The Effect of Foreign Direct Investment on Economic Growth: Evidence from Iraq

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Abstract: Inflows of Foreign direct investment (FDI) have been recently perceived as an important determinant of Iraq economic growth. This paper studies the effect that the increasing levels of FDI inflows have on levels of economic growth in Iraq. An Ordinary Least Square (OLS) regression model was employed to analyze the relationship between two variables. Two regression equations were constructed. One predicted the logarithm of GDP levels measured at current prices/billions of US$ and the other predicted levels of per capita GDP at PPP measured at current prices/billions of US$ during the period 2004-2015. In both of equations, the dependent variable was the levels of FDI as net inflows to Iraq's balance of payment in current US$, and it turned to be statistically significant in predicting levels of economic growth in Iraq.

Keywords: Foreign Direct Investment, Capital Inflows, Economic Growth, Ordinary Least Square Regression

1. Introduction

Foreign Direct Investment (FDI) has recently been perceived as an important element of the economic development particularly in transitional economies in their efforts to follow the lead of the developing world. In addition to its role in enabling easier access to higher level of fund, foreign exchange, and capital resources that are required to finance development projects, FDI contributes to the development of host countries by promoting labor market opportunities and through the transfer of technology, skills, and more efficient managerial techniques and expertise. Economies that enjoy higher degree of openness and more extensive level of international trade are proved to be more attractive to foreign capital than the economies that are characterized with lower degree of openness. Alike are the countries that experience more flexible economic systems that provide regulative incentives for foreign investors than highly regulated economies that constrain foreign investments.

Defined as an investment venture conducted by an entity located in one country in another country's territory, FDI is distinguished from foreign indirect investment in that the former includes the ownership of at least 10% of the voting shares of the investment as assigned by the OECD threshold, alongside the direct control over some parts of the business process in the investee. Meanwhile the latter includes only portfolio investments and overseas equities and stock exchange transactions that include only the ownership element with no particular magnitude or threshold (Heshmati & Davis, 2007).

Inflows of FDI are curial to developing economies. On one hand FDI increases the revenue and levels of capital investment. On the other hand, it creates a spillover effect through the transfer of sophisticated managerial skills and technology.

Heshmati and Davis (2007) mentioned a list of the factors that are considered as crucial determinants of FDI. Technology as one of the determinants of foreign direct investment has a great effect on FDI inflows to host countries though the spillover effect reflected on production costs. The availability of domestic reserves of raw material is another determinant of FDI. Countries that have abundant reserves of domestic raw material attract foreign investors in that this enables the production at lower cost of inputs. For example, Iraq has a crude oil that is the raw material in this country and it will attract the investors to come to Iraq and invest their capital in oil production sector. Labor is also considered a determinant of FDI. Countries that are characterized with high supply of labor force are more desirable than country with less supply of labor force because labor force as one of the factors of production have a significant effect on the cost of production. The existence of a developed infrastructure of transportation means is also important to attract FDI inflows. Countries that provide developed platform of infrastructure projects like roods, buildings, electricity and network communication will attract more foreigners to invest in the host country. The existence of a developed banking sector has a significant effect on levels of FDI inflows. Government regulations regarding tax exemptions for foreign ventures also have a significant impact on levels of FDI inflows. Hence, as domestic policies in host countries play a significant role in promoting levels of FDI inflows, the role on government in attracting higher levels of FDI is undeniable (Heshmati & Davis, 2007).

Empirical evidence on the positive correlation that exists between levels of FDI inflows and economic growth in developing economies has been subject to an extensive body of research throughout the recent literature of economic development. As economic growth enables the establishment of larger domestic markets with relatively higher level of domestic demand that potentially will absorb higher level of output, growing number of empirical studies are lately intended to examine the causal relationship between the two and the probable positive impact of growth on levels of FDI inflows.

This study is intended to examine the relationship between levels of Iraq's economic growth and levels of FDI inflows during the period between 2004 and 2015. The study timeframe covers the period of the latest decade after the overthrown of Saddam Hussein regime in 2003 during which levels of FDI witness a huge increase.

Upon using time series datasets that are obtained from the World Bank database on countries' economic indicators, the study employs an Ordinary Least Square (OLS regression model that predicts levels of economic activity in terms of net inflows of FDI as percentage of Iraq's balance of payment. The results reported that the variable that represents the levels of FDI net inflows is statistically significant in predicting levels of economic growth in Iraq.

2. Literature Review

In recognition of the role that foreign direct investment (FDI) has played in boosting economic growth in host countries, an extensive body of literature has attempted to examine the impact of FDI on economic growth in some developing and transitional economies. The correlation between variables that proxy

economic growth on one hand, and measures of FDI on the other, has been tested in multiple studies that employed both single and multiple regression approaches in some transitional economics. Some Asian countries that experienced high rates of economic growth that were associated with increasing shares of FDI capital inflows for the last couple of decades represent cases studies for the impact of FDI on GDP growth rates.

Malaysia represents a growing economy that witnessed high rates of foreign capital inflows during the last 20 years. Mun, Lin and Man (2008) attempted to examine the impact of FDI inflows on rates of economic growth in Malaysia. They employed an ordinary least square (OLS) regression model to test the correlation between real GDP annual growth rates in Malaysia and the nominal value of FDI inflows measured in millions of US dollar during the period between 1970 and 2005. They concluded that FDI role is significant in promoting economic growth through different transmission channels. First, FDI boosted the level of infrastructure in Malaysia as it allowed for higher level of technology transfer that positively impacted labor productivity, industrial techniques, and managerial skills. Second, it allowed for higher rates of employment through the job opportunities that were created in the private sector. Nevertheless, Mun et al. recognized some caveats that FDI inflows create through its harmful effect on domestic industries. They stated that foreign direct investment has a negative impact on domestic producers as they ended up losing their market share while the foreign investors became top producers. Therefore, Mun et al. papers calls for policy interventions that allow for achieving the ultimate benefit of FDI meanwhile minimizing its harmful effect on domestic industry, like for example, property rights protection policies that guarantee the rights of both of domestic and foreign producers and that allow for the ultimate use of the domestic resources.

The consensus among researchers and policy makers in Africa regarding the positive impact that FDI creates on rates of economic growth in African countries led Chinweobo Emmanuel Umeora to examine the channels through which FDI stimulates growth and development in Nigeria (Umeora, 2013). In his paper, Umeora attributes the accelerated rates of FDI capital inflows to the political transformation and the political reforms that Nigeria has lately undergone in an attempt to encourage foreign investors. Such reforms are essential to attract more foreign investments and capital inflows since domestic savings are not sufficient to obtain the desired levels of economic growth, neither is it easy to import the necessary technology from abroad. The commercialization and the privatization of publicly-owned enterprises, alongside the establishment of the Investment Promotion Commission and the liberalization of the foreign exchange market, all have eased the restrictions on FDI and allowed for more flexibility for investors in terms of money remittance and transfer. Umeora identifies three channels through which the FDI effect is defused throughout the economy. The first one is the linkages among levels of FDI and flows of foreign trade; the second is the spillover effect and the externalities that FDI diffuses throughout the business sector, and finally the direct effect of FDI on the host countries institutional and structural factors. Thus, among the benefits that FDI creates in the host economies are: First, technology transfer that upgrades production process and leads to the adoption of more innovative production techniques. The transfer of technology also creates higher level of resource productivity, particularly labor productivity, which in its turn generates higher levels of income, and leads to the creation of innovative job opportunities. Second, the creation of budgetary surpluses though the tax revenue. Third, improving trade balances through FDI expansionary effect on volumes of foreign trade and the creation of strategic inputs to enhance exports (Umeora, 2013).

Umeora's paper provides policy recommendations intended to stimulate economic growth through examining the effect of the increased levels of FDI on rates of growth. The paper employs an ordinary least square (OLS) method to study the relationship between levels of FDI as a dependent variable and a set of independent variables like levels of GDP, nominal exchange rate, and inflation rate. A multiple regression is conducted on a time series dataset that covers the period between 1986 till 2001. The study timeframe is selected to examine the impact of an institutional policy reform represented by the establishment of a structural adjustment program (SAP) on 1986. In examining the relationship between levels of FDI and the associated levels of exchange rate and inflation rate, Umeora concludes that FDI capital inflows created an inflationary pressure through the expansionary effect that it caused on levels of money supply. Therefore, such problems that are associated with the increased levels of FDI and that hinder the positive effect that FDI may create in stimulating economic growth could be avoided by the implementation of a set of appropriate policies that enable the intended positive impact.

When considering the peculiarities of the Nigerian economy as an oil-endowed transitional economy that receives higher rates of capital inflows, yet an economy that suffers from the Dutch Disease Syndrome (DDS) represented by the structural imbalance that the Nigerian economy is undergoing due to mismanagement of the huge oil revenue that the economy is endowed with, we can identify some commonalities that it has with Iraq economy. Iraq economy is also endowed with huge oil revenue and increased rates of FDI, yet such revenue are not reflected on rates economic growth. Another commonality is the structural change that Iraq economy has undergone after the collapse of Saddam Hussein's regime. Such reforms have also allowed for higher rates of capital inflows due to the establishment of the investment board and the implementation of some institutional policies that encouraged capital inflows and private sectors' business initiatives. This study employs the same above mentioned OLS technique to study the impact of the resulted increased rates of FDI on economic growth rates, yet with the only difference that the dependent variable is this study represents rates of economic growth that is going to be predicted by rates of FDI as an independent variable.

Apergis, Lyroudi and Angelidis (2005) examined the relationship between levels of FDI and rates of economic growth in 27 transitional economies during the period between 1991 and 2004. They studied the correlation between the inflation adjusted levels of real GDP measured by purchasing power parity (PPP) index and net overall inflows of FDI measured in constant 1995 US dollar. They obtained their data set using the World Bank Development Indicator (WDI). The study was segregated according to countries' levels of income. The analysis was categorized into higher income economies and lower income economies. Moreover, the degree of privatization of publicly owned enterprises was also taken into consideration. The dependent variable in their model was net inflows of FDI and rates of economic growth indicators were among the set of independent variables. Apergis et al. concludes that FDI has a significant role in predicting levels of economic growth in transitional economies. Higher income economies characterized by an associated lower degree of privatization turn to be less appealing to foreign investors. So do lower income economies that are characterized with an associated higher degree of privatization are also attracting FDI. Meanwhile, higher income economies that achieved higher rates of privatization of publicly owned enterprises turn to be more appealing for foreign investors. Such countries attained higher rates of FDI inflows accompanying higher rates of economic growth (Apergis, Lyroudi & Angelidis, 2005).

3. Data

The below table (Table 1: Data on Iraq GDP, Net Inflows of Foreign Direct Investment BoP, Current US$ - Billions) shows the time series dataset used in this study that covers the period between 2004 and 2015. The study timeframe represents the effect of foreign direct investments inflows measured as a share to Iraq's balance of payments on Iraq economic growth after the overthrown of Saddam Hussein's regime. The lack of data on inflows of FDI to Iraq during the previous era alongside the existence of governmental restrictions on FDI did not allow for an ex-ante and ex-post comparative analysis to the collapse of Saddam Hussein's regime. The dataset is derived from the World Bank – World Development indicator database published on 2016. Iraq GDP, per capita GDP measured at purchasing power parity (PPP), as well as foreign direct investment are measured at current USD.

4. Methodology

A log-level ordinary least square (OLS) regression model is constructed where the dependent variables will be the natural logarithm of both Iraq GDP and per capita GDP at PPP measured at current prices billions of US$ during the period 2004-2015. The independent variables vary in each of the equations where a couple of equations will include a lag of the indicator on foreign direct investment measured as net inflows to Iraq's balance of payment in current US$. Since the purpose of the study is to measure the effect of the increased inflows of FDI to Iraq BoP on Iraq's economic growth rate, the data was converted by taking the natural logarithm of the levels of both the dependent variables, GDP and per capita GDP at current US$.

Table 1: Data on Iraq GDP, Net Inflows of Foreign Direct Investment BoP, Current US$ - Billions

Year	GDP (Current US$)	Ln GDP (Current US$)	GDP Per Capita, PPP (Current US$)	Ln GDP Per Capita, PPP (Current US$)	Foreign Direct Investment, Net Inflows (BoP, Current US$)	Lag Foreign Direct Investment, Net Inflows (BoP, Current US$)
2004	36,627,901,762	24.32	9,237.93	9.13	300,000,000	
2005	49,954,890,353	24.63	9,697.90	9.18	515,300,000	300,000,000
2006	65,140,293,688	24.90	10,733.45	9.28	383,000,000	515,300,000
2007	88,840,050,497	25.21	10,893.21	9.30	971,800,000	383,000,000
2008	131,613,661,510	25.60	11,715.85	9.37	1,855,700,000	971,800,000
2009	111,660,855,043	25.44	11,875.01	9.38	1,598,300,000	1,855,700,000
2010	138,516,722,650	25.65	12,417.77	9.43	1,396,200,000	1,598,300,000
2011	185,749,664,444	25.95	13,203.05	9.49	2,082,000,000	1,396,200,000
2012	218,000,986,223	26.11	14,813.56	9.60	3,400,000,000	2,082,000,000
2013	234,648,370,497	26.18	15,501.33	9.65	5,131,200,000	3,400,000,000
2014	228,730,703,259	26.16	15,266.47	9.63	4,781,800,000	5,131,200,000
2015	180,068,537,409	25.92	15,394.77	9.64	3,468,533,333	4,781,800,000

Data Source: World Bank – World Development indicator database published on 2016

5. Data Analysis & Results

The first single-variable regression equation in which the dependent variable is the natural logarithm of GDP measured at current US$ and the independent variable is levels of FDI as net inflows to Iraq's balance of payment in current US$ reported 75 % R-square value, which states that almost 75 percent of the variation in the value of the dependent variable is explained by the variation in the values of the independent variable.

The results also reported a 0.0002 p-value for the FDI coefficient, so the p-value is lower than 0.05. Thus, the null hypothesis that the coefficient equals to zero, which is the hypothesis that the change in the share of FDI in Iraq's BoP has no effect on economic growth, is rejected at a two-sided 95% significance level. So the alternative hypothesis which states that the increased share of FDI net inflows to Iraq's BoP positively affect Iraq's economic growth rate is accepted at the same significance level.

The best linear unbiased estimator (BLUE) for the coefficient that measures the effect of the increased share of FDI in Iraq's BoP on Iraq's economic growth represented by growth rate of Iraq's GDP is reported as 3.2. Thus, the increase in the percentage of FDI share in Iraq's BoP will positively affect Iraq's economic growth rate as everything else is held constant. So the ceteris paribus effect of 1 percent increase in FDI net inflow to Iraq's BoP will be reflected in a percentage increase in the economic growth rate considering that the natural logarithm form of the variables used in the regression model.

The model's goodness of fit was increased when a lagged value of the independent variables was added to the above model. The reported R-square was increased to 76 % which means that more of the variation in GDP growth was predicted by FDI when considering the previous year's level of FDI. The BLUE estimator for the coefficient that measures the effect of the increased share of FDI also reported a lower than 0.05 p-value of 0.009. Yet, the model that predicts per capita GDP by both of the levels of FDI and the lagged value of FDI reported the highest goodness of fit measure. The reported R-square for the multiple regression of the natural logarithm of per capita GDP on levels and a one-lag of FDI levels was 86 % and the reported p-value of the coefficient on FDI levels was 0.007 alongside a positive value of the coefficient per se. Therefore, the alternative hypothesis on the positive effect of the increased levels of FDI share in Iraq's balance of payment on rates of economic growth is accepted at the same significance level.

6. Conclusion

Lately perceived as one of the main determinants of economic growth in emerging economies, foreign direct investment has a positive impact on rates of economic growth of Iraq's economy. The developing economy of Iraq that is lately running a financial crisis originated by the disruptions of economic activities due to political instability conditions is in a real need for higher rates of investment. Besides its role in providing more of financial resources and capital inflows required for investment, FDI facilitates the transfer of the skills and technologies that are needed for production activities and development projects. In this empirical study, data analysis shows that there is a positive relationship between foreign direct investment and economic growth. The increased rate of FDI during the last decade in Iraq was significantly impacting the levels of economic growth through its positive effect on levels of GDP.

Therefore, more FDI-friendly government policies that attract foreign investors like tax exemptions and reduced tariffs on imports of FDI projects are mandatory for achieving higher rates of growth in Iraq's economy which is currently undergoing financial hardship and lacks of domestic capital required for investment.

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Appendix No. 1 –Regression Results

Single- Variable - Ln GDP (Current US$) & Net Inflows of FDI (PoB – Current US$)

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.868075142
R Square	0.753554453
Adjusted R Square	0.728909898
Standard Error	0.323701608
Observations	12

ANOVA

	Df	*SS*	*MS*	*F*	*Significance F*
Regression	1	3.203932659	3.203932659	30.57691495	0.000251144
Residual	10	1.047827312	0.104782731		
Total	11	4.251759971			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	24.80913421	0.156908674	158.1119361	2.51569E-18	24.4595199	25.15874853

X Variable 1	3.2314E-10	5.84377E-11	5.529639676	0.000251144	1.92932E-10	4.53347E-10

Multiple Regression - Ln GDP (Current US$), Net Inflows of FDI (PoB – Current US$) & Lagged FDI

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.875029587
R Square	0.765676778
Adjusted R Square	0.71360495
Standard Error	0.332713774
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	3.255473874	1.627736937	14.70424256	0.001459382
Residual	9	0.996286097	0.110698455		
Total	11	4.251759971			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	24.81886132	0.161905953	153.2918394	1.08773E-16	24.45260461	25.18511803
X Variable 1	3.92935E-10	1.18618E-10	3.312596054	0.009046405	1.24601E-10	6.61268E-10
X Variable 2	-8.21382E-11	1.20376E-10	-0.682348974	0.512196004	-3.54447E-10	1.90171E-10

Multiple Regression - Ln Per Capita GDP (Current US$), Net Inflows of FDI (PoB – Current US$) & Lagged FDI

SUMMARY OUTPUT

Regression Statistics	
Multiple R	0.930903412
R Square	0.866581163
Adjusted R Square	0.836932533
Standard Error	0.073576473
Observations	12

ANOVA

	df	*SS*	*MS*	*F*	*Significance F*
Regression	2	0.316455413	0.158227707	29.22837079	0.000115738
Residual	9	0.048721476	0.005413497		
Total	11	0.365176889			

	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*
Intercept	9.203267504	0.035803955	257.0461161	1.03879E-18	9.122273331	9.284261676
X Variable 1	9.0395E-11	2.62313E-11	3.446071074	0.007319983	3.10556E-11	1.49734E-10
X Variable 2	1.28945E-11	2.66199E-11	0.484391384	0.639678099	-4.7324E-11	7.31129E-11