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Effect of Foreign Direct Investment on Employment and Welfare in Kenya

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Abstract:
The principal external source of finance for emerging nations is foreign direct investment. Due to supportive policies throughout the last 10 years, Kenya has managed to attract a notable significant amount of foreign direct investment. Foreign direct investment is felt directly or indirectly, which includes technology transfer, spillovers, employment and training of labourers. Ultimately, the study aims to examine the effect of foreign direct investment on employment and whether it translates to improvement of welfare in Kenya. Specific objectives include:

- *To examine the effect of foreign direct investment on employment in Kenya,*
- *To determine the effect of foreign direct investment on welfare in Kenya.*

Welfare was approached from two perspectives, which included the human development index and the Gini index. Secondary annual time series data was used between 1990 and 2020. The study used an autoregressive regression model estimation technique.
Conclusions:

- *First, the human development index is a better measurement of welfare compared to the Gini index.*
- *Second, there exists a negative relationship between foreign direct investment and human development index in the short run.*
- *Third, foreign direct investment plays a major role in employment creation and improvement of welfare long- and short-term in an economy.*

Recommendations are for Kenya Investment Authority to make the investing environment friendly to foreign investors, to reduce the cost of investment licenses and setting up companies and for the government of Kenya to maintain a stable political environment.

Keywords: Foreign Direct Investment (FDI), Gini Index, Human Development Index (HDI), employment, welfare

1. Introduction

1.1. Background

Policies that ultimately lead to sustainable growth and development that is driven by a robust industry, productive workforce, technology and innovation are the main objective goals in an economy. Achievement of these goals leads to direct or indirect improvement of welfare, which is the ultimate goal of any economy. Developing countries, which are characterized as infant industries, lack investment and infrastructures, unskilled labour force, and reliance on traditional methods of production are major impediments to technological progress, and sustainable economic growth, which leads to development in an economy. To address these impediments and bridge the gap, fostering innovation and driving the economy towards sustainable growth through foreign direct investment (FDI) is the strategic method (Kotey, 2019).

FDI not only offers developing countries with much-needed investment but also plays a strategic role in the achievement of major macroeconomic goals such as improvement of employment, advancement of industrial productivity and infrastructures, and increase in labour productivity, which leads to an increase in real wages (Abouelfarag & Abed, 2018).

FDI is one of the most strategic vehicles for the achievement of improvement in employment in an economy. The host economy experiences several benefits from FDI, which can be categorized into two:

- First, the injection of capital, which is needed in strategic sectors, therefore promoting industry growth.
- Second, the transfer of benefits from FDI helps minimize the technological gap between foreign companies in developed countries and domestic companies in developing countries.

The FDI has two major effects on an economy: direct effect or indirect effect. The indirect effect includes a contribution to economic growth, tax income, investment of infrastructures, technology transfer and spillovers and labour

turnover. This notwithstanding, there is an argument that purports that FDI has no effect on improving material welfare. Some studies also show that FDI has a major role in improving employment, but on the other hand, the way investment is made can also decrease the employment rate in case of mergers and acquisitions, leading to host laborers being laid off in favour of hiring foreigners leading to a decrease in welfare in the host economy.

1.1.1. Economic Growth in Kenya

The Kenyan economy has undergone several economic growth cycles. From 1960s to 1990s, the highest growth rate to be recorded in Kenya was 22 percent in 1971. These sharp upward spikes could be due to the fact that Kenya is now experiencing its potential, where resources are being invested back into the home country and not the colonial country. The average growth rate during this period was 5.6 percent (Ojiambo & Ocharo, 2016).

From the 1990s to 2008, the economy was able to bounce back after the 2002 election, when Kenya switched political regimes from a single party to a multi-party between 2003 and 2007. From 2010 to 2019, the growth rate was 5.8 percent. This could be the result of the Vision 2030 blueprint agenda, where the main goal was to attain a growth rate of 10 percent annually due to improving all sectors in the economy and sustaining the same until 2030. Gross domestic product from Kenya Bureau of Statistics (KNBS) reports increased by approximately 5.4 percent during the period of 2019 and 6.3 percent in 2018 (KNBS, 2020a).

1.1.2. Trends of Foreign Direct Investment and Employment in Kenya

Foreign direct investment in Kenya had a stagnant, steady increase and decrease from 1990 to 2006. During the 1990s, FDI decreased to a low of USD 6.3 million in the year 1992 and later increased to a high of USD 145 million in the year 1993 (World Bank, 2020). Between the years of 2007 and 2019, the highest amount to be recorded was USD 1.6 billion in 2018. As a result of new exploration for oil resources in Turkana and Titanium mining in Kwale, an increase in FDI has been witnessed (Ojiambo & Ocharo, 2016).

Formal sector employment has been steady and stagnant, increasing slowly from 1990 to 2020, with the highest being 3.09 million in 2019 and the lowest being 1.41 million in 1995, while informal sector employment has been increasing rapidly, with the highest being recorded at 15.05 million in 2019 while the lowest being 0.93 million in 1990 (KNBS, 2020b). Total employment has been increasing steadily from 1990 to 2020, with the highest being 18.14 million in 2019 while the lowest being 2.39 million in 1990 (KNBS, 2020b). The leading sources of employment include the following sectors of the economy: manufacturing, agriculture, forestry and fishing (KNBS, 2020a).

1.1.3. Welfare in Kenya

Welfare in Kenya will be approached from two sides, that is, Gini index, which will capture the distribution of income, while HDI will deal with other aspects when it comes to welfare. Inequality is perceived as unequal access to basic social amenities. The HDI is used to measure the progress of human development, which includes three indicators: life expectancy, education and per capita income. The HDI and Gini index ranges between 0 and 1, where a low HDI indicates a low level of welfare while a low Gini index indicates low inequality. Figure 1 shows welfare trends in percentage growth depicted by HDI and the Gini index from 1990 to 2020.
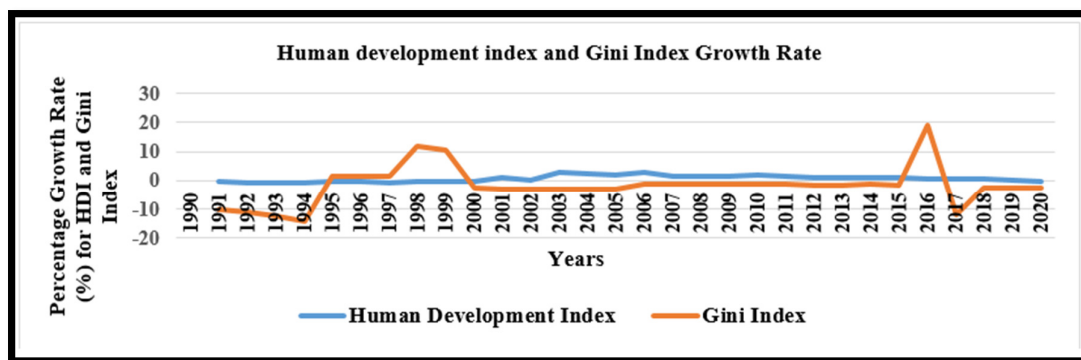

Figure 1: Human Development and Gini Index Growth Rate in Kenya (1990-2020)
Source of Data: Author's Computation

The human development index has been stagnant during the 1990s, but steadily, it has an increase in growth rate from 2000 to 2006, with a high of 3 percent in 2006 during this period. From 2006 to 2020, HDI has been slowly decreasing, indicating a decrease in welfare, with the lowest being recorded at negative 0.16 percent in 2020. On the other hand, the Gini index has been increasing rapidly during the period of 1990s with a high Gini rate of growth of approximately 11.77 percent during the period of 1998, indicating that high-income inequality was experienced during this period. From 2000 to 2020, the Gini index growth rate was negative except for 2016, where a spike was observed with a high rate of 18.87 percent, then rapidly dropped the following year in 2017 with a negative rate of 11.95 percent.

1.2. Statement of the Problem

Foreign direct investment is a strategic vehicle for the achievement of employment creation to the extent that it not only brings much-needed investment but also bridges the technological gap between developed economies and developing economies through spillover effects from developed economies to developing economies. The effect of FDI improves an economy's welfare, creating employment directly and may contribute to industry development directly or indirectly through the transfer of knowledge and skills, among others (Hoa & Thi, 2002).

Kenya's attraction to FDI has been increasing in the past 10 years. However, declines have been observed during periods of political uncertainties and challenges in overall political and macroeconomic management. As FDI increment is witnessed, improvement in employment and welfare does not reflect the same increase as witnessed by FDI growth rate trend. During the 1990s, in the year 1993, FDI growth rate grew by 21.89 percent, the employment growth rate grew by 0.0502 percent while welfare, represented by HDI and Gini index, decreased by 0.8403 percent and 12.5217 percent, respectively. During the 2000s, in the year 2007, FDI growth rate grew by 13.38 percent, the employment growth rate increased by 5.39 percent, while welfare, represented by HDI and Gini index, increased by 1.55 percent and decreased by negative 1.08 percent, respectively.

The ultimate macroeconomic goals should aim at the improvement of the population's welfare. FDI is a source of revenue for an economy, which helps in economic growth and may improve industrial productivity. However, if FDI's effect on Kenya's economic growth does not result in a rise in employment and welfare, then social and economic development cannot be achieved. In this light, the principal argument of the study is investigating whether FDI through the creation of employment actually impacts welfare improvement. To focus on this, the study is going to adopt the Gini index, which focuses on income distribution as an aspect of welfare and HDI, which measures other aspects of welfare such as health, education and per capita income.

1.3. Research Questions

The study will be guided by the following questions:
- What is the effect of foreign direct investment on employment in Kenya?
- What is the effect of foreign direct investment on welfare in Kenya?

1.4. Objective of the Study

The general objective of the study is to investigate the effect of foreign direct investment on employment and welfare in Kenya.

The specific objectives are:
- To examine the effect of foreign direct investment on employment in Kenya.
- To determine the effect of foreign direct investment on welfare in Kenya.

1.5. Significance of the Study

Policymakers, local investors, foreign investors and governments will find the study beneficial because it aims to demonstrate the effect of FDI on employment and welfare in Kenya.

1.6. Scope of the Study

The study is how FDI has an effect on both employment and welfare in Kenya. Secondary data is collected from 1990 to 2020 annually based on time series. Data are gathered from various databases.

2. Literature Review

2.1. Introduction

A review of the theoretical and empirical literature on similar studies is presented in this section.

2.2. Theoretical Literature

2.2.1. Keynesian Theory

In the 1930s, one Keynesian Economist, John Keynes, devised the Keynesian theory. As per this theory, it is the government's responsibility to provide economic stability, public goods and equality (Davis & Sanchez-Martinez, 2015). The Keynesian economist believed that increasing the income growth in the society is the most effective way to combat poverty.

Lack of employment is seen as involuntary and the major cause of poverty. Lack of employment, poor education, poor health and longevity are viewed as the main barriers preventing the population from being able to take care of themselves and therefore, government intervention is needed to protect its citizens from such social risks through fiscal policies (Leander, 2014). They believed that there is a relationship between employment and inflation and that the government should manipulate fiscal policy to ensure a balance between the two. Keynesian economists also believed that citizens have the right to be protected by the government from labour market insecurities. The Keynesian approach has been critiqued for ignoring the long-term perspective in favour of focusing primarily on the short-term perspective in an economy.

2.2.2. The Harrod-Domar Growth Model

The classical model was built and based on the Keynesian saving-investment framework developed by Harrod in 1939 and Domar in 1946. According to this theory, capital accumulation increases the output of an economy. In an economy, savings depend on income, which can be shown by equation (2.1):

$$S = sY \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.1)$$

Where:
Y denotes the national income level,
S denotes the amount of savings and
s denotes marginal propensity (MPS) to save.

In an economy, as the level of investment rises, it increases the amount of capital stock; hence, to an extent, it has an effect on capital productivity and efficiency of investment. The ratio of capital to output can be presented in equation (2.2):

$$r = \frac{K}{Y} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.2)$$

Where:
K denotes the capital stock,
Y denotes output and
r denotes capital-output ratio.
Capital stock in an economy is raised through investment, as shown in equation (2.3):

$$I = \Delta K = r\Delta Y \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.3)$$

Savings and investment are equal at equilibrium so that:
$I = S$ and $r\Delta Y = S$

$$r\Delta Y = sY \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.4)$$

From equation 2.4, we can see that at equilibrium, the economic growth rate is shown by equation   (2.5):

$$\frac{\Delta Y}{Y} = \frac{s}{r} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2.5)$$

When all factors are held constant, the capital-output ratio, MPS and the capital stock are determined by the growth rate output. In order to realize the increase in economic growth, savings must increase, which, in turn, increases capital stock and leads to a rise in production; hence, an economy will have a low growth rate if MPS is low (Opondo, 2020) This theory has been critiqued since they believed developing countries find it difficult to increase savings which is not true.

2.2.3. Neoclassical Theory

Solow and Swan, in 1956, came up with the neoclassical model of growth. This model depicts long-term economic growth within the contexts of neoclassical economics. The theory involves three components: labour input, capital input, and technology input show changes in inputs, which, in turn, affect output in a production function. The combination of the three factors is all combined to determine output. Therefore, by adjusting the inputs of a production function, an equilibrium state can be utilized to decide economic growth.

They believed that increasing productivity output can only be accomplished through development and technological advancement. According to this theory, long-run economic growth comes about from both labour input and technology input determined exogenously. FDI is beneficial and valuable to the beneficiary countries because it introduces new capital into the economy, thereby widening production output (Masoud Asst, 2013).

The neoclassicals also viewed and recognized that poverty is beyond individuals' control. It involved barriers such as lack of education, poor health, and lack of employment, among others. They also believed that the main advantage is to measure poverty in terms of quantifiable monetary units where policy can be put into practice. The Neo-classical growth theory has been critiqued since it has unrealistic assumptions, such as full employment in the economy and no vital role of government interference. The theory suffers drawbacks since it is concerned with their own developed economies and has little relevance for under-developed economies.

2.2.4. Theory of Endogenous Growth

FDI affects production growth output in both the short and long-term under this theory. Several authors (Arrow, 1962; Romer, 1986, 1987; Lucas, 1988) made it feasible to model FDI to show the linkage it has in the long run through the acquirement of permanent knowledge. The primary driver of economic growth in this theory is technological advancement and inventions. Romer assumes that the development of technology increases endogenously; therefore, the long-run effects of FDI will end up increasing not only capital but also increase labour. The theory assumes that technology is an endogenous factor.

Three main channels can be detected in the endogenous growth theory:
- First, capital accumulation increases in the host country where new inputs and technologies are introduced.
- Second, through labour and managerial training, the level of knowledge and skills are increased in the host country.
- Third, competition is increased in the host country since entry barriers and market power are reduced.

The output of an economy is dependent on capital, human capital, labour and finally, technology under the model of endogenous growth, as shown by equation (2.6):

$$Y = (K, L, A, H) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2.6$$

In this theory, the population is considered to be increasing at a constant rate and technology leads to the advancement of an economy. Comparing the Solow model and the Romer model, the difference is visible since the Romer model considers other factors, such as population growth.

$$gA = \frac{n}{1 - \theta'} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots 2.7$$

In equation 2.7, g_A denotes technology growth and θ denotes the productivity output of a single researcher. Given that $g_y = g_A$ means growth in technology is a reflection of economic growth. A higher populace in this model means a higher technological progress; hence, it corresponds to an economy experiencing rapid long-term economic expansion (Pathak, 2015). Nonetheless, this theory fails to elaborate on the various disparities that are seen in economic growth among countries by only considering knowledge accumulation.

2.2.5. Global Social Theory/Capability Theory

Amartya Sen made major contributions to the study of political economy, inequality, poverty, famines and welfare. Sen was concerned with the fact that even if technological innovation and labour productivity improved, workers were expected to endure no improvement in their standard of living. Amartya Sen (1970) addressed several issues, which include individual rights, justice, equality and majority rule. Sen suggested that employment and the booming urban economy only benefit urban workers since rural workers fail to keep pace with the rising prices, which play an essential role in welfare. Amartya Sen (1992, 1999) also argued that to address equality, one must understand and consider the basic diversity of human beings. Failure to do so would lead to an inability to understand what drives these inequalities endured by traditional, new and systematically disadvantaged groups. Sen further went beyond to emphasize the need to move away from metrics like income per-capita to new metrics to measure welfare. This theory has been critiqued since it focuses mostly on equality, but it fails to answer how much inequality is unjust.

2.3. Empirical Literature

Groot (2014) conducted a study that focused on FDI and Welfare in Economic Commission for Caribbean and Latin America. Annual panel data from 1970 to 2009 were used in this study. Multiple regression was done where dependent variables were GDP growth, household growth, Gini coefficient and HDI. Several estimation techniques were used, which included the Generalized Method of Moments and Fixed Effects. The findings revealed no significant association between FDI and the following variables: GDP and consumption. However, results revealed a positive association between FDI and inequality. The channel to this negative effect is not clear. The study suggests that this is potentially the result of policy choices made by governments.

Kimile (2018) conducted a study that focused on FDI effect on employment in the public sector in Kenya. A sample of macroeconomic data ranging from 1985 to 2014 was used. A purposive sampling technique was used. The study had public employment as the dependent variable and plant-level control, political instability and FDI variables as independent. The estimation technique involved both Johansen Juselius and Engle-Granger. The findings between FDI and public employment are that the relationship is positively significant. This study, however, failed to shed light on the relationship between employment and welfare since it only looked at public-sector employment.

Ojiambo & Ocharo (2016) researched FDI inflows and economic growth in Kenya. The collection of data was a time series on an annual basis covering from the period of 1970 to 20124. Estimation technique used was the ARDL and Granger Causality. The findings were that the following variables have unidirectional causality: FDI and macroeconomic policy environment, foreign aid and labor and finally, FDI and economic growth. The first finding was that when the macroeconomic policy was put into consideration, it revealed a positive association between the growth of the economy and foreign aid. The second finding was that in the short run, there exists a negative association between remittance and the growth of the economy and a positive association between the growth of the economy after a period of one year. The third finding revealed a negative association between FDI and the growth of the economy. The study, nonetheless, failed to shed light on variables such as employment and welfare.

Addo (2019) conducted a study that focused on FDI impact on employment in Ghana. The collection of data was a time series on an annual basis covering the period of 2000 to 2016, employing OLS as well as ARDL estimation technique. The dependent variable was employment, while wage, FDI, subsectors, investment freedom and GDP were the outcome variables. The estimation technique used both ARDL and OLS. When OLS estimation technique was used, FDI, wage and investment freedom revealed a positive association with employment. Subsector exhibited a negative association with employment when OLS model was used. When ARDL estimation technique was used, it revealed that in the long run, there was a negative association between investment and FDI on employment, whereas in the short run, only subsector had a negative association on employment. This study, however, failed to look at other variables, such as welfare, to show whether there is improvement of the populous standard of living.

Hossain et al. (2019) did a study on FDI's impact on welfare in developing countries. Welfare was chosen as the response variable and the following variables: country risk, FDI bureaucracy, openness, infrastructure inflation, debt, governance and agglomeration as the outcome variables. HDI variable was used to measure welfare. The study used panel data, which captured 79 countries over the span of 1998 to 2014. The study made use of fully modified OLS and dynamic OLS estimation technique fixed and random effect regression estimation methods. The study findings showed that in

developing countries, there is a positive association between FDI and welfare. Nonetheless, the study failed to look at other variables, such as income inequality as a measure of welfare.

Kyalo (2019) did a study that focused on FDI, the growth of the economy and employment in Kenya. The data used was a time series in this study, which covered the period from 1990 to 2016 annually. The response variable chosen was FDI and inflation, population, government expenditure and exchange rate were the outcome variables. The estimation technique was OLS. Findings from the study revealed a positive association between FDI and employment. Furthermore, it is a crucial economic variable affecting both economic growth and employment in Kenya. FDI might help increase economic growth and employment, but the study failed to investigate whether employment actually increases welfare in an economy.

Anetor et al. (2020) investigated FDI, trade, and foreign aid in the reduction of poverty in Sub-Saharan countries. Panel data were used in this study covering the period of 1990 to 2017 annually and they were collected from 29 countries in the Sub-Sahara. The feasible generalized least square technique was used in a single model. Results displayed that both FDI and foreign aid exhibited a negative association with reducing poverty. This study suggested that FDI and foreign aid had not been transmitted accordingly, and therefore, FDI has failed to reduce poverty. This study touched on HDI but failed to touch on essential variables such as employment and income inequality.

Gupta (2020) conducted a study that focused on FDI impact on employment in India. The data used was a time series spanning from 2004 to 2018. The response variable chosen was employment and output, FDI, new factories and wage-to-interest ratio were chosen as the outcome variables. The estimation technique used was the OLS method. The study's findings demonstrated that in India, FDI had a favourable positive association with employment. The study failed to investigate whether employment actually increases welfare in an economy.

2.4. Overview Literature

Neoclassical theory shows that FDI is impacted by technological progress, which is exogenously determined. This school of thought views FDI as an improvement in the local efficiency in the productive sectors, which encourages growth of the economy, which, in turn, improves employment, leading to an improvement in welfare. The endogenous growth model says that growth should be from within, which actually contradicts FDI, and should be exogenously determined. In the long run, an upsurge in population leads to improvement in technology and improvement in technology leads to improvement in economic growth. The Keynesian theory argues that government interference should be allowed to correct the market in the short run using fiscal policies. The global social theory shows that new metrics to measure welfare have to be put in place to capture more aspects of welfare and not use per capita income only.

Annual time series and panel data were used in these empirical studies. The key variables employed were FDI, GDP, exchange rate and inflation rate but most of the studies failed to capture employment and welfare in the study. Income inequality and HDI will be introduced to shed light on welfare. This study will shed light on whether there is an impact on the populous welfare through employment creation. The study adopted employment, Gini index and the HDI.

3. Methodology

3.1. Introduction

This chapter entails the following sections: employed research design, theoretical framework employed by the study, the models that will support the empirical studies, variable measurements and their definitions, and finally, data sources and how the analysis will be conducted.

3.2. Research Design

A non-experimental design was used, including a collection of time series data on an annual basis covering the period of 1990 to 2020 to address the main objective, which is to establish the effect of foreign direct investment on employment and welfare in Kenya.

3.3. Theoretical Framework

3.3.1. Employment and Foreign Direct Investment

The theoretical framework adopted by Mkombe et al. (2020) was used by the study to address the effect of FDI on employment in Kenya. Equation 3.1 depicts a simplified production function:

$$Y = A^\gamma K^\alpha L^\beta \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.1)$$

In equation 3.1, the real output at time t for any country is indicated by A, capital stock is indicated by K, labour in terms of the number of employees employed is defined by L, efficiency change in factors of technology is indicated by γ, the elasticity of output for capital is defined by α and finally, the elasticity of output for labour is defined by β. Where capital cost is equal to C on the marginal revenue product is where profit maximization will be realized (Waldkirch & Nunnenkamp, 2009). Equation 3.2 below shows profit optimization:

$$Y = A^\gamma \left(\frac{\alpha}{\beta} \cdot L_t \cdot \frac{W_t}{C_t} \right)^\alpha L_t^\beta \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.2)$$

Introducing natural logarithms on both sides of equation 3.2, we get the following labour function:

$$InL_t = \beta_0 + \beta_1 InY_t + \beta_2 In\frac{W_t}{C_t} \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (3.3)$$

Where: $_0 = -\frac{(\gamma InA + \alpha In\alpha - \alpha In\beta)}{\alpha + \beta}$, $\beta_1 = \frac{1}{\alpha + \beta}$, and $\beta_2 = -\frac{\alpha}{\alpha + \beta}$

FDI has an influence on the technical efficiency parameter (A). An increase in technology transfer through FDI increases the production of technical efficiency. Equation 3.4 below demonstrates a function of FDI due to induced technological change due to efficiency technology.

$$A_t = e^{\delta_0 T} FDI_t^{\delta_1} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (3.4)$$

Stock in a country is indicated by t, and the time trend is indicated by T where the superscript δ_0 and $\delta_0 > 0$. Equation 3.4 is linearized by employing as follows:

$$InL_t = \lambda + \beta_1 InY_t + \beta_2 In\left(\frac{W_t}{C_t}\right) + \beta_3 InFDI_t + \beta_4 T \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (3.5)$$

Where $\lambda = -\frac{(\alpha In\alpha - \alpha In\beta)}{\alpha + \beta}$; $\beta_3 = \mu\delta_1$; $\beta_4 = \mu\delta_0$; $\mu = -\frac{\gamma}{\alpha + \beta}$

Equation 3.5 can be used to represent the relationship between FDI and employment.

3.3.2. Welfare and Foreign Direct Investment

The theoretical framework adopted by Franco & Gerussi (2013) by borrowing Aghion and Commander (1999) was used by the study to address the second objective, which is the effect of FDI on welfare in Kenya. By using intermediate inputs, that is, x, it indicates the labour, which results in the production output, which is the production output which is indicated by Y in sector *I*, as shown in equation 3.6.

$$Y = \left\{\int_{\alpha}^{1} A_i^\alpha X_i^\alpha di\right\}^{1/\alpha}, 0 \le \alpha \le 1 \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (3.6)$$

Technology is represented by A in equation (3.6). If $A_i > 1$, it indicates the technology is new, while $A_i > 1$ indicates the technology is old (Franco & Gerussi, 2013). In sector *I*, the labour used is X_i to produce intermediate goods. Skilled labour supply is shown in equation (3.7).

$$L_s(t) = L(t) - (1 - s) \cdot L(t) \cdot e^{-\beta_t} \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (3.7)$$

$L_s(t)$ is the skilled labour supply, $L(t)$ is the total labour force, s is the initial fraction of skilled labours and β coefficient measures the speed of skill acquired. Divide Equation 3.7 with L(t) on both sides.

$$ln\left[\frac{L_s(t)}{L(t)}\right] = 1 + \beta(t)(1 - s) \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots (3.8)$$

This implies that if new technology is adopted, it increases skilled labourer's demand. Consequently, this leads to an increase in both real wages and labour supply in the market and ultimately improves the welfare of the economy (Franco & Gerussi, 2013).

According to Aghion & Commander (1999), it involves two stages that result in the development of technology for domestic firms. The first stage requires adopting new technology, which requires training unskilled labourers to become skilled labourers. At the second stage, if the adoption of new technology by firms is successful, skilled labour demand increases, leading to an increase in welfare.

3.4. Empirical Model Specification

The empirical model for estimating the effect of FDI on employment in Kenya will be addressed in section 3.4.1. The empirical model for estimating the effect of FDI on welfare in Kenya will be addressed in section 3.4.2. The main variables include FDI, employment, HDI, income inequality, and skilled employment, which will measure the diffusion of technology acquired over time.

3.4.1. Employment and Foreign Direct Investment

The first specific objective was addressed using the work of Oznur & Isil (2016), which investigated the effect of FDI and economic growth on female employment and employment. The model was modified to include other important variables that have an effect on employment in Kenya, which is illustrated by equation 3.9.

$$EMP = \beta_0 + \beta_1 FDI + \beta_2 SKIEMP + \beta_3 GEXP + \beta_4 Trade + \beta_5 INF + \varepsilon \dots \dots \dots \dots \dots (3.9)$$

Where:
EMP = Employment,
FDI = Foreign Direct Investment,
SKIEMP = Skilled Employment,
GEXP = Government Expenditure,
INF = Inflation,
TRADE = Trade and
ε = Error Term

3.4.2. Welfare and Foreign Direct Investment

The second specific objective was addressed using the work of Ucal et al. (2016) and Khan et al. (2019). Utilization of the model was on income inequality and FDI and determinants of HDI, which was modified to incorporate other variables as specified by the following model shown by equation 3.10.

$$WF = \beta_0 + \beta_1 FDI + \beta_2 INF + \beta_3 SAV + \beta_4 GDP + \varepsilon \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots \dots 3.10$$

Where:

WF = Welfare,

FDI = Foreign Direct Investment,

INF = Inflation,

SAV = Savings,

GDP = GDP growth and

ε = Error Term

3.5. Data Type and Sources

The quantitative method was adopted using annual time series data ranging from 1990 to 2020 in Kenya. The data will be collected and compiled from the following databases: World Bank, UNDP, Central Bank, and KNBS.

3.6. Definition and Measurement of Variables

Variable	Definition	Measurement	Source
FDI as a percentage of GDP	Capital inflows generated by a foreign investor	Measured by taking the natural logarithm of FDI net inflows.	World Bank
Employment "People in Millions"	Employment is the people employed of age 15 going onwards.	Natural logarithm of employment is used for measurement	World Bank
Skilled Employment	Proportion of skilled employment to Total Employment	Natural logarithm of skilled employment is used for measurement	World Bank
Gini Index	Gini index represents the income disparities between individuals in an economy.	Measurement of Gini index will be captured in natural logarithm	World Bank and KNBS economic surveys
HDI	Human development index is an indicator that captures per capita income, literacy and expectancy of life.	Natural logarithm of HDI is used for measurement	United Nations Development Programme
Inflation	It is the rate at which price levels rise over a specific time period	Measurement of inflation will be captured in natural logarithm	World Bank
Savings as a share of GDP	To calculate savings, aggregate consumption is deducted from aggregate national income and added net transfers.	Measurement of savings will be captured in natural logarithm.	World Bank
GDP Growth (Annual %)	A country's total value of its final and finished goods and service	Natural logarithm of GDP growth is used for measurement	World Bank
Trade "Millions"	It is defined as a country's aggregate exports plus aggregate imports of services and goods.	It is measured by taking the natural logarithm of trade	World Bank
Government Expenditure "Millions"	Entails all current goods and services purchased and spent by the government	Natural logarithm of government expenditure is used for measurement.	World Bank

Table 1: Description and Measurement of Variables

3.7. Analysis of Data

First and foremost, the main objective is to examine the effect of FDI on employment and welfare in Kenya. Answering the first specific objective requires using equation 3.9. To answer the second specific objective, equation 3.10 will be used to address this objective. Diagnostic tests done included: stationarity test, test for autocorrelation, test for normality, test for heteroskedasticity, and finally test for cointegration.

4. Empirical Findings

4.1. Introduction

In this chapter, the empirical findings will be reviewed and presented. Section 4.2 focuses on the description of statistics. Testing of stationarity is covered in section 4.3, while empirical results are covered in section 4.4. Presentation and discussion of the results are done as per the objectives of the study.

4.2. Descriptive Statistics

A description of statistics was computed, which displays various measurements and characteristics of the variables used, such as central tendency and dispersion. The variables included foreign direct investment (FDI), employment (EMP), Skilled employment (SKIEMP), GDP growth rate (GDP), inflation (INF), savings (SAV), human development index (HDI), Gini index (GINI), trade (TRADE) and government expenditure (GEXP). Annual data used was a time series ranging from 1990 to 2020. The study's descriptive statistics are displayed in table 2.

Variables	Mean	Std. Dev.	Min	Max
FDI as % of GDP	0.88	0.83	0.04	3.09
Employment "People Millions"	9.10	4.99	2.39	18.14
Inflation	11.60	9.47	1.55	45.98
Savings as % of GDP	14.32	7.33	5.01	37.16
Trade "USD Millions"	15953.90	10507.93	4190.67	31880.06
Government Expenditure "USD Millions"	4828.43	3642.20	832.86	12867.79
Skilled Employment	9.67	4.32	6.01	16.81
HDI Ranking	0.52	0.05	0.46	0.60
GINI Index	0.48	0.07	0.39	0.72
GDP Growth (Annual %)	17.09	15.61	0.05	64.94

Table 2: Variables Descriptive Statistics
Source: Author's Computation

Table 2 shows that foreign direct investment had a mean of 0.88. Notably, FDI had a relatively low standard deviation of 0.83, which is close to its mean. HDI and Gini index had a mean of 0.52 and 0.48, respectively. HDI and Gini index have a high standard deviation of 0.05 and 0.07, respectively, compared to their mean values; hence, HDI and Gini deviate more from their mean compared to FDI.

From table 2, the employment mean was 9.10, while 4.99 was the standard deviation. Skilled employment represents the skills acquired over time; its mean and standard deviation were 9.67 and 4.32, respectively. In comparison to skilled employment, the standard deviation for employment is slightly nearer to the mean.

Table 2 displays that Inflation and GDP had a mean of 11.60 and 17.09 percent, respectively, while savings had a mean of 14.32. The standard deviation for GDP and Inflation is 15.61 and 9.47, respectively, which are closer to their mean. However, for savings, the standard deviation is 7.33, which is almost double the mean value.

Table 2 shows that trade and government expenditure had a mean of approximately USD 15953.90 and USD 4828.43, respectively. Trade and government expenditure have a standard deviation of approximately USD 10507.93 and USD 832.86, respectively. Trade has a higher standard deviation compared to government expenditure.

4.3. Stationarity Test

In order to establish the data generation process and model specification, stationarity testing was performed to examine variables in order of integration. To test for stationarity, Augmented Dickey-Fuller (ADF) approach was applied. Evaluation of each variable is done to check for the presence of unit root. A series is stationary if we reject the null hypothesis, suggesting no indication of unit root.

Variables	ADF Test				Conclusion
	Level Difference		First Difference		
	None	Drift Only	None	Drift Only	
Log FDI	-3.016**				I (0)
Log Employment	-3.764 ***				I (0)
Log Inflation	-3.426 **				I (0)
Log Savings			-5.146		I (1)
Log Trade			-3.264 **		I (1)
Log Skilled Employment				-2.718**	I (1)
Log HDI				-1.852**	I (1)
Log GINI			-4.139***		I (1)
Log GDP	-3.548**				I (0)
Log Government Expenditure			-4.497***		I (1)
Key: ***P-Value less than 0.01, **P-Value less than 0.05, *P-Value less than 0.1. I (Order of Integration)					

Table 3: Stationarity Results
Source: Author's Computation

Summary findings on stationarity are displayed in table 3. At a level of significance of 5 percent, employment, FDI, inflation, and GDP variables are stationary. The first difference at a significance of 5 percent, savings, trade, and government expenditure and Gini index are stationary. The first difference with drift at a significance of 5 percent is that skilled employment is stationary. Based on variables being of order zero and one, Pesaran & Shin's (1999) ARDL model fits best.

4.4. Regression Results and Interpretation

4.4.1. Effect of Foreign Direct Investment on Employment in Kenya

The first objective of the study was to determine the effect of foreign direct investment on employment in Kenya. Table 4 displays the output results of the ARDL model used to accomplish this objective. Lag selection for the variables was

determined using the Akaike information Criteria. Table 4 below presents the ARDL regression outcomes and diagnostic tests that were carried out.

Dependent Variable: Log of Employment			
	Coefficients	Std Error	P-Value
Error Correction Coefficient (-1)	-0.92**	0.18	0.00
Long Run Estimates			
Log of FDI	0.07**	0.02	0.01
Exogenous Variables			
Log of GEXP	0.37***	0.08	0.01
Short Run Estimates			
Log of EMP: First Lagged Difference	-0.77**	0.02	0.02
Second Lagged Difference	-0.80**	0.21	0.01
Log of SKIEMP: Third lagged Difference	0.99***	0.20	0.00
Log of FDI: First Difference	-0.04**	0.01	0.01
First Lagged Difference	-0.03**	0.01	0.01
Second Lagged Difference	-0.02**	0.01	0.01
N	27		
R-Squared	0.98		
Diagnostics Test Results	**Statistics**	**P-Value**	
Cointegration Bound Test	6.26***		
Durbin-Watson Statistics for Autocorrelation	2.96		
Shapiro-Wilk W test	1.14	0.13	
Breusch-Pagan/Cook-Weisberg test for Heteroskedasticity	7.76	0.01	
LM test for Heteroskedasticity (Arch Effect)	1.98	0.16	
Ramsey Reset test	8.20	0.11	
Cumulative Sum Test for Parameter Stability	0.61***		
Key: ***P-Value less than 0.01, **P-Value less than 0.05, *P-Value less than 0.1. I (Order of Integration)			

Table 4: ARDL Regression with Newey-West Standard Errors Results for Effect of FDI on Employment in Kenya
Source: Author's Computation

Table 4 represents the results of ARDL for the long run and short run, where 0.98 was the R-squared, implying that the variables, which are independent, account for almost 98 percent of changes in employment. All interpretations were at a 5 percent level, both in the long-run and short-run. In the long-run model, the following variables were included. Holding other factors constant, the coefficient for FDI and government expenditure was 0.07 and 0.37, respectively, implying that a percentage change in FDI and government expenditure is associated with 0.07 and 0.37, respectively, percent increase in employment. In the short run model, holding other factors constant, the coefficient for the first lagged difference of employment and second lagged difference of employment were both negative 0.77 and 0.80, respectively, implying that a percentage change in the first lagged difference of employment and second lagged difference of employment is associated with 0.77 and 0.80 respectively percent decrease in employment. The coefficient for the third lagged difference of skilled employment was 0.99, implying that a percentage change in the third lagged difference of skilled employment is associated with a 0.99 percent increase in employment. The coefficient for the first difference of FDI, the first lagged difference of FDI and the second lagged difference of FDI were negative 0.04, 0.03 and 0.02, respectively, implying that a percentage change in the first difference of FDI, first lagged difference of FDI and second lagged difference of FDI is associated with 0.04, 0.03 and 0.02 percent decrease in employment.

The negative speed of adjustment coefficient was 0.92, which is negative and significant at the 5 percent level. According to Kripfganz & Schneider (2018) and Adeleye et al. (2018), the negative speed of adjustment coefficient shows the speed of adjustment process for equilibrium distortion to be corrected for the dependent variable in one period meaning that 92 percent of the disequilibrium caused by the shocks of the previous year is corrected back to the long run equilibrium in the current year.

4.4.2. Effect of Foreign Direct Investment on Welfare in Kenya

The second specific objective of the study was to determine the effect of foreign direct investment on welfare in Kenya. Welfare in Kenya will be approached from two perspectives. The first perspective focused on social and material welfare and was measured using HDI and the second perspective focal point is income distribution using Gini index as the dependent variable. To achieve this objective, two ARDL models were conducted, accompanied by results depicted in tables 5 and 6. The first regression model, HDI, was the dependent variable. The criterion utilized was Akaike information. Table 5 below presents the ARDL regression outcomes and diagnostic tests done.

Dependent Variable: Log of HDI			
	Coefficients	Std Error	P-Value
Error Correction Coefficient (-1)	-0.36**	0.11	0.04
Long Run Estimates			
Log of FDI	0.12***	0.01	0.00
Log of Savings	0.08***	0.02	0.01
Log of Inflation	-0.19***	0.01	0.00
Log of GDP	-0.07***	0.01	0.00
Short Run Estimates			
Log of HDI: Second Lagged Difference	2.43**	0.60	0.02
Third lagged Difference	2.85**	0.85	0.03
Log of FDI: First Difference	-0.04**	0.14	0.04
Log of Savings: First Lagged Difference	0.02**	0.01	0.02
Log of Inflation: First Difference	0.03**	0.01	0.02
Log of GDP: First Difference	0.02**	0.0067	0.021
First Lagged Difference	0.03**	0.01	0.03
Second Lagged Difference	0.04**	0.01	0.04
N	27		
R-Squared	0.99		
Diagnostics Test Results	Statistics	P-Value	
Cointegration Bound Test	7.37***		
Durbin-Watson Statistics for Autocorrelation	2.47		
Shapiro-Wilk W test	-0.34	0.63	
Breusch-Pagan/Cook-Weisberg test for Heteroskedasticity	0.26	0.61	
LM test for Heteroskedasticity (Arch Effect)	2.40	0.12	
Ramsey Reset test	10.54	0.22	
Cumulative Sum Test for Parameter Stability	0.24***		

Table 5: ARDL Regression Results for the Effect of FDI on HDI in Kenya
Source: Author's Computation

Table 5 represents the results of ARDL estimates for the long-run and short-run, where 0.99 was the R-squared, implying that variables that are independent account for almost 99 percent changes in HDI. All interpretations were at a 5 percent level, both in the long-run and short-run. In the long-run model, the coefficient for FDI and savings were 0.12 and 0.08, respectively, implying that a percentage change in FDI and savings is associated with 0.12 and 0.08 percent increase in HDI. Also, the coefficient for inflation and GDP were negative 0.19 and 0.07, respectively, implying that a percentage change in inflation and GDP is associated with 0.19 and 0.07, respectively, percent decrease in HDI. In the short-run model, the coefficient for the second lagged difference of HDI, the third lagged difference of HDI, the first lagged of savings, the first difference of inflation, the first difference of GDP, the first lagged difference of GDP and the second lagged difference of GDP were 2.43, 2.85, 0.02, 0.03, 0.02, 0.03 and 0.04 respectively, implying that a percentage change in the second lagged difference of HDI, the third lagged difference of HDI, first lagged of savings, the first difference of inflation, the first difference of GDP, the first lagged difference of GDP and the second lagged difference of GDP is associated with 2.43, 2.85, 0.02, 0.03, 0.02, 0.03 and 0.04 percent increase in HDI. The coefficient for the first difference of FDI is negative 0.04, implying that a percentage change in FDI's first difference is associated with a 0.04 percent decrease in HDI.

The negative speed of adjustment coefficient was 0.36, which is significant at a 5 percent level, meaning that 36 percent of the disequilibrium caused by the shocks of the previous year is corrected back to the long-run equilibrium in the current year. The second ARDL regression model, the GINI coefficient index, was the dependent variable. Lag selection was based on Akaike information. Table 6 presents the ARDL regression and diagnostic results.

Dependent Variable: Log of Gini			
	Coefficients	Std Error	P-Value
Short Run Estimates			
Log of Savings: Zero Lag	0.25**	0.08	0.02
N	27		
R-Squared	0.91		
Diagnostics Test Results	Statistics	P-Value	
Cointegration Bound Test	1.59		
Durbin-Watson Statistics for Autocorrelation	2.32		
Shapiro-Wilk W test	-2.46	0.99	
Breusch-Pagan/Cook-Weisberg test for Heteroskedasticity	0.09	0.76	
LM test for Heteroskedasticity (Arch Effect)	0.32	0.57	
Ramsey Reset test	1.61	0.32	
Cumulative Sum Test for Parameter Stability	0.33***		

Table 6: ARDL Regression Results for Effect of FDI on GINI Index in Kenya
Source: Author's Computation

Table 6 represents the results of ARDL for the short-run where 0.91 was the R-squared, indicating that variables that are independent account for almost 91 percent changes in Gini index. Interpretation was at a 5 percent level. In the short-run, the coefficient for savings was 0.25, implying that a percentage change in savings is associated with a 0.25 percent increase in Gini index.

5. Summary, Conclusion and Policy Implications

5.1. Summary

The study investigated the effect of FDI on employment and welfare in Kenya. A secondary data set was used covering the period from 1990 to 2020. Two specific objectives were formulated to help achieve the main objective where these objectives were: to determine the effect of foreign direct investment on employment in Kenya and to examine the effect of foreign direct investment on welfare in Kenya. Two models were specified: The first model, employment, was the dependent variable, while FDI, skilled employment government expenditure, trade and inflation were the independent variables. The second model had welfare as the dependent variable, whereas FDI, inflation, savings and GDP variables were independent variables. Welfare in this study was approached from two index aspects: Gini and HDI, both variables serving as dependent variables.

5.2. Conclusion

From the aforementioned discussions, conclusions were made from the research findings, which explored the effect of foreign direct investment on employment and welfare in Kenya. From the first objective, the study sought to determine the effect of foreign direct investment on employment in Kenya. Using the ARDL model, the study found out that the long-term effect of expenditure of the government and FDI on employment is positive. Also, findings revealed that the short-term effect of the first lagged difference of employment and the second lagged difference of FDI on employment all are negative, while the third lagged difference of skilled employment on employment was positive.

The findings show that FDI plays a major role in the economy in both the short-run and the long-run. FDI affects employment negatively in the short which could be a result of the foreign labour force being preferred in the short-run in order to train unskilled domestic laborers. However, the long-term effect of FDI on employment is positive, which could result from unskilled domestic labourers being absorbed as skilled labourers in the economy.

The second objective of the study sought to examine the effect of foreign direct investment on welfare in Kenya. The ARDL model was used. The findings revealed that only FDI, savings, inflation and GDP have an effect on welfare when it comes to the HDI aspect of welfare in the long-term. Also, both FDI and savings coefficients are positive; hence, the long-term effect is positive on HDI, while GDP and inflation effect on HDI is negative in the long-term. Short-term study revealed that HDI, FDI, savings, inflation and GDP had an effect on HDI. The variables that had short-term positive associations with HDI were savings, HDI, inflation and GDP, while only FDI had a short-term negative association with HDI. On the other hand, the study also revealed that savings have a positive short-term effect on Gini index.

The following conclusions were made from the findings:
- First, savings, FDI, inflation and GDP all have an effect on HDI, while only savings had an effect on Gini index, making HDI a better measurement of welfare.
- Second, since the FDI effect on HDI short-term is negative, there is a need for government intervention to curb the negative effect to avoid compromising life expectancy, education and per capita income.

5.3. Policy Implications

Policy recommendations were made from the study based on the result findings. The first objective sought to determine the effect of foreign direct investment on employment and the second objective was to examine the effect of foreign direct investment on welfare in Kenya. The study established that FDI plays a major role when it comes to employment creation and improvement of welfare in an economy, not only in the short run but also in the long run. The study made recommendations for Kenya Investment Authority to make the investing environment more friendly to foreign investors by:
- First, coming up with modern and more competitive strategies.
- Second, to reduce the cost of investment licenses and setting up companies.
- Third, the Kenyan government should maintain a stable political environment.

5.4. Areas for Further Research

The focus of the study for the period of 1990 to 2022 was on the effect of foreign direct investment on employment and welfare in Kenya. Future studies should focus on including more longer study year periods and include more developing countries. Also, future studies should consider using the inequality-adjusted human development index since it was introduced in 2010 by UNDP to capture inequality dimensions.

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