SAVINGS-ECONOMIC GROWTH NEXUS IN EAST AFRICAN COMMUNITY

BY

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AUGUST, 2023

DECLARATION

DECLARATION BY CANDIDATE

This dissertation is truly my original work without any submissions for any other awards at any other colleges or institutions.

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DECLARATION BY SUPERVISORS.

We confirm that the work in this dissertation was done by the candidate under our supervision

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DEDICATION

The dissertation is dedicated to NAGUDI BEATRICE SIRIKYE, her strong desire for me to study economics gave me encourage throughout the course and the writing of dissertation.

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

ABBREVIATION AND ACRONYMS

ADF   Augment Dickey-fuller

AIC   Akaike information criterio

AR   Autoregressive

ARDL   Autoregressive Distribution Lag

DW   Durbin Watson

EAC   East Africa Community

ECM   Error Correction Model

EG   Economic Growth

EXRATE   Exchange rate

FDI   Foreign Direct Investment

FEM   Fixed Effect Model

 GDP   Growth Domestic Product

GFCF   Gross Fixed Capital Formation

GNS   Gross National Saving

HQIC   Hannan Quinn information

INF   Inflation

IPS   Im-Persaran-Shin

Lm   Lagrange Multiplier

LRATE   Lending rate

PP   Philip Perron

REM   Random Effect Model

SACU   Southern African Custom Union

SBIC   Schwartz information

VAR   Vector Autoregressive

VEC   Vector Error Correction

WDI   World Development Indicator

ABSTRACT

The study investigated the saving-economic growth nexus in East African Community (Uganda, Kenya and Tanzania) for the period 1990-2019 using time series panel secondary data extracted from World Development Indicator database. Specifically the study was to investigate the direction of causality concerning savings and economic growth, examine the impact of gross national savings and other macroeconomic variable on economic growth. The study employed Fisher ADF and Fisher PP to test for stationarity of the variables. The unit root test results showed, lending rate (LRATE) foreign direct investment (FDI) and gross domestic product (GDP) were stationary in level, gross national savings(GNS), gross fixed capital formation (GFCF),exchange rate(EXRATE) and trade openness (TRADE) were stationary after first differencing and inflation (INF) become stationary after second differencing. The Vector Autoregressive (VAR) model was used to establish the causal direction between economic growth (GDP) and gross national savings (GNS) and panel least square used to determine the impact of savings and other macroeconomic variables on economic growth. The VAR estimate shows one way causal direction concerning savings and economic growth. The panel least square fixed effect results revealed that gross national savings has a negative but insignificant effect on economic growth which contradicts the priori expectations that savings positively and significantly affect economic growth, foreign direct investment (FDI) and gross fixed capital formation (GFCF) positively and significantly affect economic growth while trade openness (TRADE) and lending rate (LRATE) negatively and significantly affect economic growth. The study recommended adoption of policies that boost investment (GFCFC), policies that reduce lending rate to encourage borrowing for investment, increase foreign direct investment in productive sectors of the economy and export valve added products.

Keyword: Vector Autoregressive model, Panel least square fixed effect, Gross national savings, and Economic growth.

CHAPTER ONE

INTRODUCTION

1.0: Introduction.

This part presents the background data, the problem statement, the study's objectives, the research's hypothesis, its scope, its significance, and its organization.

1.1: Background of the study.

The regional economic integration globally is an old Phenomenon for example in 1957 European Economic Community was formed and European Free Trade was formed in 1960 (Mengesha , 2009) . In Africa in 1910 the Southern Africa Custom Union (SACU) was formed and In 1967 the East African Community (EAC) was established. Almost all countries in Africa belong to a regional integration bloc (Alemayehu and Haile, 2002).

The EAC consists of seven member states which include Burundi, Rwanda, South Sudan, Kenya, Tanzania, the Democratic Republic of the Congo, and Uganda.The original member states at its formation in 1967 were Tanzania, Kenya, and Uganda. Political and ideological disagreements among the member states led to the 1977 collapse of the East African Community. However when the EAC collapsed the Community states agreed to look into areas for future federation and accordingly on 30th November, 1999. The EAC treaty was signed and started operations on 7th July, 2000. Later other countries joined the community. In 2007 Rwanda become a member of EAC. In the same year Burundi joined the community, South Sudan become a member in 2016 and DRC joined the East African Community on 8th April, 2022 (EAC Outlook, 2022). Enhancing sustainable economic growth and sustainable human development is EAC's primary goal. (Othieno and Shinyekwa, 2011) among the member states through economic integration

and co-operation which was to be boosted through increase in the national savings and investment. Saving is key component of economic growth of any economy.

The amount of national income left over after a country's taxes and national consumption is known as its national saving. It is the amount of net domestic product that is in excess of the government expenditure. Saving is always equal to investment in the national income accounts. Saving is important to economic growth of any country because it is related to its investment. Increased national savings reduces the nation dependency on foreign resources especially capital.

In any economy savings is an important variable leading to Economic growth; economic development is primarily fueled by savings. Countries performing well in form of growth, savings play a big role. The economies that have made sustainable growth and development savings has played big role. It provides the required amount of fund to finance investment and production capacity. The increase in fixed capital can only be possible through enough savings. There cannot be any meaningful investment without savings. When national savings increase, investment also increases resulting into economic growth. High rate of savings contribute to increase in income, a nation with more savings will automatically raise the investment level which eventually lead to economic growth and development. Economic growth can only be enhanced if resources like saving are well mobilized and transformed into capital. Savings cannot stimulate economic growth unless it is invested in productive sectors of the economy.

Between 1990 and 2019, the EAC's economic growth rate and savings rate both increased. This illustrates the connection concerning the economic growth rate and the saving level of the EAC. The highest Economic Growth rate was in 2006 at 7.93%, and the lowest was in 1992 at 1.068%. Between 1990 and 2019, the average Economic Growth rate was 5.13%. The highest saving rate

was in 2019 at 24.2%, and the lowest saving rate was in 1990 at 11.03%. The average saving

growth rate between 1990 and 2019 is 18.07%. (WDI)
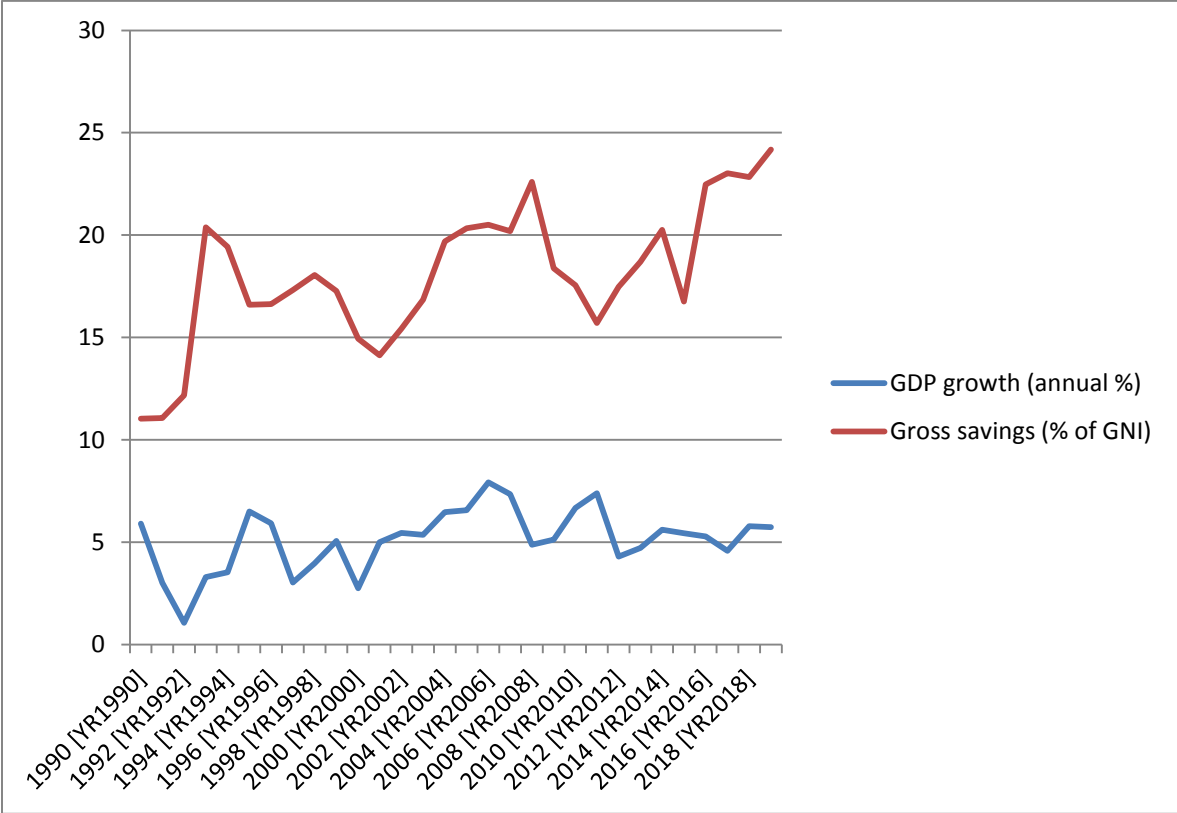
Figure 1: Saving rate and Economic Growth rate of EAC between 1990- 2019

Source: World Development Indicator

In most literature it is obvious that savings and economic growth have a relationship because

investment which is equal to savings is considered as a critical variable for economic growth of

any nation. In any economy gross national savings is one of the sources of investment that lead

to more capital formation and eventually leading to economic growth.

According to certain empirical investigations, saving leads to economic growth in one direction

such include the empirical work of Pickson and Siaw (2017) , Jagadeesh (2015) , Seifu (2015)

Adeleke (2014) and Masih and Peter (2010) . However some other empirical researcher have

rejected this assumption that the causality direction run from savings to economic growth, such research consider aggregate spending to be the key source of economic growth, therefore to them high spending lead to more output and income. The income lead to more savings so economic growth leads to savings, the empirical work in support of this view includes the empirical work of Melsew(2018), Lambamo(2015), Muhumuza(2018) and Abel(2016). They suggest that the first thing is to a achieve economic growth so that savings rate increase, moreover other literature indicates that bidirectional correlation exist between economic growth and savings; savings influence economic growth and economic growth also influence savings this is supported by the empirical work of Shradhah (2015), Abu (2010) and Reza (2014). However, other studies have it that Savings and economic growth are not directly correlated, such studies include the empirical work of Gidigbi and Manu (2020)

Researchers examined into the connection between increasing savings and growth in the economy, but they haven't come to a definitive conclusion about whether saving causes economic growth or economic growth causes saving, or if there is no relationship between the two factors at all. Many researchers find this connection to be contentious. The traditional idea which supports the view that savings lead to economic growth has been challenged by the financial crisis in Asia in 1997 witnessed by South East Asian countries. The economy in those countries collapsed with high rate of savings during the crisis. Even though it seems that savings and economic growth have an obvious association, unknown is the causal direction. Does economic growth cause savings or savings cause economic growth? Therefore the research investigates the nexus concerning savings rate and economic growth rate including impact of other macroeconomic variables with in EAC from 1990-2019.

This study investigates the nexus in EAC concerning savings and economic growth from 1990-2019. Despite the fact that the EAC collapsed in 1977 the activities of its formation continued. For this study EAC referred Uganda, Kenya, and Tanzania. Research in this area has been carried out on individual member states; Therefore, using the most recent data, this study examines the relationship between the savings rate and the rate of growth in the economy as well as the influence of other macroeconomic factors on the economic growth of the EAC.

1.2: Problem statement:

The EAC member states gross national savings and economic growth has been increasing over time since its formation in 1967. This is mainly because of the objectives of its formation which was mainly to enhance sustainable economic growth through savings and investment (EAC Vision 2050)

Savings is important for sustainable growth of the economy. Increasing gross national saving contributes to more investment, which boosts GDP growth rates in the short term. The savings rate and economic growth have a favorable relationship, as seen by the EAC members' states that more savings lead to lower consumption, which in turn encourages significant capital investment and higher rates of economic growth. The connection concerning savings rate and economic growth rate are issues which are controversial for policy makers and researchers. Many researchers have analyzed this relationship as cause and effect. An argument that is supported by one school of thought is that savings stimulate economic growth such includes empirical work of Pickson and Siaw (2017), Jagadeesh (2015), Seifu (2015) and Adeleke (2014). On another hand there is also a school of thought that support the view that economic growth stimulate savings and this includes the empirical work of Melsew (2018), Shradhah (2015), Abu (2010) and Shimelis (2014). The association concerning savings and economic growth is

unknown due to wide differences in outcome among research carried out on the nexus that exists concerning savings and economic growth, this would be due to methodology used, choice of variable specification for causality investigation and how variables are defined. This thesis examined the effects of other macroeconomic variables on the growth of the economy in the EAC as well as the causal relationship between gross national savings and growth in the economy. The extent of the causal connection can change from one economy and time period to another.

1.3: General objectives of the study:

The study's general objective is to investigate the nexus between East African Community economic growth and gross national savings.

1.4: Specific objectives of the study:

- To investigate the direction of causality between the East African Community's economic growth and gross national savings.
- To determine how the East African Community's economic growth is impacted by various macroeconomic variables, such as lending interest rates, gross fixed capital formation, exchange rates, trade openness, inflation, and foreign direct investment.

1.5: Hypotheses of the study.

Hypothesis 1: Economic growth and gross national savings in the EAC are not causally related.

Hypothesis 2: There is no impact of other macroeconomic variables on the economic growth of the EAC.

1.6: Significance of the study:

The relationship concerning savings and Economic growth has been a point of discussion among different researchers over time. To some there is a positive relationship while to others it is a negative relationship therefore this study will shade light on this relationship. To the policy makers and macroeconomist the understanding of direction of causality helps them to come up with appropriate policy in order to improve the existing economic growth rate of East Africa community.

1.8: Scope of the study:

The study investigated nexus concerning gross national savings rate and economic growth rate in the East African Community (Uganda, Kenya and Tanzania). It was limited to three member states because data was available across the three countries, besides other member states joined the EAC later for example Rwanda and Burundi in 2007, Sauth sudan 2016 and DRC 1n 2022. The study covered the period of 30 years from 1990 to 2019.This is because data was available during this period a cross the three countries.

1.9: The organization of the study:

Five chapters make up the dissertation's structure , background information, the problem description, the investigation's objectives, and the study's hypothesis, the significance of the study, and the organization of the study are all included in chapter one. The second chapter includes reviews of the theoretical and empirical literature. The study approach, which is covered in Chapter 3 and includes an empirical model, data types, data sources, and data analysis procedures, the research findings and discussion of the findings are presented in Chapter 4; the summary, conclusion, and policy recommendations are presented in Chapter 5.

CHAPTER TWO

LITERATURE REVIEW

2.0: Introduction

The theoretical and empirical literature review, empirical studies on other macroeconomic variables that affect the economy, and theoretical literature review between economic growth and gross national savings are presented in this chapter.

2.1. Theoretical literatures review:

The Harrod-Domar economic growth model, created by Roy Harrod and Evesey Domar, was established in the 1950s, according to Ruffin and Gregory (1985), and it demonstrated a crucial relationship concerning economic growth and savings. According this Model, a nation's national saving increases as its economy grows. the idea that investing merely entails growing one's capital stock, and that national saving is equivalent to national investment. The Harrod-Domar model, according to Ruffin and Gregory, predicts a direct relationship between national saving rates and economic growth rates; as a result, for a nation to experience economic growth, national savings must rise in order to boost capital formation. To accomplish economic growth, the Harrod-Domar model presupposed a closed economy without outside influences. The model assumed a closed economy where savings equal investment, l.e I=S. in this model when savings increase, the economy's productive capacity also increases through the investment multiplier process. Conversely, if savings decline, investment decreases, causing low productivity and low savings but a high capital-output ratio, the economy suffers. Due to the vicious cycle of poverty in these nations, it is difficult for developing nations to achieve economic growth. Many of these countries have therefore become more dependent on foreign direct investment.in application of

8

this model Shaw (1974) stressed that because population was increasing at an established pace as a prerequisite to improve per capita income, developing nations should focus heavily on the amount of investment. According to him, boosting the total rate of local saving has an impact on raising per capita income, and many developing nations have made substantial efforts to invite direct investment from abroad.

Savings and investment, according to Solow (1956), are the primary drivers of economic growth. This hypothesis contends that increases in saving and investing lead to a full employment of the national income. Therefore, greater levels of savings result in a larger level of output and capital stock over time, which accelerates economic growth in the short term.

Romer (1986) in the endogenous model connected economic growth to knowledge acquired through investment in research which leads to marginal productivity thus per capita income grows and capital also grows. In this model population growth is a source of growth of per capita income. This is because the more people are working in research and development sector accelerates the level of technological change. In the same way Lucas (1988) in the endogenous growth model attributed economic growth in the long run to accumulation of human capital attained through education. The model stresses the role of human capital as the main source of rising returns and divergence in economic growth of nations both developed and underdeveloped.

2.2. The Empirical review of literatures.

The empirical research reviewed on the nexus concerning economic growth and saving carry out before this study.

2.2.1. The relationship between savings and economic growth and their causal direction.

The relationship between several variables in Ethiopia between 1980 and 2017 was examined by Melsew (2018). Savings, inflation, and the pace of economic growth were the study's variables. Economic growth has a long-term, positive, and large effect on savings, according to the study's findings. The causation test showed that GDP affects the gross national saving rate but not economic growth, which in turn does not drive inflation. The Gross National Savings Rate contributes to both economic growth and inflation. Between 2000 and 2015, Muhumuza (2018) investigated the correlation between Uganda's economic growth and savings. Uganda Bureau of Statistics provided secondary data employed in the study. The long-term partnership concerning savings and economic growth was examined using OLS model . To test for short term relations, the ECM is employed. To determine the connection concerning growth in the economy and saving, the Granger causality is used. The empirical finding demonstrated that savings had a large and favorable effect on economic growth. According to the Granger causal test, economic growth causes savings rather than savings causing economic growth. This suggests a one-way causal association concerning economic growth and savings. The study suggested policies to promote economic growth by raising productivity of all elements.

Bankole and fatai (2013) also examined the link concerning domestic savings and economic growth between 1980 to 2010. The direction of connection was ascertained using Granger causality and the Engle-Granger cointegration technique. The outcome demonstrated a single-way causal connection between saving and economic growth, with economic growth leading to saving. Between 1980 and 2013, Seifu (2015) looked at the connection between domestic saving

and economic growth in developing nations. For both cross sectional and longitudinal data analysis, panel fixed effect models of the OLS are used. According to the study's findings, savings boost economic growth; therefore, one approach to link savings and economic growth is through causativeness.

Lambamo (2016), the research used time series data to evaluate link among savings, inflation, and economic growth in Ethiopia from 1981 to 2015. The findings showed a one-way causal connection between domestic savings and economic expansion, which runs from savings to economic growth. Additionally, it showed that savings had a considerable and advantageous impact on economic expansion.

Through the use of multivariate frames, Tang and Chang (2021) established the underlying relation that existed concerning savings and economic growth for Asian nations between 1970 and 2020. In order to assess the long-term correlation between savings and its drivers, Bartlett-corrected trace is utilized to test for cointegration. The research showed that Savings and economic growth are correlated in a single direction, from saving to economic growth. Additionally, it showed that in five ASEAN economies, saving and its determinant are cointegrated. Similar cointegration and causality tests were used by Lean and Song (2009) to explore the correlation concerning local savings growth and economic growth in China from 1955-2000. Savings and economic growth were found to be long-term cointegrators, and the causality test showed a one-way, unidirectional link of causation between the two, with economic growth driving saving.

Using an ARDL model, Reza (2014) examined the link between savings and Iran's overall and non-oil economic development from 1972 to 2010. The results showed that saving had a

favorable and considerable impact on economic growth. Additionally, the findings indicated a long-term, inversely proportional association concerning savings and economic growth.

In their 2014 study, Gungor and Olesia (2014) examined the connection between Albania's economic growth and savings from 1992 to 2014. The test applied was Johansen cointegration . The empirical result shows; A long-term relationship exists between savings and economic expansion. The short-term result demonstrated that the variables are stable. According to the document, the government should boost FDI and savers' policies.

Oliapido (2010) also looked into the contentious link concerning economic growth and saving within Nigeria from 1970 and 2007.The cointegration method and Granger causality are used. The test's findings indicate that saving and economic growth are cointegrated, Granger tests demonstrated the long-term relationship between economic growth and saving by revealing a causal connection in one direction that runs from saving to economic growth.

Gidigbi and Manu (2020) examined how savings impacted African economies' GDP between 1980 and 2014, encompassing 30 African countries. The investigation used generalized least square with pooled, fixed effect, and random effect estimates. It also employed regression that seemingly unrelated. According to the findings, no causal relationship exist concerning domestic savings and economic growth, but FDI, current account, and savings all have a favorable effect on economic growth. FDI and domestic savings are causally related in both directions. They proposed saving-oriented strategies to improve economic growth used time series data to investigate the connection between Ethiopia's gross domestic saving and economic growth from 1975 to 2013. According to the causality check, Growth in the economy and gross domestic savings had no correlation.

Thaw (2017) studied the long-term equilibrium association concerning FDI, economic growth and domestic savings in Myanmar for the period 1990–2015. The association among FDI, domestic saving, and economic growth over the long run was shown using the bound test. The ARDL model, regression analysis, and error correction were all used. The model indicated that in Myanmar, economic growth is ultimately driven by both domestic saving and FDI

2.3. The impact of other macroeconomic determinants on economic growth

Foreign direct investment, gross fixed capital formation, Trade openness, exchange rate, inflation and lending interest rate were the other macroeconomic variables that served as the study's control variables.

2.3.1. Foreign direct investment and economic growth

Multiple regressions are used From 2006 to 2016, Khun Sokang (2018) examined the effects of FDI on the growth of the Cambodian economy. The findings suggested that foreign direct investment contributed similarly to economic growth. Nistor (2014) examined the effect of FDI inflows on the growth of the Romanian economy from 1990 to 2012. The findings indicated a link between FDI and economic growth.

Using panel data, Silajdzic and Mehic (2015) looked into how FDI affected economic development between 2000 and 2013. The findings indicated that FDI positively impacts economic growth and is associated with more knowledge, capacity, and efficiency seeking foreign direct investment. It also stipulated a positive effect of FDI to economic growth and it is associated with knowledge of spillover.

2.3.2. Gross fixed capital formation (GFCF) and economic growth

Bakare (2011), used OLS and an error-correction model to analyze the effect of GFCF on Nigeria's economic growth. The results of the study showed a considerable connection between economic growth and capital development.

Using the Johansen cointegration test, OLS, and error correction model, Ugochukwu and Chinyere (2013) studied the effect of the GFCF on Nigeria's economic growth between 1982 and 2011. The outcome demonstrates that capital production positively affects economic growth while inflation and interest rates negatively affect it in Nigeria.

2.3.3. Trade openness and economic growth:

According to Farina's (2015) analysis, trade policy liberalization only marginally boosts economic growth in 82 developing nations. The empirical findings show that while trade openness benefits wealthy nations, it has little bearing on underdeveloped nations, especially those in Africa. The relationship might be viewed globally as either favorable or bad.

Similar to this, Zahonogo (2017) looked into how trade openness affected GDP in 42 sub-Saharan African countries from 1980-2012. The empirical evidence demonstrates that trade openness significantly and favorably affects economic growth. Keho (2017) examined the associations concerning economic growth and trade openness in Ivory coast between 1965-2014 using the ARDL model. The Toda and Yamamoto were used to establish the Granger causality. The results showed that trade openness has an advantage for economic growth in the long and short terms.

2.3.4. Lending rate and economic growth

For the years 2006 to 2019 in Burundi, Sylvane (2020) examined the interest lending rates' effect on economic growth. The association concerning interest rates and economic growth was investigated in the study using multiple linear regressions. The research showed that real interest rates, inflation, gross investment, and economic growth are all positively correlated. Similar to this, Ibrahim and Mohammed (2019) looked into how loan interest rates affected Palestine's economic growth from 1996 to 2015. The research findings demonstrated that variables have long-term relationships while short-term relationships are negligible. A bidirectional causal association concerning loan rate and economic growth was revealed by the Granger causality test.. The impact of loan rate is positive, indicating that it has a favorable impact on economic expansion.

In Nigeria from 1980 to 2016, Akinwale (2018) examined the relationship between bank lending interest rates and growth in the economy. The Dynamic Ordinary Least Estimates approach was employed in the investigation. Since the results showed an inverse link between bank lending rates and economic growth, the empirical finding demonstrated that decreases in lending rates result in increases in economic growth.

2.4: Conceptual Framework
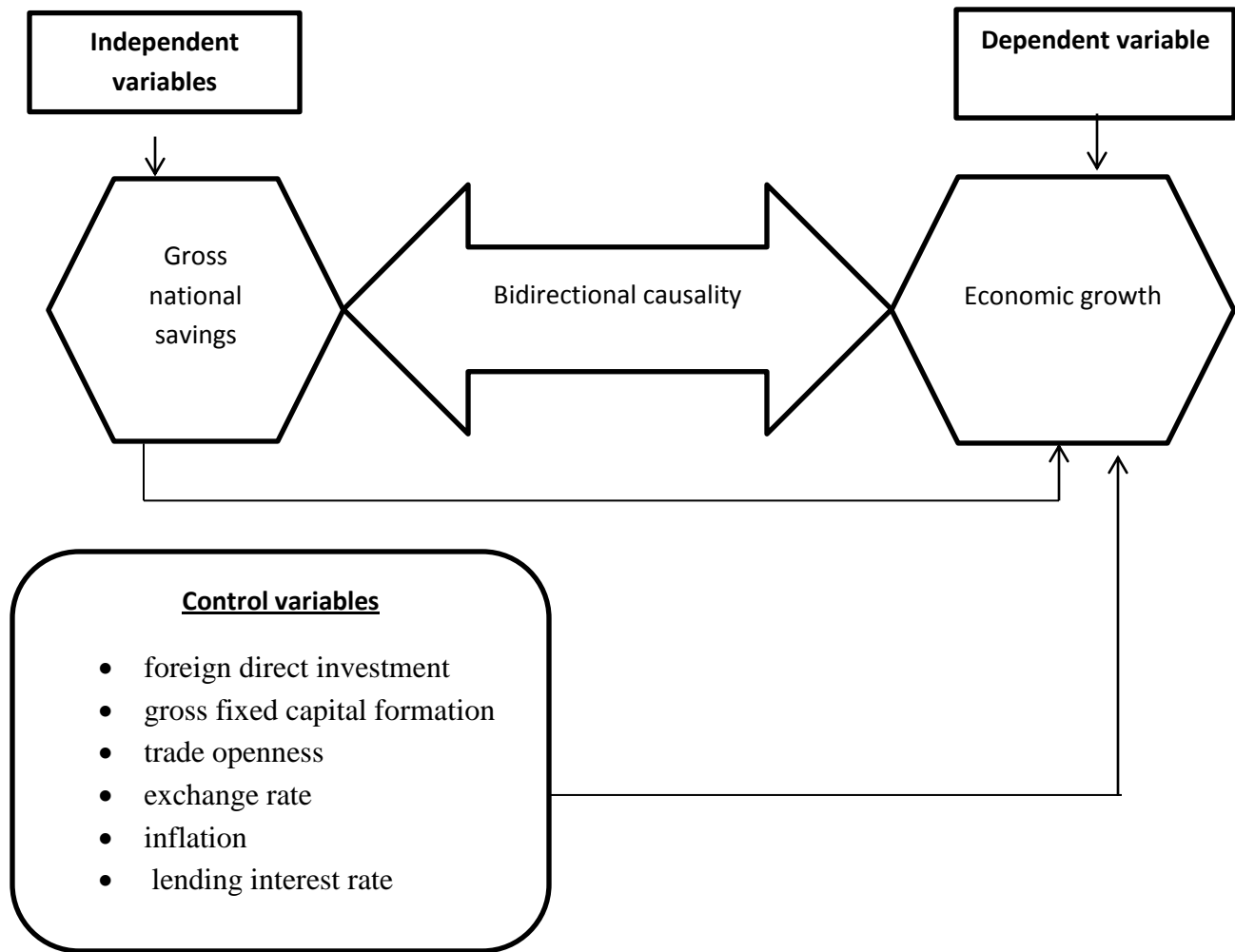
Source: Author compilation

Figure 2: Conceptual Framework

The conceptual framework shows bidirectional relationship between the two variables; economic growth and gross national savings.

CHAPTER THREE

RESEARCH METHODOLOGY

3.0. Introduction

This chapter outlines the study's methodology, including the panel unit root test, the Vector Autoregressive model for establishing the causalality between savings and economic growth rate, the panel least square method for establishing the influence of savings and other macroeconomic variables on economic growth, as well as the data source and data type

3.1: The Panel unit root test:

To determine whether the series are stationary, or whether there are I(0) or I(1), panel unit root test was conducted (Persaran and Shin, 1999; Persaran, et al., ,2001). According to econometric theory, all variables must be stationary in order to estimate the VAR model and panel least square model. While the non-stationary series I(1) were converted to stationary series through the method of differencing, the stationary series I(0) were entered into the VAR model and panel least square model in levels.

For panel unit root tests, the Im-Persaran-Shin (2003) and the Fisher test were used. This tests is a non-parametric analysis which conglomerates the test-statistic p-values for each cross-sectional unit's unit root. It employs p i, which is the p-value from the unit root test associated with the ith - cross, such that p i is U [0, 1] and independent, and -2lnp i has a chi-square (henceforth, 2) with two degrees of freedom. Consequently, the Fisher test-statistic is as follows:

$$P = -2 \sum_{i=1}^{N} lnp_i \quad \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

To test for the unit root in panel data, Equation (1) combines the p-values from unit root tests for each cross-section i.. P is distributed as χ^2 distribution with 2N degrees of freedom as $T_i \rightarrow \infty\ for\ finite\ N$ and N is the number of separate samples. The ADF compares the alternative suggestion, that the variables are stationary, to the null hypothesis, that the variables are non-stationary. This is described as;

The null hypothesis is defined as:

$$H_0 : \rho_i = 1\ where\ i = 1, 2, \ldots \ldots, N \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (2)$$

Against the alternatives hypothesis

$$H_A : \rho_i < 1, i = 1, 2, \ldots \ldots, N_1\ ;\ \rho_i\ = 1, i =\ N_1 + 1, N_1 + 2, \ldots, N \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots. (3)$$

3.2: Panel vector autoregressive (VAR) model:

To ascertain the causal link that exists between gross national savings and gross domestic product rate of growth, the VAR model was used. The reciprocal dependence between the variables in the model can be effectively analyzed using the vector autoregressive. Sims (1980) developed this model as a technique for characterizing the combined dynamic behavior of variables without the necessity for the kind of severe restrictions required to identify under the structural parameter approach.

The relationship between two or more independent variables is investigated by the vector autoregressive model. The independent variables from one equation may show up as predefined variables in another equation of the system when using a VAR model. VAR model was specified as:

$$GDP_t = f(GNS_t) \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots.. (4)$$

$$GNS_t = f(GDP_t) \ \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

It is written as equation 4 and 5 in linear form

$$GDP_t = \alpha_0 + \sum_{j=1}^{k} \alpha_{1j} GDP_{t-j} + \sum_{j=1}^{k} \alpha_{2j} GNS_{t-j} + \varepsilon_t \dots\dots\dots\dots\dots\dots\dots\dots\dots (6)$$

$$GNS_t = \beta_0 + \sum_{j=1}^{k} \beta_{1j} GNS_{t-j} + \sum_{j=1}^{k} \beta_{2j} GDP_{t-j} + \mu_t \dots\dots\dots\dots\dots\dots\dots\dots\dots (7)$$

Where α_i and β_i are parameters, j= lags, ε_t and μ_t are error terms

GDP= GDP growth (Proxy for economic growth),

GNS = Gross National Saving,

The nexus between GNS and GDP is determined by the coefficients α_{2j} and β_{2j}.

3.3: Panel least square estimation.

n order to determine the impact of savings and other macroeconomic factors on EAC's economic growth, the panel least squares model was used.. The model is specified as follows:

$$GDP_{it} = \gamma_0 + \gamma_1 GNS_{it} + \gamma_2 FDI_{it} + \gamma_3 GFCF_{it} + \gamma_4 EXRATE_{it} + \gamma_5 INF_{it} + \gamma_6 TRADE_{it} +$$

$$\gamma_7 LRATE_{it} + \epsilon_{it} \ (8)$$

Where:

GDP = GDP growth

GNS = Gross National Savings

FDI = Foreign direct investment

GFCF = Gross fixed capital formation (investment)

EXRATE = Foreign Exchange Rate

INF = Inflation

TRADE = Trade Openness

LRATE = Lending interest rates

ϵ_t = Error term

Subscript i= country

Subscript t = year

The summary of variable names, its definitions of and expected signs of are presented in Table 1 below:

Table 1 : The expected signs, names of variables, and variable definition.

Variable Name	Variable Definition	Expected sign
GDP	GDP per capita growth (annual %)	Dependent variable
GNS	Adjusted savings: net national savings (% of GNI)	+
FDI	Foreign direct investment , net inflows (% of GDP),	+
GFCF	Gross fixed capital formation (% of GDP)	+
EXRATE	Exchange Rate (LCU per US$)	+
INF	Consumer price index (2010 = 100)	-
TRADE	Trade (% of GDP)	+
LRATE	Lending interest rate (%)	-

Source: compilation by researcher

3.4: Hausman test

The Hausman test was used in making the choice of a more appropriate panel least square model specification between random effect and fixed effect models (Hausman, J.A. and W.E. Taylor,

1981). The two models specifications were used to reinforce the removal of heterogeneity issues found in most of the research

3.5: Serial correlation and heteroskedasticity tests

The results of panel least square model was subjected to serial correlation tests and heteroscedasticity tests to determine the validity of the outcomes.

3.6: Type of data and data source:

The secondary data got from World Development Indicator database was used in this study, this was because this source of data is consistent and one of the highly recommended source. The consistency and reliability of this source is unquestionable. The time period used in this study was limited to 30 years from (1990-2019).This is because data was available for this period across the three countries. The data type was annual panel data. The three countries under investigation were the founding members of the East African Community: Kenya, Tanzania, and Uganda.

CHAPTER FOUR

RESEARCH FINDINGS AND DISCUSSION OF RESULTS

4. 0: Introduction:

The findings are presented in this section as per the objectives of the study and hypothesis of the study on savings – economic growth nexus in the EAC for the period 1990-2019. It also indicates the interpretations of the results for the tests done which include the unit root test, Diagnostic tests redundant fixed effect test, Hausman Test.

4.1: Descriptive statistics:

Table 2 lists the characteristics of the variables. The Jarque Bera statistic examines the normality of a series' distribution. The Jarque-Bera statistics for economic growth, gross national savings (GNS), foreign direct investment (FDI), and trade openness (TRADE) accept the null hypothesis of normal distribution and rejects the normal distribution of lending rate (LRATE), exchange rate (EXRATE), inflation (INF), and gross fixed capital formation (GFCF), Since all of these variables are stationary and exogenous, there is no issue with this. The Kurtosis calculates the peak or flatness of the variable distribution. Foreign direct investment, gross national savings, inflation, and trade openness were all Platykurtic according to the statistics for Kurtosis, meaning that their distributions were flat compared to the normal and that their statistics were less than 3. However, economic growth, gross fixed capital formation, exchange rate (EXRATE), and lending rate (LRATE) were all Leptokurtic, meaning that their statistics were greater than 3, indicating that their distributions were peaked compared to the normal. A measurement of the symmetry of the distribution of the series around the mean is the skewness. The statistic for skewness reveals that gross domestic product (GDP) was negatively skewed while gross national

savings (GNS), foreign direct investment (FDI), gross fixed capital formation (GFCF), exchange rate (EXRATE), inflation (INF), trade openness (TRADE), and lending rate (LRATE) have positive skewness thus the long right tail of their distributions.

Table 2: Descriptive statistics

	GDP	GNS	FDI	GFCF	EXRATE	INF	TRADE	LRATE
Mean	5.125786	18.06584	2.140347	22.71235	1055.961	80.78264	43.97091	31293.45
Median	5.152384	17.34459	2.124113	20.97733	967.7497	62.31868	43.30565	19.95191
Maximum	11.52324	39.63862	6.656597	39.65486	3727.069	189.9663	72.85848	2814541.
Minimum	-0.799494	3.535837	-0.137301	12.41203	22.91477	8.509022	23.98087	12.44113
Std. Dev.	2.403772	7.760560	1.600642	6.468050	996.9387	52.61815	11.76216	296676.5
Skewness	-0.157846	0.273620	0.545285	0.894263	0.846276	0.588946	0.425510	9.327981
Kurtosis	3.123405	2.724368	2.854052	3.082732	3.005569	2.063849	2.446699	88.01124
Jarque-Bera	0.430839	1.407920	4.539920	12.02126	10.74285	8.489280	3.863920	28406.08
Probability	0.806203	0.494623	0.103316	0.002453	0.004648	0.014341	0.144864	0.000000
Sum	461.3207	1625.925	192.6312	2044.112	95036.51	7270.437	3957.382	2816411.
Sum Sq. Dev.	514.2527	5360.139	228.0228	3723.375	88455928	246411.6	12313.01	7.83E+12
Observations	90	90	90	90	90	90	90	90

Source: Author's Compilation

Normality distribution test for economic growth and gross national savings indicate that gross domestic product (GDP) and gross national savings (GNS) were normally distributed.

Since the probability of Jarque-Bera were 80.6203% and 49.4623% for gross domestic product (GDP) and gross national savings (GNS) respectively which has significance higher than 5% levels, accept the null hypothesis of normal distribution of gross domestic product (GDP) and gross national savings (GNS). Therefore, economic growth and gross national savings (GNS) were normally distributed.

4.2.: The correlation matrix:

Findings from the correlation matrix shown in table 3 indicate values less than 0.8, the highest value is 0.57 for that reason the multicollinearity problem does not exist in the model. The values greater than 0.8 among independent variables would mean high correlation therefore it would indicate problem of multicollinearity in the estimation.

Table 3 : correlation matrix

	GDP	GNS	FDI	GFCF	EXRATE	INF	TRADE	LRATE
GDP	1.000000	0.220903	0.507838	0.190930	0.399402	0.246377	-0.409858	0.085103
GNS	0.220903	1.000000	0.428650	0.533163	0.484794	0.289463	-0.086856	-0.129623
FDI	0.507838	0.428650	1.000000	0.386637	0.574451	0.304653	-0.246614	-0.142525
GFCF	0.190930	0.533163	0.386637	1.000000	0.470627	0.547918	0.024708	0.056017
EXRATE	0.399402	0.484794	0.574451	0.470627	1.000000	0.523074	-0.436320	-0.092050
INF	0.246377	0.289463	0.304653	0.547918	0.523074	1.000000	-0.308209	-0.146422
TRADE	-0.409858	-0.086856	-0.246614	0.024708	-0.436320	-0.308209	1.000000	0.055327
LRATE	0.085103	-0.129623	-0.142525	0.056017	-0.092050	-0.146422	0.055327	1.000000

Source: Author's Compilation

4.3: The panel unit root test:

For any analysis to be done with the time series data variables, it is important and necessary that this test is carried out to determine the order of integration so as to get a consistence and reliable of the results . Variable that are non-stationary are transformed into stationarity by differencing. Unless the unit root is check the regression may probably lead to spurious regression. To test for stationarity of the series, this study uses Im Pesaran and Shin W-stat (2003), Levin Lin and Chu (2003), Fisher ADF, and Fisher PP. The results show that the lending rate (LRATE), foreign direct investment (FDI), and gross domestic product (GDP) were stationary in levels, while the gross national savings (GNS), gross fixed capital formation (GFCF), exchange rate (EXRATE), and trade openness (TRADE) became stationary after the first differencing and inflation (INF) became stationary after the second differencing.

Table 4: The panel unit root test

	Im pasaran and shin W-stat		ADF Fisher		PP fisher		Levin, Lin & Chu t*	
	LEVEL	1st DIFFERENCE	LEVEL	1st DIFFERENCE	LEVEL	1st DIFFERENCE	LEVEL	1st DIFFERENCE
GDP	0.0002***	0.0000***	0.0006***	0.0000***	0.0004***	0.0000***	0.0004**	0.0000***
GNS	0.1153	0.0000***	0.0497**	0.0000***	0.0485**	0.0000***	0.1038	0.0000***
FDI	0.0002***	0.0000***	0.0006***	0.0000***	0.0019***	0.0000***	0.0000**	0.0000***
GFCF	0.4966	0.0000***	0.3352	0.0000***	0.2346	0.0000***	0.4311	0.0000***
EXRATE	0.9732	0.0000***	0.8003	0.0000***	0.7711	0.0000***	0.6959	0.0000***
INF	1.0000	0.1786	1.0000	0.1570	1.0000	0.0200**	1.0000	0.2218
TRADE	0.2280	0.0000***	0.2661	0.0000***	0.4484	0.0000***	0.1113	0.0000***
LRATE	0.0066***	0.0000***	0.0023***	0.0000***	0.0004***	0.0000***	0.0111*	0.0000***

* significant at 10%, ** significant at 5%,*** Significant at 1%

Source: Author's Compilation

4.4: Panel vector autoregressive (VAR) model:

The VAR model offers a convincing and cogent method for structural inference, policy analysis, and data description forecasting. The VAR model was to determine causality between Gross national savings (GNS) and Economic growth (GDP). Before the Granger causality, there is need to determine lag length, the importance of determining the lag length is that if the lag length is too small it may have led to misspecification of the model and if the lag length was too big the degrees of freedom would be wasted. VAR stability condition and Residual Diagnostics are performed to ensure that is no autocorrelation in lag length chosen .

4.4.1: The lag length criteria:

This was applied to identify how many lags are there in time series data analysis. Time series are analyzed using the AR model in economics. To calculate the AR lag length, the model was utilized. In time series, there are numerous lag selection criteria. The initial lagged value AR (p) of a variable is used to determine its present value in a time series, which is required for the lag length autoregressive process, or p. The optimum lag order chosen was four (4) as indicated by Akaike information criterio. The AIC was chosen because it had the lowest value (9.211417*) as compare to SBIC (9.476687*) which indicate lag one (1) being significant. 4 lag length are chosen the study.

Table 5: The lag length criteria

VAR Lag Order Selection Criteria
Endogenous variables: GDP
D(GNS)
Exogenous variables: C
Date: 04/24/22   Time: 19:25
Sample: 1990 2019
Included observations: 69

Lag	LogL	LR	FPE	AIC	SC
0	-322.7472	NA	41.98074	9.412961	9.477718
1	-314.2434	16.26809	36.84693	9.282417	9.476687*
2	-311.5680	4.963054	38.30444	9.320811	9.644595
3	-305.3679	11.14211	35.97011	9.257042	9.710339
4	-299.7939	9.694018*	34.42049*	9.211417*	9.794227
5	-298.7208	1.804082	37.56173	9.296254	10.00858
6	-294.4952	6.858820	37.45255	9.289717	10.13155

 * indicates lag order selected by the criterion
 LR: sequential modified LR test statistic (each test at 5%
level)
 FPE: Final prediction error
 AIC: Akaike information criterion
 SC: Schwarz information criterion
 HQ: Hannan-Quinn information criterion

Source: Author's Compilation

4.2.4: Granger causality test:

This test investigates if the lagged value of one variable helps in determining another variable in

the model. The null hypothesis in this study is that GNS does not Granger cause GDP. If the t-

statistic is greater than 2 at different lags, take the null hypothesis and conclude that indeed GNS

does not cause GDP. But if the t-statistic is less than 2 at different lags, reject the null hypothesis

and conclude that GDP granger cause GNS. The Granger causal test is estimated in the Table 6

below at different lags.

Table 6 : VAR granger causality test

Vector Autoregression Estimates
Date: 06/06/22   Time: 09:05
Sample (adjusted): 1995 2019
Included observations: 75 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	GDP	D(GNS)
GDP(-1)	0.300932	0.566119
	(0.12240)	(0.22393)
	[2.45853]	[2.52809]
GDP(-2)	0.045294	0.140214
	(0.12174)	(0.22272)
	[0.37205]	[0.62954]
GDP(-3)	0.212165	0.116703
	(0.11450)	(0.20948)
	[1.85295]	[0.55712]
GDP(-4)	0.041645	-0.414708
	(0.10842)	(0.19834)
	[0.38412]	[-2.09085]
D(GNS(-1))	0.004348	-0.129017
	(0.06513)	(0.11915)
	[0.06676]	[-1.08285]
D(GNS(-2))	0.092581	-0.211920
	(0.04887)	(0.08940)
	[1.89460]	[-2.37053]
D(GNS(-3))	0.068469	-0.191370
	(0.05081)	(0.09296)
	[1.34752]	[-2.05869]
D(GNS(-4))	-0.032709	-0.130092
	(0.05250)	(0.09605)
	[-0.62298]	[-1.35437]
C	2.248977	-1.884258
	(0.66816)	(1.22237)
	[3.36592]	[-1.54148]

R-squared	0.350866	0.200129
Adj. R-squared	0.272183	0.103175
Sum sq. resids	225.8483	755.8974
S.E. equation	1.849850	3.384227
F-statistic	4.459241	2.064161
Log likelihood	-147.7595	-193.0610
Akaike AIC	4.180252	5.388295
Schwarz SC	4.458351	5.666393
Mean dependent	5.478033	0.190175
S.D. dependent	2.168330	3.573597
Determinant resid covariance (dof adj.)		38.91648
Determinant resid covariance		30.13692
Log likelihood		-340.5564
Akaike information criterion		9.561505
Schwarz criterion		10.11770

Source: Author's Compilation.

The vector autoregressive estimate is used to establish causality direction between GDP and GNS. The test outcome shows one way (unidirectional) causality direction between GDP and GNS, running from economic growth to gross national savings. Table 6 reveals a unidirectional causality between GDP and GNS. This empirical results is consistent with priori Expectation that economic growth granger cause savings

4.5: The panel least square estimation model:

The panel least square estimation is employed to determine the impact of savings and other macroeconomic factors on economic growth in EAC. Panel data allows to account for unobserved differences a cross the countries. The baseline model is used to control the heterogeneity bias in cross section unit. The choice is made between using fixed effect model and the random effect model. The importance of using fixed effect model is that it allows arbitrary correlations among the unobserved heterogeneity and the independent variables

(Kudaisi 2013). But the fixed effect model cannot compute coefficients for time-invariant variable, this is a major problem with fixed effect model. For that reason random effect model is estimated that caters for time-invariant variable (Kudaisi 2013). The individual effects of latent random factor is considered under random effect model but the problem with random effect model is that it assumes that specific effect is not related to other independent variables.

The Hausman test founded by Hausman in 1978 was employed to make a choice of the appropriate model specification between the fixed effect model and random effect model. This test (Hausman test) checks on the more efficient model over the less efficient model. The consistent results are obtained by more efficient model (Hausman, 1978).

4.5.1: The fixed effect model.

 The result of the fixed effect rejects the null hypothesis for redundant fixed effect because the p-valve of Cross-section/Period chi-square is less than 0.05. Therefore the fixed effect model is appropriate panel least square model for this study. Table below indicator the findings of fixed effect.

Table 7: The redundant fixed effect test

Redundant Fixed Effects Tests
Equation: Untitled
Test cross-section and period fixed effects

Effects Test	Statistic	d.f.	Prob.
Cross-section F	6.161688	(2,47)	0.0042
Cross-section Chi-square	19.559889	2	0.0001
Period F	1.654944	(27,47)	0.0640
Period Chi-square	56.128351	27	0.0008
Cross-Section/Period F	2.054619	(29,47)	0.0136
Cross-Section/Period Chi-square	68.777978	29	0.0000

Source: Author's Compilation.

4.5.2: Hausman Test

To determine whether the random effect model should be utilized in the study, the Hausman Test result was performed to test it. As shown in table 8, the test results demonstrate that the null hypothesis of an uncorrelated random effect is accepted because the P-value for the random period is greater than 0.05.

Table 8: Hausman Test

Correlated Random Effects - Hausman Test
Equation: Untitled
Test period random effects

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Period random	7.659664	7	0.3636

Source: Author's Compilation.

Therefore both models fixed effect and random effect are appropriate to be employed. The panel least square fixed effect model was chosen to be used in this study.

4.5.3: Panel least square fixed effect model

The influence of gross national savings and other macroeconomic variables on economic growth are tested using the Panel Least Square fixed effect; the results are shown in Table 9 of the regression analysis.

Table 9 : Panel least square fixed effect model.

Dependent Variable: GDP
Method: Panel Least Squares
Date: 04/09/22   Time: 14:40
Sample (adjusted): 1991 2019
Periods included: 29
Cross-sections included: 3
Total panel (balanced) observations: 87

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	7.113913	1.203918	5.908969	0.0000
D(GNS)	-0.008464	0.053458	-0.158332	0.8748
FDI	0.368073	0.213671	1.722617	0.0910
D(GFCF)	0.230702	0.093395	2.470183	0.0169
D(TRADE)	-0.084194	0.048561	-1.733783	0.0890
LRATE	-0.139665	0.050356	-2.773548	0.0077

Effects Specification

Cross-section fixed (dummy variables)
Period fixed (dummy variables)

R-squared	0.722708	Mean dependent var	5.098960
Adjusted R-squared	0.532410	S.D. dependent var	2.429988
S.E. of regression	1.661639	Akaike info criterion	4.146990
Sum squared resid	140.8132	Schwarz criterion	5.167365
Log likelihood	-144.3941	Hannan-Quinn criter.	4.557864
F-statistic	3.797769	Durbin-Watson stat	1.840109
Prob(F-statistic)	0.000008		

Source: Author's Compilation.

4.5.3.1: Goodness of fit

The high value R-squared of 0.722708 indicates that the model fits the data well.The implication is that keeping other variables constant, the independent variables in the model explains up 72.3% in the variation of dependent variable (GDP).

4.5.3.2: F-statistics and the overall performance of the model

To examine the joint statistical significance of the model, the F-statistic is used. The overall F-stat for this model is 3.797769, and the null hypothesis is rejected with a P-value of 0.000008. Therefore, it can be said that all coefficients are statistically distinct from zero collectively.

4.5.3.3: The diagnostic test serial correlation

This test was indicated by Durbin Watson statistic of 1.840109 that is approximately 2 implying that panel Least Square fixed effect model is free from serial correlation

4.5.3.4: Impact of gross national savings on economic growth

Gross national savings have a negative and negligible effect on economic growth. This is in line with Keynesian economic theory, which contends that saving restrains the economy's ability to grow (Hansen 1973). This result was not expected and contradicts the empirical work of Jagadeesh (2015) who examined the connection concerning savings and economic growth where the results revealed that savings and economic growth in Botswana have a positive significant relationship. Similarly Sheggu (2004) and Mashi and Peter (2010) also showed that savings has positive impact on economic growth. Thorton (2009) noted that sometimes higher savings may slow down economic growth; however he believed that this can be offset by positive effect of other factors. For this study those others factors include the control variables. Intuitively the

increase in gross national saving in EAC would have not been invested in productive activities to stimulate investment which would have led to increase in economic growth.

4.5.3.5: Effect of other macroeconomic variables on economic growth:

Foreign direct investment (FDI), gross fixed capital formation (GFCF), proxy investments, exchange rates (EXRATE), trade openness (TRADE), inflation (INF), and lending rates (LRATE) are considered the control variables. Table 9 displays the test results, and the discussion that follows explains them.

The effect of foreign direct investment (FDI) on economic growth is positive and significant at 10% significance level . This is consistent with the empirical findings of Khun Sokang (2018), who used multiple regressions to determine the effect of foreign direct investment on economic growth in Cambodia from 2006 to 2016. The results showed that foreign direct investment significantly and favorably affects economic growth. In a similar way, Silajdzic and Mehic (2015) ,Nistor (2014), Aluarado et al. (2017), which supports the same findings . The modernization theory's assertions, according to which FDI contributes to economic growth through provision of the capital for investment and knowledge transfer, support this. In line with Solow (1956), FDI as an exogenous element led to economic growth through an increase in investment volume, and as an endogenous factor it led to sustainable economic expansion through technical transfer and spillover effects. (Romer, 1986; Lucas, 1988) FDI thus play a significant influence in economic progress.

The impact of gross fixed capital formation (GFCF) on economic growth was positive and significant at 5% level of significance. The result is in agreement with the empirical work of Ugochukwu and Chinyere (2013) examined impact of gross fixed capital formation on economic

growth of Nigeria between 1982-2011. The result shows that capital formation has positive influence on economic growth. The same findings are supported by the empirical work Bakare (2011), Shuaib and Dania (2015). This view is supported by the theoretical work of Keynes (1936) that investment affects economic growth positively which same view is shared by neoclassical theory of growth.

The effect of trade openness on economic growth is negative and significant at 10% significance level but insignificance at 5% level of significance. The negative effect of trade openness would be as a result of the economies concentrating on industries with dynamic comparative disadvantage, unstable foreign demand and ineffective trade policies which slow the economic growth (Farahane and Hesmati, 2020). This is in agreement with the empirical work of Hye and lau (2015) that examined the effect of trade openness in Pakistan; the findings revealed that trade openness negatively affect economic growth

The impact of lending rate is negative and significant at 5 % significance level. This is in line with the empirical work of Akinwale (2018) who Investigated nexus between bank lending rate and economic growth in Nigeria between 1980 and 2016. The empirical findings revealed that decrease in lending rates lead to increase in economic growth. Similarly Lyndon and Peter (2016), investigated the relationship between interest rate and economic growth of Nigeria between 1985-2014. The empirical results showed that interest rate and economic growth have an inverse relationship. This view is supported by the empirical work of Fatoumata (2017) , Ifeanyin and Chukwu (2014) , Polain et al (2016) , Assefa et al (2017) , Udoka and Anyingang (2012) . The theoretical of work Keynesian , Monetarists and the post Keynesian support this finding reveal that growth is negatively impacted by high rate of interest.

CHAPTER FIVE

SUMMARY, CONCLUSION AND POLICY RECOMMENDATION

5.0: Introduction:

The study's summary, conclusion, and policy recommendations are presented in this section.

5.1: Summary of the findings:

The relationship between gross national saving and economic growth in the East African Community between 1990 and 2019 and the effects of other macroeconomic variables on economic growth were established using databases of world development indicators.

The specific objectives used the vector autoregressive (VAR) model to examine the causality correlation concerning gross national saving and East African Community's economic growth and used the panel least squares model to investigate the impact of gross national saving and other macroeconomic variables on the rate of economic growth in the region.

5.2: Conclusion:

The study establish that the correlation concerning gross national saving and economic development is causally unidirectional. Economic growth and gross national saving are linked by unidirectional a causal relationship moving from economic growth to savings.

Gross national saving had a negative but statistically insignificant impact on economic growth. Trade openness (TRADE) and lending rate were significantly and negatively affected economic growth. GFCF, or gross fixed capital formation and foreign direct investment (FDI) nonetheless, had a positive and significant impact on economic growth.

5.3: Policy recommendations

Below are the policy recommendations suggested basing on the finding of the study.

The government of member states of East African Community should increase gross fixed capital formation through adoption of policies aimed at boosting investment such as favorable economic environment that increase employment which in turn increases output leading to economic growth. Policies that improve infrastructure facilities and diversification of the economy so that investment is increased in the EAC member states hence stimulating economic growth. This is consistent with the study's empirical findings.

In order to stimulate economic growth policies leading to reduction of the lending interest rate should be adopted so that the economic agent can acquire capital at low cost leading to investors getting more capital to invest leading to increase in economic growth. Similarly policy to address the factors leading to rise in lending rates should be addressed such as inflation and financial institutions should develop comprehensive policies toward reduction of bank leading interest rate.

Increase foreign direct investment in productive sectors this is because foreign direct investment (FDI) has positive and significant impact on Economic growth, therefore policies that encourage foreign inflows will stimulate economic growth in EAC member states.

Policies regarding export of value added products should be adopted as opposed to export of primary raw materials in its raw form similarly policy encouraging adoption of capital intensive sector in international trade should be adopted. This is because the empirical result of the study revealed that trade openness has negative but significant impact on economic growth.

5.4: Limitation of the study and areas for further research

Not all the determinants of the growth domestic product (GDP) have been encompassed in the current study, thus further research can be done including more variables such as labour (education), technological progress among others.

The study was limited in the time scope. The study assumed that even in the period when the EAC was non-functional (1990-2000) the activities for its formation continued and the study covered only 30 year (1990-2019). Further research need to be carryout to capture the effect of non-functional period of EAC and functional period of EAC on economic growth.

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