

Foreign direct investment, foreign aid and economic growth nexus in Kenya: A cointegration and causality analysis

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SUMMARY

The increasing role of foreign capital inflows in reducing the disparity between government revenues and costs as well as impelling economic growth has motivated this study to establish the direction of causality between foreign direct investment (FDI), foreign aid, and economic growth in Kenya. By using annual time series data from 1970 to 2020 within bounds testing approach to cointegration and the error correction model ECM-based Granger-causality, the study found a bidirectional causality between foreign aid and economic growth in the short run and a unidirectional causal flow from foreign aid to economic growth in the long run. The results also support evidences of bidirectional causality between FDI and foreign aid in the short run and a unidirectional causal flow from foreign aid to FDI in the long run. However, the study found no causal relationship between FDI and economic growth, irrespective of whether the causality test is conducted in the short run or in the long run. These empirical findings are encouragement to policy makers in Kenya to carefully channel foreign aid in productive sectors to positively influence economic growth and foreign direct investment, as most relevant targets in achieving Vision 2030 and the Sustainable Development Goals (SDGs).

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1. Introduction

The targets set in the Sustainable Development Goals (SDGs) require financing, which each signatory must source, and this is not an exception for Kenya. Foreign direct investment and foreign aid are external sources of funding that augment domestic savings and investment demands required to sustain growth levels that create room to achieve the SDGs. According to the economic growth models, they also act as an engine of growth. In the growth models, capital and labour play an important role in economic growth. Foreign direct investment, in this case, augments domestic capital investment. The United Nations also supports foreign direct investment as a source of developmental financing on the back of low savings in developing countries that is insufficient to support investment needs. Foreign aid supports growth

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by boosting investment in different sectors of the economy. These funds have an added advantage in that they bear no interest or concessional interest in the case of official development assistance. Given the Vision 2030 that guides the Kenyan economic development policies, and the main objective of transforming Kenya into a highly industrialised middle-income country, an analysis of the causal relationship between foreign aid, foreign direct investment and economic growth will shed light on which variable should be influenced first to realise a change in other variables. This aids in drafting and rolling out effective policies that yield desired outcomes when it comes to foreign aid, foreign direct investment and economic growth.

There are numerous studies that have examined the impact of foreign aid and foreign direct investment on economic growth (see, for example, [Wehncke et al. \(2023\)](#); [Younsi \(2021\)](#); [Das and Sethi \(2019\)](#); [Mowlaei \(2018\)](#)). However, studies that examined the causal relationship between the three are scarce, making another study for Kenya important. Most studies that have focused on causal relationship looked at foreign aid and economic growth (see, for example, [Mahembe and Odhiambo \(2019\)](#); [Paradhan and Arvin \(2015\)](#); [Tekin \(2012\)](#)) or foreign direct investment and economic growth (see [Karahan and Colak \(2022\)](#); [Sarker and Khan \(2020\)](#); [Sothan \(2017\)](#); [Mahmoodi and Mahmoodi \(2016\)](#)). The extant literature has limited studies that have examined the causality between foreign aid, economic growth and foreign direct investment (see [Sijabat, 2022](#)). The main objective of this study, therefore, is to examine the causal flow between economic growth, foreign direct investment and foreign aid in Kenya. The findings of the study contribute to an enlightened policy stance that supports economic growth desired to meet Vision 2030 objectives and the SDGs.

This study investigated the causality between economic growth, foreign direct investment and foreign aid using data from 1970 to 2020. Foreign aid in this study captures grants and net official development assistance. To fully specify the model, the gross fixed capital formation was added as an intermittent variable. This variable was added as an intermittent variable given its direct impact on economic growth and investment capital - foreign direct investment and foreign aid, according to growth theories. Foreign direct investment normally favors countries with growth potential mirrored on the domestic investment capacity, while foreign aid flows are always high to countries that struggle economically. The study applies an autoregressive distributed lag (ARDL) approach to cointegration and an ECM-based Granger-causality test. This follows the advantage of this approach compared to other approaches. For instance, the approach is robust in small samples and provides results in the short run and in the long run. This is more informative as policymakers in Kenya can tie policy actions to a time frame.

Kenya is an interesting case study because the country has managed to grow its economy to a middle-income country, a feat that most African countries have struggled to achieve. Despite the achievement, the country is still behind its economic growth target according to Vision 2030 of above 10%, hence a study of the influence of foreign aid and foreign direct investment would inform policy. Further, given the Kenyan economy struggles with low domestic savings that are not enough to support investment needs, external sources of finances become important. As evidence of the importance of external funding, the country has made intentional investment policy reforms and compiled an investment policy that guides both domestic and foreign investment. There are also support authorities and acts that have been put in place to facilitate, attract and retain foreign investment. However, these reforms have not fully yielded significant foreign direct investment. The question this study would like to answer is the following: should the government continue to put policies in place to support

foreign direct investment to achieve the country's development objectives? The same applies to foreign aid; Kenya has experienced a surge in foreign aid on the one hand, and growing arguments against foreign aid, where "dependency syndrome" has been highlighted on the other hand. The obtaining relation between foreign aid and economic growth in Kenya is still unclear.

Rest of this study is divided as follows. Section 2 outlines the literature review, Section 3 discusses estimation techniques, while Section 4 presents and discusses the findings of the study. The conclusion of the study is presented in Section 5.

2. Empirical literature review

Kenyan economic policy is guided by Vision 2030, which is a long-term development blueprint for the country launched in 2008 ([The Presidency, 2018](#)). The blueprint aims to transform the Kenyan economy into a highly industrialised country that is globally competitive, ultimately creating a high-quality life for Kenyans. Vision 2030 guides all economic policy and rests on economic, macro, social, and political pillars. These pillars touch all facets of the Kenyan political, economic and social challenges, hence are all-inclusive in achieving an industrialised middle-income country with a high quality of life. The long-term vision was a culmination of the National Economic and Social Council (NESC) review and advice on the challenges the economy was facing in 2002 when the new government resumed office ([The Presidency, 2018](#)). The NESC recommended a long-term national plan supported by five medium-term plans. The first medium-term plan (MTP) stretched from 2008 to 2012, followed by a second medium term from 2013 to 2017. The current third medium-term in realizing the Vision 2030 pillars stretches from 2018 to 2022. The first medium-term plan focused on sustainable economic growth with special attention to equality. The second MTP focused on the main theme of devolution, equity, national unity and socio-economic development. The third MTP focused on eight priority sectors identified to align the country with the Vision 2030 agenda. These sectors include tourism, trade, business process outsourcing, manufacturing, financial services, and the blue economy ([FAO, 2022](#)).

The Kenyan economic policy, guided by the long-term Vision 2030, has managed to build resilience in the economy over the years, as evidenced by an average growth rate of 4.3% between 2002 and 2020 compared to an average growth of 3.1% from 1980 to 2001. Although Kenya enjoyed high economic growth rates between 1970 and 1980, averaging 7.2%, the average growth rate from 1980 to 2020 never managed to break this average growth rate. A general increase in economic growth was recorded from 2009, a time that coincided with the rolling out of Vision 2030. Like most countries, Kenya also recorded a slump in economic growth during the COVID-19 pandemic ([ADBG, 2023](#)). On the foreign aid front, the landscape in Kenya is now more tilted toward aid loans compared to grants ([Owino, 2021](#)). According to this author, a large portion of aid to Kenya comes from multilateral and bilateral donors in the form of official development assistance. Some of the donors include Denmark, Sweden, the European Commission and international financial institutions. The main sectors targeted for the donor funds are health, agriculture and food, governance and security, and education and humanitarian ([Owino, 2021](#)). Foreign aid and net official development assistance increased consistently from 1970 to 1993 with an average of USD 776.4 million, before taking a downturn from 1994 to 2005. Foreign aid and net official development assistance took an upward trend that grew strong to a record USD 3.2 billion

in 2019. The period between 2006 to 2019 recorded inflows above USD 1 billion, which was never recorded before during the study period.

In line with Vision 2030 of middle-income industrialised country status and 10% growth per annum, the Kenyan government realized the importance of investment even from the private sector. This led to the creation of the Kenya Investment Policy (KIP) aimed at attracting and maintaining foreign direct investment, among other overarching objectives. The KIP also provides a comprehensive policy guide to facilitate, retain and attract investment in Kenya (MITC, 2019). The policy provides a framework to foster a harmonized institutional and regulatory framework for investors. The overarching objective of the KIP is to promote domestic and foreign investment in Kenya. This would be achieved through critical measures on investment promotion and facilitation, investment oversight, investment entry and establishment, investment assessment, the establishment of land banks, and investment retention and aftercare (MITC, 2019). There are several investment promotion institutions in Kenya, including the Ministry of Foreign Affairs, Ministry of Industry, Trade and Cooperatives and The National Treasury, Export Promotion Zones Authority, Special Economic Zones Authority, and Kenya Investment Authority, among other authorities and ministries. The legislation was also aligned to support domestic and foreign investment. Some of the laws relate to investment include the Constitution of Kenya, the Investment Promotion Act of 2004, the Economic Processing Zones Act of 2015, the Special Economic Zones Act of 2015, the Companies Act and the Foreign Investment Protection Act of 2012. The policy reforms and formation of different authorities in Kenya are yet to yield the anticipated surge in foreign direct investment. This is evident by foreign direct investment as a proportion of GDP that is below 1% for the greater part of the period under study, except for a few years. The average foreign direct investment between 1970 and 2000 was 0.6% of GDP and the average FDI inflows as a percentage of GDP increased slightly to 0.9% between 2001 and 2020 (WDI, 2023). This coincided with a time that the Kenyan government implemented reforms in the investment landscape.

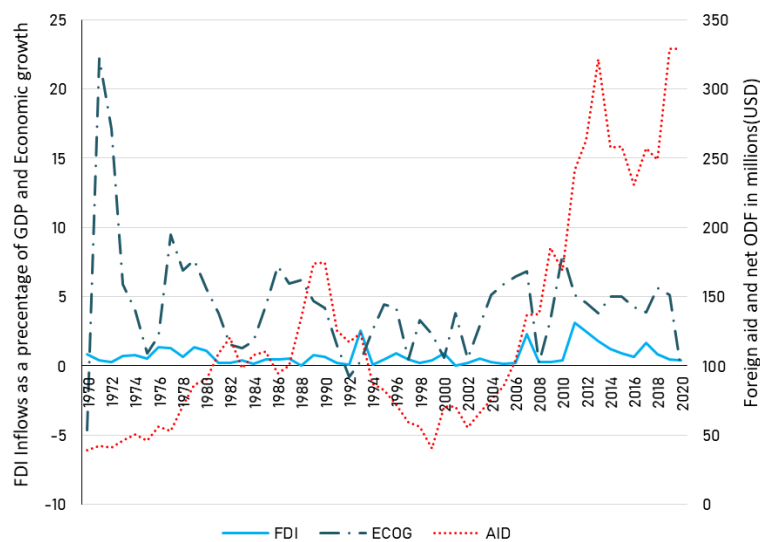


Figure 1. Trends in economic growth, foreign direct investment and foreign aid

Figure 1 reports the trends in economic growth, FDI and foreign aid between 1970 and 2020 according to World Development Indicators database from the World Bank. Although foreign aid started at lower levels, the inflows have grown stronger over the study period. This is the opposite of trends in economic growth, which started at high levels breaking the 10% mark in the 1970s and declined over the years (WDI, 2023). Foreign direct investment remained depressed over the study period. Thus, Kenya has a lot of work to realise a rise in foreign direct investment required to support the growth levels targeted in Vision 2030.

There are numerous theories in the literature that discuss economic growth drivers. Among these theories are those of Harrod (1939) and Domar (1946). The main driver of economic growth emanates from savings from the national income. The more a nation is able to save part of its income and invest it, the higher the growth levels. According to the theories, low economic growth is because of low savings that translate to low investment. This implies that if a nation struggles with low savings, augmenting investment funds can boost economic growth. This makes this study relevant for Kenya as it is among the countries that are faced with low savings that have the potential of stifling the national development plans if nothing is done to source investment funds from outside the country, thus, making foreign direct investment alternative forms of investment funds.

Although this study focuses on the causal relationship between foreign aid, foreign direct investment and economic growth, due to a few studies that examined the causal relationship among the three variables, studies that have investigated the correlations between the three variables will also be reviewed. This gives an insight into the dynamic relationship between the variables, although it is acknowledged that causality and impact studies cannot be equated. In addition, the study also reviews causality studies between foreign direct investment and economic growth and foreign aid and economic growth.

Sijabat (2022) examined the causality between foreign direct investment, gross domestic product (GDP) and foreign aid for Indonesia using data from 1970 to 2019. Using an augmented Toda–Yamamoto approach with a Granger causality test, the study found a unidirectional causal flow from official development assistance to economic growth and foreign direct investment to economic growth. Wehncke et al. (2023) examined the relationship between foreign direct investment, foreign assistance and economic growth for a selected 20 African countries using data from 2000 to 2018. Employing the autoregressive distributed lag and error correction model, the study found a positive long-term cointegration between official development assistance and economic growth, and foreign direct investment and economic growth. Foreign direct investment was found to promote economic growth, and economic growth was found to promote official development assistance. Younsi (2021) investigated the impact of foreign direct investment, foreign aid and domestic investment on economic growth for 41 African countries using panel data from 1990 to 2016. The study found foreign aid and foreign direct investment to have a positive complementary effect on economic growth.

In the same spirit, Das and Sethi (2019) examined the effect of official development assistance, foreign direct investment and remittances on economic growth for India and Sri Lanka using data from 1980 to 2016. Using the vector error correction model (VECM), the study found foreign direct investment to have an impact on economic growth, while foreign aid was found to positively impact economic growth in Sri Lanka. Mowlaei (2018) investigated the impact of foreign direct investment, foreign aid and personal remittances on economic growth for 26 African countries using data from 1992 to 2016. Using a pooled mean group

econometric technique, the study found the same results as [Wehncke et al. \(2023\)](#). In a separate study, [Chansomphou and Ichihashi \(2011\)](#) investigated the impact of foreign aid and foreign direct investment on income per capita and income growth for Lao People's Democratic Republic using data from 1970 to 2008. Employing cointegration techniques and the error correction model, the study found foreign aid to have a positive impact on income growth, while foreign direct investment was found to have a negative impact on long-run income per capita and a small positive impact on income growth. [Ndambendia and Njoupouogningi \(2010\)](#) examined the long-term relationship between foreign aid, foreign direct investment and economic growth for 36 sub-Saharan countries over a period from 1980 to 2007. Using a dynamic panel data of mean group (MG), dynamic fixed effects and pooled mean group estimator, the study found a strong positive impact of foreign aid and foreign direct investment on economic growth.

[Odhiambo \(2022\)](#) investigated the causal relationship between FDI and economic growth in Kenya using data from 1980 to 2018. Employing an ARDL bounds testing approach, the study found a unidirectional causal flow from economic growth to FDI in the short run and in the long run. [Sarker and Khan \(2020\)](#) studied the causal relationship between foreign direct investment and economic growth in Bangladesh using an ARDL approach and Granger-causality test. The study found a unidirectional causal flow from economic growth to FDI. [Oncu and Celik \(2018\)](#) found the same results in a study on China, Turkey, Russia and Brazil, using data from 1998 to 2016. [Sothan \(2017\)](#) examined the causal flow between FDI and economic growth using data from 1980 to 2014 for Cambodia. Using vector error correction, the study found similar results as [Odhiambo \(2022\)](#) in the long run. In the same vein, [Agrawal \(2015\)](#) investigated the causal relationship between FDI and economic growth using data from 1989 to 2012 for BRICS (Brazil, Russia, India, China and South Africa). The study found a long-run causal flow from foreign direct investment to economic growth.

[Nupehewa et al. \(2022\)](#) investigated the nexus between economic growth and foreign direct investment for 117 countries from seven regions: 28 African, 18 American, 34 Asian, 27 European, 5 Mediterranean, and 5 Oceanian countries, using data from 2010 to 2020. Using the Granger causality approach and AR coherence techniques, the study found bidirectional causality between FDI and economic growth globally and in the Asian region. [Mahmoodi and Mahmoodi \(2016\)](#) studied the causality between FDI and economic growth for eight European developing countries using panel data spanning from 1986 to 2013. Using the panel vector error correction model, the study found a bidirectional causality between FDI and GDP. [Kosztowniak \(2016\)](#) carried out a study on the causal relationship between FDI and GDP for Poland using data from 1992 to 2012. Employing the vector error correction model, the study found a bidirectional causality between the two. [Chowdhury and Mavrotas \(2006\)](#) investigated the causality between FDI and economic growth using data from 1969 to 2000 for Chile, Malaysia and Thailand. Employing the Toda-Yamamoto test, the study found unidirectional causal flow from GDP to FDI for Chile and bidirectional causality for Malaysia and Thailand. [Hansen and Rand \(2006\)](#) examined the causality between FDI and GDP for 31 developing countries using data for 31 years. Using heterogeneous panel data, the study found a bidirectional causality between the two. [Karahana and Colak \(2022\)](#) investigated the causal flow between economic growth and FDI for Regional Comprehensive Economic Partnership (RCEP) countries. The study found unidirectional causality running from FDI to economic growth when an asymmetric causality test was employed. However, symmetric causality confirmed no causal relationship between FDI and economic growth across all countries.

The similar study of [Shimul et al. \(2009\)](#) examined the causality between FDI and growth in Bangladesh using data from 1973 to 2007. Using an ARDL bounds testing approach, the study failed to find any causal relationship between FDI and growth.

[Mahembe and Odhiambo \(2019\)](#) examined the causality between foreign aid and economic growth for 82 developing countries using data spanning from 1981 to 2013. Using the vector error correction model, the study found a unidirectional causal flow from economic growth to foreign aid in the short run and the long run. [Paradhan and Arvin \(2015\)](#) carried out a study on the causality between economic growth and foreign aid using data from 1961 to 2012. The study found a unidirectional causal flow from foreign aid to economic growth in the short run and bidirectional causality between the two variables in the long run. [Tekin \(2012\)](#) did a study on the causality between foreign aid and economic growth for least developed countries (LDC) using data from 1970 to 2011. Employing the seemingly unrelated regression (SUR), the study found little evidence of a causal relationship between the two variables.

The reviewed literature shows mixed results when looking at the relationship between FDI, aid and growth from a causal point or from an impact viewpoint. In terms of impact studies, some found FDI and aid to have a positive impact on growth, while a few studies found them to have a negative impact on economic growth. On the causality front, studies were split between bidirectional causality, no causality and unidirectional causality, and the results seem to differ from country to country and over time. However, the link between foreign aid and foreign direct investment was not fully explored in previous studies. Hence, this study aims to fill the gap in the literature by exploring the causal relationship between the three variables using time-series data from Kenya.

3. Estimation techniques

Following [Odhiambo \(2022\)](#) and [Shimul et al. \(2009\)](#) this study employs an ARDL bounds testing approach to cointegration and ECM-based causality test to examine the relationship between FDI, aid and growth. This approach was developed by [Pesaran et al. \(2001\)](#).

Equations (1) to (4) below provide the ARDL model specification, where ECOG is economic growth captured by rate of change of gross domestic product, FDI is foreign direct investment as a percentage of GDP, AID is foreign aid plus net official development assistance and GFCF is gross fixed capital formation as a percentage to GDP.

$$\Delta ECOG_t = \varphi_0 + \sum_{i=1}^p \varphi_{1i} \Delta ECOG_{t-i} + \sum_{i=0}^q \varphi_{2i} \Delta FDI_{t-i} + \sum_{i=0}^q \varphi_{3i} \Delta AID_{t-i} + \sum_{i=0}^q \varphi_{4i} \Delta GFCF_{t-i} \quad (1)$$

$$+ \beta_1 ECOG_{t-1} + \beta_2 FDI_{t-1} + \beta_3 AID_{t-1} + \beta_4 GFCF_{t-1} + \mu_{1t}$$

$$\Delta FDI_t = \varphi_0 + \sum_{i=0}^q \varphi_{1i} \Delta ECOG_{t-i} + \sum_{i=1}^p \varphi_{2i} \Delta FDI_{t-i} + \sum_{i=0}^q \varphi_{3i} \Delta AID_{t-i} + \sum_{i=0}^q \varphi_{4i} \Delta GFCF_{t-i} \quad (2)$$

$$+ \beta_1 ECOG_{t-1} + \beta_2 FDI_{t-1} + \beta_3 AID_{t-1} + \beta_4 GFCF_{t-1} + \mu_{2t}$$

$$\Delta AID_t = \varphi_0 + \sum_{i=0}^q \varphi_{1i} \Delta ECOG_{t-i} + \sum_{i=0}^q \varphi_{2i} \Delta FDI_{t-i} + \sum_{i=1}^p \varphi_{3i} \Delta AID_{t-i} + \sum_{i=0}^q \varphi_{4i} \Delta GFCF_{t-i} \quad (3)$$

$$+ \beta_1 ECOG_{t-1} + \beta_2 FDI_{t-1} + \beta_3 AID_{t-1} + \beta_4 GFCF_{t-1} + \mu_{3t}$$

$$\begin{aligned} \Delta GFCF_t = & \varphi_0 + \sum_{i=0}^q \varphi_{1i} \Delta ECOG_{t-i} + \sum_{i=0}^q \varphi_{2i} \Delta FDI_{t-i} + \sum_{i=0}^q \varphi_{3i} \Delta AID_{t-i} + \sum_{i=1}^p \varphi_{4i} \Delta GFCF_{t-i} \\ & + \beta_1 ECOG_{t-1} + \beta_2 FDI_{t-1} + \beta_3 AID_{t-1} + \beta_4 GFCF_{t-1} + \mu_{4t} \end{aligned} \quad (4)$$

Parameter φ_0 is a constant term, coefficients φ_{1i} , φ_{2i} , φ_{3i} and φ_{4i} capture the short-run dynamics, while β_1 , β_2 , β_3 and β_4 are used to derive long-run dynamics from reparameterized ARDL mode and μ_1 – μ_4 present error terms. Gross fixed capital formation was added as an intermittent variable to form a multivariate causality framework. Used data on Kenya from 1970 to 2020 with respect to FDI, AID, ECOG and GFCF was retrieved from World Bank Development Indicators (WDI, 2023).

ECM representation of the ARDL model is specified within Equations (5) to (8) where ϑ_1 , ϑ_2 , ϑ_3 and ϑ_4 are coefficient associated with error correction mechanism and γ_1 – γ_4 are error terms.

$$\begin{aligned} \Delta ECOG_t = & \varphi_0 + \sum_{i=1}^p \varphi_{1i} \Delta ECOG_{t-i} + \sum_{i=0}^q \varphi_{2i} \Delta FDI_{t-i} + \sum_{i=0}^q \varphi_{3i} \Delta AID_{t-i} + \sum_{i=0}^q \varphi_{4i} \Delta GFCF_{t-i} \\ & + \vartheta_1 ECM_{t-1} + \gamma_{1t} \end{aligned} \quad (5)$$

$$\begin{aligned} \Delta FDI_t = & \varphi_0 + \sum_{i=0}^q \varphi_{1i} \Delta ECOG_{t-i} + \sum_{i=1}^p \varphi_{2i} \Delta FDI_{t-i} + \sum_{i=0}^q \varphi_{3i} \Delta AID_{t-i} + \sum_{i=0}^q \varphi_{4i} \Delta GFCF_{t-i} \\ & + \vartheta_2 ECM_{t-1} + \gamma_{2t} \end{aligned} \quad (6)$$

$$\begin{aligned} \Delta AID_t = & \varphi_0 + \sum_{i=0}^q \varphi_{1i} \Delta ECOG_{t-i} + \sum_{i=0}^q \varphi_{2i} \Delta FDI_{t-i} + \sum_{i=1}^p \varphi_{3i} \Delta AID_{t-i} + \sum_{i=0}^q \varphi_{4i} \Delta GFCF_{t-i} \\ & + \vartheta_3 ECM_{t-1} + \gamma_{3t} \end{aligned} \quad (7)$$

$$\begin{aligned} \Delta GFCF_t = & \varphi_0 + \sum_{i=0}^q \varphi_{1i} \Delta ECOG_{t-i} + \sum_{i=0}^q \varphi_{2i} \Delta FDI_{t-i} + \sum_{i=0}^q \varphi_{3i} \Delta AID_{t-i} + \sum_{i=1}^p \varphi_{4i} \Delta GFCF_{t-i} \\ & + \vartheta_4 ECM_{t-1} + \gamma_{4t} \end{aligned} \quad (8)$$

4. Empirical results

The Dickey–Fuller GLS unit root test and Phillip–Perron test were performed on all the variables included in the model. Although ARDL does not require all variables to be of the same order of integration, the unit root was conducted to ensure that no variables are integrated of order two, i.e. I(2) or higher. The results of the unit root tests are presented in Table 1.

The results confirm the stationarity of all the variables in first difference. The order of integration is within the boundaries applicable when using ARDL approach. The next step is to test the long-run relationship among the variables in the model. Results reported in Table 2 show that FDI, GFCF and ECOG are cointegrated. For cointegrated variables, causality is estimated for the long-run and short-run time frames, while for the foreign aid only short-run causality is estimated Table 3.

Table 1. Unit root tests

Dickey–Fuller GLS unit root test	Stationarity in the levels		Stationarity in first differences	
	without trend	with trend	without trend	with trend
FDI	−1.274	−0.992	−2.071*	−3.170*
AID	0.402	−1.368	−7.742***	−7.952***
ECOG	−0.189	−1.145	−3.412**	−3.395**
GFCF	−1.446	−1.755	−3.383**	−5.349***
Phillip–Perron test				
FDI	−2.019	−2.087	−4.113**	−4.206**
AID	−0.029	−1.206	−7.659***	−7.785***
ECOG	−1.481	−1.376	−3.936**	−3.936**
GFCF	−1.547	−2.209	−4.862***	−4.853***

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ denote stationarity at 10%, 5% and 1% significance levels

Table 2. Cointegration results

Dependent variable	F-statistic	Cointegration status				
FDI	8.630***	Cointegrated				
AID	1.944	Not cointegrated				
ECOG	7.831***	Cointegrated				
GFCF	8.109***	Cointegrated				
Asymptotic critical values (unrestricted intercept and no trend)						
Significance level	1%		5%		10%	
Integration order	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
Critical values	4.29	5.61	3.23	4.35	2.72	3.77

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ denote cointegration at 10%, 5% and 1% significance levels

Table 3. Granger–causality results

	Δ FDI	Δ AID	Δ ECOG	Δ GFCF	EC term
Δ FDI		5.169* (0.010)	1.022 (0.370)	2.603* (0.087)	−0.929*** (−6.346)
Δ AID	6.703** (0.000)		3.167* (0.059)	2.264 (0.141)	
Δ ECOG	0.004 (0.949)	6.016** (0.089)		9.347*** (0.000)	−0.944*** (−8.466)
Δ GFCF	0.073 (0.789)	3.811* (0.057)	9.807*** (0.000)		−0.613*** (−5.751)

Note: * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$ denote 10%, 5% and 1% significance levels

The causality results reported in Table 3 show that there is a bidirectional causality between FDI and AID in the short–run, while in the long–run a unidirectional causal flow from AID to FDI dominates. The results revealed a mutually beneficial relationship between FDI and foreign aid in the short–run. Thus, as more aid is received, it turns to improve invest-

ment creating room to attract FDI with better infrastructure. On the other hand, the ability to attract FDI will draw more aid as the donors and official development assistance supporting countries have a guarantee the funds they are given will be used fruitfully. The study also found a bidirectional causality between AID and economic growth in the short-run and a unidirectional causal flow from AID to economic growth in the long-run. This finding confirms the reinforcing effect that these two variables have on each other. As more AID is released to Kenya, if channeled to productive use, such as investment in infrastructure, is likely to buttress economic growth. While economic growth is promoted, the chances of getting aid or soft loans is increased. Tekin (2012) also found a unidirectional causal flow from AID to economic growth in a study of less-developed countries. The study found no causality between FDI and economic growth. This finding refutes the FDI-led or growth-led hypothesis for Kenya.

Other results presented in Table 3 confirm a unidirectional causal flow from gross fixed capital formation to FDI in the short-run and in the long-run. These results support the importance of preconditions in attracting FDI (see Borensztein et al., 1998). According to the strand of literature on FDI pre-conditions, the presence of well-developed infrastructure, health and education attracts FDI to a country and can act as one of the criteria that foreign investors consider. The study also found a bidirectional causality between economic growth and gross fixed capital formation in the short run and the long-run. This confirms the reinforcing effect of gross capital formation in supporting high economic growth and at the same time, high economic growth makes it possible for a generation of resources that can be invested in new and replacing existing capital. This finding is consistent with the economic growth models where capital and labor are important inputs to economic growth. A unidirectional causality was found from AID to gross fixed capital formation in the long-run and in the short-run. An increase in AID complements domestic investment resources for Kenya, according to the findings of this study.

5. Conclusion

This study examined the causality between FDI, economic growth and foreign aid in Kenya using annual data from 1970 to 2020. The study was driven by the importance of high economic growth required to support Vision 2030 and SDG targets for Kenya. Employing an ARDL bounds testing approach to cointegration and the ECM-based Granger-causality test, the study found bidirectional causality between aid and economic growth in the short run and a unidirectional causal flow from aid to economic growth in the long run. The study also found a feedback causal relationship between FDI and foreign aid in the short run and a unidirectional causal flow from aid to FDI in the long run. Contrary to our expectation, no causality was found to exist between FDI and economic growth. This applies irrespective of whether the causality was estimated in the short run or in the long run. It can be concluded from the findings of this study that foreign aid plays an important role in the short run and in the long run in supporting economic growth and FDI inflows. Based on these findings, it is recommended that policy makers in Kenya continue to implement policies that aim at attracting foreign aid to supplement domestic financial resources and to buttress the country's growth trajectory. Moreover, targeting foreign aid is likely to unlock economic growth and foreign direct investment in the country, especially if foreign aid is directed to productive sectors of the economy.

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Povezanost izravnih stranih ulaganja, strane pomoći i gospodarskog rasta u Keniji: analiza kointegracije i uzročnosti

SAŽETAK

Sve veća uloga priljeva stranog kapitala u ublažavanju nerazmjera između državnih prihoda i troškova te u ostvarenju poticajnog gospodarskog rasta, motivirali su ovu studiju da utvrdi smjer uzročnosti između izravnih stranih ulaganja (FDI), strane pomoći i gospodarskog rasta u Keniji. Korištenjem vremenskih nizova godišnjih podataka od 1970. do 2020. godine i graničnog pristupa testiranju kointegraciji te modela korekcije pogreške temeljenog na ECM Grangerovoj uzročnosti, studija je otkrila dvosmjernu uzročnost između strane pomoći i gospodarskog rasta u kratkom roku i jednosmjernu uzročnost od strane pomoći prema gospodarskom rastu u dugom roku. Rezultati također pružaju dokaze o dvosmjernoj uzročnosti između izravnih stranih ulaganja i strane pomoći u kratkom roku i jednosmjernoj uzročnosti od strane pomoći prema izravnim stranim ulaganjima u dugom roku. Međutim, studija nije pronašla uzročnu vezu između izravnih stranih ulaganja i gospodarskog rasta, bez obzira provodi li se kratkoročni ili dugoročni test uzročnosti. Ovi empirijski nalazi ohrabruju nositelje politika u Keniji da pažljivo usmjere inozemnu pomoć ka proizvodnim sektorima kako bi pozitivno utjecali na gospodarski rast i izravna strana ulaganja, kao najrelevantnijih ciljeva u postizanju Vizije 2030 i održivog razvoja (SDG).

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