

EXPLORING THE LINKAGES BETWEEN FINANCIAL INCLUSION AND ECONOMIC GROWTH IN EMERGING COUNTRIES

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Abstract : *The post-crisis in 2008 leaving a major concern on financial inclusion problem, especially on the nations outside developed country that classified in the bottom of pyramid, which is consists of people with low income, families that living in rural and isolated places, people with disability, workers without valid identity document, and negligible communities, most of them are unbanked and the rate is very high. This study is exploring the relationship between financial inclusion and economic growth that defined by GDP in 11 countries in emerging market from 2007-2016. By figuring out the connection between financial inclusion and economic growth, it is expected to raise efficiency in economics, decreasing the inequality and low-income pitfall, so that the wellbeing of nations would improve. Based on panel VECM result, the long-run relationship is existing between financial inclusion and economic growth. The IFRs result that obtained from panel VECM proposes that financial inclusion predominantly positively affecting the economic growth of emerging countries.*

Keywords: *financial inclusion; economic growth; panel VECM; Impulse Reaction Function, Granger Causality*

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1. Introduction

1.1 Topic Area

One of the crucial purposes of various economic policies in the world, especially in emerging country is to attain inclusive growth or comprehensive growth in all economic aspects. One of the strategies to promote inclusive growth is through financial inclusion development. Financial inclusion is an entire effort that aims to eliminate all forms of barriers to community access in utilizing financial services (Bank of Indonesia, 2014).

There are two terms in financial exclusion, voluntary and involuntary exclusion. The World Bank (2014) characterize voluntary financial exclusion as a circumstance which specific population prefer not to use financial services because they feel there is no need for it and or because of their cultural or religious excuse. On the other hand, insufficiency income of the population, their high-risk preference, or imperfection in the market causing obstacles for society to access financial facility, these circumstances are called involuntary exclusion. There are several barriers that obstruct the access to banking facilities, specifically in developing countries where the situation is quite challenging. The banks' business model that has not fully developed, country market position compared to another, level of country competition, macroeconomic conditions, and regulations that do not support the development of financial services can become the reason of low-level financial inclusion (Kunt et al. 2008). The focal point that should be overcome by policymaker along with researcher is the involuntary

exclusion; together they can design the strategy and the policies to correcting the imperfection in the market.

Despite the importance of financial inclusion for international policy in continuous development, empirical research on financial inclusion is not sufficient enough. Appropriate measures of financial inclusion both at household and country levels have been investigated in much empirical research, whereas little consideration is paid to the importance of financial inclusion to economic growth, especially in emerging countries. Emerging countries or emerging markets is a market where a middle class of its population continues to emerge. More jobs and opportunities are set up in emerging countries make people have a bigger chance to shift from poverty into a middle area, therefore, a slight increase in income will cause a significant escalation on nations purchase intention. We pay attention to emerging countries because they are expected to grow faster than mature economies. As emerging countries continue on their outstanding growth, there is a real demand for basic financial services; therefore, the improvement in financial inclusion will still require in boosting their economic growth.

From this study, we expect to take a deeper understanding of the financial inclusion impact on economic growth in emerging countries and draw out the practical information from the result to be used by policymakers to reach socioeconomic benefits.

1.2 Objectives

This study aims to investigate the influence of financial inclusion on 11 countries that included in the emerging market by evaluating the compelling relationship between financial inclusion and economic growth. To perform our research goal, we conduct a panel data analysis with panel cointegration tests to explore the long-run relationship between the variables.

The method flow of this research is described as follows: First of all, we select the variables measurement for each financial inclusion dimensions and economic growth in emerging market countries, then we test for cointegration between the variables, after that, we apply panel data VECM if the cointegration exists. Next step is we observe the effect of certain shock by examining the variables using impulse response functions (IRFs) of panel vector error correction model (VECM) methodologies. By using this approach, we can gather a comprehensive look at the relationships between variables and can tie more worthwhile information than only panel data analysis. The last is we examine the drift of the variables using panel Granger causality tests, therefore a causal link among financial inclusion and economic improvement in emerging countries can be discovered.

2. Literature Review

There are several notions of financial inclusion in existing literature. Sarma (2008) conclude that financial inclusion is indicated by the easy access to financial system and its system is usable any time, also the benefit can be utilized by all economic actors, while Hannig and Jansen (2010) argue that financial inclusion is an attempt to incorporate societies that classified into "unbankable" to proper financial system, hence they got used to utilizing primary financial services such as savings, payments, and transfers. Bhaskar (2013) assume that financial inclusion is the situation where society can access financial services at lower cost, which in the end can lead to stability in financial condition. Besides that, Amidžić, Massara,

and Mialou (2014) stated that financial inclusion is an economic condition where the access to main financial services is accepted and properly used by the society.

The regulator has paid much attention to financial inclusion since the late 1990s. Kempson and Whyley (1999) in their study about the group of people that are precluded from proper financial systems in Britain found out that a basic bank account is decisive financial service for the low-income population. Then the research was developed to find out the basic perception of financial inclusion and the features of the financial excluded classes in the early 2000s. Recently, after the late 2000s, researchers start to focus on the financial inclusion proxy and its measurement, also the relationship between financial inclusion and economic development.

Up until now, even though there is an agreement about the definition of financial inclusion, but still there is no standard method for measuring financial inclusion. Therefore, varying option of financial inclusion indicators is described by existing literature. Naceur and Ghazounai (2007) are using the index of bank development, and private sector credit as the proxy of financial development. They are exploring the relation between financial development and economic growth for 11 countries of MENA (Middle East and North Africa) region, and the result shows that bank development is negatively impacts economic growth. Pradhan et al. (2016) examine the impact market penetration of insurance, which is one of the financial inclusion dimensions, broad money, and stock-market capitalization on economic growth of ASEAN Regional Forum (ARF). They also aimed to find the causal nexus between variables, and the results inform that there are cointegration and mutual causality of all variables.

Past researches have also identified the financial inclusion impact on poverty and income inequality. Burgess and Pande (2005) found that the poverty in India has reduced because of the expansion of bank branches in the rural area. Similarly, Brune et al. (2011) found that the welfare of poor household in Malawi has improved through their participation in saving account, as they use it for agricultural activity. Research on the impact of financial inclusion on poverty also conduct by Dixit and Ghosh (2013), they assume that by creating saving culture, undertake efficient and low-cost payment mechanism, has the possibility to exclude nations from poverty. Prasad (2010) also argues that efficiency in financial intermediation can be boost by improving financial inclusion at the country level, in the end, it will promote establishment in economic.

Ghosh (2011) gives critical evaluation of the financial penetration role on the Indian economic growth at sub-national-level data. The result shows that economic growth is positively affected by social banking experiments, and the evidence also stated that financial penetration and its usage is able to influence the growth of state per capita by the role of technology. Kim, et al (2018) in the study about the relationship between financial inclusion and economic growth in Organization of Islamic Cooperation (OIC) countries, found that financial inclusion positively affecting economic growth. However, we cannot conclude that financial inclusion will always have positive linkage with economic growth, and it will not necessary causing a positive trend on finance-growth (Barajas et, al 2012).

There are only few studies that investigated the direct relationship between financial inclusion and economic growth. Nonetheless, the studies by (Berentsen and Shi, 2008; Masoud and Hardaker, 2012; Barajas et al., 2013) in cross-country level found that financial development is indirectly correlated with economic growth.

From the literature review above we can conclude that although financial inclusion has become a big concern for regulators and researcher, there are still many gaps to explore in this

research are and few types of research have been executed on this topic, mainly on the linkage between financial inclusion and economic growth.

3. Data and Methodology

3.1 Data

This study uses panel data for financial inclusion and economic growth for 11 countries in emerging market from 2007 to 2016. The classification of emerging market country was obtained from S&P Dow Jones Indices' Annual Country Classification Consultation Report in 2017.

The data set of financial inclusion was collected from IMF's Financial Access Survey (FAS) and the GDP per capita was obtained from Federal Reserve Economic Data (FRED St. Louis Fed).

Table 1. Country weights in S&P DJI's Global Benchmark Indices as of May 31, 2017:

S&P Emerging Country	BMI Weight (%)	S&P Emerging Country	BMI Weight (%)
Brazil	7.49	Mexico	3.74
Chile	1.55	Peru	0.55
China	30.89	Philippines	1.67
Colombia	0.72	Poland	1.50
Czech Republic	0.19	Qatar	0.81
Egypt	0.23	Russia	4.20
Greece	0.52	South Africa	7.19
Hungary	0.32	Taiwan	14.39
India	13.02	Thailand	2.92
Indonesia	2.75	Turkey	1.40
Malaysia	3.00	UAE	0.94

Total there are 22 countries that classified into emerging country, yet because of the consideration of missing data, therefore we only using 11 emerging country that highlighted in the table above.

3.2 Methodology

The methodology of this research proceeds according to the following steps. First, we conduct panel unit root tests to see the trend of the variables for financial inclusions and economic growth, if there is a trend then we have to make them stationer. Second, we estimate the long-run relationship between the variables using a pooled regression model. Third, we construct the VECM model to examine the dynamic causal nexus between financial inclusions and economic growth in emerging countries. We consider using the vector error correction mechanism (VECM) if there is cointegration between the variables. From panel VECM result, we can conduct Impulse Function Response and Granger Causality to find out the mutual causality between dependent and independent variable.

The thought of financial inclusion is about the number of individuals and companies that use financial services, while the main factor for measuring financial inclusion is the statistics

on the use of financial services such as account penetration, savings, credit, insurance, etc. (The World Bank, 2013).

There are several dimensions that can be used to measuring the financial inclusion; the common ways are by analyzing the banking services accessibility, its availability and the usage by nations in particular country as stated by Sarma (2012). Access dimension is useful to quantify the utilization of financial facilities, so the potential barrier to create and using bank account can be identified. It is important for society to have convenient access in any occasion. One of indicator for access dimension is the ATM number and bank branches per 100.000 adult populations. Next dimension is usage; the purpose is to measure the actual usage capabilities of financial services and products such as savings, deposits and loan. We are using the amount of deposit account and borrowers from commercial bank per 1.000 adult; also take into account the life insurance premium to GDP. Lastly is the quality dimension, this dimension is useful to measure the availability of financial products and services that has met the customer needs. However, there is still no consensus on the exact measurement and some international institutions are still concerned in developing appropriate indicators.

Table 2. Proxy of Financial Inclusion and Economic Growth

Proxy	Variable	Description	Notation	Dimension
Economic Growth	GDP per Capita	The sum of finished goods and services produced within a nation in a year.	GDP	Growth
Financial Inclusion	Automated teller machines per 100,000 adults	Indicating the ownership of the account that represents a number of people owned accounts at formal financial institutions.	ATM	Access
	Bank branches per 100,000 adults	The penetration rate of financial institutions.	BRCH	Access
	Deposit accounts with commercial banks per 1,000 adults	Represents the number of people owns savings accounts in financial institutions.	DEPO	Usage
	Borrowers from commercial banks per 1,000 adults	The credits of individuals have in the financial institutions.	BORR	Usage
	Life insurance premium volume to GDP	The level of insurance penetration.	LINSUR	Usage

4. Result

4.1 Panel Unit Root Test

Before the data is processed, we have to check the stationarity of each variable by conducting panel unit root test using Augmented Dickey-Fuller test. The null hypothesis is the data is not stationary which means there is a trend in our variable.

Table 3. Unit Root Test using ADF – Fisher Chi-square

Variable	Notation	Stationarity	Probability
GDP per Capita	GDP	At 1 st Difference	0.0000
Automated teller machines per 100,000 adults	ATM	At 1 st Difference	0.0000
Bank branches per 100,000 adults	BRCH	At 1 st Difference	0.0000
Deposit accounts with commercial banks per 1,000 adults	DEPO	At 2 nd Difference	0.0000
Borrowers from commercial banks per 1,000 adults	BORR	At 1 st Difference	0.0104
Life insurance premium volume to GDP	LINSUR	At 1 st Difference	0.0000

After all the variable data is stationer, next step is to determine the effect specification for our cross-section model, whether we have to use fixed effect, random effect or pooled regression.

Table 4. Effect Specification Test

Effect Testing	Probability	Interpretation
Redundant Fixed Effect Test	0.0000	Reject H ₀
Correlated Random Effects - Hausman Test	0.0059	Reject H ₀

The null hypothesis is the particular effect is fit for the model, because we reject the null hypothesis for both fixed and random effect, therefore pooled regression is suitable for our model.

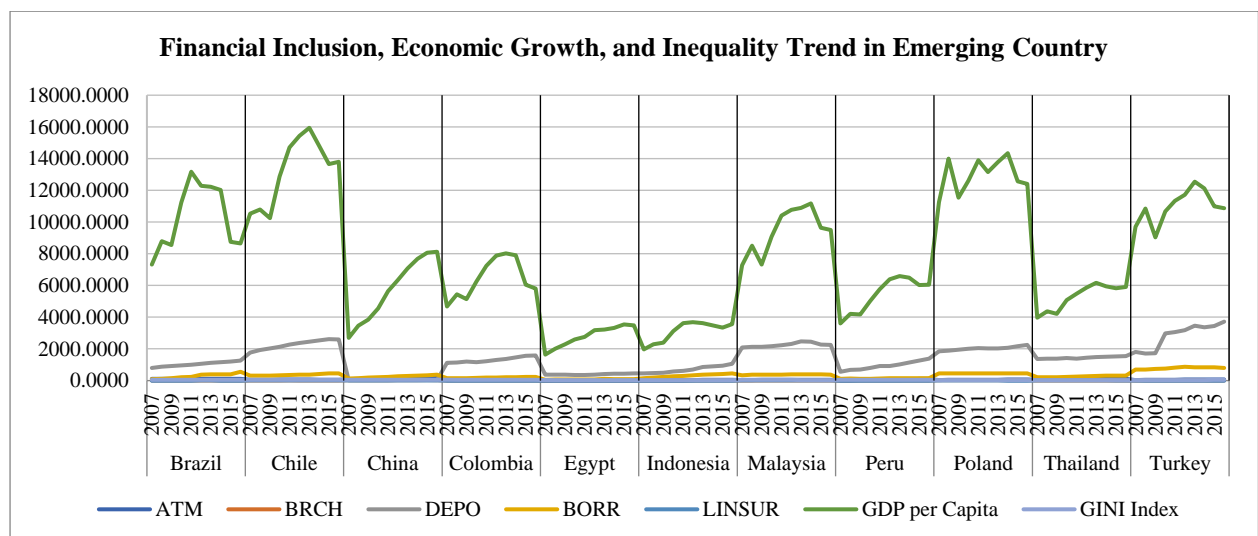


Figure 1. Trend of Financial Inclusion, Economic Growth, and Inequality in 11 Emerging Country

4.2 Cointegration Test

To determine the cointegration in our model, we are using Kao Residual Cointegration Test. If there is cointegration, then we have to use VECM model, otherwise, VAR is appropriate for estimation process if there is no cointegration is found. The result of cointegration test is presented below:

Table 5. Kao Residual Cointegration Test Result

Cointegration Test	t-Statistic	Probability
Augmented Dickey- Fuller Test	-1.995250	0.0230

The result indicates that we reject null hypothesis which means there is cointegration in our model, therefore we have to use VECM with maximum lag is 1 based on automatic lag length selection on SIC, and we can see from the table below that there is two cointegration in our model.

Table 6. Johanson Cointegration Test Result

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.449045	123.8078	95.75366	0.0002
At most 1 *	0.414868	71.35082	69.81889	0.0376
At most 2	0.124139	24.18999	47.85613	0.9384
At most 3	0.083782	12.52574	29.79707	0.9120
At most 4	0.048925	4.825694	15.49471	0.8271
At most 5	0.004664	0.411406	3.841466	0.5213

4.3 Panel VECM

First of all, we have to make sure that the cointegrating equation coefficient is negative and the probability value is significant; otherwise, the model could not be used. From the table result below, we can see that our dependent variable D(GDP) has a negative coefficient and significant probability. Therefore, we will proceed with the analysis using D(GDP) as the dependent variable. This also indicates that our model will have a long run relationship.

Table 7. Result of D(GDP) Vector Error Estimation

Independent Variable	Notation	Coefficients [t-stats]
C	α	-13.30822 [-0.08234]
CointEq1	β_1	-0.105943 [-2.36671]
CointEq2	β_2	4.204291 [1.89517]
D(GDP(-1))	β_3	0.010282 [0.09941]
D(ATM(-1))	β_4	-1.53588 [-0.11595]
D(BORR(-1))	β_5	11.9695 [2.05318]
D(BRCH(-1))	β_6	-136.2143 [-1.19295]
D(DEPO(-1))	β_7	0.403551

		[0.54878]
D(LINSUR (-1))	β_8	179.0128
		[0.39369]
R-squared	0.143679	
Adj. R-squared	0.056963	
F-stat	1.656885	

The VECM model is presented as below:

$$D(\text{GDP}) = \alpha + \beta_1 * (\text{GDP}_{(-1)} + 24.094 * \text{BORR}_{(-1)} - 104.444 * \text{BRCH}_{(-1)} - 9.092 * \text{DEPO}_{(-1)} + 210.285 * \text{LINSUR}_{(-1)} - 1668.51) + \beta_2 * (\text{ATM}_{(-1)} + 0.0036 * \text{BORR}_{(-1)} + 2.208 * \text{BRCH}_{(-1)} - 0.05 * \text{DEPO}_{(-1)} - 7.017 * \text{LINSUR}_{(-1)} - 24.415) + \beta_3 * D(\text{GDP}_{(-1)}) + \beta_4 * D(\text{ATM}_{(-1)}) + \beta_5 * D(\text{BORR}_{(-1)}) + \beta_6 * D(\text{BRCH}_{(-1)}) + \beta_7 * D(\text{DEPO}_{(-1)}) + \beta_8 * D(\text{LINSUR}_{(-1)}) + \varepsilon$$

Table.8 Result from Pooled Regression

Variable	Unstandardized Coefficient		t-Statistic	Prob.
	B	Standard Error		
Constant	13.30822	161.6226	-0.082341	0.9346
B ₁	0.105943	0.044764	-2.366708	0.0204
B ₂	4.204291	2.21843	1.895165	0.0617
B ₃	0.010282	0.103432	0.09941	0.9211
B ₄	-1.53588	13.24574	-0.115953	0.9080
B ₅	11.9695	5.829729	2.053183	0.0434
B ₆	136.2143	114.1831	-1.192946	0.2365
B ₇	0.403551	0.735364	0.548778	0.5847
B ₈	179.0128	454.7007	0.393694	0.6949
F-Statistic		1.656885	Sig-F	0.12229
R2		0.143679	Adjusted R2	0.056963

From the estimation result above, we can see if there is any short-run effect in the variable. Because the lag is only one, therefore the short-run effect can be directly seen on value of probability.

Table 9. Short Run Effect

Variable	Prob.	Short Run Effect
ATM	0.9080	There is no short run effect
BORR	0.0434	There is short run effect
BRCH	0.2365	There is no short run effect
DEPO	0.5847	There is no short run effect
LINSUR	0.6949	There is no short run effect

The VECM model performs a good model fit with significant F-Statistics. BORR, DEPO and LINSUR indicate a positive and significant relationship with GDP. This interprets the positive role of financial inclusion on economic growth in emerging countries also portrays a

lag relationship of financial inclusion variables to economic growth that indicates by GDP. Based on the evidence above, number of deposits account that represents financial inclusion can lead to better economic growth. This finding is very essential because increasing number of people that own deposits account is a main step to achieve financial inclusion. The positive relationship between those variables can be a driven for government as a policy maker to enable people to open a bank account with less difficulty.

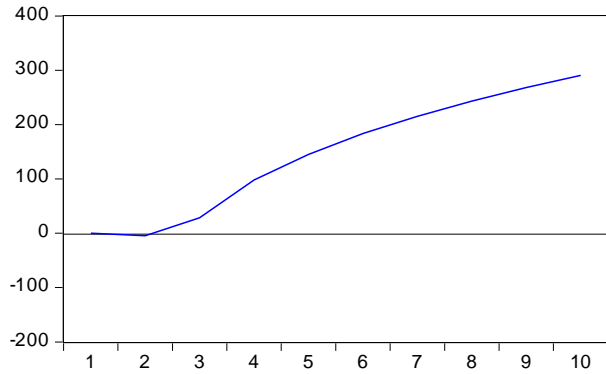
4.4 Impulse Function Response

The impulse response is a useful graph to understand how one standard deviation of innovation of a variable will affect another variable, and how the effect will develop over time. In our model, GDP is the dependent variable. Therefore, the impulse responses results will show a shock of ATM, BRCH, DEPO, BORR, and LINSUR to the GDP.

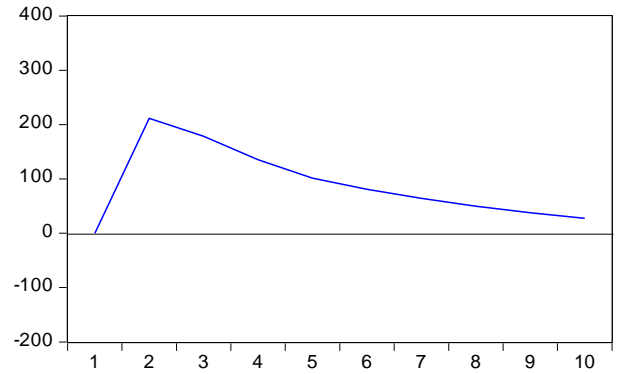
From the figure below, we can see that if there is a shock of ATM will have a positive impact on GDP starting on 3rd period, as well as the shock of DEPO, but the raise is starts on 1st period, then a bit decline on 3rd period before continue to increase again. In other hands, the shock of BORR will increase the GDP up until a certain point, specifically on 2nd period and then will decrease the GDP but remain in positive point; this pattern is quite the same with LINSUR impact to GDP. Contrary, the shock of BRCH will cause a decrease in GDP on the 1st period until 2nd period but will increase GDP in next future periods.

Response to Cholesky One S.D. Innovations

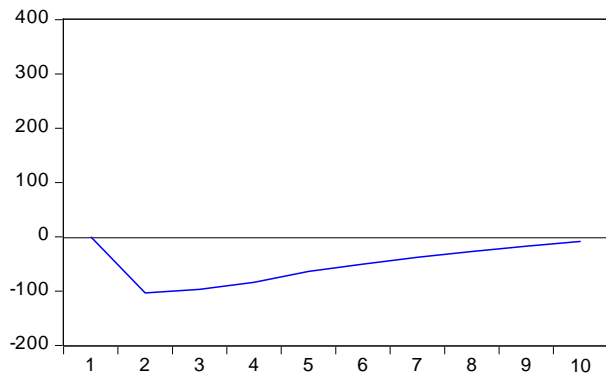
Response of GDP to ATM



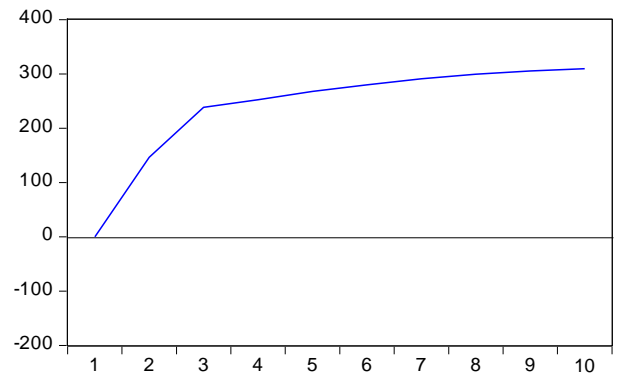
Response of GDP to BORR



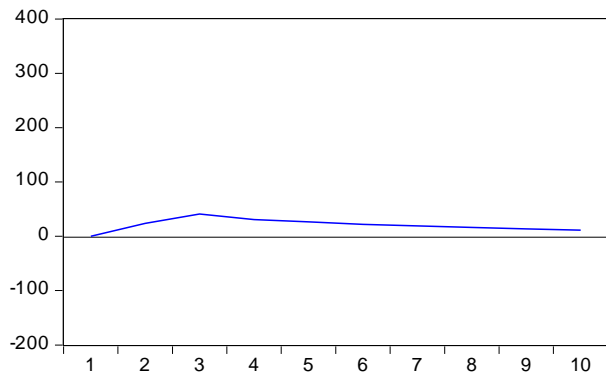
Response of GDP to BRCH



Response of GDP to DEPO



Response of GDP to LINSUR



4.5 Granger Causality

Table 10. Granger Causality Result

Null Hypothesis:	Prob.
DDEPO does not Granger Cause DGDP	0.7189
DGDP does not Granger Cause DDEPO	0.7933
DBRCH does not Granger Cause DGDP	0.6978
DGDP does not Granger Cause DBRCH	0.2989
DBORR does not Granger Cause DGDP	0.0002
DGDP does not Granger Cause DBORR	0.2512
DATM does not Granger Cause DGDP	0.5543
DGDP does not Granger Cause DATM	0.9371
DLINSUR does not Granger Cause DGDP	0.0002
DGDP does not Granger Cause DLINSUR	0.0153

We conduct granger causality test to examine the causal relationship between the variable. Focusing on the causal nexus between D(GDP) and variables of financial inclusion, we find that D(BORR) and D(LINSUR) granger cause D(GDP) at 1% significance, and D(GDP) granger cause D(LINSUR) at 5% significance. Based on the results can be seen that the credit has an influence on the economy of emerging country. With the channeling of credit can increase the development in various sectors. Loan in investment and working capital will expand the business owned by the citizen so it will impact on increasing labor demand. This means that the credit can reduce unemployment, and the credit disbursed can increase the consumption of goods and services so that the GDP of a country will increase, especially in emerging countries. The influence of insurance on economic growth is as a financial intermediary, insurance companies are means to mobilize funds by issuing insurance premiums. The mobilized premium funds are then transferred to the economic unit that experienced deficit for them to invest in the real sector (long-term investments), and at the same time, insurance companies also provide instant liquidity if there is a loss happen.). In the long run, the impact of intense improvement in banking system on economic growth will diminished because it may not generate productive credit, instead the pressure of inflation will increase. This proposition is validated by Demetriades and Hussein (1996), Rousseau and Wachtel (1998) and Arestis et al. (2001) on their study about nexus between financial development and economic growth across the countries.

5. Conclusion and Further Research

Even though recently the researcher and policymakers start to concerns about financial inclusion and its importance, there only a few studies have been conducted on finding the impact of financial inclusion and economic growth. In line with that context, the aim of this study is to analyze the financial inclusion impact on economic growth. Our attention is paid to emerging countries because they are expected to grow faster than mature economies. As emerging countries continue on their outstanding growth, there is a real demand for basic financial services, therefore the improvement of financial inclusion will still require. To accomplish the research objective, we perform the panel VECM to explore the long-run relationship between them. In addition, IRFs and Granger causality test that derived from the panel VAR analysis will provide further analysis of financial inclusion on economic growth.

From the panel VECM results, it indicates that there is a long run relationship between financial inclusion and economic growth. The IFRs result that developed from panel VECM proposes that financial inclusion predominantly has a positive impact on economic growth of emerging countries.

This study reveals the fundamental role of financial inclusion in financial development in emerging countries. Therefore, financial inclusion can be a significant parameter in the financial development of any economy. The academic implication of this study is that it enhances the literature on financial inclusion as a driver of an economy improvement. In addition, the result of this study can be used by policymakers to reach socioeconomic benefits in order to increase social welfare through economic growth.

For further research we propose to take account multivarious factors that influence financial inclusion in emerging countries such as financial literacy rate, income level, interest rate, population, culture, government policies, etc., considering that there is a significant difference of financial inclusion in the individual country. Also, it would be better to measure the financial inclusion by calculating financial inclusion index, so it could give more precise findings.

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