

**What are the Main Drivers Behind the Acceleration of Tanzania's Economic Growth Over the Past Three Decades?**

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**Abstract**

This paper examines the drivers of Tanzania's economic growth from the period 1990 to 2020. It uses Autoregressive distributed lag (ARDL) model to control endogeneity among macroeconomic variables. The findings show that human capital (i.e. measured in terms of life expectancy), labour force, personal remittances, real exchange rates and access to finance (domestic credit to the private sector) are the main drivers of successful economic growth in Tanzania in the short and long term over the past decades. Moreover, foreign direct investment (FDI) has a significant and positive impact on the Tanzanian economy in the short run. The findings show that inflation rates and external debt have a negative impact on the economy. This suggests that inflation and external debt are detrimental to economic growth. Monetary interventions (interest rates and broad money) do not appear to have any impact on the short- and long-term performance of the economy. Therefore, the Tanzanian government should invest more in fiscal rather than monetary solutions for the economy. To promote long-term, sustainable economic growth in the country, we recommend policymakers to develop and/or strengthen appropriate policies focused on human capital (health), remittance, labour quality, competitive exchange rates and access to finance. Policy implications are also discussed.

**Keywords:** Monetary Policy; Fiscal Policy; Economic growth; ARDL; and Tanzania

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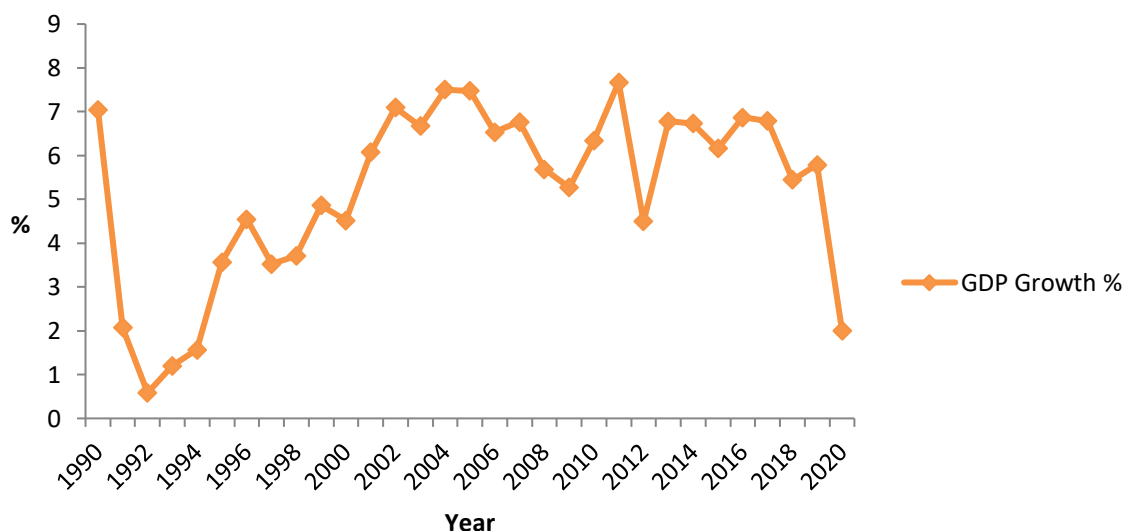
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## 1. Introduction

Tanzania is considered to be one of the fastest growing economies in the world. Its economy grew 4.6 percent in 2022, reaching \$75.5 billion in GDP. This makes it the second largest economy in East Africa after Kenya and the seventh in sub-Saharan Africa (Tanzania Invest, 2023). It is estimated that GDP will grow by 5.6% in 2023 and by 6.1% in 2024 (Tanzania Invest, 2023). In this context, it is important to understand the drivers of Tanzania's long-term growth that different countries in Africa are striving for: sustainable growth, full employment, poverty reduction and income inequality. The nation's economic growth slowed to about 2 percent in 2020 as a result of the COVID-19 pandemic, which impacted the labor market, tourism sector, production capacity, and productivity (Kinyondo and Pelizzo, 2021; Tanzania Invest, 2023). In 2021, GDP growth declined to 2%, which is said to be the lowest growth level in the last fifteen years, and below 4% to 7% in the last decade (World Bank Indicators, 2021).

Tanzania economic progress over the last three decades is shown in Figure 1. The chart shows that economic growth slowed from 7% in 1990 to 0.58% in 1992. It then slowly rose from 1.2% in 1993 to 7.4% in 2005, finally peaking at 7.6 % in 2011 before falling to 2% in 2020 due to the coronavirus outbreak. In 2021, the economy grew from 4.3% to 4.6% in 2022 (World Bank Indicators, 2023).



**Figure 1: Economic growth of Tanzania from 1990 to 2020**

Despite the fluctuations in the above trends, there are several important aspects to consider when assessing how Tanzania's economy experienced sustained rapid growth. The main question we aim to address in this paper is: What have been the key factors behind the successful improvement in economic growth in Tanzania over the past three decades? If we understand the drivers of economic growth in the country, we will be able to understand the conditions under which the Sustainable Development Goal (8) can be achieved by 2030.

Tanzania has significant natural resources including natural gas, diamonds, tanzanite, gold, agricultural land, seas, lakes and rivers. Despite these natural resources, the country still relies on grants and loans from the developed/industrial world. Aladejare (2020) found that macroeconomic variables were long-term determinants of economic development in Africa rather than resource determinants. The natural resources that drive economic growth in Africa are still under-exploited,

leaving the continent more dependent on macroeconomic factors than any other driver of economic growth.

With regard to macroeconomic factors, numerous studies have demonstrated their relationship to economic growth. For example, Kinyondo and Byaro (2020) showed that economic growth in sub-Saharan Africa is highly dependent on improved human capital, particularly health and education variables. Meanwhile, Pelizzo et al. (2018) consider health to be a key variable and argue that the continent needs to promote democracy and good governance to sustain its unprecedented growth in recent decades. Chang and Mendy (2012) link development aid, trade and labor as positive factors crucial to African countries' economic growth. In addition, foreign direct investment (FDI) and gross domestic savings have had a reasonable impact on African countries' growth (Chang and Mendy, 2012).

Other factors driving development in sub-Saharan Africa include private and public investment, government consumption and the real exchange rate (Ghazanchyan and Stotsky, 2013). Chirwa and Odhiambo (2016) showed that the causal factors for economic growth in both developed and developing countries include capital accumulation, foreign aid, foreign direct investment, fiscal and monetary policy, investment, trade, growth of human capital and natural resources. Due to long-term and widespread political uncertainties, numerous countries around the world have not yet achieved the steady and sustainable economic growth needed to meet the ambitious goals of the 2030 Agenda for Sustainable Development (Rahman and Alam, 2021).

Numerous attempts to study growth factors led to inconclusive results. Although various studies have been conducted on growth factors in sub-Saharan Africa (SSA), the results varied depending on the data period and variable selection (see Dor and Teixeira, 2023; Kinyondo and Byaro, 2020; Chirwa and Odhiambo, 2016; Chang and Mendy, 2012; Masanjala and Papageorgiou, 2008; Artadi and Sala-i-Martin, 2003; Bertocchi and Canova, 2002; Ndulu and O'Connell, 1999; Sachs and Warner, 1997; Fosu, 1996; Ghura, 1995).

It follows that the purpose of the present study is to examine the main drivers of Tanzania's economic growth based on eleven macroeconomic variables. Our empirical approach was dictated by the fact that previous studies on the drivers of economic growth in Tanzania (e.g. Kweka and Morrissey, 2000; Kasidi and Mwakalamela, 2013; Jilenga et al., 2016) were based on statistical models, which are subject to model uncertainty and omitted variable bias. To avoid the shortcomings that may have marred the existing literature on the drivers of economic growth in Tanzania, the present study uses the Solow growth framework to examine the impact of labor, human capital (i.e. life expectancy), external debt, inflation, foreign direct investment (FDI), trade, real exchange rates, broad money (M2), personal remittances and financial development (i.e. domestic credit to the private sector) on economic growth from 1990 to 2020.

Our analyses show that life expectancy, remittances, access to finance (domestic credit to the private sector), the real exchange rate and the labor force are the most important drivers of economic growth in Tanzania in the short and long term over the past three decades. In contrast, inflation and external debt are detrimental to economic growth, while monetary policy interventions (interest rates and the money supply) appear to have no impact on the short- and long-term performance of the Tanzanian economy. We believe that the evidence presented here may be of interest not only to those interested

in understanding what is driving economic growth in Tanzania, and thus in a developing country, but also to policymakers who may wish to adjust their policies in light of these factors.

## **2. Literature**

### **2.1 Theoretical review**

Neoclassical and endogenous growth theories are among the more popular theoretical frameworks on which many empirical studies are based (Chirwa and Odhiambo, 2016). Starting with Solow's neoclassical growth theory (1956), accumulation of physical capital was identified as the main driver of economic growth in the short run, but technological advancement is required in the long run.

Later, in addition to physical capital, human capital was also added as one of the important drivers of economic growth. In the theory of endogenous growth, productivity factors are also important determinants of economic growth (Grossman and Helpman, 1991). Indeed, Fischer (1992) found that factors affecting the efficiency of savings and investments (e.g., macroeconomic stability, political and institutional quality, and social infrastructure) play an important role in a country's development. The complexity of modeling to identify the drivers of economic growth has increased over the years as researchers have included additional variables in their models. The most notable of these are government spending (Barro and Salahuddin, 1992), inflation (Rahman and Salahuddin, 2009), financial development (Rahman and Salahuddin, 2009), international trade (Rahman et al., 2017; Rahman and Mamun, 2016), population growth (Rahman, 2017; Rahman and Mamun, 2016), and energy consumption (Rahman, 2017; Rahman and Mamun, 2016; Saidi et al., 2017). Despite extensive work on these and related topics, there is little consensus in the literature on how the above factors affect economic growth. For example, while Anyanwu (2014), Rahman and Salahuddin (2010) and Rahman and Mamun (2016) found adverse effects of inflation on economic development in a number of countries; Shahbaz and Rahman (2010) found positive effects of inflation on economic growth in Pakistan.

The fact that these studies came to different and sometimes conflicting conclusions about the relationship between variables of interest leads to what Sandberg and Alvesson (2011) have defined as a gap (in the literature) due to conflict.

### **2.2 Empirical review**

This section describes the empirical work on the factors affecting economic growth in different countries. In the further course of the present study, building on the existing work on the drivers of economic growth, we aim to identify which conditions or factors slow down or accelerate economic growth and finally make a comparison with Tanzania.

#### **2.2.1 Remittance and economic growth nexus**

Regarding the relationship between remittances and economic growth, Meyer and Shera (2017) found a positive impact of remittances on economic growth for six (6) Eastern European countries in Europe. A similar conclusion was reached by Shera and Meyer (2013) in a study of 21 developing countries. In a study of 100 developing countries, Giuliano and Ruiz-Arranz (2009) concluded that remittances can boost growth in countries where the financial sector is underdeveloped. Finally, Dastidar (2017) argued that remittances play an important role in developing countries when they are more open. However, despite the evidence presented in such studies, the IMF (2005) in a report on 101 developing countries found no statistically significant relationship between remittances and GDP growth over a

period of time. Labor remittances also contributed to economic growth in Korea and China (Jawaid and Raza, 2012; Pradhan, 2016).

### **2.2.2 Labor and economic growth nexus**

China's rapid economic growth has sparked a wide-ranging debate over whether productivity growth or the accumulation of capital and labor factors is the driving force behind it. Some researchers find evidence of a significant increase in total factor productivity during the reform period. In particular, total factor productivity (TFP) growth contributes about 40% to GDP growth, which is roughly in line with fixed investment growth (Borensztein and Ostry, 1996; Hu and Khan, 1997; Jefferson et al., 1992; Yusuf, 1994).

Others believe that capital investment is the main driver of China's economic progress (Chow and Lin, 2002; Wu, 2003). However, some studies agree that capital accumulation accounts for about half of total GDP growth. By examining the drivers of economic growth between 1995 and 2004, Jefferson et al. (2006) concluded that the shift of labor from agriculture to industry and ownership has improved allocative efficiency and led to productivity gains. Brandt and Zhu (2010) also came to the same conclusion. In Japan, labor quality drove economic growth, with labor productivity increasing 46-fold in 130 years (Fukao et al., 2021).

### **2.2.3 Human capital and economic growth nexus**

It is worth noting that human capital is important for accelerating economic growth in different countries (see Bye and Faehn, 2022; Kinyondo and Byaro, 2020). It has both direct and indirect effects on economic growth via physical capital investment, and also has a direct impact on production, particularly in terms of developing the skills of the workforce and facilitating technology spillovers. The workforce can make a significant contribution to the growth process by acquiring skills and knowledge. It affects growth through two mechanisms: technological and new innovative advances (research and development) that increase overall productivity and growth (Bye and Faehn, 2022; Oyinlola et al., 2021). Human capital indicators are measured by secondary school enrollment, student-teacher ratio, number of scientific and technical staff and health (see Ogbeifun and Shobande, 2021; Kinyondo and Byaro, 2020; Barro, 1991). Despite these measures, previous cross-country analyzes have produced mixed results (see, for example, Mabrouki, 2022; Barro, 1991; Benhabib and Spiegel, 1994; Mankiw et al., 1992; Temple, 2001 and Pritchett, 2001). The mixed results are due to the fact that the impact of education varies across countries and institutions, levels of economic development, labor markets and quality of education (Pritchett, 2001; Temple, 1999). However, most studies have supported the claim that human capital has a significant impact on the economic growth of different countries.

### **2.2.4 Foreign direct investment, trade and economic growth nexus**

Foreign direct investment (FDI) is important for domestic companies to acquire advanced technology and for recipient countries to acquire knowledge skills that fuel economic growth (Aziz, 2022; Gylfason, 1999). This means that foreign direct investment and domestic companies through trade activities serve as spillover channels for absorbing knowledge and technology, helping countries improve their economic performance.

Previous literature on economic growth in the FDI nexus is considered in both neoclassical and endogenous growth models. However, empirical evidence for this type of relationship provides

conflicting results. For example, it is widely accepted that foreign direct investment and international trade were the main drivers of China's rapid growth from the late 1980s to the early 2000s (see Shan, 2002; Tseng and Zebregs, 2002; Liu et al., 2002; Lemoine, 2000; Berthelemy and Demurger, 2000; Graham and Wada, 2001; Sun and Parikh, 2001; Wei et al., 1999; Dees, 1998; Borensztein et al., 1998; Pomfret, 1997; Chen et al., 1995; Harrold, 1995; Wei, 1993). This means that after accounting for other variables, most studies examining the relationship between foreign direct investment and economic growth conclude that foreign direct investment has a positive and significant impact on growth. All of this empirical evidence shows that foreign direct investment has contributed to the modernization of China's state and collective sector (Liu, 2008).

Other exogenous geographic and political factors such as proximity to major ports, policy decisions to establish special economic zones and free trade zones, open-door policies, and local institutional features such as statutory policies, contract enforcement, local infrastructure spending, and labor market conditions all contributed to China's positioning in foreign direct investment.

It is also widely recognized that capital flows from developed to emerging economies bring technology and know-how to the recipient country. However, other studies have shown that FDI is not effective in promoting economic growth (see Byaro et al., 2022; Nguyen, 2017; Dritsakia & Stiakakis, 2014; Belloumi, 2014). On the other hand, some studies show that trade (i.e. export) is closely related to economic growth in developing countries (see Sun and Parikh, 2001; Anyanwu, 2014), while others indicate that trade is not related to economic growth (Musila and Yiheyis, 2015; Vlastou, 2010; Levine and Renelt, 1992).

### **2.2.5 Financial development and economic growth nexus**

Financial development is considered an important pillar for long-term economic growth (Ahmed et al., 2022). This is also stated by Rajah and Zingales (1998) that financial development promotes economic growth by reducing the cost of external financing for firms. In addition, Guiso et al. (2004) discovered that differences in local financial development can explain the spread of entrepreneurship and economic growth in the private sector. Empirical studies have shown positive correlations between financial development and economic growth. For example, Jun et al. (2007) and An & Kargbo (2021) showed the positive impact of financial developments on provincial-level productivity growth in China and sub-Saharan Africa, respectively. Rousseau and Xiao (2007) found that foreign exchange market liquidity and banking sector development are positively associated with growth in China. Furthermore, Fung (2009) argued that the link between financial development and economic growth is stronger in the early stages of economic development and weakens when sustained economic growth begins to rise steadily.

Low-income countries with a relatively well-developed financial sector are more likely to catch up with their middle- and high-income counterparts, while low-income countries with a relatively underdeveloped financial sector are more likely to remain in the poverty trap. Song et al. (2021) stressed the need for developing countries to pursue policies that drive financial development by promoting economic growth. Meanwhile, financial developments in China, Japan and India acted as a catalyst for economic growth over the period 1960-2016 (Wu et al., 2020). Likewise, a study in 16 low-income countries found that financial developments had a favorable and significant impact on economic growth between 1994 and 2014 (Bist, 2018). The author suggests that low-income countries should focus on formulating policies that encourage private sector growth.

### **2.2.6 Real exchange rates and economic growth nexus**

The exchange rate can be defined as the value of the local currency against foreign currencies. It is known that an increase in undervaluation (high exchange rates) promotes economic growth, while an increase in overvaluation (low exchange rates) harms the economy (Rodrick, 2008). However, this relationship only exists for developing countries and disappears when the sample is restricted to richer countries (Rodrick, 2008). This implies that there is a positive relationship between growth and undervaluation in developing countries. Rodrick (2008) warned that exchange rates, if not managed properly, can hurt a country's economic growth. At the same time, a competitive and well-managed exchange rate promotes a good business environment, which is necessary for expanding international trade, investment and higher economic growth (Hsing, 2016; Nuru and Gereziher, 2021). Foreign currency shortages, rent seeking and corruption, current account deficits and balance of payments crises are examples of overvalued currencies hurting growth (Pelizzo et al., 2018; Rodrick, 2008). In the Democratic Republic of Congo, the real exchange rate also contributed negatively to economic growth from 1990 to 2019 (Kabamba and Matadi, 2021). In order to avoid a negative impact of the exchange rate on economic growth, it is important to diversify economic activities and increase international reserves. Furthermore, Freund and Pierola (2012) and Gala (2007) argued that the competitive exchange rate was a crucial factor in the successful growth experiences of East Asian countries such as Japan, Singapore, South Korea, Taiwan and China.

To test whether a weakening of the local currency can help stimulate economic growth, Cumperayot and Kouwenberg (2021) used a data set of 182 countries and found that changes in undervaluation caused by exchange rate management and capital control policies have no significant impact on long run growth. Investment is one of the mechanisms through which the real exchange rate can affect economic growth. Overvalued real exchange rates discourage investment because of their positive impact on labor costs (Bahlla, 2012). A competitive real exchange rate, in turn, increases the profit share of tradable sectors (Rodrick, 2008). This means that a competitive real exchange rate increases net exports both directly and indirectly by lowering labor costs and making exports (imports) cheaper.

### **2.2.7 Money supply, interest rate and economic growth nexus**

There are numerous studies on the existing relationship between monetary policy (i.e. money supply, interest rates) and economic growth, but the results are mixed. For example, Twinoburyo and Odhiambo (2018) found that the majority of studies support the relevance of monetary policy in stimulating economic growth, particularly in financially developed economies with relatively independent central banks. In Kenya, Mutuku and Koech (2014) showed that monetary policy (money supply and short-term interest rates) had no impact on actual output. Similarly, in Kenya and Tanzania, Kamaan (2014) and Montiel et al. (2012) revealed that monetary policy had no effect on economic growth. A structural, institutional and regulatory framework was responsible for the observed weak links. On the other hand, a number of empirical studies (see Sequeira, 2021; Havi and Enu, 2014; Onyeiwu, 2012; Muhammad et al., 2009) showed that monetary policy is crucial for economic growth. Kareem et al. (2013) also found that monetary variables such as narrow money supply (M1) and broad money supply (M2) are important policy variables influencing Nigeria's economic growth (real GDP growth rate). Despite the uncertain relationship between monetary policy and economic growth, many studies conclude that monetary policy is important for growth in both the short and long term (Twinoburyo and Odhiambo, 2018).

### **2.2.8 External debt, inflation and economic growth nexus**

In any economy, external debt is one of the main sources of financing capital formation. Due to low savings and productivity, African developing countries are heavily dependent on credit. Makun (2021) discovered that external debt has a negative impact on economic growth in Fiji after examining the relationship between economic growth and external debt. In addition, Kinyondo et al. (2021) also showed that government debt growth does not have a positive impact on the economic performance of African countries, regardless of good governance. External debt is having an adverse effect on economic growth in South Asia. According to Asteriou et al. (2021) an increase in government debt is associated with poorer economic growth in Asian countries in the short and long term. Similarly, Musa et al. (2023) showed that public debt has a negative impact on economic growth in developing countries. On the other hand, inflation has a negative impact on the economic growth (see, Siddik, 2023; Olamide et al., 2022).

## **3. Data sources and methodology**

### **3.1 Data sources**

The World Bank Development Indicators Database (2021) was used to collect annual secondary data on all variables from 1990 to 2020. The selection and its sources are clearly shown in Table 1. The variables selection was based on previous economic growth literatures.

**Table 1: Variables, unit and sources**

<b>Variables</b>	<b>Unit</b>	<b>Source</b>
GDP per capita (income)	Constant 2010 US dollars	World Development Indicators (2021)
Life expectancy at birth	Total years	World Development Indicators (2021)
Inflation rate	Consumer price (annual %)	World Development Indicators (2021)
Trade	% of GDP	World Development Indicators (2021)
Foreign direct investment	net inflows (% of GDP)	World Development Indicators (2021)
Domestic credit to private sector	% of GDP	World Development Indicators (2021)
Broad money(M2)	% of GDP	World Development Indicators (2021)
External debt stock long term total	(DOD, current US\$ Billions)	World Development Indicators (2021)
Labour force	% of active population(age 15 and older)	World Development Indicators (2021)
Real interest rate	(%)	World Development Indicators (2021)
Personal remittances	(% of GDP)	World Development Indicators (2021)
Real exchange rate (RER)	LCU per US\$, period average	World Development Indicators (2021)

**Source:** World Development Indicators (2021).

### **3.2 Estimation of the ARDL Model**

To identify the drivers of economic growth in Tanzania from 1990 to 2020, we used the ARDL (Autoregressive Distributed Lag) approach. It determines whether the data in their levels are stationary at level I(0) or stationary at first differences I(1) (Pesaran et al., 2001). There are several benefits for using this model. First, it works when the sample size is very small, and pre-testing the orders of integration is not always required (Pesaran and Shin, 1999; Pesaran et al., 2001). Second, it addresses the autocorrelation and endogeneity of the models (Byaro et al., 2022a; Murshed, 2021, Sarkodie and Ozturk, 2020; Byaro and Lemnge, 2018). Third, it predicts both short and long-term elasticities and



uses different lag lengths for different variables. Fourth, the model finds asymptotic critical value bounds, showing that variables are integrated at the first differences I(1) or at level I (0) (Perasan et al., 2001). The upper bound represents I(1) critical values, while the lower bound represents I(0) critical values. If the calculated F-test statistics are greater than the critical values, a long-term relationship between the variables is established (Perasan, 2001). If the test statistic falls below the upper critical value, the null hypothesis of no cointegration cannot be rejected. The ARDL model is expressed as follows:-

$$\Delta L(GDP)_t = \alpha_0 + \sum_{i=1}^q \alpha_{1i} \Delta L(GDP)_{t-i} + \sum_{i=1}^q \alpha_{2i} \Delta L(INFL)_{t-i} + \sum_{i=1}^q \gamma_i \Delta L(Z)_{t-i} + \lambda_1 L(GDP)_{t-1} + \lambda_2 L(INFL)_{t-1} + \lambda_i L(Z)_{t-1} + \mu_t \tag{1}$$

Where GDP represent economic growth, INFL (Inflation), Z represents vector of other macroeconomic variables such as broad money (M2), trade openness, real exchange rates, financial development, real interest rate, human capital (health), external debt stock, FDI, personal remittances and labor. Δ represent the first difference operator and L shows a natural logarithm while q is the optimal lag length. Long-term relationships are represented by the expressions (λ<sub>1</sub> – λ<sub>i</sub>) on the right. The summation sign (α<sub>1</sub> – γ<sub>i</sub>) shows a short run dynamic and μ<sub>t</sub> represent the error term or white noise.

It is possible to estimate long and short term models if there is cointegration. If there is no cointegration, the ARDL model for the short run is described as follows: -

$$\Delta L(GDP)_t = \alpha_0 + \sum_{i=1}^q \alpha_{1i} \Delta L(GDP)_{t-i} + \sum_{i=1}^q \alpha_{2i} \Delta L(INFL)_{t-i} + \sum_{i=1}^q \gamma_i \Delta L(Z)_{t-i} + \delta ECM_{t-1} + \mu_t \tag{2}$$

While δ is the coefficient of the Error Correction Model (ECM). The ECM reveals how quickly the dependent variable reaches equilibrium, and it must be negative and statistically significant.

#### 4. Empirical results

We started our analysis with descriptive statistics and then analyzed the correlation analysis. Correlation analysis tells us the association between all variables. The analysis shows strong and weak correlations between the variables. Variables that are strongly related are not included in the same model to predict economic growth; as such an attempt would lead to multicollinearity. Table 2 shows the descriptive analysis results.

**Table 2: Descriptive statistics**

	CREDIT	DEBT	GDP	FDI	INFLAT	INTEREST	LABOUR	LIFE	M2	RER	TRADE	REMITTAN
Mean	9.61	8.31	671.27	2.58	12.07	6.63	61.29	55.73	20.00	1186.39	40.76	0.35
Median	11.26	6.21	637.00	2.31	7.25	6.78	63.43	54.34	21.11	1128.93	41.90	0.11
Maximum	14.61	23.80	985.44	5.66	35.82	16.28	65.62	65.82	25.08	2294.10	65.69	1.18
Minimum	2.94	2.08	476.52	0.10	3.29	-26.50	2.07	49.28	2.07	195.05	2.07	0.01
Std. Dev.	3.94	4.82	173.09	1.49	9.55	7.51	11.13	5.88	4.80	651.45	14.04	0.39
Observations	31	31	31	31	31	31	31	31	31	31	31	31
Jarque-Bera	3.44	16.61	2.92	0.79	7.40	176.21	913.09	3.18	44.55	1.72	0.56	4.37
Probability	0.17	0.00	0.23	0.67	0.02	0.00	0.00	0.20	0.00	0.42	0.75	0.11

Source: Authors estimation

Table 3 shows strong correlations between external debt and labor, external debt and broad money (M2), life expectancy and GDP, and GDP and real exchange rates (RER). Further, there is a highly positive correlation between external debt and trade, trade and labor, broad money (M2) and trade, labor and M2. From this point of view, we have developed different models that explain the drivers of economic growth, since combining strongly correlated variables in the same model leads to problems of multicollinearity and distort the results. All variables with cut-off points above 0.50 were considered strong correlates.

**Table 3: Correlation analysis of variables**

	FDI	GDP	DEBT	CREDIT	INFLAT	INTEREST	LABOUR	LIFE	M2	REMITTANCE	RER	TRADE
FDI	1											
GDP	-0.43	1										
DEBT	0.37	-0.04	1									
CREDIT	-0.20	0.34	-0.24	1								
INFLAT	-0.20	0.01	-0.12	0.21	1							
INTEREST	0.37	0.06	-0.02	0.14	-0.12	1						
LABOUR	0.26	-0.09	0.81	-0.23	-0.02	-0.02	1					
LIFE	-0.40	0.76	0.05	0.52	0.13	0.05	-0.003	1				
M2	0.30	-0.09	0.79	-0.15	0.004	0.08	0.98	0.01	1			
REMITTANCE	0.08	0.05	0.05	-0.51	-0.16	-0.28	-0.001	-0.01	-0.03	1		
RER	0.32	-0.51	0.10	-0.08	0.11	0.06	0.29	-0.56	0.33	-0.07	1	
TRADE	0.30	-0.07	0.78	-0.15	0.03	0.05	0.98	0.02	0.99	-0.01	0.32	1

Source: Authors estimation (2023)

Our study focuses on time series modeling techniques that take advantage of the stationarity of the data (i.e. *mean, variance, and autocorrelation do not change over time*). This means that statistical testing is required before a final decision can be made. To determine whether a series is stationary or not, unit root tests are required. Table 4 shows the unit root test. Some variables are stationary at level after testing the unit root, while others are stationary at the first difference after testing the unit root. By taking the first difference, non-stationary variables (i.e. *trends, random walk, mean, variance and covariance change over time*) become stationary (Byaro and Kinyondo, 2018). The null hypothesis that a unit root (i.e. non-stationary) exists in a time series sample is tested using an augmented Dickey–Fuller test (ADF). Variables are integrated at first differences I(1) or level I(0), as shown in Table 4. This makes possible to apply an ARDL bound test.

**Table 4: Unit roots (non-stationary) test of variables**

Variables	Augmented Dickey Fuller Test (ADF) test	
	Level	First difference
GDP	-2.35	-4.58***
FDI	-3.39	-7.07***
Debt	-2.68	-9.66***
Trade	-2.44	-14.04***
Remittance	-4.26**	-9.65***
Labour force	-5.95***	-
Life expectancy	-3.84***	-
Inflation	-1.91	-2.04**
Real exchange rate	-3.81**	-
Real interest rate	-5.60***	-

**Note:**\*\*\*= P value statistically at 1% critical values,\*\*= P value statistically at 5%,  
\*= P value statistically at 10% critical value; and all variables are expressed in natural logarithm.

Table 5 shows an ARDL or bound test. A long run relationship between the variables is established when the calculated F-test statistics are greater than the upper critical values. After running the bound test, the short and long run ARDL was estimated.

**Table 5: Bound Test**

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Calculated F- statistic (value)	5.76	5.17	5.12	5.79	8.54	5.22
Critical value bounds (Upper)						
<b>Significance</b>						
10%	3.52	3.35	3.35	3.52	2.93	3.52
5%	4.01	3.79	3.79	4.01	3.34	4.01
2.5%	4.49	4.18	4.18	4.49	3.71	4.49
1%	5.06	4.68	4.68	5.06	4.21	5.06

**Source:** Authors estimation (2023)

Table 6 shows that, in the short run, Foreign Direct Investment (FDI), human capital (life expectancy as a proxy for health), remittances, real exchange rate, labor, and financial development (i.e. access to domestic credit) all have a positive and significant effect on Tanzanian economic growth. In turn, inflation and external debt have a negative and significant impact on Tanzania's economic growth. Our findings also show that, in long run, financial development (i.e. domestic credit to private sector), human capital (life expectancy), remittances, the real exchange rate, and labor are the main key drivers

of Tanzanian economic growth. Furthermore, our findings show that monetary policy tools (i.e., real interest rates and broad money) are statistically insignificant and have no impact on the country's economic growth. The diagnostic test shows that, the models are free from heteroskedasticity and autocorrelation.

**Table 6: ARDL model estimates for drivers of economic growth in Tanzania**

Variables	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
<b>A: Short run</b>						
ΔDEBT	-0.015* (0.008)					
ΔCREDIT	-0.001(0.012)				0.03**	
ΔFDI	0.011**(0.003)	0.004(0.005)	0.007(0.006)			
ΔINFLATION	-0.016*(0.009)	-0.016**(0.06)	-0.014**(0.01)	-0.009(0.007)	-0.02**	-0.01**
ΔINTEREST RATE		0.001(0.001)		0.000(0.001)	-0.00	0.00
ΔLIFE EXPECTANCY		1.17 **(0.48)	1.21**(0.48)			
ΔREMITTANCE		0.001(0.005)		0.006(0.004)		0.01*
ΔBROAD MONEY			-0.008(0.009)			
ΔEXCHANGE RATES				0.033**(0.016)	0.09	
ΔLABOUR FORCE					0.29***	
ΔTRADE						0.01
<b>ECM(-1)</b>	0.015(0.049)	-0.51**(0.19)	-0.50**(0.18)	-0.10*** (0.030)	-0.39***	-0.08**
<b>B: Long run</b>						
DEBT	1.029(2.96)					
CREDIT	0.062(0.66)				0.08**	
FDI	-0.72(2.37)	0.008(0.005)	0.015(0.014)			
INFLATION	1.07(0.25)	-0.031*(0.016)	-0.027(0.016)	-0.098 (0.085)	-0.03*	-0.23**
INTEREST RATES		0.000(0.001)		0.003(0.006)	-0.00	0.003
LIFE EXPECTANCY		2.31*** (0.165)	2.36*** (0.154)			
REMITTANCE		0.002 (0.011)		0.061(0.044 )		0.16***
BROAD MONEY			-0.016(0.018)			
EXCHANGE RATE				0.340**(0.144)	0.51***	
LABOUR FORCE					0.63***	
TRADE						0.01
Constant	1.07(0.28)	-2.71*** (0.71)	-2.91(0.65)	4.64** (1.16)	3.71**	7.53***
<b>C: Diagnostic Tests</b>						
Serial LM Test	[0.54]	[0.27]	[0.15]	[0.63]	[0.11]	[0.69]
Heteroskedasticity	[0.30]	[0.84]	[0.78]	[0.67]	[0.90]	[0.54]
<b>Observations</b>	31 years	31years	31years	31 years	31 years	31 years

Source: Authors estimation (2023). All variables are expressed in natural logarithms. [ ] shows probability value

\* \*Significant at 5%, \*\*\* significant at 1% value, **ECM**= Error Correction Model

## 5. Discussion

The aim of this study was to identify the most important drivers of economic growth in Tanzania over the past three decades. ARDL to cointegration allowed us to analyze the relevant drivers for both short and long run models. Consistent with the available literature (see Borensztein and Ostry, 1996; Hu and Khan, 1997; Jefferson et al., 1992; Yusuf, 1994; Fung, 2009; Hsing, 2016; Nuru and Gereziher, 2021); remittances, real exchange rate, labour and financial sector development (domestic credit to private sector) all have a positive and significant impact on Tanzania's economic growth in both short and long term periods. However, it is important to note that the literature (see Fung, 2009; Giuliano and Ruiz-Arranz, 2009) indicates that remittances only have a positive impact on economic growth when there is an underdeveloped financial sector. This result therefore suggests that Tanzania needs to further develop its financial sector if the corresponding economic growth is to be sustained.

Linked to this, foreign direct investment and human capital (health represented by life expectancy) have a positive and significant impact on Tanzania's economic growth in the short term. This is consistent with the existing literature, as developing countries like Tanzania tend to start from a lower base, so any improvement in their human capital and foreign direct investment can lead to significant gains in economic growth (see Kinyondo and Byaro, 2020; Chany and Mendy, 2012; Chirwa and Odhiambo, 2016).

Our findings, which are consistent with the literature (see Kinyondo et al., 2021; Asterious et al., 2021; Makun, 2021), show that inflation and external debt have a statistically significant and negative impact on Tanzania's economic growth in the short term. This is a wake-up call for Tanzania, as, like many African countries, it has accumulated debt in recent years to fund infrastructure projects and fight COVID-19 (see Kinyondo and Pelizzo, 2021). Meanwhile, the combination of climate change and aggressive borrowing has put upward pressure on the economy's overall price level, affecting low-income earners. Efforts to fight inflation should therefore be a priority to ensure that progress in reducing poverty in the country is not lost.

Interestingly, the findings show that monetary instruments (interest rates and broad money) have a statistically insignificant impact on Tanzania's economic growth in both the short and long term. This result is at odds with the Bank of Tanzania's recent efforts to expand monetary policy. This suggests that the Central Bank of Tanzania needs to rethink its strategies by formulating appropriate monetary policies that can support economic growth in the country. Furthermore, the failure of monetary policy to have an impact on economic growth in Tanzania could indicate that most of the economic challenges in Tanzania are related to fiscal rather than monetary constraints. Therefore, it is logical that the government should invest more in fiscal measures (adjusting spending and tax rates) than monetary measures, as it is currently doing.

In addition, the findings show that human capital (health measured in terms of life expectancy) has a statistically significant and positive impact on economic growth in Tanzania over the long term. This is important as the gains of a young population can easily be wiped out if skilled workers cannot live long enough for the Tanzanian economy to benefit from their human capital and potentially enable the transmission of skills to a younger generation. Importantly, we note that this particular finding is consistent with the literature (see Byaro et al., 2022; Kinyondo and Byaro, 2020; Pelizzo et al., 2018).

## **6. Conclusion**

The purpose of this study was to examine the main drivers behind the acceleration of economic growth in Tanzania over the past three decades. By analyzing data on economic growth and other relevant variables from the period 1990-2020, we found that some variables had an impact on growth in the short run but not in the long run, as in the case of foreign direct investment and foreign debt. While the impact of foreign direct investment on economic growth has been positive, the impact of external debt appears to be negative. The second conclusion that emerges from our data analysis is that some variables had an impact on economic growth in both the short and long term. In particular, life expectancy, which is our indicator of human capital, remittances, the real exchange rate and the labor force have a positive impact on economic growth in the short and long term, while inflation has a negative impact on the Tanzanian economy in the short and long term.

These findings could be of interest to scholars and practitioners alike. While the literature has suggested and contested, proposed and questioned, verified and falsified the impact of a wide range of factors or variables on economic growth, the evidence discussed in the present study provides compelling evidence as to which factors were instrumental in ensuring and/or promoting (rapid) economic growth in Tanzania from 1990 to 2020. Of particular interest, we believe, the fact that some of the factors that play a reasonably important role in the short term do not matter in the long term.

Knowing what has secured the growth of the Tanzanian economy over the past three decades may not be enough to give policymakers a clue as to what may lead to high rates of economic growth in the years to come. Tanzania's economic performance has suffered in the course of endless COVID-19 pandemic, as has that of the rest of the world's economies. The disruptions caused by the pandemic have taken a toll on Tanzania's economic performance, not only by making international travel virtually impossible and affecting the tourism and hospitality sectors so vital to Tanzania, but also by slowing the momentum of the global economy, it reduced the demand for the natural resources that Tanzania exports to the world market.

To recover from the pandemic-induced economic slowdown, policymakers quickly adjusted to the new normal, identified priority areas for intervention, and set the stage for economic recovery. One might be tempted to make a long list of actions the Tanzanian government could take to boost the economy: increasing the efficiency of the extractive industry; developing the tourism industry around the so-called Southern Circuit; encouraging real estate development (both residential and tourism); and diversifying the economy by investing in the blue economy, which could be of great value to coastal communities. But such a list, meaningful as it is, neither reflects nor is in any way supported by the findings we have presented in this paper.

Our paper makes it clear that there are three major steps policymakers should take to revitalize Tanzania's economy. First, the Tanzanian government should properly manage the macroeconomic conditions and prevent the inflation rate from rising. Second, the Tanzanian government should strive to enable its citizens to live longer and healthier lives, as this allows them to maximize the contribution of the country's human capital to the economy. Third, the Tanzanian government should promote financial development and facilitate access to credit, which have long prevented the private sector from growing faster. Fourth, the government should invest more in fiscal than monetary solutions to the economy, as monetary policy appears to have only an insignificant impact on Tanzania's economic growth. If policymakers commit to evidence-based policy-making, in a few steps they could lay the foundation for another, long, and unprecedented economic expansion for the country.

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### **Declarations**

We declare no competing interest

### **References**

- Ahmed, F., Kousar, S., Pervaiz, A., & Shabbir, A. (2022). Do institutional quality and financial development affect sustainable economic growth? Evidence from South Asian countries. *Borsa Istanbul Review*, 22(1), 189-196.
- Aladejare, S. A. (2020). Macroeconomic vs. resource determinants of economic growth in Africa: a COMESA and ECOWAS study. *International Economic Journal*, 34(1), 100-124.
- An, H., Zou, Q., & Kargbo, M. (2021). Impact of financial development on economic growth: Evidence from Sub-Saharan Africa. *Australian Economic Papers*, 60(2), 226-260.
- Anyanwu, J. C. (2014). Factors affecting economic growth in Africa: are there any lessons from China?. *African Development Review*, 26(3), 468-493.
- Artadi, E., & Sala-i-Martin, X. (2003). The economic tragedy of the 20th century: Growth in Africa.
- Asteriou, D., Pilbeam, K., & Pratiwi, C. E. (2021). Public debt and economic growth: panel data evidence for Asian countries. *Journal of Economics and Finance*, 45(2), 270-287.
- Aziz, O. G. (2022). FDI inflows and economic growth in Arab region: The institutional quality channel. *International Journal of Finance & Economics*, 27(1), 1009-1024.
- Barro, R. J. (1991). Economic growth in a cross section of countries. *The quarterly journal of economics*, 106(2), 407-443.
- Barro, R. J. (2001). Human capital and growth. *American economic review*, 91(2), 12-17.
- Belloumi, M. (2014). The relationship between trade, FDI and economic growth in Tunisia: Application of the autoregressive distributed lag model. *Economic System*, 38(2014), 269-287.
- Benhabib, J., & Spiegel, M. M. (1994). The role of human capital in economic development evidence from aggregate cross-country data. *Journal of Monetary economics*, 34(2), 143-173.
- Berthélemy, J. C., & Demurger, S. (2000). Foreign direct investment and economic growth: theory and application to China. *Review of development economics*, 4(2), 140-155.
- Bertocchi, G., & Canova, F. (2002). Did colonization matter for growth?: An empirical exploration into the historical causes of Africa's underdevelopment. *European economic review*, 46(10), 1851-1871.
- Bhalla, S. S. (2012). Devaluing to prosperity: misaligned currencies and their growth consequence. Peterson Institute.
- Bils, M., & Klenow, P. J. (2000). Does schooling cause growth? *American economic review*, 90(5), 1160-1183.
- Bist, J. P. (2018). Financial development and economic growth: Evidence from a panel of 16 African and non-African low-income countries. *Cogent Economics & Finance*, 6(1), 1449780.
- Borensztein, E., & Ostry, J. D. (1996). Accounting for China's growth performance. *The American Economic Review*, 86(2), 224-228.



- Borensztein, E., De Gregorio, J., & Lee, J. W. (1998). How does foreign direct investment affect economic growth?. *Journal of international Economics*, 45(1), 115-135.
- Brandt, L. and Zhu, X. (2010). Accounting for China's growth. IZA Discussion Papers 4764, Institute for the Study of Labor (IZA), Bonn, Germany, pp. 1-59.
- Byaro, M., & Kinyondo, A. (2018). No correlation between health care expenditure and mortality in the European Union. *European journal of internal medicine*, 55, e9.
- Byaro, M., & Kinyondo, A. (2020). Institutional Quality Explains the Difference of Natural Gas Revenues to Contribute in the Economy: Empirical Evidence from Tanzania. *African Journal of Economic Review*, 8(3), 84-97.
- Byaro, M., & Lemnge, D. A. (2018). Does development assistance for health buy better results in maternal health in Tanzania? evidence from Autoregressive Distributed Lag (ARDL) model. *African Journal of Economic Review*, 6(2), 60-73.
- Byaro, M., Mafwolo, G., & Mayaya, H. (2022a). Keeping an eye on environmental quality in Tanzania as trade, industrialization, income, and urbanization continue to grow. *Environmental Science and Pollution Research*, 1-11.
- Byaro, M., Mgale, Y., & Mafwolo, G. (2022). Economic Growth Benefits more from Population Health than Foreign Direct Investment: Evidence from Tanzania. *African Journal of Economic Review*, 10(3), 110-129.
- Bye, B., & Faehn, T. (2022). The role of human capital in structural change and growth in an open economy: Innovative and absorptive capacity effects. *The World Economy*, 45(4), 1021-1049.
- Chang, C. C., & Mendy, M. (2012). Economic growth and openness in Africa: What is the empirical relationship?. *Applied Economics Letters*, 19(18), 1903-1907.
- Chen, C., Chang, L., & Zhang, Y. (1995). The role of foreign direct investment in China's post-1978 economic development. *World development*, 23(4), 691-703.
- Chirwa, T. G., & Odhiambo, N. M. (2016). Macroeconomic determinants of economic growth: A review of international literature. *The South East European Journal of Economics and Business*, 11(2).
- Cumperayot, P., & Kouwenberg, R. (2021). Cheaper currencies and long-term growth: The effect of exchange rate management and capital controls. *The World Economy*, 44(9), 2738-2757.
- Dees, S. (1998). Foreign direct investment in China: determinants and effects. *Economics of planning*, 31(2), 175-194..
- Diebolt, C., & Hippe, R. (2019). The long-run impact of human capital on innovation and economic development in the regions of Europe. *Applied Economics*, 51(5), 542-563.
- Doré, N. I., & Teixeira, A. A. (2023). Empirical literature on economic growth, 1991–2020: Uncovering extant gaps and avenues for future research. *Global Journal of Emerging Market Economies*, 15(1), 7-37.

- Dritsaki, C., & Stiakakis, E. (2014). Foreign Direct Investment, Export and Economic growth in Croatia: A time series analysis. *Procedia Economics & Finance*, 14(2014), 181-190
- Fischer, S. (1992). Macroeconomic stability and growth. *Cuadernos de Economía*, 29(87), 171-186.
- Fosu, A. K. (1996). The impact of external debt on economic growth in Sub-Saharan Africa. *Journal of economic development*, 21(1), 93-118.
- Freund, C., & Pierola, M. D. (2012). Export surges. *Journal of Development Economics*, 97(2), 387-395.
- Fukao, K., Makino, T., & Settsu, T. (2021). Human capital and economic growth in Japan: 1885–2015. *Journal of Economic Surveys*, 35(3), 710-740.
- Fung, M. K. (2009). Financial development and economic growth: convergence or divergence?. *Journal of international money and finance*, 28(1), 56-67.
- Gala, P. (2007). Real exchange rate levels and economic development: theoretical analysis and econometric evidence. *Cambridge Journal of economics*, 32(2), 273-288.
- Gemmell, N. (1996). Evaluating the impacts of human capital stocks and accumulation on economic growth: some new evidence. *Oxford bulletin of economics and statistics*, 58(1), 9-28.
- Ghazanchyan, M. M., & Stotsky, M. J. G. (2013). Drivers of growth: Evidence from sub-Saharan African countries. International Monetary Fund.
- Ghosh Dastidar, S. (2017). Impact of remittances on economic growth in developing countries: The role of openness. *Global Economy Journal*, 13(1), 20160066.
- Giuliano, P., & Ruiz-Arranz, M. (2009). Remittances, financial development, and growth. *Journal of development economics*, 90(1), 144-152.
- Graham, E.M. and Wada, E. (2001), 'Foreign direct investment in China: effects on growth and economic performance', Institute for International Economics Working Paper, 01-03.
- Grossman, G.M., and Helpman, E. (1991), *Innovation and Growth in the Global Economy*, Cambridge, Mass., The MIT Press.
- Guiso, L., Sapienza, P., & Zingales, L. (2004). Does local financial development matter?. *The Quarterly Journal of Economics*, 119(3), 929-969.
- Gylfason, T. (1999). Exports, inflation and growth. *World Development*, 27(6), 1031-1057.
- Harrold, P. (1995). China: foreign trade reform: now for the hard part. *Oxford Review of Economic Policy*, 11(4), 133-146.
- Havi, E. D. K., & Enu, P. (2014). The effect of fiscal policy and monetary policy on Ghana's economic growth: which policy is more potent. *International Journal of Empirical Finance*, 3(2), 61-75.
- Hsing, Y. (2016). Determinants of the ZAR/USD exchange rate and policy implications: A simultaneous-equation model. *Cogent Economics & Finance*, 4(1), 1151131.

- Hu, Z. F., & Khan, M. S. (1997). Why is China growing so fast?. *IMF Staff Papers*, 44(1), 103-131.
- IMF (2005), *World Economic Outlook 2005*, International Monetary Fund, Washington, DC.
- Jawaid, S. T., & Raza, S. A. (2012). Workers' remittances and economic growth in China and Korea: an empirical analysis. *Journal of Chinese Economic and Foreign Trade Studies*, 5(3), 185-193
- Jayadevan, C. M. (2021). Impacts of health on economic growth: evidence from structural equation modelling. *Asia-Pacific Journal of Regional Science*, 5(2), 513-522.
- Jefferson, G. H., Hu, A. G., & Su, J. (2006). The sources and sustainability of China's economic growth. *Brookings Papers on Economic Activity*, 2006(2), 1-60.
- Jefferson, G. H., Rawski, T. G., & Zheng, Y. (1992). Growth, efficiency, and convergence in China's state and collective industry. *Economic development and cultural change*, 40(2), 239-266.
- Jilenga, M. T., Xu, H., & Gondje-Dacka, I. M. (2016). The impact of external debt and foreign direct investment on economic growth: Empirical evidence from Tanzania. *International Journal of Financial Research*, 7(2), 154-162.
- Jun, Z., Wan, G., & Jin, Y. (2007). The financial deepening-productivity nexus in China: 1987–2001. *Journal of Chinese Economic and Business Studies*, 5(1), 37-49.
- Kabamba, M. A., & Matadi, L. D. (2021). *Exchange rate fluctuations and economic growth in the Democratic Republic of Congo*. HAL.
- Kamaan, C. K., & Nyamongo, E. M. (2014). The effect of monetary policy on economic growth in Kenya. *International Journal of Business and Commerce*, 3(8), 11-24.
- Kareem, R. O., Afolabi, A. J., Raheem, K. A., & Bashir, N. O. (2013). Analysis of fiscal and monetary policies on economic growth: Evidence from Nigerian democracy. *Current Research Journal of Economic Theory*, 5(1), 11-19.
- Kasidi, F., & Mwakanemela, K. (2013). Impact of inflation on economic growth: A case study of Tanzania. *Asian Journal of empirical research*, 3(4), 363-380.
- Kinyondo, A., & Byaro, M. (2020). Human Capital Contribution to the Economic Growth of Sub-Saharan Africa: Does Health Status Matter? Evidence from Dynamic Panel Data. In *Challenges of Globalization and Prospects for an Inter-Civilizational World Order* (pp. 713-724). Springer, Cham.
- Kinyondo, A., & Pelizzo, R. (2021). How COVID-19 has Affected Africa's Development. *World Affairs*, 184(1), 57-76.
- Kinyondo, A., Pelizzo, R., & Byaro, M. (2021). "DELIVER AFRICA FROM DEBTS": Good Governance Alone is not Enough to Save the Continent From Debt Onslaught. *World Affairs*, 184(3), 318-338.
- Kweka, J. P., & Morrissey, O. (2000). *Government spending and economic growth in Tanzania, 1965-1996* (No. 00/6). Credit Research Paper.

- Lemoine, F. (2000). FDI therefore the setting up of China's economy', CEPII Working Paper, 2000-11
- Levine, R., & Renelt, D. (1992). A sensitivity analysis of cross-country growth regressions. *The American economic review*, 82(4), 942-963.
- Liu, X., Burridge, P., & Sinclair, P. J. (2002). Relationships between economic growth, foreign direct investment and trade: evidence from China. *Applied economics*, 34(11), 1433-1440.
- Liu, Z. (2008). Foreign direct investment and technology spillovers: Theory and evidence. *Journal of Development Economics*, 85(1-2), 176-193.
- Mabrouki, M. (2022). Patent, Education, Human Capital, and Economic Growth in Scandinavian Countries: a Dynamic Panel CS-ARDL Analysis. *Journal of the Knowledge Economy*, 1-16.
- Makun, K. (2021). External debt and economic growth in Pacific Island countries: A linear and nonlinear analysis of Fiji Islands. *The Journal of Economic Asymmetries*, 23, e00197.
- Mankiw, N.G., Romer, D. and Weil, D. (1992). A contribution to your empirics of economic growth', *Quarterly Journal of Economics*, 107/2, pp. 407-37.
- Masanjala, W. H., & Papageorgiou, C. (2008). Rough and lonely road to prosperity: a reexamination of the sources of growth in Africa using Bayesian model averaging. *Journal of applied Econometrics*, 23(5), 671-682.
- Matousek, R., & Tzeremes, N. G. (2021). The asymmetric impact of human capital on economic growth. *Empirical Economics*, 60(3), 1309-1334.
- Meyer, D., & Shera, A. (2017). The impact of remittances on economic growth: An econometric model. *Economia*, 18(2), 147-155.
- Mohsin, M., Ullah, H., Iqbal, N., Iqbal, W., & Taghizadeh-Hesary, F. (2021). How external debt led to economic growth in South Asia: A policy perspective analysis from quantile regression. *Economic Analysis and Policy*, 72, 423-437.
- Montiel, P., Adam, C., Mbowe, W., & O'Connell, S. (2012). *Financial architecture and the monetary transmission mechanism in Tanzania*. Centre for the Study of African Economies.
- Muhammad, S. D., Wasti, S. K. A., Hussain, A., & Lal, I. (2009). An empirical investigation between money supply government expenditure, output & prices: The Pakistan evidence. *European Journal of Economics, Finance and Administrative Sciences*, (17), 60.
- Murshed, M. (2021). Modeling primary energy and electricity demands in Bangladesh: An Autoregressive distributed lag approach. *Sustainable Production and Consumption*, 27, 698-712.
- Musa, K., Sohag, K., Said, J., Ghapar, F., & Ali, N. (2023). Public Debt, Governance, and Growth in Developing Countries: An Application of Quantile via Moments. *Mathematics*, 11(3), 650.
- Musila, J. W., & Yiheyis, Z. (2015). The impact of trade openness on growth: The case of Kenya. *Journal of Policy Modeling*, 37(2), 342-354.

- Ndulu, B. J., & O'Connell, S. A. (1999). Governance and growth in sub-Saharan Africa. *Journal of economic Perspectives*, 13(3), 41-66.
- Nguyen, N.T.K. (2017). The Long Run and Short Run Impacts of Foreign Direct Investment and Export on Economic Growth of Vietnam. *Asian Economic and Financial Review*, 7(5), 519-527.
- Nuru, N. Y., & Gereziher, H. Y. (2021). The effect of fiscal policy on economic growth in South Africa: a nonlinear ARDL model analysis. *Journal of Economic and Administrative Sciences*.
- Ogbeifun, L., & Shobande, O. A. (2021). A reevaluation of human capital accumulation and economic growth in OECD. *Journal of Public Affairs*, e02602.
- Olamide, E., Ogujiuba, K., & Maredza, A. (2022). Exchange rate volatility, inflation and economic growth in developing countries: Panel data approach for SADC. *Economies*, 10(3), 67
- Omri, A. (2014). The nexus among foreign investment, domestic capital and economic growth: Empirical evidence from the MENA region. *Research in economics*, 68(3), 257-263.
- Onyeiwu, C. (2012). Monetary policy and economic growth of Nigeria. *Journal of Economics and Sustainable development*, 3(7), 62-70.
- Oyinlola, M. A., Adedeji, A. A., & Onitekun, O. (2021). Human capital, innovation, and inclusive growth in sub-Saharan African Region. *Economic Analysis and Policy*.
- Pelinescu, E. (2015). The impact of human capital on economic growth. *Procedia Economics and Finance*, 22, 184-190.
- Pelizzo, R., Kinyondo, A. and Nwokora, N. (2018). "Development in Africa". *World Affairs*, 181(3), 256-285
- Pesaran, H.M. and Shin, Y. (1999). Autoregressive distributed lag modeling approach to cointegration analysis. Chapter 11, in storm, S., (Ed.) *Econometrics and Economic Theory in the 20th Century: The Ragnar Frisch Centennial Symposium*. Cambridge: Cambridge University Press.
- Pesaran, M.H., Shin, Y., & Smith, R. J. (2001). Bounds Testing Approaches to the Analysis of Level Relationships. *Journal of Applied Econometrics*, 16, 289-326
- Pomfret, R. (1997). Growth and transition: why has China's performance been so different?. *Journal of Comparative Economics*, 25(3), 422-440.
- Pradhan, K. C. (2016). Does remittance drive economic growth in emerging economies: Evidence from FMOLS and Panel VECM. *Theoretical & Applied Economics*, 23(4), 57-74
- Pritchett, L. (2001). Where has all the education gone?. *The world bank economic review*, 15(3), 367-391.
- Rahman, M. M., & Alam, K. (2021). Exploring the driving factors of economic growth in the world's largest economies. *Heliyon*, 7(5), e07109.

- Rahman, M. M., & Mamun, S. A. K. (2016). Energy use, international trade and economic growth nexus in Australia: New evidence from an extended growth model. *Renewable and Sustainable Energy Reviews, 64*, 806-816.
- Rahman, M. M., & Salahuddin, M. (2009). The determinants of economic growth in Pakistan: does stock market development play a major role?. In *Proceedings of the 38th Australian Conference of Economists (ACE 2009)* (pp. 1-22). Economic Society of Australia (South Australian Branch).
- Rahman, M. M., Rana, R. H., & Barua, S. (2019). The drivers of economic growth in South Asia: evidence from a dynamic system GMM approach. *Journal of Economic Studies, 46*(3), 564-567
- Rahman, M. M., Saidi, K., & Mbarek, M. B. (2017). The effects of population growth, environmental quality and trade openness on economic growth: a panel data application. *Journal of Economic Studies, 44*(3), 456-474
- Rajan, R.G. and Zingales, I. (1998). Financial dependence and growth. *American Economic Review, 88*(3), 559-86.
- Rodrik, D. (2008). The real exchange rate and economic growth. *Brookings papers on economic activity, 2008*(2), 365-412.
- Rousseau, P. L., & Xiao, S. (2007). Banks, stock markets, and China's 'great leap forward'. *Emerging Markets Review, 8*(3), 206-217.
- Sachs, J. D., & Warner, A. M. (1997). Sources of slow growth in African economies. *Journal of African economies, 6*(3), 335-376.
- Saidi, K., Rahman, M. M., & Amamri, M. (2017). The causal nexus between economic growth and energy consumption: New evidence from global panel of 53 countries. *Sustainable cities and society, 33*, 45-56.
- Sarkodie, S. A., & Ozturk, I. (2020). Investigating the environmental Kuznets curve hypothesis in Kenya: a multivariate analysis. *Renewable and Sustainable Energy Reviews, 117*, 109481.
- Sequeira, T. N. (2021). Inflation, economic growth and education expenditure. *Economic Modelling, 99*, 105475.
- Shahbaz, M., & Rahman, M. M. (2010). Foreign capital inflows-growth nexus and role of domestic financial sector: an ARDL co-integration approach for Pakistan. *Journal of Economic Research, 15*(3), 207-231.
- Shan, J. (2002). A VAR approach to the economics of FDI in China. *Applied economics, 34*(7), 885-893.
- Siddik, M. N. A. (2023). Does macroeconomic stability promote economic growth? Some econometric evidence from SAARC countries. *Asian Journal of Economics and Banking*.
- Solow, R. M. (1956). A contribution to the theory of economic growth. *The quarterly journal of economics, 70*(1), 65-94.

- Song, C. Q., Chang, C. P., & Gong, Q. (2021). Economic growth, corruption, and financial development: Global evidence. *Economic Modelling*, 94, 822-830.
- Sun, H., & Parikh, A. (2001). Exports, inward foreign direct investment (FDI) and regional economic growth in China. *Regional Studies*, 35(3), 187-196.
- Tanzania Invest (2023). The economy of Tanzania. <https://www.tanzaniainvest.com/economy>
- Temple, J. (1999). The new growth evidence. *Journal of economic Literature*, 37(1), 112-156.
- Tseng, W. and Zebregs, H. (2002), 'Foreign direct investment in China: some lessons for any other countries', IMF Policy Discussion Paper, 02/3.
- Twinoburyo, E. N., & Odhiambo, N. M. (2018). Monetary policy and economic growth: A review of international literature. *Journal of Central Banking Theory and Practice*, 7(2), 123-137.
- Vlastou, I. (2010). Forcing Africa to open up to trade: is it worth it?. *The Journal of Developing Areas*, 44(1), 25-39.
- Wei, S. J. (1993), 'The open door policy and China's rapid growth: evidence from city-level data', NBER Working Paper, 4602.
- Wei, Y., Liu, X., Parker, D., & Vaidya, K. (1999). The regional distribution of foreign direct investment in China. *Regional studies*, 33(9), 857-867.
- World Bank Development Indicators Database (2021). <http://worldbank>
- World Bank Development Indicators Database (2023). <http://worldbank>
- Wu, C. F., Huang, S. C., Chang, T., Chiou, C. C., & Hsueh, H. P. (2020). The nexus of financial development and economic growth across major Asian economies: Evidence from bootstrap ARDL testing and machine learning approach. *Journal of Computational and Applied Mathematics*, 372, 112660.
- Wu, Y. (2003). Has productivity contributed to China's growth?. *Pacific Economic Review*, 8(1), 15-30.
- Yusuf, S. (1994). China's macroeconomic performance and management during transition. *Journal of Economic Perspectives*, 8(2), 71-92.