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DOES ISLAMIC BANKING PROMOTE FINANCIAL INCLUSION AMONG WOMEN IN OIC MEMBER COUNTRIES?

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ABSTRACT

Previously, women in Organization of Islamic Cooperation (OIC) member countries were reported to be more financially excluded compared to the global average. Hence, this study aims to have a closer look at the aspect of gender inequality in financial inclusion in OIC member countries. Specifically, it seeks to examine the role of Islamic banking in enhancing financial inclusion among women in selected OIC member countries empirically. This study frames its analysis based on annual economic and financial data for OIC member countries from several sources including the World Bank Global Findex and World Development Indicators for each respected country for the years 2011 and 2014 using ordinary least squares (OLS) estimation. The findings show significant improvement in the growth of women's account penetration for 2014, suggesting Islamic banking deepening has had a positive effect on financial inclusion among women in the OIC member countries under study. The significant positive effect of Islamic banking presence and accessibility of Muslim women to financial services indicates pivotal role of Islamic banking in promoting financial inclusion among women, enhance economic activities for women and reduce gender gap in finance. The finding helps to promote gender equality, empowerment and financial inclusion among Muslim women in OIC countries through Islamic banking services. The findings call for Islamic finance industry players to expand their outreach to Muslim clients and help policymakers to define their role more clearly in expanding financial inclusion, Islamic or otherwise, to Muslim adults.

Keywords: financial exclusion, gender equality, Islamic banking, Muslim countries, sustainable development goals (SDG), women empowerment

INTRODUCTION

Whilst United Nations' Sustainable Development Goal No. 5 on Gender Equality and Women's Empowerment (United Nations, 2015) promotes equality education, political prospects, and economic opportunities alike among women, according to the Global Financial Inclusion Database (Global Findex), in 2014 women made up a disproportionately large share of adults without bank accounts worldwide. Women in developing economies are 20% less likely than men to have an account at a formal financial institution, and 17% less likely to have borrowed formally in the past year (World Bank, 2017). These gaps persist across regions and within country income categories (Demirguc-Kunt, Klapper & Singer, 2013). While more women work today to support their families and engage in micro-entrepreneurial activities, exclusion from financial services is a huge barrier for economic empowerment (Hendriks, 2019).

In the same year of 2014, the largest gender gap of 7 to 9% was reported in Muslim centric regions, namely South Asia, the Middle East and North Africa (World Bank, 2017). Narrowing it down to the members of the Organization of Islamic Cooperation (OIC) countries, the largest financial gender gaps were reported in Saudi Arabia (14.2%), Turkey (24.7%) and the United Arab Emirates (23.4%). It is surprising as these countries are among Qatar, Indonesia, Saudi Arabia, Malaysia, UAE and Turkey (QISMUT) countries that have advanced Islamic financial development, especially in banking, with accumulated Islamic assets of USD1.7 trillion in 2017 (Thomson Reuters, 2018). Malaysia and Indonesia, on the other hand, reported almost no gender difference in financial accessibility. The above statistics raised concerns on the role of Islamic banking and finance in empowering women, promoting financial inclusion and addressing gender inequality, in order to achieve sustainable development goals and ultimately, *maqasid al-shariah* (the objectives of shariah).

This study aims to address the aspect of gender inequality in financial inclusion with respect to Islamic banking. It will first provide stylized facts on financial inclusion in selected OIC member countries. Secondly, it seeks to examine the role of Islamic banking in enhancing financial inclusion among women in OIC member countries empirically. This study is the first to offer a gender specific study of Islamic finance and banking and its inclusivity by providing evidence on the Islamic banking influence towards financial inclusiveness for women.

The paper is organized as follows: Section 1 gives insights on the issue of financial inclusion among women. Section 2 provides brief literature on relevant concepts and existing empirical works on women and financial inclusion as well as the role of the Islamic banking services. Section 3 discusses the research methodology and Section 4 analyses the results. Section 5 concludes the overall discussion.

RELATED STUDIES ON FINANCIAL INCLUSION

Financial Inclusion

Financial inclusion was first addressed in early 2000 by the United Nations who were concerned by the lack of financial access for the poor and its correlation to poverty. It is recognized as part of the economic development which discusses the efficiency of an inclusive economic system that ensures individuals are integrated into the economic, social and political institutions of the society (Oxoby, 2009). Nonetheless, it has drawn back from the idea of 'financial citizenship' discussed by Leyshon and Thrift (1993) where financial infrastructure withdrawal in Britain and the United States caused the poor and disadvantaged social groups to be excluded from access to financial services and become the 'non-citizens' of the financial system. The study was the first to mention the term 'financial exclusion' from the perspective of physical

and geographical accessibility. Kempson and Whyley (1999) later broadened the definition to reflect all individuals who are impeded from accessing formal financial services. This is how the concept of financial inclusion was derived. The World Bank (2013) defined financial inclusion as access by individuals and businesses to useful and affordable financial products and services that met their needs, delivered in a responsible and sustainable way. Thus, in the context of this study, financial inclusion is to be defined as accessibility in terms of account ownership, which measures the penetration into formal financial services. Financial inclusion was also the major subject discussed for its contribution to the macro economy. Among others, access to credit and savings are significant in encouraging consumption and savings and economic growth (Aportella, 1999; Bhattacharya & Wolde, 2010; Dupas & Robinson, 2009). Financial inclusion is also the subject addressed for inequality and poverty traps (Banerjee & Newman, 1993; Beck, Demirguc-Kunt & Levine, 2007; Galor & Zeira, 1993).

Meanwhile religious beliefs appear to be the least significant reason for not having a bank account (World Bank, 2017). To study this further, Jouti (2018) analyzed the issue of unbanked people with religious concerns from the perspectives of Islamic finance and concluded that Islamic finance can not only enhance financial inclusion but also create financial migration from conventional to Islamic banking system.

Financial Inclusion and Gender (In)Equality

In various studies, it is observed that gender inequality does exist in financial inclusivity, undermining the financial accessibility for women (Demirguc-Kunt, Klapper & Singer, 2013; Zhang & Posso, 2017). Demirguc-Kunt, Klapper and Singer (2013) found that legal restrictions such as the ability to work, to be the head of a household and to receive inheritance, contributes to the likelihood of a woman owning an account. Zhang and Posso (2017) found that participation in microfinance improves gender equality among women as it helps them to become financially independent and able to engage in income-generating activities, i.e., better financial inclusivity also promotes female empowerment (Ashraf, Karlan & Yin, 2010). Meanwhile, Kairiza, Kiprono and Magadzire (2016) found that a female entrepreneur is no less likely than a male counterpart to be financially included in the informal financial market. Ashraf, Karlan and Yin (2006, 2010) supported the hypothesis that having bank accounts encourages female empowerment. Thus, it is in our interests to investigate, at a macro level, whether women in OIC member countries are, generally, less inclusive than men in accessing financial services.

Financial Inclusion and Gender Equality: Islamic Perspective

Islam is instituted with its great value on social justice and equity for women. “For men is a share of what the parents and close relatives leave, and for women is a share of what the parents and close relatives leave, be it little or much - an obligatory share”, (Al-Quran, 4: 7). Sharia law has testified to a woman’s right in the administration of her own property, inheritance and earning her own wealth (Al-Quran 4:11-13, 20-21). There is also a gender specific injunction for both Muslim men and Muslim women to giving out zakat, “The belief that men and women are allies of one another. They enjoin what is right … and give zakah ...”, which shows that woman is not only allowed to own but is also accountable for her wealth (Al-Quran, 9: 71). The *maqasid al-shariah* of Islamic finance are wealth circulation, fair and transparent financial practices and justice, without discrimination by gender or income (Ismail et al, 2015). Ghazal and Zulkhibri (2016) developed Islamic Inclusive Growth Index based on *maqasid al-shariah* and highlighted that social inequality and social inclusion as one of the subcomponents of the measure. Henceforth, it is expected that Islamic finance will encourage a more inclusive financial system, especially in promoting equitable opportunities for financial access by women.

Exclusively, Islamic finance is addressing the issue of financial inclusion through risk-sharing contracts or alternative instruments for the redistribution of wealth (Mohieldin et al., 2016). The World Bank (2017) has recognized Islamic finance to be an effective tool for financing development in reducing poverty, expanding access to finance, developing the financial sector and building financial stability and resilience. However, it is a concern that usage and access to financial services among adults in Muslim countries are still hindered by religious requirements (Demirguc-Kunt, Klapper & Randall, 2013; Zulkhibri, 2016). Although Islamic banking is far from meeting its objective in shaping the society, Mohd Nor (2016) illustrated that the ideal concept of Islamic moral economy is closer to the characteristics of social banking, in which Islamic banks accentuate ethical values and social justice. Development of Islamic banking, especially the risk-sharing feature, is suggested to encourage financial inclusivity for Muslim consumers (Ben Naceur, Barajas & Massara, 2015; Mohieldin et al., 2016). Ahmed Shaikh et al. (2017) advised the role of Islamic banking in financial inclusion is to leverage on technology, utilize equity-based finance and focus on microfinance. Islamic microfinance is proposed as an instrument for income distribution through waqf, qard al-hasan, sadaqah and zakah (Ahmad & Salleh, 2016; Ahmed Shaikh et al., 2017; Mohieldin et al., 2016; Zulkhibri, 2016).

PREVIOUS EMPIRICAL STUDIES ON FINANCIAL INCLUSION

Account Ownership as Financial Inclusion Indicator

Previously, several indicators were used to indicate financial inclusivity. For instance, Beck, Demirguc-Kunt and Peria (2007) demonstrated an empirical relationship between financial accessibility and economic development at a cross-country level by using physical bank penetration and usage of banking services as indicators. Besides bank penetration, ownership of accounts in formal financial institutions (Demirguc-Kunt & Klapper, 2013; Sarma & Pais, 2011; Sarma, 2008), formal savings and borrowings (Demirguc-Kunt & Klapper, 2013); usage of banking services in terms of volume of credit and deposit (Sarma & Pais, 2011), and availability of banking services measured as the number of banking branches and ATMs (Sarma & Pais, 2011) are employed to indicate financial inclusivity. For this study, we use ownership of accounts at financial institutions as they provide a broader perspective for financial inclusion. It also shows the first penetration of users to financial services, which best reflects the accessibility of the services.

Islamic Banking Presence and Activities

In representing Islamic finance, the simplest form of Islamic banking indicator used by Ben Naceur, Barajas and Massara (2015) and Evans and Adoeye (2016) is a dummy variable for the presence of Islamic banking in a country. Ben Naceur, Barajas and Massara (2015) further suggested to proxy the presence of Islamic banking activities using the total number of Islamic bank branches, and to measure the depth of Islamic activities using total Islamic banking assets scaled to adult population. Other sophisticated indicators for Islamic banking presence are represented by the ratio of Islamic banking assets to conventional banking assets, or the ratio of deposits to conventional banking (Lebdaoui & Wild, 2016). Nonetheless, there is mixed evidence on the relationship between an Islamic banking presence and activity of financial inclusion. Ben Naceur, Barajas and Massara (2015) found a weak and tentative relationship while Evans and Adoeye (2016) concluded that the Islamic banking presence is positive and significant to financial inclusivity in South Africa.

Controlled Structural Factors and Other Determinants

Following the categorization by Martinez and Krauss (2015), financial inclusivity could be determined by income factors, macroeconomic environments, formal financial development, geography, technology and knowledge. Income factor, indexed using GDP per capita, is important in explaining cross-country differences in the usage of formal accounts (Beck, Demirgüç-Kunt, & Maksimovic, 2005; Demirguc-Kunt & Klapper, 2013). Decline in GDP per capita affects deposit volume hence it is significantly and positively associated with account penetration (Ardic, Heimann & Mylenko, 2011; Ben Naceur, Barajas & Massara, 2015; Kendal et al., 2010). Ben Naceur, Barajas and Massara (2015) followed the work of Beck Beck, Demirgüç-Kunt and Maksimovic (2005) to include population as part of the controlled variables for demographic differences. Both Sarma and Pais (2011) and Adoeye and Evans (2016) found positive and significant effects of population concentration on deposit account penetration. The rural population is another indicator that reflects the regional demography and so accounts for the geographical barrier in the delivery of banking services (Lebdaoui & Wild, 2015).

Other Macroeconomic Environments

These variables are measured using deposit interest and inflation rates to provide differences on country level stability. The deposit rate is significant and positively correlated to the number of deposit accounts (Ardic, Heimann & Mylenko, 2011; Evans & Adoeye, 2016; Martinez & Krauss, 2015). Countries with a lower interest rate spread, i.e., lending rate minus deposit rate, show a higher number of deposit accounts per 1,000 adults (Ardic, Heimann & Mylenko, 2011). It was found that inflation rate has a significant negative relationship on deposit volume (Kendal et al., 2010). However, Ardic, Heimann and Mylenko (2011) found no significant relationship to the number of depositors.

The indicator for formal financial development is measured using money supply as a percentage of gross domestic product and domestic credit to the private sector ratio to GDP (Evans & Adoeye, 2016; Martinez & Krauss, 2015). Money supply is used as a proxy to availability of liquidity supply in the economy for financial deepening. Private sector borrowing, on the other hand, measures the volume of financial intermediary activities in the country. Both studies found a positive and significant effect of private lending and money supply on financial inclusivity.

Other literature also studied the role of employment, exchange rates and net aid inflows as part of the macroeconomic environment indicators (Martinez & Krauss, 2015), adult literacy rate to measure the quality of human capital (Sarma & Pais, 2011), technological infrastructure in terms of internet usage, servers and mobile phone usage (Adoeye & Evans, 2016; Martinez & Krauss, 2015; Sarma & Pais, 2011).

METHODOLOGY

Model Specification

To examine the role of Islamic banking in enhancing financial inclusion among women in OIC member countries empirically, this study adopts the model by Adoeye and Evans (2016) as it is more inclusive in explaining financial inclusion by introducing an Islamic banking dummy. This dummy variable is used as a proxy for the presence of Islamic banking activities in the country. The dependent variable, which is the financial inclusion indicator of women, FI is measured by account ownership by females aged 15 and above in each respective country i. The independent variables consist of: (i) variable of research interest, i.e., proxy for the presence of Islamic banking activities ($DummyIB_i$), (ii) macroeconomic environmental

factors (X_i), such as money supply, private lending, rural population, deposit rate and interest rate; and (iii) control variables (Z_i), such as income (GDP) per capita and population. The model is as follows:

$$FI_i = \beta_0 + \beta_1 DummyIB_i \quad + \beta_2 X_i + \beta_3 Z_i + \varepsilon_i \qquad (1)$$

To control the structural characteristics of the socio-economic environment and policy factors, Beck and Feyen (2014) proposed the use of the log of GDP per capita Z_i and the log of the population Z_i, respectively to account for demand and supply side constraints related to low-income, market size and geographic barriers. The added specification to the model in (1) is as follows:

$$FI_i = \beta_0 + \beta_1 DummyIB_i \quad + \beta_2 X_i + \beta_3 logZ_i + \varepsilon_i \qquad (2)$$

To study the effects on development of Islamic banking institutions, Ben Naceur, Barajas and Massara (2015) introduced an alternative indicator for Islamic banking, i.e., total Islamic banking assets per adult to reflect the depth of Islamic banking activities in the country i. Following this, the model was expanded by including total Islamic banking assets per adult, $Asset_i$, as follows:

$$FI_i = \beta_0 + \beta_1 DummyIB_i \quad + \beta_2 X_i + \beta_3 logZ_i + \beta_4 Asset_i + \varepsilon_i \qquad (3)$$

Further enhancement made to the model is through the introduction of an interaction variable between the presence of Islamic banking activities ($DummyIB_i$) and total Islamic banking assets ($Asset_i$) to indicate the co-movement of presence and volume of Islamic banking activity scaled by adult population. It is also interesting for this study to examine the parallel importance of both the presence and the volume of Islamic banking activities. The model with the interaction variable, $InteractIB_i = DummyIB_i . Asset_i$ is as follows:

$$FI_i = \beta_0 + \beta_1 DummyIB_i \quad + \beta_2 X_i + \beta_3 logZ_i + \beta_4 Asset_i + \beta_5 InteractIB_i + \varepsilon_i (4)$$

The final empirical model is as equation (4) above and will be used for estimation purposes.

Sample and Variables

This study frames its analysis based on cross-country using ordinary least squares (OLS) estimation. As far as data are concerned, only 34 out of 57 OIC state members (60%) are included as sample countries. The overall classification of Islamic banking countries is as depicted in *Table 1*.

Table 1.
Classification of OIC Countries with and without Islamic Banking Services

OIC Countries with Islamic Banking				OIC Countries with No Islamic Banking			
1.	Bahrain	12.	Pakistan	22.	Benin	29.	Mali
2.	Bangladesh	13.	Qatar	23.	Chad	30.	Morocco
3.	Djibouti	14.	Saudi Arabia	24.	Comoros	31.	Niger
4.	Egypt, Arab Rep.	15.	Senegal	25.	Gabon	32.	Sierra Leone
		16.	Sudan	26.	Guinea	33.	Tajikistan
5.	Indonesia	17.	Turkey	27.	Kazakhstan	34.	Togo
6.	Iraq	18.	Uganda	28.	Kyrgyz Republic		
7.	Jordan						

8.	Kuwait	19.	United Arab Emirates
9.	Malaysia	20.	West Bank and Gaza
10.	Mauritania	21.	Yemen, Rep.
11.	Nigeria		

Source: World Bank (2017).

The detailed description of these variables is summarized in Table 2.

Table 2.
Description of Variables

Variable		Definition	Measure	Source
Dependent variable				
Financial Inclusion, female	*FI*	Access to formal finance for women	Account at financial institutions by female adult aged 15 and above, per 1,000 female adults	World Bank Global Findex (2011, 2014)
Independent variables				
(i) Islamic banking indicators				
Islamic banking	*DummyIB*	Islamic banking presence	Dummy variable (1 if the country has Islamic banking presence and activity, and 0 otherwise)	Bankscope and World Bank Islamic Banking indicators (2017), where available
Islamic banking assets	*Asset*	Depth of Islamic banking activities	Total Islamic banking assets per adult (USD)	Bankscope and World Bank Islamic Banking indicators (2017), where available
Interaction between the presence of Islamic banking activities and total Islamic banking assets	*InteractIB*	Co-movement of presence and volume of Islamic banking activity	*DummyIB x Asset*	
(ii) Macroeconomic environment factors				
Money supply	X_1	Financial depth	Broad money (% of GDP)	
Private lending	X_2	Volume of financial intermediation	Domestic credit provided by financial sector (% of GDP)	

Rural population	X_3	Demographic constraints for financial services	Rural population	World Bank World Development Indicators (2017)
Inflation rate	X_4	Economic stability	Inflation rate	
Deposit rate	X_5	Economic stability	Deposit interest rate	
(iii) Control variables				
Income	Z_1	Demand and supply-side constraints related to income	Log of gross domestic product per capita (current USD)	World Bank World Development Indicators (2017)
Population	Z_2	Market size	Log of total population	

Data and Source of Data

Annual data for OIC member countries from several sources are used for this study. At the cross-country level, Sarma (2008) and Ben Naceur, Barajas and Massara (2015) both suggested bank accounts percent of population as an indicator to measure penetration. A similar measure is adopted in this study with specific gender interest; bank accounts by female adults aged 15 and above, percent of population, to constitute our dependent variable. Nonetheless, the World Bank initiative to provide a gender segmented study, i.e., The Global Findex is very recent and hence the segmented data are only available for three (3) year interval starting 2011 with 2017 being the latest data sets. This study only incorporates 2011 and 2014 data sets as commencing 2017, new measurement of certain indicators being used. To maintain consistency in estimation for 2011 and 2014, we left out 2017 data sets. Accessibility to finance in terms of ownership of accounts gives a broader scope for measuring bank penetration compared to formal savings and borrowings.

As an indicator of Islamic banking, the asset size of Islamic banks operating in the country is grouped and scaled to the number of adults. The data on Islamic banking may provide irregularities due to various definitions of an Islamic bank and no single comprehensive database for reference. Two main sources are the Bankscope database for balance sheet information on individual banks in each country categorized as Islamic banks, and the Islamic Banking Database by the World Bank is used to complement the data as it provides a wider reportage of Islamic banks to include Islamic banking windows.

The conditioning set of income measured as gross domestic product (GDP) per capita and population is employed to ensure that structural or non-policy factors that might be explaining the differences across the country are controlled. Environmental factors, such as money supply, credit to private sectors, rural population, inflation and interest rates are used to reflect the macroeconomic environment in terms of financial deepening, volume of intermediation, demographical factors and stability measures. These

variables are extracted from the World Bank Global Findex and World Development Indicators database for each respected country for the years 2011 and 2014.[1]

FINDINGS AND DISCUSSION

Stylized Fact

Out of 34 OIC member countries studied, only 21 are classified as countries with Islamic banking services. Comparing the world statistics and OIC group, mean growth rate of financial inclusion in terms of account penetration for women, is analyzed using the World Bank's Global Findex 2011 and 2014 data. To compare the relative levels of financial inclusion, we provide two analyses: (i) OIC member countries as a single group; and (ii) groupings of OIC member countries based on the classification by the World Bank using per capita income.

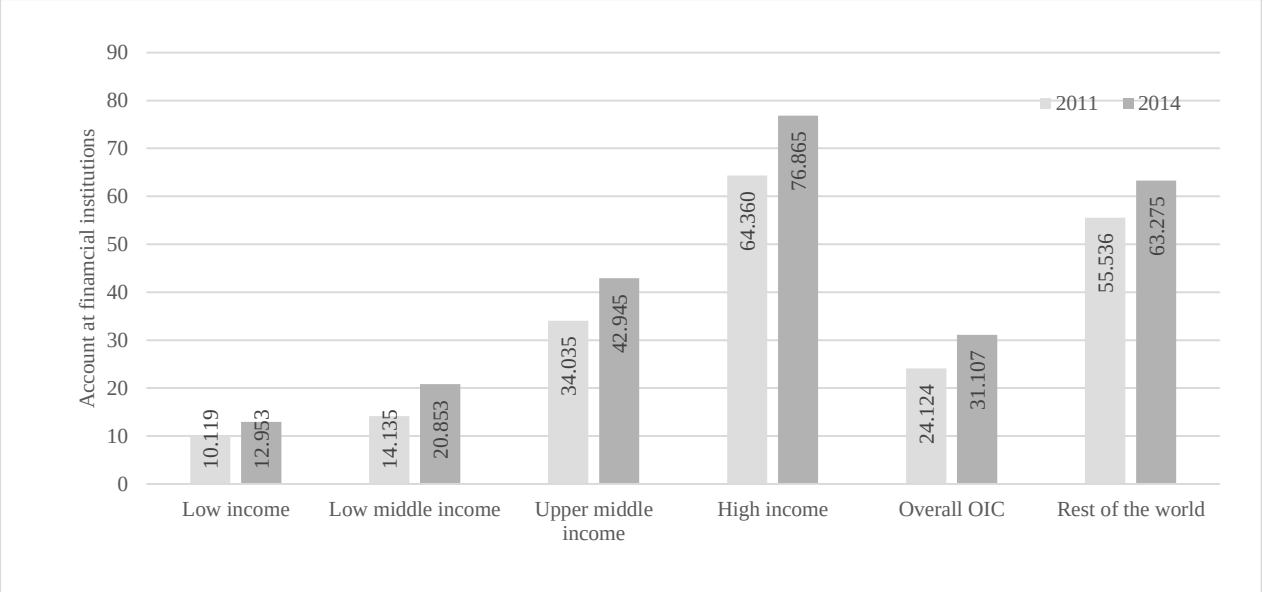

Figure 1. *Overall Account Penetration Per 1,000 Adults in OIC Member Countries (2011 & 2014).*

Figure 1 shows the comparison of overall financial inclusion, both men and women, between the mean of OIC member countries as a single group and the mean of the other countries. It was found that average improvement of financial inclusion in OIC member countries underperformed at an average of 6.98 percentage points compared to 7.74 percentage points in the rest of the world. However, looking at each economy group, Upper Middle Income and High Income of OIC member countries reported superior improvement at 8.910 and 12.5 percentage points respectively.

Separately, analysis for financial inclusion among women are shown in *Figure 2*. Account penetration for females in the OIC group on average grew by 7.547 percentage points, while the rest of the world grew at 7.669 percentage points. However, this was largely due to substantial growth of 16.846 percentage points in the High Income OIC member countries.

[1] The Global Findex database is the world's most comprehensive data set on how adults save, borrow, make payments and manage risk. Launched with funding from the Bill & Melinda Gates Foundation, the database has been **published every three years since 2011**. The data are collected in partnership with Gallup, Inc., through nationally representative surveys of more than 150,000 adults in over 140 economies. **The 2017 edition includes updated indicators** on access to and use of formal and informal financial services. It also adds new data on the use of financial technology (fintech), including the use of mobile phones and the internet to conduct financial transactions.

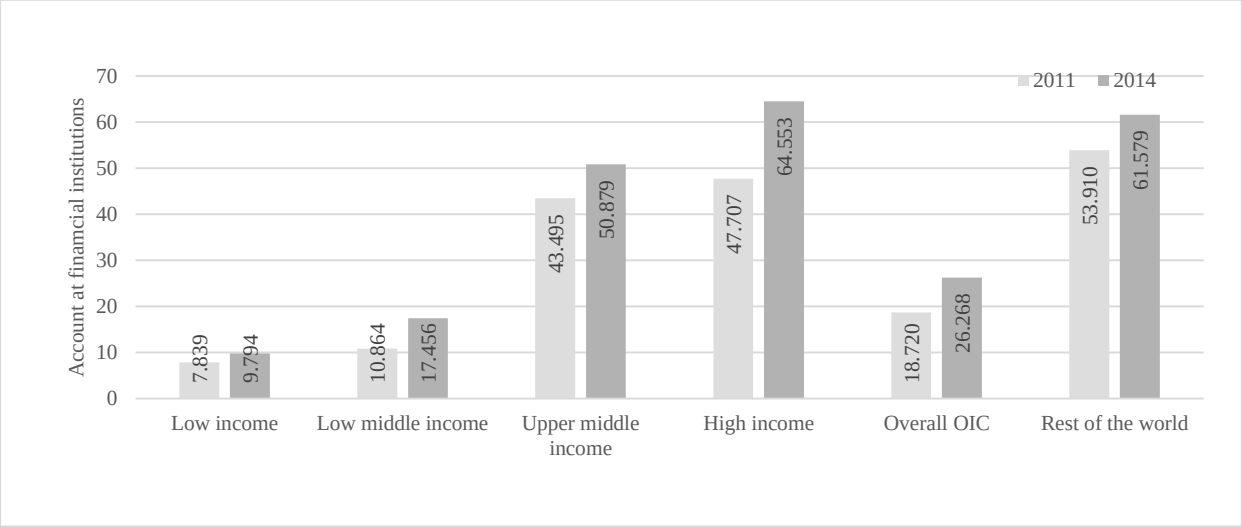

Figure 2. *Account Penetration for Women (Per 1,000 Female Adult) in OIC Member Countries (2011 & 2014).*

To reflect on the gap in financial inclusion, differences between account ownership of male adults and female adults are counted for the years 2011 and 2014 as illustrated in *Figure 3*. Overall, OIC member countries showed a decrease in the gender gap of 1.4 percentage point while the rest of the world recorded a gender financial gap larger by 0.1 percentage point. Unfortunately, among OIC member countries, only High Income and Upper Middle-Income economies showed a reduced gender gap at 11.5 and 0.3 percentage points respectively.

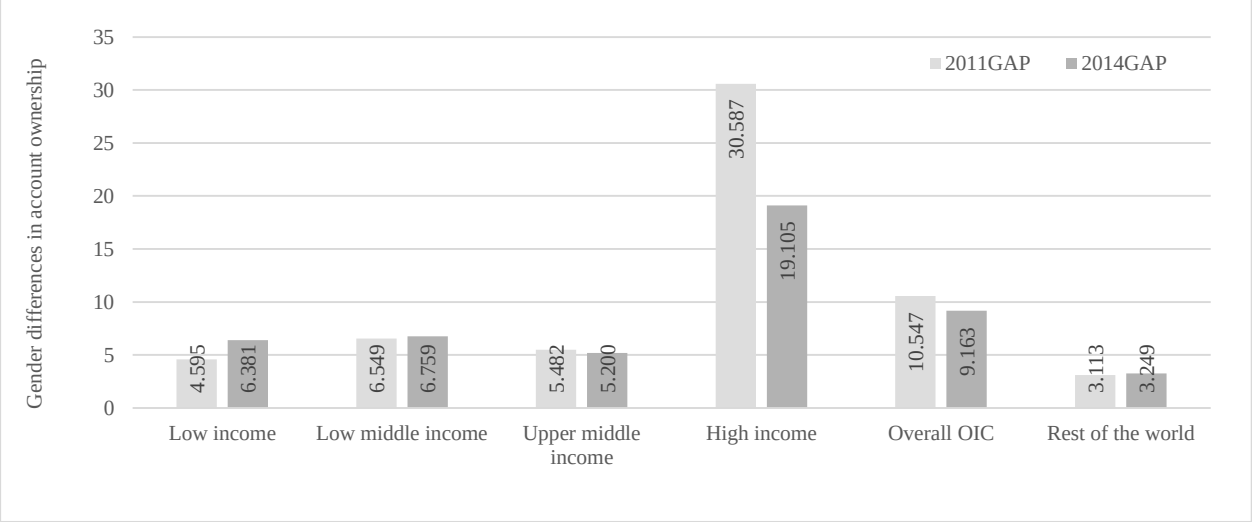

Figure 3. *Account Ownership Gap between Gender in OIC Member Countries (2011 & 2014).*

Looking at these three facts, High Income OIC economies overtake the performance of financial inclusion in the rest of the world. This triggers the point of this study to check whether Islamic banking contributes a significant factor specifically in inclusivity of women in finance.

Empirical Results and Analyses

Descriptive statistics are presented in *Table 3*. To check on collinearity, correlation coefficients between independent variables were calculated and reported in *Table 4.* A correlation coefficient of less than 0.7 means that variables are not correlating, which means no multicollinearity exists.

Table 3
Descriptive Statistics

Variable		Obs.	Mean	SD	Minimum	Maximum
Dependent variable						
Financial Inclusion, female	*FI*	65	28.535	27.818	0.000	98.653
Independent variables						
(i) Islamic banking indicators						
Islamic Banking	*DummyIB*	65	0.769	0.425	0.000	1.000
Islamic Assets	*Asset*	65	4,386.133	10,907	0.000	56,759.340
(ii) Macroeconomic environment factors						
Money supply	X_1	65	59.428	41.746	12.052	256.927
Private lending	X_2	65	43.304	36.518	4.849	151.068
Rural population	X_3	65	41.470	23.780	0.000	85.200
Inflation rate	X_4	65	6.349	6.829	-3.704	36.908
Deposit rate	X_5	65	5.616	4.996	0.000	20.000
(iii) Control variables						
Income	Z_1	65	8.350	1.507	5.928	11.372
Population	Z_2	65	16.612	1.662	12.902	19.357

Table 4.
Correlation between variables

	Income	*Population*	*Money*	*Lending*	*Rural*	*Inflation*	*Deposit*	*DummyIB*	*Asset*	*InteractIB*
Income	1.000									
Population	(0.215)	1.000								
Money	0.403	(0.061)	1.000							
Lending	0.538	0.038	0.782	1.000						
Rural	(0.865)	0.360	(0.503)	(0.520)	1.000					
Inflation	(0.384)	0.326	(0.332)	(0.352)	0.451	1.000				
Deposit	(0.541)	0.327	(0.242)	(0.310)	0.434	0.378	1.000			
DummyIB	0.246	0.244	0.283	0.262	(0.288)	0.082	0.036	1.000		
Asset	0.573	(0.437)	0.134	0.177	(0.533)	(0.226)	(0.322)	0.220	1.000	
InteractIB	0.572	(0.435)	0.134	0.177	(0.532)	(0.225)	(0.322)	0.221	1.000	1.000

Estimated results for the role of Islamic banking on financial inclusion among women in OIC member countries is shown in *Table 5*. Wald test returned p-value of 0.000 for each specification, rejecting null hypothesis of no joint significance of the regression. Breusch-Pagan-Godfrey Heteroskedasticity Test showed homoscedastic error terms at 5% significance level. The control variable of population density is dropped from the regression as it yields heteroskedastic error terms which violate Gauss-Markov assumptions. The Durbin Watson test for autocorrelation reported to be larger than upper critical value of 1.964, satisfying no positive autocorrelation in the model. Therefore, the OLS estimators of the model are unbiased and BLUE.

Table 5.
Estimation Results

Dependent Variable: Financial Inclusion (Women in OIC Member Countries)

Variables		**Coefficients**
(i) Islamic banking indicators		
Islamic banking presence	*DummyIB*	-8.234
		(5.749)
Islamic banking assets	*Asset*	-0.114**
		(0.014)
Co-movement of presence and depth of Islamic banking	*InteractIB*	0.114**
		(0.045)
(ii) Macroeconomic environment factors		
Money supply	X_1	-0.162*
		(0.082)
Private lending	X_2	0.598***
		(0.098)
Rural population	X_3	-0.033
		(0.214)
Inflation rate	X_4	0.243
		(0.349)
Deposit rate	X_5	0.591
		(0.514)
(iii) Control variables		
Log Income	Z_1	7.052*
		(3.631)
Log Population	Z_2	2.334
		(1.807)
Wald test (Prob. Chi-sq)		0.000
Hetero test: BPG (Prob. Chi- Sq)		0.0745
Durbin Watson test		2.2738

Note: This Table shows the estimated coefficients, standard error (in parentheses). Significance levels of 10 percent (*), 5 percent (**), and 1 percent (***), subsequently.

Income per capita is statistically significant and positive, suggesting a weak relationship to financial inclusion. As commented by Ben Naceur, Barajas and Massara (2015), the relative weakness may be

due to some of the control variables being correlated to income per capita. However, a positive GDPC coefficient across specifications showed that high income per capita is conducive to a highly inclusive financial system (Adoeye & Evans, 2016; Sarma & Pais, 2011).

Private lending and money supply, in ratio of GDP, are also measures of financial deepening. Lending shows a significant and positive relationship which is consistent with Evans and Adoeye (2016), and Martinez and Krauss (2015). However, money supply in the economy has a significant and negative relationship to the financial inclusion of women. This indicates that more liquid money available in circulation reduces the financial inclusivity for women in OIC member countries. This finding contradicts prior studies by Martinez and Kraus (2015) and Evans and Adoeye (2016). This is due to the cultural barriers and legal restrictions imposed on women, such as prohibition from working, inheritance and heading the household, which makes women less likely to own an account (Demiguc-Kunt, Klapper & Singer, 2013).

Both deposit interest and inflation rates are positively correlated to financial inclusion, but insignificant. Evans and Adoeye (2016) also report the same result in their study of African countries. Total population and rural population percentages also indicate an insignificant relationship to financial inclusion. Meanwhile, the rural population shows mixed results due to high correlation between the control variables in explaining its relationship to financial inclusion.

Islamic banking indicators in the form of interaction variables of Islamic banking presence and depth of Islamic banking activities as measured by total Islamic banking assets per 1,000 adults, exhibit a significant positive relationship with financial inclusivity of females in OIC member countries. This is consistent with the findings by Ben Naceur, Barajas and Massara (2015) and Evans and Adoeye (2016). However, a dummy variable of Islamic banking presence showed a negative and insignificant relationship, while the depth of Islamic banking activities was reported to have an insignificant mixed contribution to financial inclusion for women. Nonetheless, as suggested by Ben Naceur, Barajas and Massara (2015), only the interaction variable is of interest to this study.

CONCLUSION

Previously, women in OIC member countries were reported to be more financially excluded compared to the global average. The findings from this study show significant improvement in the growth of women's account penetration for 2014, suggesting Islamic banking deepening has had a positive effect on financial inclusion among women in the OIC member countries under study. Overall, this study signifies that Islamic banking is important in providing a more inclusive financial system for Muslim women, especially those who are hindered from financial inclusion due to religion. This study should encourage policy makers and government to empower financial inclusivity for women through supporting market initiatives to enlarge the supply of Islamic banking products and services, lift legal restrictions on women that reinforce financial exclusion and establish task force to undertake research projects in understanding the financial landscape for women. In general, unaffordable financing for the low-income group is a huge barrier for their access to financial facilities. The emergence of Islamic social finance as an alternative to the formal resources is highly commended but each with their own limit; waqf is difficult to be mobilized while zakat for its collection and distribution. Fintech provides effective remedy for these constraints. Government and agencies could propose a development plan for an efficient Islamic resources mobility by regulating social finance as part of a formal channel with proper governance and develop strategic financial technology to enhance outreach to the excluded group. Central banks and financial institutions should introduce Islamic banking services and deliver continuous development of its facilities and operations to provide a more inclusive financial system. Limiting or diminish the intermediary's structure may allow for ease of direct access and penetration to

the financial market. Providing financial literacy through Islamic finance education and advice and increase social awareness will also help in educate women and cater for self-exclusion.

It is hoped that the findings would help the Islamic finance industry leaders expand their outreach to Muslim clients and help policymakers to define their role more clearly in expanding financial inclusion, Islamic or otherwise, to Muslim adults. Nonetheless, inconsistencies in previous studies may be due to the limitation in data sampling as only two-year gender segmented data are available and incomplete data of all OIC member countries. Lack of access to extensive resources for Islamic banking also caused a drawback to our study scope especially in Islamic banking indicators. Future research could incorporate other indicators of Islamic banking facilities such as the number of Islamic bank branches and proximity measures. Measuring financial inclusion in terms of savings and credits would also add a different perspective and a more comprehensive insight.

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