

ISLAMIC FINANCE AND VOLUNTARILY FINANCIAL EXCLUSION IN MIDDLE EASTERN COUNTRIES

Abstract

This paper empirically investigates the association of increasing the supply of Islamic banking services and voluntarily financially excluded groups. Due to the structure of the data, we use ordinary least square estimations to assess the association between Islamic banking and voluntarily financial exclusion. In the meantime, as the modification of the results in the literature, this paper aims to assess the mechanisms by which the association of Islamic finance and financial exclusion in Muslim dominant countries. The results suggest that improving the arguments in the literature, we find a relatively stronger association between Islamic banking and financial inclusion in both country samples.

Keywords: Financial Inclusion, Islamic Finance, and Microfinance

JEL Classification: G20, G21, G28

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Özet

Bu makale, İslami bankacılık hizmetlerinin arzının artırılması ile gönüllü olarak finansal anlamda dışlanmış grupların arasındaki bağı deneysel olarak incelemektedir. Verilerin yapısı nedeniyle, İslami bankacılık ile gönüllü finansal dışlanma arasındaki ilişkiyi değerlendirmek için en küçük kareler yöntemini kullanıyoruz. Aynı zamanda, literatürdeki sonuçların değişimi olarak, bu makale önde gelen Müslüman ülkelerde İslami finans ve finansal dışlanma arasındaki bağ aracılığıyla mekanizmaları değerlendirmeyi amaçlamaktadır. Sonuçlar, literatürdeki argümanların iyileştirilmesiyle her iki ülke örneğinde İslami bankacılık ile finansal katılım arasında nispeten daha güçlü bir ilişki bulunduğunu gözler önüne sermektedir.

Anahtar Kelimeler: Finansal katılım, İslami Finans ve Mikrofinans

JEL Sınıflandırma: G20, G21, G28

التمويل الإسلامي والتهميش المالي الإرادي في بلدان الشرق الأوسط

الملخص

إن هذا البحث يقوم بدراسة الرابط والعلاقة بالاعتماد على التجربة بين زيادة عرض البنوك الإسلامية والمجموعات المهمشة إراديا في المجال المالي. وإننا نستخدم طريقة المربعات الصغرى لدراسة العلاقة بين البنوك الإسلامية والمجموعات المهمشة إراديا في المجال المالي، وفي نفس الوقت نعمل عبر هذا البحث من حيث التغيير في نتائج على تقييم الآليات عبر العلاقة والرابط بين البنوك الإسلامية والتهميش المالي في الدول الإسلامية المتقدمة. ومع تحسين الوسائط في الادب المالي فإن النتائج تضع أماننا واقع أن العلاقة بين البنوك الإسلامية والمساهمة المالية أقوى في مثال كلا البلدين.

الكلمات المفتاحية: المساهمة المالية، التمويل الإسلامي والتمويل المصغر

التصنيف: G20, G21, G28

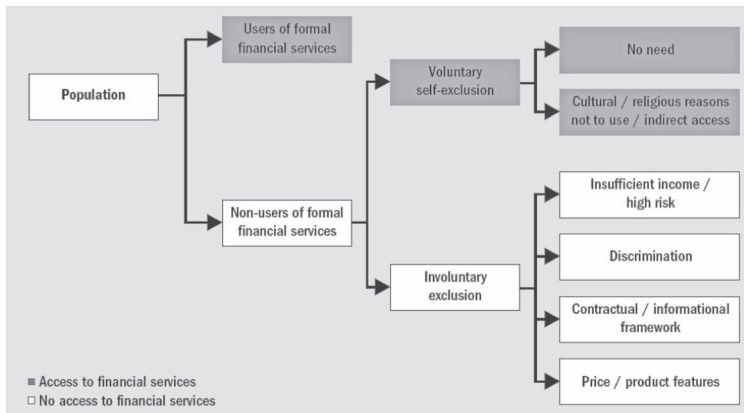
Introduction

In recent years, there has been increasing concern about financially excluded groups who have limited or even no access to formal financial services in societies. Poor and disadvantaged groups, who are considered as socially excluded, live without any access to formal financial services. Generally, they are denied by the formal financial systems. Therefore, as described in European Commission¹, financial exclusion and social exclusion are strongly associated with each other.

Financial exclusion can be described with two main factors, which are voluntary and involuntary exclusion as seen in Figure 1. These factors are important in terms of determining the reasons for financial exclusion. Scholars mainly consider involuntarily excluded groups in order to measure the financial inclusiveness in an economy and ignore voluntarily excluded groups. The reason is that these groups have a chance to use formal financial services tools but prefer not to use these services. They claim that these types of groups do not require any further policy actions². However, in this paper, it is assumed that voluntarily excluded groups need to be considered as important as involuntarily excluded groups in order to enhance greater financial access and financial inclusiveness in the economy.

¹ Financial services provision and prevention of financial exclusion: European Commission (Commission of The European Communities, 2008)

² Finance for All? Policies and Pitfalls in Expanding Success, A World Bank Policy Research Report: World Bank Group (World Bank, 2008) Available from: <http://www.myilibrary.com?id=119146>.

Figure 1. Factors of Financial Exclusion

Source: The World Bank (2008) *Finance for All: Policies and Pitfalls in Expanding Access*, A World Bank Policy Research Report, World Bank, Washington, DC, USA

Religious barriers are considered one of the most important reasons for voluntary exclusion, particularly among Muslim groups because of the Islamic rules on finance. Since Islamic Law (*Shari'a*) forbids any interest gain from financial transactions and most of the formal financial institutions lack Islamic Law-compliant financial services, these kinds of groups face religious barriers to use formal financial services and voluntarily choose not to use them. Therefore, these groups need specific targeting regulations to involve in the financial system. This would also imply that self-exclusion is considered the reason for direct banking exclusion in developing and low-income countries with predominantly Muslim population³.

Since little empirical research has been done to examine the association between financial exclusion and Islamic finance in the literature so far, this study will empirically fill this gap. In doing so, following Global Financial Development Report⁴; Demircug-Kunt et al.⁵; and Naceur et al.⁶, this paper aims to contribute to the literature by empirically examining the link between Islamic finance and voluntarily financial exclusion, which is determined by

³ Elaine Kempson, "Policy Level Response to Financial Exclusion in Developing Economies: Lessons for Developing Countries", Paper for Access to Finance: Building Inclusive Financial Systems, May 30-31 2006, World Bank, Washington DC.

⁴ Global financial development report: (World Bank, 2014). Available from: <http://alltitles.ebrary.com/Doc?id=10809087>.

⁵ Asli Demircug Kunt and Leora Klapper, "Measuring Financial Inclusion: Explaining Variation in Use of Financial Services across and within Countries", *Brookings Papers on Economic Activity* (The Brookings Institution, 2013), p. 279-321.

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lack of access to formal financial services. Furthermore, as the modification of the results in the literature and so that one of the main contributions of this paper, we subdivide Islamic banking products to assess the mechanism by which the impact of Islamic finance on financial exclusion occurs.

This paper is conducted as follows: Section 2 identifies the Islamic finance and some basic Sharia-compliant products. Section 3 explains related work on the association between Islamic finance and financial inclusion. Section 4 determines the indicators and their sources. Section 5 indicates methodology of the paper. Section 6 presents the empirical results of the models performed in this paper, and finally section 7 concludes the paper.

Sharia-compliant Financial Products and Islamic Finance Institutions

The main aspects of the Islamic finance, which relies on Shari'a, are social justice, equitable allocation of resources among people, and inclusion. In other words, the fundamental factor of the Islamic economic system is economic growth along with social justice, which is also known as inclusive economic growth. This system aims for all members in society to have equal opportunities.

The Islamic perspective on financial inclusion has two dimensions: First, Islamic Law promotes financial inclusion through risk-sharing contracts, which are the best alternative to conventional finance. Second, it also promotes financial inclusion through particular redistribution of the wealth instruments among all groups in the economy⁷. Risk-sharing financial instruments can be classified as Shari'a-compliant microfinance, SME financing and micro insurance, and Shari'a-compliant deposits and/or savings accounts, which operate under *Mudaraba* (profit sharing) in order to provide broader access to finance. This also means more financial inclusion. These instruments can be referred to as profit and loss sharing principles in all types of financial transactions. Risk-sharing financial instruments, as classified above, operate under profit-sharing principle wherein there is no interest gain for account owners, but rather they share the overall profit or loss of the Islamic financial institution⁸.

Furthermore, redistributive instruments are explained as Zakah, Sadakat, Qard-al-hassan, and Waqf, which target the disadvantaged and underprivileged in order to eradicate poverty and enhance social justice in society.

⁷ Patrick Imam and Kangni Kpodar, *Is Islamic banking good for growth*, (Washington, D.C.: International Monetary Fund, 2015), <http://www.imf.org/external/pubs/cat/longres.aspx?sk=42871.0>.

⁸ Asli Demirguc Kunt and Leora Klapper, "Measuring Financial Inclusion: Explaining Variation in Use of Financial Services across and within Countries", *Brookings Papers on Economic Activity* (The Brookings Institution, 2013), p. 279-321

These redistributive instruments are considered as the mandated levies. In other words, the social and economic risks of the poor are faced by the privileged ones in society⁹.

Since not all countries with predominantly Muslim population engage in the Islamic economic system and Shari'a, the redistributive instruments above remain peoples' voluntary choices and cannot be controlled or tracked by the policymakers of such countries. For example, there is no way with which the annual amount of Zakah in the Republic of Turkey as a secular country can be tracked. Therefore, in most countries, redistributive instruments are not considered as tools for Islamic financial institutions. Risk-sharing products are the main objectives of the Islamic financial institutions across the world.

Related Work

The concerns about the groups with limited access to financial services and those considered financially excluded have been increasing recently. Financial exclusion, which is the absence of physical banking services, causes low community investment, unemployment, and poverty in the economy¹⁰. In doing so, researchers have been giving more attention to the causes of financial exclusion and financial service provision developments which are organized to eradicate financial exclusion¹¹.

Mohieldin, Iqbal, Rostom and Fu¹² argues that if they are applied in true spirits, Islamic Law-compliant financial services may lead to overall wealth distribution among people in society from the rich segment to the poor. This redistribution results in poverty reduction and the elimination of income inequality in that economy. Hence, in order to increase levels of access or reduce the financial exclusion rates, policymakers should provide different sets of Islamic financial instruments in Muslim dominant population countries.

Muslims are less likely to use formal financial services such as having a bank account and saving at a formal financial institution than non-Muslims. Differently, they are less likely to use Islamic law-compliant banking services

⁹ Mahmoud Mohieldin and Zamir Iqbal and Ahmed Rostom and Xiaochen Fu. The Role of Islamic Finance in Enhancing Financial Inclusion in Organization of Islamic Cooperation (OIC) Countries. (Washington, D.C.: The World Bank, 2011) Available from: <http://proxy.library.carleton.ca/login?url=http://elibrary.worldbank.org/content/workingpaper/10.1596/1813-9450-5920>.

¹⁰ Thorsten Beck and Asli Demirgüç-Kunt and Ross Levine, "Finance, inequality and the poor", *Journal of Economic Growth*, 12, March 2007, p. 27-49.

¹¹ Sharon Collard and Elaine Kempson and Claire Whyley, *Tackling financial exclusion: An area-based approach*, (Bristol, UK: Policy Press, 2001)

¹² Ibid.

in some countries¹³. Therefore, lack of access to Islamic law-compliant financial services is considered one of the most important causes of low banking penetration and, as a result, financial inclusion, particularly in the Middle East and North Africa (MENA) regions where the financial inclusion rates are the lowest in the world¹⁴. Hence, Muslim households and SMEs may choose to stay outside the financial system because of the Islamic law on finance around the world. These exclusion rates tend to be high in religiously conscious Muslim population regions.

The specific studies examining the association between financial exclusion and Islamic finance are rare in the literature. However, there are various particular studies conducted on the participatory preferences of the clients of Islamic financial institutions, in order to determine the importance of the religious reasons behind choosing and preferring such institutions. For instance, Ozsoy, Gormez, and Mekik¹⁵ stated that the reasons why arbitrarily chosen sample clients from the province of Bolu in Turkey prefer Islamic financial institutions are service quality, trust, and religious reasons, respectively. This result can be interpreted as the structure of Islamic financial institutions, which are different from the traditional Islamic Law-compliant financial institutions in the world. Intuitively, the results from the countries that have traditional Islamic banking institutions support this argument.

For example Gerrard et al.¹⁶ in Singapore, Metawa et al.¹⁷ in Bahrain, Naser et al.¹⁸ in Jordan, Othman et al.¹⁹ in Kuwait, Wakhid et al.²⁰ in Indonesia, Gait et al.^{21,22} in Libya, and finally Lee et al.²³ in Pakistan found that religious rea-

¹³ Asli Demircuc-Kunt and Douglas Randall and Leora Klapper, *Islamic Finance and Financial Inclusion Measuring Use of and Demand for Formal Financial Services among Muslim Adults*, (Washington, D.C.: The World Bank, 2013) <http://proxy.library.carleton.ca/login>.

¹⁴ Wafica Ali Ghoul, "The Dilemma Facing Islamic Finance and Lessons Learned from the Global Financial Crisis", *Journal of Islamic Economics, Banking and Finance*, 7, p. 57-76.

¹⁵ ?

¹⁶ Philip Gerrard and J. Barton Cunningham, "Islamic Banking: A Study in Singapore" *International Journal of Bank Marketing*, 15 (6), p. 204-216.

¹⁷ Saad A. Metawa and Mohammed Almossawi, "Banking Behaviour of Islamic Bank Customers: Perspectives and Implications", *International Journal of Bank Marketing*, 16 (7), p. 299-313.

¹⁸ Kamal Naser and Ahmad Jamal and Khalid Al-Khatib, "Islamic banking: a study of customer satisfaction and preferences in Jordan", *International Journal of Bank Marketing*, 17(3), p. 135-151.

¹⁹ AbdulQaqi Othman and Lynn Owen, "Adopting and Measuring Customer Service Quality (SQ) in Islamic Banks: A Case Study in Kuwait Finance House" *International Journal of Islamic Financial Services*, 3 (1), p. 1-26.

²⁰ Slamet Ciptino Wakhid and Soviyanti Efrita, "Adapting Islamic Banks' Carter Model: An Empirical Study in Riau's Syariah Banks, Indonesia", *Pesat*, 2, p. 120-127.

²¹ Alsadek Gait, A., & Philip, G., & Vidhan G. (2009a). *Attitudes, Perceptions and Motivations of Libyan Retail Consumers toward Islamic Methods of Finance*. St Lucia, Australia, University of Queensland. Available from: <http://hdl.handle.net/10072/31929>.

²² Alsadek Gait, *Libyan Attitudes towards Islamic Methods of Finance: An Empirical Analysis of Retail Consumers, Business Firms and Banks*, Griffith University. Department of Accounting, Finance and Economics. Available from: <http://www4.gu.edu.au:8080/adt-root/public/adt-QGU20100615.104528>.

²³ Kun-ho Lee and Shakir Ullah, "Customers' attitude toward Islamic Banking in Pakistan", *International Journal of Islamic and Middle Eastern Finance and Management*, 4 (2), p. 131-145.

sons are the most important reasons why some clients prefer using Islamic banking services. Furthermore, Karakaya et al.²⁴ and Okumus²⁵, using all Islamic finance institutions in Turkey, found that religious beliefs are the most important reason behind the preference of using Islamic banking services.

Furthermore, The World Bank Global Financial Development Report²⁶ concludes that the emergence of Islamic banks has a significant impact on the financial access of the households and small and medium-scaled firms. For example, this report suggests that there is an inverse and significant association between the size of Islamic financial institutions and the proportion of firms identifying access to finance in OIC countries. Moreover, the increasing number of Islamic banks has a positive influence on the operations of small-scaled firms. This paper follows the theory behind their work, and tests the association between financial access and Islamic finance for both all countries from different backgrounds and Muslim dominant countries, separately.

Similarly, Naceur et al.²⁷ suggests that in Organization for Islamic Cooperation (OIC) member countries, where levels of financial inclusion are lower and the extent of exclusion from formal financial system because of religious reasons share are greater, Islamic banking is an effective factor for financial inclusion. They find evidence that the presence of Islamic banking activities is associated with higher levels of banking credits by households and firms in OIC member countries.

Data & Methodology

Following the traditional way in the literature, financial exclusion is determined by the opposite term of financial inclusion in this paper. In order to examine this association between in Muslim dominant countries and other countries separately, we use two different samples of countries in the regression models. The first set of regression models is run for 118 countries from different geographic and economic backgrounds around the world. The second set of regression models is run for Middle Eastern countries to analyze

²⁴ Aykut Karakaya and Osman Karamustafa, "The Role of Customer Features on the use of Technology Intensive Financial Products in Banks", *Active Bankacılık ve Finans Dergisi*, 38, p. 1-6.

²⁵ H. Şaduman Okumus, "Interest-Free Banking in Turkey: A Study of Customer Satisfaction and Bank Selection Criteria" *Journal of Economic Cooperation*, 26 (4), p. 51-86.

²⁶ Ibid.

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the association between financial inclusion and Islamic finance. Because of the data limitations of other countries for Islamic banking products, we cannot use Middle Eastern country interaction terms in the all countries regression models. Moreover, because of the nature of data we average the values of financial inclusion index and Islamic banking products for the period from 2004 to 2011 in this section.

Meanwhile, we examine this association in terms of both conventional banks and other financial institutions such as microfinance institutions separately in this section. Hence, there are two proxies of financial inclusion are used as the dependent variable to examine the effects of the Islamic financial institutions on financial inclusion. The multidimensional financial inclusion index, which is constructed by Yorulmaz²⁸, is used as the proxy of commercial bank base financial inclusion.

Regarding the access indicator from other financial institutions, we follow the same process by using the residuals after differentiating the all-financial institutions indicator from formal financial institutions indicator. 'The percentage of adults that have an account at a formal financial institution' variable, which contains accounts in credit unions, post offices, and other financial institutions such as cooperative or microfinance institutions, is constructed from the World Bank's Global Financial Inclusion Database.

Following the literature, we first use Islamic banking dummy and number of Islamic banks variables in the regression models²⁹. These variables are constructed from Global Financial Development Report 2014 database. Moreover, in order to assess the mechanisms by which the impact of Islamic finance occurs, we use services of Islamic banks separately in the models. This would help us to assess the different channels of the real association between Islamic finance and financial access in both country types. Bringing a broader aspect on the impact of Islamic finance on financial access into the literature, this analysis is one of the main contributions of this paper.

In this regard, following the previous studies, we use the ratio of Islamic banking assets to GDP, the ratio of Islamic bank deposits to GDP, and the ratio of Islamic loans to GDP as the *mudaraba* services of Islamic banks. These variables are also used as the measures of the development of Islamic ban-

²⁸ Recep Yorulmaz, "An analysis of constructing global financial inclusion indices", *Borsa Istanbul Review*. 18, p. 248-258.

²⁹ Thorsten Beck and Aslı Demirgüç-Kunt and Ross Levine, "Finance, inequality and the poor", *Journal of Economic Growth*, 12, March 2007, p. 27-49. Ayesha K. Khan and Tarun Khanna, *God, Government and Outsiders: The influence of Religious Beliefs on Depositor Behavior in an Emerging Market*, (Harvard: Harvard Business School, 2010)

king in the literature³⁰. Furthermore, the ratios of *zakah* and *murabahat* services to GDP variables are also use to assess the mechanisms of this impact. Finally, following Imam and Kpodar³¹, we use the capital-asset ratio of Islamic banks as the robustness check of the results in terms of capitalization measure of Islamic banks. All these indicators above are constructed from *Bankscope* database.

Furthermore, following the literature, we use some other control variables such as ‘the percentage of adults citing religious reasons for not having an account at a formal financial institution’, ‘the percentage of religiosity of a country’, and ‘the percentage of Muslim population’ variables in this section. These variables are used to determine the impact of Islamic financial institutions on financial access in the economies in terms of the levels of religiosity and Muslim population. These variables are constructed from the Global Financial Development Report 2014 database. Meanwhile, ‘the percentage of Muslims’ variable’ is constructed from Demirguc-Kunt, Klapper, and Randall³².

Finally, following Beck, Demirguc-Kunt, and Merrouche³³, log GDP per capita as the proxy of income growth and private credits to GDP ratio as the proxy of financial development variables are used to control the results of the models. These variables are used to control the results in terms of country’s income growth and financial development levels and the World Bank’s World Development Indicators database is used to construct these indicators.

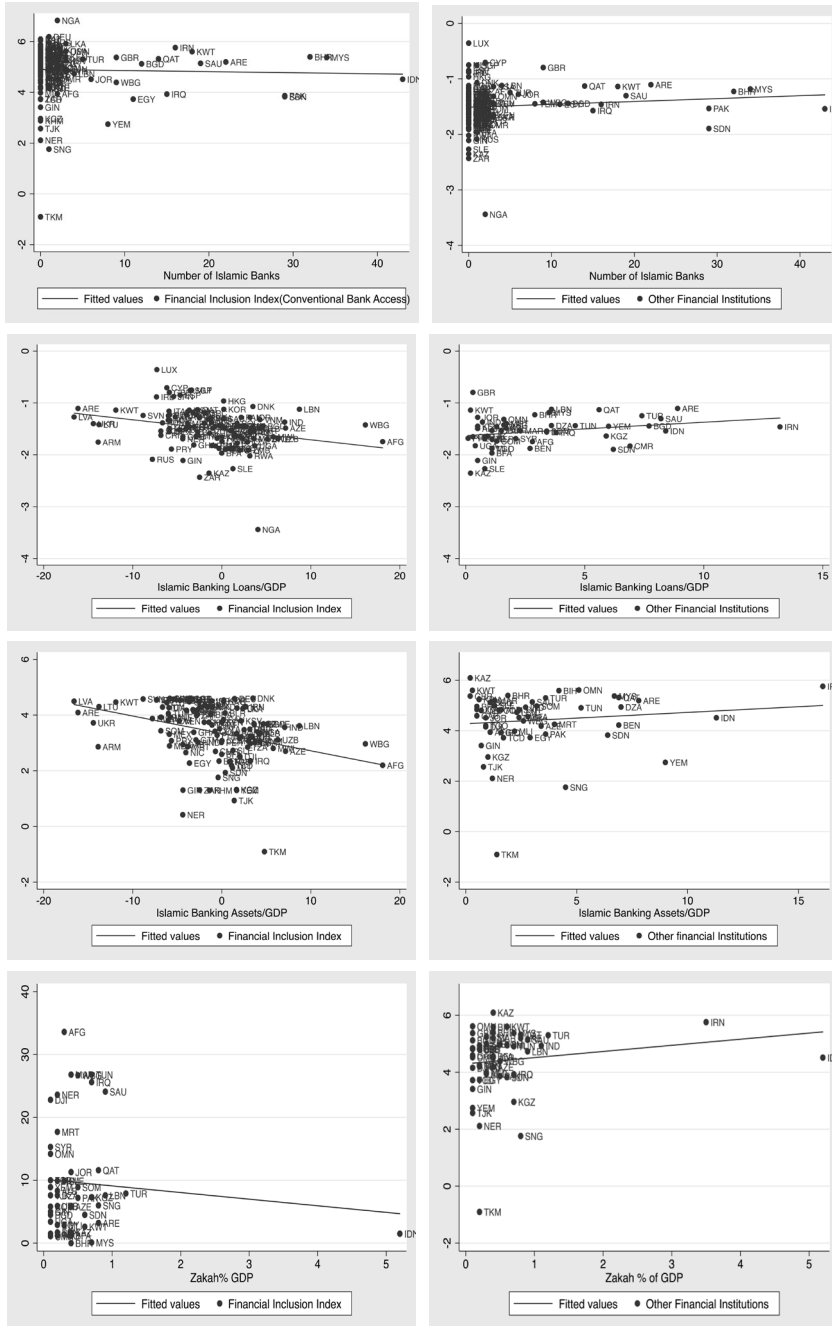
³⁰ Patrick Imam and Kangni Kpodar, *Is Islamic banking good for growth*, (Washington, D.C.: International Monetary Fund, 2015), <http://www.imf.org/external/pubs/cat/longres.aspx?sk=42871.0>.

³¹ *Ibid.*

³² *Ibid.*

³³ Thorsten Beck and Asli Demirgüç-Kunt and Ouarda Merrouche, “Islamic vs. conventional banking: Business model, efficiency and stability”, *Journal of Banking and Finance*, 37, p. 433-447.

Figure 2. Correlates of Financial Inclusion proxies against Islamic Banking products



In particular, starting clockwise from the upper left corner, the first sets of graphs show the number of Islamic banks against access to conventional banks and other financial institutions for the average of years from 2004 to 2011. The second sets of graphs explore the Islamic banking loans to GDP ratio against access to financial services from both institutions. The third one shows the Islamic banking total assets to GDP ratio against the proxies of financial inclusion. Finally, the last sets of graphs explore the Zakah % of GDP for the countries against access to financial services from both institutions. The data show that all the products of Islamic financial institutions above negatively associated with conventional bank base access, while they are positively associated with access from other financial institutions. There are some common outlier countries in the data such as Turkmenistan, Nigeria, Niger, and Afghanistan as it can be seen from the graphs. As the robustness check we will extract these countries from the data and rerun the estimation models to assess the impacts of outliers.

Adopting the arguments and methodologies in Global Financial Development Report³⁴, Demirguc-Kunt et al.³⁵, and Naceur et al.³⁶ this paper assesses the link between Islamic finance and financial exclusion using OLS regressions. Furthermore, as the modification of the results in the literature, we use Islamic banking products to assess the mechanism by which the impact of Islamic finance on financial exclusion occurs. This additional analysis is one of the main contributions of this paper.

Following the studies in the literature, this paper begins by investigating the OLS models to explore the linkage between financial exclusion and Islamic finance. These models are used for both sets of the samples above. The basic regressions are conducted as follows:

$$Y_i = \alpha + \beta' X_i + \varepsilon_i \quad (1)$$

Where Y_i is the dependent variable, X represents the vector of explanatory variables as explained above and ε_i is the usual stochastic term.

There are two different proxies of financial inclusion as the dependent variables with two different regressions. These two proxies of financial inclusion are used in all regression models for all empirical models. Regarding the Islamic banking access, we first use the number of Islamic financial instituti-

³⁴ Ibid.

³⁵ Ibid.

³⁶ ?

ons in the relevant countries and Islamic banking dummy variables to assess the impact of Islamic finance on financial access in this paper.

Empirical Results

All Countries Sample

Table 1 confirms that higher levels of the indicators of Islamic finance are significantly associated with lower levels of conventional bank base financial access, even after controlling for levels of religiosity indicators and macro-economic stability variables as GDP per capita and private credit to GDP ratio. The Islamic banking products also negatively and significantly enter in the estimation models, except for deposit accounts. Since, we regress Islamic banking products in separate regression equations because of the high correlations amongst them, these results are accurate. Changing the explanatory variables changes coefficient and significance of some key control variables such as Muslim population and no account due to religious reasons indicators as the proxy of religiosity. Overall, results show that Islamic banking in all countries sample negatively and significantly associated with conventional bank base access, and the country specific control variables do not alter these results.

In particular, these results show that higher levels of specific Islamic banking products such as loans, and total assets percentage of GDP, stronger capitalization ratio of Islamic banks, and higher levels of percentage of zakah and murabahat transactions are associated with lower conventional bank access in the sample countries. Meanwhile, percentage of Islamic banking loans, assets, and deposits ratio variables, which are also considered as Islamic banking growth indicators, are found significantly and negatively associated with commercial bank outreach and the access to and use of commercial banking services in this section.

Furthermore, the levels of religiosity indicators such as percentage of Muslim population, religiosity, people have no account due to religious reasons are negatively associated with commercial bank base access. As explained above, religiosity indicators have negative and statistically significant association with financial inclusion, which is measured with commercial bank based access indicators. This result also supports the assumption that this paper relies on, which is the suggestion that the more religious (Islamic) people are; the less they use financial services. Hence, the impact of religious

indicators on people's preferences might explain the results of Islamic banking and its products above.

These results support the arguments in the literature, as Ghoul³⁷ argued that lack of access to Islamic financial institutions is one of the main reasons behind having low levels of financial access. Similarly, most researches on the literature such as Gerrard et al.³⁸, Metawa et al.³⁹, Naser et al.⁴⁰, Othman et al.⁴¹, Wakhid et al.⁴², Gait et al.⁴³, and Lee et al.⁴⁴ argued that religious beliefs are the most important reasons behind clients choosing Islamic banking services, which may decrease the level of access to financial services from conventional banks. Furthermore, as Karakaya et al.⁴⁵ and Okumus⁴⁶ stated, religious beliefs as being a Muslim are the most important reason behind the preference of using Islamic banking services in Turkey. Therefore, Muslim clients prefer to use Islamic financial services more, rather than conventional banking services.

However, when we rerun the regressions on the access indicator of other financial institutions, results are different with some exceptions. Islamic banking dummy and number of Islamic banks indicators along with Islamic banking products are positively and significantly associated with access from microfinance institutions, credit unions, and post offices services. Similarly, changing the main explanatory variables in each regression changes the coefficients and significance of some key control variables. In particular, significance of the proxies of religiosity change when we change the Islamic banks products for each regression. However, the results of economic growth and financial development proxies remain similar for each regression equation.

These results hold even after controlling for religiosity indicators and macroeconomic country specific factors. Unlike the previous regression results, %of Muslim population and % of religiosity variables significantly and positively enter the models. Furthermore, the indicators of Islamic banking growth are found significantly and positively associated with outreach of microfinance institutions, cooperatives, and post offices in this section.

³⁷ Ibid.

³⁸ Ibid.

³⁹ Ibid.

⁴⁰ Ibid.

⁴¹ Ibid.

⁴² Ibid.

⁴³ Ibid.

⁴⁴ Ibid.

⁴⁵ Ibid.

⁴⁶ Ibid.

Table 1. Cross-Country OLS Estimation of the Impact of Islamic Finance on Financial Inclusion in All Countries Sample

The first dependent variable is the financial inclusion index for model specifications (1) to (8). The second dependent variable is other financial institutions access indicator for model specifications (9), to (16). Regression equations are determined in the methodology section above. We use Islamic banking dummy and number of Islamic banks to assess the impact of Islamic finance on financial inclusion. In addition to this, improving the works in the literature, we add Islamic banking products to examine the mechanism behind this impact in this paper. Because of the high correlations amongst these products, we regress them one at a time in the regression equations. Furthermore, we add percentage of Muslim population, religiosity, and people have no account due to religious reasons indicators to control for the levels of religiosity in countries. Finally, GDP per capita and private credits/GDP indicators are used to control the results in terms of income growth and financial development levels of countries respectively. Robust Standard Errors are clustered by country. **, *, and * show significance levels at 1, 5, 10 % respectively.

Dependent Variable	Financial Inclusion Index (Commercial Bank Access)								Other Financial Institutions (Access from Microfinance Institutions)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Islamic Banking dummy	-0.040** (0.020)								0.181** (0.437)							
Number of Islamic Banks		-0.009* (0.002)								0.002* (0.015)						
Islamic Banking Loans%			-0.002* (0.001)								0.057* (0.043)					
Islamic Banking Assets %				-0.003 (0.001)								0.010* (0.054)				
Islamic Banking Deposits %					0.001* (0.0001)								0.003 (0.025)			
Islamic Banking Capital Ratio						-0.004 (0.015)								0.078* (0.079)		
Zakah %							-0.010* (0.016)								0.089* (0.077)	
Murabahat %								0.011* (0.016)								0.013* (0.091)
Religiosity %	-0.001 (0.001)	0.001 (0.001)	-0.001* (0.0001)	-0.002 (0.0007)	-0.001 (0.0008)	-0.004* (0.005)	-0.004 (0.005)	-0.003 (0.005)	-0.011* (0.007)	-0.011 (0.009)	0.016** (0.007)	0.013* (0.007)	0.014* (0.007)	0.012* (0.007)	0.014** (0.007)	0.014* (0.007)
Muslim %	-0.054* (0.030)	-0.041* (0.032)	-0.042* (0.031)	-0.034 (0.029)	-0.036* (0.030)	-0.265* (0.150)	-0.265 (0.156)	-0.228* (0.167)	0.275** (0.537)	-0.311* (0.670)	0.258** (0.538)	0.138** (0.562)	0.210 (0.573)	0.130** (0.467)	0.232** (0.534)	0.136* (0.724)
No Account due to Religious reasons	0.001 (0.001)	0.001 (0.001)	-0.001* (0.0006)	-0.0001* (0.001)	-0.0001 (0.001)	-0.002* (0.003)	-0.0003 (0.003)	0.0006 (0.003)	0.001 (0.015)	0.001 (0.021)	0.007 (0.014)	0.004* (0.015)	0.006 (0.015)	0.007 (0.015)	0.007 (0.015)	0.004 (0.019)
GDP per capita growth	0.002* (0.002)	0.001*** (0.010)	0.001*** (0.001)	0.0002*** (0.0002)	0.0004*** (0.0006)	0.0002*** (0.0005)	0.0002*** (0.001)	0.006*** (0.001)	0.006*** (0.001)	0.0005* (0.004)	0.003*** (0.0006)	0.0001*** (0.0004)	0.0001*** (0.004)	0.001*** (0.004)	0.0001*** (0.004)	0.0001*** (0.004)
Private Credits/GDP	0.001*** (0.003)	0.001** (0.001)	0.001*** (0.0002)	0.002*** (0.0002)	0.001*** (0.0002)	0.004*** (0.001)	0.004*** (0.001)	0.004*** (0.001)	0.018*** (0.005)	0.018*** (0.004)	0.017*** (0.004)	0.017*** (0.004)	0.017*** (0.004)	0.018*** (0.004)	0.017*** (0.004)	0.017*** (0.004)
Constant	0.079 (0.080)	-0.104 (0.085)	0.090 (0.084)	0.093* (0.082)	0.092* (0.083)	-2.301*** (0.530)	-2.304*** (0.531)	-2.280*** (0.525)	1.682*** (0.134)	1.819*** (0.138)	5.972*** (0.723)	5.794*** (0.690)	5.856*** (0.715)	5.656*** (0.684)	5.867*** (0.697)	5.803*** (0.750)
R-squared	0.479	0.505	0.657	0.655	0.649	0.533	0.534	0.536	0.414	0.409	0.504	0.485	0.484	0.514	0.490	0.485
Number of Observations	53	52	51	51	51	51	51	51	53	53	52	52	52	52	52	52

Table 2. Cross-Country OLS Estimation of the Impact of Islamic Finance on Financial Inclusion in Middle Eastern Countries Sample

The first dependent variable is the financial inclusion index for model specifications (1) to (8). The second dependent variable is other financial institutions access indicator for model specifications (9), to (16). Regression equations are determined in the methodology section above. We use Islamic banking dummy and number of Islamic banks to assess the impact of Islamic finance on financial inclusion. In addition to this, improving the works in the literature, we add Islamic banking products to examine the mechanism behind this impact in this paper. Because of the high correlations amongst these products, we regress them one at a time in the regression equations. Furthermore, we add percentage of Muslim population, religiosity, and people have no account due to religious reasons indicators to control for the levels of religiosity in countries. Finally, GDP per capita and private credits/GDP indicators are used to control the results in terms of income growth and financial development levels of countries respectively. Robust Standard Errors are clustered by country. ***, **, and * show significance levels at 1, 5, 10 % respectively.

Dependent Variable	Financial Inclusion Index (Commercial Bank Access)								Other Financial Institutions (Access from Microfinance Institutions)							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)
Islamic Banking dummy	-0.035*								0.180*							
Number of Islamic Banks_OIC		-0.001*								0.012*						
Islamic Banking Loans%_OIC			-0.002								0.058*					
Islamic Banking Assets%_OIC				-0.004*								-0.011				
Islamic Banking Deposits%_OIC					0.002*								0.005*			
Islamic Banking Capital Ratio_OIC						-0.002								0.079		
Zakah %_OIC							-0.002*								0.090*	
Murabahat %_OIC								0.002**								0.014*
Religiosity_OIC %	0.0002	0.0002	-0.0005*	-0.0005*	-0.0005	-0.0006*	-0.0006	-0.0006	0.012	0.011	-0.017*	0.014*	0.015*	0.012	-0.014*	0.013*
Muslim_OIC %	-0.055*	-0.041*	-0.042*	-0.035	-0.037*	-0.044*	-0.045	-0.039*	0.175*	0.121*	0.150*	0.038*	0.320*	0.030*	0.132*	0.045*
No account religious reasons_OIC	-0.001*	0.0004	-0.0001*	-0.0007*	-0.0001	-0.0003	-0.0002	0.0001*	0.001	0.002	0.007	0.005	0.005	0.008*	0.008	0.005
GDP per capita growth_OIC	0.0002**	0.001**	0.0007**	0.0006**	0.0006**	0.0001**	0.0003**	0.0005**	0.0001	0.002	0.0002	0.0002*	0.0002*	0.0002**	0.0002*	0.0002
Private Credits/GDP_OIC	0.0001	0.010	0.0009	0.0008	0.0008	0.0008	0.0008	0.0009	0.019	0.020	0.016	0.018	0.017	0.016	0.017	0.018
Constant	0.072	0.104*	0.091*	0.094*	0.093*	0.086*	0.084*	0.088*	0.670**	0.850**	0.572**	0.794**	1.456**	1.650**	1.365**	1.815**
R-squared	0.418	0.515	0.657	0.656	0.650	0.644	0.642	0.645	0.410	0.410	0.505	0.481	0.485	0.515	0.491	0.455
Number of Observations	52	52	51	51	51	51	51	51	53	53	52	52	52	52	52	52

As the robustness of the results we run the regressions omitting the outliers in the data. However, the results hold even omitting the outliers for both proxies of financial inclusion. These results are also consistent with literature. These results support the argument in Naceur et al.⁴⁷ that Islamic banking is associated with greater levels of financial inclusion, in terms of access

⁴⁷ Ibid.

from other financial institutions. In particular, adding the Islamic banking products into the regressions, our results improve their work by exploring the mechanism by which the impact of Islamic banking occurs. The results of regressions for the second proxy of financial inclusion are consistent with the literature. For instance, as Ghoul⁴⁸ argued that increasing the access of Islamic financial services may also increase the levels of banking penetration in the economy.

Middle Eastern Countries Sample

As seen in Table 2, Islamic banking dummy variable and the number of Islamic financial institutions significantly and negatively enter the model for commercial bank base financial inclusion. Regarding the Islamic banking products, they are found negatively and significantly associated with commercial bank base access except for Islamic banks deposits and murabahat variables. In particular, Islamic bank deposits percentage of GDP and percentage of murabahat variables positively and significantly enter the regression models for commercial bank base financial inclusion. However, Islamic banking loans and total capital ratio variables do not enter significantly in the regressions.

The positive association of deposits and murabahat transactions of Islamic banks with conventional banks in Middle Eastern countries can be explained as the nature of some Islamic financial institutions. Murabahat transactions, which are profit and loss sharing transactions, have the major share amongst Islamic banking products. Furthermore, most of the Islamic financial institutions contain commercial banking services, which mostly use retail deposit as the major funding source. Thus, in countries like Kuwait and Qatar, where Islamic banks are the major financial obstacle, Islamic banking murabahat and zakah transactions have positive association with conventional banking outreach.

Meanwhile, since percentage of Islamic banking loans, assets, and deposits ratio variables are also considered as Islamic banking growth indicators, we can interpret their association here as the impact of Islamic banking growth on commercial banking outreach in Mid-East countries. In doing so,

⁴⁸ Ibid.

in Mid-East countries, Islamic banking growth is found significantly and negatively associated with commercial bank outreach and the access to and use of commercial banking services in this section.

These results hold even after controlling for levels of religiosity indicators and macroeconomic country specific factors into the regression models. Accordingly, percentage of religiosity, percentage of Muslim population, percentage of people having no account due to religious reasons variables significantly and negatively associated with commercial bank base access in the regression models. Furthermore, income growth and financial development indicators are found positively and significantly associated in the models.

These results suggest that in Muslim dominant countries, higher levels of usage of Islamic financial products and higher levels of religiosity associated with lower commercial bank access. However, there are some exceptions for specific Islamic banking products such as percentage of murabahat and deposits in the regression models. As explained the details above, higher levels of these components of Islamic banks are associated with higher levels of commercial bank access.

In particular, percentage GDP of Islamic banking deposits, murabahat transactions, and zakah transactions are found positively and significantly associated with access from other financial institutions such as microfinance institutions, cooperatives, and post offices. However, Islamic banking total assets and total capital ratio variables are found insignificant. Meanwhile, as the proxies of Islamic banking growth, Islamic banking deposits percentage of GDP is found significantly and positively associated the outreach of microfinance institutions, cooperatives, and post offices.

The negative association of Islamic banking total assets with other financial institutions can be explained as the same reason we have given above. Therefore, the close link between some Islamic banks and conventional banking services, which rely on retail deposit as the major funding source, might also explain this negative association. In the meantime, in consistent with our results in this section, in countries like Kuwait and Qatar, where Islamic banks are the major financial obstacle, Islamic banking murabahat and zakah transactions more likely to have positive association with other financial institutions outreach.

Furthermore, the levels of religiosity variables such as percentage of Muslim population, religiosity, and people having no account due to religious reasons are found significantly and positively related with access from other financial institutions variable in the regression models. Finally, the macroeconomic control variables GDP per capita growth and private credits to GDP significantly and positively enter the models in this section. Overall, higher levels of Islamic finance components associated with higher levels of access from microfinance institutions, cooperatives, and post offices. The specific products of these financial institutions that are offered in the Muslim dominant countries can explain these results. Meanwhile, the results of the indicators of religiosity indicators in this section support this argument.

Overall, the absolute values of Islamic banking proxies and products are relatively higher in the commercial bank access regressions using all countries sample. In this regards, we might suggest that these results imply economically substantial impacts. For example, Islamic banking dummy variable's smallest coefficient in the commercial bank base access regressions for Middle Eastern countries sample is -0.001. Meanwhile, the mean and standard deviation amounts of commercial bank base access are 0.024 and 0.009, respectively. In this regard, the size of coefficients imply that if Islamic banking dummy and/or Islamic banking deposits indicators were used in all countries sample, their low levels of the impact on commercial bank base access would be larger. The amount of association between Islamic finance and other financial institutions outreach seem similar in case of both all countries and Mid-East samples.

These results are economically expected, as well as meaningful. In the meantime, they are consistent with literature. As argued in the study *The World Bank Global Financial Development Report*⁴⁹, the emergence of Islamic banks has a significant impact on the financial access of the households and small and medium scaled firms. Furthermore, as Demirguc-Kunt, Klapper, and Randall⁵⁰, argued that Muslims are less likely to use formal financial services such as having a bank account at a formal financial institution than non-Muslims. This may explain the negative association between financial inclusion and the percentage of Muslims in the model.

⁴⁹ Ibid.

⁵⁰ Ibid.

Moreover, as the one of the main contributions of this paper, modification and improvement of the results in Naceur et al.⁵¹ and Demirguc-Kunt, Klapper, and Randall⁵², we explore the mechanisms by which the impact of Islamic finance occurs on financial exclusion by subdividing the services of Islamic banks. We assess these services separately in both all countries and Muslim dominant countries samples to explain the mechanisms of the impact. Meanwhile, we improve their arguments by finding relatively stronger association between Islamic banking and financial inclusion using financial inclusion measures by Yorulmaz⁵³. However, our results only explore the degree of association between variables rather than mitigating endogeneity concerns and/or causal relationships.

⁵¹ Ibid.

⁵² Ibid.

⁵³ Ibid.

Conclusions

Regarding the impact of Islamic finance on voluntarily financial exclusion, we find evidence that higher levels of Islamic finance is associated with lower levels of conventional bank base financial access in both all countries and Middle Eastern countries. We find evidence that Islamic bank loans, deposits, and total assets percentage of GDP explain the impact of Islamic finance on conventional bank access in all countries. Meanwhile, Islamic bank loans, deposits, capital ratio, zakah, and murabahat percentage of GDP variables explain this impact in Middle Eastern countries. On the other hand, as one of our contributions to the literature, we find evidence that Islamic banking growth indicators are significantly associated with lower levels of commercial bank outreach and the access to and use of commercial banking services in both all countries and Mid-East countries samples.

Moreover, regarding the access from microfinance institutions, credit unions, and post offices services as the proxy of financial inclusion, we find evidence that Islamic bank indicators significantly associated with higher levels of access from other financial institutions in both all countries and Mid-East countries samples. Assessing the mechanisms of this impact, we find evidence that Islamic bank deposits, total assets, total capital ratio, zakah, and murabahat transactions % of GDP variables explain the impact of Islamic finance on access from other financial institutions in both all countries and Mid-East countries samples.

As discussed above, the impact of Islamic finance is relatively stronger in Mid-East countries since the effects of religiosity are stronger in Muslim dominant countries. In this regard, governments and policymakers should consider providing more *Shariah*-compliant financial services, removing caps of interest rates, and strengthening customer protection rules for religious clients to bring voluntarily excluded groups into the financial systems. Moreover, in order to combat with voluntarily financial exclusion, Middle Eastern countries governments should extend access to various *Shariah*-compliant financial services through existing channels of Islamic banks.

At this point, the term of 'Institutionalization' emerges as a need for Islamic redistributive instruments not only in Mid-East countries but also in worldwide. Starting from building and developing legal infrastructure of nation-wide specific institutions for such instruments above would facilitate

redistribution of wealth among people to achieve the target of economic and social justice and poverty alleviation. Finally, developing worldwide specific institutions of Islamic redistributive instruments would be a long-term target for policymakers. Since the analysis on the association between financial access and Islamic banking is rare in literature, this paper may stimulate more research in this area. The actual effects of Islamic finance on the involuntarily exclusion in different countries from different backgrounds still need to be explored like showing time trend with broader data and more indicators. Therefore, future works may concentrate on exploring this association using different strategies.

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