

## INNOVATIONS

### Effect of Financial Instability on Economic Growth: Evidence from Selected East and Southern African Countries

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#### Abstract

This study examines the effect of financial instability on economic growth in Eastern and Southern African countries using Dynamic Panel-Auto Regressive Distributed Lag model, and sample 11 countries for the of period 1995-2019. The study used Credit to GDP gap ratio and financial instability index as proxy variables of financial instability. The Dynamic fixed effect estimator applied in the context of Panel-Auto Regressive Distributed Lag model reveal that financial instability index, money supply to GDP ratio and external debt to GDP ratio affects economic growth negatively in the long run at 1 percent level of significance, while remittance, population growth, capital formation and government consumption expenditure had positive effects on long run economic growth. Hence, the Central Banks supposed to improve control financial instability variables in line with the economies capacity through effective monetary and fiscal policy to reduce financial instability, debt burden and money supply to GDP ratio to promote economic growth. Providing identification cards that allow migrants access to financial institutions abroad, monitoring of remittance inflows, developing retail payment systems for households that help stabilize finance will increase economic growth in the regions. Moreover, creating positive investment climate through stable political, and macroeconomic environment are a potential for increasing capital formation and government consumption expenditure to increase economic growth in the long-run.

**Key words:** 1. Financial instability 2. Hausman test 3. Panel Autoregressive Distributed Lag Model

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#### 1. 1 Introduction

The fundamental question in economic growth that has preoccupied researchers is why countries grow at different rates. Empirical growth literature has documented numerous variables that could explain cross-country differences in economic growth. The most commonly named variables includes: factor accumulation, resource endowments; the degree of macroeconomic stability, educational attainment, institutional development, legal system effectiveness, international trade, ethnicity and religious diversities (Heshmati, 2018) and (Rissa, 2019).

Among these critical factors, the one which has been receiving considerable attention more recently is the role of financial sector in the growth process. The possible nexus between financial depths, defined broadly as the level of development of financial markets and economic growth is fairly obvious. Developed countries, without exception, have more developed banking system, financial freedom and financial markets ( Agitu G., 2019).

The relationship between financial instability and the rate of economic growth has been the subject matter of research since last few decades. For example, many economists (Akosah, Nana and Loloh, Francis and Lawson, Natalia and, 2018) argued that chronic financial instability adversely affects economic growth. For several decades, the global economy has repeatedly faced international financial crises that hit both industrialized and developing economies. These crises, whether they broke out directly or through a contagion effect, are known by their number, size, and their different forms Mikhail and Renat,etal, (2018). Although there was a methodological controversy on how to assess the consequences of financial crises on economic growth, there was an agreement that the magnitude and the duration of the effects of the crises on savings and economic growth potential are enormous (Ahlem and Mohamed , 2019)

According to Sarat and Kumar,etal, (2011) and Temesgen, (2021), there are three different channels through which financial instability can affect economic growth. First, by increasing uncertainty about the fundamental value of assets and the behavior of investors during periods of financial instability that increases the volatility of asset prices. This makes firms more careful about their investment decisions until the uncertainty has disappeared. Additionally, households tend to cut back their spending in times of financial instability since uncertainty affects the expected value of their future wealth. The second channel is that financial instability deteriorates borrowing conditions due to tightened credit standards, through raising minimum credit standards which makes harder for borrowers to get fund, and result in negative effect on economic growth. The third channel through which financial instability can slow economic growth is by increasing cost for financial spending.

It is widely argued that higher economic growth could lead to lower financial instability. However, the empirical examination on the impact of financial instability on economic growth has been mixed and remained a debated subject (Bulat and Aleksey ,etal, 2020). It seems that policies that develop sound financial sector will guarantee financial stability, and expected to raise economic growth and hence, the role of financial stability is considered as key determinant of economic growth of any country. For example, the study by Mutunga, et al, (2017) documented the negative impact of financial instability on economic growth in East African community (EAC) using data for the period 1963 to 2014.

On the contrary, Alexey A., (2018) stressed that specific shock to the financial sector because of: wrong policy, herd behavior, panics, or corruption in the financial sector, may lead to crises in the real economy. Similarly, Bijlsma, M., Kool, C., & Non, M., (2018) conclude that though there seems to be consensus on the negative impact of financial crises on real economy from a theoretical and empirical point of view, several structural, institutional, and economic factors can amplify their impacts. For Iheanacho (2019), the ill developed financial system in developing countries, which in most cases lead to financial volatility, affect economic growth adversely. For example, the study by Arshad H. etal, (2019) indicates Global Financial Crisis (GFC) was associated with lower economic growth at 1% level significance, in selected East and Southern African countries.

According to ( Hannes and Welz, 2017) the best indicator of financial instability is credit to GDP gaps, which is defined as the difference between the ratios of actual private credit to GDP from its long-run trend. Other studies such as Sadia ad Rashid, (2019) and Batuo and Michael, (2012) criticize credit-to-GDP gap and use financial stability index as proxy of financial instability. This study approach is different due to the fact that first model used new

approach of principal component method while the second model used credit GDP gap ratio as proxy of financial instability to investigate how financial instability index affects economic growth using panel regression framework. Hence, study attempted to fill the gap in literature and attempted to examine the long run and short run impact of financial instability on economic growth in sample Eastern and Southern African countries.

### **1.2 Related Literature review**

Economists argue that financial instability occurs as soon as a large number of market players are no longer solvent, and liabilities to their own creditors can no longer be paid. In this state, the financial system is vulnerable to financial crisis. Financial crisis, which is often seen as an extreme case or the culmination of financial instability, particularly prevalent when there is a significant deterioration in financial indicators. For example, there could be a sharp increase in short-term interest rates, a drop in share, bond prices, and sudden insolvency of important companies. Due to the fact that financial crisis presupposes financial instability, economists identify a variety of indicators that leads to unstable financial system (Peter, 2019).

Developing nations experience domestic shocks due to intrinsic instability, self-inflicted policy faults, traditional technologies, and unskilled labor makes their output more volatile. In 2018, Eight East and Southern African countries had an economic vulnerability index higher than 36 scores of threshold level and five countries have current account deficit of 5–10 percent and debt-to-GDP ratios exceeding 50 percent, compared to only 2 % in 2013. (ECA, 2020).

### **1.3 Empirical studies**

Different empirical studies have employed different indicators of financial instability while most of them use credit-to-GDP gap which is subject to considerable regular volatility since strong credit growth has preceded many historic episodes of financial instability. Money supply to GDP and financial instability index are other indicators of financial instability those result in decrease of output and economic growth (Duc Hongvo, et al, 2019). Even though the relationship between financial depth and growth needs appropriate estimation methods, there is strong link between financial depth and economic growth. Moreover, determining how to develop financial markets and how precisely their development will benefit growth is still relatively new research area while cross-country studies, supplemented by individual country analysis extremely fruitful in addressing the open questions

There are few studies in this field. For example, Bulat and Aleksey ,etal, (2020), relationship between instability and economic growth in India while Sanusi, N. A and Sallah, N. H. M., (2007) examined the relationship between financial development and economic growth in Malaysia covering the period 1960-2002 using the ratio of broad money to GDP as a measure of financial development. By employing the autoregressive distributed lag approach, the study found that ratio of broad money to GDP had positive and statistically significant impact on economic growth in the long run.

The results further indicated that a rise in investment will enhance economic growth in the long run. Wondaferahu et al. (2015) analyzed the impact of remittances inflow on economic growth and poverty in Ethiopia. The findings of their study indicate that remittances affects real output of Ethiopian economy positively. That is, increases inflow of remittance from abroad promotes economic growth by increasing real private investment and fixed capital accumulation which increase capital accumulation, reduction in current account deficit, external debt burden and improve education/skills of the households or human capital.

A few other studies have noted that the relationship between financial deepening and growth varies considerably (Chauhan & Ramesha, 2019). Furthermore, (Darko Lazarov, et al, 2018) show that the relationship varies with the inflation rate. They argue that financial deepening does not affect economic growth when annual inflation rate is above threshold between 13% and 25%. Likewise, (Jokipii, et al, 2020) Exploring BIS credit-to-GDP gap critiques: in the Swiss case. Specifically, as Bijlsma, M., Kool, C., & Non, M., (2018) financial deepening has a larger impact on growth with a moderate level of financial sector development. However, none of the earlier studies has provided an explanation whether these relationships affected by several financial instability indicator and using principal component analysis. Rioja, Felix, and Neven Valev, (2004) distinguish between the short run impact of credit expansions on growth and the long run positive of financial deepening on growth. The short run effect is sometimes negative particularly during episodes of financial crisis.

### 1.4 Research Methodology

#### 1.4.1 Data source and type

In this study secondary data from, 11 African countries (Eight from East Africa and three from Southern Africa) were included into study based on availability of data. The sample countries included are: Ethiopia, Kenya, Rwanda, Uganda, Tanzania, Burundi, Djibouti, Seychelles, Mozambique, Zambia, and Zimbabwe. The study used panel data for the period 1995 to 2019 from the World Development Indicators (2020) database. Except population and inflation, all other variables were measured in US dollar, which is an international standard unit currency

Abdulrashid, (2013) shows logarithmic transformation was applied by using semi-log transformation since most numbers of observation are negative, transform those variables using the following procedure to logarithmic form since the logarithm of the ratio variable performs slightly better than the ratio variable and its reciprocal:  $y = \ln(x + \sqrt{x^2 + 1})$ . Therefore, study suggest use logarithm of the ratio variable especially in a nonparametric regression to overcome the limitations imposed by linear functional form assumption. When the true model is a linear function of a ratio variable, choosing its reciprocal reduces the explanatory power significantly, while choosing its logarithm with polynomials can approximate the true model pretty well as discussed by John Beausire Wyatt Webber, (2013)) and Matthias Bussea, Carsten Hefeker, (2005)

#### 1.4.2 Model specifications

The effect of financial instability on economic growth is estimated by applying the panel ARDL model estimator as (Fazli & Abbasi, 2018). The cross-country average of the coefficients is the mean group (MG) estimator while different coefficient assumed by pool mean group (PMG) estimator. A Hausman test reveals whether the PMG estimator provides a consistent and efficient estimation of the coefficients across all countries. Thus based on the following parameterization, the standard Dynamic Panel Autoregressive Distributed Lag (ARDL) model is:

$$Y_{it} = \alpha_{it} + \sum_{j=1}^p \lambda_{ij} Y_{it-j} + \sum_{j=1}^q \beta_{ij} X_{it-j} + \mu_i + \gamma_t + \epsilon_{it} \dots \dots \dots (i)$$

Where  $Y_{it}$  and  $X_{it}$  are a vector of observations on the dependent variable (i.e., RGDPpc) and a vector of explanatory variables (i.e. financial instability variables, macroeconomics variables and other exogenous determinants of economic growth), for country  $i$  at time  $t$ ,  $\mu_i$  represents the country-specific fixed effect.  $\gamma_t$  is the individual time trend coefficient; and  $\epsilon_{it}$  stands for the country-specific error term. Rearranging above equation VECM format: as (Millicent, et al, 2018)

$$\Delta Y_{it} = \theta + \pi Y_{t-1} + \sum_{j=1}^{p-1} \gamma_{ij} \Delta Y_{it-j} + \sum_{j=1}^{q-1} \beta_{ij} \Delta X_{it-j} + \mu_i + \gamma_t + \epsilon_{it} \dots \dots \dots (ii)$$

The basic Dynamic panel ARDL models used in this study is formulated as follows:

**Long run model:** As shown below, some of the variables in the long run RGDP per capita income model are transform into logarithm form to estimate the long-run coefficients (i.e., the respective elasticity).

$$\begin{aligned} \ln RGDP_{pcit} = & \alpha_0 + \sum_{i=1}^{p1} \beta_{ij} \ln GDP_{it-j} + \sum_{i=0}^{q1} \gamma_{0ij} \Delta CRGDP_{gapit-j} \\ & + \sum_{i=0}^{q2} \gamma_{1ij} \ln M2GDP_{it-j} + \sum_{i=0}^{q3} \gamma_{2ij} FII_{it-j} + \sum_{i=0}^{q4} \gamma_{3ij} \ln EXDEB_{it-j} + \sum_{i=0}^{q5} \gamma_{4ij} \ln FDI_{it-j} \\ & + \sum_{i=0}^{q6} \gamma_{5ij} \ln CA_{it-j} + \sum_{i=0}^{q7} \gamma_{6ij} \ln GCFit_{it-j} + \sum_{i=0}^{q8} \gamma_{7ij} \ln INF_{it-j} + \sum_{i=0}^{q9} \gamma_{8ij} \ln GCE_{it-j} \\ & + \sum_{i=0}^{q10} \gamma_{9ij} \ln REM_{it-j} + \sum_{i=0}^{q11} \gamma_{10ij} \ln POP_{it-j} + \epsilon_{it} \dots iii \end{aligned}$$

**Short run Model:**

$$\begin{aligned} \ln \Delta RGDP_{pcit} = & \alpha_0 + \sum_{i=1}^{p1} \beta_{ij} \Delta \ln GDP_{it-j} + \sum_{i=0}^{q1} \gamma_{0ij} \Delta CRGDP_{gapit-j} \\ & + \sum_{i=0}^{q2} \gamma_{1ij} \ln \Delta M2GDP_{it-j} + \sum_{i=0}^{q3} \gamma_{2ij} \Delta FII_{it-j} + \sum_{i=0}^{q4} \gamma_{3ij} \ln \Delta EXDEB_{it-j} \\ & + \sum_{i=0}^{q5} \gamma_{4ij} \ln \Delta FDI_{it-j} + \sum_{i=0}^{q6} \gamma_{5ij} \ln \Delta CA_{it-j} + \sum_{i=0}^{q7} \gamma_{6ij} \ln \Delta GCFit_{it-j} + \sum_{i=0}^{q8} \gamma_{7ij} \ln \Delta INF_{it-j} \\ & + \sum_{i=0}^{q9} \gamma_{8ij} \ln \Delta GCE_{it-j} + \sum_{i=0}^{q10} \gamma_{9ij} \ln \Delta REM_{it-j} + \sum_{i=0}^{q11} \gamma_{10ij} \ln \Delta POP_{it-j} + \theta_i ECM_{it-1} \\ & + \epsilon_{it} \dots iv \end{aligned}$$

Where,  $\theta_i$  shows error correction parameter (indicates existence of the long-run relationship between  $Y_i$  and  $X_i$  while  $\beta_{ij}$  refers to long run coefficients.  $\gamma_t$ , and  $\mu_i$  are short run coefficients.

The dependent and independent variables used in equation (III and IV) are described as follows.

**Real GDP per capita income (lnRGDPpc):** This is dependent variable, which is a proxy for economic growth. It is measured by dividing real GDP of each sample African countries by their respective population. Both data on real GDP and population were obtained from World Development Indicator (2020). It is continuous variable measured based on international standard unit of measurement called US dollar. (Lien, 2017).

**Financial instability variables (FII):** The major financial instability indicators are credit to GDP gap ratio, money supply to GDP ratio; and financial stability index (FII). Financial stability index (FII) was a composite index of Credit to GDP gap ratio and Net interest rate margin, while Credit to GDP gap ratio and Money supply to GDP ratio are highly correlated. The measurement strategies and their expected signs are discussed below.

**Credit to GDP gap ratio (CRGDP<sub>gap</sub>):** It is measured as ratio of the actual private credit ratio to GDP deviated from the trend of private Credit to GDP ratio as follows

$$CRGDP_{gap} = \left( \frac{cr - cr^*}{cr} \right) * 100 \dots = \left( \frac{cr - cr^*}{cr} \right) * 100$$

Where  $cr$  and  $cr^*$  are the actual credit and the trend credit, respectively. The higher the ratio of private credit to GDP is the best proxy for credit market development or financial development and provides evidence on the extent to which the banking system channel fund

to the private sector and hence affects economic growth both through the improvement of investment productivity or better allocation of capital (Bijlsma, M., Kool, C., & Non, M., 2018) . Hence, the expected sign of CGDP gap on economic growth is negative both in the long-run and short-run (i.e.  $\gamma_0 < 0$  ).

**Financial stability Index (FSI)** =Based on study by (Batuo and Michael, 2012) and (Sadia ad Rashid, 2019) principal components analysis was used in this study to formulate index of financial stability and reduce 1 from FSI to get financial instability index(FII) and study also used CRGDP gap to check robustness of the findings.

**Money supply to GDP ratio (lnM2GDP):** This variable is obtained by dividing broad money supply, which is currency plus deposits, by nominal GDP. The study by Nguyen , (2018) that investigated the Applying Panel Dynamic OLS and Panel VECM to Estimate the Relationship between Public Investment, Private Investment and Economic Growth in Developing Asian Countries. The authors found that M2 to GDP ratio exerted positive impact on economic growth in the long-run but the relationship was insignificant in the short-run due to neutrality of monetary policy in the long run. Hence money supply to GDP expected to have positive effect on economic growth.

**Financial Vulnerability Index;** includes the ratio of Current Account Deficit to GDP, foreign Direct Investment to GDP and External Debt to GDP as indicators of financial vulnerability index. (Fazli & Abbasi, 2018).

**External debt to GDP ratio (lnEXDEB):** It is measured as a ratio of total external debt to GDP of that country in a year. It is believed that excessive level of external debt leads to higher interest payments, which are resources devoted to repaying debt than otherwise could be invested in domestic economy. Hence, the external debt to GDP ratio hypothesized to affect economic growth negatively. (Millicent ,etal, 2018).

**Foreign direct investment to GDP (lnFDI):** FDI is expected to have positive impact on economic growth. Because, foreign investment may create huge employment opportunities for citizens, flourish of local businesses, and increases foreign exchange reserve of the host country. On the other hand, if the outflow of capital exceeds that of FDI inflows, it will have adverse impact on economic growth. Empirical studies on the impact FDI on economic growth showed mixed results. There are studies found a positive association between FDI and economic growth. On the contrary, other studies found negative relationship between FDI and GDP growth ( Gogo and Wanjala, 2020)

**Current account to GDP ratio (lnCA):** current account balance is expected to have positive impact on economic growth. If a country runs a large current account surplus typically sees upward pressure on its real exchange rate and will have stable financial system and higher level of economic growth. (Fazli & Abbasi, 2018).

**Control variables:** The control variables used in this study are capital accumulation to GDP ratio, inflation rate, government consumption to GDP, remittance to GDP ratio, and population growth.

**Gross capital formation to GDP (lnGCF):** Growth capital formation is used as a proxy variable to capture the effect of technology and population growth as proxy of labor productivity on stochastic economic growth as (Peter, 2018). Increase in net domestic capital overtime implies increase in investment or capital accumulation. It follows from economic literature that domestic capital accumulation will have positive impact on economic growth.

Hence, the expected sign of capital accumulation to GDP on economic growth is positive as (ECA, 2020)

**Inflation rate (lnINF):** It is a continuous variable, which is measured by consumers price index of an aggregate basket of goods measured in a year. Inflation rate can adversely affect economic growth by causing uncertainty and short-term distortions in resource allocation. According to (Magweva & Sibanda, 2020), inflation rate indicates macroeconomic instability. Hence, the expected sign of inflation rate (Persistently high inflation) on economic growth is negative.

**Government final consumption expenditure to GDP (lnGCE):** Government final consumption is part of total government expenditure. It indicates the size of the public sector in an economy and has negative effect on GDP unless it is specifically meant to improve productivity. If it improves productivity by spending more on government’s key areas on improving education and health service, eradication of illiteracy, employing more workers, maintaining law and order, protecting property right, keeping crime etc. as suggested by Deborah and Solawon.etal, (2018) the expected effect of this variable on economic growth is positive. However, if government final consumption is spend more on unproductive areas other than mentioned above then it will have adverse effect on economic growth hence its expected sign was ambiguous.

**Remittance to GDP (lnREM):**It is a continuous variable measured in terms of the ratio of total remittance to GDP. Following the argument of (Wondaferahu Mulugeta, Temesgen Yaekob, and Jibril Haje, 2015) increases and more stable inflow of remittance from abroad helps sustain domestic consumption and private investment. Hence, Remittance is hypothesized to affect economic growth positively. To date, the empirical evidence of the impact of remittances on economic growth appears mixed and is difficult to predict a priori.

For instance, results for a sample of 39 developing countries covering the period 1980–2004 indicate a positive impact on economic growth. A study examining the aggregate impact of remittances on the economic growth of 18 Latin American countries for the period 1980–2005 found that remittances positively and significantly affected the growth of Latin American economies where the financial systems are less developed by providing an alternative way to finance investment and helping overcome liquidity constraints Darko Lazarov, etal, (2018). There were similar results for 37 African countries for the period 1980–2004.

**Population growth (lnPOP);** It is a continuous variable measured in terms percentage change in population from one fiscal year to another. Population growth hypothesized to be affect economic growth positively or negatively since population are both consumer and producer of economy.

**1.5. Result and Discussion**

Descriptive statistics presents both central tendency and measures of the distribution of data over the period 1995-2019. It was explained by mean, maximum, skewness, kurtosis and Jarque-Bera.

**Table 1.1 Descriptive analysis**

	GDP	Money/GDP	Current Account	Political stability	Remittance
Mean	5.18	40.13	-7.67	-0.60	1.82
Maximum	35.22	163.3	29.39	1.28	13.611
Minimum	-17.60	9.63	-41.5367	-2.52	0.00
Skewness	-0.23	1.67	8.88	0.82	2.26

Kurtosis	10.04	5.28	-0.23	0.15	2.79
Jarque-Bera	673.10	221.00	117.07	7.66	1166.10
Probability	0.00	0.00	0.00	0.022	0.00

Source: own computation using WDI data 1995-2019

The mean value of GDP growth of sample East and Southern African countries over 1995-2019 was about 5.18 percent with an average external debt to GDP ratio was 64.73 percent. This implies that East and Southern African countries were among the highly indebted countries on the globe, triggered mainly by their negative current account balance to GDP ratio of 7.67 percent. Moreover, degrees of financial deepening (M2/GDP ratio) were 40.13 percent. Average current account was about 7.69 while average political stability index was about -0.6 in averages in the study area from 1995-2019 greater than that of 2018 as UNECA, (2018).

Political stability index, current account ratio, and the growth rate of GDP have normal skewness while others have positive skewness. East and South African countries were among highly indebted countries with minimum 6.62 and maximum 268 percent of GDP with average 64 percent with growth rate of Quasi Money and broad money growth rate varies from 9.6 to 163 percent of GDP with average of 40 percent of GDP in the years. The Kao Co-integration test<sup>1</sup> results show the existence of co integrating equations at 5% significance level in the model reveals that a long-run relationship exists between the growth of GDP and its explanatory variables (Bhaumik, 2020)

The results of Pool mean group (PMG), Mean Group (MG) and Difference fixed effect (DFE) estimation have been used based on the Hausman -test<sup>2</sup> to choose the efficient estimator and consistency. Since hausman test prefers DFE than PMG and MG estimator the interpretation depend on DFE result. The coefficient of error correction term was negative and greater than -2. This is the main requirement for the validity, consistency, and efficiency of a long run relationship among the variables of interest.

**Table 1.2<sup>3</sup> Regression Model as proxy of (CRGDP gap and financial instability index (FII)).**

Dependent: GDGP	CRGDPgap(Model 11)	FII(Model2)
Credit to GDP gap ratio	-0.045(0.0143)**	-
Financial instability index(FII)		-.88(0.33)***
Log external debt ratio	-0.32 (0.157)***	-0.35(0.125)***
Log of money supply to GDP		-1.72(0.313)***
Log of Current Account	-0.03 (0.078)	-.058(0.063)
Log of Remittance	0.9(0.185)***	0.63(0.151)***
Log of Inflation rate	-.064(0.104)	-.12(0.085)
Log of Foreign direct investment	-.08(0.149)	0.034(0.118)
Log of population growth	.94(0.318)***	1.06(0.248)***
Log of Capital Formation	0.134**(0.069)	0.12(0.054)**
Log govt Cons. Expenditure	0.21(0.071)***	0.19(0.056)***
Political stability index	-.06(0.237)	.04(0.193)
<b>Short run</b>		
Ec	-.79(0.079)***	-.96(0.088)***
lag:GDP	.065(0.062)	.16(0.065)**

KAO and Pedroni Test<sup>1</sup> indicate test indicates there is panel co integrating equation(s) at 5% significance level while wastelands shows mixed since it cannot test all variables together.

Based on Hausman test<sup>2</sup>, PMG is better than MG, DFE is better than both PMG and MG since the null of no systematic difference between PMG and DFE at 5 percent level of significance is not rejected. : H0 = constant coefficient estimator model H1 = fixed effects estimator model

<sup>3</sup> Table shows top panel (long-run) ,bottom panel (a short-run). <sup>5</sup> \*\*\* \*\* and \* significant at 1%,5% and 10% level

Credit to GDP gap ratio <sup>^^</sup>	-.006(0.012)	
Financial instability index <sup>^^</sup>		.22(0.34)
Log external debt ratio <sup>^^</sup>	-.52(0.258)**	-.48(0.24)**
Log of money supply to GDP <sup>^^</sup>		-.31(0.485)
Log of Current Account <sup>^^</sup>	-.027(0.058)	-.023(0.056)
Log of Remittance <sup>^^</sup>	-.22(0.224)	-.15(0.216)
Log of Inflation rate <sup>^^</sup>	-.076(0.063)	-.015(0.062)
.Log of Foreign direct investment <sup>^^</sup>	0.118(0.123)	.086(0.11)
Log of population growth <sup>^^</sup>	-.164(0.211)	-.28(0.20)
Log of Capital Formation <sup>^^</sup>	-.03(0.040)	-.03(0.038)
Log govt Cons. Expenditure <sup>^^</sup>	-.055(0.04)	-.068(0.038)*
Political stability index <sup>^^</sup>	.144(0.153)	.07(0.146)
Constant	.195(0.194)	6.55(1.56)

**Note** ^^ denotes that the variable is one year differenced

Source: own computation using WDI data 1995-2019.

**Model 1:** using Credit to GDP gap ratio as proxy for financial instability, DFE result reveal that as CRGDPgap ratio increases by one percent, economic growth decreases by 0.0455 percent other things remain constant at 1% level of significant. This indicates excessive credit growth has negative impact on economic growth consistent with findings of (Malik, 2015). In addition, the result is consistent with the economic theory of financial instability due to credit growth curb economic growth by 13.49 percent.

Furthermore, DFE estimator shows imbalances in a period one will improve in the next period approximately by 0.79 at one percent level of significance. These findings also supported by Jan and Thomas, etal, (2012) and Caverzasi and Tori, (2018) that states that financial instability deteriorating borrowing conditions due to tightened credit standards and increase financial instability.

**External debt and money supply to GDP ratio:** This variable was found to be negatively associated with FII at 1 percent level of significance. Specifically, as debt to GDP ratio increase by one percent, economic growth decrease by 0.32 percent in the long run at 1 percent level of significance and decrease economic growth by 0.52 percent in the short run at 5 percent level of significance other things remaining constant. These findings also are similar with the findings by (Heshmati, 2018) which document that remittances and capital formation on economic growth had a positive impact on the economic growth of low-income countries. (Alemayehu, 2019) and (Kizito Uyi Ehigiamusoe, 2019).

**Money supply to GDP ratio:** The result of DFE shows negative relationship between the level of money supply to GDP ratio and economic growth. Correspondingly, as ratio of money supply to GDP increase by one percent, economic growth decrease 1.72 percent in the long run other things remains constant at their mean. This implies that increase in money supply can be opposite to the desired goals as stated by Iheanacho, (2019) and Dingela and Siyasanga , etal, (2017). In contrast to this found statistically insignificant association between M2GDP ratio and credit to GDP ratio with Economic Growth in the short run associated with the hypothesis of the neutrality of money supply on economic growth similar result with, (Hnatkovska and Loayza, 2003).

**Remittance to GDP ratio (Rem<sup>4</sup>):** DFE estimator result show that as remittance increase by one percent, economic growth increase by 0.9 in the long run at 1percent level and finding is similar with that of Bauer and Granziera, (2016)). Furthermore, findings of Gogo and Wanjala, (2020) revealed that financial deepening positively affect on economic growth in East Africa Community.

**Population growth:** population can may positive or negative impact on economic growth. Moreover, unlike Malthus theoretical approaches in which population decrease economic growth, the study revealed as population increase by one percent economic growth increase by 0.94 at 1 percent level of significance in the long run and study similar with that of Boserupian theory of population growth.

Government capital formation and government consumption expenditure were found to be positively associated with economic growth in the long run at 1% significance level.

Accordingly, a 1% increase in capital formation and government consumption expenditure will increase GDP by 0.134 and 0.21percent in the long run respectively. In contrast to this, government consumption decreases economic growth in short run verifies consumption decrease economic growth in short run and increase in the long run. (Heshmati, 2018)

**Model 2:** using financial instability index as proxy of financial instability DFE result found the same findings with model1 that indicates robustness of the findings.

As DFE<sup>5</sup> estimation of Panel ARDL model, one percent increase in financial instability index will decrease economic growth by 0.88 percent.

The result similar with Hnatkovska and Loayza, (2003) that conclude that financial volatility and long-run economic growth are negatively related. This is because financial volatility is exacerbated in countries that are poor, institutionally underdeveloped, undergoing intermediate stages of financial development, or unable to conduct countercyclical fiscal policies. DFE estimator shows imbalances in a period one will improve in the next period approximately by 0.96 at one percent level of significance.

This verifies stability of economic growth in the long run. If debt to GDP increases by one percent, economic growth decrease by 0.35 and 0.48percent in the long run and short run respectively at 1 percent level of significance similar with model 1 and findings of (Dereje, 2013).

In the long run one percent increase in remittance and population growth, increase economic growth by 0.63 and 1.06 percent respectively. The result also parallel with the study of Simpasa, (2011) that states neutralist theory of population growth that state's population growth may have negative or positive impact on economic growth. Accordingly, a 1%

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<sup>4</sup> Mundell, (2003) Envisage a single world currency as a solution to the financial instability problem. The experience of the euro area illustrates how this response can eliminate the currency-crisis problem; just contrast the prevalent of currency crises in Europe in the 1980s and 1990s with their absence from the euro area today. In addition Reinhart, Rogoff and Savastano argue that developing countries should solve this financial fragility problem by limiting foreign borrowing, the increase in the volatility of cyclical fluctuations may lead to more banking-sector instability.

<sup>5</sup>Financial instability variables like external debt, money supply and current account: decrease Economic growth under PMG as DFE which shows consistent and robustness of the result under two models while insignificant under MG model. PMG proves 0.308 percent of imbalance in first year will adjusted to equilibrium in the second year.

As population growth increase by one percent, economic growth increase by 0.033 percent as result of PMG equally with result of DFE estimator while FDI and capital formation have positive effects on economic growth

In All East and Southern African External debt to GDP ratio is significant and negatively affects economic growth .in: except in Burundi, Ethiopia, Tanzania and Rwanda which is insignificant. Remittances to GDP ratio is significant and positively affect economic growth of sample East and South African countries.

Investment of fixed capital formation was negative in Djibouti while positive in Ethiopia, Mozambique, and Tanzania and Uganda. FDI was significant and positively affect economic growth of Djibouti and Kenya while negatively effect on economy of Mozambique and Tanzania furthermore Inflation rate negative in economy of Ethiopia, Rwanda while positive in Uganda and Zambia.

increase in capital formation and Government consumption expenditure will increase GDP by 0.12 and 0.19 percent respectively in the long run similar with model 1.

Individual country fixed effect model using (PMG estimator) <sup>6</sup> shows the same result with DFE estimator.

### 1.5 Summary and Conclusion

The results of DFE regression indicate that financial instability variables measured by Credit to GDP gap ratio, and financial instability index have negative impacts on economic growth in the long run but have insignificant effect in short run.

The findings of the study using both models are the same by using two proxies of financial instability indicators like CRGDP gap ratio and financial instability index.

Accordingly, as Credit to GDP gap ratio, and financial instability index increase by one percent, economic growth decreases by 0.045 percent, and 0.88 percent, respectively in the long run. Since all error-correction term are negative and significant, long-run relationship among the financial variables and economic growth exist in all sampled East and Southern African in almost all individual countries.

This suggests that, relationship between financial instability and economic growth in the 11 East and Southern African countries, corrects towards equilibriums of economic growth at a speed corresponding to their respective error correction terms (ECT (-1)) while in 10 East and Southern African based on countries individual specific countries fixed effect model of PMG estimator.

### 1.6 Policy implication

Since, financial instability index, money supply to GDP ratio, credit to GDP gap ratio and external debt ratio negatively affect economic growth in the long run, central banks are advised to reduce credit growth, money supply so as to reduce financial instability variables through monetary .

Borrowings from abroad in foreign currency create debt burden and incur a currency mismatch, thus adopting common currency will solve the problem. Furthermore, paying attention to; monitoring of remittance inflows, developing retail payment systems for remittance transfers, improving financial access of households abroad to increase the flow of remittance is necessary by allowing banks to open accounts for diasporas to get their money by US currency overseas through providing identification cards (such as the Mexican Matricula Consular) that are accepted by allow banks was vital.

Moreover, creating stable macroeconomic environment and successful implementation of privatization that is a potential source of increasing capital formation and FDI will increase economic growth in the long-run.

Further research is needed on similar title in Eastern and Southern African countries to identify Effect of financial instability on economic growth for each individual country.

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<sup>6</sup> The parameters of all individual country error coefficients are negative as expected and fulfill the assumption that the variables converge to equilibrium in long-run. Since all error-correction term are negative and greater than  $-2$  a long-run relationship exist between financial instability and economic growth in all sampled East and Southern African except in Tanzania similar with the findings of (Loayza and Ranciere, 2005).

This suggests economic growth in 10 East and Southern African countries, corrects its disequilibrium at a speed of 83.4percent in Burundi, 134percent in Djibouti, 96percent in Ethiopia, 89 percent in Kenya, 90 percent in Mozambique, 96percent in Rwanda, 65percent in Seychelles, 6percent in Tanzania and 56, 79 and 27 percent in Uganda, Zambia and Zimbabwe respectively based on financial instability index. Based on model 1, using PMG estimator error-correction term for Rwanda and Zimbabwe found to be negative while positive for Tanzanian reveals Tanzanian economy is explosive while stable for Rwanda and Zimbabwe. Abdulrashid, (2013)

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