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Foreign Capital Inflows and Economic Growth in Bangladesh: An Empirical Analysis

Submitted by
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Abstract

The major objective of this study is to explore the dynamic causal linkages between foreign capital inflows (FCI) and economic growth in Bangladesh using a long span of time series data from 1981 to 2014. Though there are a lot of piecemeal studies dealt separately on the linkage between one or two components of foreign capital inflows and economic growth, the present study consider the joint impact of all the components of FCIs (namely, official development assistance, overseas remittances, foreign direct investment and external debt) on economic growth in Bangladesh. Though the earlier studies bear significance the present study is an improvement of the earlier studies in terms data used and methodological point of view. The study examines the time series properties of the data using the widely used ADF unit root tests, which is again rechecked by the Phillips-Parron test. The unit root test results show that all the data series are of I(1) processes. Hence, we utilize the Johansen-Juselius multivariate cointegration test to examine the long run equilibrium relationship among the variables in the model. Existence of a single cointegrating vector was detected and all the considered variables belong to the cointegrating space implying that there is a stable long run relationship among them. The estimation of error-correction model further confirms the existence of long run stable equilibrium among the variables in the model and there is bidirectional causality all components of FCIs (except official development assistance) and economic growth and there is a unidirectional causality from official development assistance to economic grwoth. The result is supported both by the F test (based on Granger causal relationship) and also the t test (based on error correction model). The implication of the result is that the role of foreign capital can't be ignored to achieve long run economic growth of Bangladesh. The empirical result also shows that foreign direct investment, in the presence of improved human capital, can be much more beneficial for the long run growth and development of the economy.

Keywords: Foreign Capital Inflows, Economic Grwoth, Cointegration, Granger Causality, Error Correction Models.

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1.0 Introduction and Rationale of the Study

The role of foreign capital inflows (FCI) in economic development has largely been discussed in theoretical and empirical literature. It has been widely accepted that foreign capital inflows (FCI) stimulates economic growth in the developing world. FCI enables receiving countries to achieve investment levels beyond their own domestic savings by augmenting total resource availability. FCI helps in transferring modern technology and innovation from developed to developing countries. However, the growth enhancing effect of FCI varies from country to country, and for some countries FCI can even adversely affect the growth process (Leff, 1969; Griffin, 1970; Ali, 1993; Balasubramanyam et al., 1996; Borenstein et al., 1998; De Mello, 1999; and Lipsey, 2000). Therefore, the overall issues remain contentious and lively in the literature. This debate dates back to 1950s when many capital deficient developing countries relied more on foreign capital inflows, but failed to perform satisfactorily. Thus there is still ample scope to empirically examine this issue for a resource scant developing country Bangladesh.

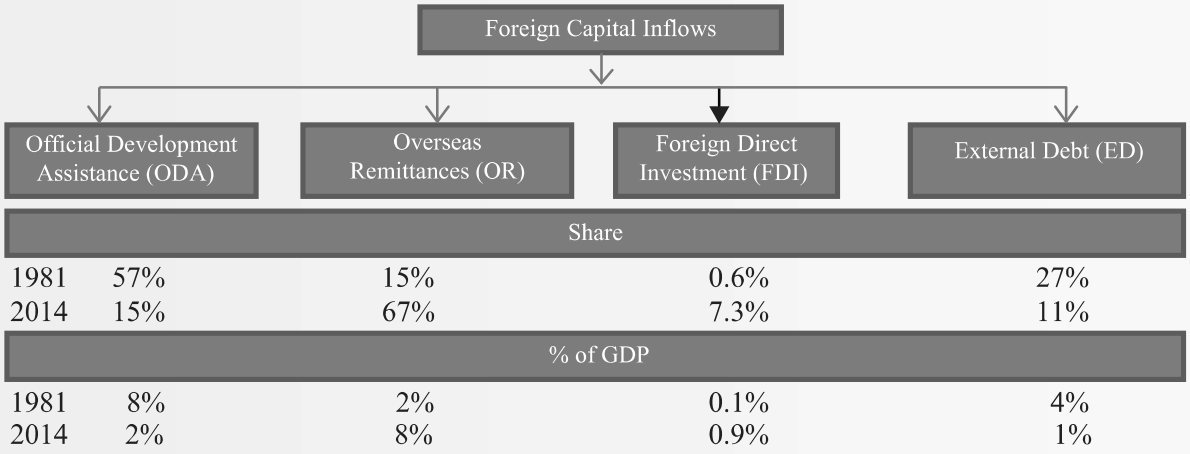
Bangladesh, a resource scare poor developing country has experienced different policy regimes since its independence in 1971. Before 1980s Bangladesh followed inward looking economic strategies and suffered from low economic growth and faced several structural problems like balance of payments crises. In this backdrop on being advised by the World Bank and IMF Bangladesh has adopted liberal policies towards foreign capital inflows. In Southeast Asia, Bangladesh has been rated favorably in terms of overall competitiveness as well as attracting foreign capital. The trends and the patterns have shown that the foreign capital in Bangladesh have increased sharply. Bangladesh lacks physical, financial and human capital as well as political and macroeconomic stability. Hence, Bangladesh has to rely on FCI. The main objective of this paper is to analyze the effectiveness and impact of foreign capital inflows on the economic growth of Bangladesh.

The paper is articulated as follows. After introducing the issues in chapter 1, chapter 2 focuses on the trend and composition of foreign capital inflows in Bangladesh. A detailed survey of the existing literature on this issue is presented in chapter 3. Chapter 4 and chapter 5 present the objective and the methodology of the study respectively. Chapter 6 points out the data and the analytical framework for testing stationarity, cointegration, error correction models and causality among the variables of the study. Chapter 7 analyzes the results found following the analytical framework. Finally, chapter 8 summarizes the paper with concluding remarks.

2.0 Trend and Composition of Foreign Capital Inflows in Bangladesh

There are different components of foreign capital inflows. The early studies on Bangladesh considered one or two of them. However, in the context of this study foreign capital inflows are composed of official development assistance (foreign aid), overseas remittances, foreign direct investment and external debt. Following chart and tables gives a birds eye view of the foreign capital flows in Bangladesh.

Figure 2.1: Composition of Foreign Capital Inflows in Bangladesh



Source: author's computations.

Table 2.1: Disaggregated Capital Inflows as percentage of Total inflows and GDP

(million US dollar)

Year	Remittances	% share	% of GDP	FDI	% share	% of GDP	ED	% share	% of GDP	ODA	% share	% of GDP
1981	305	15	2	12	0.6	0.1	554	27	4	1146	57	8
1982	491	21	4	3	0.1	0.0	586	25	5	1240	53	10
1983	628	26	5	21	0.9	0.2	590	24	5	1177	49	10
1984	500	22	4	7	0.3	0.1	535	23	4	1268	55	9
1985	500	21	3	3	0.1	0.0	569	24	4	1269	54	8
1986	576	22	4	3	0.1	0.0	760	29	5	1306	49	8
1987	748	23	4	16	0.5	0.1	934	28	5	1595	48	9
1988	764	24	4	14	0.4	0.1	817	25	4	1640	51	9
1989	758	22	4	21	0.6	0.1	996	29	5	1668	48	8
1990	782	21	3	15	0.4	0.1	1044	29	5	1810	50	8
1991	769	22	3	23	0.7	0.1	901	26	4	1732	51	7
1992	902	27	4	25	0.8	0.1	794	24	3	1611	48	7
1993	1009	28	4	74	2.0	0.3	857	24	4	1675	46	7
1994	1154	26	4	829	18.9	3.2	849	19	3	1559	36	6
1995	1202	26	4	750	16.5	2.6	849	19	3	1739	38	6
1996	1355	27	4	1543	30.2	4.8	766	15	2	1443	28	5
1997	1525	31	5	1105	22.8	3.4	745	15	2	1481	30	5
1998	1599	23	5	3493	49.3	10.3	748	11	2	1251	18	4
1999	1807	29	5	1974	31.9	5.5	867	14	2	1536	25	4
2000	1955	30	4	2147	32.8	4.6	862	13	2	1588	24	3
2001	2071	37	4	1311	23.3	2.8	865	15	2	1369	24	3
2002	2848	51	6	350	6.3	0.7	963	17	2	1442	26	3
2003	3178	50	6	463	7.3	0.9	1075	17	2	1585	25	3
2004	3610	61	6	556	9.4	1.0	695	12	1	1033	18	2
2005	3848	52	6	780	10.6	1.3	1257	17	2	1507	20	2
2006	4802	58	8	792	9.6	1.3	1067	13	2	1567	19	3
2007	5979	64	9	663	7.1	1.0	1040	11	2	1630	18	2
2008	7915	63	10	1086	8.7	1.4	1403	11	2	2061	17	3
2009	9689	72	11	700	5.2	0.8	1189	9	1	1847	14	2
2010	10987	70	10	913	5.8	0.8	1589	10	1	2227	14	2
2011	11650	75	9	1136	7.3	0.9	1032	7	1	1777	11	1
2012	12843	72	10	1292	7.3	1.0	1538	9	1	2126	12	2
2013	14461	69	10	1599	7.6	1.1	2085	10	1	2811	13	2
2014	14228	67	8	1551	7.3	0.9	2404	11	1	3084	15	2

Source: Author's own calculation based on the data the 6th Five Year Plan document (FY 2011-FY 2015), and Bangladesh Economic Survey 2015.

It reveals from table 2.1 that while foreign capital inflows have increased over time on aggregate level, weights of its disaggregated components have changed over the years. In the 1980s foreign aid and external debt occupied the major portion of the foreign capital inflows. However, over the years the percentage share of these components decreased over time. It has also been observed from the table that over the time the percentage share of overseas remittances and foreign direct investment has increased over time, but as a percentage of GDP their shares are still very low.

3.0 Survey of the Literature

The dynamic causal relationship between foreign capital inflows and economic growth has largely been analyzed in the theoretical and empirical literature. However, the early studies presented a piecemeal analysis because the composition of the foreign capital variable differs in every study. We therefore examine some of the relevant literature on these lines separately and then we shall examine the literature on the dynamic linkages between foreign capital (in general) and economic growth.

3.1 Foreign Direct Investment and Economic Growth

There is a strong theoretical standpoint on the relationship between foreign direct investment (FDI) and economic growth. The neoclassical growth theory, led by Solow and Swan argued that economic growth generally comes from two sources: factor accumulation and total factor productivity (TFP) growth (Felipe, 1997). To them, FDI contributes to the total factor productivity growth through spillover effect such as new technologies, capital formulation, the expansion of international trade and the development of human capital (labor skills and employment) (Alguacil et al., 2002; Baharumshan and Thanoon, 2006; Balasubramanyam et al., 1996, 1999; Bende-Nabende and Ford, 1998; Borensztein et al., 1998; Chakraborty and Basu, 2002; De Mello, 1997, 1999; Liu et al., 2002; Wang, 2005).

The endogenous growth models mentioned that, FDI can not only contribute to economic growth through capital formation and technology transfers (Blomstrom et al.1996; Borensztein et al., 1995) but also do so through the augmentation of the level of knowledge through labor training and skill acquisition (de Mello 1997, 1999). These models mentioned three main channels through which FDI affects growth. First, FDI increases capital accumulation in the receiving country by introducing new inputs and technologies (Dunning, 1993; Blomstrom et al., 1996; Borensztein et al. 1998). Second, it raises the level of knowledge and skills in the host country through labor and manager training (de Mello, 1997, 1999). Third, FDI increases competition in the host country industry by overcoming entry barriers and reducing the market power of existing firms.

The empirical literature on the relationship between FDI and economic growth is also voluminous. However, the results are mixed due to the application of diversified econometric techniques. Studies by Hermes and Lensink (2003), Durham (2004) and Alfaro et al. (2004) find that countries with better financial systems and financial market

regulations can exploit FDI more efficiently and achieve a higher growth rate. However, other studies point put that FDI can offset the economic growth (Bende-Nabende et al., 2003; Carkovic and Levine, 2005). Bende-Nabende et al. (2003) found that FDI in some countries had a negative relation with economic growth. Considering the omitted variable bias of the early studies several other studies included export in the model along with FDI and GDP. Burridge and Sinclair (2002) found bidirectional causality between each pair of real GDP, real exports, and real FDI for China using seasonally adjusted quarterly data from 1981:1 to 1997:4. Kohpaiboon (2003) found that, under export promotion (EP) regime, there is a unidirectional causality from FDI to GDP for Thailand using annual data from 1970 to 1999. Alici and Ucal (2003) found only unidirectional causality from exports to output for Turkey using seasonally unadjusted quarterly data from 1987.1 to 2002.4. Dritsaki and Adamopoulos (2004) found a bidirectional causality between real GDP and real exports, unidirectional causalities from FDI to real exports, and FDI to real GDP.

Hossain, A. and Hossain, M. K. (2012) study examines co-integration and the causal relationship between Foreign Direct Investment (FDI) in both the long and short term in Bangladesh, Pakistan, and India. They found co-integration between them in both the short and long term in Pakistan but no causality relationship between GDP and FDI for Bangladesh. Tabassum and Ahmed (2014) examined the relationship between foreign direct investments and economic growth of Bangladesh during the period 1972–2011. The results indicate that domestic investments exert a positive influence on economic growth whereas foreign direct investments and openness of trade are less significant. On the other hand, Shawa and Amoro (2014) investigates how foreign direct investment (FDI) relates to the host country's GDP growth, domestic investment, and export to Kenya from 1980 to 2013 using co-integration and the Granger causality test. The co-integration test results indicate that there is a long-term relationship among the four variables being analyzed in this study.

3.2 Remittances and Economic Growth

The literature on remittances is large and the researchers have analyzed the issues of trends, patterns, and the impact on the domestic economy. Rusell (1986) have identified and described the various costs and benefits to remitting. Bloom (1985) analyzed the impact of remittance by considering the role of family of migrants as the entire family is sharing, and trading off the costs and benefits of remitting. Lucas and Stark (1985) is the proponent of Bloom (1985) and supported to consider the role of family in remittance analysis. They argued that migrants use their family members as their agent as the remittances sent by the migrants are used to care for the migrant's interests, though they also contain some compensation for the agents (Chami, et. al. 2003).

Few studies analyzed the remittances issue on the endogenous migration approach or the portfolio approach. For instance, Wahaba (1991) divided remittance into two parts. The fixed remittances, which go toward family support and the discretionary remittances, which are investment flows. A good number of studies directly address the economic

effects of remittances and they concluded that most of the remitted funds are spent on consumption (Oberai and Singh 1980, Durand et al 1996). Based on household survey in Pakistan Gilani (1981) found that most of the remittances are spent on consumption, followed by residential investment. Glytsos (1993) has found almost the similar spending pattern for remittances to Greece.

Some of the other studies found that part of the remittances goes to the savings and so on investment. Using survey data for Pakistan Alderman (1996) and Adams (1998) found that remittances tend to be invested in real estate of land and buildings. Brown (1997) has found that housing expenditures are the single largest expenditure out of remittance income based on the household data for Western Samoa and Tonga. In a sample survey of 74 Egyptian households Adams (1991) concluded that the receipt of remittances increases the marginal propensity to invest. The other studies concluded that the savings and the investment resulted from remittances may be seen from the individual households but are not necessarily productive in terms of the overall economy. Expenditures on housing, land or jewelry can be considered as investment from the individual points of view but a very little portion of the remittances are channeled to the business investment or directly productive activities. It is well recognized that an increase in investment in directly productive activities by the individual lead to the increase in investment in social overhead capital by the government. Thus there is reason to believe that the remittances have negative impact on the domestic economy if it is used to increase family's consumption and stock of wealth, but not on the overall economy's stock of wealth (Chami et al 2003).

Using input-output tables for Bangladesh Stahl and Habib (1989) have found a simple remittance multiplier for the years 1976-1988 is about 1.24, which is mainly a consumption effect. Using a simple Keynesian structural model Nishat and Bilgrami (1991) found the average value of multiplier 2.43. These simple Keynesian multiplier issues captures the short-run impact of remittances on the receiving economy. However, there is very scanty literature on the impact of remittances on longer-term economic growth. A World Bank study carried out by Ali, et al. (1981) has identified overseas remittances as a means of achieving a favorable balance of payments as well as creating a new resource base for the country. A number of studies focused on the trends in the process of migration, inflow and uses of remittances (Mahmood, 1985; Salim, 1992; Murshid et al. 2001). A major finding of these studies is that a significant portion of overseas earnings is spent for consumption purposes, acquisition of assets (particularly land), investments in petty trade and business and reinvestment to go to the other countries.

Some of the other studies (Salim, 1991, 1992; Mahmood 1991, Matin, 1994, Jesmin, 2005) focused on the macroeconomic effect of overseas remittances in Bangladesh. By calculating rates, ratios and percentages they have found that as compared to the major macro variables of the country such as export, import, ADP allocations, etc., overseas remittances rank highly. They argued that over the years remittances secured the top position as a source of foreign exchange earnings. Therefore it is equivalent to a significant

amount of export earnings, covering the payments for the major imports of the country as well as having a dramatic effect on the balance of payment position. However, manpower exports have adverse effects as well. In the process of manpower exports, skilled and competed personnel also leave the country. Thus the country is deprived of their services and hence upsetting the normal functioning of the economy (Mahmood, 1985).

Hossain et. al. 2007, has examined bi-variate relationship between gross national product and the remittances for Bangladesh by considering time series properties of the variable and by applying standard econometric techniques. However, such bivariate analysis suffers from omitted variable bias, as there are dynamic linkages between remittances and the other macro variables. The present study adopts the cointegration technique as well as the Granger and Error Correction Models with the purpose of ascertaining the short run dynamics of the remittances and its association with other relevant macro variables within a long run relationship in Bangladesh. Besides, the paper also investigates the causal relationship among the studied variables in the Granger causality framework, not attepted before.

3.3 Foreign Aid and Economic Growth

The effectiveness of foreign aid has largely been discussed in both theoretical and empirical literature. Though the positive role foreign aid on the economic growth of developing countries can't be ignored, the empirical findings are mixed.

Burnside et al. (2000) investigated the aid growth nexus for developing countries and found that positive affect of aid on growth is conditional to sound monetary, fiscal and trade policies. Feeny (2003) analyzed the impact of foreign aid on poverty and human well-being through channel of growth in Papua New Guinea during the 1990s. Results suggest that aid has negative relationship with poverty through growth but in presence of inequality the magnitude of such relationship significantly diminishes. Collier et al. (2004) investigated policies and patterns of aid and growth in 17 societies coming out of civil war. Both growth and aid were found to be sensitive to policies. A study conducted by McGillivray (2005) demonstrates how aid to African countries not only increases growth but also reduces poverty. Addison, Mavrotas and McGillivray (2005) examine trends in official aid to Africa over the period 1960 to 2002. The authors largely emphasize the tremendous decrease in aid over the last decade which will have an impact on Africans living in poverty and the African economy as a whole. A study by Karras (2006) investigates the correlation between foreign aid and growth in per capita GDP using annual data from the 1960 to 1997 for a sample of 71 aid-receiving developing countries. This paper concludes that the effect of foreign aid on economic growth is positive, permanent, and statistically significant.

For Bangladesh, Islam (1992, 1999) analyzes 27 years (1972-1998) data and exposed that the effects of aid on GDP growth are barely positive, but highly insignificant. On the other hand, Ahmed (1992) showed that aid has negative effect on growth due to institutional

constraints. Quazi (2005) scrutinizes the 27 years data from 1973 to 1999 and found a little positive effect of aid on GDP growth. Obaydullah (2007) showed that, aid has little impact on the country's socioeconomic development of Bangladesh. Recently, the study of Quibria (2010) has described that; Bangladesh achieved mixed (both positive and negative contributions) results in aid effectiveness.

3.4 External Debt and Economic Growth

Public borrowings become an important issue of concern over the last decades in the backdrop of the rising trends of such borrowings by many underdeveloped and developing countries. To meet the growing needs of the public expenditure these capital deficient countries borrowed extensively both from the internal and external sources. However, the empirical findings show that the result of such borrowing is mixed.

Using the cross section-time series data from 43 less developed countries for the period of 1980-1986 by applying Two Stage Limited Dependent Variable model (2SLDV) procedure Savvides (1992) concludes that debt overhang and decreasing in foreign capital inflows have a significant negative effect in investment rates. This result is also consistent with the IMF's (1989) conclusion. Cohen (1993) estimated an investment equation for a sub-sample of 81 developing countries, over three sub-periods: 1965-1973, 1974-1981, and 1982-1987, using OLS method. The author shows that the level of debt does not explain the slowdown of investment in highly rescheduling developing countries. The author also found that the correlation between debt and investment are the same in 1980's for the rescheduling countries. They tested the effect of foreign aid on domestic investment in 1960's. The impact of foreign finance on investment seems to be low and consistent with the result of Cohen (1993). Warner (1992) tried to measure the size of debt crisis effect on investment with the Least Squares estimation for 13 less developed countries over the period of 1982-1989 using a set of independent variables. The reasons behind the decline of investment in many of the heavily indebted countries are declining exports prices, high world interest rates, and sluggish growth in developed countries. These shocks could have directly caused investment to decline.

Rockerbie (1994) utilized Ordinary Least Squares for each of the thirteen countries, over the sample period 1965- 1990. The results show that the debt crisis of 1982 had significant effects in terms of dramatic slowdown of domestic investment in less developed countries (LDCs). Afxentiou and Serletis (1996) examined 55 developing countries facing debt service difficulties. The results show that during the period of 1970-1980, the relationship between indebtedness and national productivity is not negative. Developing countries used the foreign loans to take time and absorb the shock from oil price increases as painlessly as possible. These findings were proved by all four groups of developing countries.

Fosu (1996) tested the relationship between economic growth and external debt with an empirical study for the sample of sub-Saharan African countries over the 1970-1986

periods by employing the OLS method. The results show that by using a debt-burden measure, direct effect of debt hypothesis reveals that GDP growth is negatively influenced via a diminishing marginal productivity of capital. The findings of this study also show that on average a high debt country faces about one percentage reductions in GDP growth rate annually. Sawada (1994) employed annual time series data for sample period from 1955-1990 and estimated the cointegration regression using the OLS method. The findings of this study show that heavily indebted countries (HICs) have debt overhang problems. Since their current external debts are above the expected present value of the future gains.

According to Elmendorf and Mankiw (1998), a country with a large debt is likely to face high interest rates and the monetary authority may be pressured to try to reduce those rates through expansionary policy and thus foreign debts exert positive effect to the economic growth. Lin and Sosin (2001) argue that it is the interest payment of the debt that retards the economic growth. The authors mentioned that in order to pay the principle and interest, more future tax revenues must be raised or the given tax revenue must be diverted from other productive uses, which may hurt economic growth. IMF (2004) adds that greater reliance on foreign-currency debt is associated with a higher frequency of debt crises. Relatively large shares of foreign-currency debt and depreciations can abruptly render a country insolvent.

Rahman and Bashar (2012) concluded that Bangladesh depends on external debt to fulfill the budget deficit and savings investment gap. They examined the relationship between external debt and GDP by using the data of period 1972-2010. They found a strong positive correlation between GDP and debt and results are statistically significant.

3.5 Foreign Capital Inflows and Economic Growth

There is a wide variety of theoretical and empirical literature on the relationship between foreign capital inflows and economic growth in developing countries. Chenery and Strout (1966) explained the dual-gap model and pointed out the importance of foreign resources on economic growth. Papanek (1973), North (1956), Bosworth et.al (1999) empirically proved that external resources enhance economic growth of the recipient countries by using neoclassical production function. Using three principal components of foreign capital inflows namely foreign aid, foreign private investment and foreign debt Papanek, (1973) found out that all the three flows had a statistically significant positive impact on economic growth. Among the components, foreign aid exhibited stronger effect on economic growth than other factors. Similarly, Burnside and Dollar (2000) applied TSLS approach and observed that foreign aid had a robust positive impact on economic growth.

Using data for the period of 1990 to 2000 for 11 Mediterranean countries Laureti et al. (2005) found positive relationship between foreign capital and growth only for those countries which followed openness oriented policies to attract foreign capital. Gourinchas et al. (2006) provided estimates based on calibrated standard neoclassical model. The paper contributes to the literature by estimating benefits in terms of risk sharing. Findings of the

paper suggest that welfare gains are not very large, as predicted by growth theories, even for the countries with significantly large inflow of capital. For a typical non-OECD country, switching from perfect autarky to perfect capital mobility is statistically equivalent to 1% increase in consumption which is relatively negligible as compared to gains from increase domestic productivity. Mohey-ud-din (2007) reported that FCIs have stimulating impact on economic growth, but the study used the time series data for 20 years, that is invalid for time series analysis.

Bordoetal. (2007) studied the growth-foreign capital nexus for19 countries during first era of globalization i.e. 1880-1913 and found positive relationship between the considered variables. Prasad et. al. (2007) examined the FCI and growth nexus using time series data 83 countries for the period of 1970 to 2005. The study found that foreign capital is more beneficial for industrialized countries because of better domestic financial sector. Though inflow of capital is good for non-industrial economies as well but due to underdeveloped financial sector, they fail effectively utilize such inflows that may reflect in growth in long run. The study suggests that instead of blindly looking for foreign capital, poor countries should focus on developing their domestic financial sector. Schularick et. al. (2010), compared the first era of globalization (1880-1913) with modern period (1980-2002). Using different model specifications and estimation methodologies, the study found that in first era of globalization, the financial openness and growth nexus was significant and robust for all model specifications. In decomposing foreign capital inflows into its various components, Aurangzeb and Haq (2012) examined the impact of foreign capital inflows on economic growth of Pakistan for the period of 1981-2010. Using multiple regression analysis technique the estimated results indicated that the three independent variables (remittances, external debt and foreign direct investment) are positive and have a significant relationship with economic growth (GDP). The Granger-causality test showed a bidirectional relationship between remittances and external debt, GDP and external debt, foreign direct investment and external debt, and foreign direct investment and remittances. The results also revealed a unidirectional relationship from gross domestic production to foreign direct investment.

Razzaque and Ahmed (2000) estimated a time-series relationship between foreign aid and domestic savings for Bangladeshi for the period of 1973-1998 using cointegration technique. They observed a negative relationship between domestic savings and foreign aid. The short-run relationship between these two variables was significantly negative. However, the estimated coefficient of foreign aid from different techniques varied.

Though there is a diversity of empirical literature on foreign capital inflows and economic growth. However, for Bangladesh any comprehensive literature on this issue is quite nascent. The earlier studies tried to present a piecemeal analysis on the relationship between one or two components of FCI and economic growth. The studies thus suffer from methodological deficiency and omitted variable bias. The present paper makes an improvement over the early studies in terms of overcoming the above problems and relying on the Johansen-Juselius maximum likelihood method in fully specified error correction

modeling which produces identical cointegrating vectors for either variable in the model. This study also for the first time examines the joint impact of all the components of FCI and economic growth of Bangladesh.

4.0 Objectives of the Study

Bangladesh, a small country overburdened by its 160 million people suffered from tangible capital since its independence in 1971. Besides it followed an inward looking import substitution strategy characterized by high protection and foreign exchange rationing with multiple exchange rates in the initial years of independence. The country was also heavily relied on foreign aid and loans. The result of this strategy was painful as Bangladesh faced balance of payments disequilibria, foreign exchange shortage, relatively low growth and micro inefficiencies like uncompetitive enterprises (Hossain 2013). Consequently, after 1982 Bangladesh started to shift to a more outward looking trade strategy as part of the broader market oriented economic and financial reforms in the economy. This lead to the flow foreign direct investment and Bangladesh was also successful to explore the international labor market (by its untapped and unskilled human resources). This led to the large flow overseas remittances over the years. Bangladesh, like other developing countries, still has an underdeveloped infrastructural facilities, thus fails to attract large flow of FDI to its directly productive sectors. Besides due to fragile financial system and poor financial intermediation presents significant disincentives to foster economic growth. Given the very low levels of both domestic and national savings, and together with population growth, Bangladesh needs more resources for investment. The country is still heavily relying on both the internal and external debt in the backdrop of the declining flow of the foreign aid.

In this backdrop to foster the economic growth Bangladesh has adopted market oriented trade and financial reforms along with the development of physical infrastructure. Besides by exploring the international labor market Bangladesh is trying to attract more remittances in the economy. Thus an empirical research is needed to determine the effectiveness of foreign capital inflows with regard to growth in a developing country like Bangladesh.

The empirical literature on FCI and economic growth is voluminous in both developed and developing countries. However, only a handful of literature focused on a piecemeal analysis on the relationship between one or two components of FCI and economic growth. However, the reliability of the above studies may be undermined as they suffer from the omitted variable bias and methodological deficiencies.

The major objective of this paper is to examine the short run dynamics of the long run relationship between foreign capital inflows and economic growth in Bangladesh. That is to see whether they are cointegrated or not. It also sheds lights on the causal relationship among the considered variables using annual time series data for the period 1981 to 2014. The specific objectives of the study are as follows:

First, it examines the joint impact of all the components of FCI on the economic growth in Bangladesh;

Secondly, the study takes into account of various modeling issues that arise in causality framework. The study for the first time will examine the stationary properties of the considered variables in the context of Bangladesh and will employ Augmented Dicky Fuller (ADF) test to examine the time series properties of foreign capital inflows and income. The study will also apply Johansen and Juselius test to examine the cointegration properties of the variables.

Thirdly, the study will examine both short-term and long-term dynamic relationships between the considered variables within an error-correction framework. The result found from error correction framework will be further justified by the Granger causality test and by formulation a vector error correction framework.

5.0 Methodology of the Study

To accomplish the specified objectives of the study various facets of the time series econometrics have been performed. With a view to examine the dynamic linkages among the variables the paper has taken into account of various modeling issues that arise in causality framework. The usual first step in any standard time series analysis is to conduct the unit root test to examine the stochastic properties of the data. The study examines the stationary properties of the data on the variables by applying the Augmented Dicky Fuller (ADF) test. Once it is found that the considered time series have unit roots meaning that they are nonstationary. Since the regressions on nonsatationary time series yields spurious results we need to take the first difference of the time series to make them stationary. Once the series are found stationary they are integrated of order one i.e. I(1) then it is necessary to check whether there exist any long run relationship among them. Johansen and Juselius test has been applied to examine the cointegration i.e. the long run relationships among the variables. Some of the earlier studies (Razzaque and Ahmed, 2000) for Bangladesh used the Engel and Granger two steps procedure to examine the cointegration among the variables. However, due to the robustness of such study in case of small data points the present study relied on the Johansen and Juselius cointegration test. Then the Error Correction models and Granger causality test has been applied to test the short run dynamics of long run relationships among the considered variables. The findings of the above tests help to examine the nature, direction and the extent of causality between the foreign capital inflows and economic growth in Bangladesh. The detailed analysis of the steps of time series methodology has been presented in section 6.

6.0 The Analytical Framework

6.1 Data and Model Specification

This study is based on the long span annual data for the period 1981 to 2014 taken from the Economic Trends published by the Bangladesh Bank, Five year plan documents and Bangladesh economic survey. In this study the considered variables are: gross domestic product (which is most widely proxies for economic growth) as a dependent variable while foreign aid (official development assistance), overseas remittances, foreign direct

investment and external debt. Nominal values of the variables have been used.

Based on the methodology and the objective of the study the functional relationship between foreign capital inflows and economic growth of Bangladesh can be expressed as follows:

$$GDP_t = f(ODA, OR, FDI, ED) \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (1)$$

Where GDP represents economic growth, and ODA, OR, FDI and ED stands for official development assistance (foreign aid), overseas remittances, foreign direct investment and external debt respectively. The econometric form of equation can be estimated as follows:

$$GDP_t = \beta_0 + \beta_1 ODA_t + \beta_2 OR_t + \beta_3 FDI_t + \beta_4 ED_t + v_t \ldots\ldots\ldots\ldots (2)$$

Where β_0 is the constant term, whose estimated value represents the joint effect of all the omitted variables from the model. The β 's are the slope coefficients representing parameters to be estimated and v_t is the white noise error term which is assumed to be purely random. We expect that the estimated parameters β_2 and β_3 to be positive while β_1 and β_4 may be positive or negative.

6.2 Granger Causality Test

The most widely applicable technique to examine the direction of causality among the considered variables is the Granger Causality test, due to its wide applicability to examine the direction of causality among variables. The basic premise of the Granger Causality is that a variable X causes another variable if Y can be explained better by the present and lagged values of X than by the past values of Y alone assuming that both X and Y are stationary variables. This test assumes that the information relevant to the prediction of the respective variables is contained solely in the time series data on these variables (Gujrati, 2004). The standard Granger causality test consists of estimating the following equations:

$$Y_t = \beta_0 + \sum_{i=1}^{m} \beta_i Y_{t-i} + \sum_{j=1}^{n} \alpha_j X_{t-j} + u_t \qquad (3)$$

$$X_t = \gamma_0 + \sum_{i=1}^{m} \gamma_i X_{t-i} + \sum_{j=1}^{n} \delta_j Y_{t-j} + v_t \qquad (4)$$

where u and v are mutually uncorrelated white noise series and t denotes time period. Causality may be determined by estimating equations (3) and (4) and testing the null hypothesis that for all j's against the alternative hypothesis that and for at least some j's. If the coefficients 's are statistically significant but 's are not, then Y is said to have been caused by X. The reverse causality holds if 's are statistically significant while 's are not. If both and are significant, then causality runs both way. One advantage of this test is that the framework can be generalized to include more variables in the system. In this study we have extended the Granger Causality test for the considered variables.

The implementation of Granger causality test needs to estimate the unrestricted and restricted version of equations. To test whether X causes Y the unrestricted regression involves the estimation of equation (1) using OLS. From this regression we obtain the unrestricted residual sum of squares (RSSur). Then, another version of (1) that restricts the coefficient of all lagged X's to zero is to be performed and obtained the restricted residual sum of squares (RSSr). To test case (i) above we rely on the following statistic:

$$F = [(RSSr - RSSur)/m] / [RSSur / (n – k)] \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Which follows F distribution with m and (n – k) df. Here m is equal to the number of lagged X terms included in the equation (3) and k is the number of parameters estimated in the unrestricted equation. X is said to Granger causes Y if the computed F statistics is significant at the conventional level. The same procedure can be applied to test causality from Y to X.

In the Granger causality test the direction of causality critically depends on the number of lagged terms included in the estimated regression equations. If we use too few lags we will omit potentially valuable information contained in the more distant lagged values, the causality result is thus distorted. On the other hand, if we use too may lags we will be estimating more coefficient than necessary, which in turn introduces additional estimation error into forecasts and may cause an absence of causality between them (Gujrati, 2012). The study used Akike information criteria to make such choice.

The standard Granger causality test which may report one-way or two-way causality or no causality does not consider the stationary properties of the considered time series. However, if the variables are cointegrated, the modified Granger causality test rules out the possibility of no causality when the variables share a common trend. The estimation of the Granger causality test involves three steps. Step I includes the identification of the order of integration of the variables under consideration. If the variables under consideration are integrated of the same order they are considered to be cointegrated. However, statistically we have to test whether the variables are cointegrated or not. If the variables are cointegrated, the residuals obtained from the cointegrating regressions are used as error-correction terms in estimating the modified Granger causality equations.

6.3 Cointegration Test and Error Correction Models[2]

Most of the economic time series have sluggishness that is they have the tendency to move together (Thomas, 1993). Thus we need to test for the possible cointegration of the variables as a guide for model specification. Presence of cointegration between two variables led to the causality in the Granger sense as least in one direction (Miller, 1999). There are two channels of causality between cointegrated variables –the standard Granger test and the error correction specification. Non-causality conclusion may result from failure to take the cointegratedness into account (Dickey et. al., 1991).

The notions of cointegration provide the basis for modeling both the short run dynamic and

2 This section draws partially on Hossain, M.A. (2009).

long run relationship simultaneously. If Yt and Xt are cointegrated, then Granger representation theorem (Engle and Granger, 1987) says that the relationship between the two variables can be expressed as the error correction mechanism as follows:

$$\Delta Y_t = \lambda_1 Z_{t-1} + \sum_{i=1}^{k} \delta_i \Delta X_{t-i} + \sum_{j=1}^{k} \pi_j \Delta Y_{t-j} + u_{1t} \ldots\ldots..(6)$$

$$\Delta X_t = \lambda_2 Z_{t-1} + \sum_{i=1}^{k} \tau_i \Delta X_{t-i} + \sum_{j=1}^{k} \zeta_j \Delta Y_{t-j} + u_{2t} \ldots\ldots..(7)$$

where, $Z_t = Y_t - \gamma X_t$, and u1t and u_{2t} are white noise error terms. In these two equations, the series Y_t and X_t are cointegrated when at least one of the coefficients λ_1 or λ_2 is not zero. This error correction model allows us to study the short run dynamics of the long run relationship between Y_t and Xt. If $\lambda_1 \neq 0$ and $\lambda_2 = 0$, then Xt will lead Yt in the long run. The opposite will occur if $\lambda_2 \neq 0$ and $\lambda_1 = 0$. If both $\lambda_1 \neq 0$ and $\lambda_2 \neq 0$, then feedback relationship exists between Y_t and X_t , which will adjust in the long run. In addition short run dynamics between Y_t and X_t are characterized by the coefficients δ_i's and ζ_j's. If δ_i's are not all zero, movements in the X_t will lead to Y_t in the short run. If ζ_j's are not all zero, movement in the Y_t will cause X_t in the short run. If γ can be obtained so that Z_t can be constructed, the remaining parameters in equations (6) and (7) can easily be estimated. Engle and Granger (1987) propose a two-step procedure. The first step involves OLS regression of Y_t on X_t and yield a consistent estimate for γ. The next step is the OLS estimation of equations (6) and (7) with Z_t replaced by estimated Z_t.

7.0 Analysis of the Results

The standard time series technique to examine the causality among the considered variables involves testing for integration, cointegration and error correction mechanism. The estimated empirical findings have been examined below.

7.1 Testing for the Order of Integration (ADF Test)

The time series are usually nonstationary in nature. Estimating regression based on nonstationary data gives spurious results. Thus we need to make them stationary. The first step thus consists of determining the order of integration of the variables under consideration. This is done by using the Augmented Dickey- Fuller (ADF) test (Dickey and Fuller, 1981). This test is based on the following regression equation with a constant and a trend of the form:

$$\Delta Y_t = \phi_0 + \phi_1 t + \gamma_0 Y_{t-1} + \sum_{i=1}^{n} \psi_t \Delta Y_{t-1} + \varepsilon_t \qquad (8)$$

In the above equations, Y_t is a random walk with drift around a stochastic trend, is the first difference operator, is the white noise error term. The null hypothesis that W is a nonstationary time series is rejected if is less than zero and statistically significant. The ADF is widely used due to the stability of its critical values as well as its power over different sampling experiment. In this study the test is applied to both the original series (in logarithmic form) and to the first differences. The lag parameters are determined by Akike information criterion. The results are reported in table -1.

Table 1: Test for Integration

Variable	ADF		Phillips-Perron	
	Level	First Difference	Level	First Difference
lnGDP	-2.450(2)	-11.274(2)***	-3.582(2)	-6.026(2)*
lnODA	-4.032(2)	-5.425(3)*	-2.9656(2)	-6.542(2)*
lnOR	-2.045 (2)	-6.870 (3)*	-1.498 (2)	-5.896 (2)*
lnFDI	-1.569 (2)	-7.210 (2)**	-2.325 (2)	-6.025 (2)*
lnED	-2.356 (2)	-6.320 (2)*	-1.985 (2)	-7.026 (2)**

Notes: i) Figures within parentheses indicate lag lengths chosen by the Akike information criterion (AIC); ii) ***, ** and * denote rejection of the null hypothesis of unit root at the 1%, 5% and 10% levels respectively. iii) Author's own formulation by using econometric software Eviews 7.0.

The results indicate that at the levels all the considered variables are nonstationary. Therefore to achieve stationarity the variables must be first-differenced. The ADF statistics are significant only for the first-differenced series with the intercept term. The PP statistics also shows the same result. That is all the series are integrated of the same order i.e., I(1). Since all of the series are integrated of the same order, the series may be tested for the existence of a long-run relationship between them. Thus, cointegration analysis can be applied to the selected variables in the present analysis as all the series are found to be stationary in first differences.

7.2 Testing for Cointegration (Multivariate Cointegration Test)

The existence of long run relationship among the economic variables implies that they are cointegrated (Thomas, 1993). In other words, a long-run relationship means that the variables move together over time so that any short-run deviations from the long-run trend will be corrected (Manning and Andrianacos, 1993). The main assertion behind cointegration is that if, in the long-run, two or more series move closely together, even though the series themselves are trended, the difference between them is constant. It is possible to regard these series as defining a long-run equilibrium relationship, as the difference between them is stationary (Hall and Henry, 1989). A lack of cointegration suggests that such variables have no long-run relationship and they can wander arbitrarily far away from each other (Dickey et. al., 1991).

If the considered time series variables found to be integrated of order one i.e. I(1), there is the possibility that they have a tendency to move together in the long run meaning that they have a stable long run relationship. The usual second step thus involves searching for cointegration between variables. This can be empirically tested either by Engle-Granger

two step cointegration procedures or by Johansen-Juselius cointegration technique. This study relied on Johansen-Juselius cointegration technique because of limited data points. In this technique two test statistics are used to identify the number of cointegrating vectors, namely the trace statistic and the maximum eigenvalue test statistic. The Trace test statistic for the null hypothesis that there are at most r distinct cointegrating vectors is

$$\lambda_{trace} = T \sum_{i=r+1}^{N} \ln(1 - \lambda_i) \quad \ldots\ldots\ldots\ldots \qquad (9)$$

where, λi's are the N-r smallest squared canonical correlations between Xt-k and ΔXt (where Xt = (considered variables)/ and where all variables in Xt are assumed I(1)), corrected for the effects of the lagged differences of the Xt process.

The maximum eigenvalue statistic for testing the null hypothesis of at most r cointegrating vectors against the alternative hypothesis of r + 1 cointegrating vectors is given by

$$\lambda_{\max} = -T \ln(1 - \lambda_{r+1}) \ldots\ldots\ldots\ldots \qquad (10)$$

Johansen (1988) shows that equations (9) and (10) have non-standard distributions under the null hypothesis and provide approximate critical values for the statistic, generated by Monte Carlo methods. The result is presented in table-2.

Table 2: Results of the Johansen Cointegration Test

Trace Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value (5%)	Prob.**
None*	0.8903	78.56	69.818	0.0000
At most 1*	0.7852	72.69	47.856	0.0000
At most 2*	0.7214	28.65	29.797	0.0001
At most 3	0.3215	18.89	15.494	0.0689
At most 4*	0.2356	8.26	3.841	0.0006

Maximum Eigenvalue

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	Critical Value (5%)	Prob.**
None*	0.8903	101.78	33.786	0.0000
At most 1*	0.7852	44.36	27.584	0.0001
At most 2	0.7214	12.35	21.131	0.6453
At most 3*	0.3215	10.45	14.264	0.1848
At most 4*	0.2356	8.69	3.841	0.0066

* denotes rejection of the hypothesis at the 5% level.
** MacKinnon-Haug-Michelis (1999) p-values.

i) Author's own formulation by using econometric software Eviews 7.0.

Table-2 reports the trace tests and the maximum eigenvalue test of Johansen and Juselius (1991). These are complementary versions of the same test to determine the cointegration rank, r. The tests results reveal that the null hypothesis of no cointegrating vector between GDP and foreign capital inflows components is rejected at the 5% level of significance. Both the test suggest that there are four cointegrating relationship among GDP and foreign capital inflows components. Thus there exist a unique long run relationship between the GDP and the other considered variables. The implication is that all the foreign capital inflow components have some important long run implications of to changes in national output in Bangladesh economy.

7.3 Estimation of the Error Correction Models

The notion of cointegration provides the basis for modeling both the short run and long run relationship simultaneously. It is found that the considered variables are cointegrated, then according to Granger representation theorem (Engle and Granger, 1987) the relationship among the gross domestic product (GDP), official development assistance (ODA), overseas remittances (OR), foreign direct investment (FDI) and external debt (ED) can be expressed as the error correction mechanism as follows:

$$\Delta GDP = \mu_{11} + \mu_y v_{t-i} + \sum_{i=1}^{k} \delta_{11,i} \Delta GDP_{t-i} + \sum_{i=1}^{k} \delta_{12,i} \Delta ODA_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta OR_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta FDI_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta ED_{t-i} + u_1 \ldots (11)$$

$$\Delta ODA = \mu_{11} + \mu_y v_{t-i} + \sum_{i=1}^{k} \delta_{11,i} \Delta ODA_{t-i} + \sum_{i=1}^{k} \delta_{12,i} \Delta GDP_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta OR_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta FDI_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta ED_{t-i} + u_1 \ldots (12)$$

$$\Delta OR = \mu_{11} + \mu_y v_{t-i} + \sum_{i=1}^{k} \delta_{11,i} \Delta OR_{t-i} + \sum_{i=1}^{k} \delta_{12,i} \Delta ODA_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta GDP_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta FDI_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta ED_{t-i} + u_1 \ldots (13)$$

$$\Delta FDI = \mu_{11} + \mu_y v_{t-i} + \sum_{i=1}^{k} \delta_{11,i} \Delta FDI_{t-i} + \sum_{i=1}^{k} \delta_{12,i} \Delta ODA_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta OR_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta GDP_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta ED_{t-i} + u_1 \ldots (14)$$

$$\Delta ED = \mu_{11} + \mu_y v_{t-i} + \sum_{i=1}^{k} \delta_{11,i} \Delta ED_{t-i} + \sum_{i=1}^{k} \delta_{12,i} \Delta ODA_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta OR_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta FDI_{t-i} + \sum_{i=1}^{k} \delta_{13,i} \Delta GDP_{t-i} + u_1 \ldots (15)$$

This equation system constitutes VAR in first differences, which also has error correction terms and allows examining the short run dynamics of the long run relationship among the variables. The coefficient of the error correction term must be seen as correcting towards equilibrium subspace, i.e., how adjustment is taking place in the short run to maintain stable equilibrium long run relationship among the considered variables. The coefficients of the lagged values of the variables show whether the independent variables cause the corresponding dependent variable (Ramos, 2001). The result of the causality tests are shown in Table 3.

Table 3: Temporal Causality Based on Granger Causality Test (F statistic) and Vector Error Correction Model (t statistic)

Dependent	Significance levels of F statistic					t statistic
Variable	Δ lnGDP	Δ lnODA	Δ lnOR	Δ lnFDI	Δ lnED	ECM $_{t-1}$
Δ lnGDP	-	4.682*	7.526*	4.840**	3.982***	-3.571**
Δ lnODA	-0.652	-	-3.52***	-0.638	3.583***	0.689
Δ lnOR	8.569*	3.871***	-	5.642**	0.521	0.056
Δ lnFDI	9.892*	4.260**	5.026**	-	0.426	0.547
Δ lnED	-4.356**	-5.378**	-4.36	-5.692**	-	-4.573*

Note: i) * denotes 1% level of significance, ** denotes 5% level of significance, ***denotes 10% level of significance.
ii) Author's own formulation by using econometric software Eviews 7.0.

Table 3 reveals that there is a unidirectional causality from official development assistance (foreign aid) to the gross domestic product (GDP), while there is a bidirectional causality from other components of FCI and the GDP. The result is supported both by the F test (based on Granger causal relationship) and also the t test (based on error correction model). The implication of the result is that the more the economy can attract foreign direct investment, overseas remittances and utilize external debt to the directly productive activities the higher is the possibility of income growth. This result has been justified by many of the earlier piecemeal studies that examined the causality between the individual components of FCI and economic growth.

It can also be seen from 3rd line table 3 that a change of GDP is positively causally related to the all four components of FCI. The implication of the result is that foreign capital inflows have positive impact on the output growth in Bangladesh. The Granger causality test also shows the bidirectional causality between GDP and overseas remittance, GDP and FDI, and GDP and external debt. The table also shows that the GDP has no causal relationship with ODA. These findings are justified as the earlier piecemeal studies questioned about the effectiveness of foreign aid to the developing and underdeveloped countries.

8.0 Summary and Conclusions

The role of foreign capital inflows on economic growth process of capital deficient underdeveloped and developing countries can't be ignored. For these countries foreign capital is used to increase accumulation and rate of investments to create conditions for accelerated economic growth.

The major objective of this study is to examine the impact of foreign capital flows measured by foreign debt, FDI and worker's remittances and foreign aid on economic growth of Bangladesh economy for the period of 1981-2014. After finding all of the time series variables to be integrated of order 1, I(1) that is stationary at their first difference Johansen cointegration method and Granger causality test and the error correction model have been applied for the long run and short run effects of foreign capital flows on growth.

The study found unidirectional causality from official development assistance (foreign aid) to the gross domestic product (GDP), while there is bidirectional causality from other components of FCI and the GDP. The result is supported both by the F test (based on Granger causal relationship) and also the t test (based on error correction model). The implication of the result is that the more the economy can attract foreign direct investment, overseas remittances and utilize external debt to the directly productive activities the higher is the possibility of income growth. The result also shows that the GDP is positively causally related to the all four components of FCI. The implication of the result is that foreign capital inflows have positive impact on the output growth in Bangladesh. The Granger causality test also shows the bidirectional causality between GDP and overseas remittance, GDP and FDI, and GDP and external debt. The estimated result also shows that the GDP has no causal relationship with ODA.

The negative impact of foreign aid (official development assistance) on growth calls for the reliance of the economy on domestic resources. Domestic resource mobilization and incentives for domestic investment can be helpful for long run growth. The improvement of both physical and financial infrastructure may have growth stimulating effect by increasing overseas remittances and attracting foreign direct investment. Foreign direct investment, in the presence of improved human capital, can be much more beneficial for the long run growth and development of the economy.

References

Adams, Richard H. Jr. (1991). The Economic Use and Impact of International Remittances in Rural Egypt, Economic Development and Cultural Change, Vol. 39, P. 695-722.

Addison, T., Mavrotas, G. and M. McGillivray (2005). Aid to Africa: an unfinished agenda, Journal of International Development, vol.17, p.989-1001.

Afxentiou, P. C. (1993). GNP Growth and Foreign Indebtedness in Middle-income Developing Countries, International Economic Journal, Vol. 7, No. 3, pp. 81-92.

Afxentiou, P. C. ve Serletis, Apostolos (1996a). Foreign Indebtedness in Low and Middle Income Developing Countries, Social and Economic Studies, Vol. 45, No. 1, pp. 133-159.

Ahmad, S. (1990). Foreign Capital Inflow and Economic Growth: A Two Gap Model for the Bangladesh Economy. *Bangladesh Development Studies Vol.*18, no. 1: 55-78.

Ahamad, M. G. and Tanin, F. (2010). *Determinants of and the Relationship between FDI and Economic Growth in Bangladesh.* Unpublished.

Alesina, A. and D. Dollar (2000).Who gives foreign aid to whom and why? Journal of

Economic Growth, vol. 5, p.33–63.

Alam, Mohammad S. (1999). Foreign Direct Investment and Economic Growth of India and Bangladesh: A Comparative Study". *The India Journal of Economics* 80 (1), no.316: 1-15.

Alguacil, M. T. and V. Orts (2002). A Multivariate Cointegrated Model Testing for Temporal Causality between Exports and Outward Foreign Investment: the Spanish case, *Applied Economics*, 34, 119-32.

Alguacil, M. T., A. Cuadros and V. Orts (2002). Foreign Direct Investment, Exports and Domestic Performance in Mexico: A Causality Analysis," *Economic Letters*, 77, 371-76.

Ali, M.Q. (1980). Manpower Export from Bangladesh: Its Socio-economic Implication. *The Dhaka University Studies*, Part- C, Vol. 1, No. 2, P.47-56.

Amjad, R. (1986). Impact of Worker's Remittances from the Middle East on Pakistan's Economy: Some Selected Issues, Pakistan Development Review, Vol. 25, P. 757-782.

Amoateng, Kofi. ve Amoako, Adu.B. (1996). Economic Growth, Export and External Debt Causality: The Case of African Countries, Applied Economics, Vol 28, pp. 21-27.

Baharumshah, A. Z. and M. A-M Thanoon (2006). Foreign capital flows and economic growth in East Asian countries, China Economic Review, 17, 70-83.

Balasubramanyam, V. N., M. Salisu and D. Sapsford (1999). Foreign Direct Investment as an Engine of Growth," The Journal of International Trade & Economic Development, 8, 1, 27-40.

Barro, Robert J., and Xavier Sala-i-Martin (1995) Economic Growth. New York, N.Y.: McGraw-Hill.

Bauerfreund, O. (1989). External Debt and Economic Growth: A Computable General Equilibrium Case Study of Turkey 1985-1986, Duke University Ph.D. thesis (unpublished).

Bende-Nabendem, A., J. L. Ford, B. Santoso and S. Sen (2003). The Interaction between FDI, Output and the Spillover Variables: Co-integration and VAR Analysis for APEC, 1965-1999," *Applied Economics Letters*, 10, 165-72.

Borensztein, E., J. De Gregorio, J-W. Lee (1998). How does Foreign Direct Investment Affect Economic Growth, *Journal of International Economics*, 45, 115-35.

Borensztein, E. (1990). Debt Overhang, Credit Rationing, and Investment, Journal of Development Economics, Vol. 32, pp. 315-335.

Boone, P. (1996). Politics and the effectiveness of foreign aid, European Economic Review, vol.40, p.289–329.

Brautigam, D. A. and S. Knack (2004). Foreign aid, institutions, and governance in Sub-Saharan

Africa, Economic Development and Cultural Change, vol.13, p.255-285.

Bullow, J. ve Rogoff, K. (1990). Cleaning Up Third World Debt Without Getting Taken To the Cleaners, Journal of Economic Perspectives, Vol 4, No 1, pp. 31-42.

Burnside, C. and D. Dollar (2000). Aid, policies, and growth, American Economic Review,

vol.90, p.847–868.

BOI 2010: Board of Investment, Prime Minister's Office, Dhaka.

Chakraborty, C. and P. Basu (2002). Foreign Direct Investment and Growth in India: a Cointegrating Approach, , 34, 1061-73.

Chami, R., C. Fullenkamp, and S. Jahjah, (2003). Are Immigrant Remittance Flows a Source of Capital for Development? The IMF Working Paper, WP/03/189, Washington, D. C.

Chawdhury, A. R. (2001). Foreign Debt and Growth in Developing Countries: A Sensitivity and Causality Analysis Using Panel Data. Department of Economics, Marquette University, USA.

Chenery H B and Strout A M (1966). Foreign Assistance and Economic Development, American Economic Review, Vol. 56, No. 4, pp. 679-773.

Cohen, D. (1993). Low Investment and Large LDC Debt in the 1980s. American Economic Review 83:3, 437–449.

Chowdhury, K. (1994). A Structural Analysis of External Debt and Economic Growth: Some Evidence from Selected Countries in Asia and the Pacific, *Applied Economics*, Vol 26, pp. 1121-1131.

Cunningham, R.T. (1993). The Effects of Debt Burden on Economic Growth in Heavily

Indebted Nations, Journal of Economic Development, Vol 18, No. 1, pp. 115-126.

Dalgaard, C. J., Hansen, H. and F. Tarp (2004). On the empirics of foreign aid and growth,

Economic Journal, vol.114, p.191–216.

De Mello, Jr. (1997). Foreign Direct Investment in Developing Countries and Growth: A Selective Survey, *Journal of Development Studies*, 34, 1, 1-34.

De Mello, Jr. (1999). Foreign Direct Investment-led Growth: Evidence from Time Series and Panel Data, *Oxford Economic Papers*, 51, 133-51.

Dollar, D. (1992). Outward-Oriented Developing Economies Really Do Grow More Rapidly: Evidence from 95 LDCs, 1976–85. *Economic Development and Cultural Change* 40:3, 553–544.

Doucouliagos, H. and M. Paldam (2009). Conditional aid effectiveness: a meta-analysis,

Journal of International Development, vol.21, no.7, p.1582-1601.

Easterly, W. (2003). Can foreign aid buy growth?, Journal of Economic Perspectives, vol.17,

p.23–48.

Easterly, W., Levine, R. and D. Roodman (2004). Aid, policies, and growth: comment,

American Economic Review, vol.94, p.774–780.

Engle, R. and Granger, C.W.J (1987). Cointegreation and Error Correction: Representation, Estimation and Testing" *Econometrica*, 55: 251-276.

Fajnzylber, P. and H. Lopez, (2008). The Development Impact of Remittances in Latin America in *Remittances and Development – Lessons from Latin America,* The World Bank, 2008.

Feldstein, M. (1986). International Debt Service and Economic Growth: Some Simple Analytics, National Bureau of Economic Research, 2076.

Feeny, S. and M. McGillivray (2008). Aid allocation to fragile states: absorptive capacity

constraints, Journal of International Development, vol.20, no.7, p.1031-1050.

Fosu, A. K. (1996). The Impact of External Debt on Economic Growth in Sub-Saharan Africa, Journal of Economic Development, Vol 21, No 1, pp. 93-118.

Fry, Maxwell J. (1986). Terms-Of-Trade Dynamics in Asia: An Analysis of National Saving and Domestic Investment Responses to Terms-Of-Trade Changes in 14 Asian LDC, Journal of International Money and Finance, Vol. 5, pp. 57-73.

Geiger, L.T. (1990) Debt and Economic Development in Latin America, The Journal of Developing Areas, 24, 181-194.

Gilani, I., 1981. "Labor Migration from Pakistan to the Middle East and its Impact on the Domestic Economy, Part I," *Pakistan Institute of Development Economics Research*

Report Series 126.

Gong, L. & Zou, H. (2002). Effects of Growth and Volatility in Public Expenditure on Economic Growth: Theory and Evidence, Peking, Peking University Press

Gomanee, K., Girma, S. and O. Morrisey (2005). Aid and growth in Sub-Saharan Africa:

accounting for transmission mechanisms, Journal of International Development, vol.17,

no.8, p.1055–1075.

Griffin K B (1970). Foreign Capital, Domestic Savings and Development, Bulletin of Oxford University, Vol. 32 No. 2, pp. 99-112, Institute of Economics and Statistics, Oxford University Press.

Gujarati 1995: D. N. Gujarati, *Basic Econometrics*, 4th edition, McGraw Hill Book Co., Singapore.

Gujarati, D.N. (2003). *Basic Econometrics*. 3rd edition, Mcgraw Hill, New York.

Glytsos, N.P. (1993). Measuring the Income Effects of Migrant Remittance: A Methodological Approach Applied to Greece, Economic Development and Cultural Change, Vol. 42, P. 131-161.

Hansen, H. and F. Tarp (2000). Aid effectiveness disputed, Journal of International Development, vol.12, p.375–398.

Hansen, H. and F. Tarp (2001). Aid and growth regressions, Journal of Development Economics, vol.64, p.547–570.

Hasnain, Mohsin A. (2000). The Impact of Foreign Capital Inflows on Saving, Growth and Long Run Debt Capacity: The Case of Pakistan, M.Phil. Thesis, Applied Economics Research Centre, University of Karachi, Karachi.

Hossain, M.A., N.A. Shams and W. Habib, (2007). Gross National Product, Overseas Remittances and Causality in Bangladesh: A Bivariate Analysis, *The Jahangirnagar Economic Review*, Vol. 17, June 2007.

Hossain, M. A. (2015). Trade Liberalization, Financial Sector Reforms and Economic Growth: A VAR Approach (unpublished).

Hudson, J. (2004). Introduction: aid and development, Economic Journal, vol.114, p.185–190.

IMF (2000) International Financial Statistics. Washington, D. C.: International Monetary Fund.

Jensen, P. S., M. Paldam (2003). Can the New Aid-Growth Models Be Replicated?, Working Paper No.2003–17, Institute for Economics: Aarhus.

Jennings, A. and M. Clarke, (2005). The development impact of remittances to Nigeria, *Development in Practric*, Vol. 15, No. 5, P.685-691.

Jesmin, R. (2005). Is Migrants' Remittances A Potential Tool For The Development OF

Bangladesh Economy, Journal of Business Administration, Vol. 31, No. 3 & 4, P. 15-41.

Johansen, S. (1988). Statistical Analysis of Cointegrating Vectors," *Journal of Economic Dynamics and Control,* 12: 231-54.

Johansen, S. and K. Juselius, (1990). "Maximum Likelihood Estimation and Inference on Cointegration- With Applications to the Demand for Money", *Oxford Bulletin of Economics and Statistics*, Vol. 52, P.169-210.

Kabir, R., (2007). Foreign Direct Investment and Sustainable Growth: A Case Study on Bangladesh. USA: Department of Economics, Emory College of Emory University.

Karagol, Erdal (2002). The Causality Analysis of External Debt Service and GNP: The Case of Turkey, Central Bank Review, Vol.2, No. 1, pp. 39-64.

Karras, G. (2006). Foreign aid and long-run economic growth: empirical evidence for a panel of

developing countries, Journal of International Development, vol.18, no.7, p.15–28.

Kiong W. H. and Jomo K. S. (2001).The Impact of Foreign Capital Inflows on the Malaysian

Economy, 1966-96, FEA Working Paper No. 2001-02.

Krueger, Anne O. (1987). Debt, Capital Flows, and LDC Growth, American Economic Review, Vol. 77, pp. 159-164.

Liu, Xiaohui, P. Burridge and P. J. Sinclair (2002). Relationships between Economic Growth, Foreign Direct Investment and Trade: Evidence from China, *Applied Economics*, 34, 1433-40.

MacKinnon, J. (1991). Critical Values for Cointegration Tests," in R. F. Engle & C. W. J. Granger (eds.) *Long-run Economic Relationships:Readings in Cointegration*, Oxford University Press.

Matin, K.A., (1994). The Overseas Migrant Workers, Remittances and The Economy of Bangladesh: 1976/77 to 1992/93. *Dhaka University Journal of Business Studies*, Vol. 15, No. 2, P.87-109.

Mohey-ud-din (2007). Impact of Foreign Capital Inflows (FCI) On Economic Growth in Pakistan [1975-2004], Journal of Independent Studies and Research, Vol. 5, No. 1, pp. 24-29.

Mosely P. (1980). Aid Savings and Growth Revisited", Oxford Bulletin of Economics and Statistics, Vol. 42, No. 1, pp. 79-95.

Murshid, K.A.S., K. Iqbal and M. Ahmed, (2001). *Migrant Workers from Bangladesh: Remittance Inflows and Utilization*. Research Report No. 170. The Bangladesh Institute of Development Studies, Dhaka.

Narayan P. K. and Smyth R. (2005). Exchange Rates and Stock Prices in South Asia: Evidence

From Granger Causality Tests, The ICFAI Journal of Applied Finance, Vol. 11, pp. 31-37.

Papanek (1972). The Effect of Aid and Other Resource Transfers on Saving and Growth in Less Developed Countries, Economic Journal, Vol. 82, No. 327, pp. 934-950.

Pesaran, M. H. and R. P. Smith (1998). Structural Analysis of Cointegrating VARs, *Journal of Economic Surveys*, 5, 471-505.

Phillips, P. C. B., and P. Peron (1988) Testing for a Unit Root in Time Series Regression. Biometrika 75, 335–346.

Perasso, G. (1992). Debt Reduction versus Appropriate Domestic Policies, Kyklos, Vol.45, No. 4, pp. 457-467.

Rockerbie, D. W. (1993). Credit Rationing and Macroeconomic Adjustment in Latin America, The Quarterly of Review of Economics and Finance, Vol.33, No. 4, pp.325-342.

Sachs, J. D. (1986).Managing the LDC Debt Crisis, Brooking Papers on Economic Activity, No. 2, pp. 397- 431.

Savvides, A. (1992). Investment Slowdown in Developing Countries During the 1980s: Debt Overhang Or Foreign Capital Inflows, Kyklos, Vol. 45, No. 3, pp. 363-378.

Salim, R.A., (1992). Overseas Remittances in Bangladesh: Importance, Potentialities and Policy Options. *The Jahangirnagar Economic Review,* Part II, Social Science: Vols. XIII & XIV.

Sawada, Y. (1994). Are the Heavily Indebted Countries Solvent? Tests of Inter Temporal Borrowing Constraints, Journal of Development Economics, Vol. 45, pp. 325-337.

Stahl, C.W. and A. Habib, (1989). The Impact of Overseas Workers' Remittances on Indigenous Industries: Evidence from Bangladesh, The Developing Economies, Vol. 27, P. 269-285.

Shams, N.M. (2012): "Money and Price in Bangladesh: A bivariate Causality", (mimeo).

Tendulkar, S., and B. Sen (2000): Markets and Economic Growth in South Asia, 1950–97: An Interpretation. Unpublished Study Prepared for Global Research Project of World Bank.

Todaro, M.P. and Smith, S.C., (2006), Economic Development, 9th Edition, Page 1-22.

UNCTAD (2005, 2007). UNCTAD *World Investment Report, Transnational Corporations and the Internationalization of R&D.*

Wang, Miao (2005). Manufacturing FDI and Economic Growth: Evidence from Asian Economies. Department of Economics, Marquette University.

Wahba, S., (1991). What Determines Workers' Remittances?" Finance and Development, December, P. 41-44.