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Original Research Article

Remittances and economic growth in Kenya (1970-2010)

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Abstract

Statistics show that remittances to Kenya have been increasing over the years. Studies on the effect of remittances on economic growth in Kenya are limited and have not included private capital inflows as one of the determinants of economic growth. This study investigated the effect of remittances on economic growth in Kenya. Data was sourced from the World Bank's African Development Indicators and various Economic Surveys and Statistical Abstracts for the period 1970-2010. The study used the ordinary least squares estimation to determine the effect of remittances on economic growth. The study found that the coefficient of remittances as a ratio of gross domestic product was positive and significant. The Government of Kenya should put in place policies that encourage remittances.

Keywords: Diaspora, Economic Growth, FDI, Portfolio Investment, Remittances

INTRODUCTION

To overcome the high poverty levels and improve the standard of living in developing countries there is need for a substantial inflow of external resources in order to fill the savings and foreign exchange gaps. This will increase the rate of capital accumulation and growth. One of these external resources is remittances. Remittances represent a large proportion of the financial flows and amount to more than global overseas development assistance (Sorensen et al., 2002). Remittances are not only a source of foreign exchange but have also become the second largest source of external finance for developing countries after foreign direct investment (FDI) (World Bank, 2009). They are higher than foreign aid and are a more constant source of income to developing countries.

Remittances can go into maintaining the living standards (and even improving them) of recipient households, starting small businesses and other development projects, and can help boost the foreign exchange reserves. They have been found to enhance growth through human capital accumulation (Okoth, 2003; Gupita et al., 2009; Mim and Ali, 2012).

It is argued that remittances are not only relatively stable than other financial flows but also tend to increase during periods of economic depression and natural disasters. Remittances have also been found not have the effect of eroding the country's export competitiveness unlike aid flows (Yang, 2006; Rajan and Subramanian, 2006). Remittances can be used to support the capital account of the balance of payments (BoP), domestic investment, increase the flow of finances during the period of natural disasters at the national level; smooth consumption at the household level; finance development projects and enhance the capacity to import.

According to Mim and Ali (2012) the effect of remittances on the economic growth of a country can be looked at in three ways: first, they can be spent like any other income and therefore their contribution to economic

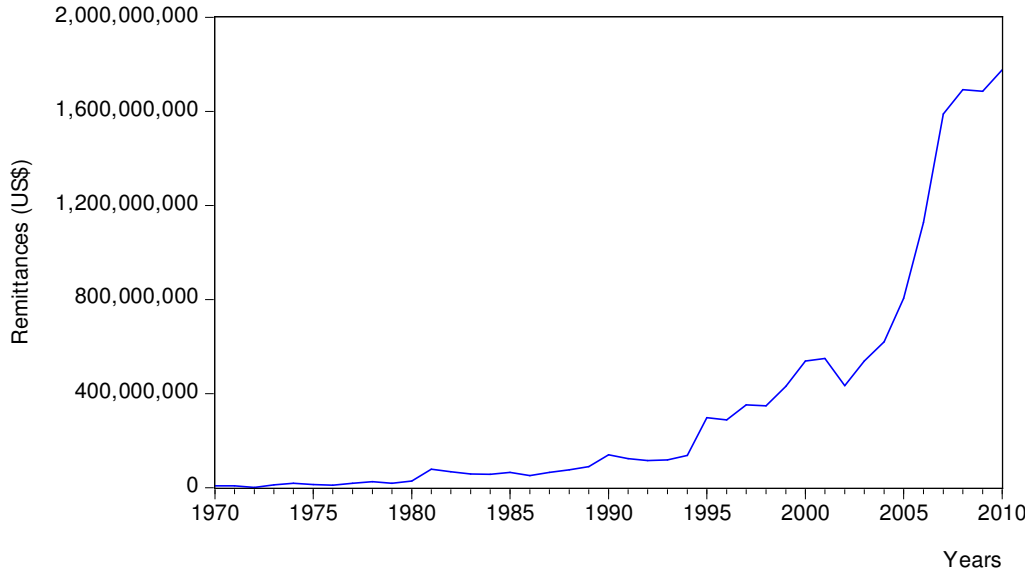

Figure 1. Remittances to Kenya (1970 – 2010).

Growth can be seen as the contribution by any source of income. Second, remittances can cause negative effects by recipient households spending more on luxury goods and leaving little for unproductive savings and investment like housing, land and jewelry.

There has been a growing interest in Diaspora remittances by the Kenyan Government as evidenced in its long term development plan, the Kenya Vision 2030 (Republic of Kenya, 2007). Remittances are expected to boost savings of up to 10 per cent of the GDP and have been earmarked among the flagship projects. This calls for an investigation into the effect of remittances on the economic growth of Kenya.

The Flow of Remittances to Kenya

Remittances to Kenya have been rising over the years. In 2010 they were estimated at 5.4 per cent of Kenya's GDP. Figure 1 shows the trend of remittances flows to Kenya from 1970 to 2010:

Data Source: www.centralbank.go.ke/forex/Diaspora-Remit.aspx

For example, remittances rose from US$7,260,000 in 1970 to US$89, 099,998 in 1989. By 2009, remittances were US$609,156 million (Central Bank of Kenya, 2011). The drop in rate of increase in remittances between 2008 and 2009 could be attributed to the global financial crisis. The steady rise in remittances is attributed to the rise of the number of Kenyans in the Diaspora. Most of these remittances are from North America (51 %) and Europe (28 %).

The Kenyan Embassy in Washington D. C. indicated that by July, 2011 there were three million Kenyans in the Diaspora and in the USA alone, there were about 400,000 Kenyans. The second reason for this trend is the low naturalization rate in these countries (USA, Canada, Europe, Asia, and South Africa) where Kenyans stay. Thirdly, the passing of the new constitution in 2010 which allowed for dual citizenship has made those Kenyans who would wish to invest both in the countries they live in and at home to increase remittances. Lastly, there has been an aggressive campaign by the Kenya Government to involve the Kenyan Diaspora in the development agenda of the country. This is evidenced by the government's ratification of the amendment to the African Union (AU) Constitutive Act Article 3(q) that invites and encourages the full participation of the African Diaspora as an important part of African continent's building. In the domestication of the AU Act, the Kenya Government established the International Jobs and Diaspora Office (IJDO) in the Ministry of Foreign Affairs in 2007.

Kenya's GDP Growth

Kenya's economic growth has been unstable since independence as shown in Figure 2.

Kenya's GDP growth was high in the first two decades after independence in 1963. This was due to public investment, encouragement of small holder agricultural production and incentives for private investment. There

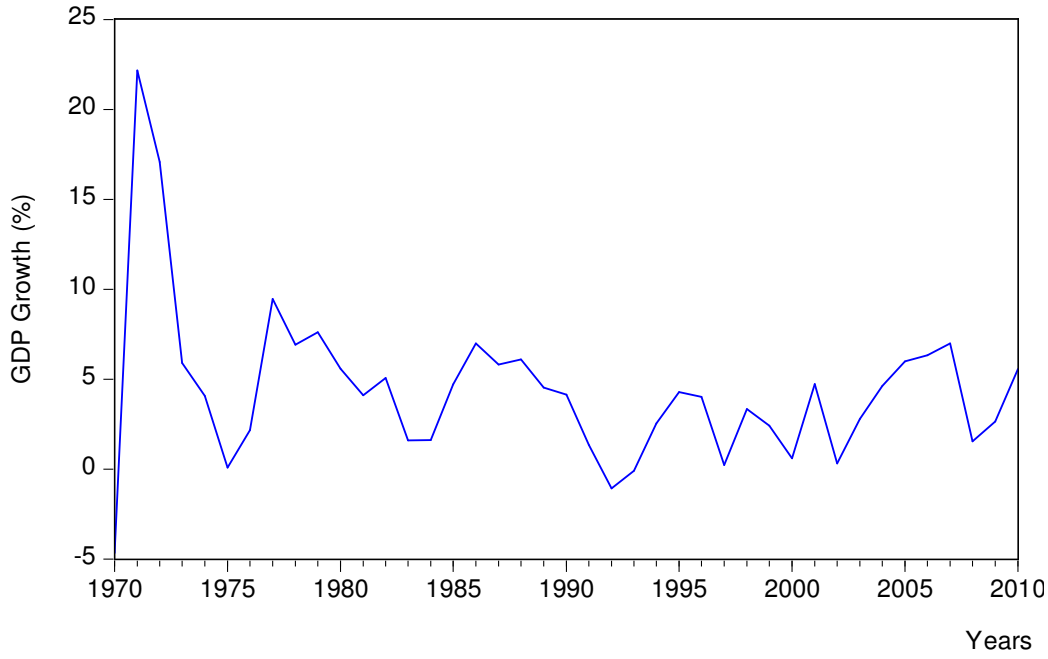

Figure 2. Kenya's GDP Growth (1970-2010).
Data Source: World Bank's Global Development Finance Database-various issues; Republic of Kenya: *Economic Surveys*

was notable decline in Kenya's economic performance from the 1970s to 2004 when GDP growth was below 10%. The worst years were 1974 to 1975, 1978, 1981, and 1990 to 1999, 2000-2003 and 2008. The worst performance in these years is explained by both the internal and external factors. For example, the period 1974-1990 was marked by Kenya pursuing the import substitution (IS) policy and the time also coincided with high oil prices which made Kenya's manufacturing sector uncompetitive. Additionally, in the early 1990s, there was failure by the Government to sustain prudent macroeconomic policies, the structural reforms that had started in the 1980s had slowed down and there was the problem of governance. In 1991, bilateral and multilateral donors suspended aid to Kenya.

In 1994-1996 there was improved economic performance because in 1993 Kenya started a major economic reform programme. With the assistance of the IMF and the World Bank, Kenya had eliminated the price control and import licensing, had removed foreign exchange controls, had embarked on privatization, had started retrenchment of the civil service and pursued conservative fiscal and monetary policies. Other factors that have had negative effects on the macroeconomic performance include the adverse weather conditions and the general elections.

The Statement of the Problem

Economic growth is driven by a number of factors among them capital. When local sources of capital are inadequate, external sources are an alternative. Remittances can be a source of external capital. The effect of remittances on the economic growth of Kenya has not received the attention it deserves. A study on remittances and poverty in Kenya (Kiiru, 2010) used a Household Budget Survey and did not include economic growth as a dependent variable but rather used per capita income of the recipient households. This study fills this gap by being country-specific, taking economic growth as a dependent variable and employs time series data.

Objectives of the Study

The general objective of this study was to analyze the relationship between remittances and economic growth in Kenya. The specific objectives of the study were to:

i. To determine the trend of remittances in Kenya
ii. Examine the effects of remittances on economic growth and
iii. Draw policy implications from the research findings

Organization of the Study

The study is structured as follows. Section I is an introduction that provides relevant information about Kenya's Diaspora remittances and economic growth, during the period under study. Section II presents a brief empirical literature review. Section III focuses on methodology which includes the model specification, definition and measurement of variables. Section IV presents the findings of the study while Section V provides the conclusion and policy implications.

Empirical Literature

Ang (2007) investigated whether remittances have spurred growth in Philippines. The study used data for the period 1988-2004 and with OLS estimation found that remittances have a positive effect on economic growth. Barajas *et al.* (2009) investigated the relationship between remittances and economic growth for a sample of 84 recipient countries for the period 1970-2004. The study carried out a panel growth estimation regression for the full sample and for emerging economies. This study found that remittances have no impact on economic growth.

In their work, Siddique *et al.* (2010) investigated the relationship between remittances and economic growth for Bangladesh, India and Sri Lanka, for the period 1975-2006. The authors employed a Granger Causality test under the Vector Auto Regression (VAR) framework. They found that there was no causal relationship between economic growth and remittances in India, that there was a two-way relationship between remittances and economic growth in Sri Lanka, and that remittances did not lead to economic growth in Bangladesh.

Fayassa and Nsiah (2010) in their investigation of the aggregate impact of remittances on economic growth of 18 Latin American countries within the neoclassical growth framework using the panel data for the period 1980-2005, found that remittances have a positive and statistically significant effect on the growth of Latin American countries. A 10 percent increase in remittances of a typical Latin America economy resulted in about 0.15 percent increase in the average per capita income.

Kiiru (2010) investigated the impact of remittances on poverty and the determinants of remittances at the household level in Kenya. The author used Household Budget Survey data 2005/2006 and found that remittances have had a positive impact on household consumption. Kiiru's study considered remittances as comprising of domestic and international remittances. This study considers international remittances and its effect on the economic growth.

Mim and Ali (2012) investigated the growth effects of remittances and the channels through which they may affect economic growth in MENA countries of Algeria, Egypt, Djibouti, Iran, Jordan, West Bank and Gaza, and Yemen. They used panel data for the period 1980-2009. Using the System Generalized Method of Moments, they found that remittances had a positive and statistically significant coefficient, leading to the conclusion that remittances positively and significantly affect economic growth in MENA countries. A study on the impact of remittances on economic growth in Sub- Saharan Africa countries by IKechi and Anayochukwu (2013) targeted three countries of Nigeria, Ghana and South Africa. The study used time-series data for the period 1980-2010 to determine the effect of remittances on economic growth. They also conducted a Granger Causality test to determine the direction of causality between the two variables. The study found that workers' remittances had impacted positively on the economic growth of the three countries, with the greatest impact felt in South Africa followed by Ghana and then Nigeria. Remittances were found to granger cause economic growth in South Africa and Ghana, whereas economic growth was found to granger cause remittances in Nigeria.

Overview of Literature

Most studies on remittances and economic growth are cross-country. More so, these studies have taken remittances independent of other foreign private capital inflows (Ang, 2007; Barajas *et al.,* 2009; Siddique, 2010; and Fayissa and Nsiah, 2010), yet remittances could be considered a special type of private capital inflows (Barajas *et al.,* 2009).

This study is different in that it is country-specific and focuses on the effects of remittances on economic growth including various components of private capital inflows as independent variables.

METHODOLOGY

Model Specification

The objective of this study was to determine the effect of remittances on economic growth. This was achieved through Ordinary Least Squares estimation. The Ordinary Least Squares estimation included other determinants of economic growth. These variables were selected on the basis that they have been identified in the literature as determinants of economic growth. The variables included were foreign direct investment (FDI), portfolio investment (PI), cross-border inter bank borrowing (IBB), human

capital (HC), macroeconomic stability (MS), trade openness (NX), financial development (FD) and government expenditure (G).

Thus the effect of remittances on economic growth was captured by running an ordinary least squares estimation of the following equation:

$$\ln g_t = \alpha_0 + \alpha_1 RM_t + \alpha_2 \ln FDI_t + \alpha_3 \ln PI_t + \alpha_4 \ln IBB_t + \alpha_5 \ln G_t + \alpha_6 \ln FD_t + \alpha_7 \ln MS_t + \alpha_8 \ln NX_t + \alpha_9 \ln HC_t + \varepsilon_t \quad \text{.....(3.1)}$$

where α's are parameters, lnRM, lng, lnFDI, lnPI, lnIBB, lnG, ln FD, lnMS, lnNX and lnHC and were log of economic growth, log remittances as a ratio of GDP, log of foreign direct investment as a ratio of GDP, log of portfolio investment as a ratio of GDP, log of cross-border interbank borrowing as a ratio of GDP, log of government expenditure as a ratio of GDP, log of financial development as a ratio of GDP, log of macroeconomic stability, log of trade openness as a ratio of GDP and log of human capital, and ε_t was white noise.

In addition to the use of the traditional ordinary least squares regression estimation, the study employed another time-series technique, impulse response function and variance decomposition (together called 'innovation accounting') to analyse the dynamic relationship between remittances and economic growth.

Based on the above, a Vector Auto regression (VAR) incorporating the growth model of the form 3.2 was built:

$$V_t = A_0 + \sum_{i=1}^{k} A_i V_{t-i} + \varepsilon_t \quad \text{..... (3.2)}$$

Where V_t = (log of economic growth, log of remittances as a ratio of GDP, log of foreign direct investment as a ratio of GDP, log of portfolio investment as a ratio of GDP, log of cross-border interbank borrowing as a ratio of GDP, log of financial development as a ratio of GDP, log of government expenditure as a ratio of GDP, log of human capital and log of macroeconomic stability), ε_t = error terms for the variables included and A_1 to A_k are nine by nine matrices of coefficients and A_0 is an identity matrix.

Definition and Measurement of Variables

Economic growth

The average annual growth rate of real gross domestic product in percentage.

Remittance

Personal transfers and compensation of employees. Personal transfers consist of all current transfers in cash or in kind made or received by resident households or from non-resident households. Compensation of employees refer to the income of border, seasonal, and other short-term workers who are employed in an economy where they are not resident and of residents employed by non-resident entities. It was measured as a ratio of gross domestic product

Foreign direct investment

An investment to acquire a lasting management (normally 10 percent of voting stock) in a business operating in Kenya by no- Kenyan investors. It was measured as a percentage of gross domestic product

Portfolio investment

Portfolio equity flows (the purchase of stocks by a foreign Enterprise) and portfolio bond flows (the purchase of bonds issued by a domestic enterprise or government by a foreigner). It was measured as a percentage of gross domestic product.

Cross-border interbank borrowing

Loans that were given by foreign banks to domestic banks. This study used net external debt (private) as a proxy for cross-border interbank borrowing. This was measured as a ratio of gross domestic product.

Human capital

The measure of skills and training of the country's labour force. It was measured by the ratio of secondary and tertiary institutions enrolment in the population.

Macroeconomic stability

A measure of macroeconomic performance of the country. Inflation measured in percentage terms was used to capture this.

Trade openness

It is the measure of the volume of trade between Kenya and the rest of the world. It was measured as the sum of exports and imports as a percentage of gross domestic products.

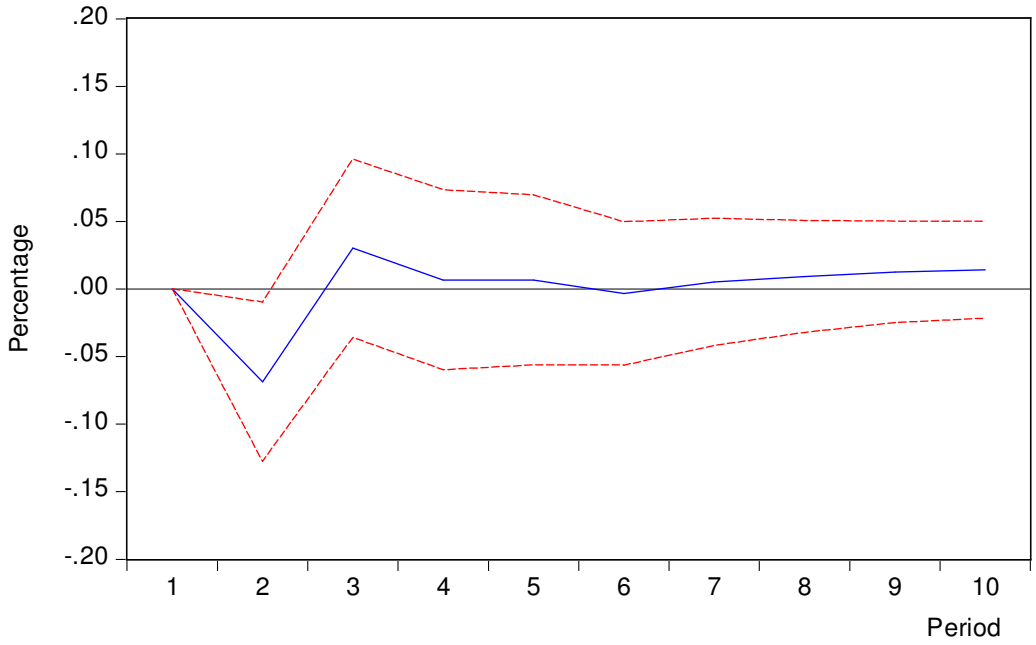

Figure 3. Response of economic growth to remittances (%).

Financial development

Measured the development of the financial markets. It was captured by the level of gross domestic capital formation as a ratio of gross domestic product.

Public expenditure

Measured the government's participation in development process. It was captured by the government's expenditure on goods and services as a ratio of gross domestic product.

FINDINGS

Effect of Remittances on Economic Growth

Variations in the independent variables shown in Appendix 5, Table A6 below jointly explain about 82 percent of the variations in economic growth. An adjusted R^2 of more than 0.5 indicates that the model has a good fit and can explain the variations in the economic growth. The F-statistic is 57.034 and is statistically significant at 1 percent level. The standard error of the regression of 0.011 is small, meaning that the model was well fitting. The remaining 18 per cent of the variations in economic growth could be explained by other factors such as better maintenance of rule of law, improvement in the terms of trade, political freedom, life expectancy and lower fertility.

The regression results in Table A8 Appendix 5 show that the coefficient of log of remittances as a ratio of GDP is 0.151 and is statistically significant. The result indicates that a 10 percent rise in the ratio of remittances to GDP will lead to an increase of economic growth by 1.5 percent. The result contradicts the findings of Barajas *et al.* (2009) and Siddique *et al.* (2010) in the case of India and Bangladesh. However, the result supports the findings of Fayissa and Nsiah (2010) for Latin American countries and Siddique *et al.* (2010) for Sri Lanka. Thus the assertion that remittances may be used for conspicuous consumption rather than for the accumulation of productive assets (Rahman *et al.,* 2006) may not be true for Kenya since this study has shown that remittances as a ratio of GDP have a positive and significant coefficient.

To complement the regression results, an impulse response analysis was done to trace the path of a shock in remittances on economic growth. The result is shown in Figure 3.

A shock in remittances leads to a drop in increase of economic growth in the second period, picks up in the third period and then evens out in the fourth period. The innovation in remittances leads to a less than 2.5 percent fluctuation in economic growth. The implication is that a shock to economic growth from a shock in remittances is minimal and is short lived.

In addition, the variance decomposition (Appendix 6, Table A7) indicates that remittances account for 4 percent of the variations in economic growth in the third period. Thereafter, remittances account for less than 4 percent of the variations in economic growth over the forecast period. Therefore, variations in remittances explain little of the variations in economic growth.

CONLUSION

The objective of this study was to investigate the effect of remittances on economic growth in Kenya. The findings are that remittances as a ratio of GDP have a positive impact on economic growth. A 10 per cent increase in the remittances as a ratio of GDP will lead to a 1.5 per cent increase in rate of economic growth.

The Kenya Government should put in place policies that will encourage remittances. The establishment of the International Jobs and Diaspora Office in the Ministry of Foreign Affairs is a good step in the right direction in boosting remittances. But the Office should work with the Ministry of Interior and Co ordination of National Government to tap into new markets for the Kenyan labour especially in the East African Community and the Middle East so as to increase the remittances in the future. In addition, the Government should put in place institutions to help recipients of remittances to make the most use of these funds and provide information to the Kenyan Diaspora on the investible opportunities available so that the remittances can be put into productive use.

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APPENDICES

APPENDIX 1: Data used in the study

Table A1. Raw Data.

YEAR	g	PI	MS	HC	RM	FDI	G	NX	PI	IBB
1970	-4.67	0	2.19	1.241	7260000	13800000	1566400000	969919612	391187844	
1971	22.17	0	3.78	1.327	7260000	7400000	1735800000	1135119826	425319830	20.10
1972	17.08	0	5.83	1.458	1386000	6300000	2138100000	1165639534	470399812	7.707
1973	5.90	0	9.281	1.526	12540000	17260000	2526900000	1402773070	645834271	-1.09
1974	4.07	0	17.81	1.64	18480000	23420000	2978000000	2214799364	764959414	-5.64
1975	0.09	272361	19.12	1.735	13200000	17158748	3476900000	2096909245	591296426	-1.64
1976	2.15	1673211	11.45	2.063	9900000	46371851	3530400000	2230869807	703226909	-7.49
1977	9.46	7249389	14.82	2.295	18480000	56545226	4485600000	2991097750	1063243908	-5.90
1978	6.91	0	16.93	2.508	26400000	34414130	5307900000	3586574861	1578393092	6.71
1979	7.62	0	8.00	2.625	19140000	84009903	6091300000	3576306534	1130468168	4.13
1980	5.57	269,535	13.87	2.796	27719999	78093746	7095400000	4752734899	1780520445	0.94
1981	4.1	0	7.90	2.571	78540001	14147557	6682700000	4406079027	1570599613	1.41
1982	5.05	0	13.82	2.584	67980002	13000893	6434400000	3744199900	1405960283	2.61
1983	1.59	0	11.61	2.837	58080002	23738843	5984100000	3238499700	1251152763	3.57
1984	1.6	0	20.67	2.847	56759998	10753527	6233900000	3640800000	1226585449	3.84
1985	4.70	0	11.40	2.373	66000000	28845949	6131100000	3401599900	1553688208	5.26
1986	6.98	0	10.28	2.398	52139999	32725777	7240600000	4035199900	1575819841	4.86
1987	5.81	0	13.01	2.624	66000000	39381344	7971600000	3802300100	1936066122	8.16
1988	6.09	0	4.80	2.653	76559998	394431	8353000000	4175600100	2126364307	8.03
1989	4.54	0	7.62	3.041	89099998	62189917	8329200000	4396951994	2056523927	6.82
1990	4.13	0	11.2	2.864	139259995	57081096	8593500000	4898423929	2075834343	7.33
1991	1.34	0	19.10	2.805	124080002	18830977	7987400000	4532382848	1709538402	5.75
1992	-1.08	0	27.33	2.783	114839996	6363133	8221100000	4351297610	1391014478	1.83
1993	-0.10	-7864561	45.98	2.321	118139999	145655517	5751800000	4190664374	1012914646	3.41
1994	2.53	3334328	28.81	2.572	137279999	7432413	7148500000	5094203040	1379108624	16.43

Table A2. Continue.

1995	4.29	4518603	1.55	2.544	298320007	42289248	8883300000	6490357930	1973888014	15.80
1996	4.01	853893	8.96	2.563	288420013	108672932	9130800000	6903723432	1807336023	-5.78
1997	0.22	4341938	11.92	2.599	351779999	62096810	10279100000	7089985181	1985851037	16.88
1998	3.33	3936773	6.72	2.546	347820007	26548246	10780000000	6891200000	2352542654	21.10
1999	2.41	1850803	5.75	2.522	431640015	51953456	10916300000	6214900000	2001649461	17.45
2000	0.60	-5988208	9.96	2.805	537900024	110904550	11392600000	6765599509	2210070810	15.33
2001	4.73	2378862	5.73	2.593	550000000	5302623	13059000000	7265546970	2440211303	17.81
2002	0.30	2951029	1.97	2.841	433000000	27618447	13191000000	7254800000	1990563881	17.34
2003	2.79	642255	9.81	2.898	538000000	81738243	15036000000	8067675027	2456439294	9.77
2004	4.62	3220886	11.79	2.952	620000000	46063931	16091000000	9573483668	2750309461	5.05
2005	5.98	3145428	9.87	2.978	805000000	21211685	18739000000	12082000000	3169203484	7.61
2006	6.33	1805250	6.04	3.178	1128000000	50674725	22504000000	14116000000	4038903760	5.42
2007	6.99	454264	4.26	3.557	1588000000	729044146	27167000000	17125579167	5183506686	7.60
2008	1.53	5022022	16.18	4.006	1692000000	95585680	30031000000	20853917511	6109391647	1.93
2009	2.65	2636777	10.55	4.332	1686228027	116257609	29394000000	18665994832	6135348837	7.61
2010	5.55	33285057	4.09	4.606	1776986938	185793190	32163000000	20382449186	6674997035	10.08

Table A3. Refined Data.

Year	G	FDI	PI	IBB	G	HC	FD	MS	NX	RM
1970	6.83930	0.860600	0.000000	NA	23.28000	1.241000	21.60700	2.188500	29.82570	0.463500
1971	-5.091500	0.416100	0.000000	20.06939	27.27000	1.327000	25.07700	3.780200	28.63940	0.409300
1972	-11.18590	0.299000	0.000000	7.701927	25.03000	1.458000	22.88800	5.831600	26.58780	0.648200
1973	-1.830900	0.689800	0.000000	-1.092377	24.33000	1.526000	22.01200	9.281200	27.39380	0.496300
1974	-3.977380	0.788600	0.000000	-5.643527	20.55000	1.640000	20.03200	17.80990	33.67590	0.620600
1975	2.065780	0.526400	0.007800	-1.640906	25.84000	1.735000	20.72100	19.12020	29.82370	0.379600
1976	7.299800	1.334600	0.047400	-7.490084	26.11000	2.063000	20.32100	11.44900	32.45050	0.280400
1977	-2.541300	1.258100	0.016200	-5.902336	24.98000	2.295000	23.77100	14.82100	34.95890	0.412000
1978	0.702700	0.648900	0.000000	6.712202	33.01000	2.508000	28.74100	16.93180	28.93550	0.497400
1979	-2.043200	1.347500	0.000000	4.128561	35.25000	2.625000	27.30600	7.979400	25.75310	0.314200
1980	-1.472000	0.782000	0.000300	0.942589	23.02500	2.796000	23.02500	13.86600	29.51700	0.274500

Table A4. Continue.

1981	0.952000	0.148700	0.000000	1.410506	24.33500	2.571000	24.33400	7.895000	30.46000	0.825600
1982	-3.459000	0.141900	0.000000	2.605412	22.05200	2.584000	22.05200	13.82100	21.64200	0.742600
1983	0.007000	0.280700	0.000000	3.572394	21.70500	2.837000	25.70500	11.60300	19.56400	0.685700
1984	3.103000	0.122400	0.000000	3.835120	20.28900	2.847000	20.28900	20.66700	19.89300	0.645900
1985	2.279000	0.343900	0.000000	5.257538	26.40000	2.373000	26.40000	11.39800	20.84900	0.786900
1986	-1.171000	0.315100	0.000000	4.864495	23.60000	2.398000	23.60000	10.28400	20.45800	0.502000
1987	0.280000	0.345800	0.000000	8.157390	24.37500	2.624000	24.37500	13.00700	20.69900	0.579600
1988	-1.551000	0.003300	0.000000	8.026232	24.66300	2.653000	24.66300	4.804000	21.31300	0.648500
1989	-0.406000	0.531300	0.000000	6.815212	18.98300	3.041000	18.98300	7.617000	21.81800	0.761200
1990	-2.795000	0.468600	0.000000	7.332797	23.71900	2.864000	23.71900	11.20000	22.98200	1.143300
1991	-2.419000	0.163700	0.000000	5.745513	20.99200	2.805000	20.99200	19.10400	21.98500	1.078900
1992	0.985000	0.056200	0.000000	1.825329	15.07000	2.783000	15.07000	27.33200	23.54200	1.013900
1993	2.626000	1.851000	-0.099900	3.413472	16.68800	2.321000	16.68800	45.97900	25.30900	1.501300
1994	1.756000	0.078900	0.035400	16.42811	14.89800	2.572000	14.89800	28.81400	25.14100	1.457000
1995	-0.276000	0.354100	0.037800	15.80165	14.70800	2.544000	14.70800	1.554000	23.17700	2.497700
1996	-3.791000	0.902100	0.007100	-5.776589	12.53000	2.563000	12.53000	8.962000	22.92300	2.394300
1997	3.110000	0.467600	0.032700	16.87957	13.45900	2.599000	13.45900	11.92400	23.39700	2.547300
1998	-0.923000	0.192800	0.028600	21.09633	12.78800	2.546000	12.78800	6.716000	22.55700	2.526500
1999	-1.808000	0.403300	0.014400	17.45405	10.87700	2.522000	10.87700	5.753000	20.20900	3.364300
2000	4.127000	0.900700	-0.486300	15.32743	14.67900	2.805000	14.67900	9.955000	20.56600	4.368600
2001	-4.427000	0.046100	0.018200	17.81250	16.76100	2.593000	16.76100	5.730000	22.36700	4.211700
2002	2.486000	0.209400	0.022400	17.35814	12.00300	2.841000	12.00300	1.970000	23.46700	3.282500
2003	1.831000	0.543600	0.004300	9.770511	13.12300	2.898000	13.12500	9.810000	23.32200	3.578100
2004	1.365000	0.286300	0.020000	5.045258	14.43200	2.952000	14.43200	11.79000	22.74300	3.853100
2005	0.345000	0.113200	0.016800	7.609988	16.91200	2.978000	16.91200	9.870000	24.28400	4.295900
2006	0.667000	0.270400	0.008000	5.423177	17.94700	3.178000	17.94700	6.036000	24.71900	4.999100
2007	-5.465000	2.683600	0.001800	7.597247	19.07900	3.557000	19.07500	4.256000	26.22400	5.845300
2008	1.117000	0.318900	0.016700	1.929493	20.34200	4.006000	20.34300	16.18100	27.55600	5.634200
2009	2.907000	0.395500	0.009000	7.614281	20.88700	4.332000	20.88600	10.55200	29.05000	5.736600
2010	5.552000	0.577700	0.103500	10.07844	22.58600	4.606000	22.58600	4.086000	31.42300	5.524900

APPENDIX 2: Descriptive Statistics
(Based on refined data)

Table A5. Descriptive statistics.

	g	FDI	PI	IBB	G	HC	FD	MS	NX	RM
Mean	-0.28	0.54	0.00	6.70	20.41	2.67	19.72	11.99	25.03	2.03
Median	0.14	0.37	0.00	6.23	20.72	2.61	20.33	10.42	23.50	1.05
Maximum	7.30	2.68	0.10	21.10	35.25	4.61	28.74	45.98	34.96	5.84
Minimum	-11.16	0.00	0.49	-7.49	10.88	1.33	10.88	1.55	19.56	0.27
Std. Dev.	3.36	0.53	0.08	7.32	5.69	0.67	4.75	8.26	4.07	1.85
Skewness	-0.59	2.16	-5.15	0.14	0.39	0.64	-0.15	2.03	0.72	0.84
Kurtosis	4.46	8.34	30.85	2.50	2.84	4.63	1.96	8.63	2.58	2.25
Jarque-Bera	5.87	78.61	1469.55	0.54	0.90	7.14	1.96	80.37	3.75	5.62
Probability	0.053	0.00	0.00	0.76	0.64	0.028	0.38	0.000	0.15	0.060
Sum	-11.07	21.61	-0.14	268.10	816.28	106.77	788.77	479.54	1001.38	81.37
Sum Sq. Dev.	441.55	11.09	0.27	2091.91	1260.82	17.34	881.43	2660.42	645.60	132.93
Observations	40	40	40	40	40	40	40	40	40	40

Where G is economic growth, FDI is foreign direct investment, PI is portfolio investment, IBB is cross-border interbank borrowing, GOVT is government expenditure, HC is human capital, FD is financial development, MS is macroeconomic stability, NX is total exports and imports and RM is remittances.

APPENDIX 3: Time Series Tests

Table A6. Findings of Unit Root Tests.

Variable	Type of test	Form of test	Test statistic	Critical value at 5%	Conclusion
Log of economic growth	ADF	C-level	-5.692379	-2.936942	Stationary
	PP	C-level	-5.747963	-2.936942	Stationary
Log of Foreign Direct Investment	ADF	C-level	-5.394832	-2.936942	Stationary
	PP	C-level	-5.419378	-2.936942	Stationary
Log of cross border interbank borrowing	ADF	C-level	-3.821021	-2.938987	Stationary
	PP	C-level	-3.898093	-2.938987	Stationary
Log of Portfolio Investment	ADF	C-level	-4.911189	-2.936942	Stationary
	PP	C-level	-4.911189	-2.936942	Stationary
Log of Government Expenditure	ADF	C-level	-1.224294	-2.936942	NonStationary
		C &T-level	-7.048089	-3.526609	Stationary
	PP	C-level	-0.925090	-2.936942	Nonstatinary
		C&T-level	-7.048089	-3.526609	Stationary
Log of Financial Development	ADF	C-level	-1.066295	-2.936942	NonStationary
		C &T-level	-2.282204	-3.526609	NonStationary
		None	2.172882	-1.949319	Stationary
	PP	C-level	-1.066295	-2.936942	NonStationary
		C&T-level	-2.320979	-3.526609	NonStationary
		None	2.2262274	-1.949319	Stationary
Log of Human Capital	ADFs	C-level	-1.576023	-2.936942	NonStationary
		C &T-level	-2.009824	-3.526609	NonStationary
		None	2.113413	-1.949319	Stationary
	PP	C-level	-1.609151	-2.936942	NonStationary
		C&T-level	-2.143076	-3.526609	NonStationary
		None	1.732167	-1.611711	Stationary
Log of Macroeconomic Stability	ADF	C-level	-4.736314	-2.936942	Stationary
	PP	C-level	-4.676458	-2.936942	Stationary

Table A7. Continue.

Log of openness	ADF	C-level	-1.012598	-2.936942	NonStationary
		C &T-level	-2.088394	-3.526609	NonStationary
		None	-0.424327	-1.949856	NonStationary
	PP	C-level	-1.024997	-2.936942	NonStationary
		C&T-level	-2.223280	-3.536609	NonStationary
		None	3.295249	-1.949319	Stationary
Log of Remittances	ADF	C-level	-0.925223	-2.936942	NonStationary
		C &T-level	-5.176775	-3.526609	Stationary
	PPs	C-level	-0.362012	-2.936942	Nonstatinary
		C&T-level	-5.119208	-3.526609	Stationary

Table A8. Correlation Matrix for the independent variables of log of economic growth.

	lnFD	**LnFDI**	**lnG**	**lnHC**	**lnIBB**	**lnMS**	**lnNX**	**lnPI**	**LnRM**
lnFD	1.000								
lnFDI	0.030	1.000							
lnG	0.069	0.118	1.000						
lnHC	-0.155	-0.086	-0.257	1.000					
lnIBB	-0.257	-0.334	-0.328	0.245	1.000				
lnMS	0.152	0.082	0.148	-0.052	-0.385	1.000			
lnNX	0.296	0.394	0.400	-0.198	-0.506	0,075	1.000		
lnPI	0.128	-0.159	0.134	0.017	-0.130	-0.111	0.227	1.000	
lnRM	-0.628	-0.053	-0.681	0.628	0.454	-0.299	-0.210	-0.130	1.000

Where lnG is the log of government expenditure, lnFDI is the log of foreign direct investment, lnIBB is log of net private external debt, lnPI is log of portfolio investment, lnNX is log of total exports and imports, lnMS is log of inflation, lnHC is log of ratio of secondary and tertiary enrolment to total population, lnFD is log of gross domestic capital formation and lnRM is log of remittances.

APPENDIX 5: Regression Results

Table A6. Log of Economic Growth Equation Results.

Variable	Coefficient	t-statistic	Probability
Log of remittances	0.151***	3.793	0.007
Log of foreign direct investment	0.089**	2.511	0.017
Log of portfolio investment	0.005	0.093	0.927
Log of cross-border inter-bank borrowing	0.057	1.395	0.173
Log of financial development	0.326**	2.504	0.018
Log of government expenditure	-0.092**	-2.296	0.039
Log of human capital	0.612***	3.083	0.004
Log of macroeconomic Stability	-0.062*	-1.870	0.071
Log of openness	0.148**	2.881	0.010
Constant	3.923	1.687	0.102

Note: *** shows the coefficient is statistically significant at 1%, ** shows that the coefficient is statistically significant at 5% and * shows that the coefficient is statistically significant at 10%.
Source: Researcher's Calculations

APPENDIX 6: Impulse Response Graphs and Variance Decomposition

Figure A1. Impulse Response Graphs.

Table A7. Variance decomposition.

	Variance Decomposition of log of economic growth									
Period	**lnG**	**lnRM**	**lnFDI**	**lnIBB**	**lnPI**	**lnNX**	**lnMS**	**lnHC**	**lnGOVT**	**lnFD**
1	100	0.0	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
2	87.80	1.87	0.35	0.00	4.32	1.82	0.00	3.23	0.00	0.60
3	74.00	4.06	0.35	8.52	3.73	2.02	0.12	2.75	1.35	3.08
4	65.55	3.80	2.01	15.42	3.28	1.78	0.29	3.44	1.26	3.15
5	58.85	3.40	1.80	18.59	7.74	1.71	0.34	3.60	1.16	2.82
6	57.06	3.36	1.76	18.90	9.26	1.68	0.32	3.69	1.15	2.83
7	56.70	3.44	1.74	19.07	9.26	1.68	0.34	3.69	1.21	2.86
8	56.38	3.42	1.74	19.43	9.20	1.67	0.35	3.68	1.24	2.89
9	55.99	3.38	1.75	19.59	9.530	1.66	0.36	3.65	1.23	2.86
10	55.90	3.37	1.75	19.57	9.64	1.68	0.36	3.65	1.22	2.85

Where lnG is the log of economic growth, lnFDI is the log of foreign direct investment, lnIBB is log of net private external debt, lnPI is log of portfolio investment, lnNX is log of total exports and imports, lnMS is log of inflation, lnHC is log of ratio of secondary and tertiary enrolment to total population, lnGOVT is log of government expenditure, lnFD is log of gross domestic capital formation and lnrM is log of remittances.