Financial Inclusion and Economic Growth  
MENA Region

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Abstract

Financial inclusion aims to include all excluded population into the financial system, to reduce poverty and raise economic growth rate. The paper examines financial inclusion in 23 countries in Middle East and North Africa region over the period from 2004 to 2016 using multi-dimensional index, which are availability, usage, and access to banking services. Panel model estimated to test impact of financial inclusion on economic growth and poverty reduction using financial inclusion data set. Positive significant variables found to be number of automated teller machines, number of depositors, borrowers and bank accounts as well as credit as percentage of GDP. The paper underscores governments’ needs to provide complementary policies towards higher financial inclusion to raise economic growth and reduce poverty.

Keyword: Financial Inclusion, Index, Economic growth, poverty reduction, MENA countries, panel model, GDP, Credit, Dimensions, bank usage.

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Introduction

Financial Inclusion policies designed to raise economic growth rates at countries through widening financial resources at the financial system, which require raising awareness and facilitation of low cost and easily accessed financial services.

Financial inclusion is a priority in Middle East and North Africa region as it shows the lowest level of financial inclusion together with the Sub Saharan region according to the World Bank global Findex database, which shows the importance of studying the financial inclusion in the region to facilitate higher inclusion levels towards higher economic growth rates and poverty reduction.

Paper Importance: there are not enough papers studying impact of financial inclusion in MENA countries on economic growth. The paper will try to fill the gap by providing a measurement of financial inclusion in MENA region, which can be used by policy makers with further study of its impact on economic growth.

Research Methodology: The paper will use three dimensions financial inclusion index. The dimensions are penetration, usage, and availability of financial services. The index produce values between zero and one the higher the value the higher the financial inclusion.

The paper will calculate the index of financial inclusion IFI to 23 countries in MENA region in the period from 2004 to 2016, which are the latest available data. An empirical analysis will be carried studying the impact of financial inclusion on real GDP, using panel model to find the relationship between financial inclusion, economic growth and poverty reduction in MENA region.

The paper structured as follows: first section presents a brief review of the literature on the relationship between financial inclusion and economic growth. Second section presents a brief
review of the literature on the relationship between financial inclusion and poverty reduction. Third section is measuring financial inclusion in the studied MENA countries. Fourth section the econometrics methodology used to study impact of financial inclusion on economic growth. Finally, the fifth section presents results of regression analysis. The paper will end by presenting conclusions and the required future policies.

First: Economic Growth and Financial Inclusion: Literature Review

Financial inclusion aims to include all excluded population into the financial system, as stated by Sarma (2008) it is the process of ensuring the availability, ease of access and usage of formal financial system by all economy members. Mehrotra et al. (2009) stressed that financial services is a public good that should be accessible to all population as a quasi-public good. Beck et al (2007) found that well developed accessible financial system reduces transactions and information costs. Reduction of financial services cost raise accessibility to all population segments enhances financial development, which contributes to economic growth (Yorulma, 2013). The lack of access to finance affects economic growth and poverty reduction, as it becomes difficult to the poor to accumulate savings and invest in business activities that yield income without financial sector (Neaime & Gaysset, 2018).

Financial development accelerate economic growth through four areas: first availability of low cost payment tools, second increasing financial transactions volume and better allocation of resources, which improve resources distribution. Third developed risk management, which lead to more productive investments and financial innovations. Fourth reduction effects of asymmetric information due to availability of more information provided by the financial system on investment
possibilities and available capital in the banking system (Babajide et al., 2015).

Theoretical economic literature have argued through history that a well-developed financial system facilitates efficient allocation of capital resources as it allows alternatives of investment activities, that manage risks through diversification leading to enhanced asset liquidity (Ouma et al., 2017). Solow growth model stated that savings would increase per capita output shifting the whole production function upward. Solow model was limited to short and medium term didn’t explain technological advancement which covered by Schumpeterian growth model that shows the importance of developed financial system and innovative financial tools which encourage savings by all income segments in the economy raising financial funds towards innovations causing higher economic growth. This shows the importance of financial inclusion in facilitating high levels of economic growth (Babajide et al., 2015).

Joseph Schumpeter (1912) stated that services of financial intermediaries are essential for economic growth, as new innovative projects require finance, without a financial sector that channel funds there will be little economic growth. Hicks (1969) argued that financial development contribute significantly to savings and investments inputs which lead to larger output in the economy through capital accumulation channel and through technological change as stated by Schumpeter.

Bell and Rousseau (2001) studying India economy proved positive economic impact of financial intermediaries on economic performance in India. Financial inclusion overcomes constraints that hamper economic growth on individual and country level as low-income level, high illiteracy rates, and cultural barriers.
As said by Rangarajan, Ex- Governor Reserve Bank of India “The country has moved on to a higher growth trajectory. To sustain and accelerate the growth momentum, we have to ensure increased participation of the economically weak segments of the population in the process of economic growth” (Gupta et al., 2012).

King and Levine (1993) stated that finance has an impact on growth through higher productivity and more efficient allocation of resources. Khan (2011) stated that financial services access will increase economic activities and job opportunities at rural areas which will increase rural households’ disposable income increasing savings which will cause economic growth through multiplier effect. Hariharan and Marktanner (2013) found that financial inclusion enhance economic growth as they found positive correlation between total factor productivity and financial inclusion which imply that it gives higher ability to capital formation as it increase savings and enhance intermediation efficiency boosting business activities resulting economic growth.

Babajide el al. (2015) investigated the determinants of financial inclusion and its impact on economic growth in Nigeria, the study found financial inclusion is a significant determinant of total factor of production and capital per worker, which determines level of output in economy.

Sharma (2015) studied the relationship between financial inclusion and economic development in India and he found that there is a positive association between financial inclusion and economic growth as it develop more efficient and stronger financial system that facilitates economic growth. Among financial inclusion dimensions, penetration and availability of banking services are the most affecting dimensions. SAAB (2017) studied the impact of financial inclusion on economic
Financial Inclusion and Economic growth of developing economies as the MENA region. The paper used a regression to quantify the relationship between financial inclusion, financial literacy and growth, the finding showed the importance of financial inclusion in the region.

Second: Financial Inclusion and Poverty: Literature Review
Authors through economic literature found that financial inclusion is a source of poverty reduction, welfare enhancement, and resources utilization efficiency as financial services facilitate increasing investment rates in businesses, health, and education (Kunt et al, 2017).
Developed financial intermediaries reduce poverty by providing access to credit market and financial services for the poor. In theoretical economic literature, financial development is argued to reduce poverty by Schumpeter (1934) and McKinnon (1973) through providing interest earnings from savings as well as facilitating credit and financial services that stimulate investment activities which create sources of income which known as the direct effect.
Keynes (1937) theory of demand of money was revisited by McKinnon (1973) argued that financial sector affect poverty through providing savings opportunities to the poor that affect their income. The model studies both liquidity and credit ratios to know the effect of savings on poverty. The theory assumed that financial intermediaries helps poor accumulating capital through savings which enables poor borrowing money to start micro and small size enterprises, which create jobs opportunities and higher income levels, which reduces poverty.
Banerjee and Newman (1993) found that accessibility to finance enhances productivity enabling poverty reduction. Eastwood and Kohli (1999) associated bank branches expansion and direct lending programs to fostering small scale business
outputs creating more income resources. Classes and Feijen (2007) stated that financial intermediaries reducing risks of falling into poverty and coping with shocks through financial services as insurance, loans, and savings. Jeanneney & Kpodar (2008) investigated using a sample of developing countries from 1966 to 2000 the association between financial development and poverty reduction by allowing the poor to use financial services to raise income either through savings or through profitable investments.

Sarma & Pais (2009) found that creating financial services allows safe and secure savings. It develops new economic activities opportunities to low income people creating secure income, which raise people chance to have enough opportunities to participate in society. In addition, managing financial emergencies will be much easier. As argued by Hannig and Jansen (2010) wider access of financial services will lead to higher living standards due to be better access to financial system, which improves daily financial resources management.

Williams et al. (2007) empirically investigated the impact of financial inclusion on poverty reduction and economic growth they used panel data analysis for data covering period from 2006 until 2015 for three African countries. They found one percent increase of ATM would increase in growth domestic product by about 0.0082 and reduction of poverty in developing countries. Burgess and Pande (2005) associated expansion of bank branches in rural areas in India with poverty reduction. Brune et al. (2011) studying financial access in rural Malawi found that bank branches in rural areas provide poor households’ access to savings, which improve their well-being. Allen et al. (2013) studying financial inclusion in Kenya found that commercial banks improve financial access to poor household.
Third: Measuring Financial Inclusion

3.1 Index of Financial Inclusion: Measuring Technique

The present study uses three-dimensional financial inclusion index, which are penetration of banking services in the country, usage, and availability of banking services attaching equal weights to all dimensions.

The method starts by calculating \( (d_i) \) an index of each variable in the dimension \( i^{th} \) the resulted \( (d_i) \) value will be between 0 and 1 the higher the value the higher the dimension achievement. The next step is calculating each dimension \( D_i \) over the studied period using the simple average of \( (d_i) \) for the available years. Finally, financial inclusion index, for each country, calculated using formula (1) to get values between 0 and 1. Where 0 means complete exclusion and 1 is complete financial inclusion.

\[
IFI_i = 1 - \frac{\sqrt{\sum(d_{i1})^2 + (1-d_{i2})^2 + \ldots + (1-d_{in})^2}}{\sqrt{n}} 
\]

(1)

According to the IFI values, countries placed according to the following three categories.
- High financial inclusion if \( 0.5 \leq IFI \leq 1 \)
- Medium financial inclusion if \( 0.3 \leq IFI \leq 0.5 \)
- Low financial inclusion if \( 0 \leq IFI \leq 0.3 \)

The index includes three dimensions as follow:

- **Banking Penetration dimension (D1):** If all people in the country have bank account the dimension should be equal to 1. The study used number of borrowers from commercial banks (per 1,000 adults), number of depositors with commercial banks (per 1,000 adults) and bank account (per 1000 adults).
- **Availability of banking services dimension (D2):** Availability of banking services measured using number of Commercial
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bank branches (per 100,000 adults), and number of Automated
teller machines (ATMs) (per 100,000 adults).

Usage of banking dimension (D3): Two main services
considered in banking services deposits and credit. Accordingly,
the dimension used volume of deposit as percentage of GDP and
volume of domestic credit as percentage of GDP.

3.2 Index of Financial Inclusion: MENA Countries

The present study calculated the financial inclusion index for 23
countries in MENA region covering the period from 2004 until
2016 due to data availability. The data on all the three index
dimensions were available for 22 countries while the index of
Bahrain calculated on two dimensions level (penetration and
usage). The data were retrieved from World Bank (World
Development Indicators database last updated July 2018). Table
(1) presents the average values of IFI and the three dimensions
for the available studied years for each country.

It has been found that almost 50% of studied countries are low
financially included while almost 40% are medium and only
10% highly financially included. Penetration of banking D1 is
the lowest dimension in almost 48% of the countries followed
by usage of banking services D3 of almost 30% while
availability of banking services D2 is the lowest dimension at
almost 22% of the studied countries.
Table (1) Three Dimensions Values in Studied MENA Countries (2004-2016)

<table>
<thead>
<tr>
<th>Country Name</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>IFI</th>
<th>IFI Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yemen, Rep.</td>
<td>0.025</td>
<td>0.002</td>
<td>0.148</td>
<td>0.05</td>
<td>Low</td>
</tr>
<tr>
<td>Iraq</td>
<td>0.000</td>
<td>0.051</td>
<td>0.119</td>
<td>0.08</td>
<td>Low</td>
</tr>
<tr>
<td>Syrian Arab Republic</td>
<td>0.102</td>
<td>0.053</td>
<td>0.111</td>
<td>0.09</td>
<td>Low</td>
</tr>
<tr>
<td>Mauritania</td>
<td>0.037</td>
<td>0.070</td>
<td>0.223</td>
<td>0.09</td>
<td>Low</td>
</tr>
<tr>
<td>Djibouti</td>
<td>0.030</td>
<td>0.045</td>
<td>0.306</td>
<td>0.12</td>
<td>Low</td>
</tr>
<tr>
<td>Algeria</td>
<td>0.150</td>
<td>0.072</td>
<td>0.177</td>
<td>0.13</td>
<td>Low</td>
</tr>
<tr>
<td>Egypt, Arab Rep.</td>
<td>0.126</td>
<td>0.070</td>
<td>0.432</td>
<td>0.20</td>
<td>Low</td>
</tr>
<tr>
<td>Libya</td>
<td>0.347</td>
<td>0.170</td>
<td>0.096</td>
<td>0.20</td>
<td>Low</td>
</tr>
<tr>
<td>Sudan</td>
<td>0.005</td>
<td>0.026</td>
<td>0.112</td>
<td>0.25</td>
<td>Low</td>
</tr>
<tr>
<td>Saudi Arabia</td>
<td>0.317</td>
<td>0.366</td>
<td>0.122</td>
<td>0.26</td>
<td>Low</td>
</tr>
<tr>
<td>West Bank and Gaza</td>
<td>0.332</td>
<td>0.224</td>
<td>0.292</td>
<td>0.27</td>
<td>Low</td>
</tr>
<tr>
<td>Tunisia</td>
<td>0.277</td>
<td>0.337</td>
<td>0.333</td>
<td>0.31</td>
<td>Medium</td>
</tr>
<tr>
<td>Bahrain</td>
<td>0.046</td>
<td>NA</td>
<td>0.368</td>
<td>0.34</td>
<td>Medium</td>
</tr>
<tr>
<td>Morocco</td>
<td>0.250</td>
<td>0.389</td>
<td>0.444</td>
<td>0.35</td>
<td>Medium</td>
</tr>
<tr>
<td>Oman</td>
<td>0.412</td>
<td>0.545</td>
<td>0.213</td>
<td>0.36</td>
<td>Medium</td>
</tr>
<tr>
<td>United Arab Emirates</td>
<td>0.269</td>
<td>0.436</td>
<td>0.359</td>
<td>0.36</td>
<td>Medium</td>
</tr>
<tr>
<td>Jordan</td>
<td>0.244</td>
<td>0.406</td>
<td>0.541</td>
<td>0.39</td>
<td>Medium</td>
</tr>
<tr>
<td>Iran, Islamic Rep.</td>
<td>0.045</td>
<td>0.610</td>
<td>0.301</td>
<td>0.41</td>
<td>Medium</td>
</tr>
<tr>
<td>Qatar</td>
<td>0.397</td>
<td>0.524</td>
<td>0.348</td>
<td>0.41</td>
<td>Medium</td>
</tr>
<tr>
<td>Kuwait</td>
<td>0.586</td>
<td>0.470</td>
<td>0.362</td>
<td>0.46</td>
<td>Medium</td>
</tr>
<tr>
<td>Turkey</td>
<td>0.899</td>
<td>0.526</td>
<td>0.285</td>
<td>0.50</td>
<td>High</td>
</tr>
<tr>
<td>Lebanon</td>
<td>0.447</td>
<td>0.657</td>
<td>0.965</td>
<td>0.63</td>
<td>High</td>
</tr>
</tbody>
</table>

Source: Calculated by Author

Fourth: Estimation Technique: Model Specification
This section investigates the impact of financial inclusion on economic growth and poverty reduction through regressing financial inclusion variables on Real GDP and regressing
financial inclusion dimensions on real GDP as two independent regressions.

4.1 Regression of Financial Inclusion Variables on GDP

\[ RGDP_{it} = a_0 + a_1 LGDP_{it-1} + a_2 BCB_{it} + a_3 DCB_{it} + a_5 CBB_{it} + a_6 ATM_{it} + a_7 DD_{it} + a_8 DC_{it} + \varepsilon_{it} \]  

Where,

- \( i, t \) denote country and time period
- \( RGDP \): Real Gross Domestic Product
- \( LGDP \): Lagged GDP growth rate
- \( BCB \): Number of borrowers from commercial banks (per 1,000 adults)
- \( DCB \): Number of depositors with commercial banks (per 1,000 adults)
- \( CBB \): Number of Commercial bank branches (per 100,000 adults)
- \( ATM \): Number of Automated teller machines (per 100,000 adults).
- \( DD \): Deposit as percentage of GDP
- \( DC \): Domestic credit as percentage of GDP
- \( a_0 \): intercept parameter
- \( a_1, \ldots, a_n \): are the coefficients of the independent variables
- \( \varepsilon \): stochastic error term

4.2 Regression of Financial Inclusion Dimensions on GDP

\[ RGDP_{it} = a_0 + a_1 D1_{it} + a_2 D2_{it} + a_3 D3_{it} + \varepsilon_{it} \]  

Where,

- \( i, t \) denote country and time period
- \( RGDP \): Real Gross Domestic Product
D1: Banking Penetration dimension including number of borrowers from commercial banks (per 1,000 adults), number of depositors with commercial banks (per 1,000 adults) and bank account (per 1000 adults).

D2: availability dimension includes number of Commercial bank branches (per 100,000 adults), and number of Automated teller machines (ATMs) (per 100,000 adults).

D3: usage dimension includes deposit as percentage of GDP and domestic credit as percentage of GDP.

\[ \begin{align*}
&\alpha_0 \text{ intercept parameter} \\
&\alpha_1, \ldots, \alpha_n : \text{are the coefficients of the independent variables} \\
&\epsilon \text{ stochastic error term}
\end{align*} \]

Data: the data include 23 countries in MENA region covering the period from 2004 to 2016 due to data availability.

For each regression the pooled ordinary least square (OLS), panel Random and fixed effect methods are employed then Hausman test carried which found that the fixed effects model best fits the data in both regressions. Data retrieved from World Bank - World Development Indicators database last updated July 2018.

Fifth: Empirical Results and Discussions

5.1 Financial Inclusion Variables and GDP

From table (2) lagged GDP growth rate shows positive coefficient 1.73 a positive significant impact on real GDP. One percent increase in GDP growth rate in previous year will lead on average to 1.73 percent increase in real GDP the current year.

Number of Automated teller machines (ATMs) shows a positive significant impact on real GDP. One percent increase in ATM will lead on average to 4.34 percent increase in real GDP.
Domestic credit as percentage of GDP shows a positive impact on real GDP; a one percent increase in domestic credit will lead to an increase in real GDP of average 5.74 percent. Number of depositors with commercial banks shows positive impact on real GDP. One percent increase in number of depositors will lead to an increase of average 6.82 percent in real GDP.

Table (2): Relationship between IFI Variables and Real GDP

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Random Effects Model</th>
<th>Fixed Effects Model</th>
<th>Pooled Regression Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>p&gt; t</td>
<td>Coefficient</td>
</tr>
<tr>
<td>GDPlag</td>
<td>1.55</td>
<td>0.028</td>
<td>1.73</td>
</tr>
<tr>
<td>Branches</td>
<td>-5.18</td>
<td>0.028</td>
<td>-4.13</td>
</tr>
<tr>
<td>ATM</td>
<td>4.27</td>
<td>0.000</td>
<td>4.34</td>
</tr>
<tr>
<td>Borrowers</td>
<td>-1.01</td>
<td>0.243</td>
<td>-9.28</td>
</tr>
<tr>
<td>Credit</td>
<td>4.57</td>
<td>0.035</td>
<td>5.74</td>
</tr>
<tr>
<td>Depositors</td>
<td>7.26</td>
<td>0.000</td>
<td>6.82</td>
</tr>
<tr>
<td>Deposits</td>
<td>-1.13</td>
<td>0.345</td>
<td>-9.74</td>
</tr>
<tr>
<td>Constant</td>
<td>6.30</td>
<td>0.220</td>
<td>6.06</td>
</tr>
<tr>
<td>R. Squared</td>
<td>0.8107</td>
<td></td>
<td>0.8119</td>
</tr>
</tbody>
</table>

Source: Author’s computation using Stata 14

From the above table it can be deduced that using the fixed effect model, the R² (coefficient of determination) is very high. It shows that about 81 percent of the total variations in real gross domestic product are explained by all the independent variables in the model.

5.2 Financial Inclusion Dimensions and GDP

Regressing financial inclusion dimensions on real GDP as found from fixed effect model which best fits the data. From table (3) Banking Penetration dimension has positive significant impact on real GDP. One percent increase in Banking Penetration will lead on average to 8.21 percent increase in real GDP. The results show the positive significance of banking penetration variables which are number of borrowers from commercial banks (per
Financial Inclusion and Economic

1,000 adults), number of depositors with commercial banks (per 1,000 adults) and bank account (per 1000 adults) on economic growth and poverty reduction.

**Table (3): Relationship between IFI Dimensions and Real GDP**

<table>
<thead>
<tr>
<th>Independent Variables</th>
<th>Random Effects Model</th>
<th>Fixed Effects Model</th>
<th>Pooled Regression Model</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Coefficient</td>
<td>p&gt;</td>
<td>Coefficient</td>
</tr>
<tr>
<td>D1</td>
<td>1.02</td>
<td>0.020</td>
<td>8.21</td>
</tr>
<tr>
<td>D2</td>
<td>-8.94</td>
<td>0.131</td>
<td>-8.56</td>
</tr>
<tr>
<td>D3</td>
<td>-7.60</td>
<td>0.091</td>
<td>-6.88</td>
</tr>
<tr>
<td>Constant</td>
<td>1.89</td>
<td>0.000</td>
<td>2.07</td>
</tr>
<tr>
<td>R. Squared</td>
<td>0.2670</td>
<td>0.2387</td>
<td>0.3358</td>
</tr>
<tr>
<td>Hausman Prob</td>
<td></td>
<td></td>
<td>0.1329</td>
</tr>
</tbody>
</table>

Source: Author’s computation using Stata 14

**Conclusion and Policy Implications**

Empirical results found that financial inclusion variables number of ATMs, number of depositors, number of borrowers, number of account and credit as percentage of GDP has positive significant impact on Gross Domestic Product, which will drive economic growth and reduce poverty as mentioned by literature. Investment in well-maintained and functioning ATMs affects economic growth and poverty reduction positively. ATMs save time and cost which facilitate availability, usage and access to banking services which stress on the importance of installing more ATMs in MENA countries.

The more the Penetration of banking services the higher the economic growth and the lower the poverty. Number of bank account, number of depositors and borrowers with commercial banks as shown from empirical results increase economic growth and reduce poverty. Depositors will receive stable, secured, and risk free interest payment, which increase their income as well as raise available funds in the economy.
Available Domestic credit has positive significant impact on economic growth as it facilitates investment opportunities in the economy, which raise GDP through productive businesses of different sizes and reduce poverty due to income earning from profitable investments.

As shown from index of financial inclusion calculated for MENA countries only two countries are high financially included, 40% are medium financially included and almost 50% of the studied countries are low financially included which negatively affect economic growth rates and poverty levels as shown from the empirical results. MENA countries should target higher financial inclusion level, to raise economic growth and reduce poverty. As stated by Schumpeterian growth model innovative financial tools will encourage savings by all income segments in the economy raising financial funds causing higher economic growth. Hicks (1969) also argued that improvement of capital accumulation channel through technological change would contribute significantly to savings and investments, lead to larger GDP.

Future policies in MENA region should include innovative financial tools and technological improvement. First, implantation of more advanced ATMs covering wider areas of MENA countries to facilitate more usage of banking system. Second, banking system should offer new financial tools that attract population to banking system to increase number of depositors, and number of bank accounts to raise available funds in the banking system to increase economic growth. As stated by Solow growth model savings would increase per capita output shifting the whole production function upward. Third, Banks should offer attracting financial tools and services to increase number of borrowers and credit as percentage of GDP, which increase investment opportunities, raise Gross domestic product,
economic growth rates, and reduce poverty. To reach the direct effect of financial inclusion as argued by Schumpeter (1934) and McKinnon (1973) through providing interest earnings from savings as well as facilitating credit and financial services that stimulate investment activities, which create sources of income.
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