

# The Link between Financial Development and Economic Growth Case of Rwanda

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**Abstract - The connection between financial development and economic growth is not definite in the existing economics literature. This study analysis was performed by the dynamic error correction mode (VCEM) to check the impact of financial development on economic growth in Rwanda. The empirical results confirmed that commercial product proxied by credit given by the financial sector and money supply is insignificant for short, while FDI contributes for short and long. Rwanda aims to become a middle-income country by 2035, which requires raising the level of income of the citizens throughout investment projects and harmonized economic policies that attract foreign investments as the primary determinant of economic growth. Therefore developed financial system is imperative to Rwanda as every investor needs to operate in an efficient financial system.**

**Keywords:** Financial Development, Economic Growth, Rwanda.

## I. INTRODUCTION

The economic growth in the modern economy rotates on a competent financial sector, gathers domestic savings, and attracts foreign capital for profitable investment. The link between growth and the financial industry has been a debatable point during the past even today. Without efficient financial institutions, productive investment projects may stay unexploited, which will harm economic growth [1].

## II. LITERATURE REVIEW

The financial development has been recognized along with economic researches as macroeconomic factors stimulate economic growth [2][3][4][5][6]. The financial development presents different impacts depending on the structure of the economy and the country's reality; in some countries, it can show either a positive or negative effect. In South Africa, through the improvement of financial access remained consistent in liaison with economic growth [7]. Also found the private sector and liquid liabilities, having adverse effects on

growth on a sample of 30 developing countries, in Nigeria even financial development proxied by bank credits, bank deposit, and liquidity liabilities was found with a negative impact on economic growth [8]. However, some exceptions were found contradicting the positive connection of financial development to the economic growth but most of researches revealed their positive impact in most of economies than the negative impact.

So many researchers recognized foreign direct investment (FDI) over time as a robust determinant of economic growth in many economies. FDI is a channel that facilitates the flow of technologies from advanced economies to less developed economies, increases the level of investment and efficient production systems, and improves specialization and institution performance in host countries [9][10].

However, FDI presents a positive impact in most economies; there are shreds of evidence that, due to the structure of the economy, it can show a negative effect [1]. Some researchers say that the apparent positive impact of FDI is observed at the aggregate level than in accounting estimates. See the case of Indonesia [12], and research conducted using off-road data for the period 1981-1999 suggests that total FDI exerts an equivocal upshot on progression. Foreign direct investments in the dominant sector, however, show a negative impact on growth, while investment in manufacturing has a positive one [13].

The high inflation was recognized for a long time ago as an enemy of economic growth as this one affects the entire financial system. In the NBER's study by [14] on a sample of 100 countries, the hypothesis was confirmed that an increase of inflation hinders economic growth and other macroeconomic variables. This means that the monetary policy should always struggle for a consistently low price for having a stable macroeconomic climate for the secured exploitation and implementation of other macro systems, especially financial businesses and FDI.

Separately from practical tactic, we are motivated to add to the literature as follow.

First, to make the use of proxies of financial development available to inspect the link between economic growths in Rwanda. The commercial development is among the priorities strategies taken by Rwanda to reach the middle-income economy by 2035.

Second, this article tends to make more prominent empirical literature to Rwanda’s experience of the relationship between financial development and economic growth. Finally, recommendations are given as a support to the long term economic growth decision-making process in Rwanda.

This paper is prepared where Section 2 deals with methodology. Section 3 deals with empirical analysis and results of the study, while unit 4 is the conclusion and recommendations to the policymakers.

### III. METHODOLOGY

To investigate the relationship between economic growth and financial development in Rwanda, We use a similar model to one developed by Christopoulos and Tsionas (2004) [15] to assess the link between financial development and economic growth in 10 developing countries.

$$y = f(bd) \quad (1)$$

Where y stands for real GDP, bd represents financial development proxied by money supply(M3) as per Samargandi, Fidrmuc and Ghosh(2013) [16] and Favara(2003) [17], domestic credit to the private as per Mihalca(2007) [18], and FDI set as control variable:

Foreign Direct Investments in log form (LFDI),

Net credit by the financial sector to private in log form (LNDC),

Money supply in log form ( LM3),

And this paper uses the multiple linear regression form to check the sensitivity of economic growth to selected drivers.

$$LY_t = \beta_0 + \beta_1 LFDI_t + \beta_2 LNDC_t + \beta_3 LM3_t + \mu_t \quad (2)$$

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$  are coefficients, and  $\mu_t$  represents an error term which is assumed to be a white noise error, and t is the period which annually observation.

### IV. EMPIRICAL ANALYSIS

#### 4.1 Description of Data

This course paper has utilized time series secondary data from 1980-2018 as per World Development Indicators (World Bank 2016) and IMF 2016. In other to study the link between financial development and economic growth, all variables are computed in billion in current Rwandan francs in log form. The data analysis for Johansen cointegration method which involves Unit root test for stationarity of variables(A. Fuller, 1979) [19], Vector Autoregressive estimates provides a number of the cointegrating equation based on the Trace and Eigenvalue test while Vector Error Correction Model (VECM) by Engle and Granger (1987)[20] is used to check the speed of adjustment of the model as well the short-run relation among variables with Eviews 9 software.

#### 4.2 Unit root test for time series

In other to find the long-run and short-run connection between the economic growth and financial development, the starting point is the check-up of whether series are stationary or not by performing the unit root test using the ADF test, and results are displayed down.

Table 1: Augmented Dickey-Fuller (ADF) test

Variable	Trend & intercept	Intercept	None	Max .Lag by Schwarz info Criterion	Level of integration	Probability
	t-test statistics	t-test statistics	t-test statistics			
LYt	-	-4.592952***		4	I(1)	0.0019
LFDIt	-	-12.39888***	-	4	I(1)	0.0000
LNDCIt	-	-4.904611***	-	4	I(1)	0.0010
LM3 t	-	-4.250371***		9	I(1)	0.0039

\*, \*\* and \*\*\* indicate rejection of the null hypothesis of unit root at 10%, 5%, and 1% significant level, respectively.

Based on the results in table 1, all series are stationary at the first difference, and the use of the cointegration test is acceptable. Having achieved stationarity, accordingly, as [20]

indicate, there should be a cointegration test. The existence of cointegration is the indication of long run affiliation among the variables. The Tarce and Eigenvalue test displayed one cointegration equation, performed using the Johansen cointegration test.

**Table 2: Johansen cointegration test of Economic growth (Trace)**

Unrestricted Cointegration Rank Test (Trace)

Hypothesized	Trace	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.849775	65.02268	47.85613	0.0006
At most 1	0.547767	29.00585	29.79707	0.0615
At most 2	0.467454	13.92827	15.49471	0.0849
At most 3	0.097856	1.956652	3.841466	0.1619

Trace test indicates 1 cointegrating equation(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

**Table 3: Johansen cointegration test of the economic growth (Max-eigenvalue)**

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized	Max-Eigen	0.05		
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.849775	36.01683	27.58434	0.0033
At most 1	0.547767	15.07758	21.13162	0.2835
At most 2	0.467454	11.97162	14.26460	0.1117
At most 3	0.097856	1.956652	3.841466	0.1619

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

\* denotes rejection of the hypothesis at the 0.05 level

\*\*MacKinnon-Haug-Michelis (1999) p-values

### 4.3 Results of Regression

The dynamic error correction model long-run results in table 4 are interpreted as follow:

1. Consequently, economic growth, in the long run, will increase by 0.04%..0.07%, due to the change of one percent of FDI and net credit offered by the financial sector, respectively. In comparison, one percent of the money supply will decrease economic growth by -6.36%. Based on long-run results, it is clear that both FDI and credit to the private have a positive impact on the economy, which matches with the

economic agenda of Rwanda to transform the economy by making the Rwandan financial sector a lucrative business and making the country an attractive business environment to prop up the sustainable economic growth.

2. In the short run, financial development proxied by a credit to private and money supply(3) is insignificant, which supports the findings of Samargandi, Fidrmuc, and Ghosh (2013) for the case of middle-income countries.
3. The R-squared of 62.7.8% confirms the fitness of the model with all variables. The speed of adjustment coefficient of -0.41.5 with significance at 10% level

shows that disequilibrium is progressively corrected to re-establish the long-run equilibrium situation among cointegrating variables at 41.5 % per annum of interest the existence of the long-run relationship between financial development and economic growth in Rwanda.

- The diagnostic tests revealed the stability and consistency of parameters for the model, are relying on the plot of % critical bound by CUSUM proposed by Brown et al. (1975), absence of serial correlation

up to the 16th lag because all probabilities are greater than 10% level of significance under correlogram squared residuals and Breusch-Pagan-Godfrey proves that the model of study is homoscedastic as the probability of obs\*R-squared (33.35%) is greater than 10% level of significance. Another point of reliability for this model is that residuals are generally distributed as tested by Jarque- Bera with a probability of 78.09% higher than 10%.

**Table 4: The dynamic error correction model long-run**

Variable	Coefficient	S.E	t-statistic	Conclusion
LFDIt	0.04006	0.01030	3.89147	Significant
LNDCIt	0.07019	0.01804	3.88991	Significant
LM3 t	-0.636546	0.03190	-19.9516	Significant

**Table 5: VECM Results**

Error Correction:	D(LY1)	D(LFDI)	D(LNDC)	D(LM3)
CointEq1	-0.415813 (0.215799) [-1.926858]	3.142929 (7.62472) [ 0.41220]	-4.872346 (1.76591) [-2.75911]	0.721247 (0.98134) [ 0.73496]
C	0.180949 (0.08026) [ 2.25443]	-1.306693 (2.30559) [-0.56675]	0.757934 (0.53398) [ 1.41939]	-0.046475 (0.29674) [-0.15662]

## V. CONCLUSION

This course paper has used variables that have a closer effect on the financial development to check its impact on economic growth in Rwanda from 1995 to 2018. Results confirmed the hypothesized idea that FDI as a control variable contributes to the economic growth in the short and long run. Simultaneously, the hypothesis of financial development is not valid in the short term as net domestic credit is significant in the long run, and M3 is negatively related to economic growth in the long run.

Based on findings, the Rwandan policymakers must put more effort into FDI attraction as it is the short term strategy to apply for the sake of economic growth. However, domestic credit is not significant in the short term for this sample. Still, it is quietly necessary to put in place physical and soft infrastructure, which can ease the access to finance for any economic growth level. The new investment will need course through the financial sector.

The increase in the number of banks in different corners of the country, predominantly rural areas, and technological banking, are among the best ways to facilitate financial deepening. For the more significant impact of economic development, the government should design different policies that enable all economic agents to earn and need money.

However, other determinants were found with little impact, but they cannot be ignored as sustainable growth cannot due to one item instead of a complexity of factors. And they have dangerous consequences once there are not managed well. For example, macroeconomic instability due to price unsteadiness will hinder the economy's opportunities.

- The investment promotion legislation could continue to create various strategies to attract foreign direct investments as this remained significant to the Rwandan economy by bringing new value and distributes income to domestic economic agents. The investment promotion legislation could make

available spurs to different saving initiatives by other private groups to increase enough domestic capital reserves, which figure a competitive advantage to the country and late contribute to the economic growth.

2. The Rwandan policymakers must ensure that policies are in place to sustain the financial deepening through financial awareness, hard and soft infrastructure.

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### Citation of this Article:

Mugabe Roger, Peter Umaru Kamara, Aruna Bakarr, Abdulai Bobson Turay, “The Link between Financial Development and Economic Growth Case of Rwanda” Published in *International Research Journal of Innovations in Engineering and Technology - IRJIET*, Volume 5, Issue 2, pp 97-102, February 2021. Article DOI <https://doi.org/10.47001/IRJIET/2021.502014>

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