Foreign Direct Investment and Economic Growth: Evidence from Bangladesh

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Abstract: The objective of this study is to examine the relationship between foreign direct investment and economic growth in Bangladesh using annual data from 1986 until 2013. Cointegration technique is applied to examine the long run relationship between foreign direct investment and real gross domestic product in Bangladesh. Granger causality is also employed to see the causal effect of foreign direct investment and real gross domestic product. Our main findings reveal that there is no significant long run relationship between foreign direct investment and economic growth. However, two-way granger causality is evident between foreign direct investment and gross domestic product. Foreign direct investment granger cause to gross domestic product and gross domestic product also granger cause to foreign direct investment.

Keywords: Foreign Direct Investment, Gross Domestic Product, Cointegration Test, Granger Causality.

Introduction

The relationship between foreign direct investment (FDI) and economic growth has been a topical issue for several decades. Policymakers in a number of countries are engaged in creating all kinds of efforts to attract FDI, because it is assumed to positively affect local economic development. Notable growth in FDI over the 1990’s, especially in the developing countries, has inspired a stream of literature focusing on the impact of FDI on the dynamics of growth measured by GDP in the recipient country.

According to Organization for Economic Co-operation and Development (OECD), foreign direct investment is cross-border investment by a resident entity in one economy with the objective of obtaining a lasting interest in an enterprise resident in another economy. World Bank defines foreign direct investment as the net inflows of investment to acquire a lasting management interest (10 percent or more of voting stock) in an enterprise operating in an economy other than that of the investor. In the Balance of Payment Manual, the foreign direct investment is cross-border investments that were made by foreign investors who have financial interest in certain companies and wishing to control the company’s operation in certain degree.

In 2002, OECD reported that the countries with weaker economies consider the foreign direct investment as the only source of growth and economy modernization. Thus, the governments especially in developing countries are focusing on foreign capital, (Carkovic & Levine, 2002). In

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the economic factors, the financial system stability, better integration of financial intermediaries, appropriate fiscal and monetary policy, interdependence between the economic sectors, well established connection between domestic and foreign trade are recognized as the influencing factors on the FDI.

According to the OECD Fact-book 2013, global FDI activity slowed down in 2011 following a brief period of recovery in 2010. FDI outflows world-wide increased in 2011 by 12% to USD 1,558 billion as opposed to 24% increase in 2010 and remained well below the historically high level in 2007 ($2,170 billion). The top three investing countries were the United States ($419 billion), Japan ($114 billion) and the United Kingdom ($107 billion), which made a recovery from very low levels of investments observed since 2009. Investors from the European Union (EU) as a whole accounted for 36% of global outflows in 2011, at $557 billion maintaining its steady share since 2009.

After the independence in 1971, Bangladesh was mainly dependent on foreign aid rather than foreign investment. The country started to be considered as investment destination after the financial sector reform and financial liberalization in 1990s. As a result, the economic growth rate has been maintaining a decent rate of over 6 percent per annum for the last two decades. But FDI growth did not get the momentum due to the long period of political instability. However the FDI has been growing at an average rate of 18.58 percent from 1997.

![Figure 1: FDI inflows into Bangladesh](source: World Development Indicators, World Bank, October 2015)

During the period of late 1990s, the inflows of foreign direct investment into Bangladesh started increasing until 2000. In 2001 a drastic drop occurred due to September 11, 2001 incidence that happened to the World Trade Center in the United States. After the incidence, the inflows of the foreign direct investment became volatile in the following year from 2002 until 2004. After that incidence Bangladesh’s foreign direct investment inflows were able to grow but could not get the pace for the political instability of the country from 2006 to 2008.
The United Kingdom is the largest contributor of FDI inflows in Bangladesh followed by South Korea, Japan, and Netherlands. Until 2012, USA was the second largest investor in Bangladesh. Apart from the top investors, Malaysia, Japan, Egypt, Hong Kong, and British Virgin Islands has shown their interest in Bangladesh with their growing investment in last 5 years.

Telecommunication and textiles & wearing are the primary sectors that attract the maximum FDI in Bangladesh. Besides, banking, gas & petroleum, power, cement, and chemicals & pharmaceuticals sectors are the foreign investors’ favorite in Bangladesh.
This study is to examine the effect of foreign direct investment on economic growth and their causality relationship in Bangladesh. It is important to empirically examine the impact of FDI on economic growth in the Bangladeshi perspective. Such understanding or finding will help to policy makers to establish the better policy framework in the foreign direct investment in the developing or emerging economy like Bangladesh.

The rest of the paper is organized as follows. The next section will present the relevant literature on the relationship between the variables under consideration. Of course, debates on the issue will also be emphasized. Then details about appropriate data and methodology will be discussed. After that empirical results will be reported. Finally conclusion will put an end to the paper.

Literature Review

Foreign Direct Investment (FDI) can be explained as the investment which is being invested by an investor in foreign countries with interest to gain more market share in the international context and enjoy the economies of scale (Shaari, Hong & Shukeri, 2012). Besides, FDI provides the basic infrastructure facilities to the developing countries to enhance the entrepreneurial intention and eliminate the poverty in terms of better standard of living (Athukorala, 2003).

Various international organizations and foreign advisors suggested that developing countries should focus primarily on foreign direct investment as a source of external finance. Generally, FDI induces economic growth more than other types of capital inflows. In particular, FDI is supposed to be less volatile, and to offer not just capital but also access to modern technology and know-how (Nunnenkamp and Spatz, 2009).

The significant relationship between foreign direct investments and economic growth has been identified in many countries. Abdus Samad (2008) studied a relationship between foreign direct investment and economic growth, involved nineteen developing countries of South-East Asia and Latin America. For his result, Latin America had a long run relationship between gross domestic product and foreign direct investment. Five countries in Latin America which had this relationship such as Argentina, Brazil, Chile, Guatemala, and El-Salvador and one country that was Sri Lanka in the East and South East Asia also indicated the same direction of relationship. Besides that, there was double-sided relationship between gross domestic product and foreign direct investment in East and South East Asia that are Singapore, Indonesia, India, Thailand, and Pakistan. Lastly, there was also a short run relationship in Latin America that was Bolivia, Columbia, Ecuador, Honduras, and Mexico gross domestic product and foreign direct investment were not cointegrated. Liu et al., (2002) tested the existence of a long-run relationship among economic growth, foreign direct investment and trade in China. The research found the existence of a bi-directional causal relationship among FDI, growth, and exports.

Some studies identified mixed context in the results on the FDI and its impact on economic growth. Ericsson and Irandoust (2001) examined the causal effects between FDI growth and output growth for the four OECD countries applying a multi-country framework to data from Denmark, Finland, Norway and Sweden. The authors failed to detect any causal relationship between FDI and output growth for Denmark and Finland. Ram and Zhang (2002) focused on foreign direct investment and economic growth in the cross-country level. They found the
significant positive influence between FDI and economic growth. In contrast, Carkovic and Levine (2002) have found the insignificant influence. Further, Dutt (1977) has found that, there is a significant negative impact of FDI on economic growth. Further, the empirical findings seem to become clearer once host economy Characteristics in terms of economical, social, cultural and political factors is taken into account. Blomstom, Lipsey and Zejan (1994) noted that FDI has the significant impact on the economic growth. The finding is limited to the developing countries which are in the higher income perspective. Borensztein, Gregorio and Lee (1998) have found that FDI enhances growth only in economies with a sufficiently qualified labor force. According to Hansen and Rand (2006), Foreign Direct Investment had a strong causality impact on economic growth in short term and in 31 developing countries.

Economic growth can be improved through many factors. One of the factors is through the higher export. Export is said to have a positive relationship with foreign direct investment. The higher foreign direct investment can be improved, the higher export can be achieved and thus economic growth. Dilek and Aytac (2009) stated that foreign direct investment gave an impact on export such as transfer of technology, promotes domestic investment, improved human capital, improved existing knowledge, and served as an instrument of economic growth in Turkey. Besides that, economic growth can be improved not only by foreign direct investments, the other factors should be considered to have a positive effect on economic growth. Lheem and Guo (2004) stated that economic growth was also influenced by educational attainment and development momentum. So, they summarized that there are other indicators that can affect the economic growth besides the foreign direct investment.

Buthe and Milner (2008) examined the study on the foreign direct investment into developing countries. They found that, International trade agreements and preferential trade agreements have great impact or influence on the FDI inflows in the developing countries. Due to that, joining with international trade agreements induce to attract the FDI. Finally, the increasing trends of the FDI through joining with international trade agreements enhance the economic growth level of the developing countries.

However there is a study that stated there is no relationship between foreign direct investment and economic growth. Katherina, John and Athanasios (2004) carried out their study on 17 countries in US and Western European, and applied Bayesian regression analysis. The empirical results showed that foreign direct investment does not have any significant effect on the economic growth in transition countries. It proved that it is not necessary to escalate foreign direct investment to stimulate economic growth in every country. It is additionally supported by Jayachandran and Seilan (2010).

Data and Methodology

This study was conducted in Bangladesh perspective, especially on the foreign direct investment and economic growth. Data on the foreign direct investment and economic growth from the year 1986 to 2013 were collected from World Development Indicator of World Bank for the study purpose. Similar studies have been conducted by Velnampy et al., (2014) on Sri Lanka and Shaari et al (2012) on Malaysia. Velnampy et al., (2014) did not find any significant impact of FDI on the economic growth of Sri Lanka. However, Shaari et al., (2012) found that the increase in foreign direct investment has given a good impact on Malaysian economic growth.
The following equation 1 is the estimating equation that will be used in this study.

\[ \text{GDP}_t = \beta_0 + \beta_1 \text{FDI}_t + \epsilon_t \quad (1) \]

Where GDP$_t$ is real gross domestic production period $t$, FDI$_t$ is foreign direct investment in period $t$. To get the best result, the equation is expressed as the percentage of change in dependent variables when the independent variable changes around 1 percent.

\[ \ln \text{GDP}_t = \beta_0 + \beta_1 \ln \text{FDI}_t + \epsilon_t \quad (2) \]

Unit Root Test, Cointegration Test and Granger Causality are applied to find out the effect of foreign direct investment on real gross domestic product and vice versa. Unit root test was applied to see the stationary of the series at the level and first difference test by using Augmented Dickey Fuller (ADF). If this stationary test has a significant, it means that the variable series is stationary and does not has a unit root test, so the null hypothesis will be rejected but alternative hypothesis will be accepted (Trung & Vinh, 2011). But if the stationary test is not significant, it means that the variable series is non-stationary and has a unit root test (so, null hypothesis will be accepted). The hypothesis in this test is:

- \( H_0: \delta = 0 \) (unit root / not stationary)
- \( H_1: \delta \neq 0 \) (no unit root / stationary)

If value of t-statistic is greater than ADF critical value, the null hypothesis does not reject (unit root test exits) but if the t-statistic is less than ADF critical value, the unit root test does not exists (so, the null hypothesis will be rejected). Firstly, the unit root test be tested at level (unit root test at level with constant and unit root test at level with constant and trend) and after that, the unit root test be tested at first difference (unit root test at first difference with constant and unit root test at first difference with constant and trend). The following equation 3 and 4 are the equation at level with constant only and with constant and trend.

With constant only:

\[ \Delta Y_t = \alpha + \delta Y_{t-1} + U_t \quad (3) \]

With constant and trend:

\[ \Delta Y_t = \alpha + \beta T + \delta Y_{t-1} + U_t \quad (4) \]

The cointegration test also used in this study because to examine the long run relationship between two variables (foreign direct investment and real gross domestic product). In this cointegration test, the model that developed by Johansen (1988) and Johansen and Juselius (1990) will be used. The hypothesis for this study is:

- \( H_0: \delta = 0 \) (not stationary for \( \hat{\mu}_t \) or not cointegration if \( I_\delta > \tau \))
- \( H_1: \delta < 0 \) (stationary for \( \hat{\mu}_t \) or have cointegration if \( I_\delta < \tau \))

The granger-causality test is also applied in this study. This is to determine causality relationship between those variables. The causality test is to see a reaction between variables such as, if
variable FDI has granger cause to GDP and GDP also has granger cause to FDI, it means that the value after FDI can help us to expect the value for the next period of GDP and also the value after GDP can help us to expect the value for the next period of FDI. It is shown by the following hypothesis:

H₀: All the lagged independent variable does not cause the dependent variable

H₁: All the lagged independent variable cause the dependent variable

The following equations are the formula for granger causality regression test for two-way variable (FDI and GDP).

\[ GDP_t = \sum_{j=1}^{P} \delta_j GDP_{t-j} + \sum_{j=1}^{Q} \gamma_j FDI_{t-j} + \mu_t \]  
\[ (5) \]

\[ FDI_t = \sum_{j=1}^{P} \delta_j GDP_{t-j} + \sum_{j=1}^{Q} \gamma_j FDI_{t-j} + \mu_t \]  
\[ (6) \]

**Empirical Result**

First of all, unit root test based on Augmented Dickey-Fuller (ADF) test is conducted to measure the stationarity property of the time series data. Then, Johansen test will be presented to examine the existence of a long run relationship among foreign direct investment (FDI) and real GDP per capita (GDP). After that granger causality test will be performed to identify the direction of causality between these variables. It is used to analyze the causality direction between FDI and real Gross Domestic Product (GDP).

Unit root test is essential to examine the stationarity properties of the time series data. The results indicate that the real gross domestic product and foreign direct investment of Bangladesh are non stationary in levels and stationary in first differences at 1 percent. Thus, we can proceed to the long run cointegration analysis.

<table>
<thead>
<tr>
<th>Variables</th>
<th>Constant</th>
<th>Constant + Trend</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Level</td>
<td>First Difference</td>
</tr>
<tr>
<td>GDP</td>
<td>-0.536</td>
<td>-6.911***</td>
</tr>
<tr>
<td></td>
<td>(0.596)</td>
<td>(0.000)</td>
</tr>
<tr>
<td>FDI</td>
<td>-1.063</td>
<td>-5.797***</td>
</tr>
<tr>
<td></td>
<td>(0.298)</td>
<td>(0.000)</td>
</tr>
</tbody>
</table>

Note: ***, ** and * indicates the rejection of the null hypothesis of non-stationary at 1%, 5% and 10% significance level.
To test the long run equilibrium relationship between FDI and real GDP, cointegration test was used in this study. At null hypothesis, the trace statistic value is 12.2428, lower than the critical value (trace) 15.41 at five percent significant level. This trace statistic result present that this equation have no long run relationship between two variables at five percent significant level.

<table>
<thead>
<tr>
<th>Maximum rank</th>
<th>Parms</th>
<th>LL</th>
<th>Eigen value</th>
<th>Trace statistic</th>
<th>5% critical value</th>
<th>Max statistic</th>
<th>5% critical value</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>6</td>
<td>34.5541</td>
<td></td>
<td>12.2428*</td>
<td>15.41</td>
<td>11.9359</td>
<td>14.07</td>
</tr>
<tr>
<td>1</td>
<td>9</td>
<td>40.5220</td>
<td>0.36813</td>
<td>0.3069</td>
<td>3.76</td>
<td>0.3069</td>
<td>3.76</td>
</tr>
<tr>
<td>2</td>
<td>10</td>
<td>40.6755</td>
<td>0.01173</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

For Max-Eigen statistic, the result also showed no relationship between the variables in long run at five percent significant level. Max-Eigen statistic 11.9359 is lower than critical value (Eigen) 14.07 at five percent significant level. The results indicated that there is no long run association between FDI and real GDP of Bangladesh.

Granger causality test is conducted to determine the pair of time series data has a correlation or not. The correlation for granger causality test only can apply for 2 variables. The time series data have been checked before running the causality test by applying the unit root and the cointegration test. Table 3 presents Granger Causality of gross domestic product and foreign direct investment. The result shows that gross domestic product granger cause to foreign direct investment and foreign direct investment also granger cause to gross domestic product. It means that the two variables are mutually correlated.

**Conclusion**

Based on the overall study, we found that, in the Bangladesh context, there is no long run equilibrium relationship between FDI and economic growth rate. Statistical findings on the Cointegration test and Granger causality test show the contradiction in terms of the findings. Finding of the Cointegration test pointed that, there is no significant long run relationship between foreign direct investment and economic growth. However, According to the Granger causality test, foreign direct investment granger cause to gross domestic product and gross domestic product also
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granger cause to foreign direct investment. The absence of long run relationship between FDI and economic growth can be attributed to the absence of availability of long run time series monthly data.

Based on the empirical findings of Granger Causality test, the foreign direct investment can be considered as an emerging trait to accelerate the economic growth in Bangladesh. Large export oriented labor intensive industries and substantial domestic market of Bangladesh are becoming an attraction for foreign investors especially in textile, telecommunication, and so on.

However, capital inflows only flow to Bangladesh if government policies pander to foreign investors favorably. That mean more foreign investors will come to Bangladesh especially have special terms which are provided by government. Therefore, foreign direct investments should be considered as a priority by the government to increase the economic growth in Bangladesh.

References


