

# Does financial development mean financial inclusion? A causal analysis for Eswatini

NOLWAZI HLOPHE

Central Bank of Eswatini  
Correspondence: nolwazih@centralbank.org.sz

## **Abstract**

The purpose of this paper is to undertake a causal analysis for Eswatini, which examines whether financial development causes increased financial inclusion. Through Engle & Granger (1987) cointegration analysis, the existence of a long run relationship between the dependent variable, financial inclusion, and the independent variables: financial development and economic growth is investigated. The results indicate unidirectional Granger causality from financial development to financial inclusion and that the variables have a long-run relationship. The results imply that financial development causes financial inclusion in Eswatini. Policy recommendations from these results advise that financial inclusion strategies include policy decisions that are geared to increased financial development.

**Keywords:** Financial Development; Financial Inclusion; Eswatini.

## **1. Introduction**

The purpose of this paper is to examine the causal relationship between financial development and financial inclusion in Eswatini. The contribution of this paper to the literature is to research the impact that financial inclusion has on economic development. In recent years, financial development through financial innovation has drawn much attention and has raised interest in how financial development can be harnessed for increased financial inclusion in developing economies. The importance of an inclusive financial system is widely recognized in the policy circles and recently financial inclusion has become a policy priority in many countries.

The National Financial Inclusion Strategy (NFIS) of Eswatini was developed as part of the government's vision to afford appropriate and quality financial services and products accessible to all categories of the population as well as the micro, small and medium enterprises (MSMEs). It is intended to remove constraints preventing some strata of the population from having access to and use of these services and products. According to the latest FinScope Survey for Eswatini, 54% of the adult population is banked, which is to say: included in formal financial institutions (FinMark Trust, 2015).

Within the Southern African Development Community (SADC) region financial inclusion is a joint strategic undertaking. Botswana has 76% of the adult population as financially included (FinScope, 2014), whereas the Mozambique only has 40% of the adult population as financially included (FinScope, 2014). The NFIS of Eswatini is in line with Vision 2022 of Eswatini and the proposed goal is to:

1. Increase the depth of financial inclusion, growing the percent of adults with access to two or more formal products from 65% (FinScope 2014) to 75% by 2022,
2. Reduce the financially excluded from 27% to 15%, by 2022 through growing mobile money and remittances,
3. Deepening bank reach, getting credit basics right, ensuring risk management products are available, and
4. Enabling alternative financial services channels to serve the poor.

Financial development is defined as improvements in the size, efficiency and stability of the financial system. Financial inclusion means that individuals and businesses have access to affordable financial products to meet their needs.

Through financial inclusion, the components of financial development are increased. As more individuals and businesses make use of financial services, the size of the financial services sector increases and can be better monitored by the central bank towards financial stability as more money is included in the formal financial sector.

There is no consensus on the formal definition for financial inclusion but it can be broken down into the following three aspects, namely: usage of financial products, access to financial products, and lastly barriers to financial inclusion (Demirguc-Kunt, *et al.*, 2014). In Eswatini, financial inclusion is broadly defined as effective access by citizens to a range of quality financial services such as credit, savings, insurance, payments and remittances, provided by diverse financial service providers. Financial inclusion means that the adults have access to services that are provided safely, are sustainable and are in a well regulated environment (Demirguc-Kunt, *et al.*, 2017).

In Eswatini, the barriers to financial inclusion are due, but not limited, to the following:

### **1. Usage barriers**

*a. Trust:* Formal financial institutions are generally regarded with suspicion by the public, though trusted to keep money safe.

*b. "Banks are not for me":* Most respondents felt that they were not the target market for formal financial institutions. They perceive banks to serve mainly the affluent or those with a formal job.

### **2. Access barriers**

*a. Eligibility:* Banks often require confirmation of employment, proof of address or a title deed, which is not always readily available as only approximately 20 per cent of the adult population is formally employed or can prove their address and only 10 percent has a title deed.

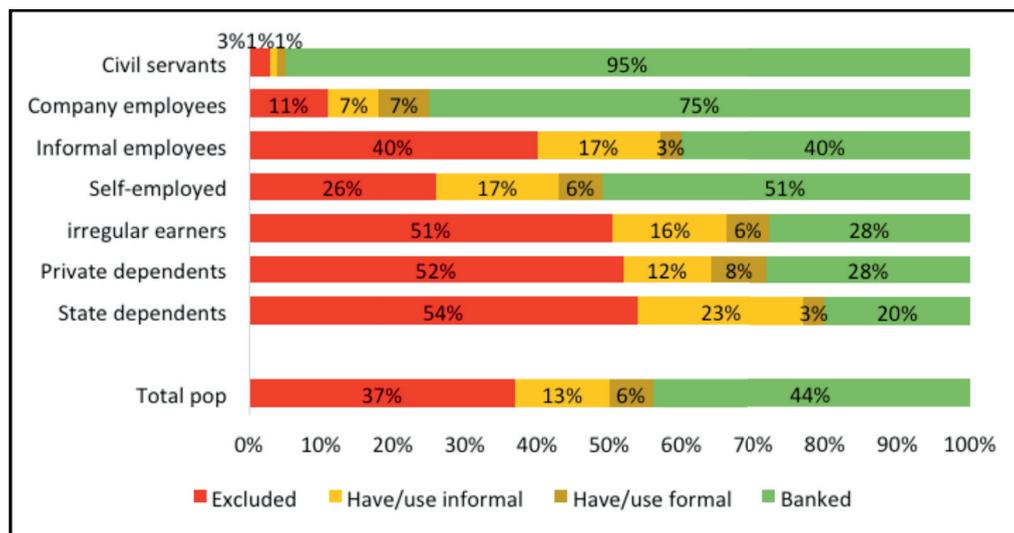
*b. Affordability:* High bank charges were mentioned, by FinScope respondents, as a barrier for savings and transaction products.

*c. Others may include,* lack of loanable funds, administrative capacity, institutional barriers etc.

Financial inclusion is necessary for economic development and this is very significant for developing economies. A financially inclusive system is indicative of a growing and more efficient financial system that is more efficient and cost effective. Figure 1 displays the financial services usage in Eswatini, the

excluded population mainly consists of informal employees, irregular earners, state and private dependents.

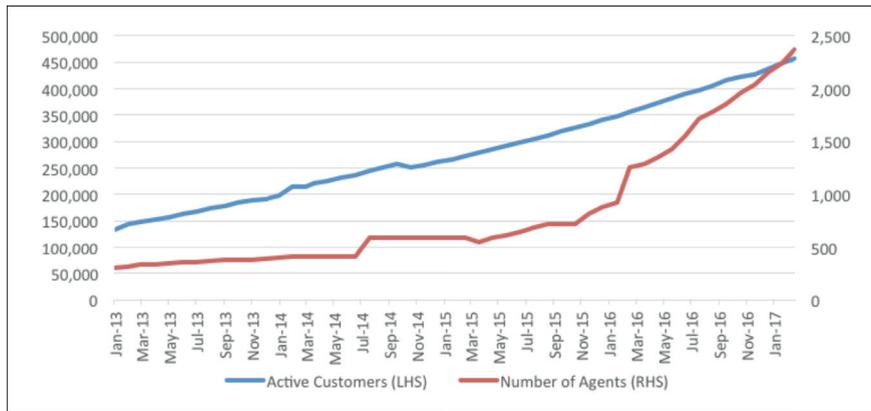
FIGURE 1: FINANCIAL SERVICE USAGE IN ESWATINI



Source: FinScope Consumer Survey Eswatini 2014

Towards a more financially inclusive economy, diverse sectors can be involved regarding providing remittance services that will allow more availability of financial services to the financially excluded. In Kenya, telecommunications company Safaricom introduced M-PESA, which is a mobile money remittance platform that functions on Unstructured Supplementary Service Data (USSD) codes. Mobile money was introduced in Eswatini by MTN in 2011. It has been an innovation that has increased financial inclusion through the efficiency, affordability and safety that it provides to its users, which are mainly the financially excluded. The use of this service has grown exponentially since its inception, showing another avenue of increased financial inclusion in Eswatini. Since its introduction, MTN Mobile Money transactions have increase by 124% from 2015 to 2016 and has 60% of the adult population of Eswatini as active customers (Figure 2). Mobile money breaks down geographical constraints in that subscribers do not have to travel great distances to gain access to cash (Asongu, 2012). In recent years, the building society has developed applications that are compatible MTM Mobile Money and this has connected previously unbanked citizens to the formal banking system. The result of this rise in mobile banking is that Eswatini is now witnessing financial development the developing world.

FIGURE 2: MOBILE MONEY STATISTICS



Source: Central Bank of Eswatini

The banking sector has also taken a lead role in promoting financial inclusion. The banks, since 2014, have launched low cost bank accounts that also have lower customer registration requirements. These low cost bank accounts now allow the largely financially excluded population to be financially included through the laying down of the barriers. Mobile money is a financial inclusion initiative that has increased financial inclusion in Eswatini through the ease of accessibility, low cost function and efficiency of its service delivery.

Through this, it is observed that the development of bank accounts by the private institutions has led to increased financial inclusion. The study sought to empirically examine this relationship. Using cointegration analysis, to test whether a long-run relationship exists between financial inclusion, financial development and economic growth.

## 2. Literature review

Increased research has been conducted on financial inclusion in developing economies because “financial Inclusion is a key enabler to reducing poverty and boosting prosperity” (Rakoto, 2018). The main drivers of financial inclusion in Eswatini are the banks and the telecommunications provider: MTN. This is why this paper mainly focuses on whether financial development causes financial inclusion, as the private financial institutions play a big role in whether the financially excluded will become included. Rapid financial development in Eswatini can be attributed to mobile money, which has enhanced financial inclusion through an increase in the number of citizens with access to active mobile money accounts (Beck, *et al.*, 2015). The greatest cost faced by banks in

*Hlophe: Does financial development mean financial inclusion? A causal analysis for Eswatini*

financial inclusion is setting branches in hard to reach, rural areas, which do not guarantee high profitability (Beck, *et al.*, 2015).

Sarma and Pais (2001) seek to empirically identify the country specific factors that are associated with the level of financial inclusion in a country. They find that human development & financial inclusion move closely with each other, as it is expected that higher levels of financial literacy will result in better financial decisions individuals. Demirgüç-Kunt *et al.* (2017) identify income per capita, quality of institutions, good governance and regulatory environment as factors that influence a country's financial development and financial inclusion.

Sarma and Pais (2001) identify the factors that affect financial inclusion by carrying out sets of the regressions and conclude that the following factors affect financial inclusion: income, inequality, urbanization and physical infrastructure. They specify that the last two factors speak to the connectivity and information levels, which play a crucial role in financial inclusion. In another study, Zins & Weill (2016) take another view of the determinants of financial inclusion in Africa; they note that gender, level of income, age and education level are the factors that affect financial inclusion.

Kostov *et al.* (2015) study the “Mzansi” accounts in South Africa to analyze the role of households' behavior decision process. They find that aspirations and financial literacy are important determinants of the decision process. Gender also matters for financial inclusion. Using the 2012 Global Findex on 98 developing countries, Demirgüç-Kunt *et al.* (2013) find that a significant gender gap exists in account ownership, formal saving and formal credit. Being a woman would increase the likelihood of being financially excluded. To fully understand the benefits of financial inclusion, it is important to make sure that the financial products offered to people meet their needs and that the products are safe, stable and that the providers are regulated in a reliable financial system (Demirgüç-Kunt, *et al.*, 2017).

The population that is formally financially included is observed not to use Mobile Money (Fanta, *et al.*, 2016). Through the Mobile Money innovation, the number of remittances has increased and therefore the expansion of Mobile Money services will further increase remittances in developing economies, as has happened in the following economies: Botswana, Zimbabwe and Eswatini (Fanta, *et al.*, 2016). Increased remittances are a signal for increased financial inclusion. Digital technology offers a powerful channel to decrease the financial inclusion gap. As financial services change, through technological advancements, so might their latent link to economic development.

Financial development has extrapolative power for future economic growth, and this has been shown to have a causal relationship from financial development to economic growth (King & Levine, 1993). King and Levine (1993) use private credit as a ratio of GDP to show direction of causality from financial development to economic growth. Other measures for financial development that they use include: the ratio of bank credit to the sum of bank and central bank credit, liquid liabilities of banks and non-bank institutions as a share of GDP and private credit to domestic credit. Gurley and Shaw (1960) likewise emphasize the role of financial development in being instrumental to increased economic growth and Gerschenkron (1962) concluded that financial development plays a key role in increased economic growth for developing economies.

### 3. Methodology

#### 3.1. Data

This study uses data obtained from the International Monetary Fund (IMF) and the World Bank for the period 2004 to 2015. The financial inclusion and financial development variables data is obtained from the World Bank, whereas the economic growth data is obtained from the IMF. The variables employed in this study are indicated on Table 1:

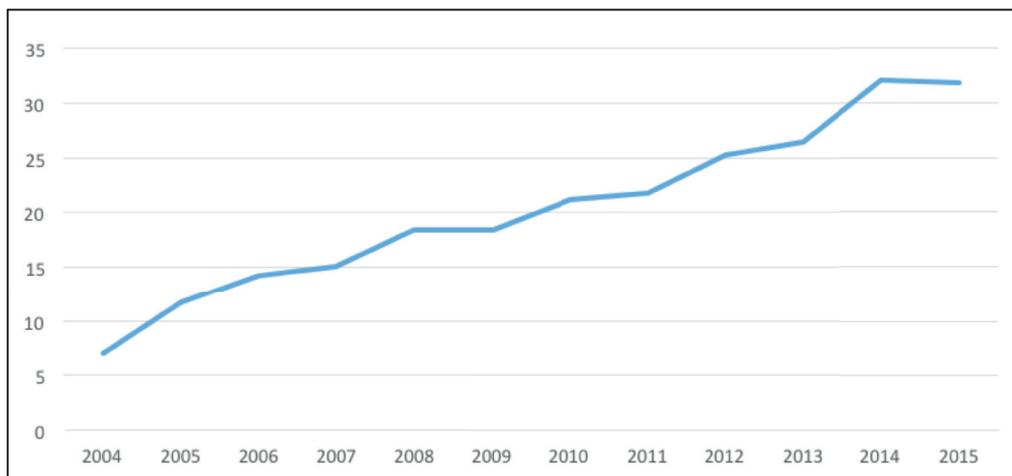
TABLE 1: VARIABLES FOR REGRESSION

<b>Dependent variable:</b>	<b>Independent variables:</b>
Financial inclusion (FI)	Financial development (FD) Economic growth (GDP per capita)

The proxies for financial inclusion and financial development are financial access (number of Automated Teller Machines (ATMs) per 100 000 adults) and domestic credit to the private sector as a percentage of GDP respectively. This study employs cointegration analysis to observe the long-run dynamics between the dependent and the independent variables. A Granger causality test will be conducted to answer the main objective of this paper, which is to investigate whether financial development means, or causes, financial inclusion.

The number of ATMs per 100 000 adults showed rapid increase between 2004 and 2014 and to some extent plateaued from 2014 to 2015 (Figure 3).

FIGURE 3: FINANCIAL INCLUSION - NUMBER OF ATMs PER 100 000 ADULTS



Source: World Bank

### 3.2. Model Specification

In order to examine the causal relationship between financial development and financial inclusion in Eswatini, the initial step is to perform the cointegration analysis proposed by Engle and Granger (1987) to examine the existence of a stationary equilibrium long-run relationship between the variables. Firstly estimate the long-run model of the variables using the following equation:

$$LFI_t = \beta_0 + \beta_1 LFD_t + \beta_2 LGDP_t + \mu_t$$

Where  $LFI$  is financial inclusion,  $LFD$  is financial development and  $LGDP$  is economic growth, all with natural logarithm. For the Engle and Granger (1987) approach, at least one of the variables must be integrated and after estimating the OLS model for the variables from the above equation, we can then say that these variables are cointegrated if the residual series from the estimation is stationary, therefore indicating a stationary long-run equilibrium relationship between the variables. Cointegration amongst variables does not imply correlation (Alexander, 2008) and from this, we can see that in this case cointegration and positive correlation are seen to coexist for the variables in this analysis.

The next step in my analysis is to conduct pairwise Granger causality tests between the variables to examine the direction of causality between variables thereby answering the main question of this paper.

### 3.2. Results and Discussions

The results from the empirical analysis are discussed in this section. Table 2 shows the descriptive statistics of the obtained data.

TABLE 2: DESCRIPTIVE STATISTICS

	<b>Financial Inclusion</b>	<b>Financial Development</b>	<b>Economic Growth</b>
Mean	20.23803	19.78166	17167.44
Median	19.75803	20.39069	17396.79
Maximum	32.06961	21.88329	19898.15
Minimum	6.96874	15.38629	13905.25
Std. Dev.	7.75812	1.848586	1934.878
Skewness	0.048941	-1.153083	-0.199139
Kurtosis	2.150136	3.707895	1.975809
Jarque-Bera	0.365925	2.909758	0.603797
Probability	0.832799	0.233429	0.739413
Sum	242.8564	237.3799	206009.2
Sum Sq. Dev.	662.0727	37.58997	41181261

Table 3 indicates the unit root tests. The Augmented Dickey-Fuller unit root tests for each of the series to confirm integration, i.e. that the variables under consideration are not stationary. From the unit root tests, we can observe that financial inclusion and economic growth are integrated series, whereas financial development is not. After the unit root test, the long-run regression of the variables is estimated using ordinary least squares regression (OLS) to obtain the long-run coefficient estimates of the variables. Table 4 displays the OLS estimation results showing a positive and significant relationship between financial inclusion and economic growth. The output also displays that 97 per cent of the variation in financial inclusion can be explained by the independent variables: financial development and economic growth.

TABLE 3: AUGMENTED DICKEY-FULLER UNIT ROOT TESTS (10% LEVEL OF SIGNIFICANCE)

	<b>Test Statistic</b>	<b>Critical Value</b>	<b>Conclusion</b>
<b>Variable</b>			
Financial Inclusion	0.289964	-2.747676	Integrated
Financial Development	-5.008736	-2.771129	Not Integrated
Economic Growth	-1.316506	-2.728985	Integrated
<b>Residuals</b>	-3.060273	-2.728985	Not Integrated

Table 5 displays the pairwise Granger causality tests, which are to check for direction of causality between the dependent and independent variables. The results from these tests indicate that financial development Granger causes financial inclusion and that financial inclusion Granger causes economic growth. These results show interesting links in that focusing on financial inclusion through financial development the economy of Eswatini will be positively impacted. This is also reinforced by the correlations of the variables indicated on Table 6. Financial inclusion and economic growth have a strong positive relationship of 0.985 whereas financial inclusion and financial development have a positive relationship of 0.544.

Table 7 indicates diagnostic tests run on the OLS regression, which indicate that the regression displays no evidence of heteroscedasticity, no evidence of serial correlation and no functional form misspecification.

#### **4. Conclusion**

The purpose of this study is to examine whether financial development causes financial inclusion using cointegration analysis and pairwise Granger causality tests. The study uses data obtained from the International Monetary Fund (IMF) and the World Bank from 2004 to 2015. The data indicates positive correlation between all the variables and only economic growth is significant, in the long-run, in explaining financial inclusion. The results also indicate that financial development Granger causes financial inclusion and that the variables, financial inclusion, financial development and economic growth are cointegrated.

The study revealed that financial development suggests considerable progress in increasing financial inclusion in Eswatini. A coordinated approach towards the implementation of the NFIS could potentially increase the successful application of the National Financial Inclusion Strategy of Eswatini. Increased

digital innovation in financial services, within regulation, additionally provides another channel for increasing financial inclusion. Financial inclusion could also be potentially increased through intensive research into the needs of the people using the financial services as cheap financial products do not necessarily mean affordable products. Current measures of financial inclusion measure from the perspective of access, but perhaps these variables would better measure financial inclusion through a needs based measurement approach through analysis of the recency and frequency of use of the registered bank accounts and mobile money accounts.

The challenges of this study include difficulties in sourcing for the data on the variables of interest. Be that as it may, the study used sufficient data rich enough to yield reliable results. Many scholars include a gender variable in studies on financial inclusion. Future studies on financial inclusion in Eswatini would benefit from the understanding of the gender gap between financially included and excluded development initiatives. The variable for financial development may have the limitation as large amounts of credit do not always match up to broad use of financial services, as credit is often concentrated among the major firms (Dabla-Norris, *et al.*, 2015).

### **Biographical Notes**

**Nolwazi Hlophe** is a Macroprudential Analyst and Project Manager at the Central Bank of Eswatini. She is also an Economics PhD student with the African Institute of Financial Markets and Risk Management (AIFMRM) at the University of Cape Town under the supervision of Prof Co-Pierre Georg. She holds an MCom in Economics from the University of Pretoria. Nolwazi's research interests include financial inclusion, central banks and financial innovation.

### **Acknowledgements**

I would like to thank my colleagues from the Central Bank of Eswatini who provided insight and expertise that greatly assisted the research. I especially would like to thank Dr. Thula Dlamini for comments that greatly improved the manuscript and I thank the reviewers for their notes.

Finally, I must express my very profound gratitude to my parents and to the rest of my family and friends for providing me with unfailing support and continuous encouragement.

## References

- Alexander, C., 2008. Cointegration and Correlation Compared. In: *Market Risk Analysis: Practical Financial Econometrics*. s.l.: John Wiley & Sons Ltd, pp. 225-227.
- Alexandra, Z. & Weill, L., 2016. The determinants of financial inclusion in Africa. *Review of Development Finance*, Volume 6, pp. 46-57.
- Asongu, S., 2012. How has Mobile Banking Stimulated Financial Development in Africa. AGDI Working Paper, No WP/12/027.
- Beck, T., Senbet, L. & Simbanegavi, W., 2015. Financial Inclusion and Innovation in Africa: An Overview. *Journal of African Economies*, 1 January, 24(1), pp. i3-i11.
- Dabla-Norris, E., Ji, Y., Townsend, R. & Unsal, D., 2015. Distinguishing Constraints on Financial Inclusion and Their Impact on GDP, TFP, and Inequality. NBER Working Paper 20821.
- Demirguc-Kunt, A., Klapper, L. & Singer, D., 2017. Financial Inclusion and Inclusive Growth. World Bank Policy Research Working Paper 8040, April.
- Demirguc-Kunt, A., Klapper, L., Singer, D. & Van Oudheusden, P., 2014. The Global Findex Database 2014. [Online] Available at: <http://documents.worldbank.org/curated/en/187761468179367706/pdf/WPS7255.pdf#page=3> [Accessed 21 March 2017].
- Engle & Granger, 1987. Cointegration and Error Correction: Representation, Estimation and Testing. *Econometrica*, Volume 55, pp. 251-276.
- Fanta, A. et al., 2016. The role of mobile money in financial inclusion in the SADC region: Evidence using FinScope Surveys, s.l.: FinMark Trust.
- FinMark Trust, 2015. FinScope Consumer Survey Eswatini 2014. [Online] Available at: [http://www.finmark.org.za/wp-content/uploads/2016/01/Brich\\_FsEswatini\\_2014.pdf](http://www.finmark.org.za/wp-content/uploads/2016/01/Brich_FsEswatini_2014.pdf) [Accessed 8 March 2017].
- Gerschenkron, A., 1962. Economic backwardness in historical perspective : a book of essays. 15th ed. Cambridge: Belknap Press of Harvard University Press.
- Gurley, J. & Shaw, E., 1960. Money in a theory of finance. 6th ed. Washington: Brookings Institution.
- Iqbal, B. & Sami, S., 2017. Role of banks in financial inclusion in India. *Contaduría y Administración*, Volume 62, pp. 644-656.

- King, R. & Levine, R., 1993. Finance and Growth: Schumpeter Might Be Right. *Quarterly Journal of Economics*, 32(3), pp. 717-737.
- Kostov, P., Arun, T. & Annim, S., 2015. Access to financial services: the case of the “Mzansi” account in South Africa. *Rev. Dev. Finance*, Volume 5, pp. 34-42.
- Rakoto, A., 2018. The Promotion of Financial Inclusion in Madagascar Through Mobile Money and Microfinance. [Online] Available at: [https://papers.ssrn.com/sol3/papers.cfm?abstract\\_id=3173606](https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3173606) [Accessed 3 June 2018].
- Sahay, R. et al., 2015. Financial Inclusion: Can It Meet Multiple Macroeconomic Goals?. IMF Staff Discussion Note.
- Sarma, M. & Pais, J., 2011. Financial Inclusion and Development. *Journal of International Development*, Volume 23, pp. 613-628.
- Villasenor, J., West, D. & Lewis, R., 2015. The 2015 Brookings Financial and Digital Inclusion Project Report. [Online] Available at: <https://www.brookings.edu/wp-content/uploads/2016/06/fdip2015.pdf> [Accessed 21 March 2017].

## Appendix

TABLE 4: OLS ESTIMATION OUTPUT (DEPENDENT VARIABLE – FINANCIAL INCLUSION)

Variable	Coefficient	Std. Error	t-Statistic	Prob.	Significant?
Financial Development	-0.162919	0.294291	-0.553597	0.5933	No
Economic Growth	0.004038	0.000281	14.36199	0	Yes
C	-45.86321	4.986614	-9.197265	0	
R-squared	0.970548	Mean dependent var	20.23803		
Adjusted R-squared	0.964003	S.D. dependent var	7.75812		
S.E. of regression	1.471933	Akaike info criterion	3.823348		
Sum squared resid	19.49928	Schwarz criterion	3.944575		
Log likelihood	-19.94009	Hannan-Quinn criter.	3.778466		
F-statistic	148.2916	Durbin-Watson stat	1.975152		
Prob(F-statistic)	0				

TABLE 5: PAIRWISE GRANGER CAUSALITY TESTS (F-STATISTIC = 2.32260)

<b>Null Hypothesis:</b>	<b>F-Statistic</b>	<b>Prob.</b>	<b>Conclusion</b>
FINANCIAL_DEVELOPMENT does not Granger Cause FINANCIAL_INCLUSION	2.63117	0.1657	Reject $H_0$
FINANCIAL_INCLUSION does not Granger Cause FINANCIAL_DEVELOPMENT	0.03021	0.9704	Do not Reject $H_0$
ECONOMIC_GROWTH does not Granger Cause FINANCIAL_INCLUSION	0.34623	0.7231	Do not Reject $H_0$
FINANCIAL_INCLUSION does not Granger Cause ECONOMIC_GROWTH	2.57723	0.1701	Reject $H_0$
ECONOMIC_GROWTH does not Granger Cause FINANCIAL_DEVELOPMENT	0.63987	0.5657	Do not Reject $H_0$
FINANCIAL_DEVELOPMENT does not Granger Cause ECONOMIC_GROWTH	0.21794	0.8114	Do not Reject $H_0$

TABLE 6: CORRELATION MATRIX

	FINANCIAL_INCLUSION	FINANCIAL_DEVELOPMENT	ECONOMIC_GROWTH
FINANCIAL_INCLUSION	1		
FINANCIAL_DEVELOPMENT	0.543649	1	
ECONOMIC_GROWTH	0.984655	0.578358	1

TABLE 7: DIAGNOSTIC TESTS FOR OLS ESTIMATION

	<b><math>H_0</math>:</b>	<b>p-value:</b>	<b>Conclusion:</b>
White test: Heteroscedasticity	Homoscedasticity	0.4265	Do not reject $H_0$ , no evidence of heteroscedasticity.
Ramsey RESET test: Functional form specification	Correct functional form specification	0.2228	Do not reject $H_0$ , no evidence of functional form misspecification.
Breusch–Godfrey test: Serial Correlation	No serial correlation	0.8917	Do not reject $H_0$ , no evidence of serial correlation.