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Original Article

### An Empirical Analysis of Foreign Remittances, Education Index, and Human Development in Kenya

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Every government pursues high living standards, appropriate education, and better-quality general wellbeing of its citizens. It is feasible that an economy on the right course of attaining sustainable development goals could flourish in human richness. Kenya endeavours to advance the wellbeing of her people. There has been a rise in human development from 0.468 human development index in 1990 to 0.575 in 2021. This is a 22.86% increase. However, this is low compared to economies with high levels of human development. Kenya is classified at the medium level, below the standards stipulated by the United Nations Development Programme. This classification recommends economies have a high or very high human development index. Numerous studies in Kenya have focused on foreign remittances and education expenditure. This offers diminutive consideration to remittances and human development. This paper seeks to fill this gap by focusing on foreign remittances, education index and human development. This area has only received derisory attention even though foreign remittance has been one of the crucial financial foreign inflows in the country. The paper espouses a non-experimental research design to explain the effects of foreign remittances on human development by dint of education index conduit. The vector error correction model, a cointegrated vector autoregression model, is applied in this research to analyse data. This establishes a short-term relationship between foreign remittances and the education index while correcting the deviation from the long-term movement of these variables. Secondary time series data for the period 1990 to 2021 is used. Statistical analysis was conducted using E-views statistical package. This paper concludes that foreign remittances in Kenya have negative and significant effects on the education index in the short run. This indicates that a vast amount of remittances received in Kenya are not channelled to educational purposes. The long-run impact is statistically inconclusive.

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## INTRODUCTION

Human development is a concept about human richness rather than the richness of the economy (UNDP, 2017). In many societies, gross national product (GNP) can increase while human lives shrivel, as noted by Muhibub (1999). Accordingly, the real wealth of a nation is dependent on human richness based on human development progress. UNDP (2017) borrows the human development concept from Sen's (1985) capabilities approach. Sen (1985) accentuates human happiness that places efforts on good standards of living and good access to education, among other capabilities that individuals require to achieve a requisite state of being (see also Adams, 2006; Nussbaum, 2000).

Progress in human wellbeing is measured by an index that involves calculating proxies that are important components of human development. These proxies include education and gross national income per capita that contribute to improved wellbeing and societal progress (UNDP, 2018; De Haas, 2007; Ajayi, 2009). Human development focuses on human progress, taking into account people's schooling and income earned into one number, as noted by UNDP (2018). HDI is a vital tool for relating human development progress

across the world and appraising the performance of each country individually. According to the human development ranking report released by UNDP (2018), 66 countries ranked very high, 49 countries high, 44 countries medium, and 32 countries ranked low in the same report.

*Table 1* below displays the global ranking of the top four and bottom four countries. *Table 1* shows the global ranking of the human development index of 9 countries. The table aids in understanding discrepancies between the most developed countries in terms of human development and those with low human development. From *Table 1*, Switzerland was highest with 0.962 HDI while Norway was second with an HDI of 0.961. Iceland had an HDI of 0.959, and Hong Kong was last in this category with an HDI of 0.952. The top four countries are perfect examples of how countries can steer to realise human development progress by mobilising all the resources available. Kenya can greatly borrow from the Nordic model, which helped the Scandinavian countries to achieve high levels of human development. Nordic model advocates for welfare, which is based on the idea of equality: high-quality life and education for all (Adams & Cuecueacha, 2010; Entzinger, 1985).

**Table 1: Human development global ranking**

Country	HDI values	HD global ranking (2021)
Switzerland	0.962	1
Norway	0.961	2
Iceland	0.959	3
Hong Kong	0.952	4
Kenya	0.590	152
Central Africa republic	0.404	188
Niger	0.400	189
Chad	0.394	190
Southern Sudan	0.385	191

**Sources:** UNDP report (2017)

Additionally, *Table 1* shows that Kenya was at position 152 with 0.590. Having achieved the threshold required by UNDP, the country still has a long way to go to catch up with top countries. This calls for the country to avail all resources available to achieve the same. Among countries that performed dismally in the ranking included; the Central African Republic, which had an HDI of 0.404, Niger with 0.400, and Chad with 0.394. South Sudan had a HDI of 0.385 and was ranked at the bottom of the report. Countries with low HDI have a long way to go to achieve the threshold stipulated by UNDP, which advocates for countries to have at least 0.5 HDI.

Although human development has been on the rise across all regions since 1990, in the last decade, growth has slowed down. The slowed down on rising human development was attributed to conflicts and war within and among countries, global food crises, and economic and financial crises, among others (UNDP, 2018; Wu, 2006). Kenya needs to beat the above global challenges to climb up and achieve the very best of human development, as the case with top countries as demonstrated above.

### Background On Human Development In Kenya

Over the last 20 years, Kenya's roadmap to development has been pegged on Vision 2030, Sustainable Development Goals (SDGs) and the Big 4 Agenda (which include manufacturing, affordable housing, affordable health care and food

security). The main aim of these programmes was to create an economy that would be competitive worldwide and prosperous with high quality of life (Kenya National Treasury and Planning, 2020). According to Kenya National Treasury and Planning (2020), vision 2030 should transform Kenya into an industrialised, middle-income economy. This plan is to be actualised through five years medium terms plan (MTP). MTP's theme was to transform Kenya. It paved the way for devolution, social and economic development, equity, and national unity, according to Kenya National Treasury and Planning (2020). The plan gave priority to devolution and rapid social, economic development. The social pillar was pegged to attain 100% universal secondary education and improve the teacher-student ratio.

With the help of MTP, Kenya made an entry into the medium human development category in 2015 (UNDP, 2018). Further, in the period 1990 to 2015, HDI grew at an average of 0.64 yearly (UNDP, 2018). This positive progress in human development was a result of decentralised programmes by the government. These programmes included district focus for the Rural Development Fund in the 1990s, the Constituency Development Fund, which helped to fund children attending school through bursaries, the Youth Enterprise Fund, which helped youth to start businesses to sustain livelihoods and the Uwezo Fund that enabled many families to have businesses which

improved the welfare of beneficiaries (Cherono, 2013; The African Development Bank, 2019).

National Rainbow Coalition (NARC) government led by the late former president Mwai Kibaki oversaw programme implementations that were successful in areas such as poverty reduction, decrease in the unemployment rate and inequality, and improvement of social protection. NARC policies were pegged on universal primary education and the creation of wealth by reducing the unemployment rate. These policies, coupled with other interventions, helped the country towards achieving Vision 2030. Kenya has achieved significant milestones under the sustainable development goal, which became effective in 2016 (Kenya National Treasury and Planning, 2020). From 2017 to 2019, Kenya made progress in reducing poverty.

Implementation of SDG-4 under universal primary education was being achieved through free primary

education, which was gaining momentum as net admission rates for primary pupils joining school rose from 8,879,685 in 2016/2017 to 8,959,719 in 2018/2019 (Kenya National Treasury and Planning, 2020). These programmes, policies and achieved targets scaled up human development in the country. By 2018, Kenya slightly improved its position in the global human development parade, moving from position 143 in 2017 to position 142 in 2018, according to the UNDP report (2018).

UNDP report (2018) ranked 189 countries in total and was dependent on three aspects: life expectancy at birth, mean and expected years of schooling and Gross National Income (UNDP, 2018). Table 2 below shows human development (HDI) data and its indicators that were generated to get a broad picture of human development in Kenya from 1990 to 2021. (See Table A1 in the appendix section for the raw data on the education and health index).

**Table 2: Kenya's human development index (HDI)**

Year	Life expectancy at birth	Expected years of schooling	Mean years of schooling	GNI per capita (2011 PPP\$)	HDI value
1990	57.5	9.1	3.7	3096	0.482
1995	53.9	8.7	4.5	2867	0.468
2000	50.9	8.3	5.3	2839	0.461
2005	54.7	9.4	5.8	2991	0.500
2010	61.0	10.7	6.1	3317	0.551
2015	64.8	11.7	6.3	3776	0.587
2016	65.4	11.6	6.4	3898	0.591
2017	65.9	11.5	6.5	3969	0.595
2018	66.3	11.4	6.6	4135	0.599
2019	66.7	11.3	6.6	4244	0.601
2020	67	11.1	6.7	4359	0.578
2021	61.4	10.7	6.7	4474	0.575

**Sources:** UNDP (2022)

The trend is that human development in Kenya has been moving upward from 1990 to 2019. However, in 2020 and 2021, human development slowed down for the first time, and the index dropped slightly lower than that which was recorded in 2016. HDI as of 2021 was 0.575, and the country was in the medium category and ranked 152 out of 191

nations worldwide. Human development increased by 0.122 between 1990 and 2017, maintaining an increase of 26.1% (UNDP, 2017). Between 1990 and 2021, life expectancy at birth improved by 2.8 years, mean years of schooling by 2.9 years, and expected years of schooling increased by 3.1 years. Table 2 clearly indicates that Kenya is determined

to achieve human development goals. Nonetheless, the country is yet to achieve high human development levels.

Despite the increase, Kenya is far below the standards set by UNDP (2018). UNDP stipulates a life expectancy of 85 years, average years of schooling of 15 years, expected years of schooling 18 and minimum per capita income of US\$ 75,000. The country is still trailing at position 152 out of 191 hence sitting at medium instead of high or very high levels. As noted by United Nations (2018), economic expansion has the ability to change societies, lead to increased income and enable people to thrive. However, growth alone is never enough. De Haas (2007) suggests that both economic and social progress are crucial for advancing human development. World Bank (2016) report indicates that fighting poverty and enabling a prosperous nation requires growth that creates more which can bridge economic growth and people's lives. Employment is essential because it acts as a bridge between economic growth and people's lives (World Bank, 2013; UNDP, 2013; Dietmar & Adela, 2017; Larson & Angman, 2014).

### **Background on Foreign Remittances in Kenya**

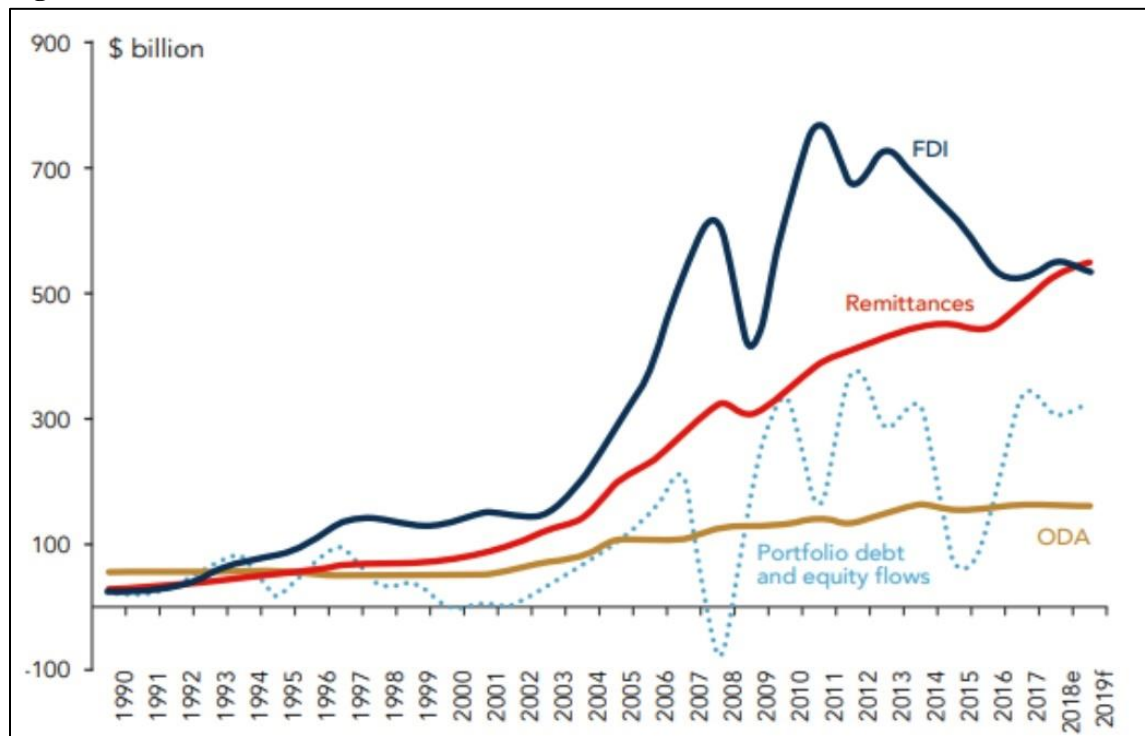
According to IOM (2006), money sent by residents working abroad has increased promptly over the years to become a core source of foreign inflows in Africa. The increase in remittance inflows reflects a rise in migration from Africa. The migrants send about US\$ 441 billion to their families in developing nations (World Bank, 2016). This amount is three times the amount of official aid flow. In 2009, remittance inflows comprised 2.6% of GDP in Africa. Remittance to developed economies averaged 1.9% of gross domestic product (Ratha, 2010). In 2012, the amount of

remittances worldwide totalled US\$ 471 compared to US\$ 262 billion in 2005 (World Bank 2015a).

Foreign remittances flow to the growing economies reached US\$ 414 billion in 2013, which was an increase of 6.3% from 2012 (World Bank, 2013). World Bank (2016) shows that foreign remittance inflows to small and middle-income economies totalled 466 billion US\$ in 2017 compared to US\$ 429 billion in 2016. In sub-Saharan economies, remittance inflows reached a high of US\$ 41 billion in 2018 (World Bank, 2019). Remittance inflows in Africa are roughly equal to aid flow.

Evidently, *Figure 1* above shows that there has been a rise in both foreign direct investment (FDI) and remittance over time. Although FDI remains higher than remittances, it recorded higher fluctuations, unlike remittances. Both official direct assistance and portfolio debts and equity flows remain lower than remittances over the period. The continuous increase in remittances divulges the reason remittances remain a core contributor to economic growth and human development. Remittances have been on an upward trend in Kenya for the last 15 years. In 2011, Kenya recorded 1890 million US\$ inflow of remittances, while in 2017, it was 1947 million US\$ (CBK, 2017). Remittances have been increasing tremendously, reaching a high total of 3.7 billion US\$ in 2021 compared to 3.1 billion US\$ recorded in 2020.

Recipients of foreign remittances have used the funds received differently. The recipients of foreign remittances have used these funds in different ways to improve their wellbeing. Though remittances come from different places and the recipients have different economic backgrounds, there seems to be a convergence of how these remittances are used to improve human development (Huay *et al.*, 2019; UNDP, 2013; Adams, 2006; Helweg, 1983).

**Figure 1: Remittances inflows with other financial inflows in sub-Sahara Africa**

Sources: World Bank (2018)

Table 3 specifies the uses of remittances by recipient households in Kenya. Foreign remittance inflows from outside Africa to the country are mostly used for investment. Marriage/funeral got the least share of 0.9 %. Remittances sent from within Africa show that a higher percentage was spent on the construction of new houses, while education got a share of 22.9%. Remittances are used to improve the general living conditions of individuals. A great proportion goes to indicators that promote the wellbeing of households. These indicators are important proxies used to get a general picture of the performance of human development in a country.

Figure 1 shows that remittances have been stable and rising. According to Anyanwu & Erhijakpor (2010), remittances have attracted lots of attention because they are stable and are continuously increasing. However, World Bank (2013) suggests that the impact of remittances on recipient economies is likely to be underestimated.

Remittances remain largely untapped by many economies and have increased in the last two decades; hence full potential is not yet realised. Despite good prospects in remittances, whether the increase of these foreign remittances has contributed to human development in Kenya remains an empirical subject to be tested. Past empirical investigations have dwelt on the impacts of remittances on economic growth hence underscoring their effects on human development. Few studies in Kenya have focused on remittances and education expenditure outcomes hence ignoring the contribution of these remittances on the education index. This study seeks to fill the void between foreign remittances and human development in Kenya, which has not received adequate attention.

**Table 3: Uses of foreign remittances in Kenya**

Uses of foreign remittances	Remittances outside of Africa	Remittances sources from Africa
Construction of new house	11.2	27.5
Food	12.8	14.5
Education	9.6	22.9
Health	7.3	5.8
Business	3.9	8.4
Marriage/funeral	0.9	1.7
Rent (house, land)	5.7	0.4
Rebuilding of house	5.3	3.1
Vehicles	1.3	1
Land purchase	8.4	7
Improvement of farm	2.3	0.4
Investment	24.2	0.6
Others	7.2	6.6

**Source:** The African Development Bank (2019)

## THEORETICAL LITERATURE REVIEW

### Utilitarianism Theory

The theory of utilitarianism is built on the aspect of wellbeing also referred to as welfarism. The main idea of utilitarianism theory is that we ought to improve the wellbeing (Human development) of everyone as much as possible. The theory typically promotes the sum total of wellbeing and overall level of social satisfaction among members of society. The term welfarism was developed by Hicks (1981) and applied by Sen (1985). The theory demands that we judge society through the distribution factor and their welfare state. Individuals achieve a good state of wellbeing if they maximise their utility through deeds and consumption choices.

The main objective of households is to maximise their welfare through optimal current and future consumption. Remittances can offer extra money, which can be channelled to the consumption of goods and services, which may include education, healthcare, and housing, just to mention a few. In this instance, remittances become a private source of income redistribution (Medina & Cardona, 2010). Remittances can augment welfare by significantly increasing consumption through more

allocation towards consumption of food, education, healthcare and rent (Ahmed & Mughal, 2015; Adams & Cuecuecha, 2013; Medina & Cardona, 2010; Barajas *et al.*, 2009).

### Consumer Theory

Consumer theory lays grounds for rational consumers and their consumption decisions. The structures arise because the consumer choice sets are assumed to be defined by certain prices and the consumers' income or wealth. The consumer chooses a vector of goods  $x = (x_1, x_2, \dots, x_n)$  to maximise the utility subject to a budget constraint and thus cannot spend more than their wealth. Consumer problems can be defined as:

$$\text{Max } u(x) \text{ s.t. } P \cdot X \leq W; X \in R^n \quad (1)$$

Depending on the problem to be analysed, goods and services might be specific or in aggregate, like education, health, food, shelter or even leisure, among others. Given prices (P) and wealth (W), we can write the agent's choice set (i.e., X in the general choice model) as the budget set:

$$B(P, W) = \{ X \in R^n : P \cdot X \leq W \} \quad (2)$$

Consumer theory assumes that prices remain constant while wealth and consumption change. The

theory is significant because remittances can be individualised to wealth, whereas consumption can be assumed to represent either education or health. Thus, representing the wellbeing of Kenyans. The mathematical model in equation 2 can be transformed to help in the analysis of the link among foreign remittances, education index and human development. However, the model has its shortfall because it ignores that consumers are always rational and become indifferent to the choices they make due to the newness of products. Consumers' decisions are also influenced by an emotional component (Papademetrious, 1985; Madhavan, 1985). Consumers' choice is based on what gives them the greatest satisfaction hence might ignore education and health and spend on other goods. Remittances are absorbed into the economy either directly or indirectly. The theory, therefore, is important in explaining how remittance inflows are incorporated into the recipient economy (see also Barajas *et al.*, 2009).

## EMPIRICAL LITERATURE REVIEW

Using a panel data set of 15 sub-Saharan African countries from 1987 to 2007, Adentusi (2010) examined the macroeconomic impact of remittances on human development. Kenya was not included among the 15 sub-Saharan economies. The study employed Fixed-Effects model to estimate the relationship between remittances and the human development index. The outcome reveals that remittances have a positive impact on human development. The study laid a broad base in which the effects of remittance on human development would be narrowed down to a specific country.

The effects of international remittances on educational expenditure in Albania were examined by Cattaneo (2012). Applying data from April to September 2002 from the Albanian measurement survey, the study utilised the Engel curve framework and quantile regression technique. It was discovered that education investment is not motivated by remittance because senders of this remittance directed the users on where to use the

money (see also Elbadawi & Roushdy, 2010; Adams, 2009). Consequently, education outcome in the region had low quality and thus, educational infrastructure in most Albanian schools were underdeveloped.

According to Adelman *et al.* (2010), poverty and human development are interrelated. This is because as the human development index goes high, absolute poverty tends to diminish. The view that remittances reduce poverty was supported by Adams and Cuccuecha (2013). The study found that remittance reduces poverty and increases investments. Using data from 2005 to 2006 which included 8000 households, the standard survey found three scenarios. Families receiving remittances spend less in margin on food, more in margin on investment in education, housing, and health. Subsequently reducing poverty. Adams and Cuccuecha's (2013) study was done in Ghana, where 8000 households were sampled. Even though numerous studies show that remittance lessens poverty levels, some studies contradict the positive relationship between remittances and poverty reduction. However, poverty is multi-dimensional and cannot be generalised to mean human development, as the study assumes (Taylor & Wyatt, 1996; Stahl & Fred, 1986).

Larson and Angman (2014) did a study about remittances and human development. In their work, which included 99 developing countries using panel data, they found that there was a positive relationship between remittances and human development in developing countries. Larson and Angman (2014) used Two-stage Least Square (2SLS) estimation method. The study is important because it focuses on developing nations. Their study, nevertheless, used data from 2005 to 2015 hence ignoring the period starting in 1990 when human development data became more consistent.

Hines and Simpson (2018) used the Kenyan Migration Household Survey of 2009 to examine the connection among out-migration, remittances, and human capital investment. The report

discovered that the more remittances a household receives, the more money is put towards education at all levels. The authors applied ordinary least squares (OLS) and data from 2009. Unfortunately, this study did not distinguish households that received remittances and those that did not. This study takes into account all the households in Kenya by aggregating the health and education index.

## METHODOLOGY

Consumer theory specifies grounds for rational consumers and their consumption decisions (Pennix, 1982). The structures arise because the consumer choice sets are assumed to be defined by certain prices and the consumers' income or wealth. The consumer chooses a vector of goods  $x = (x_1 \dots x_n)$  to maximise the utility subject to a budget constraint and thus cannot spend more than their wealth. Consumer problems can be defined as;

$$\text{Max } u(x) \text{ s.t. } P.X \leq W; x \in R_i^n. \quad 3$$

Depending on the problem to be analysed, the goods and services might be specific or aggregated goods or services like education, health, food, shelter or even leisure, among others. Given prices (P) and wealth (W), we can write the agent's choice set (which was X in the general choice model) as the budget set:

$$B(P, W) = \{x \in R_i^n . P.X, x \leq W\} \quad 5$$

Consumer theory assumes that prices remain constant and wealth changes while consumption changes too. The theory is important in that remittances can be personalised to become wealth (income) while consumption can be on services like education and health, representing the wellbeing of the people of Kenya. The shortcoming of this theory is that it ignores that consumers are rational and become indifferent to the choices they make. Since remittances are absorbed in the economy either directly or indirectly, the theory is important to explain how remittance inflows are incorporated into the recipient economy hence the transformative

direction remittances have against human development.

## Empirical Model Specification

Aggregate consumption increases through an increase in consumption of consumer goods and services. The recipients of foreign remittances can direct these remittances in financing their welfare, thus improving human development (Barajas *et al.*, 2010; Orozco & Lowell, 2005; Sen, 2000). Foreign remittances therefore stimulate consumption; hence important to know the transformative direction of these funds in relation to wellbeing in Kenya. This paper specifies a theoretical model as follows:

$$\text{Max } u(x) \text{ s.t. } P.X \leq W \quad 6$$

$$\text{Max } U(X) = (X_1, X_2) \text{ subject to } P_1 + P_2 = 1 \quad 7$$

Where  $U$  is the measure of utility to be maximised,  $X_1$  is the basic commodities,  $X_2$  other goods and services,  $P_1$  the price of basic commodities and  $P_2$  is the price of other goods and services.

The solution to the choice problem is demand functions for basic commodities/services and other goods/services give rise to the empirical development model of form;

$$X_i = f(p_1, p_2, I) \quad 8$$

To adopt human development, health index, education index and foreign remittance, equation (8) is mirrored into;

$$Y_t = f(RT_t, Z_t, I) \quad 9$$

Further equation (9) is transformed to give rise to the following model;

$$Y_t = \alpha_0 + \alpha_1(RT_t) + \alpha_2(Z_t) + \varepsilon_t \quad 10$$

The  $Y_t$  is the dependent variable (education index),  $RT_t$  is an independent variable (foreign remittances),  $Z_t$  is a set of control variables (inflation and gross domestic product per capita) which may influence the response variable.

Further, equation 10 incorporates the variables of this study to form an empirical model, which helped in the analyses of data. Equation 11 is transformed into general vector error correlation because the study uses time series data which can exhibit both short-run and long-run relationships.

Formally, VECM befits:

$$\Delta Y_t = \alpha_0 + \sum_{i=1}^{p-1} \alpha_1 \Delta(X1_{t-i}) + \sum_{i=1}^{p-1} \alpha_2 \Delta(X2_{t-i}) + \sum_{i=1}^{p-1} \alpha_3 \Delta(X3_{t-i}) + \sum_{i=1}^{p-1} \alpha_4 \Delta(X4_{t-i}) - \lambda ECT_{t-1} + \varepsilon_t \quad (11)$$

Where  $\Delta Y_t$  is the change in dependent variable,  $X1$ ,  $X2$ ,  $X3$  and  $X4$  are independent variable and control variables;  $p - 1$  = the lag length reduced by 1;  $\alpha_1, \alpha_2, \alpha_3, \alpha_4$  are short-run dynamic coefficients of the model adjustment long-run equilibrium;  $\lambda$  is the speed of adjustment parameter with a negative sign;  $ECT_{t-1}$  Is the error correction term which carries long-run information extracted from the long-run cointegrating equation and  $\varepsilon_t$  represents the residuals (impulses).

### Definition and Measurement of Variables

The education index (EI) is the dependent variable. This index captures the acquisition of knowledge, skills, values, beliefs, and habits. Mathematically, EI combines mean and expected years of schooling. Foreign remittances (RT) are the independent variable and are the inflows of money sent back to a country by her natives who are abroad. Measured by the amount of money received in the country in terms of U.S. dollars per year. Health index (HI), a control variable, is an index that measures the number of years a person is expected to live. Measured using the life expectancy index and calculated using a minimum of 20 years and a maximum of 80 years of living. Inflation (INF) is a continuous increase in the costs of goods and services in a country over one year. It is measured as a percentage change of the general price index in a country. Gross Domestic Product Per Capita (GDPPC) measures the sum of the value of goods

and services in an economy annually divided by the total population of that country. Measured in U.S. dollars. Appendix A1 in the appendix section provides data on the education index (EI) and health index (HI) in Kenya.

### Data Type and Sources

The study relied on existing data to investigate the effects of foreign remittances on human development in Kenya. The data was drawn from the year 1990 to 2021 (see *Appendix 1*). The period starting from 1990 is critical because most reports and availability of human development data and its indicators became more consistent. Data on remittances, gross domestic product and the inflation rate, was sourced from UNCTAD and World Bank databases. Data on the health index and education index was sourced from United Nations Development Programme reports.

### Data Analysis

The study applied time series data to achieve its objectives. Diagnostics tests were carried out to check stationarity, co-integration, and causality. In an effort to find out the effects of foreign remittances on the education index, a quantitative analysis was done. The study was examined using the ordinary least square (OLS) regression technique to find out any relationship between the variables and the degree of their relationship. The coefficients of determination on both independent and dependent variables were obtained. Post-data analysis was done to ascertain autocorrelation, normality, and heteroscedasticity. The data were analysed with the aid of the E-Views statistical package.

## EMPIRICAL FINDINGS

### Descriptive Statistics

Analysis of descriptive statistics was done on all variables. Measures of central tendencies and dispersions are computed in *Table 4* below:

**Table 4: Descriptive statistics.**

Variables	EI	HI	RT	INF	GDPPC
Mean	0.4556	0.586	883.44	11.426	837.795
Standard deviation	0.4556	0.586	951.48	9.361	548.586
Minimum	0.376	0.476	4.000	1.554	220
Maximum	0.534	0.716	3506	45.95	2007
Count	32	32	32	32	32

**Sources:** *Authors*

From *Table 4*, the education index had a mean of 0.4556 from 1990 to 2021. The education index remained less than 0.5, meaning the country did not perform well in terms of education index hence dragging human development progress. The UNDP advocates for countries to have high and very high levels of human development. The deviation from the mean was 0.4556 meaning the country stayed on the right path to human development. A minimum of 0.376 and a maximum of 0.534 indexes were recorded over the same period. The country performed better in the health index, having recorded a mean of 0.586, which is more than 0.5 meaning the country was climbing and doing well health-wise. The standard deviation was 0.586, the minimum index was 0.476, and the maximum value over the period was 0.716.

Remittances had a mean of 883.44\$. This means the country recorded an increase in remittances over the years, and thus the country could depend on it as a source's foreign inflows. The standard deviation was 951.48 while the lowest value was 4\$ and the highest value was 3505 \$ over the 29 years. The results computed in *Table 4* also indicate that inflation maintained an average of 11.426%, 9.361% of standard deviation, the lowest inflation rate of 1.554 % and the highest inflation rate was 45.95%. An average of 837.795 \$ gross domestic

product per capita income was recorded, which propelled the country to middle-income earner. The deviation from the mean was 548.586\$. The minimum income per capita of 220 \$ was recorded, while the highest income per capita over the 31 years was \$2007, which was still far from improving the standards of living in the country.

### Regression Analysis Results

The Short-run Model is:

$$\Delta EI_t = 0.006571 - 0.006742ECT_{t-3} + 0.006742EI_{t-3} - 0.000012RT_{t-3} + 0.000176INF_{t-3} + 0.00000267GDPPC_{t-3} \quad 12$$

The study analysis in *Table 5* for the education index found that foreign remittances had a coefficient of -0.000012. The coefficient was negative, meaning there was a negative relationship between foreign remittances and the education index in Kenya. The coefficient was statistically significant at a 10% significance level. Thus, an increase in one unit of foreign remittances leads to a decline in the education index by 0.000012. The outcome simply means that remittances received are not channelled to educational purposes hence explaining the negative relationship between foreign remittances and the education index.

**Table 5: The vector error correction model: Dependent variable is  $\Delta(E)$** 

	$\Delta(ECT_{t-1})$	$\Delta(EI_{t-1})$	$\Delta(RT_{t-1})$	$\Delta(GDPPC_{t-1})$	$\Delta(INFL_{t-1})$	C
Slope	-0.0067	0.0067	-0.0000124	0.00000267	0.000176	0.0067
P-value	0.1932	0.6419	0.0867	0.2407	0.5478	0.0005
t-statistics	-1.3388	-0.471	-1.7865	-0.60965	1.20313	4.0213
Standard error of the regression	0.006445					
R-squared	0.240618					
Adjusted R-squared	0.082414					

The study does concur with that of Cattaneo (2012), which discovered that education investment was not motivated by remittance because senders of these remittances directed the users on where to use the money. The gross domestic product per capita and inflation rate in the model were statistically insignificant at a 10% level and hence are meaningless in the study. The mathematical model of the education index indicates an error correction term of -0.006742. This means in the long run; the model converges towards the equilibrium at a speed of 0.6742 percent. For the long-term model, the coefficient was 0.0000725. This means that in the long run, a unit increase in foreign remittances increases the education index by 0.0000725 units.

## CONCLUSIONS

Kenya's roadmap to development over the last two decades has been pegged on Vision 2030, Sustainable Development Goals (SDGs) and the Big 4 Agenda (which include manufacturing, affordable housing, affordable health care and food security). The main aim of these programs was to create an economy that would be globally competitive and prosperous with high quality of life. When a country thrives in human richness, then the country can be predicted to be on the right trajectory of achieving sustainable development goals. It is in these regards that the research paper sought to study the effects of foreign remittances on human development in Kenya. The study applied consumer theory pegged on maximising the utility subject to consumer income to build a theoretical framework. The theoretical framework laid the ground for the empirical model as used in the study. To achieve the results of the research questions, the study used a vector error correction model (VECM).

The main purpose of this paper was to investigate the effects of foreign remittance on human development in Kenya. This study concludes that foreign remittances have significant and negative effects on both the health and education index in Kenya. The remittances might not have a trickle-down effect and thus derailing the improvement of

both the health and education index. Areas for further research such as effects of economic growth on human development. This is because there can be economic growth in any economy but the absence of growth in human development. Also, research on other aspects of human development, such as gender inequality and gross domestic income per capita, can be incorporated to get the broad picture of remittances and human development. This is because gender disparity tends to affect any growth in any society.

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**APPENDIX****Appendix 1: Raw Data on education index (EI) and health index (HI)**

<b>Year</b>	<b>EI</b>	<b>HI</b>	<b>Year</b>	<b>EI</b>	<b>HI</b>	<b>Year</b>	<b>EI</b>	<b>HI</b>
1990	0.376	0.575	2002	0.412	0.486	2014	0.510	0.679
1991	0.379	0.565	2003	0.434	0.499	2015	0.513	0.689
1992	0.383	0.553	2004	0.451	0.515	2016	0.518	0.698
1993	0.386	0.541	2005	0.455	0.534	2017	0.523	0.701
1994	0.390	0.528	2006	0.476	0.555	2018	0.526	0.713
1995	0.393	0.515	2007	0.475	0.576	2019	0.534	0.715
1996	0.396	0.503	2008	0.484	0.596	2020	0.519	0.711
1997	0.399	0.493	2009	0.494	0.614	2021	0.519	0.690
1998	0.402	0.484	2010	0.498	0.630			
1999	0.405	0.478	2011	0.501	0.644			
2000	0.407	0.476	2012	0.505	0.656			
2001	0.414	0.478	2013	0.508	0.668			