Drivers and barriers to financial inclusion: New insights from Muslim countries

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Abstract

Purpose – This study examines the factors driving and barriers to financial inclusion in Organisation of Islamic Cooperation (OIC) countries.

Methodology – This study employs panel data analysis using fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) methods. The sample consists of OIC countries from 2011 to 2021.

Findings – According to the FMOLS model, remittances, bank stability, and government debt are key drivers of long-term financial inclusion, while inflation, trade openness, and economic development act as barriers. Bank competition does not significantly impact financial inclusion. In the DOLS model, remittances and bank stability remain significant drivers, with inflation and economic growth acting as barriers. However, in the long term, financial inclusion is not significantly influenced by government debt or competition.

Implications – This study offers insights for financial institutions and governments. Financial institutions should improve their access to low-income groups and small businesses. Governments should promote financial inclusion and stability through sound macroeconomic policy. Policymakers can use these findings to focus on key factors for a sustainable economy.

Originality – This study fills a gap by exploring the factors affecting financial inclusion in OIC countries, a less-studied topic. It also uses additional indicators to measure the financial inclusion index, leading to more comprehensive results.

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Introduction

Financial inclusion has become an interesting and growing research topic in the literature, attracting great attention from academics and policymakers. Both the micro and macro levels recognize its existence as an important factor that supports sustainable development (Azimi, 2022; Biswas, 2023; Giday, 2023; Murshed et al., 2023). Many have tried to define financial inclusion because, until now, there has been no definite definition regarding this matter. For example, Khan et al. (2022) define financial inclusion as the availability of relevant and cost-effective financial goods and services for individuals and companies to meet their needs for purchases, savings, loans, and so on.

The World Bank defines financial inclusion as the extent to which households and small businesses can gain access to financial services (Van et al., 2021). Financial inclusion is closely related to financial development because it encourages economic growth and development in the financial sector (Chen et al., 2023). Awareness of financial inclusion makes it the main pillar of development policy (Gustriani et al., 2023). Access to financial services is recognized globally as a key factor in a country's economy and development. Empirical studies have emphasized the importance of financial inclusion and its role in achieving prosperity and development (Markjacson, 2023; Sha'ban et al., 2020). Many countries also recognize that financial exclusion creates social instability and worsens income inequality (Ezzahid & Elouaourti, 2022). Therefore, financial inclusion can be used to increase growth and reduce inequality and poverty.

Most financial systems in developing countries are still weak; therefore, people tend to rely on informal financial systems for their financial needs (Nkuna et al., 2021). To increase financial inclusion, regulators and international organizations, such as the OECD, IMF, and World Bank, have held international conferences to assess and improve financial systems in various countries. The focus of this conference was to identify ways to increase financial inclusion globally, especially in developing countries. The World Bank also states that financial inclusion is one of the main initiatives to address pressing financial problems (Bashiru et al., 2023).

Although many initiatives have been conducted, the conditions for financial inclusion in developing countries are still inadequate. A large portion of the world's population still lacks access to modern financial services. In fact, 50% of the world's population does not have a bank account with a formal financial institution (Gebrehiwot & Makina, 2019). This shows that financial inclusion in developing countries remains a major problem (Grohmann et al., 2018). According to the Global Findex, OIC countries have a lower percentage of access to formal bank accounts (46.3%) than non-OIC developing countries (71.55%) (Zainorin et al., 2023). The above problem is reinforced by Zulkhibri (2016), who stated that the Islamic financial services industry still has a long way to go to increase financial inclusion in many Muslim countries because of the scale required and relatively weak infrastructure. Therefore, it is important to identify existing obstacles and look for ways to increase financial inclusion, especially in Muslim countries, whose majority still have a developing country status.

Among the various factors that inhibit and drive the growth of financial inclusion, the literature has explored the determinants of financial inclusion, such as economic growth, bank stability, bank consentration, remittances, trade openness, government debt, and inflation (Ajefu & Ogebe, 2019; Barnabe, 2020; Bashiru et al., 2023; Gebrehiwot & Makina, 2019; Markjacson, 2023; Sha'ban et al., 2020). Other studies have also explored financial inclusion in several Muslim countries (Khmous & Besim, 2020; Kim et al., 2018; Mustafa et al., 2018; Zainorin et al., 2023; Suseno & Fitriyani, 2018). However, this research did not specifically examine the factors inhibiting and encouraging financial inclusion but only analyzed its relationship with economic growth.

This research is driven by ongoing practical debates and the lack of empirical studies on the determinants of and barriers to financial inclusion in Muslim OIC countries. In contrast to previous studies that used cross-sector data, we expanded the research period. We developed a composite index of financial inclusion that included seven indicators: number of deposit accounts per 1,000 adults, number of commercial bank branches per 100,000 adults, number of ATMs per 100,000 adults, loans provided by commercial banks (% of GDP), deposits in commercial banks (% of GDP), private credit by banks (% of GDP), and bank assets (% of GDP). The reason for using the seven indicators above is that the majority of previous research only used five indicators or fewer (Abor et al., 2024; Gebrehiwot & Makina, 2019; Murshed et al., 2023; Sha'ban et al., 2020). In addition, using the FMOLS and DOLS approaches, we map rarely researched macro factors and the long-term impact of banking sector stability and technology on financial inclusion. However, this approach has not been widely applied in previous studies.

Literature Review

Existing literature focuses on three main areas: 1) quantification of financial inclusion, 2) driving financial inclusion, and 3) barriers to financial inclusion. There is debate about the best measure of

financial inclusion because there are no agreed-upon standard benchmarks. The majority of previous literature defines financial inclusion based on accessibility, affordability, and availability of financial services for the community. Therefore, existing studies have used various measures of financial inclusion.

Several studies use the Principal Component Analysis (PCA) technique to divide financial inclusion into three dimensions: accessibility, affordability, and availability of financial services for the community. For example, Murshed et al. (2023) studied the determinants of financial inclusion in four South Asian countries using five indicators of financial inclusion: the number of ATMs per 100,000 adults, number of commercial banking institutions, number of commercial bank branches, deposits in commercial banks, and loans from commercial banks. Several other studies use a financial inclusion index with different financial inclusion indicators (Bashiru et al., 2023; Ningsih & Aimon, 2021; Sha'ban et al., 2020; Tram et al., 2023); Oanh et al., 2023). Other studies use one measure of financial inclusion (E. Joseph et al., 2021; Zainorin et al., 2023). It uses the amount of deposits in commercial banks to measure the financial inclusion in Nigeria. Other studies have also used data from the World Bank's Global Findex database (Gustriani et al., 2023; Markjacson, 2023; Mose & Thomi, 2021; Pandey et al., 2023).

Previous literature explores the determinants of financial inclusion based on micro-level factors, such as age, gender, educational qualifications, and income level (Bekele, 2023; Dangol & Humagain, 2021; Nkuna et al., 2021; Sethy et al., 2023). However, research focusing on assessing macro factors, banking sector stability, and technology in influencing financial inclusion is still limited. Anarfo et al. (2019) find that financial sector development and economic growth can increase financial inclusion. These results are confirmed by Chikalipah (2017), who states that income per capita is the main element in determining a country's financial inclusion. However, Zainorin et al. (2023) found different results in OIC countries. The results show that economic growth does not have a significant effect on financial inclusion, but that the use of technology can increase financial inclusion.

Ramakrishna and Trivedi (2018) suggest that the main factors determining financial inclusion are technology and banking reach. This ensures that the banking sector needs to effectively focus on these dimensions to achieve the government's target of making the economy inclusive. Kamalu and Wan Ibrahim (2021) investigate the relationship between banking sector development, remittances, and financial inclusion in OIC countries. The results show that the development of the banking sector and remittances encourages the growth of the banking sector, thereby increasing the level of financial inclusion. Another factor that encourages financial inclusion is trade openness (Murshed et al., 2023; Oumarou & Celestin, 2021; Pandey et al., 2023). Other variables that can hinder financial inclusion include government debt (Gebrehiwot & Makina, 2019; Sha'ban et al., 2020) and inflation (E. Joseph et al., 2021; Mose & Thomi, 2021).

Hypothesis

Considering the importance of financial inclusion for a sustainable economy, especially in Muslim countries, the literature reveals that economic growth can be a driver of financial inclusion in a country (Mose & Thomi, 2021). The argument is that people in countries with higher income levels tend to be more integrated into the financial services system (Sha'ban et al., 2020). Specifically, research by Oumarou and Celestin (2021) in the context of WAEMU countries confirms that economic growth can increase financial inclusion. Thus, the proposed hypothesis is as follows:
H_1: Economic growth has a positive effect on financial inclusion in Muslim countries

The condition of the banking sector in a country can determine financial inclusion. The stability of the banking sector and financial inclusion may be new to policymakers. Until now, most studies have not demonstrated or empirically explored the proposed link. However, they also failed to apply this conceptual framework. Chinoda and Kwenda (2019), in the context of African countries, reveal that banking sector stability can be a determinant of financial inclusion. Likewise, research by Bashiru et al. (2023) using panel data from 2000 to 2017 in sub-Saharan Africa found

that banking sector stability had an effect on financial inclusion. Thus, the following hypotheses are proposed:

H_2: Banking sector stability has a positive effect on financial inclusion in Muslim countries

High levels of competition may hinder such incentives for banks to provide financial services to riskier small businesses and individuals (Sha'ban et al., 2020). However, other opinions state that when competitive pressure is higher, it can provide lower incentives for innovation and the expansion of financial services and broaden the customer risk spectrum, thereby encouraging financial inclusion (Owen & Pereira, 2018). On the one hand, the market power hypothesis states bank competition increases the availability of credit as financing costs decrease. The information hypothesis shows that, in the presence of agency costs and information asymmetry, competition can reduce financial access by making it less attractive for banks to internalize profits from investments in lending, especially to unclear customers (Chinoda & Kwenda, 2019). Thus, the proposed hypothesis is as follows:

H_3: Bank competition has a significant effect on financial inclusion in Muslim countries

Modern financial services such as mobile and internet banking are recognized as important means of driving financial inclusion in the contemporary era, with technology in the financial sector reducing transaction costs (Chatterjee, 2020). International remittances are also considered to have a major influence on financial inclusion because they can stimulate the demand for financial services through formal or informal channels (Murshed et al., 2023). A study in Nigeria by Ajefu and Ogebe (2019) shows that international remittances can increase the use of formal financial services such as deposit accounts and banking via mobile devices and the Internet. In addition, Mani (2016) explored the South Asian region and revealed that electronic money transfers can increase financial inclusion. Thus, the proposed hypothesis is as follows:

H_4: Remittances have a positive effect on financial inclusion in Muslim countries

Research Methods

Data

This research uses data at the level of OIC countries, which consists of 57 countries, but not all countries have available data, especially data related to the financial inclusion dimension, which is new in this research. Thus, only 17 countries were studied, including Azerbaijan, Jordan, Indonesia, Uzbekistan, Uganda, Pakistan, Bangladesh, Tajikistan, Turkey, Algeria, Suriname, Guyana, Lebanon, Egypt, Morocco, Mauritania, and Mozambique. Banking sector stability data were collected from the World Bank's Global Financial Development Database. Financial inclusion data were obtained from the Monetary Fund's Financial Access Survey and the rest were obtained from the World Development Indicator.

Dependent Variable

According to Sarma (2012), indices can be built at the macro- or micro-level, depending on the research objectives. This research aims to analyze the driving and inhibiting factors of financial inclusion, following the method used by Bekele (2023), with slight modifications due to the lack of available data for this research. The three dimensions used were financial penetration, availability of financial services, and use of financial services. We compiled a financial inclusion index based on seven sub-measures using a principal component analysis (CPA). These sub-measures include the number of deposit accounts per 1,000 adults, the number of commercial bank facilities per 100,000 adults, the number of ATMs per 100,000 adults, outstanding loans from commercial banks (% of GDP), outstanding deposits with commercial banks (% of GDP), private credit by deposit money banks to GDP (%), and deposit money bank assets to GDP (%).

Principal Component Analysis (PCA) analysis reduces the dimensions of large datasets and increases interpretability while minimizing information loss (Bashiru et al., 2023). The FII was calculated using the normalized inverse Euclidean distance. The equation is given as follows:

$$FII_i = 1 - \frac{\sqrt{(1-d_1)^2+(1-d_2)^2+(1-d_3)^2+(1-d_4)^2+(1-d_5)^2+(1-d_6)^2+(1-d_7)^2}}{\sqrt{7}} \qquad (1)$$

The numbers are normalized to make them lie between 0 and 1, and the inverse distance means that the higher the index, the higher the degree of financial inclusion a country achieves.

Independent Variable

The independent variables in this study are economic growth, bank stability, bank competition, and remittances. The control variables included trade openness, government debt, and inflation. Economic growth, measured by gross domestic product (GDP) per capita, reflects the macroeconomic situation and can drive financial inclusion. Bank stability, as indicated by the ratio of bank credit to bank deposits, promotes financial inclusion. Bank competition, measured by the concentration of the five largest banks, has an ambiguous effect on financial inclusion. Remittances, measured by personal transfers in dollars, are assumed to drive financial inclusion in the OIC countries. Trade openness is measured by net foreign direct investment in dollars, government debt by total external debt stocks, and inflation by the Consumer Price Index. Trade openness and inflation negatively affect financial inclusion, whereas government debt can promote it. Table 1 presents the variables used in this study are summarized in Table 1.

Tabel 1. Summary of Operational Variables

Type of Variable	Name	Variable Definition	Expected Sign	Source of Data
Dependent	Financial Inclusion Index (FII)	Number of deposit accounts with commercial banks per 1,000 adults Number of commercial bank branches per 100,000 adults Number of ATMs per 100,000 adults Outstanding loans from commercial banks (% of GDP) Outstanding deposits with commercial banks (% of GDP) Private credit by deposit money banks to GDP (%) Deposit money banks' assets to GDP (%)		Financial Access Survey (FAS)
Macro-economic Factor	Economic Growth (GDP)	GDP per capita	(+)	World Development Indicator, (WDI)
Bank Sector	Bank Stability (STAB)	Bank Credit to Bank Deposits (%)	(+)	Global Financial Development Database
	Bank Competition (CON)	Bank Concentration (%)	(+/-)	
Remitance	Remitance (RMT)	Personal Transfers, receipts (Current US$)	(+)	World Development Indicator, (WDI)
Control	Trade Opener (FDI)	Foreign Direct Investment, net (Current US$)	(+)	World Development Indicator, (WDI)
	Government Debt (DBT)	External Debt Stocks, Total (Current US$)	(+)	
	Inflation (INF)	Inflation, Consumer Prices (Annual %)	(-)	

Source: Authors' own work

Model Specification and Empirical Approach

The model specifications in this research are as follows:

$$FII_{i.t} = \beta_{0i} + \beta_{1i}LnGDP_{i.t} + \beta_{2i}STAB_{i.t} + \beta_{3i}CON_{i.t} + \beta_{4i}LnRMT_{i.t} + \beta_{5i}Ctr_{i.t} + \varepsilon_{i.t} \qquad (2)$$

Where FII represents the financial inclusion index for all sample countries at time t, LnGDP is the natural logarithm of GDP per capita, STAB is the stability of the banking sector, CON is the level of bank competition, LnRMT is the natural logarithm of remittances, Ctr indicates trade openness, government debt, and inflation as control variables, and ε is the error term. The basic premise of the model above is that macroeconomic and banking stability variables influence financial inclusion.

Testing for panel unit root and panel cointegration

In the initial stage, it is necessary to examine the unit roots of the variables before conducting a cointegration analysis. This study follows previous literature using the Im-Pesaran-Shin approach to examine the unit root panels. This is because this approach is less restrictive and has much power compared to other unit root tests. This test is superior because it allows for heterogeneity within the panel groups.

After the panel unit root test was performed, the next step was to test for cointegration. With the advent of panel data analysis, several popular methods have been developed to estimate cointegration between variables. The most popular test was by Pedroni, who proposed a panel cointegration approach to test long-term relationships between variables. The advantage of this method is that it can capture heterogeneity at the country level.

FMOLS and DOLS approaches

The cointegration approach using the ordinary least squares (OLS) method is considered biased and inconsistent, and the possibility of heterogeneity cannot be ignored in this study. Therefore, we use the fully modified ordinary least squares (FMOLS) and dynamic ordinary least squares (DOLS) approaches, which can handle heterogeneity and serial correlation in the data. In addition, the FMOLS and DOLS methods were used to solve the endogeneity problem and eliminate the serial correlation that exists in OLS.

Furthermore, the DOLS method developed by Stock and Watson (1993) was used in the cointegration analysis. This method captures the endogeneity and serial correlation problems in panel cointegration. This approach corrects bias by adding additional explanatory variables to the cointegration equation.

There is a perception that OLS estimators are biased and provide inconsistent results in panel data analyses (Sethi & Acharya, 2018; Sethy & Goyari, 2023). Endogeneity and serial correlation problems reduce the OLS estimator's power. Thus, this study uses two methods, FMOLS and DOLS, which control for the problems of endogeneity and serial correlation. Thus, the FMOLS and DOLS approaches produce better estimates of the long-term relationships.

Results and Discussion

Descriptive statistics

Table 2 presents descriptive statistics, several key economic variables reveal intriguing dynamics. FII has verage near zero with high volatility, indicating significant fluctuations in foreign investments. GDP averages 3219320 with a very large standard deviation of 8597823, reflecting significant instability in economic size. STAB shows considerable variability with an average of 80.99 and a standard deviation of 38.08. CON averages at 63.13 with a standard deviation of 19.75, indicating a relatively high but varied level of concentration. RMT average 5630000000, indicating substantial financial transfers. FDI shows a negative average of -2800000000 indicating substantial investment withdrawals contributing to economic instability. DBT is extremely high on average, at

68100000000, highlighting a significant and varied debt burden. INF averages 8.22 with a standard deviation of 14.54, indicating variable inflation rates.

Tabel 2. Descriptive statistics

Variables	Mean	Std.Dev	Min	Max	Obs.
Financial Inclusion Index (FII)	-5.35E-08	1.000000	-1.145080	3.568450	187
Economic Growth (GDP)	3219320.	8597823.	538.4357	40620816	187
Bank Stability (STAB)	80.99945	38.07577	25.86229	261.8811	187
Bank Competetion (CON)	63.12538	19.75423	25.31277	102.1191	187
Remitance (RMT)	5.63E+09	7.28E+09	1493544.	3.15E+10	187
Trade Opener (FDI)	-2.80E+09	3.93E+09	-2.05E+10	1.78E+09	187
Government Debt (DBT)	6.81E+10	1.15E+11	1.47E+09	4.47E+11	187
Inflation (INF)	8.223783	14.54428	-3.749145	154.7561	187

Source: Data processing

Matrix corelations

Table 3 presents the correlations among the variables in this study. The highest correlation among all independent variables is 0.681, which is the correlation between government debt (DBT) and remittances (RMT). Considering that there is no correlation higher than 0.80, it can be said that the data in this study did not have serious multicollinearity problems between the variables used.

Tabel 3. Correlation matrix

	FII	LnGDP	STAB	CON	RMT	FDI	DBT	INF
FII	1							
GDP	0.036	1						
STAB	-0.131	-0.246	1					
CON	-0.073	-0.353	-0.103	1				
RMT	0.068	0.242	-0.036	-0.554	1			
FDI	0.067	-0.332	-0.063	0.411	-0.259	1		
DBT	0.156	0.213	0.061	-0.686	0.681	-0.673	1	
INF	-0.029	0.076	-0.121	0.172	-0.056	0.039	0.029	1

Source: Data processing

Panel unit root result

In general, panel data models must test the stationarity of the data before carrying out regression estimates (Sethy & Goyari, 2023). Table 4 presents the root test results for all the variables in this study. The results of the Im-Pesaran-Shin unit root test show that the variables in the study are stationary at the first difference, but some variables are not stationary at that level. Therefore, it rejects the null hypothesis, which states that it is nonstationary at the 1% significance level. These results confirm that panel cointegration requires the same order of integration.

Tabel 4. Panel unit root test

Variables	Level	First difference
Financial Inclusion Index (FII)	0.22381	-3.03564***
Economic Growth (GDP)	0.60202	-3.16912***
Bank Stability (STAB)	0.15827	-2.78690***
Bank Competetion (CON)	0.72637	-1.66678**
Remitance (RMT)	0.64451	-4.21920***
Trade Opener (FDI)	0.36842	-3.95462***
Government Debt (DBT)	0.29608	-2.70152***
Inflation (INF)	-1.96049**	-40.7351***

Note: ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.
Source: Data processing

Cointegration test result

The unit root test confirms that the variables follow the second difference process. Determination of the cointegration. Table 5 presents the seven statistics of the Pedroni cointegration test are presented in Table 5. The results show cointegration between the dependent and independent variables. Of these seven, four Pedroni test statistics reject the null hypothesis of non-cointegration at the 1% significance level. This means that financial inclusion and other independent variables have a long-term relationship. In other words, independent variables can provide benefits for long-term financial inclusion if they are considered important in the current period.

Table 5. Pedroni panel cointegration estimation

	Statistic	P-value
With dimentions		
Panel v-Statistics	-2.978765	0.9986
Panel p-Statistics	5.337688	1.0000
Panel Phillips-Perron t	-9.084052***	0.0000
Panel Augmented Dickey Fuller t	-2.988677***	0.0014
Between Dimensions		
Group p Statistics	7.077673	1.0000
Group Phillips-Perron t	-14.23888***	0.0000
Group Augmented Dickey-Fuller t	-3.247261***	0.0006

Note: *** indicates significance at 1% level.
Source: Data processing

FMOLS and DOLS panel estimates

Table 6 presents the results of the FMOLS and DOLS estimations. The FMOLS and DOLS estimations reveal that economic growth (GDP) has a significantly negative impact on financial inclusion in the long term, indicating that increased economic growth reduces financial inclusion. Both the FMOLS and DOLS results show positive cointegration between bank stability (STAB) and financial inclusion, suggesting that enhanced banking sector stability in selected countries boosts financial inclusion. Bank competition (CON) has no significant effect on financial inclusion in either the FMOLS or DOLS models. For remittances (RMT), the FMOLS and DOLS results are positively and significantly integrated, indicating that advancements in technology improve financial inclusion levels.

Table 6. Panel FMOLS and panel DOLS estimations

	FMOLS		DOLS	
	Coeff.	P-value	Coeff.	P-value
Economic Growth (GDP)	-0.315083***	0.0000	-0.255631***	0.0035
Bank Stability (STAB)	0.003151***	0.0000	0.002969***	0.0000
Bank Competetion (CON)	0.000505	0.3220	-0.001055	0.1098
Remitance (RMT)	0.045413***	0.0000	0.053285**	0.0164
Trade Opener (FDI)	-8.93E-12***	0.0081	4.81E-13	0.9387
Government Debt (DBT)	0.089462***	0.0000	0.034299	0.2099
Inflation (INF)	-0.007712***	0.0000	-0.005516***	0.0000
R2	0.951300		0.949117	
Adjusted R2	0.943628		0.941937	

Note: ***, **, and * indicate significance at 1%, 5%, and 10% levels, respectively.
Source: Data processing

Trade openness (FDI) is negatively correlated with financial inclusion in the FMOLS results, implying that increased trade openness reduces financial inclusion in the long-term. However, DOLS results showed no significant effects. According to the FMOLS, government debt (DBT) has a positive long-term relationship with financial inclusion, indicating that increased

government debt enhances financial inclusion. By contrast, the DOLS results show no significant effect of government debt. Lastly, both the FMOLS and DOLS estimations reveal a negative relationship between inflation (INF) and financial inclusion, indicating that higher inflation worsens financial inclusion.

Discussion

This section reports the stationarity of the variables included in the model. Table 4 shows that all variables are stationary at the first difference, indicating that panel cointegration can be applied for decision making in this study. Table 5 presents the significant cointegration test results, demonstrating that financial inclusion in OIC countries has a long-term relationship with economic growth, banking stability, bank competition, remittances, and control variables.

Contrary to our hypothesis, the FMOLS and DOLS results show that economic growth negatively impacts financial inclusion in OIC countries. This can be attributed to worsening income inequality in the region despite strong economic growth over the past decade (Murshed et al., 2023). High inequality and poverty levels mean that many people remain financially marginalized, with fewer people seeking financial services, compared to a more equitable income distribution scenario. Additionally, Tran et al. (2023) show that economic growth without transparent government policies, especially in the financial sector, can cause financial distortions and system collapse. Therefore, national economic growth does not necessarily guarantee financial inclusion. This indicates that policies aimed at promoting financial inclusion must address income inequality and ensure that transparent financial governance is effective.

Banking stability has a positive impact on financial inclusion in the long run in both models, which aligns with our expectation. This can be explained in several ways. First, financial inclusion activities attract small savers, enhancing household and individual stability. Second, an inclusive financial system benefits both small businesses and households. Third, financial inclusion promotes greater financial intermediation, boosting investment cycles and leading to greater stability. Fourth, a diverse customer base, through financial inclusion, creates a more resilient and stable economy (Chinoda & Kwenda, 2019). Furthermore, Sha'ban et al. (2020) state that stable banks with strong capital can drive inclusive finance by lowering funding costs and increasing customer trust. Ensuring banking stability is crucial for promoting financial inclusion, which in turn strengthens economic resilience and stability. This finding underscores the need for policies that support bank stability to achieve broader financial inclusion goals.

Bank competition had no significant impact on financial inclusion in either model. However, the FMOLS analysis shows a positive relationship, while the DOLS analysis shows a negative relationship, reflecting ambiguous findings in prior literature. A positive relationship suggests that the market power hypothesis could enhance credit availability and reduce financial costs, thus boosting the demand for financial services. However, the lack of a significant impact on our results may indicate that competition indirectly benefits financial inclusion. Conversely, the information hypothesis posits that agency costs and information asymmetry reduce competition and financial access as banks become less willing to internalize lending risks, especially with less clear customers (Chinoda & Kwenda, 2019). High competition may also lead banks to minimize risk, hindering financial inclusion services (Sha'ban et al., 2020). This aligns with Lenka and Barik (2018), who find that inefficient financial sectors driven by competition hinder economic growth and stability. Policymakers should recognize that bank competition alone does not guarantee improved financial inclusion. Efforts must be made to ensure efficient financial sector operations and manage risks to enhance financial inclusion and economic stability.

Remittances have a significantly positive impact on financial inclusion in the long term. This causes funds sent through formal channels to stimulate the demand for financial services, thereby enhancing financial inclusion (Murshed et al., 2023). Remittances also increase the likelihood of using formal financial services such as deposit accounts and mobile or Internet banking (Ajefu & Ogebe, 2019). This finding aligns with Mani (2016), who noted that remittances often flow through various electronic money-transfer initiatives. The promotion of formal remittance channels can significantly boost financial inclusion. Policymakers should focus on

facilitating and encouraging the use of these channels to enhance financial services and economic stability.

Factors such as trade openness, government debt, and inflation show varying results in our models. Inflation has a significantly negative impact on financial inclusion in the long term. High inflation erodes household income and reduces access to financial services (Nsiah & Tweneboah 2023). Low inflation can boost economic growth, while high inflation can harm it, particularly in low- and middle-income countries (Ndoricimpa, 2017). Thus, high inflation decreases financial inclusion, as it lowers disposable household income (Mose & Thomi, 2021). Policymakers should focus on maintaining low inflation rates to protect household income and enhance financial inclusion. Government debt shows a significant positive impact on financial inclusion in the FMOLS model but has no effect in the DOLS model. This positive relationship is possible because debt often overcomes fiscal deficits, facilitating financial resource mobility from surplus to deficit units within a country (Edeminam & Abdullahi, 2022). Properly managed government debt can promote financial inclusion by addressing fiscal need and facilitating resource mobility. Trade openness has a significant negative impact on financial inclusion in the FMOLS model, but has no significant effect in the DOLS model. This is partly due to the negative average foreign direct investment being negative in these countries, indicating that net investment inflows decrease financial inclusion. Additionally, many OIC countries are still developing or impoverished, which affects their trade dynamics. Efforts to improve financial inclusion should consider the negative impact of trade openness, especially in developing countries, by creating policies that better integrate foreign investment into the local economy.

Conclusion

This study examines the factors driving and inhibiting financial inclusion in OIC countries from 2011 to 2021 using FMOLS and DOLS methods. The results show that economic growth hinders financial inclusion in the long term due to widespread low income, resulting in financial marginalization. Banking stability supports financial inclusion by building public trust through effective management. Remittances increase financial inclusion by increasing the demand for services through formal channels. Trade openness and inflation hinder financial inclusion, whereas government debt supports it.

Based on these findings, financial institutions should focus on stabilizing the banking sector and increasing access to low-income households and small businesses. The government must support financial inclusion and stability through sound macroeconomic policies, particularly by keeping inflation low. Identifying and addressing barriers to financial services are critical to increasing financial inclusion. This study is limited by the lack of data on important factors across countries and may not be fully generalizable beyond OIC countries. However, this may still be relevant for countries with similar income levels and macroeconomic characteristics. Future research should explore financial inclusion in other regions to validate these findings and include additional indicators, such as digital financial services, institutional quality, and socio-economic factors, to gain a deeper understanding of the dynamics of financial inclusion. Further research could also investigate the role of technology in increasing financial inclusion and the impact of various regulatory frameworks on the financial sector's development. In addition, adding dimensional indicators to the financial inclusion index could add value.

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