Journal of ISOSS
2017 Vol. 3(1), 73-80

IMPACT OF AID, EXPORT, AND GDP PER CAPITA ON THE FOREIGN DIRECT INVESTMENT (PANEL DATA ANALYSIS OF TWENTY AFRICAN AND ASIAN ECONOMIES)

Muhammad Aftab Rafiq and **Sayed Mumtaz Kazmi**
Department of Economics, National College of Business Administration & Economic
Bahawalpur Campus, Pakistan.
Email: aftab_rafiq1987@yahoo.com
mumtazkazmi69@yahoo.com

ABSTRACT

In over study we use the data of twenty countries of Africa and Asia. Data of 31 year were taken from 1982-2012. Data is taken about the five variable. We use the FDI as the dependent variable GDP, GDP per capita, ODA, and Export of goods and services as the independent variable. We use the panel data analysis technique. Mixed effect model is used in our study. After the analysis we conclude that our overall model is fit and explain the dependent variable. All variables are significant. GDP have a positive impact on the FDI of the country. GDP per capita have the negative impact on FDI the economies of Asia and Africa according to our study exports of goods and services have the negative impact on the FDI and FDI reduced due to the exports of goods and services. ODA have also the negative impact on the FDI. ODA will reduced the foreign investment.

KEY WORDS

Foreign Direct Investment (FDI), Multilevel Mixed effect model, Official Development Assistance (ODA), Exports of goods and services, Gross Domestic Product (GDP), GDP per Capita, Panel data

INTRODUCTION

The concept of the Foreign Aid and FDI is not a new concept too many studies is performed in recent decades. Numerous studies become part of the economic literature and provide guidance to the policy maker. There finding are having different results because of the different geographical location and different aspect under study .Due to poor structure and poor level of the saving in the African economies there investment level is also very low. They are not having resources to meet there own investment requirement needed for the economy.

Due to the poor structure in African economies poor institution quality lack of access to the capital is the main reason to attract the foreign capital in the country in the form of FDI and AID. To reduced the severity of the low capital accumulation and improve the quality of institution they utilize the AID to improve their structure in the economy. AID makes the environment conducive for the attainment of FDI in the economy. Aim of the multination firms and international firms to get the benefit and attainment of the maximum profit from the economy but at the same time if also impact on the level of the employment and technology and improvement of the level of the living in the host country. Poor Courtiers are not having enough resources and not capable of meet there investment needs.

In our study our analysis exports of goods and services and aid and their influence on the FDI of the economies. We study their relationship how the export of the country and ODA will effect over the FDI. In our study we also uses the GDP and the GDP per Capita and their effect on the FDI is under consideration and checked which type of the effect will occur on the foreign direct investment either it improve the level of FDI or it reduce the level of the FDI. Our research wills helpful Address the issue related to the FDI and decision making in the investment matters.

We divide the article into six sections first section tells about the objective of our study and the 2nd section are related to the review of the literature and 3rd one tells about the source of the data and methodology and then we interpret the results of our study. Conclusion, references and annexure the last included the annexure .annexure included all the countries name included in our study.

OBJECTIVE OF THE STUDY

Objective of our study is to answer following Macroeconomic problems.

1. Is ODA will affect the FDI of the countries in Africa and Asia?
2. Effect of GDP on FDI.
3. Impact of export of the countries on the FDI.
4. Will GDP per capita reduced or increase the FDI?

LITERATURE REVIEW

SELAYA and SUNESEN (2012), analysis the effect of ODA and their response towards FDI he uses the FDI as the independent variable and after the analysis he concludes that effect of ODA and FDI is not too much clear theoretically. Aid increase the productivity of the capital if it utilized over the enhancement of infrastructure and human but if only the transfer of only physical capital it will crowd out or reduced the private investment in the economy. Effectiveness of the aid purely depends on its utilization. Hang Pham (2015) study over the ODA and FDI in the economy of Vietnam over the period of 1998-2012 he study about 64 provinces of Vietnam after that we concludes that ODA increase FDI in the long period of time And in the intermediate period of time but having no impact in the short run. Heang and Moolio (*2013) study the Relationship between the FDI and GDP of the Cambodian economy from the period of 1993-2011 by using the Simple Regression model he concludes that GDP and FDI having the positive impact on each other.* Demirhan and Masca (2008) study over the period of 20000 -2004 of thirty eight developing economies in his study he uses FDI as the depend variable and GDP per capita, taxes, trade openness are used as the independent variable he concluded that GDP per Capita is having the significant statically in the model and having the positive effect on the FDI. T. Bhavan et al. (2011) study the south Asian economies and he analysis the relation of ODA and FDI after the study he concludes that ODA attract the FDI in the south Asian countries and it will improve the flow of FDI in the economies. Arazmuradov (2015) study the central Asian economies over the period of *1993–2008 and he analysis the impact of AID on the FDI of the economy and he concludes that opposite* effect of AID and FDI and local and domestic investment will shrink the FDI. Mottaleb (2007) study the determinant of FDI how that effect and which factor effect the FDI in the country he concludes that the countries having the higher GDP and having the modern facilities ,infrastructure, and internet are going to maintain the higher level of foreign direct investment (FDI). Anh and Mai (2012) study the ASEAN countries and the relation of FDI and ODA is analysis after the analysis he concluded that statistically ODA and FDI are significant impact over each other and the ODA have the positive impact over to raise to level of FDI .if it utilized in the proper way over and ODA is the good tools to raise the level of FDI in the ASEAN economies. Chien, Zhang (2012)' he study the period of 2000-2010 of Vietnam economy linkage between the GDP and FDI is under study he concluded that there is the well-built association between the FDI and FDI. They are having the positive relation between each other. Quality of the institution also significant role to attract the FDI in province, Falk and Hake (2008) study over the period of 1973-2004 and analysis the relationship between FDI and exports of seven European economies by using the GMM method he concluded that association between the FDI and Export are significant and export of country can outward the FDI of the economies of European countries.

DATA AND METHODOLOGY

We get the data of twenty economies of Africa and Asia about thirty one year's 1982-2012 (list of courtiers are attached in annexure).data of five variables are taken for the World Bank data source. We use the FDI as the dependent variable and ODA, GDP, GDP per capita, X variable as the independent variables. We use panel analysis technique and multilevel mixed effect model from the STATA. Detail of over model is as follows.

Model:

FDI= (ODA, GDP, GDP per capita, X) **………………** **(i)**

FDI =Foreign Direct Investment

ODA=Official Development Assistance

GDP=Gross Domestic Product

X = Exports of goods and services

GDP/Capita=Gross Domestic product per capita

DEFINITIONS OF THE VARIABLES

Gross Domestic Product

GDP of the country is the production of the country at the domestic it is the production by the residents of the country the data of the GDP is taken from World Development Indicator data base in us dollars.

Foreign Direct Investment

Foreign direct investment inflow is the flow of the foreign capital in the form of investment.

To get the benefit from the reporting country it's the cross border investment one country firm or the residential to the other country the data taken from the World Development Indicator (WDI) in us dollars.

Exports of Goods and Services

All the exports of goods and the other services given by the country to the world residents are called the exports. It involves all the services and goods like transports, insurances and traveling and much more all the data about exports of goods and services taken from the World Development Indicator (WDI) in US dollars.

Official Development Assistance

ODA is simple we say that the aid. Aid is given by the some country or some multinational organizations to the poor country for the development and welfare and some of the cases the political motive it can also a loan on the concessional term the data of ODA is taken from the World Development Indicator (WDI) in the current us dollars

Gross Domestic Product Per Capita

If the GDP of the country is divided by the mid-year population we can get the gross domestic product of the country value the data of GDP per capita is taken from the World Development Indicator (WDI) in the current us dollars

Econometric Models

Model

$$FDI = \beta_o + \beta_1 GDP + \beta_2 X + \beta_3 ODA + \beta_4 GDP \text{ per capita} + \varepsilon \ldots\ldots\ldots\ldots\ldots \quad \textbf{(ii)}$$

Model Estimation

We get the panel data of 20 countries including the Asia and Africa we firstly get the data from the WDI data base data of the all the variables in current us dollars we firstly convert all the data in the pooled from and then apply the multilevel mixed effect model on the data then taken the results firstly we have discuss the model.

1. **Fixed Effect**: (intercept and slop) tells that the population study as the whole this effect are have the just like the intercept and slops in the conventional regression analysis
2. **Random Effect**: up and the down over the population intercept and slop which are used to describes the sub population these effect can be vary across the sub population
3. **Mixed Effect**: Is use for the multilevel modeling growth curve analysis panel data analysis also used for the time series and cross sectional data and more complex model.

Mixed effect model = Fixed effect model +Random effect model.

MIXED EFFECT MODEL

A multilevel mixed effect model is a statistical model containing both fixed effects and random effects. These models are helpful in a broad diversity of disciplines in the physical, natural science and social sciences. It is too much useful in settings where recurrent and frequent measurements are prepared on the same statistical units (longitudinal study), and whenever where measurements are made on clusters of related statistical units. This is to much useful for handling with missing values, mixed effects models are often favorite over traditional methods such as repeated measures ANOVA.

Multilevel mixed effect models are now used in education research or geographical research, if we want to estimate separately the variation between pupils within the same school, and the variation between schools. In psychological fields, the multiple levels are items in an instrument, individuals, and families. In sociological fields, multilevel models are used to examine individuals entrenched within regions or countries. In organizational psychology research, data from individuals must often be nested within teams or other functional units. Different co variables may be relevant on different levels. It can also be used for longitudinal studies, as with growth studies, to separate changes within one individual and differences between individuals.

Matrix notation of mixed effect model is as below

$Y = X\beta + Z\ u + \in$

- Y is a known vector of observations, with mean $E(y) = X\beta$;
- β is an unknown vector of fixed effects
- u is an unknown vector of random effects, with mean $E(u) = 0$ and variance – covariant matrix $\text{var}(u) = G$;
- $\in$ is an unknown vector of random errors, with mean $E(\in) = 0$ and variance $\text{var}(\in) = R$;
- X and Z are known design matrices relating the observations y to β and u, respectively.

RESULTS AND INTERPRETATION

We use multilevel mixed effect model in our analysis from the STATA after the study we observe that our whole model is statistically significant because Prob>chi2= 0.0000 all the variables used in our study are significant and probability is less than the 5%. ODA variable is individually significant and having the negative effect on the FDI it shows that ODA reduced the FDI. ODA will reduce the FDI (-1.790757) dollars. GDP per Capita is also significant as the probability value is less the 5%. Sing of the coefficient is negative it stated that GDP per Capita will reduced the FDI(-514597.2) dollars. Exports of the goods and services is significant due to probability is less the 5% and having the negative impact on FDI. Export will reduced the FDI (-5.30e-06) dollars. GDP variable is also significant and have the positive impact on FDI. If the GDP is high the FDI also will be high. GDP will increase the FDI (0.0390619) dollars.

Mixed-effects ML regression **Number of obs = 615**

Wald chi2 (4) = 11142.10

Log likelihood = -14713.38 **Prob>chi2 = 0.0000**

Results of Multilevel mixed effect model: *FDI* [dependent variable]

Variables	Coefficients	Std. Err.	p- values	Z
ODA	-1.790757	.3143941	0.000	-5.70
GDP	.0390619	.0003705	0.000	105.44
Export	-5.30e-06	1.31e-06	0.000	-4.06
GDP Per Capita	-514597.2	86890.99	0.000	-5.92

CONCLUSION

In our analysis we use the data of thirty one years from 1982 -2012 of twenty African and Asian economies. We use the multilevel mixed effect model and then we concludes in our study that GDP is having the positive impact on the FDI if the value of GDP increases it will increases the value of FDI. 2nd variable aid (ODA) having the negative influence over the FDI according to our study ODA is reducing the FDI in these economies. GDP per Capita having the Negative influence over the FDI and GDP per Capita Reduced the FDI. Exports of goods and services having the Negative impact on the FDI in the economies and in context of our study its shows that FDI is being reduced due to raise the level of the exports of the economies.

POLICY RECOMMENDATION

1. ODA is having the negative influence in our study but if the measure has been taken to utilize the AID in the proper mechanism and to raise the level of infrastructure it will pave the way to improve the FDI in the economies.
2. GDP is the domestic level of the production of country if the economies raise the production level and to raise the level of income in the country it will pave a way toward the attainment of investment and it will raise the level of FDI in the country.
3. It is also necessary to raise the income of capita pollution over the economy it will influence the FDI also.
4. Exports influenced the FDI in the negative way but if the FDI in the selected field where FDI not influenced the domestic production and exports of the Domestic country it also play a constructed role in the economy.

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ANNEXURE

1. Egypt
2. Kenya
3. Tunisia
4. Algeria
5. China
6. Chad
7. Thailand
8. Malaysia
9. Philippines
10. Bangladesh
11. India
12. Sri Lanka
13. Pakistan
14. Nigeria
15. Jordan
16. Indonesia
17. Zimbabwe
18. Zambia
19. Saudi Arabia
20. Turkey