Journal of International Business and Economics
June 2014, Vol. 2, No. 2, pp. 61-70
ISSN: 2374-2208 (Print) 2374-2194 (Online)

Published by American Research Institute for Policy Development

Determinants of FDI in Pakistan: An Empirical Analysis

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Abstract

Purpose: The purpose of this study is to describe the major FDI determinants that show capital flow in Pakistan and to investigate impact of FDI determinants on economy of Pakistan in particular. **Design / methodology / approach:** This paper look into whether FDI determinants influence FDI based in Pakistan by taking time series data using OLS, over the period of 1990-2010. **Findings:** The relation of FDI with a few FDI determinants including total debt service, Electric power consumption, total external debt, and gross fixed capital formationcontain a strong positive result on economic growth in Pakistan;at the same time as the relation of FDI with Inflationcontain a negative effect. **Research limitations / implications:** The restrictions of the study are basically the enlargement of data which cannotbe found continuous for 2011 and 2012 completely for all variables. **Originality / value:** The objective of this study is to define the main FDI determinants that show capital flow in Pakistan and to explore impact of FDI determinants on economy of Pakistan in particular. Secondary objective is the quantify FDI determinants to suggest some policies through which FDI can improve in Pakistan.

Keywords: Host country growth, Capital formation, Inflation, FDI

1. Introduction

Trade associate the national economies and create an international economy it is traditionally seen that FDI similar to the trade mechanism. There is a two way reality among FDI and trade for developing countries.

Firstly,it is sensible to anticipate that the relation between FDI and trade will be strong and secondly, the impact of FDI does not change with the diverse phases of development in different countries.

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The financial restraint, mostly ruthless for the deeply obliged countries, rapidly explained into a quick reduction in investment and growth rates in these severely indebted economies. Such decline in investment and growth rate resulted in the rising significance of FDI as a comparatively dependable source of capital flows for the developing countries(Chakrabarti, 2001).

FDI influence the host country economy in numerous ways by increasing domestic investment, transfer of technology and human capital formation. Developing countries including Pakistan need huge amount of capital to foster their economy efficiently. But the grant and loans has a negative impact on country balance of payment. So, the FDI is preferred for accelerating capital formation that it imposes no financial liability on host country at all.FDI has a large number of benefits that are generation of more employment, increase export, enhance managerial and technical skills, improving balance of payment and standard of living(Falki, 2010). A lot of features made Pakistan a more attractive location for foreign investments that are the following:Economy of Pakistan illustrated responsiveness and prospectivecapability, LargePakistan population and has an excellent physical infrastructure(Yousaf, Hussain, & Ahmad, 2008).

It is stated in the ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT 2002that the main reason of people investing in foreign countries isthe expected profitability, Subsidiaries operate in a given country with no difficulty and on the whole quality of the host country's environment but in general it is viewed that cheap labor and higher ROIattract the foreign investors.

Previous empirical studies that are conducted in Pakistan regarding the determinants of FDI are up to the year 2004.Various studies has been conducted after this like economic evaluation of foreign direct investment in 2008 by Mahrmuhammadyousaf, zakirhussain&nisarahmad in Pakistan but in this no analysis of determinants of FDI is taken and many other studies conducted but those do not touch the main essence of our study. In this study we take the time span of 1990 to 2010 to overcome this deficiency. Prior empirical studies results are vague that try identify the impact of individual policies factors on FDI. Labor cost, trade policies and tax policies are not significant in many cases(Demekas, Horvath, Ribakova, & Wu, 2007).There are a hugeamount of empirical studies conducted in which lack of consent over the conclusions and no explanatory variable that can be widely accepted.

Furthermore, not any of these studies significantlymanage all the variables analyzed by early researchers as prospectivecontender ofenlightening FDI. A broadarray of variables have been considered to be significant interconnected with FDI and results in conceptual weakness on determinants of FDI that leaves the reader confused one variable giving positive result in one study and negative in another. It is concluded by AvikChakrabarti, that the relationamong FDI and numerous controversial variables are highly responsive to littlemodifications in information(Chakrabarti, 2001).These studies are based on cross country analysis and our study is based on time series analysis.

Dunning has developed a model through which he justify why companies invest abroad his model consist of components: ownership, location and internationalization the proceeding three factors influence any company to invest in a country in which gaining market power ,location advantage and direct operations can be easily done without any difficulty or agreement(Demekas, et al., 2007).

The objective of this study is to define the main FDI determinants that show capital flow in Pakistan and to explore impact of FDI determinants on economy of Pakistan in particular. Secondary objective is the quantify FDI determinants to suggest some policies through which FDI can improve in Pakistan.

This study is consisting of five sections. In Section 1 Introduction; Section 2 literature review; Section 3 data methodology; Section 4 results and discussion; Section 5 provides concluding remarks; Section 6 Limitations and references.

2. Literature Review

FDI had observed in the previous era as a useful guide to promote growth in developing countries(like Pakistan) and depressed countries.FDI was considered destructive for economic development in developing countries and less developed countries this is the view that is accepted by various economic field in the period of 1950s to 1960s, is intensely distinction with the above. In the twentieth century after 1960s the new growth theory has permitted new theoretical discussion. It is stated that this theory model provide a structure of an attractive surroundings to examine the FDI and growth rate of GDP(Bengoa & Robles, 2003).

FDI is increases investment rate resulted rise in per capita income growth but not in lengthy period by the neoclassical development growth model and income growth.FDI measured enduring growth outcome in the host country it is stated in new growth theory in 1980s.(Hsiao & Hsiao, 2006).The large number of theorist is debating about the impact of FDI on host country.

As stated above neoclassical development theory according to which growth rate does not affected by FDI in long span of time.Growth rate of yield affected by FDI was forced by the survival of physical capital diminishing proceeds is within structure of neoclassical model(Solow, 1956). Sass (2003), it is logical by thinking the hypothesis of the model is following: stable financial system, declining subsidiary products of contribution, optimistic replacement flexibility of inputs & ideal competition.Consequently, FDI might put forth a rankconsequence on the productivity per capita, however not a rate outcome. In particular, it was not capable to change the growth rate of output in large span of time(Bengoa & Robles, 2003).

FDI has a recently identify prospectivefunction in the growth process as a result of endogenous growth theory(Nabende & Ford, 1998). In comparison to endogenous growth theory in the new economic growth theory FDI influence rate of growth with the level of output per capita. There are many hypothesis has been generated that enlighten the reason behind FDI prospectivelyadvance the growth rate of per capita income in the host country(Bengoa & Robles, 2003). On the other hand, the theory discussed prior, which gives out with the hypothesis of idealrivalry competition, givesaddedextent for the blow of FDI on growth. Research and development and human capital helps FDI to affect the rate of growth in this theoretical structure.Yetthere is a decrease in yield on investment growth is affected by externalities, FDI. If the return on investment is declining, FDI may influence growth through externalities. Therefore, the subsistence of such externalities is one of the prerequisite of the affirmativeoutcome of FDI on the host economy (Sass, 2003).

There are a large number of schools of theoretical thoughts that there is a various impact of FDI on economic growth.In this literature analysis of few variables have been done to explain the FDI.Behavior of variables are suggested on the two basis firstly on the base of formal theories and secondly on the base of naturally behavior. Many researchers told that inflation has negative impact on FDI.Inflation having positive coefficient on FDI if it is combined with growth rate found in other studies.

It is suggested that FDI is promoting economic growth by technological progress(Findlay, 1978).Blomstrom (1992) argued that it is found that FDI is positively correlated with economic growth and Gross domestic investment. The rate of capital formation decides the rate of economic growth by both researchers(Long & Summers, 1991)&(Levine & Renelt, 1992). One empirical literature has been performed by Graham about the determinants of FDI and their way to affect host and home country economy and various reason and causes also given. In his paper he described that there may positive impact either has negative impact on host country economy. In china study has been conducted economic growth contributed to the gross fixed capital formation promote the FDI(Sun, 2002).

It is argued that FDI has positive correlation withthe electric power, total external debt DOD, total debt service (Sun, 2002) and(Kok & Erso, 2009) . Gross capital formation is having non effect with the FDI (Blonigen, 1997). Blomstrom suggested negative relation of FDI with Domestic gross fixed capital formation. He has done a lot of work in this field in these days his work is acknowledged a lot by other researchers.It is also concluded that infrastructure and electric power has negative results by Moody (1992).Inflation has negatively related to FDI it is argued by many researchers and proved by empirical results(Kok & Erso, 2009).

3. Data, Variables& Methodology

The variables that we have selected in our research are based on previous FDI theories and literature.

$$GDFI=\beta_0 + \text{LOGELEC}\,\beta_1 + \text{LOGEXDEBT}\,\beta_2 + \text{TDSGDP}\,\beta_3 - \text{INFLATION}\,\beta_4 + \text{GFCF}\beta_5$$

WhereGDFI indicates Gross Foreign Direct Investment: Foreign direct investment is described as investment so as to is prepared to obtain a lasting management interest (usually of 10 percent of voting stock) in an ventureworking in a country other than that of the investor(Host).Source: World Bank (WDI, 2011).

Then the determinants of FDI is measured by following variables: Electric power consumption (kwh per capita) is indicated as LOGELEC this variable can be measured by production of power plants and combined heat and power plants, a lesser amount of distribution losses, &acquiresexercise by heat and power plants and data is taken from World Bank, (WDI, 2011). Total external debt, total (DOD, current US$) is indicated as LOGEXDEBT and define at world bank website as Total external debt is debt allocated to nonresidents repayable in foreign currency, goods, or services. Source: World Bank, (WDI, 2011).Total debt service (per cent of GDP) is specified as TDSGDP and explained on WD as Total debt service is the addition of principal repayments and interest in factcompensated in foreign currency, goods, or services on long period debt, interest paid on short period debt, and repayments to the IMF. Source: World Bank (WDI, 2011). Expected sign of determinants is positive except inflation. Inflation, GDP deflator (annual percent) is indicated asINFLATION and it is calculated by the annual growth rate of the GDP implicit deflator demonstrates the rate of price alter in the economy as anentire. Source: World Bank (WDI, 2011). Domestic gross fixed capital formation (as a percentage of GDP) is used in paper as GFCF Indicates capital stock in the host country and the availability of infrastructure. Source: World Bank (WDI, 2011).

The variables tested in this paper on time series data of Pakistan for at least 21 years. Data for the year 2011 and 2012 is not completely available for all variables so data is taken up to 2010. In this study time series data for Pakistan from the period of 1990-2010 is collected from World Bank, World Development Indicator 2011. Ordinary Least Square analysis has applied on data because it utilizes the data very efficiently and OLS is easily well understandable and interpretable of statistical values. As OLS is an efficient approach to know the relationship between dependent and independent variables keeping other variables constant and gives the optimize results. Rationale of study is that up to yet after 2004 no study exactly as determinants of FDI is conducted in Pakistan and this gap is filled by conducting this study up to year of 2010.

4. Results and Discussion

As the methodology discussed above we applied that on variable OLS to get the results. The result got from the methodology is supported by our literature review in which various researchers also supporting these results. By applying multipleregressions we get the following equation:

$$GDFI = -7.148538 + .007668\,\beta_1 + 2.03\,\beta_2 + .0072728\,\beta_3 - .0349369\,\beta_4 + .3079774\beta_5$$

As this multiple regression can be interpreted as if there is one unit increase in LOGELEC then GDFI is increases by .007668 and so on. As the Empirical results are shown that all variables are showing positive coefficient with GDFI except INFLATION as shown in Table A.R-squared is an explanatory power of the model that how our points is matching to the original points of data. Our r-squared from the empirical results is 0.8570 which is above .50 means R-squared is good and results are perfectly predicted. HSK is errors are randomly distributed with constant variance. HSK's value 0.899 the value is more than 0.1 so there is no HSK present in data. So, errors are not randomly distributed with constant variance.Multicollinearity is the pair or more independent variables are co related.VIF value in the results is 3.25 which is less than 10 so there is no Multicollinearity in data exists. Then to check Auto correlation which is correlation with in errors, if dw-stat is range ofbetween 1.50-2.50 according to liberal researchers and 1.75-2.25 according conservative researcher there is no auto correlation. Our results value is 1.135113 which is even less than liberal researchers value so there is positive auto correlation exists in data so we have to solve it. We solve it through the following command:

Prais*GFDI LOGELEC LOGEXDEBT TDSGDP INF GFCF, corc*

After applying this problem of auto correlation has been resolved now the Transformed Durbin-Watson is 1.799719 which is between the range of 1.50-2.50.in the new results R-Squared is 0.7556 which is reduced from the previous but still it is satisfactorily good. Now the interpretation of coefficient can be done as follow that if one unit increase in LOGELEC then GDFI increases with .006697. if one unit increase in LOGEXDEBT then GDFI is increases by 2.82e-11 and if TDGDP is increase one unit so there is GDFI increases by .0426243.If GFCF is increases by one unit then .3295281 as all above are positively correlated with the GDFI .If Increase in inflation by one unit the GDFI decrease with .0380151.as shown in Table B. After solving Auto correlation there is no effect on HSK and Multicollinearityas both of it is not exists. Now the equation is***:***

$$GDFI = -7.554311 + .006697\,\beta_1 + 2.82\,\beta_2 + .0426243\,\beta_3 - .0380151\,\beta_4 + .3295281\beta_5$$

Table A

GDFI	Coef.	Std. Err.	t	P>|t|	[95% Conf. interval]
LOGELEC	**.007668**	**.0035034**	2.19	0.045	.0002006 0151354
LOGEXDEBT	**2.03e-11**	**2.29e-11**	0.89	0.390	-2.85e-11 6.91e-11
TDSGDP	**.0072728**	**.1136397**	.06	0.950	-.2349446 .2494902
INF	**-.0349369**	**.0219286**	-1.59	0.132	-.0816767 .0118028
GFCF	**.3079774**	**.0608951**	5.06	0.000	.1781826 .4377722
Cons	**-7.148538**	**1.675566**	-4.27	0.001	-10.71992 - .577155

Table B

GDFI	Coef.	Std. Err.	t	P>|t|	[95% Conf. interval]
LOGELEC	**.006697**	**.0046615**	1.44	0.173	-.003301 .016695
LOGEXDEBT	**2.82e-11**	**2.66e-11**	1.06	0.307	-2.89e-11 8.53e-11
TDSGDP	**.0426243**	**.1082694**	0.39	0.700	-.1895904 .274839
INF	**-.0380151**	**.0175845**	-2.16	0.048	-.0757302.00030
GFCF	**.3295281**	**.0735585**	4.48	0.001	.1717609.487295
Cons	**-7.554311**	**2.000312**	-3.78	0.002	-11.8445 -3.26406
Rho	**.4587283**				

5. Conclusion

The purpose of this study is to define the main FDI determinants that show capital flow in Pakistan and to explore impact of FDI determinants on economy of Pakistan in particular. In this we see effect on gross domestic foreign investment by the Electric power consumption (kWh per capita),Total external debt total (DOD, current US$),Total debt service (per cent of GDP), Inflation GDP deflator (annual percent)**,** Domestic gross fixed capital formation (as a percentage of GDP).OLS has applied to data collected from WDI. It is concluded, Electric power consumption, Total external debt, Total debt service and Domestic gross fixed capital formation have positive impact on Gross domestic foreign investment. Inflation has negative impact on Gross domestic foreign investment. We have conducted this study for the reason that after 2004 no study has been conducted by conducting this research we fill this gap.

In the paper we recognized themajor determinants of FDI .by seeing at the major determinants of FDI countries can also able to generate FDI policies according to their own economic arrangement. Thefunction of FDI in country enlargement can be stated by the consequences of every of the determinants or by the consequences of every one determinants jointly. In this mode, the function of FDI at the country enlargement can be utilizesefficiently.

6. Limitations

Prior empirical studies results are vague that try identify the impact of individual policies factors on FDI. Labor cost, trade policies and tax policies are not significant in many cases. There are a huge amount of empirical studies conducted in which lack of consent over the conclusions and no explanatory variable that can be widely accepted. Furthermore, not any of these studies significantly manage all the variables analyzed by early researchers as prospective contender of enlightening FDI. It is concluded by AvikChakrabarti, that the relation among FDI and numerous controversial variables are highly responsive to little modifications in information. These studies are based on cross country analysis and our study is based on time series analysis. By using Extreme bond analysis to some extent this problem vague consent over FDI can be resolved but in this research paper this problem is not addressed directly.

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