Sustainable Economic Development in Kenya: Analysing the Influence of Diaspora Remittances, Foreign Direct Investment, and Imports

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Abstract

Purpose: Many African countries struggle to sustain steady economic growth. Specific macroeconomic factors can influence a country's economic growth. We investigated the trend and influence of diaspora remittances, foreign direct investment, and imports on Kenya's economic growth.

Methodology: We used panel data from the World Bank Indicators database from 1973 to 2021. By utilising the autoregressive distributed lag model for econometric analysis and performing computations using R software, we provide valuable insights into both short-term and long-term dynamics.

Findings: In the short term, we establish a non-significant negative impact of FDI and imports on economic growth, contrasting with the positive influence of diaspora remittances. However, in the long term, all three variables—FDI, imports, and remittances—emerge as significant determinants of economic growth.

Originality: We therefore contribute original insights by examining the interplay between diaspora remittances, FDI, imports, and economic growth over the study period. The emphasis on both short-term and long-term effects adds nicely to understanding their roles in shaping Kenya's economic. growth trail.

1. Introduction

Sustainable economic development refers to a country's efforts to achieve long-term growth and prosperity while considering environmental, social, and economic factors (Charter & Tischner, 2017; Todaro & Smith, 2020). It involves creating a balance between economic progress, social equity, and environmental conservation to ensure that current needs are met without compromising the ability of future generations to meet their own needs (Barrier, 2017). In Kenya, sustainable economic development is key for addressing challenges such as poverty, inequality, environmental degradation, and unemployment while fostering inclusive growth and improving the quality of life for its citizens.

Over the years, Kenya's economic status has experienced both advancements and difficulties. Its GDP is derived from a variety of industries, including manufacturing, services, technology, and mostly agriculture. It is regarded as one of the strongest economies in East Africa. Although there have been variations recently owing to a variety of reasons such internal policy changes, weather patterns that affect agriculture, and global economic situations, the country's economy has grown at a reasonably steady rate, averaging between 5 and 6% annually (Kenya Institute for Public Policy Research and Analysis (KIPPRA), 2020). Kenya's services sector is growing, especially in the areas of finance, telecommunications, and tourism. This is one of the country's main economic tendencies (Broadberry & Gardner, 2022). Furthermore, there has been a rise in foreign direct investment (FDI) inflows into the nation, particularly for energy and infrastructure development projects (Figure 1). Still, there are obstacles in the way of attaining sustainable economic growth (Odhiambo, 2022).

The Kenya Vision 2030 is a comprehensive plan for the country's long-term development, driven by a shared desire for a more improved society by the year 2030. The objective of Kenya Vision 2030 is to establish a nation that is globally competitive and rich, while also ensuring a high standard of living by the year 2030. The objective is to transform Kenya into a newly industrialized, middle-income nation that offers a high standard of living to all its inhabitants within a clean and secure setting (Government of the Republic of Kenya, 2007).

Diaspora remittances, FDI, and imports play significant roles in Kenya's economy, contributing to various aspects of macro-economic development and growth. In this context, diaspora remittances refer to funds sent by Kenyan nationals living abroad to their families or businesses in Kenya. Remittances are a vital source of foreign exchange earnings for Kenya, providing stability to the country's balance of payments and supporting the local currency. These funds are often used for

household consumption, education, healthcare, and investment in small businesses, contributing to poverty reduction and improving livelihood (Bett, 2014).

From Figure 1 below, diaspora remittances have been increasing steadily (especially from early 2000 to present). This is seen from the fact that the number of Kenyans emigrating to developed countries such as the USA, Canada, Australia, Germany, and United Kingdom has been increasing over the years. The pull factors from Kenya were high inflation, exchange rate appreciation, high population, and a rise in Kenyan GDP per capita. In considering the relative attractiveness of the destination countries in increasing order the finding showed Australia, Canada, UK and Germany were the prominent migration destinations (Birundu, 2016).

FDI involves foreign companies or individuals investing in businesses or assets in Kenya. FDI brings in capital, technology, skills, and market access, stimulating economic growth, creating jobs, and enhancing productivity in various sectors such as manufacturing, services, and infrastructure. The government of Kenya actively promotes FDI through incentives, favourable business policies, and investment promotion agencies to attract foreign investors and stimulate economic diversification and development (Sorin-Andrei Dojan, 2023). This has also seen the establishment of the Ministry of Diaspora affairs and consequently the draft Kenya diaspora remittances policy 2024 (Ministry of Foreign and Diaspora Affairs,Kenya, 2024). From Figure 1, FDI to Kenya has been wildly fluctuating. Due to factors like the Covid-19, political unrest, uncompetitive returns, and comparatively high perceived levels of public sector corruption (Cooke, 2023).

Imports represent goods and services purchased from foreign countries and brought into Kenya. Imports fulfil domestic demand for products that are not produced or insufficiently available domestically, supporting consumption, production, and investment activities. Kenya's imports include raw materials, machinery, consumer goods, and fuel, among others, which are crucial for various industries, businesses, and households. In January 2024, Kenya experienced a year-on-year growth of 25.3% in total imports, which is higher than the 9.9% increase observed in the previous month. The statistics on the growth of total imports in Kenya is regularly updated monthly. It covers the period from August 1999 to January 2024 and has an average growth rate of 11.1%. The statistics peaked at an unprecedented 86.4% in August 2011 and to a historic low of -29.9% in May 2020 (CEIC Data, 2024).
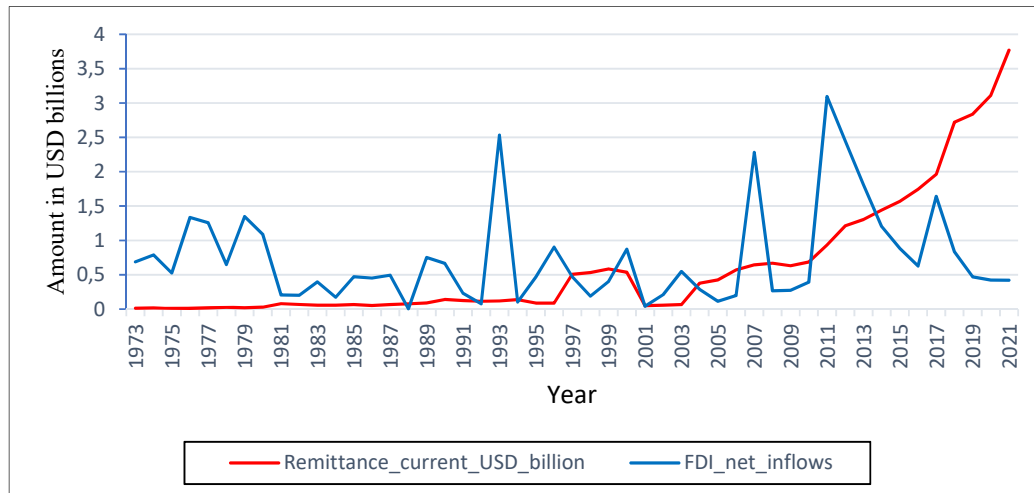
Figure 1: Diaspora remittances and FDI for Kenya for the period 1973 to 2021.

Source: Author (2024)

The main research question is: How do diaspora remittances, FDI and imports influence sustainable economic development in Kenya? Several factors make studying these factors essential for understanding and fostering sustainable economic development in Kenya. First, they boost Kenya's economy by contributing foreign cash, capital, and vital commodities and services (Kipkoech, 2020). Effective economic policies need understanding how these elements affect economic growth, employment, and trade balance. Secondly, Kenya's economic dependence on diaspora remittances, FDI, and imports can cause risks. They can indicate hazards including remittance flow fluctuations, investment patterns, and external shocks that alter import dependency. Policymakers can evaluate diaspora remittances, FDI, and imports for inclusive development. FDI can create jobs and improve technology, while remittances can reduce poverty and boost household welfare. Understanding these processes helps build policies that benefit more people. Evidence-based research on these topics guides policymakers and strategic planning. It helps policymakers plan focused initiatives, attract sustainable investment, boost trade competitiveness, and use diaspora contributions for economic growth. The study adds to academic literature by examining the dynamics of diaspora remittances, FDI, and imports in sustainable economic development. Scholars might use these findings to investigate related topics, theories, and methods.

The objectives of this study are: To analyze the trends and patterns of diaspora remittances to Kenya over a specified period. And to evaluate the overall impact of diaspora remittances, FDI, and imports on sustainable economic development indicators in Kenya, such as real GDP. The hypothesis is the combined influence of diaspora remittances, FDI, and imports contributes positively to sustainable economic development in Kenya, but there may be trade-offs and challenges that need to be addressed for long-term sustainability.

The study covers 1973 to 2021 and considers key economic indicators such as GDP growth. It encompasses both quantitative data analysis, such as trends and statistical modelling, and qualitative discussions on policy implications and socio-economic impacts. The availability and quality of data on diaspora remittances, FDI inflows, imports, and economic indicators may vary, leading to potential data limitations, biases, or gaps in the analysis. External factors such as global economic trends, political stability, Covid 19, regulatory changes, and natural disasters may influence the study's findings and should be considered when interpreting the results.

The remainder of this paper is organized as follows. Section 2 presents the theoretical and empirical literature review. Section 3 presents the data and methods, the results in Section 4, and conclusions and recommendations in Section 5.

2. Literature review

2.1 Theoretical framework

This study anchored on the growth theories: (a) exogenous growth (b) endogenous growth and (c) Inclusive growth theories.

Exogenous growth theory, rooted in constant returns to scale and conditional convergence, asserts that economic growth results from the accumulation of physical capital, labour, and technological progress (Solow, 1956). This theory was extended by (Mankiw et al., 1992) by incorporating human capital as a key factor in predicting economic growth. Another preposition was by (Domar, 1946), which underscores the link between capital accumulation and full employment, emphasizing the importance of the labour force and productivity.

Endogenous growth theories encompass various models, including Frankel's AK model emphasizing physical capital's lasting impact on growth (Frankel, 1962) and Cass's model prioritizing societal well-being through optimal growth paths (Cass, 1965). The theory of know-how and technological progress as endogenous growth drivers is highlighted by (Romer, 1986) while (Grossman & Helpman, 1991) models focus on intellectual capital, emphasizing quality improvements in innovations based on Schumpeter's creative destruction theory (Schumpeter, 1976). The model of industrial innovations improving product quality was put forward by (Aghion & Howitt, 1992) and later (Lucas, 1988) introduces an endogenous growth model incorporating human capital's impact on production, stressing the enhancement of skill levels for increased productivity.

Inclusive growth theory focuses on ensuring that the benefits of economic growth are shared widely across different segments of society, including marginalized groups, and that growth is sustainable over the long term (Valerie Cerra, 2022). When applied to understanding the impact of diaspora remittances, foreign direct investment (FDI), and imports on sustainable economic development, inclusive growth theory highlights the following aspects:

Remittances play a crucial role in supporting households in poor nations by meeting essential necessities such as food, healthcare, and education (Mabrouk & Mekni, 2018). The theory of inclusive

growth emphasises the need of channelling remittances towards vulnerable communities, mitigating poverty, and fostering social inclusion. In addition, remittances have the potential to stimulate entrepreneurship and promote local economic growth when allocated towards productive endeavours. This requires the presence of a conducive environment for small and medium-sized firms (SMEs), which includes access to finance and business support services (Akanle et al., 2022).

FDI can create jobs and foster the development of skills, which are essential for achieving inclusive economic growth (Ofori & Asongu, 2021). Policies should be designed to ensure that FDI leads to the creation of long-lasting job opportunities, especially for marginalised communities. The benefits of FDI also encompass the transfer of technology and the dissemination of knowledge, which need the implementation of policies that promote the absorption of technology and the development of local capacity.

Imports play a crucial role in ensuring that consumers have access to a wide range of goods and services, which ultimately enhances their overall well-being. Inclusive growth necessitates the implementation of trade policies and institutions that guarantee the equitable distribution of benefits from import liberalisation, with a particular focus on low-income groups (Kim et al., 2004). Imports can promote industrial advancement and the integration of supply chains, necessitating policies that bolster local businesses and enhance the competitiveness of home firms in global value chains. We review more empirical evidence in the next section.

2.2 Empirical framework
2.2.1   FDI and economic growth

Several studies have been conducted to establish the relationship between FDI and economic growth. To establish the casual relations between FDIs, economic theory, and financial development in Africa (Ibrahim & Acquah, 2021), used data from 1980 to 2016 across 45 developing nations. The study emphasised a noteworthy association between FDIs, financial sector development, and economic growth across the study period, highlighting the dependence of the FDI-economic growth relationship on determinants of economic expansion.

Another study used annual panel data from 45 African nations covering the years 1980–2016 to investigate the relationship between foreign direct investment, economic growth, and the development of the banking sector. The two-system generalised method of moments results show that foreign direct investment has a mixed impact on economic growth, even if larger FDI is generally linked to higher growth. Therefore, the model definition determines the exact impact of foreign direct investment on economic growth. It's interesting to note that the banking sector reduces FDI's beneficial impact on economic growth. This conclusion is true regardless of the financial sector and economic growth indicators; nonetheless, domestic credit has a greater dampening effect than private credit (Acquah & Ibrahim, 2020).

An analysis of the impact of foreign direct investment on economic growth was carried out in Nigeria. The real GDP growth rate was employed as a gauge of economic growth throughout the 1981–2022 study period. The model was estimated using the Autoregressive Distributed Lag methodology, which is based on the endogenous growth theory and the eclectic paradigm. Although statistically negligible over time, foreign direct investment, per capita income, currency rate, and gross fixed capital creation all had a favourable effect on Nigeria's economic growth (Eniekezimene et al., 2024).

A quantitative analysis was carried out in Ghana to determine the impact of imports, real exchange rate, remittances, and foreign direct investment on economic growth. The paper examined secondary data on gross capital creation, imports, remittances, real exchange rates, foreign direct investment, and gross domestic product from 1980 to 2018. Autoregressive Distributed Lag was used in the study's econometric analysis. The analysis discovered cointegrations between economic development and foreign direct investment, imports, remittances, real exchange rates, and gross capital formation. The key conclusions are that, from the standpoint of growth, real exchange rates, imports, and remittances are important. Long-term and short-term economic growth in Ghana is positively and significantly impacted by remittances (Mawutor et al., 2023).

A study by (Gutola & Milos, 2022) examined how foreign direct investment affected Kenya's economic expansion, with particular attention to exports, the balance of payments and the GDP. The research paper's central query was: How does foreign direct investment affect Kenya's economic growth? Descriptive research design was employed. Based on the data, foreign direct investment contributes positively to Kenya's economic growth.

2.2.2   Remittances and economic growth

We also review literature on the influence of remittances on economic growth, especially within the Africa region. A study including the six East African Community (EAC) nations of Kenya, Tanzania, South Sudan, Uganda, Burundi, and Rwanda was carried out to determine whether diaspora remittances have an impact on macroeconomic indicators in the region. The study found that remittances from the diaspora have a positive impact on GDP growth rate, a negative impact on inflation rate, a positive impact on exchange rate, and a negative impact on unemployment rate. Nonetheless, the study found that diaspora remittances do not statistically significantly affect the GDP growth rate, inflation rate, currency rate, or unemployment in the East African population at the 5% level of significance (Gatugi, 2021).

An investigation into the effects of overseas remittances on economic growth was carried out in Zimbabwe. Secondary data for the years 1960–2020 were gathered from the World Bank's World Development Indicators database to conduct an empirical analysis of the nature of the link between the two variables. The main conclusions show that, across the three years under consideration, there were both unidirectional and bidirectional causal relationships between overseas remittances and

economic growth. The gross domestic product of Zimbabwe was positively and significantly impacted by foreign remittances (Maune & Matanda, 2022).

Another study conducted in Kenya examined the short- and long-term impacts of diaspora remittances on economic growth while controlling for the independent variables of domestic savings and financial deepening. The study used time series data covering the years 1970–2017. During the research period, the Granger causality tests demonstrated a unidirectional causal relationship between remittances from the diaspora and Kenya's economic growth. This indicates that rather than economic growth driving an increase in diaspora remittances to Kenya, diaspora remittances accelerate economic growth in Kenya (Kipkoech, 2020).

To investigate the potential impact of the practice of sending financial income to households in the country of origin on the poverty status of the recipient household, a desk review and analysis of secondary data from 10% of the 2019 Kenya Population and Housing Census was conducted. The findings indicated that remittances to Kenya in the final three quarters of 2022 were USD 2,992,505,680 trillion, according to data from the Central Bank of Kenya. The census statistics show that household consumption accounted for most remittances (40.8%), while investments, health (20.5%), education (28%), and housing accounted for the least amount (13.4%). These demonstrate how recipient households' greater revenue from remittances lessened the strain on their household budgets and other expenses (Ochieng, 2021).

Using the autoregressive distributed lag and cointegration techniques, a study examining the relationship between remittances and economic growth in African emerging economies from 1990 to 2021 finds that remittances have a non-significantly negative impact on the rate of growth of the gross domestic product. Economic growth is adversely affected by both the inflation rate and domestic lending to the private sector. The report suggests that in order to reduce the number of people without access to banking services, governments should formalise remittance transfers more (Offor et al., 2024).

Using data from 2006 to 2021, (Mohammed, 2024) examined the relationship between remittances, economic growth, and corruption in Sub-Saharan Africa (SSA). A two-stage least squares (2SLS) estimator is used in the study. According to the study, remittances benefit and directly influence economic growth more in nations with low levels of corruption. It is advised that policymakers, especially in nations with high levels of corruption, adopt specific policies to enhance remittance utilisation effectiveness, transparency, accountability, and the rule of law.

2.2.3   Imports and economic growth

Lastly, we review the relation between imports and economic growth. The kind of imported commodities determines how imports affect a nation's economic growth. Importing goods like food or toys may limit their economic impact. On the other hand, there is a chance for beneficial economic impact when imported machinery and cutting-edge technology are introduced (Mawutor et al., 2023).

Aluko & Adeyeye (2020), examined the relationship between imports and economic expansion in 41 African nations. According to the study, there is (i) unidirectional causality between imports and economic growth in seven short-term and five long-term countries; (ii) unidirectional causality between economic growth and imports in four short-term and ten long-term countries; (iii) bidirectional causality in just one short-term and three long-term countries; and (iv) no causality in 29 short-term and 23 long-term countries. The results imply that the neutrality hypothesis is generally true over both the short and long terms. Our results suggest that policy makers should plan and consider potential shifts in the causation dynamics between imports and economic development over time.

Using the ARDL cointegration approach, a study was carried out in Namibia to investigate the effects of trade openness, imports, and exports on the country's economic growth. The findings indicate that imports and economic growth have a strong negative association, whereas exports and trade openness have positive and significant relationships with economic growth. Moreover, trade openness, imports, and exports are the main drivers of short-term economic growth (Sunde et al., 2023).

In Ghana a study was conducted from 1998 to 2018 to determine and measure the effects of imports and exports on the country's economic growth. Through the long-term equilibrium connection, the unit root and cointegration test, and the first-order difference cointegration variable stability. Ghana's GDP growth and imports into international commerce do not significantly correlate. Exports like cocoa significantly correlate with Ghana's GDP growth. GDP has no Granger causal relationship with the exchange rate or inflation rate. On the other hand, GDP is the greater causal cause of inflation and currency rates (Okyere & Jilu, 2020).

In Kenya, Wamalwa & Were (2021), uses time series data to investigate the connection between Kenya's exports, imports, and economic growth. The authors contend that Kenya's export growth has been sluggish despite efforts to liberalise trade and promote exports, with a primary concentration on basic agricultural items. According to the study, imports have a greater impact on output growth than total exports, which have no discernible effect. To promote export-led growth, the paper offers measures for Kenya to increase export competitiveness, value addition, diversification, and utilisation of regional and global value chains.

2.3 Summary of reviewed studies and research gap

Having reviewed several studies, we give a summary with a view to exposing the research gap and novelty of this study. Existing studies reveal contradictory findings regarding the impact of imports, FDIs, and remittances on economic growth. Some studies assert positive contributions, whereas others suggest potential impediments. The lack of consistent consensus across these studies highlights a research gap in understanding the precise nature and extent of the relationship between these factors. Secondly, many studies have focused on specific countries, such as Ghana, Zambia,

Zimbabwe, Kenya, other African countries, etc., and their unique economic contexts. The findings' generalizability to other regions or broader global contexts is uncertain. Therefore, there is a research gap in understanding how the relationships observed in these individual studies may vary across diverse economic environments and time periods. Lastly, there is a need to have updated insights as economic situations change over time. Countries also establish bi-lateral agreements that boost FD, remittances, and imports.

2.3.1 Conceptual framework

This study focuses on pivotal determinants of sustainable economic development, with the annual GDP growth rate as the dependent variable. Preceding GDP levels are posited to positively influence current economic growth. The conceptual framework is shown in

Figure 2 below. We give a summary and motivation for the variables.

a. Sustainable economic development refers to the pursuit of economic growth while ensuring the long-term well-being of current and future generations. It involves achieving economic prosperity, social equity, and environmental sustainability through balanced and inclusive growth strategies (Barrier, 2017).

b. Diaspora remittances are financial transfers sent by emigrant populations to their home countries. These remittances constitute an important source of external finance for many developing economies, contributing to household income, poverty reduction, and overall economic stability (Kipkoech, 2020).

c. FDI involves the investment of capital by multinational corporations (MNCs) or individuals from one country into businesses or projects located in another country. FDI inflows can play a crucial role in promoting sustainable economic development by fostering technology transfer, job creation, infrastructure development, and export diversification (Yimer, 2023).

d. Imports represent goods and services purchased by a country from foreign sources. While imports are often associated with consumption and investment needs, they also play a significant role in driving economic development and sustainability. Importation of capital goods, technology, and intermediate inputs can enhance productivity, innovation, and industrial competitiveness, thereby stimulating economic growth and facilitating sustainable development pathways (Aluko & Adeyeye, 2020).
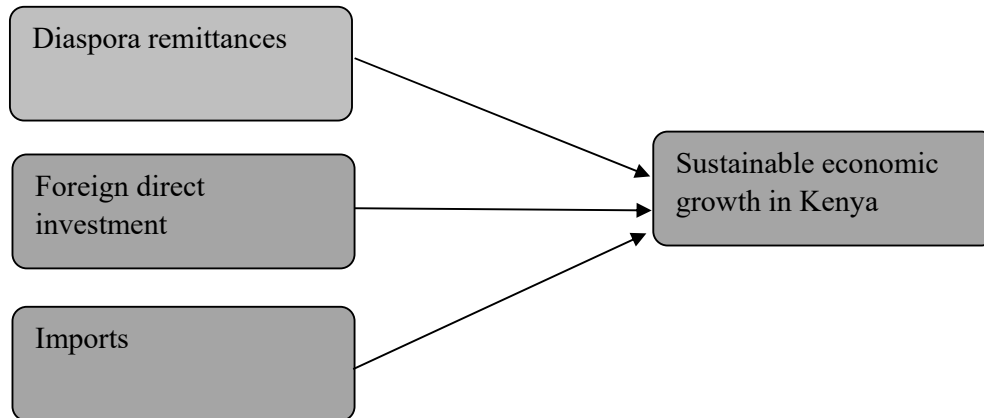
Figure 2: A Conceptual framework showing the variables in the model.

Source: Author (2024)

3. Data and methods

3.1 Data analysis and description of variables

Data on GDP, FDIs, remittances, and imports were extracted from WDI database, covering a span of 49 years from 1973 to 2021. The chosen timeframe aligns with the data availability for the selected variables. Data analysis was performed using R software. The ARDL model was employed to assess the impact of FDIs, remittances, and imports on Kenya's GDP. The model used for this examination is as follows:

$$GDP_t = \beta_0 + \beta_1 RMT_t + \beta_2 FDI_t + \beta_3 IMP_t \qquad (1)$$

where GDP is the gross domestic product, RMT is remittance, FDI is foreign direct investments, and IMP is imports. In Equation (1), real GDP represents the dependent variable. The FDIs is measured as the net inflow as a percentage of GDP. Remittances are measured as foreign remittances as a percentage of GDP and imports are measured as total goods and services imported as a percentage of GDP. This study employed the bound test approach developed by (Pesaran et al., 1999) and later extended by (Pesaran et al., 2001). The approach presented is notably simpler compared to other methods for multivariate co-integration. Through the utilization of the bound test, it becomes possible to confirm the co-integration relationship via Ordinary Least Squares (OLS) once the appropriate lag order of the model is determined. In this instance, it is essential for the dependent variable to be influenced by both the explanatory variables and the past values of the independent variable. The analysis employs secondary annual time-series data, and the model incorporates the lag of the dependent variable within its structure. The ARDL model is expressed as follows in Equation (2):

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$$LNY_t = \alpha + \sum_{j=1}^{k} \Delta\varphi LNY_{t-j} + \sum_{j=1}^{p} \beta' LNX'_{t-j} + \pi_{jt}, \tag{2}$$

where α is the intercept, π_{0jt} is the error term, X'_t is a vector of the independent variables which can either be $I(1), I(0)$, Y'_t is the vector of dependent variables, φ, β are coefficients, K is the optimal lags used for the dependent variable, p is the optimal lags for the independent variables. (Pesaran et al., 2001) used an ARDL model to estimate an Error-Correction Model (ECM). The ARDL model for both the long run and the short run is estimated as in Equation (3):

$$\Delta GDP_t = \beta_0 + \beta_1 GDP_{t-1} + \sum_{j=0}^{k1} \beta_{2,j} FDI_{t-j} + \sum_{j=0}^{k2} \beta_{3,j} IMP_{t-j} + \pi_t, \tag{3}$$

where β_0 represents the constant; Δ is the difference operator, $\beta_1 - \beta_3$ are coefficients to be estimated, $k_1 - k_3$ are optimal lags for the independent variables; π_t is the vector of the error term; GDP_t is economic growth; FDI_t is foreign direct investment; RMT_t is remittances; and IMP_t is imports.

4. Results

4.1 Descriptive analysis

This section presents the outcomes and a discussion derived from the analysis and begins by examining the descriptive statistics. Figure 3, below illustrates the fluctuations in Kenya's GDP, international remittances, imports, and FDIs from 1973 to 2021. Kenya's GDP exhibited a consistent upward trajectory. In 1973, it was 2.51 billion USD, surging to 110.35 billion USD by 2021. Notably, GDP for 2021 increased by 9.62% compared to 2020. Specifically, Kenya's GDP was 110.35 billion USD in 2021, marking a 0.29% rise from 2020 when it was 100.67 billion USD. Furthermore, GDP for 2019 had a value of 100.38 billion USD, signifying an 8.87% increase from 2018. In 2018, Kenya's GDP reached 92.20 billion USD, reflecting 12.39% increase from 2017. Imports, international remittances, and FDIs exhibited stability over time, with a minor decline in imports observed between 2010 and 2021. This decrease was attributed to government initiatives aimed at promoting the production of locally manufactured goods.
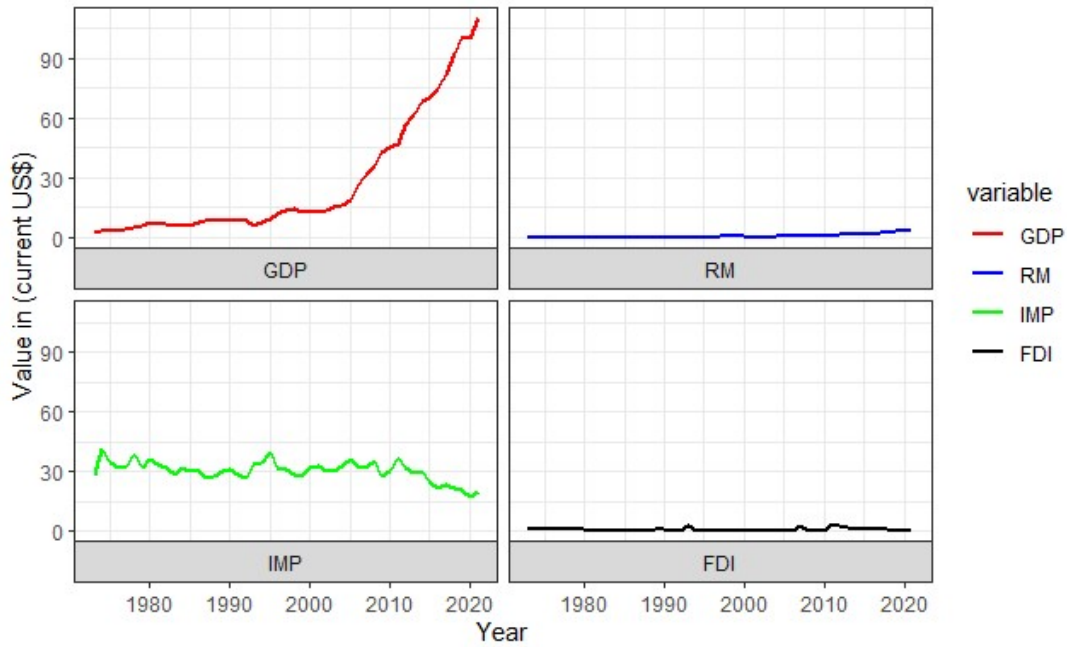
Figure 3: Gross Domestic Product, Remittances, Imports, and Foreign Direct Investment for Kenya: 1973-2021.

Source: Author (2024)

4.2 Correlation analysis

Figure 4 below show the spread of each variable on the diagonal. In the lower diagonal, bivariate scatter plots depict the fitted lines. Positioned at the top of the diagonal are the correlation values along with their corresponding significance levels indicated by stars. Each level of significance was represented by specific $p-values$ $(0, 0.001, 0.01, 0.05, 0.1, 1.0)$. The results revealed a strong positive correlation between GDP and RM of 0.9694, with a significant $p-value < 0.05$. A strong negative correlation between GDP and IMP (-0.6863) and significant p-value of less than 0.000. However, the correlation between GDP and FDIs was low, $(0.1994,$ and not significant $p-value = 0.1695)$. From these findings, a statistically significant relationship exists between GDP and remittances.
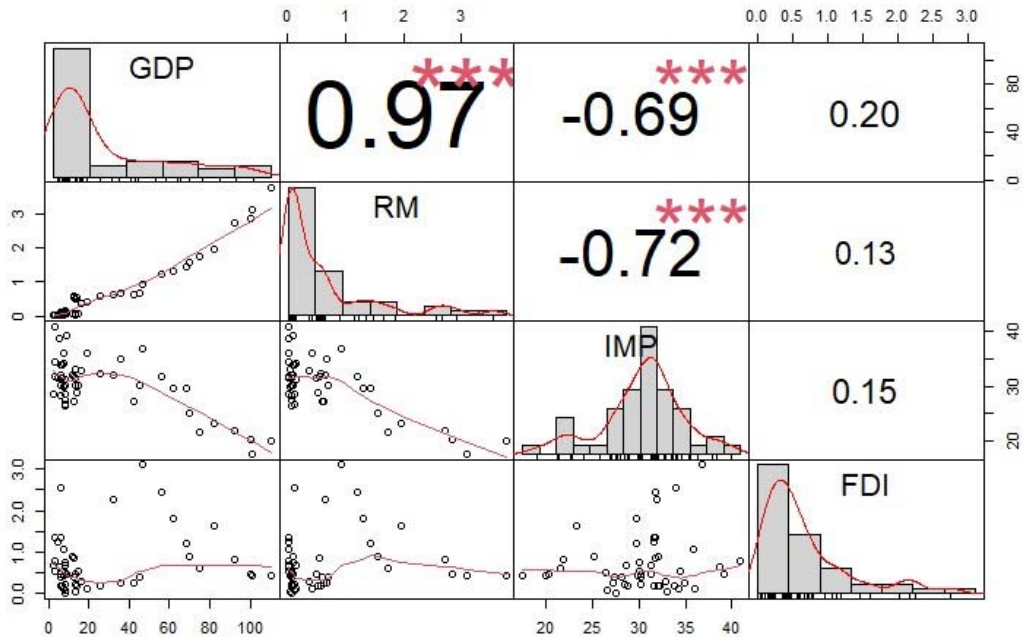
Figure 4: Correlation between GDP and Remittances, Imports and FDI.

Source: Author (2024)

4.3 Diagnostic tests

4.3.1 The Autocorrelation tests.

The autocorrelation test (Durbin-Watson test) was used to assess the presence of autocorrelation within a regression model. In this case, the Durbin–Watson statistic was $DW = 0.65491$ and $p-value = 0.0000$ and since was $DW < 1$ and the $p.value < 0.05$, the null hypothesis of no correlation was rejected and concluded the presence of auto-correlated residuals. This was also confirmed by the Breusch-Godfrey test for serial correlation, where the value $LM\ test = 26.0530, df = 3, p-value = 0.0000$. To overcome this problem, lags were added to the dependent and independent variables as illustrated in Figure 5 below. The figure shows that stationarity is achieved after differencing.
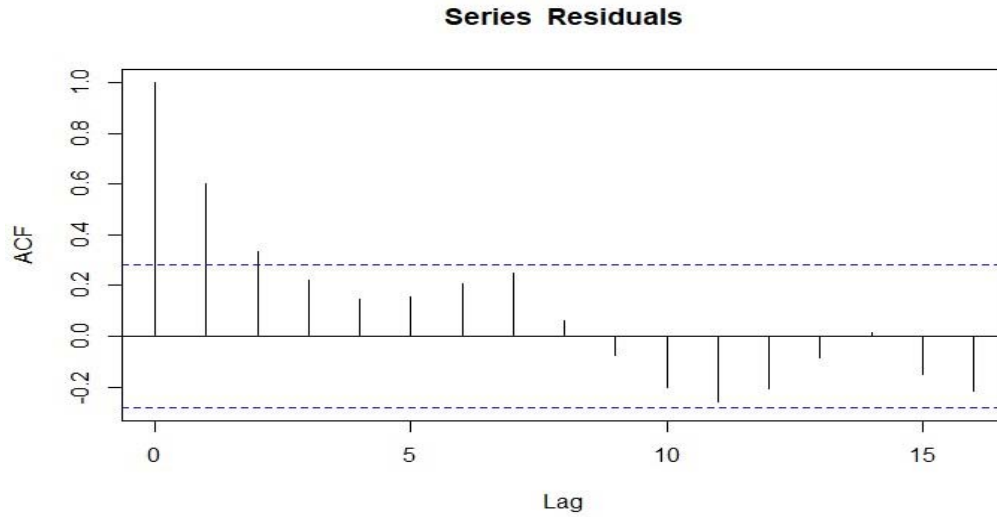
Series Residuals

Figure 5: Autocorrelation plot showing stationarity after differencing.

Source: Author (2024)

4.3.2   Heteroscedasticity

To test for heteroscedasticity the Goldfeld-Quandt test was primarily used to identify heteroscedasticity in a linear regression model. This test involved dividing the data into two distinct groups based on a predetermined criterion, and then examining the variances of the residuals within each group to determine if they differed significantly. Figure 6 below shows residual plots of least squares residuals and the explanatory variables. There is no evident pattern in the plot, therefore, heteroscedasticity was not present. The studentized Breusch-Pagan test yielded, 9.5128, degrees of freedom $= 3$, $p - value = 0.0232 < 0.05$, and thus, the null hypothesis was rejected and concluded that there was no heteroskedasticity.
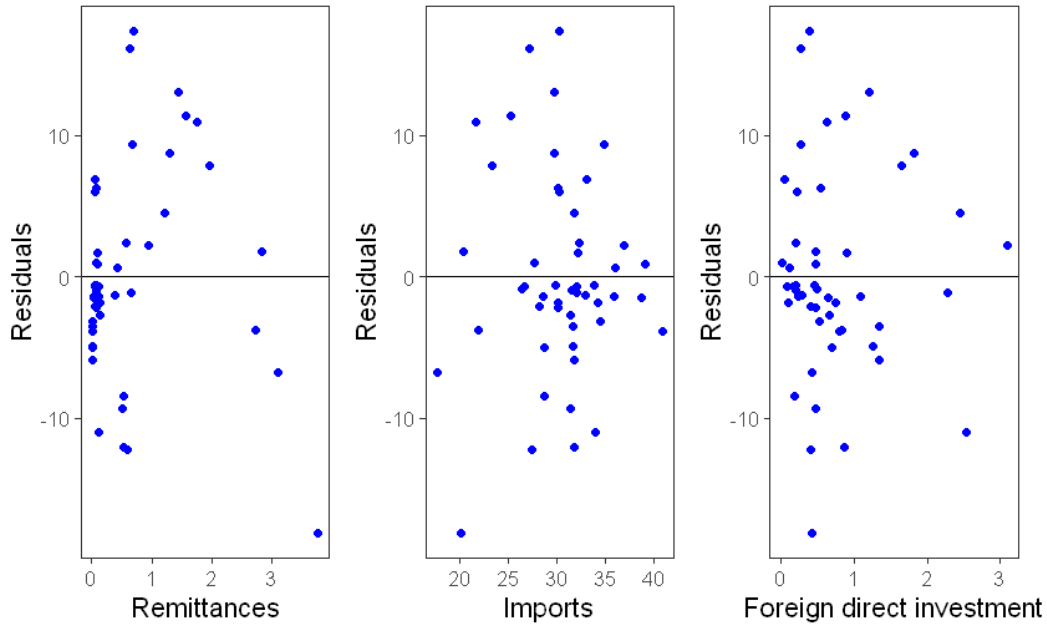
Figure 6: Residual plots against covariates: remittance, imports and FDI.

Source: Author (2024)

4.3.3   Normality test

In this study, graphical and statistical tests were used to test for normality. First, the quantile-quantile plots showed the correlation between a given sample and the normal distribution (Figure 7). A 45-degree reference line was also plotted and as expected, these variables were not normally distributed. This visual inspection is usually unreliable and, therefore, the Shapiro-Wilk test was used. From Table 1, below, all p-values are less than 0.05, implying a deviation from the normal distribution. Exception is seen for the imports with a p-value of 0.1512 suggesting normality.

Table 1: Shapiro-Wilk Normality results for GDP, remittances, FDI, and imports

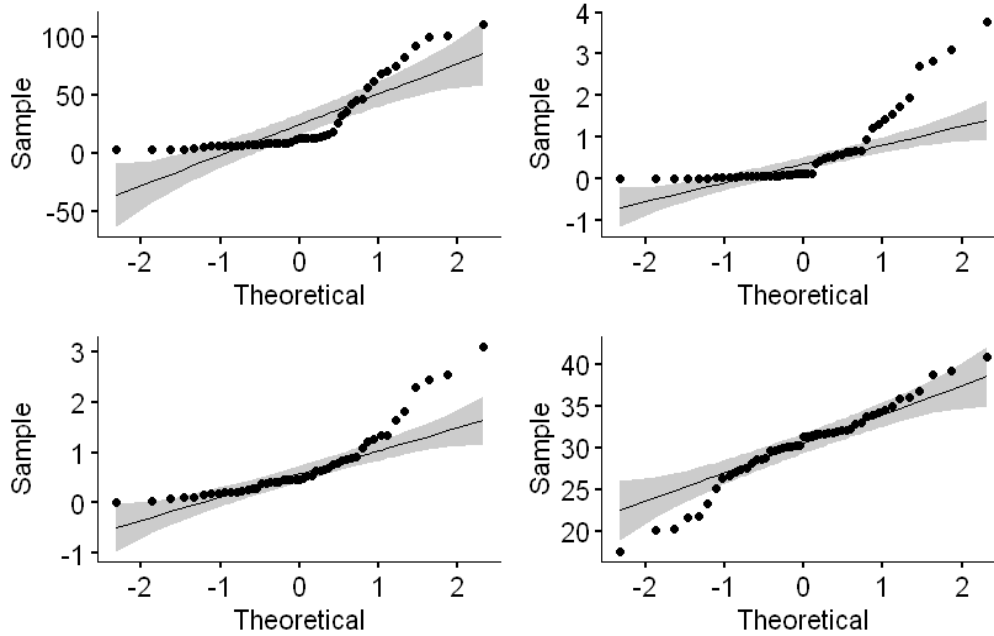| Variable	W	p-value
Gross domestic product	0.74408	0.00000
Remittances	0.69949	0.00000
Foreign direct investments	0.81010	0.00000
Imports	0.96494	0.15120

Source: Author (2024)

Figure 7: Quantile-Quantile plots for GDP against remittances, and imports.

Source: Author (2024)

4.3.4   Unit root test

The presence of a unit root problem in the variables was assessed using Augmented Dickey-Fuller (ADF) and PP tests. While the ARDL model does not necessarily require pre-testing for non-stationarity, it is advisable to conduct tests to ensure that none of the variables are integrated in order two (I(2)). The results of ADF and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) tests are shown in Table 2 and Source: Author (2024)

Table 3 below, respectively. These results indicated that both ADF and KPSS tests were applied with intercept and trend, as well as with the intercept only. The findings demonstrate that based on the two tests, all examined variables exhibited a unit root problem at their initial levels. However, after considering the first difference, the remaining variables became stationary. This suggested that the variables were integrated in different orders, specifically I(0) and I(1), which is a prerequisite for the co-integration test.

Table 2: Values for the Augmented Dickey-Fuller test

Variable	Dickey-Fuller value	Lag order	p-value
Gross domestic product	2.2187	0	0.9900
Remittances	2.5048	0	0.9900
Foreign direct investments	-5.4230	0	0.0100
Imports	-3.8700	0	0.0226

Source: Author (2024)

Table 3: Values for the Kwiatkowski-Phillips-Schmidt-Shin test

Variable	KPSS level	Lag order	p-value
Gross domestic product	0.0990	1	0.1000
Remittances	0.0454	1	0.1000
Foreign direct investments	0.0924	1	0.1000
Imports	0.1550	1	0.0428

Source: Author (2024)

4.4 Estimation results

In ARDL model that incorporates a distributed lag structure, the estimated coefficients depict the connections between the dependent variable and previous values of both the dependent and independent variables. The ARDL model, incorporating a distributed lag, enables the analysis of both immediate and enduring associations among the variables. The estimated coefficients of ARDL model are contingent upon the inclusion of lagged terms in the model and the datasets employed for the estimation. Table 4 below shows results of estimated coefficients.

Table 4: Estimated coefficients for Autoregressive Distributed Lag model for short-term effects

	Estimate	Std. Error	t-value	Pr (>|t|)
(Intercept)	0.40912	0.42676	0.95900	0.34308
Gross domestic product	0.05910	0.01444	4.09200	0.00018
Remittances	4.05116	2.21083	1.83200	0.07382
Imports	-0.08223	0.07939	-1.03600	0.30610
Foreign direct investments	-0.33489	0.36757	-0.91100	0.36733
R-squared	0.55770			
Adjusted R-squared	0.51660			
Prob (F-statistic)	0.00000			

From Table 4 above, the results of estimated coefficients for ARDL model with distributed lag model for short term effects shows that in the short term, both FDIs and imports have a negative impact on economic growth, however not significnatly at 5% level. As Kenya attracts FDIs from various countries, there is a possibility that international firms may withdraw their investments from the country. Consequently, the adverse effect of FDIs on economic growth in Kenya can be attributed to an excessive outflow of FDIs relative to net inflow. Factors such as corruption, deficient human capital, inflated business costs, and inadequate infrastructure may also significantly contribute to the negative relationship between FDIs and economic growth. Similar results are reported in Tunisia by (Aloui, 2019). Similarly, the detrimental effect of imports on economic growth can be attributed to the excessive import of consumable goods that could have been domestically produced, resulting in an unfavorable balance of payments. This is also seen in Ghana by (Mawutor et al., 2023). On the contrary, from the table, the lagged GDP and remittances depict a positive non-significant influence on economic growth in the short term.

Table 5, below provides long-term estimations of various variables. All the variables have a positive impact on GDP. However, only lagged GDP and remittances are significant. The findings indicate that a 1% increase in remittances leads, on average, to a 0.17% increase in economic growth holding other factors constant, whereas a 1% increase in imports results, on average, in a 0.21% increase in economic growth ceteris paribus. In addition, the results indicate that a 1% increase in FDIs leads, on average, to a 0.58% increase in economic growth all else being equal. These findings align with previous research in this field (Azam & Feng, 2022; Jiang et al., 2022).

Table 5: Estimated coefficients for Autoregressive Distributed Lag model for long-term effects

	Estimate	Std. Error	t-value	Pr(>|t|)
(Intercept)	-7.02907	3.06269	-2.29500	0.02670
Gross domestic product	0.09172	0.04612	1.98800	0.05320
Remittances	0.16991	1.71517	0.09900	0.92150
Imports	0.21015	0.09583	2.19300	0.03380
Foreign direct investments	0.57957	0.48471	1.19600	0.23840
R squared	0.59930			
Adjusted R squared	0.56200			
Prob(F-statistic)	0.00000			

Source: Author (2024)

5. Discussion, conclusion and recomendations

The research has investigated the influence of FDIs, remittances, and imports on Kenya's economic growth by employing an ARDL model. We conducted a comprehensive analysis of secondary annual time-series data spanning 1973 to 2021. While previous research has explored this relationship, the findings are usually contradictory and context specific. Updated information is needed for evidence-based policymaking. In the short term, we found a non-significant negative impact of both FDI and imports on economic growth, contrasting with the positive influence of diaspora remittances. However, in the long term, all three variables emerge as significant determinants of economic growth.

Our study show that in the long term, FDI, imports, and remittances emerge as significant determinants of economic growth. This agrees with previous investigations. For example (Gatugi, 2021), found that remittances from the diaspora have a positive impact on GDP growth rate, a negative impact on inflation rate, a positive impact on exchange rate, and a negative impact on unemployment rate. Nonetheless, the study found that diaspora remittances do not statistically significantly affect GDP growth rate, inflation rate, exchange rate, or unemployment in the East and Central Asia region at the 5% significance level. Same results are seen on the study by (Kipkoech, 2020). In the study, diaspora remittances foster economic growth in Kenya for the period under study (1970-2017). This means that diaspora remittances accelerate economic growth in Kenya and that economic growth does not lead to increase in diaspora remittances in Kenya (Misati et al., 2019) illustrate a robust and favourable correlation between remittances and financial progress in equations that consider long-term effects. These findings indicate that increased levels of remittances offer recipients the chance to establish bank accounts, increase their savings, and get access to financial systems. Additionally, it allows those who previously did not have bank accounts to become familiar with new and existing financial products. The results further validate the potential benefit of adopting contemporary and sophisticated technologies to streamline international mobile transfers. Recently, (Mose & Kipchirchir, 2024), indicate that the short-run and long-run foreign direct investment kindles economic growth in Kenya.

Although the study seeks to offer helpful insights on the correlation between the variables, it is important for readers to consider certain limits and constraints. There may be variations in the availability and reliability of data on diaspora remittances, FDI inflows, imports, and economic indicators, resulting in potential limits, biases, or gaps in the analysis. The study's findings may be influenced by other factors such as global economic trends, political stability, COVID-19, regulatory changes, and natural calamities. It is important to take these aspects into account when evaluating the

results. Our study demonstrates that it has mainly concentrated on GDP as a measure of economic growth. Future studies may explore other measures of sustainable growth, such as the human development index, employment rates, and well-being indicators. Also, other explanatory variables, such as exports and technology, could be included in the econometrics model. Based on the findings, the following are policy recommendations:

1. FDI promotion: Put policies in place to draw in and keep foreign capital by facilitating corporate transactions, offering financial incentives, and guaranteeing regulatory stability.
2. Improving import management: Develop plans to strike a balance between domestic production and import dependency to reduce short-term negative effects on economic growth. Invest in homegrown sectors to boost competitiveness and reduce dependence on imports for necessities.
3. Making the most of remittances from the diaspora: Create routes to let remittances flow into profitable ventures, such as entrepreneurship development initiatives and investments in important industries like manufacturing, technology, and agriculture.
4. Observing and responding to external elements: Establish systems for monitoring and evaluating international economic trends, political stability, regulatory changes, and other external factors that may have an impact on Kenya's economic performance.

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