables	Funding Mobilization and Allocation			Economic Growth, Income Inequality and Poverty Index					
	Bank Deposit	Financial System Deposit	Private Credit	Economic Growth	Gini	Poverty Ratio International	Poverty Ratio National	Poverty Gap International	Poverty Ratio Rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Small ISB Share	-0.006 (-0.25)	-0.007 (-0.26)	0.036 (1.14)	-0.011 (-0.52)	0.051 (1.39)	-0.069 (-1.18)	-0.105 (-1.13)	-0.033 (-1.14)	-0.129 (-1.16)
Medium ISB Share	0.073** (2.69)	0.072* (2.14)	0.095 (1.76)	0.042*** (3.38)	0.052 (0.94)	-0.177*** (-3.49)	-0.096 (-1.73)	-0.052** (-3.06)	-0.190* (-2.20)
Large ISB Share	0.058 (1.43)	0.018 (0.57)	0.028 (1.79)	-0.026 (-1.83)	-0.087 (-0.69)	0.165 (1.40)	0.179 (1.40)	0.037 (1.31)	-0.171 (-0.62)
Small ISW Share	0.017 (1.24)	0.028 (1.70)	0.053** (2.54)	0.003 (0.21)	0.047* (1.92)	0.038 (0.63)	0.021 (0.76)	0.013 (0.62)	-0.024 (-0.47)
Medium ISW Share	0.107* (1.86)	0.108 (1.81)	0.073 (1.81)	0.021 (1.32)	0.068 (1.15)	-0.008 (-0.16)	0.052** (2.37)	-0.001 (-0.04)	-0.039 (-0.55)
Large ISW Share	0.161** (2.94)	0.167** (2.91)	0.068 (1.71)	-0.019 (-0.83)	-0.090 (-1.65)	0.127** (2.36)	0.144 (1.63)	0.015 (0.70)	-0.239 (-0.92)
Foreign Banks Share	-0.127 (-1.64)	-0.137 (-1.69)	-0.106 (-1.61)	0.024 (0.50)	0.050 (0.33)	-0.185 (-1.50)	-0.082 (-0.96)	-0.045 (-1.29)	-0.075 (-0.90)
State Banks Share	-0.242** (-2.93)	-0.263** (-2.91)	-0.052 (-1.32)	-0.006 (-0.26)	0.090 (1.21)	-0.099 (-0.81)	0.036 (1.00)	-0.013 (-0.30)	-0.014 (-0.18)
Inflation	-0.180** (-2.50)	-0.174 (-1.53)	-0.075 (-1.20)	0.035 (1.65)	-0.338* (-1.95)	0.546* (1.83)	0.232 (0.86)	0.176* (1.97)	0.082 (0.36)
Remittance Inflow	0.104 (0.29)	0.219 (0.66)	0.551 (1.83)	0.194 (1.35)	-0.045 (-0.10)	0.687 (1.11)	0.413 (0.48)	0.146 (0.86)	0.994 (1.37)
Trend	0.588 (1.53)	0.521 (1.38)	0.180 (0.48)	-0.130 (-1.24)	0.070 (0.89)	-1.091*** (-3.98)	-0.265 (-0.63)	-0.363*** (-3.28)	-0.492 (-0.96)
Constant	44.448*** (7.00)	46.199*** (7.16)	24.781*** (4.77)	0.408 (0.15)	34.169*** (6.86)	27.361*** (5.19)	22.618*** (4.24)	7.592*** (5.13)	42.316*** (4.01)
Observations	105	101	104	110	28	32	32	32	30
R-squared	0.435	0.413	0.309	0.168	0.546	0.761	0.737	0.750	0.642
Number of Country	10	10	10	10	10	10	9	10	9

Table 4. Islamic Banking in High Uncertainty Avoidance Countries

This table illustrates the estimation of the equation (1) for the sample of *High Uncertainty Avoidance Countries*:

$$Y_{j,t} = \alpha_0 + \alpha_{11} \times \text{Small_ISB_Share}_{j,t} + \alpha_{12} \times \text{Medium_ISB_Share}_{j,t} + \alpha_{13} \times \text{Large_ISB_Share}_{j,t} + \alpha_{21} \times \text{Small_ISW_Share}_{j,t} + \alpha_{22} \times \text{Medium_ISW_Share}_{j,t} + \alpha_{23} \times \text{Large_ISW_Share}_{j,t} + \alpha_3 \times \text{Foreign_Banks_Share}_{j,t} + \alpha_4 \times \text{State_Banks_Share}_{j,t} + \alpha_5 \times \text{Inflation}_{j,t} + \alpha_6 \times \text{Per_Capita}_{j,t} + \alpha_7 \times \text{Remittance_Inflow}_{j,t} + \alpha_8 \times \text{Trend}_t + \epsilon_{j,t}$$

We split our sample into two groups on the basis of the median value of countries' uncertainty avoidance index. Countries below the median value are classified in one group (called *High Uncertainty Avoidance Countries*). The median value is 68.

We regress our dependent variables on our variable of interest (i.e., *Small ISB Share*, *Medium ISB Share* and *Large ISB Share*) and control variables. In columns (1) to (3), we study the relationship between our variables of interest and development of financial intermediation. Columns (4) to (9) present our analysis for economic growth, income inequality and poverty index.

We employ the fixed-effect technique for our estimation. Standard errors are clustered at the country level. Robust z-statistics are reported in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively. See table A1 for variable definitions.

Variables	Funding Mobilization and Allocation			Economic Growth, Income Inequality and Poverty Index					
	Bank Deposit	Financial System Deposit	Private Credit	Economic Growth	Gini	Poverty Ratio International	Poverty Ratio National	Poverty Gap International	Poverty Ratio Rural
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Small ISB Share	-0.019 (-0.99)	-0.029 (-1.50)	0.009 (0.42)	-0.025 (-1.27)	1.943 (0.18)	10.599 (0.38)	57.416 (1.20)	1.524 (0.21)	
Medium ISB Share	0.072* (2.04)	0.079* (1.96)	0.097* (2.14)	0.017 (0.61)	-0.032 (-1.56)	-0.036 (-0.73)	-0.381** (-3.62)	-0.010 (-0.76)	-0.623*** (-11.35)
Large ISB Share	0.042 (1.47)	0.007 (0.32)	0.008 (0.34)	-0.017 (-0.86)	-0.017 (-0.21)	-0.043 (-0.23)	-0.425 (-1.46)	-0.006 (-0.12)	-0.531** (-3.83)
Small ISW Share	0.000 (0.01)	0.009 (0.68)	0.031 (1.12)	0.014 (0.93)	0.050*** (4.88)	-0.037 (-0.89)	-0.145** (-3.03)	-0.011 (-1.14)	-0.333*** (-9.18)
Medium ISW Share	0.070 (1.79)	0.077* (2.01)	0.013 (0.18)	0.028 (1.20)	-0.003 (-0.23)	0.116*** (5.20)	-0.049 (-0.63)	0.034*** (5.39)	-0.462*** (-16.41)
Large ISW Share	0.196*** (4.25)	0.209*** (4.05)	0.131* (1.86)	-0.016 (-0.75)	-0.053 (-1.82)	0.148*** (5.16)	0.196* (2.20)	0.032*** (8.29)	-0.183 (-1.29)
Foreign Banks Share	-0.017 (-0.27)	-0.033 (-0.40)	-0.025 (-0.26)	-0.029 (-0.93)	-0.048 (-0.37)	0.214 (0.67)	0.785 (1.47)	0.046 (0.54)	-0.096** (-2.59)
State Banks Share	-0.119 (-1.23)	-0.155 (-1.31)	-0.035 (-0.32)	-0.053* (-2.12)	-0.017 (-0.15)	0.166 (0.74)	0.595 (1.62)	0.040 (0.67)	0.360*** (11.63)
Inflation	-0.165* (-2.17)	-0.171* (-2.19)	-0.220*** (-2.90)	-0.034 (-0.69)	0.018 (1.27)	-0.016 (-0.51)	0.224* (2.18)	-0.009 (-0.89)	0.199*** (5.07)
Per Capita	0.347 (1.18)	0.399 (1.35)	0.230 (0.66)	0.415*** (3.84)	0.132 (1.28)	-0.418 (-1.08)	-4.992*** (-6.44)	-0.132 (-1.51)	-11.036*** (-22.55)
Remittance Inflow	0.518 (1.09)	0.685 (1.43)	0.093 (0.09)	0.230* (1.91)	0.423** (2.60)	0.441 (0.60)	0.130 (0.12)	0.084 (0.42)	-3.836*** (-13.64)
Trend	0.931** (2.73)	0.852* (2.16)	0.324 (0.52)	-0.182** (-2.96)	-0.508*** (-3.88)	0.044 (0.19)	2.157** (2.64)	0.023 (0.47)	7.684*** (13.82)
Constant	33.229*** (5.95)	35.501*** (5.07)	28.216* (1.93)	0.634 (0.22)	39.175*** (8.89)	-2.601 (-0.24)	18.989 (0.82)	-0.411 (-0.14)	94.240*** (23.99)
Observations	104	100	106	119	28	28	27	28	22
R-squared	0.557	0.516	0.382	0.161	0.854	0.833	0.871	0.833	0.963
Number of Country	11	11	12	12	8	8	7	8	6

Table 5. Cost-Inefficiency Analysis

This table presents the estimation of the Equation (2), using the ratio of total noninterest expense on total operating income (*Inefficiency*) as the proxy for inefficiency:

$$\text{Inefficiency}_{i,t} = \beta_0 + \beta_{11} \times \text{Small_ISB_Share}_{j,t} + \beta_{12} \times \text{Medium_ISB_Share}_{j,t} + \beta_{13} \times \text{Large_ISB_Share}_{j,t} + \beta_{21} \times \text{Small_ISW_Share}_{j,t} + \beta_{22} \times \text{Medium_ISW_Share}_{j,t} + \beta_{23} \times \text{Large_ISW_Share}_{j,t} + \beta_3 \times \text{HHI}_{j,t} + \beta_4 \times \text{Domestic_Interest_Rate}_{j,t} + \beta_5 \times \text{Per_Capita}_{j,t} + \beta_6 \times \text{Per_Capita_Growth}_{j,t} + \beta_7 \times \text{Capital}_{i,t} + \beta_8 \times \text{Size}_{i,t} + \beta_9 \times \text{Credit Risk}_{i,t} + \sum_{y=1}^{12} \beta_{10,y} \times \text{Year_Dummies}_{t,y} + \xi_{i,t}$$

We split our sample into two groups on the basis of the median proportion of Muslims in a country’s population. Countries below the median value are classified in one group (called *More Religiously Diverse Countries*) and the rest are in the other group (called *Predominantly Muslim Countries*). The median value is 95%. The results for *More Religiously Diverse Countries* are presented in columns (1) to (4), whereas columns (5) to (8) display our analysis for *Predominantly Muslim Countries*.

We regress *Inefficiency* on our variable of interest (i.e., *Small ISB Share*, *Medium ISB Share* and *Large ISB Share*) and control variables. In the first column we regress *Inefficiency* on *Small ISB Share*, *Medium ISB Share* and *Large ISB Share* while controlling for *Small ISW Share*, *Medium ISW Share* and *Large ISW Share*. In column (2), we include *HHI*, *Domestic Interest Rate*, *Per Capita*, and *Per Capita Growth* in our model. Column (3) illustrates the result when we add *Capital*, *Size* and *Credit Risk* to our model. In column (4) we add year dummies. Columns (5) to (8) depict the result when we use the *Predominantly Muslim Countries* subsample. Year dummies are included but not reported in the table.

We apply the fixed-effect technique for our estimation. Standard errors are clustered at the country level. Robust z-statistics are reported in parentheses. ***, **, and * indicate significance at 1%, 5%, and 10% respectively. See table A1 for variable definitions.

Variables	More Religiously Diverse Countries				Predominantly Muslim Countries			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Small ISB Share	-0.034** (-2.00)	-0.045** (-2.38)	-0.035 (-1.48)	-0.037 (-1.42)	-0.000 (-0.00)	-0.010 (-0.23)	-0.007 (-0.13)	0.026 (0.39)
Medium ISB Share	-0.004 (-0.14)	-0.025 (-0.87)	-0.032 (-0.91)	-0.035 (-0.94)	-0.110** (-2.27)	-0.093* (-1.68)	-0.101* (-1.81)	0.012 (0.17)
Large ISB Share	-0.068* (-1.73)	-0.054 (-0.95)	-0.008 (-0.11)	0.029 (0.41)	-0.125* (-1.85)	-0.083 (-1.16)	-0.334** (-2.23)	-0.367** (-2.40)
Small ISW Share	0.040 (1.43)	0.023 (0.84)	0.014 (0.26)	-0.001 (-0.02)	0.049 (0.45)	0.034 (0.32)	-0.074 (-0.50)	-0.089 (-0.60)
Medium ISW Share	-0.036 (-0.85)	-0.101** (-2.10)	-0.161** (-2.54)	-0.145** (-2.21)	0.168 (1.54)	0.181 (1.45)	-0.031 (-0.17)	-0.172 (-0.85)
Large ISW Share	-0.057 (-1.09)	-0.137*** (-2.67)	-0.168*** (-2.87)	-0.137** (-2.15)	0.125 (0.41)	0.157 (0.50)	-0.090 (-0.65)	-0.001 (-0.01)
HHI		-0.030 (-0.37)	-0.059 (-0.51)	-0.047 (-0.38)		-0.212 (-1.09)	0.303 (1.64)	0.287 (1.24)
Domestic Interest Rate		0.126 (0.55)	0.287 (0.97)	0.083 (0.17)		0.444*** (3.13)	0.472*** (2.76)	0.333 (1.63)
Per Capita		-0.162*** (-3.32)	-0.139** (-2.38)	-0.121* (-1.78)		-0.386 (-0.78)	0.880* (1.68)	0.635 (0.36)
Per Capita Growth		-0.219* (-1.68)	-0.146 (-1.12)	-0.149 (-0.99)		0.173 (0.61)	0.232 (0.64)	0.034 (0.09)
Capital			-0.053 (-0.38)	-0.026 (-0.17)			-0.259* (-1.92)	-0.172 (-1.24)
Size			-0.719 (-0.82)	-0.323 (-0.35)			-1.267 (-0.75)	-0.434 (-0.27)
Credit Risk			0.129 (1.31)	0.130 (1.32)			0.492*** (3.18)	0.384** (2.59)
Constant	56.8*** (46.45)	61.1*** (21.01)	69.6*** (5.24)	66.3*** (4.65)	61.3*** (23.28)	62.0*** (9.73)	59.3* (1.97)	51.7 (1.13)
Year Dummies	No	No	No	Yes	No	No	No	Yes
Observations	1,714	1,677	1,179	1,179	901	855	506	506
R-squared	0.007	0.014	0.030	0.041	0.019	0.074	0.187	0.246
Number of Banks	248	247	219	219	145	135	100	100