

Research Paper

Islamic Banking Financial Inclusion and Tax Revenue in OIC Countries: To what extent do they correlate?

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ABSTRACT

Tax revenue of Organization of Islamic Cooperation (henceforth OIC) countries has not reached the global average, and so has the financial inclusion. Notwithstanding this fact, few researchers have addressed the effect of financial inclusion on tax revenue in the context of Islamic finance while it is undeniably having significant connection to the real sector. Drawing on this crucial issue, the present study calls into the possible effect of Islamic banking financial inclusion on tax revenue in eleven countries of OIC membership consisting of Indonesia, Jordan, Kazakhstan, Kuwait, Malaysia, Nigeria, Oman, Pakistan, Saudi Arabia, Turkey, and the United Arab Emirates in the period of 2013 to 2019. The data were analyzed under the procedure of panel data regression using fixed effect model. The result depicted that Islamic banking financial inclusion, in terms of financial access and financial usage, had no significant effect on tax revenue of the OIC countries. This result is reasonable, since Islamic banking financial inclusion still requires massive promotion particularly by the OIC countries included in this study. Hence, this study leaves an implication for OIC countries to foster Islamic banking financial inclusion as a crucial effort to increase the tax revenue, in which Islamic banks play a promising role for sharia-compliance-based financial transactions in the recent years.

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Introduction

The role of taxes for a country is as an instrument in order to provide financing for development in that country. An effective tax system can mobilize the revenue needed for development, achieve distributive justice, and promote sustainable development (Ezenagu, 2021). Unfortunately, the performance of state revenues from taxes has not been optimal. This can be seen from the small ratio of tax revenue to gross domestic product in several countries that are members of the Organization of Islamic Cooperation (OIC). According to World Bank data from 2008 to 2019, the average Tax Revenue in percent of GDP (TXR) in the world was 13.39% while the average for OIC countries was only 11.54% as can be observed in graph 1 which reveals comparative data between the average Tax Revenue in percent of world GDP and OIC countries.

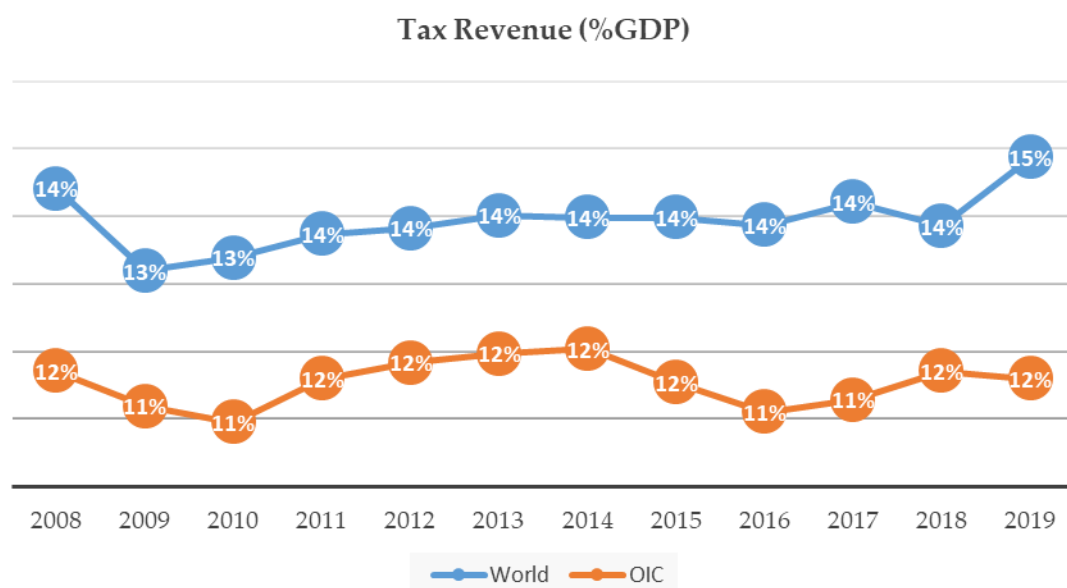


Figure 1: Comparison of OIC and World Tax Revenue

On the other hand, in general, financial inclusion in OIC countries is also lower when compared to the growing trend of financial inclusion in developing and developed countries. As revealed by (Kamalu & Wan Ibrahim, 2021) that based on 2017 Global Financial Index data, the financial inclusion of the population aged over 15 years in OIC member countries is only around 45.3% which means that the remaining 54.7% are still excluded, while the average financial inclusion rate for people over 15 in the world is 69%. Although the level of financial inclusion in the OIC countries is still low, there is a glimmer of hope in terms of the development of Islamic banking progress in OIC member countries where from 2013 to 2019 based on the Statistical, Economic and Social Research and Training Center for Islamic Data countries (SESCRIC). Islamic banking assets continue to experience an upward trend with an average of 13.8% for 7 years. Outstanding financing and deposits in Islamic banking over the last 7 years also showed a positive trend of 13% and 16.8%, respectively, which is an indication that Islamic banking as an intermediary institution that has an important role in driving the real sector continues to grow.

Financial inclusion refers to conditions of ease of access, availability and use of the formal financial system for all economic actors (Park & Mercado, 2015). Based on 2017

Financial Inclusion Index Database data, there is an increase in the number of adults in the world who already have accounts at financial institutions by 69%, whereas in the 2011 Financial Inclusion Index Database data, it is still at 51% (Oleschak, 2021). The amount of financial inclusion in the formal financial system increases opportunities and facilitates investment so that increased business leads to more tax revenues and supports economic growth (Al-Own & Bani-Khalid, 2021). Therefore, financial inclusion can be an opportunity for a country to take advantage of financial progress as one of the potentials in increasing state revenues from taxes. As an instrument of revenue receipts for the state, taxes are the main source of income from the public sector received from both companies and individuals (Bayar & Karamelikli, 2017). Furthermore, taxes are collected from the government based on tax subjects and income levels, both of which can be affected by financial inclusion (Maherali, 2017).

There are very scant studies in an effort to explore the effect of financial inclusion on tax revenue (Oz-Yalaman, 2019), (Al-Own & Bani-Khalid, 2021), (Raouf, 2022), (Compaoré, 2022). Utilizing data from the Global Financial Index Database, Oz-Yalaman (2019) found a positive and significant effect on tax revenue. In addition, Al-Own & Bani-Khalid (2021) also found that high financial inclusion was able to significantly increase tax revenue in Europe. Similar findings were also found by Raouf (2022) which showed that countries with high financial inclusion had a more positive effect on tax revenues than countries with low financial inclusion, which is the opposite, where low financial inclusion has a negative effect on tax revenue with observations on 45 countries in Africa, Europe, and the Middle East. More specific findings regarding tax revenue and financial inclusion where tax revenue from natural resources is excluded (non-resource tax), the results are in line with previous findings where financial inclusion can generate higher non-resource tax revenue in 63 developing countries (Compaoré, 2022).

In this study we provide a different and more specific scope of study compared to the previous literature where we examine the financial inclusion of Islamic banking in order to determine its effect on tax revenues in OIC member countries, because Islamic banking is considered to have a strong role in promoting financial inclusion (Kabiru & Wan Ibrahim, 2020) by providing financial instruments that are in accordance with religious principles as a unique feature that conventional banking does not have (Léon & Weill, 2018). Based on this reality, it becomes an impetus for us to examine the association between Islamic banking financial inclusion and tax revenues in OIC member countries.

Financial inclusion of Islamic banking has a broader meaning because of the position of Islamic banking as a financial institution that seeks to apply Islamic principles in banking intermediation activities, especially according to (Gani & Bahari, 2021) Islamic banking is seen as more connected to real economic activities than conventional banking. Therefore, the objective of our research is to ascertain whether the financial inclusion of Islamic banking also has an influence on tax revenues in OIC countries, because Islamic banking is closer to the real sector and has the potential to encourage economic growth (Mohd. Yusof & Bahlous, 2013) and increasing welfare (Suzuki et al., 2019) which has an impact on increasing tax revenues by the state.

The contribution of this research is to provide an empirical study to policy makers who handle taxation and the financial services industry whether the development of Islamic banking has an impact on state revenue in the form of tax revenue so that Islamic banking financial inclusion needs to be encouraged and supported because it provides

benefits to the state in terms of revenue. Taxes or vice versa. Financial inclusion in this study refers to two dimensions, namely access which is proxied by the number of sharia banking branch offices and usage which is proxied by the amount of distribution of financing funds and the amount of fund raising carried out by Islamic banking by observing eleven OIC member countries namely Indonesia, Jordan, Kazakhstan, Kuwait, Malaysia, Nigeria, Oman, Pakistan, Saudi Arabia, Turkey, and the United Arab Emirates in the period by analysis using panel data regression. To avoid bias in the estimation results, we embed control variables, namely income per capita, manufacturing share to GDP, industry share to GDP, and trade share to GDP.

Hypotheses Development

Several prior studies have examined the relationship within financial development and tax revenue, but there are still few studies that focus on financial inclusion. For instance, [Taha et al., \(2013\)](#) examined the effect of financial system activities on tax revenue in Malaysia. The findings indicate that there is a unidirectional causality between the stock market and direct tax revenues, where an increase in activity in the stock market can increase direct tax revenues. However, the relationship is greater in the short term than in the long term. Furthermore, [Gnangnon & Brun, \(2019\)](#) inspect the effect of financial development on non-resource tax revenues through international trade and economic growth. The results show that financial development has a positive and significant effect on non-resource tax revenues.

Research that specifically touches on the effect of financial inclusion on tax revenue is the research of [Maherali \(2017\)](#), [Oz-Yalaman \(2019\)](#), [Al-Own & Bani-Khalid \(2021\)](#), [Oleschak \(2021\)](#), [Raouf \(2022\)](#), and [Compaoré \(2022\)](#) although each of these studies has dimensions. There are different variables in determining the representation of financial inclusion variables, as revealed by [Kabiru & Wan Ibrahim \(2020\)](#) that there is no one variable that can definitely be the right proxy that can represent financial inclusion. Using the Global Findex Database from 2011 to 2017, [Oz-Yalaman \(2019\)](#) found a positive and significant effect between financial inclusion and proxy bank accounts (% age 15+) and credit card ownership (% age 15+) on tax revenue. [Al-Own & Bani-Khalid \(2021\)](#) also researched by taking Global Findex data in 2011-2017 but using a sample of countries in Europe. The results showed that financial inclusion proxied by bank accounts (% age 15+) and credit card ownership (% age 15+) had a significant positive effect on tax revenue. [Maherali \(2017\)](#) uses 2011 and 2014 data from Global Findex and adds forecasts to 2020. The results show that financial inclusion and digital finance are able to increase tax revenue to \$4.1 Trillion globally and it is projected that in 2020 it will increase to \$12 Trillion. [Oleschak \(2021\)](#) examines financial inclusion and technology on monetary and fiscal aspects. Meanwhile, Tax Revenue is one of the dependent variables measured by [Oleschak \(2021\)](#) and results in the finding that financial inclusion as proxied by ownership of transaction accounts at a financial institution shows a positive and significant effect on Tax Revenue. [Raouf \(2022\)](#) applied dynamic principal component analysis (DPCA) of five indicators that consist of deposit accounts with commercial banks, outstanding deposits with commercial banks, outstanding loans from commercial banks, the number of outstanding deposits with commercial bank branches per 100,000 adults, and the number of ATMs per 100,000 adults to create financial inclusion indicator of countries in Africa,

Europe, and The Middle East in total of 45 countries. The result show that countries with high financial inclusion had a more positive effect on tax revenues than countries with low financial inclusion and on the other hand countries with low financial inclusion has a negative effect on tax revenue. While [Compaoré \(2022\)](#) used number of ATMs per 100, 000 adults to be the indicator of financial inclusion to be one of the determine variable that effect non-resource tax revenue. The findings of [Compaoré \(2022\)](#) are in line with previous findings where financial inclusion can generate higher non-resource tax revenue in 63 developing countries.

In this study, the dimensions of financial inclusion refer to access and usage. The access dimension is reflected by the number of sharia bank branch offices per number of sharia banking entities in the country, while the representation of the usage dimension is reflected in the percentage of financing fund distribution and the amount of fund raising conducted by Islamic banking on domestic product growth. The greater number of Islamic banking branch offices provide opportunities for the public to be able to reach Islamic financial services provided by Islamic banking, with the increasing number of branch offices, the greater the opportunity for financial inclusion is possible. On the other hand, by using the financial services provided by Islamic banking as an intermediary institution that has a function as an institution to collect surplus public funds and channel funds to people who need funds, Islamic banking intermediation becomes one of the components that contribute to spurring economic activity which then encourages tax revenue.

In order to avoid biased estimation results, we use control variables consisting of per capita income, manufacturing share to GDP, industry share to GDP, and trade share to GDP. When the economic growth of a country is high which, when associated with high per capita income, the collection of taxes collected by the state will be high ([Minh Ha et al., 2022](#)). The manufacturing sector is considered to have a role in tax collection, because from raw goods to finished goods through many supply chains which to reach consumers will be taxed through value added tax ([Amoh & Adom, 2017](#)) especially as stated by [Minh Ha et al., \(2022\)](#) that the manufacturing sector can encourage greater tax collection than the agricultural sector. On the other hand, the imposition of taxes in the agricultural sector is more difficult than in other economic sectors ([Diaz-Bonilla et al., 2019](#)) so that the imposition of taxes on the manufacturing sector and the industrial sector is easy to collect taxes ([Ángeles Castro & Ramírez Camarillo, 2014](#)). The industrial sector is an important sector for the economy of a country because the progress of the industrial sector is considered to be able to increase a decent standard of living because of its ability to produce high quality goods and services so as to encourage employment, encourage economic growth which has an impact on the increasing tax collection required. Can be collected cumulatively ([Kitessa & Jewaria, 2018](#)). In the era of globalization, all countries are interconnected and depend on each other ([Surugiu & Surugiu, 2015](#)) including in terms of international trade where each country transacts with each other on goods produced and offered in the international market. International trade has two sides to tax revenues, with higher trade activities, the potential to increase a country's tax revenues, but on the other hand it can also reduce tax revenues due to openness factors and reduced tariffs ([Gnangnon, 2022](#)).

There are a number of studies that reveal the influence of each control variable in this study on tax revenue. Studies show that income per capita has a positive effect on tax revenue in 34 countries OECD member countries from 2001 to 2011 ([Ángeles Castro &](#)

Ramírez Camarillo, 2014), and 120 developing countries in the world from 1990 to 2012 (Yohou et al., 2016). However, different findings were obtained by Nguyen & Duong (2022) in BRICS countries in the period 2001-2017, (Imam & Jacobs, 2014) in 12 Middle Eastern countries during 1990 to 2003 who found that income per capita had a negative effect on tax revenue.

Manufacturing share on GDP has a positive effect on tax revenue in Ethiopia during 1975-2013 (Ayenew, 2016), Southeast Asian countries for the period 2000-2016 (Minh Ha et al., 2022), and Ghana in the period 1975 to 2015 (Amoh & Adom, 2017). The industry's share of GDP has a positive influence on tax revenue in 34 OECD countries in 2001-2011 (Ángeles Castro & Ramírez Camarillo, 2014), and Southeast Asia region countries from 2006 to 2015 (Anh & Thinh, 2018). Meanwhile, studies by Oz-Yalaman (2019) and Yohou et al., (2016) show different results that industry share per GDP has a negative effect on tax revenue.

Our last control variable is share Trade on GDP, where share trade has a positive effect on tax revenue in Southeast Asian countries during 2006 to 2015 (Anh & Thinh, 2018), and Malaysia from 1970-2017 (Loganathan et al., 2020) while different findings were found that share trade per GDP negative effect on tax (Oz-Yalaman, 2019), (Cagé & Gadenne, 2018).

Based on previous studies, we formulate the following hypotheses:

H1: *Number of Sharia Bank Branch Offices has a Positive and Significant Effect on Tax Revenue.*

H2: *Distribution of Islamic Bank Financing Funds has a Positive and Significant Effect on Tax Revenue.*

H3: *Islamic Bank Funds have a Positive and Significant Effect on Tax Revenue*

H4: *Income per Capita has a Positive and Significant effect on Tax Revenue.*

H5: *Manufacturing Share per GDP has a Positive and Significant Effect on Tax Revenue.*

H6: *Industry Share per GDP has a Positive and Significant Effect on Tax Revenue.*

H7: *Share Trade per GDP has a Positive and Significant Effect on Tax Revenue.*

Method

In this study, we empirically tested the effect of Indonesia inclusion on tax revenue using a purposive sampling technique by observing eleven member countries of the Organization of Islamic Cooperation (OIC), namely Indonesia, Jordan, Kazakhstan, Kuwait, Malaysia, Nigeria, Oman, Pakistan, Saudi Arabia, Turkey, and the United Arab Emirates for a period of 7 years from 2013 to 2019. The reasons for choosing 2013 as the initial year of observation and 2019 as the final year of observation and the selection of the eleven sample countries were based on the limited availability of data in revealing the research objectives.

Variable

The exogenous variable in our study is Islamic banking financial inclusion. We were inspired by (Immurana et al., 2021) in determining the selection of financial inclusion variables based on financial access indicators consisting of Automated Teller Machines (ATM) as well as the number of commercial bank branches and financial usage which includes the number of borrowers, and outstanding deposits. Due to the lack of

availability of data that we can use as a presentation of the financial inclusion variable of Islamic banking by referring to the data available at the Statistical, Economic and Social Research and Training Center for Islamic Countries (SESCRIC), we make modifications while maintaining the essence of financial access and financial usage.

The indicator of Islamic banking financial access in our research is proxied by the number of sharia banking branch offices per number of sharia banking entities, while the total share of sharia banking financing distribution per GDP and the total share of sharia banking third party fund collection per GDP are indicators of financial usage. As an effort to avoid biased results, we added a control variable, namely economic development as a proxy for per capita income growth by including the contribution of each economic sector per share of GDP from each sector which includes the manufacturing, industry, and international trade sectors. Data collection for all control variables comes from the World Development Indicator (WDI) of the World Bank. Tax revenue as an endogenous variable refers to the International Monetary Fund's World Revenue Longitudinal Data (WoRLD) which is proxied by tax revenue to the percentage of gross domestic product as presented in table 1.

Table 1. Operational Variables

Variable	Notation	Unit of Measurement	Source
Tax Revenue	TXR	% of GDP	WoRLD
Number of Islamic Banking Branch / Number of Islamic Banking	IBB	Natural Logarithm	SESCRIC
Islamic Banking Deposit	IBD	% of GDP	SESCRIC and Author Calculation
Islamic Banking Financing	IBF	% of GDP	SESCRIC and Author Calculation
Growth Gross Domestic Product per Capita	GDPC	%	WDI
Manufacturing	MANU	% of GDP	WDI
Industry	INDS	% of GDP	WDI
Trade	TRDE	% of GDP	WDI

Econometric Method: Panel Data Regression

In general, the equations of the panel data regression econometric model in this study can be explained as follows:

$$TAX_{it} = \beta_1 + \beta_2 IBB_{it} + \beta_3 IBD_{it} + \beta_4 IBF_{it} + \beta_5 GDPC_{it} + \beta_6 MANU_{it} + \beta_7 INDS_{it} + \beta_8 TRDE_{it} + \varepsilon_{it} \quad (1)$$

TAX_{it} notation indicates endogenous variables where, $i: 1,2,3,\dots,n$, refers to the number of individuals in the observation, while $t: 1,2,3,\dots,n$, shows the time series from year to year. IBB_{it} , IBD_{it} , IBF_{it} , $GDPC_{it}$, $MANU_{it}$, $INDS_{it}$, $TRDE_{it}$, show exogenous variables from the i as individual and the t as time unit. The β_1 is the intercept coefficient. The notation $\beta_2 - \beta_8$ shows the slope coefficient of each exogenous variable.

In the use of panel data, the best model test is selected by conducting tests based on the Hausman test, Chow test, and Langrange multiplier test to identify whether the model is fixed effect, random effect, and common effect (Herawati & Angger, 2018). We also perform diagnostic tests through multicollinearity, serial-correlation, and

heteroskedastic tests.

Multicollinearities testing is based on the Variance Inflation Factor (VIF) where if the VIF value is less than 10 then it is free from multicollinearity problems (Al-Own & Bani-Khalid, 2021). The serial-correlation test is an important test in panel data, in this test the correlation will provide information clues that there is a correlation between entities (Soondram et al., 2022) so that misleading results do not occur (Muhammad et al., 2021). based on the Cross-Section Dependence Test based on CD Pesaran because the N in the study is more than T (Bui, 2019) and has been widely applied because it is robust in many modeling specifications (Baltagi et al., 2016) and the heteroskedastic test using the glajser test was carried out by regressing the results of the residuals generated from the original equation in the form of absolute values for exogenous variables (Wang et al., 2020). The model is free from heteroskedastic when there is no significant variable on the absolute value of the residue (Mohd. Shariff et al., 2022).

Results

Descriptive Statistics and Correlation

Tables 2 and 3 show descriptive statistics and correlations for each variable. It can be observed that on average the tax revenues of the eleven OIC countries that were sampled in this study had a figure of 10.46% which provides evidence and arguments that tax revenues in the OIC countries are still below the world average. On the other hand, the average share of total Islamic banking financing per GDP and the total collection of Islamic banking third party funds per GDP are 13.81% and 15.34%, respectively, but the standard deviation of the two is quite high compared to the respective variables of 17, 26 and 20,14 indicate that there are various distribution and utilization data that the use of Islamic banking in each country is not the same.

Table 2. Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis
TXR	10.47623	11.93303	22	0.875014	5.955587	-0.13457	1.775946
IBB	3.513647	3.590439	5.507362	0.916291	1.290884	-0.40902	2.442214
IBD	15.34875	5.378562	76.09338	0.020198	20.13505	1.526674	4.393408
IBF	13.81504	3.405768	56.00813	0.011737	17.25681	1.041908	2.647693
GDP	1.015921	1.449523	6.664884	-7.0435	2.897055	-0.46361	2.544869
INDS	38.08803	38.29143	73.09873	17.80431	13.76577	0.437456	2.409112
MANU	13.39982	12.08076	22.87393	5.542412	5.109454	0.41462	1.768071
TRDE	79.69476	66.68677	176.7476	20.72252	42.68602	0.66921	2.620127

(Soure: Author's Calculation)

The difference in the distribution of data from the value of the standard deviation is the largest in the share of the trade sector of 42.67 which indicates that there are countries that are very active in conducting international trade but some are more passive in international trade even though in general the average share of the trade sector is the highest compared to other sectors with the share of the manufacturing sector being the sector with the lowest average.

Table 3. Correlations

Correlation	TXR	IBB	IBD	IBF	GDPC	INDS	MANU	TRDE
TXR	1							
IBB	0.170163	1						
IBD	0.166858	0.222529	1					
IBF	0.301598	0.392652	0.901131	1				
GDPC	0.639376	0.230754	0.286489	0.344946	1			
INDS	-0.52267	-0.11381	-0.38764	-0.46001	-0.41674	1		
MANU	0.54825	0.179384	0.459579	0.495465	0.627342	-0.38388	1	
TRDE	0.137396	-0.05141	0.083694	-0.02672	0.032559	0.512147	-0.0618	1

(Soure: Author's Calculation)

The positive correlation between access and usage of Islamic banking to low tax revenue is an early indication that the relationship between the two, although in the same direction, is not strong. In contrast to per capita income, which has a high positive correlation value to tax revenue, which is a sign that per capita income has a strong relationship and is in the same direction as tax revenue. The correlation with the smallest value in tax revenue is in the relationship between trade and tax revenue.

Panel Data Modeling

Once compared, the fixed effect model is a better model than the common effect model because based on the chow test the cross-section F and Cross-section Chi-square values have a probability value of < 0.05 . The next test is the hausman test to establish the best model between the fixed effect model and the random effect model. The test results found that the random effect model is nothing more than the fixed effect model because the Cross-section random shows a probability value of < 0.05 . The results of the chow test and hausman test are embedded in [Table 4](#).

Table 4. Best Model Selection Test

Chow Test			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	17.778069	(10,59)	0.0000
Cross-section Chi-square	106.998961	10	0.0000
Hausman Test			
Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f	Prob.
Cross-section random	29.658737	7	0.0001

Hypotheses Testing Result

[Table 5](#) shows the results of the estimated fixed effect model. Although all variables of Islamic banking financial inclusion are not significant to endogenous variables, when viewed from the coefficient results, only IBD has a negative coefficient against endogenous variables, while IBB and IBF have positive coefficients. This indicates that the number of Islamic banking offices and the total distribution of Islamic banking financing have a

unidirectional relationship with tax revenue while the total collection of Islamic banking funding has an inverse relationship with tax revenue although the influence of these three variables is not significant in affecting tax revenue. Of the four control variables, there are two variables that affect tax revenue, namely per capita income growth and the industrial sector with both of them have positive coefficient while manufacturing and trade are not to be the significant determinant for tax revenue with the coefficient of manufacturing is positive and trade is negative. The result shows that hypotheses fourth and sixth are accepted meanwhile the rest are rejected.

Table 5. Fixed Effect Model Estimation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IBB	0.943992	0.766333	1.231831	0.2229
IBD	-0.196899	0.152733	-1.289177	0.2024
IBF	0.162678	0.170134	0.956178	0.3429
GDPC	0.435397	0.119411	3.646204	0.0006
INDS	0.179662	0.065538	2.741366	0.0081
MANU	0.350586	0.323330	1.084298	0.2826
TRDE	-0.065627	0.041141	-1.595190	0.1160
C	1.181163	6.102743	0.193546	0.8472
R-Squared		0.940718		
Adjusted R-Squared		0.923637		
F-statistic		55.07298		
Prob(F-statistic)		0.000000		
Mean VIF		4.701582		
Pesaran CD		-0.429170		
Prob(Pesaran CD)		0.667800		

Diagnostic Testing

Multicollinearity, Serial-Correlation, Heteroskedasticity, and Glejser Test

Based on table V, the mean value of VIF is 4.701582 which means that the model has no issue of multicollinearity due to the cut off of multicollinearity when the mean value of VIF is above 10 (Ali & Puah, 2019). In order to avoid serial-correlation, we conducted testing using CD Rotation. Our estimation model is free from serial-correlation as in table V, that the CD Percentage value is above 0.05.

After extracting the absolute residual value of the fixed effect model estimate, we then regressed with the exogenous variable and found that none of the exogenous variables had a significant effect at the level of 5% on the absolute value of the resid which is a sign that there is no heteroscedastic in our equation. Table VI displays the results of the Glejser Test that we carried out.

Discussion

Based on this study, it is empirical evidence that financial inclusion has not significantly affected tax revenues in the eleven OIC member countries sampled in this study. In addition, from this study, although it is not significant, it can be seen that the

collection of funds carried out by Islamic banks actually has a negative relationship direction which can be an indication that with money stored in banks can actually reduce tax revenue. It is our estimate that with the money stored in the bank, then the money becomes precipitated and not spent. This finding is in line with the publication of the Economic Outlook released by the OIC in 2019 that the level of investment in OIC countries is still low so that OIC countries must find ways so that idle funds from savings that have been collected can be channeled in encouraging investment activities (SESRIC, 2019).

It is a challenge OIC countries to be able to produce idle money as a lubricant for the economy to generate a growing economy in effort to encourage tax revenues amidst economic conditions that are currently entering an era of high interest rates as a consequence of the world's economic conditions full of uncertainties due to various kinds of dynamics of global factors that influence. This is where Islamic banking in OIC countries should take its role because by nature Islamic banking does not rely on interest rates as the main benchmark for their operations and relies more on the application of profit sharing as a differentiating factor in the midst of ongoing economic challenges. With a challenging economic situation, it is an opportunity for Islamic banking to be able to contribute as an important part of driving tax revenue for the state while not allowing idle funds that should be productive as a driving force for the economy so that it can continue to grow.

Meanwhile, the contrasting results are shown by the distribution of Islamic banking financing which has a positive relationship direction which can be an indication that the financing disbursed can rotate the economy so as to encourage tax revenue even though until this study was made the results have not significantly affected tax revenues. In addition, the large number of Islamic banking branch offices that have a positive relationship with tax revenues can provide an indication that access to Islamic banking is also involved in increasing tax revenues even though the effect has not been significant. From this research, it can be said that the financial inclusion of Islamic banking in terms of access and usage has not been maximized by the eleven OIC countries to collect taxes from these channels. So in this case the seriousness of the eleven sample OIC countries in efforts to increase financial inclusion is not only limited to providing financial access for the community, but there is also room for opportunities for benefits for tax revenues as found by existing studies of Maherali (2017), Oz-Yalaman (2019), Al-Own & Bani-Khalid (2021), Oleschak (2021), Raouf (2022), and Compaoré (2022).

Jump in to the discussion related to control variables result, it can be inferred that high per capita growth will add to the government's tax collection that can be done so that our findings are in line with the findings Ángeles Castro & Ramírez Camarillo (2014), and Yohou et al. (2016). The relationship between per capita income and tax revenue is clear, the higher the per capita income, the greater the ability of the state to obtain tax revenues. Moreover, this study shows the results that per capita income is the most dominant variable that significantly influences tax revenue. Our research reinforces the findings of Ángeles Castro & Ramírez Camarillo (2014) and Anh & Thinh (2018) that the industrial sector is proven to contribute to the increasing amount of tax that can be collected by the state. It indicates that when more and more industries grow and develop, it can encourage additional tax revenues that can be collected by the state. Industry penetration is one of the factors that determines the economic strength of a country because it is a very important

driving engine for economic growth (Azolibe & Okonkwo, 2020) (Elfaki et al., 2021). One of the drivers of the industrial sector for OIC countries is the fact that many of its member countries are producers of oil and other natural resources. The OIC countries are blessed with an extraordinary wealth of natural resources, although one day these resources may run out because they cannot be renewed, so it is important for the OIC countries to diversify their industrial sector, including finding new sources of tax revenue.

There is still room for OIC countries to expand tax revenues by optimizing opportunities for financial inclusion, especially with the growth of Islamic banking as a promising financial industry with the growing need for sharia-compliance-based financial transactions where Islamic banking has become the leading entity to date. Therefore, the position of this research is to provide initial support and evidence of the importance of Islamic banking as an important part of efforts to increase tax revenues through financial inclusion which is currently being intensively campaigned so that all levels of society can enjoy formal financial services. States can use financial inclusion as a source of data access to track potential new individual taxpayers. Especially in the midst of increasingly rapid technological advances, digital financial transactions cannot be separated from banking services and Islamic banking has also taken part in adjusting to the rapid pace of digital finance. On the other hand, Islamic banks must also continue to innovate in product development to spur investment in the real sector in order to avoid the potential for idle funds where Islamic financial institutions should be the driving force for the smooth circulation of money in society so as to encourage productive economic growth.

Conclusion


The focus of this study is to study the effect of Islamic banking financial inclusion in terms of financial access and financial usage on the tax revenues of member countries of the Organization of Islamic Cooperation (OIC) for the 2013-2019 period. Using the fixed effect model panel, the results showed that only Islamic banking financial inclusion both in terms of financial usage and financial access did not have a significant influence on tax revenue. Of the eleven OIC countries that sampled our research, only the industrial sector had an effect on tax revenue, while the manufacturing sector and international trade had no effect on tax revenue. Our findings contradict the prior studies which resulted in a positive and significant influence between financial inclusion and tax revenue. Based on the results of this study, Islamic banking financial inclusion still needs to be promoted by the eleven countries that we observe as one of the potential channels in an effort to increase tax revenue. Unfortunately, this study only sampled eleven OIC members due to the limited availability of data in the period 2013-2019 although in general OIC countries have an average tax revenue below the global average so that suggestions for further research can exploit more samples used mainly to countries that experience a downward trend in tax revenue and accommodate the operationalization of Islamic banking in that country. Further research is also expected to be able to examine Islamic banking financial inclusion and tax revenue after the emergence of the COVID-19 pandemic in 2020 where at this time the use of digitalization is an important need as a consequence of limiting direct interaction.

Authors' Declaration

The authors made substantial contributions to the conception and design of the study. The authors took responsibility for data analysis, interpretation and discussion of results. The authors read and approved the final manuscript.

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References

- Al-Own, B., & Bani-Khalid, T. (2021). Financial Inclusion and Tax Revenue: Evidence From Europe. *International Journal of Financial Research*, 12(2), 27. <https://doi.org/10.5430/ijfr.v12n2p27>
- Ali, M., & Puah, C. H. (2019). The internal determinants of bank profitability and stability: An insight from banking sector of Pakistan. *Management Research Review*, 42(1), 49-67. <https://doi.org/10.1108/MRR-04-2017-0103>
- Amoh, J. K., & Adom, P. K. (2017). The determinants of tax revenue growth of an emerging economy - the case of Ghana. *International Journal of Economics and Accounting*, 8(3/4), 337. <https://doi.org/10.1504/ijea.2017.10013451>
- Ángeles Castro, G., & Ramírez Camarillo, D. B. (2014). Determinants of tax revenue in OECD countries over the period 2001–2011. *Contaduría y Administración*, 59(3), 35–59. [https://doi.org/10.1016/S0186-1042\(14\)71265-3](https://doi.org/10.1016/S0186-1042(14)71265-3)
- Anh, L. H., & Thinh, T. Q. (2018). Factors impacting tax revenue of Southeast Asian Countries. *Studies in Computational Intelligence*, 760, 514–530. https://doi.org/10.1007/978-3-319-73150-6_41
- Aynew, W. (2016). Determinants of Tax Revenue in Ethiopia (Johansen Co-Integration Approach). *International Journal of Business, Economics and Management*, 3(6), 69–84. <https://doi.org/10.18488/journal.62/2016.3.6/62.6.69.84>
- Azolibe, C. B., & Okonkwo, J. J. (2020). Infrastructure development and industrial sector productivity in Sub-Saharan Africa. *Journal of Economics and Development*, 22(1), 91–109. <https://doi.org/10.1108/jed-11-2019-0062>
- Baltagi, B. H., Kao, C., & Peng, B. (2016). Testing cross-sectional correlation in large panel data models with serial correlation. *Econometrics*, 4(4), 1–24. <https://doi.org/10.3390/econometrics4040044>
- Bayar, Y., & Karamelikli, H. (2017). Financial development and tax revenues in Turkey: A non-linear cointegration analysis. *The European Journal of Applied Economics*, 14(2), 31–42. <https://doi.org/10.5937/ejae14-14838>
- Bui, D.-T. (2019). Fiscal sustainability in developing Asia – new evidence from panel correlated common effect model. *Journal of Asian Business and Economic Studies*, 27(1), 66–80. <https://doi.org/10.1108/jabes-01-2019-0001>
- Cagé, J., & Gadenne, L. (2018). Tax revenues and the fiscal cost of trade liberalization, 1792–2006. *Explorations in Economic History*, 70(August), 1–24. <https://doi.org/10.1016/j.eeh.2018.07.004>
-

-
- Compaoré, A. (2022). Access-for-all to financial services: Non-resources tax revenue-harnessing opportunities in developing countries. *Quarterly Review of Economics and Finance*, 85, 236–245. <https://doi.org/10.1016/j.qref.2022.03.007>
- Diaz-Bonilla, E., De Salvo, C. P., & Egas, J. (2019). *Fiscal policies in agriculture and producer support estimates in Latin America and the Caribbean*. <https://www.fao.org/3/ca5526en/CA5526EN.pdf>
- Elfaki, K. E., Handoyo, R. D., & Ibrahim, K. H. (2021). The impact of industrialization, trade openness, financial development, and energy consumption on economic growth in Indonesia. *Economies*, 9(4). <https://doi.org/10.3390/economies9040174>
- Ezenagu, A. (2021). Boom or bust, extractives are no longer saviours: The need for robust tax regimes in Gulf countries. *The Extractive Industries and Society*, 8(2), 100848. <https://doi.org/10.1016/j.exis.2020.11.014>
- Gani, I. M., & Bahari, Z. (2021). Islamic banking's contribution to the Malaysian real economy. *ISRA International Journal of Islamic Finance*, 13(1), 6–25. <https://doi.org/10.1108/IJIF-01-2019-0004>
- Gnangnon, S. K. (2022). Financial development and tax revenue in developing countries: investigating the international trade channel. *SN Business & Economics*, 2(1), 1. <https://doi.org/10.1007/s43546-021-00176-0>
- Gnangnon, S. K., & Brun, J. F. (2019). Trade openness, tax reform and tax revenue in developing countries. *World Economy*, 42(12), 3515–3536. <https://doi.org/10.1111/twec.12858>
- Herawati, A., & Angger. (2018). The Influence of Fundamental Analysis on Stock Prices: The Case of Food and Beverage Industries. *EUROPEAN RESEARCH STUDIES JOURNAL*, XXI(Issue 3), 316–326. <https://doi.org/10.35808/ersj/1063>
- Imam, P. A., & Jacobs, D. (2014). Effect of Corruption on Tax Revenues in the Middle East. *Review of Middle East Economics and Finance*, 10(1), 1–24. <https://doi.org/10.1515/rmeef-2014-0001>
- Immurana, M., Iddrisu, A. A., Boachie, M. K., & Dalaba, M. A. (2021). Financial inclusion and population health in Africa. *Journal of Sustainable Finance and Investment*, 0(0), 1–16. <https://doi.org/10.1080/20430795.2021.1953929>
- Kabiru, K., & Wan Ibrahim, W. H. B. (2020). Can Islamic Banking Development Spur Financial Inclusion in OIC Member Countries? *Asian People Journal (APJ)*, 3(1), 170–185. <https://doi.org/10.37231/apj.2020.3.1.181>
- Kamalu, K., & Wan Ibrahim, W. H. B. (2021). Islamic Banking Development and Financial Inclusion in OIC Member Countries: The Moderating Role of Institutions. *Journal of Islamic Monetary Economics and Finance*, 7(3), 170–185. <https://doi.org/10.21098/jimf.v7i3.1364>
- Kitessa, D. T., & Jewaria, T. (2018). Determinants of tax revenue in East African countries: An application of multivariate panel data cointegration analysis. *Journal of Economics and International Finance*, 10(11), 134–155. <https://doi.org/10.5897/jEIF2018.0924>
- Léon, F., & Weill, L. (2018). Islamic banking development and access to credit. *Pacific Basin Finance Journal*, 52(May 2017), 54–69. <https://doi.org/10.1016/j.pacfin.2017.04.010>
- Loganathan, N., Ahmad, N., Subramaniam, T., & Taha, R. (2020). The dynamic effects of growth, financial development and trade openness on tax revenue in Malaysia. *International Journal of Business and Society*, 21(1), 42–62. <https://doi.org/10.33736/ijbs.3222.2020>
-

-
- Maherali, A. (2017). Financial Inclusion, Digital Payments and Their Impact on Income and Tax Revenue Around the World. *Harvard University*, 120. <http://nrs.harvard.edu/urn-3:HUL.InstRepos:33826588>
- Minh Ha, N., Tan Minh, P., & Binh, Q. M. Q. (2022). The determinants of tax revenue: A study of Southeast Asia. *Cogent Economics and Finance*, 10(1). <https://doi.org/10.1080/23322039.2022.2026660>
- Mohd. Shariff, R. A., Bahrul Ilmi, M., & Mohamad, M. H. S. (2022). Linking corporate governance with organisational growth: evidence from Indonesian Islamic banks. *Journal of Islamic Accounting and Business Research*. <https://doi.org/10.1108/JIABR-05-2021-0153>
- Mohd. Yusof, R., & Bahlous, M. (2013). Islamic banking and economic growth in GCC & East Asia countries. *Journal of Islamic Accounting and Business Research*, 4(2), 151–172. <https://doi.org/10.1108/JIABR-07-2012-0044>
- Muhammad, F., Khan, A., Razzaq, N., & Karim, R. (2021). Influence of tourism, governance, and foreign direct investment on energy consumption and CO2 emissions: a panel analysis of Muslim countries. *Environmental Science and Pollution Research*, 28(1), 416–431. <https://doi.org/10.1007/s11356-020-10502-y>
- Nguyen, V. D., & Duong, T. H. M. (2022). Corruption, Shadow Economy, FDI, and Tax Revenue in BRICS: A Bayesian approach. *Montenegrin Journal of Economics*, 18(2), 85–94. <https://doi.org/10.14254/1800-5845/2022.18-2.8>
- Oleschak, R. (2021). Financial inclusion , technology and their impacts on monetary and fiscal policy : theory and evidence Robert Oleschak. *Swiss National Bank, Working Papers*, 4. https://www.snb.ch/n/mmr/reference/working_paper_2021_04/source/working_paper_2021_04.n.pdf
- Oz-Yalaman, G. (2019). Financial inclusion and tax revenue. *Central Bank Review*, 19(3), 107–113. <https://doi.org/10.1016/j.cbrev.2019.08.004>
- Park, C.-Y., & Mercado, R. J. (2015). Financial Inclusion, Poverty, and Income Inequality in Developing Asia. *SSRN Electronic Journal*, 426. <https://doi.org/10.2139/ssrn.2558936>
- Raouf, E. (2022). The impact of financial inclusion on tax revenue in EMEA countries: A threshold regression approach. *Borsa Istanbul Review*. <https://doi.org/10.1016/j.bir.2022.08.003>
- SESRIC. (2019). *OIC Economic Outlook: Mobilizing Financial Resources for Development*. <https://sesricdiag.blob.core.windows.net/sesric-site-blob/files/article/696.pdf>
- Soondram, H., Samy, M., & Jugurnath, B. (2022). The social welfare impact of double tax treaties in Sub Saharan Africa. *Social Responsibility Journal*, 18(1), 141–153. <https://doi.org/10.1108/SRJ-08-2020-0326>
- Surugiu, M.-R., & Surugiu, C. (2015). International Trade, Globalization and Economic Interdependence between European Countries: Implications for Businesses and Marketing Framework. *Procedia Economics and Finance*, 32, 131–138. [https://doi.org/10.1016/S2212-5671\(15\)01374-X](https://doi.org/10.1016/S2212-5671(15)01374-X)
- Suzuki, Y., Uddin, S. M. S., & Sigit, P. (2019). Do Islamic banks need to earn extra profits? *Journal of Islamic Accounting and Business Research*, 10(3), 369–381. <https://doi.org/10.1108/JIABR-01-2017-0003>
- Taha, R., Colombage, S. R. N., Maslyuk, S., & Nanthakumar, L. (2013). Does financial system activity affect tax revenue in Malaysia? Bounds testing and causality
-

-
- approach. *Journal of Asian Economics*, 24, 147–157.
<https://doi.org/10.1016/j.asieco.2012.11.001>
- Wang, J., Koblyakova, A., Tiwari, P., & Croucher, J. S. (2020). Is the Australian housing market in a bubble? *International Journal of Housing Markets and Analysis*, 13(1), 77–95.
<https://doi.org/10.1108/IJHMA-03-2017-0026>
- Yohou, H. D., Goujon, M., & Ouattara, W. (2016). Heterogeneous aid effects on tax revenues: Accounting for government stability in WAEMU countries. *Journal of African Economies*, 25(3), 468–498. <https://doi.org/10.1093/jae/ejw003>