

## Financial Inclusion–Financial Stability Nexus in Arab Countries: Evidence from 2011–2021

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### Abstract

his study examines the impact of financial inclusion on financial stability in Arab countries over the period 2011–2021, employing static panel data models. Financial inclusion is captured through five key indicators: ATMs per 100,000 adults, commercial bank branches per 100,000 adults, borrowers from commercial banks per 1,000 adults, broad money supply (% of GDP), and domestic credit to the private sector (% of GDP). Financial stability is proxied by the Z-score.

Empirical analysis indicates that the random effects model provides the most appropriate specification, with the Feasible Generalized Least Squares (FGLS) method applied to address autocorrelation and heteroskedasticity. Results reveal that the number of bank branches and borrowers from commercial banks positively and significantly influence financial stability, whereas the number of ATMs has a negative and insignificant effect. Broad money supply negatively impacts stability, while domestic credit to the private sector shows a positive but statistically insignificant effect.

The study highlights that advancing financial inclusion is a crucial driver of financial stability in the Arab region. Policy implications include establishing robust inclusion frameworks, integrating inclusion with stability strategies, strengthening the legal and regulatory environment, expanding banking networks in underserved areas, and avoiding excessive credit growth to mitigate financial risks.

**Keywords:** Financial inclusion, Financial Stability, Arab Countries, Panel Data Models, FGLS, Z-score, Banking Sector, Broad Money Supply, Domestic Credit.

### Introduction

Over the past two decades, the global financial system has witnessed a growing interest in the concept of **financial inclusion** as a key pillar for achieving sustainable economic development and enhancing **financial stability**. Financial inclusion refers to enabling all segments of society—particularly vulnerable and low-income groups—to access and use formal financial services at affordable costs and with adequate quality. Following global financial crises, expanding access to financial services has increasingly been viewed as an effective tool to reduce systemic risks and strengthen the resilience of the financial sector.

In the Arab context, financial inclusion has gained increasing importance during the period **2011–2021**, which was characterized by significant economic and financial volatility due to political instability, fluctuations in oil prices, and the repercussions of global shocks such as the financial crisis and the COVID-19 pandemic. In response to these challenges, many Arab countries have adopted national financial inclusion strategies aimed at improving financial infrastructure, expanding digital financial services, and strengthening the role of non-banking financial institutions.

Despite the growing policy emphasis on financial inclusion, the nature of its relationship with financial stability remains a subject of debate in the economic literature. While several studies argue that greater financial inclusion contributes to risk diversification and enhances financial system resilience, others suggest that rapid and poorly regulated financial expansion may increase financial fragility. Therefore, there is a clear need for an in-depth econometric analysis to examine this relationship in Arab countries, taking into account their specific economic and institutional characteristics.

Accordingly, this research is structured around the following main themes:

- I.** Theoretical Framework of Financial Inclusion and Financial Stability;
- II.** The Relationship between Financial Inclusion and Financial Stability According to Previous Studies;
- III.** The Impact of Financial Inclusion on Financial Stability in Arab Countries during the Period 2011–2021.

### **I. Theoretical Framework of Financial Inclusion and Financial Stability**

The first section serves as a fundamental introduction to understanding the concepts of financial inclusion and financial stability, focusing on their definitions, significance, and objectives. This introduction aims to highlight the theoretical foundations of each concept, paving the way for comprehending their role in supporting financial performance and economic growth.

#### **• Financial Inclusion**

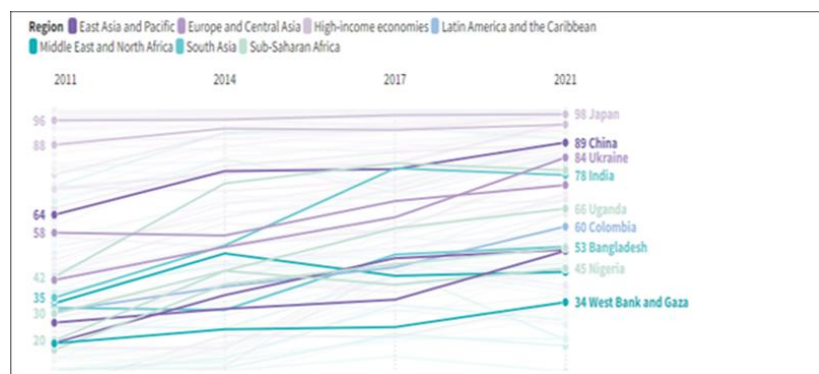
Financial inclusion refers to the ability of individuals and businesses to access financial products and services that are useful, affordable, and tailored to their needs—such as payment services, savings accounts, credit, loans, and insurance—provided in a responsible and sustainable manner (World Bank, s.d.).

Improving high levels of financial inclusion, which strives to integrate diverse parts of society in the capitalist financial system while also achieving financial stability and economic growth, would benefit the economic (financial and banking), social, and political contexts. The program aims to achieve the following objectives:

- ✓ Financial inclusion for marginalized individuals (e.g., women, low-income households, and rural populations);
- ✓ Poverty reduction through affordable financial services and community integration into formal banking;
- ✓ Creating work opportunities to improve economic stability;
- ✓ Providing access to official money to improve residents' living conditions, particularly for the impoverished (Nadine , Nouran, & Andrew , 2023, p. 82);
- ✓ The objective is not only to increase access to financial services, but also to improve financial well-being;
- ✓ It strives to lay the groundwork for sustained and equitable national development (BANGKO SENTRAL NG PILIPINAS).

The Global Findex Database constitutes the most comprehensive dataset available on how adults globally save, borrow, make payments, and manage financial risks. Published by the World Bank every three years—initially in 2011, and subsequently in 2014, 2017, and 2021—this dataset has become an essential reference for policymakers, researchers, and development practitioners. It is widely recognized as a cornerstone in global efforts to enhance financial inclusion.

The figure below presents the global proportion of adults holding a bank account over the period 2011–2021.



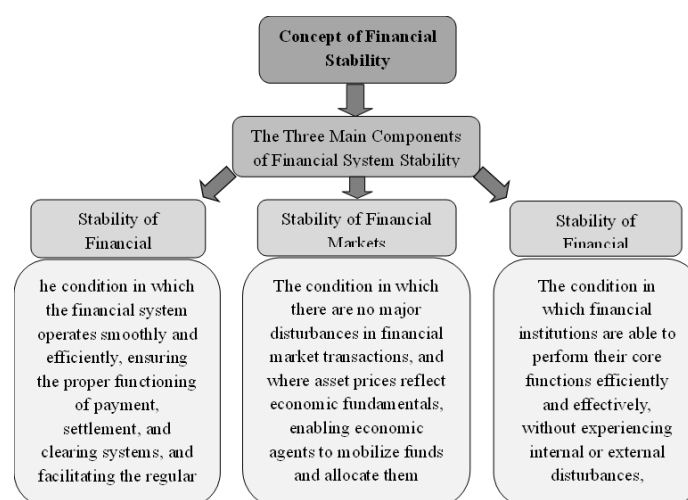
**Fig.1. Global Bank Account Ownership Rate (2011–2021)**

Prepared by the authors based on (WORLD BANK GROUP, 2021).

The significant increase in global account ownership—from 51% in 2011 to 76% in 2021—has not only expanded financial inclusion but also contributed to enhancing financial stability. Greater access to banking and mobile money services enables individuals and businesses to better manage risks, accumulate savings, and access credit, thereby reducing vulnerability to economic shocks. In developing countries, the rise from 63% to 71% in account ownership underscores the role of mobile financial services in strengthening financial resilience and supporting more stable financial systems across the region. These developments suggest that expanding financial inclusion can serve as a strategic tool for promoting both economic participation and systemic stability.

#### • Financial Stability

A financial system is considered stable when it can dissipate internal financial imbalances or absorb negative and unforeseen shocks. In a state of stability, the system primarily mitigates such shocks through self-correcting mechanisms, thereby preventing adverse events from having a destructive impact on the real economy or on other financial institutions. Consequently, the true value of financial stability is often most evident in its absence (BANK OF KOREA, s.d.).



**Fig.1. Concept of Financial Stability**

Prepared by the authors based on (BANK OF KOREA, s.d.).

Some scholars emphasize that the importance of financial stability lies in two key aspects:

- The financial system plays a crucial role in the economy by facilitating financial intermediation, enabling the flow of funds between savers and borrowers, and ensuring the efficient allocation of financial resources to promote economic growth and development (BANK NEGARA MALASIA, s.d.);

- The true significance of financial stability often becomes most apparent during periods of financial instability (THE WORLD BANK, s.d.).

## **II. The Relationship between Financial Inclusion and Financial Stability According to Previous Studie**

The relationship between financial inclusion and financial stability has yielded mixed results across empirical studies, with findings varying between positive and negative effects depending on the methodologies employed and the economic contexts examined. Accordingly, the following section reviews a selection of previous studies that have addressed this relationship and highlighted its different dimensions.

### **• The Positive Relationship between Financial Inclusion and Financial Stability**

A study by **Antony and Peter (2021)** concluded that measures designed to promote financial inclusion contribute to enhancing financial stability by fostering the diversification of financial services. According to the study, expanding access to and usage of banking services improves the resilience of the banking sector, thereby strengthening financial stability (Antony R & Peter W, 2021, p. 14).

A study by **Tran Thi Kim Oanh et al (2023)** found that financial inclusion is positively associated in low-income countries. Accordingly, financial inclusion in less-developed countries enhances financial stability and contributes to reducing inflation rates (Tran Thi Kim , 2023, p. 13).

### **• The Negative Relationship between Financial Inclusion and Financial Stability**

A study by **Rajesh Barik and Ashis Kumar Pradhan (2021)** found that financial inclusion has a significant negative impact on financial stability. This negative effect is attributed to the adverse consequences of financial inclusion arising from the rapid expansion of credit extended to the private sector (Rajesh & Ashis Kumar , Winter 2021, pp. 342-356).

Additionally, a study conducted by **the Reserve Bank of New Zealand (2023)** concluded that increased financial inclusion negatively affects financial stability as a result of expanding access to credit for marginal borrowers, which led financial institutions to assume higher levels of risk, as evidenced by experiences such as the mortgage crisis in the United States (Reserve Bank Of New Zealand, MAY 2023, p. 2).

Furthermore, the same study by **Tran Thi Kim Oanh et al (2023)** found that financial inclusion is negatively associated with financial stability in high-income countries. In more developed economies, financial inclusion increases financial instability, which in turn contributes to inflationary pressures in the long run (Tran Thi Kim , 2023, p. 13).

### **• Review and Analysis of Previous Studies**

This section presents the most important previous studies that addressed the same topic in terms of the two variables—financial inclusion and financial stability. However, these studies differed in their selection of financial inclusion indicators, while they converged on using the same dependent variable, namely the Z-Score index, as a measure of financial stability.

#### **➤ Fatima Muhammad Abdulkarim, Hamisu Sadi Ali, FINANCIAL INCLUSIONS, FINANCIAL STABILITY, AND INCOME INEQUALITY OIC COUNTRIES: A GMM AND QUANTILE REGRESSION APPLICATION, 2019.**

This paper examines the relationship between financial inclusion, financial stability, and income inequality in 47 OIC countries during 2006-2016. The study uses multiple financial inclusion indicators (ATMs, bank branches, and deposit accounts) and two dependent variables (Z-Score for financial stability and GINI for income inequality). The results indicate that ATMs and bank branches are positively associated with financial stability, while deposit accounts have no significant effect. The study also finds that financial inclusion positively enhances financial stability and reduces income inequality, helping to narrow the gap between the rich and the poor in OIC countries (Fatima & Hamisu , 2019, pp. 419-438) .

➤ **Manh Hung PHAM, Thi Phuong Linh DOAN, The Impact of Financial Inclusion on Financial Stability in Asian Countries, 2020.**

This paper examines the relationship between financial inclusion and financial stability in 42 Asian countries in 2011, 2014, and 2017 using bank-level data and panel data models. The results indicate that financial inclusion has a generally weak positive effect on financial stability. The use of credit and payment services shows mixed effects, while savings and deposit accounts positively impact stability. Furthermore, financial access (number of bank branches per 100,000 adults, number of ATMs per 100,000 adults, number of bank branches per 1,000 km<sup>2</sup>, number of ATMs per 1,000 km<sup>2</sup>) positively contributes to financial stability. (Manh Hung & Thi Phuong, 2020, pp. 47-59)

➤ **Duc Hong Vo et al, Financial Inclusion and Stability in the Assian Region Using Bank-Level Data, 2021.**

This paper examines the relationship between financial inclusion and financial market stability using data from 3,071 banks in Asia during 2008-2017, employing dynamic panel estimation (GMM). The independent variables for financial inclusion are (number of ATMs per 100,000 adults, number of bank branches per 100,000 adults, number of credit cards per 1,000 adults, number of debit cards per 1,000 adults), and the dependent variable is Z-Score. The results indicate that increasing financial inclusion through access to banking facilities significantly enhances financial sector stability, increases bank resilience, and may help raise revenues, reduce costs, and expand market share (Duc , 2021, pp. 36-43).

➤ **Velenkosini Matsebula, Johannes P S Sheefeni, An Analysis of the Relationship Between Financial Inclusion and Financial Stability in South Africa, 2022.**

This paper examines the relationship between financial inclusion and financial stability in South Africa during 2004-2020 using the Error Correction Model (ECM) for quarterly time series data. The study relies on two financial inclusion variables (number of ATMs per 100,000 adults, number of commercial bank branches per 100,000 adults) and the dependent variable Z-Score for financial stability. The results indicate a mixed effect of financial inclusion: a positive relationship between the number of bank branches and Z-Score, a negative and insignificant relationship between ATMs and Z-Score, while credit to the private sector (% of GDP) has a positive impact on financial stability. (Velenkosini & Johannes P S , 2022, pp. 637-648)

➤ **Emmanuel Anoruo, Felix Afolabi, An Examination of the Effect of Financial Inclusion on Financial Stability: Evidence From a Panel of Ten African Countries, 2023.**

his study examines the impact of financial inclusion on financial stability in 10 African countries (Botswana, Cameroon, Kenya, Madagascar, Morocco, Mozambique, Nigeria, Uganda, South Africa, and Zambia) during 2004-2019 using dynamic panel estimation (GMM). It relies on six financial inclusion variables (number of commercial bank branches per 100,000 adults, number of ATMs per 100,000 adults, number of ATMs per 1,000 km<sup>2</sup>, number of deposit accounts per 1,000 adults, credit from commercial banks (% of GDP)) representing three dimensions (availability, access, and usage). A financial inclusion index was constructed using PCA to determine the weights. The dependent variable is Z-Score for financial stability, with inflation and economic growth as control variables. The results indicate a significant positive effect of financial inclusion on the financial stability of the sampled countrie (Emmanuel & Felix , 2023, pp. 57-72).

• **Financial Inclusion Variables in Your Study (Arab Countries 2011-2021):**

✓ **Independent Variables (Financial Inclusion):**

1. **Number of ATMs per 100,000 adults**

Reflects the availability of financial and technological infrastructure and ease of access to financial services.

2. **Number of commercial bank branches per 100,000 adults**

Reflects the availability of banking infrastructure and improved access to financial services.

3. **Number of borrowers from commercial banks per 1,000 adults**

Reflects the usage of credit and lending services as part of financial inclusion.

4. **Broad money supply (% of GDP)**

Reflects the size of the formal financial system and its capacity to channel financial resources to economic activities.

5. **Domestic credit to the private sector (% of GDP)**

Reflects the efficiency of resource allocation, as the private sector generally uses funds more productively.

✓ **Dependent Variable (Financial Stability):**

• **Z-Score**

- A reliable and widely used indicator of financial stability.
- Used in all the studies listed above.

**III. The Impact of Financial Inclusion on Financial Stability in Arab Countries during the Period 2011–2021.**

This study aims to identify the sample and study variables, as well as to compare fixed panel models and determine the most appropriate estimation method for the study, namely FGLS.

• **Methodology and Tools**

➤ **Sample of the Study**

The study sample consists of a group of Arab countries, totaling **nine countries**: United Arab Emirates, Saudi Arabia, Kuwait, Qatar, Algeria, Lebanon, Tunisia, Mauritania, and Djibouti. These countries were selected based on the availability of statistical data for the study variables and according to their levels of financial inclusion (**high, medium, and low**) during the period 2011–2021, as shown in the following table:

**Table.1. Study Sample of Countries**

Level of Financial Inclusion	Country	No
High financial inclusion	United Arab Emirates	1
	Saudi Arabia	2
	Kuwait	3
	Qatar	4
Medium financial inclusion	Algeria	5
	Lebanon	6
	Tunisia	7
Low financial inclusion	Mauritania	8
	Djibouti	9

Prepared by the authors.

➤ **Study Variables**

This study relies on a set of explanatory variables to build a standard model examining the impact of financial inclusion on financial stability in Arab countries during the period 2011–2021. The independent variable data were collected from the **World Bank** (<https://data.albankaldawli.org/indicator/>), while the dependent variable

data were obtained from **Trading Economics** (<https://tradingeconomics.com/country-list/bank-z-score-wb-data.html>).

Five key indicators were used to measure financial inclusion, representing **three dimensions** (financial access, financial usage, and financial depth), and one indicator was used to measure financial stability: **Z-Score**, as recommended in the literature. The following table summarizes the dimensions, variables, and their codes.

**Table.2. Study Variables**

Main Variables	Sub-Variables	Code	Type
<b>Financial Inclusion Indicators</b>	Number of ATMs (per 100,000 adults)	ATM	Independent
	Number of commercial bank branches (per 100,000 adults)	CBK-BRCH	Independent
<b>Financial Usage</b>	Number of borrowers from commercial banks (per 1,000 adults)	CBK-BRWR	Independent
<b>Financial Depth</b>	Broad money supply (% of GDP)	LBL-BNNY	Independent
	Domestic credit to the private sector (% of GDP)	AST	Independent
<b>Financial Stability Indicator</b>	Z-Score	Z-Score	Dependent

Prepared by the authors.

### ➤ **Development of the Model**

The study's model can be expressed as follows:

$$\text{Z-Score}_{it} = \alpha + \beta_1 \text{ATM} + \beta_2 \text{CBK-BRCH} + \beta_3 \text{CBK-BRWR} + \beta_4 \text{LBL-BNNY} + \beta_5 \text{AST} + \varepsilon_{it}$$

/  $i = 1, \dots, 9$  ,  $t = 1, \dots, 11$

- **i**: number of countries;
- **t**: number of years;
- **Z-Score**: financial stability indicator;
- **ATM**: number of ATMs per 100,000 adults;
- **CBK-BRCH**: number of commercial bank branches per 100,000 adults;
- **CBK-BRWR**: number of borrowers from commercial banks per 1,000 adults;
- **LBL-BNNY**: broad money supply (% of GDP);
- **AST**: domestic credit to the private sector (% of GDP);
- $\alpha, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ : model parameters;
- $\varepsilon_{it}$ : random error term.

### • **Results and Discussion**

#### ➤ **Results of Model Selection Tests**

The following table summarizes the model selection tests used to determine the most appropriate panel estimation model:

**Table.3. Summary of Model Selection Tests for Choosing the Appropriate Static Panel Data Model**

<i>Test</i>	<i>Comparison Between Models</i>	<i>Calculated Value</i>	<i>Probability</i>	<i>Decision</i>	
<b>Fisher</b>	Pooled Regression Model vs. Fixed Effects Model	30.92	0.000	<b>Fixed Model</b>	<b>Effects</b>
<b>Breusch and Pagan</b>	Pooled Regression Model vs. Random Effects Model	192.53	0.000	<b>Random Model</b>	<b>Effects</b>
<b>Hausman</b>	Fixed Effects Model vs. Random Effects Model	4.98	0.4182	<b>Random Model</b>	<b>Effects</b>

Prepared by the authors based on the outputs of Stata 17.0

From the table, it can be observed that the F-statistic is 0.0000, which is significant at the 1% level. Therefore, the null hypothesis  $H_0$ , which assumes the homogeneity of country intercepts, is rejected, and the alternative hypothesis  $H_1$  is accepted, indicating that the Fixed Effects model is initially appropriate. However, the p-value for the Breusch and Pagan test is 0.0000, which is significant at the 1% level, leading to the rejection of the null hypothesis  $H_0$  and acceptance of the alternative hypothesis  $H_1$ , suggesting that the Random Effects model is more suitable in this case. Additionally, the p-value for the Hausman test is 0.4182, which is greater than 10%, resulting in the acceptance of the null hypothesis  $H_0$  and the rejection of the alternative hypothesis  $H_1$ , confirming that the Random Effects model is the most appropriate choice for estimating the fixed panel model.

#### ➤ **Results of Diagnostic Test**

The table presents a summary of the diagnostic tests for the Random Effects model:

**Table.4. Summary of Diagnostic Test Results for the Random Effects Model**

<b>Issue Detected</b>	<b>Test Name</b>	<b>Calculated Value</b>	<b>Probability</b>	<b>Decision</b>
<b>Normality of Errors</b>	Shapiro-Wilk	1.157	0.12361	<b>Errors follow a normal distribution</b>
		0.749	0.22680	
<b>Autocorrelation</b>	Wooldridge Test	3.931	0.0827	<b>Autocorrelation problem exists</b>
<b>Heteroscedasticity</b>	LM Test	4744.2622	0.000	<b>Heteroscedasticity problem exists</b>
	LR Test	34.8560	0.000	
	Wald Test	7.47e+04	0.000	
<b>Cross-Sectional Correlation</b>	CD Test Pesaran	-1.468	0.1421	<b>No cross-sectional correlation problem</b>

Prepared by the authors based on the outputs of Stata 17.0

From the table, it can be observed that the p-values for the **Shapiro-Wilk test** for the errors  $V_i$  and  $\epsilon_{it}$  are 0.1236 and 0.2268, respectively, which are greater than the 10% significance level. Therefore, the null hypothesis is accepted, and the alternative hypothesis is rejected, indicating that the errors follow a normal distribution. Meanwhile, the p-value for the **Wooldridge test** is 0.0827, which is less than the 10% significance level. Hence, the alternative hypothesis is accepted, and the null hypothesis is rejected, indicating the presence of



an **autocorrelation problem**. Furthermore, the p-values for the three **heteroscedasticity tests** — LM Test, LR Test, and Wald Test — are all 0.0000, which is far below the 1% significance level. Thus, the alternative hypothesis is accepted, and the null hypothesis is rejected, indicating the presence of **heteroscedasticity**. Finally, the results of the **Pesaran CD test** show a p-value of 0.1421, which is greater than the 10% significance level, leading to the acceptance of the null hypothesis  $H_0$  and the rejection of the alternative hypothesis  $H_1$ , indicating that there is **no cross-sectional correlation problem**.



#### Estimation of the Appropriate Study Model

(FGLS)

To address measurement issues, including autocorrelation and heteroscedasticity, and to obtain more efficient and representative estimates, the Feasible Generalized Least Squares (FGLS) method will be used to estimate the parameters of the random effects model, thereby correcting the standard errors of the parameters, as well as analyzing and discussing these results.



#### Estimation of FGLS

table (5) presents the results of estimating the parameters of the Random Effects model using the Feasible Generalized Least Squares (FGLS) method, summarized as follows:

**Table.5. FGLS Estimation Results**

Number of observations=99	t=11	n=9	Dependent Variable: Z-Score	
Probability			Coefficient	Explanatory Variables
0,000			20,7871	(Constant) C
0,918			-0,0027	ATM
0,005			0,27	CBK-BRCH
0,002			0,0085	CBK-BRWR
0,000			-0,0392	LBL-BNNY
0,926			0,0015	AST
			61,18	value chi <sup>2</sup>
			0,0000	statistic chi <sup>2</sup>

Prepared by the authors based on the outputs of Stata 17.0

Accordingly, the equation can be estimated using the following mathematical formula:

$$\text{Z-Score}_{it} = 20.7871 - 0.0027 \text{ ATM} + 0.27 \text{ CBK-BRCH} + 0.0085 \text{ CBK-BRWR} - 0.0392 \text{ LBL-BNNY} + 0.0015 \text{ AST} + \varepsilon_{it}$$

$$/ \quad i = 1, 2, \dots, 9 \quad , \quad t = 1, 2, \dots, 11$$



#### Analysis of Study Results

The estimation results of the FGLS model, as reported in Table (5), indicate the following:

- **Financial Access**
  - **ATM (Number of ATMs per 100,000 adults):**

The results show a negative effect of ATMs on the financial stability index (Z-Score), with a coefficient of -0.002, which is weak and statistically insignificant at 10%.

○ **CBK-BRCH (Number of commercial bank branches per 100,000 adults):**

The study found a positive and significant effect at 1% level, meaning that an increase of one branch per 100,000 adults will increase the Z-Score by 0.027 points.

• **Financial Usage**

○ **CBK-BRWR (Number of borrowers from commercial banks per 1,000 adults):**

There is a positive and significant effect at 1% level on Z-Score. Each increase of 1 borrower per 1,000 adults increases Z-Score by 0.0085 points, though the effect is considered weak.

• **Financial Depth**

○ **LBL-BNNY (Broad money supply as % of GDP):**

A negative and significant effect at 1% level on Z-Score is observed. Each 1% increase in broad money supply reduces Z-Score by 0.0392 points.

○ **AST (Domestic credit to private sector as % of GDP):**

The effect is positive but weak and statistically insignificant at 10%.

✓ **Discussion of Study Results**

In this section, the results will be discussed following their analysis based on the estimation of the FGLS model:

• **Financial Access**

○ **ATM:** The number of ATMs per 100,000 adults has a negative and insignificant effect on Z-Score. This aligns with the study by *Velenkosini Matsebula*, but contrasts with the findings of *Fatima Muhammad Abdulkarim and Manh Hung PHAM and Duc Hong Vo et al.*, which found a positive and significant effect.

○ **CBK-BRCH:** The number of commercial bank branches has a positive and significant effect on Z-Score. This aligns with several studies (*Fatima Muhammad Abdulkarim and Manh Hung PHAM DOAN, Duc Hong Vo et al.*, and *Velenkosini Matsebula*). Increased branch density improves financial literacy and access to services, thus enhancing financial stability.

• **Financial Usage**

○ **CBK-BRWR:** The number of borrowers positively and significantly impacts Z-Score. Higher borrowing improves individual and corporate finances, investments, capital accumulation, productivity, and economic growth, thus promoting financial stability. However, excessive lending could increase financial risks and reduce stability.

• **Financial Depth**

○ **LBL-BNNY:** Broad money supply has a negative and significant effect on Z-Score.

○ **AST:** Domestic credit to the private sector has a positive while aligning with *Velenkosini Matsebula* who reported a positive effect.

**Conclusion**

Through this study, the impact of financial inclusion on financial stability in Arab countries was examined using static panel data models over the period (2011–2021). The analysis relied on five (05) variables representing the independent variable ‘financial inclusion’, namely: the number of ATMs per 100,000 adults, the number of commercial bank branches per 100,000 adults, the number of borrowers from commercial banks per 1,000 adults, broad money supply (% of GDP), and domestic credit to the private sector (% of GDP). The Z-score variable was used to represent the dependent variable ‘financial stability’.

The findings indicate that the random effects model is the most appropriate specification for estimating the static panel data model. Therefore, the Feasible Generalized Least Squares (FGLS) technique was used to correct for autocorrelation and heteroskedasticity issues.

**study Findings:**

- The number of ATMs per 100,000 adults has a negative and statistically insignificant effect on financial stability;
- The number of commercial bank branches per 100,000 adults has a positive and statistically significant effect on financial stability. This is attributed to the geographical expansion of bank branches in countries with low levels of financial inclusion (Mauritania and Djibouti), as well as Tunisia, which has a moderate level of financial inclusion. This expansion facilitates access to financial services, thereby leading to an improvement in the financial stability index of the countries under study;
- The number of borrowers from commercial banks per 1,000 adults has a positive and statistically significant effect on financial stability. This can be explained by the improvement in the financial position of individuals and institutions through an increase in the number of borrowers, which in turn raises the level of investment and capital within the economy. This contributes to higher productivity and wealth, ultimately enhancing financial stability;
- Broad money supply (% of GDP) has a negative and statistically significant effect on financial stability. This result is attributed to the continuous increase in the money supply ratio over the study period, which leads to higher liquidity levels, an expansion in financial intermediation, and an increase in the volume of financial services provided, thereby adversely affecting financial stability;
- Domestic credit to the private sector (% of GDP) has a positive but statistically insignificant effect on financial stability.

**Recommendations:**

- Working toward establishing principles of financial inclusion that would enhance financial stability in Arab countries;
- Adopting a clear strategy aimed at achieving integration between financial inclusion and financial stability;
- Pursuing a financial system that supports financial inclusion, which in turn contributes to strengthening financial stability in Arab countries;
- Ensuring the availability of a legal and regulatory environment that supports financial inclusion and promotes financial stability;
- Countries with high levels of financial inclusion, as well as Algeria and Lebanon—which are characterized by relatively low densities of commercial bank branches—should work on increasing branch density in order to enhance financial inclusion on the one hand and improve financial stability on the other;
- Avoiding excessive expansion in borrowing policies is essential, as it increases financial risks associated with such behavior, thereby negatively affecting financial stability.

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