

Bilateral Foreign Direct Investment between GCC Countries and Developed Economies, using a Gravity Model

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Abstract

The study analyzed the bilateral foreign direct investment between GCC countries and developed economies using a Gravity Model. The study has applied a new approach to the panel data set on bilateral foreign direct investment flows between 6 GCC countries and 8 developed countries, from 2001 and 2012. GDP per capita for source countries and population of the source, and destination economies were almost positive and significant determinants of bilateral Foreign Direct Investment flows. Geographical proximity has exerted a significant positive influence on bilateral foreign investments. Investors may seek diversity in the investments and support GCC countries for foreign investment.

Keywords: Bilateral FDI flows • GCC countries • Gravity model • Panel data

Introduction

Bilateral trade has gained importance in the international market due to the mutual interdependence of the world economies. International trade has accounted for various benefits including sustainable economic growth, improved employment opportunities, growth in production and fiscal base as well as the economic status of the individuals [1]. The growth in international trade has promoted countries to devise policies consistent with the changing business model and outlook, particularly for the Gulf Cooperation Council (GCC) countries.

It is because recent disruptions in the oil prices have led to economic and social instability for the oil-rich countries, highlighting the importance of economic diversification [2]. Foreign Direct Investment (FDI) can serve as an instrumental tool for developing the country's economy, introducing new technologies, accessing new markets and diversifying the economic activities. The international trade dynamics have also changed as the results of the General Agreement on Tariffs and Trade (GATT) [3].

FDI outward activities have become a part of diversification policy in GCC countries. It has diverted away from oil and gas-based economies, with sovereign wealth funds, state-owned enterprises, and other government-controlled entities playing a key role. This is extremely critical given the changing economic conditions and for securing sustainable economic progress. Such as members of GCC, concerning the State-owned telecom companies have been actively investing abroad, in 2008. Saudi Telecom, Zain (Kuwait), and Qatar Telecom (Qtel) concluded a cross border mega deal. While Omantel (Oman) acquired a 65% stake in Pakistan's World Call for about \$204 million. Following the investments, the majority of these telecom companies were able to secure licenses to operate abroad.

The bilateral trade FDI flows are observed to have a positive impact on the Gross Domestic Product (GDP) per capita of the countries. Initially, the trade relations of GCC have been investigated for the developing

countries while minimal concentration has been directed to the developed countries. The interdependence of the GCC countries declines from 74% to 40% of the overall GDP. Engaging in the FDI bilateral trade with developed countries is likely to assist both the countries in terms of its sales, regional security as well as environmental, political and cultural issues [4]. The non-monetary benefits associated with the bilateral trade association of the two regions are significant, ensuring cooperative benefits at an international level. Even though various efforts have been instigated for increasing trade performance, the statistics are found to remain stagnant, which fails to cross more than 6% (International Monetary Fund, 2016). This necessitates the region to explore new and developed economies by forming international trade linkage. The gravity model is observed as a standardized framework for assessing the bilateral trade flows [5]. Given this, the present study uses the gravity model for analyzing the bilateral FDI flow between GCC and developed countries. This study is also driven due to the focus of earlier researches on the bilateral trade of developed countries only have investigated the trade relationship between the aforementioned regions by conducting a review analysis, which fails to quantify the outcomes and relationship between the two. Therefore, the present study aims to explore the trade relation between GCC and developed countries using a gravity model.

This study has contributed to the literature and gravity model, from the year 2001 to 2012, to determine bilateral FDI flows from GCC economies and developed countries. Time trends dummy had been included for accounting the fixed parameters. In addition, source country characteristics, host country effects, and fixed-effects were estimated to capture home-economy specific effects. These effects were included in the study as they have been associated with the unobservable factors [6]. This study has employed two techniques: (1) Ordinary Least Squares (OLS), and (2) Random Effects (RE) estimations. These techniques have determined FDI flows from 6 countries, belonging to the Gulf Cooperation Council (GCC) economies and 8 developed countries. The pooled (OLS) technique has been extensively applied to the study for serving the capital flows, particularly in the domain of asset holdings. Random Effects (RE) estimation has been applied in bilateral FDI flows [7].

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Literature Review

This section had briefly reviewed the literature for the Gravity Model, concerning the bilateral FDI flows. Petri has studied the flows from high technology economies to medium technology economies. It stated that the flow dominates the Intra-Asian foreign direct investment; whereas, FDI primarily consists of flows among high technology economies in other regions. The main results indicated that population and GDP per capita in

both the source and host countries were positive and significant while, the distance was negative [8].

The impact of country-pair exchange rate regime combinations on the bilateral FDI flows. The study used a panel of 27 OECD (Organization for Economic Co-operation and Development) and non-OECD high-income countries throughout 1980 to 2003. GDP per capita for source and host countries and trade were positively and statistically significant, while distance was negative and statistically significant [9].

Feil have determined the impact of regional integration on inward FDI and examined the annual flow of inward FDI into OECD member countries between 1980 and 2003. The GDP per capita for both source and host countries were statistically positive and distance as a statistically negative factor. Moreover, bilateral trade has a positive and significant effect. Egger has used a panel data on Austria's bilateral multinational activity, including across 25 countries and seven country-blocs, four sectors and thirteen years of period, to show the disadvantage of log-linear Model estimation at quasi-maximum likelihood estimation. It had found that GDP for host countries was negative and significant.

The determinants of FDI flows to emerging economies using a panel approach between the years of 1992 and 2000. Several emerging economies in Asia, Latin American, and Central and Eastern Europe were studied under this approach. The GDP for source countries in Asia appears to be negative and insignificant; whereas, it displayed a significant positive impact on bilateral FDI flows in Latin American, and Central and Eastern Europe. GDP for host countries was positive and significant for both Asian and Latin Americans; however, it appeared to have a negative and significant impact on Central and Eastern Europe. Open trade between countries and risk had been positive and insignificant. However, the coefficient of distance expressed a negative and statistically significant impact on the bilateral FDI flows [10]. Bilateral FDI relationship between the members of the European Union and Eight Central and East European Candidate Economies in transition [11]. Cross-sectional data were in this study and found positive significant effects between GDP for host countries, openness to trade, and rating risk. The bilateral analysis concerning the gravity model has highlighted various studies for determining the trade. The determinants highlighted by some of the studies are presented in Table 1.

Table 1. Previous Studies conducting trade analysis.

Research	Region/ Countries	Model	Determinants
Wang, Wei, & Liu (2010)	19 OECD countries	Gravity model	Positive for Foreign direct investment and research and development, while negative for distance.
Jafari, Ismail, & Kouhestani (2011)	D8 countries	Gravity model	Positive impact on the GDP, currency, depreciation, export, and negative on transportation.
Aylward (2016)	European countries (24)	Gravity Model	Positive impact on GDP, Common border, and negative on distance.
Azu & Obe (2016)	China and Nigeria	Cointegration	Positive impact on GDP, trade openness, and exchange rate.
Anderson & Yotov (2016)	Countries (41)	Gravity Model	Positive impact on global efficiency and free trade agreement.

Statistical Analysis

Sample description and data: The study has used a panel data consisting of 6 GCC countries investing and 8 receiving, from the period of 2001 to 2012. Appendix A provides a list of source countries, and

Appendix B provides a list of host countries that have been included in each regression. The dependent variable was bilateral FDI flows from GCC countries to developed countries, along with the data, which were obtained from the UNCTAD FDI/TNC database. The data was converted in real terms using the U.S. GDP deflator. Data for U.S. GDP deflator were obtained from World Bank (2014) and World Development Indicators Database (WDI).

Variables: Gravity Model had regressed the bilateral FDI flows on a set of standard explanatory variables. These variables denoted relative market size and wealth, population and market risks, and trade openness. Details on the selection of data sources and parameters for each of the variables in the model were described in the following subsections. The choice of variables and proxies was guided by the literature. Table 2 shows the variables, definitions, and data sources (Table 2).

Table 2. Variables, Definitions and Data sources.

Variables	Definitions
Dependent Variable	
Ln FDI flows _{ij}	Real foreign direct investment flows from source country i to host country j, in natural logarithm form.
Explanatory Variables	
GDP pc _i	Real GDP per capita (constant 2000USD) in source country i
Ln GDP pc _i	Real GDP per capita (constant 2000USD) in source country i, in natural logarithm form
GDP pc _j	Real GDP per capita (constant 2000USD) in host country j
Ln GDP pc _j	Real GDP per capita (constant 2000USD) in host country j, in natural logarithm form
POP _i	Population in source country i
Ln POP _i	Population in source country i, in natural logarithm form
POP _j	Population in host country j
Ln POP _j	Population in host country j, in natural logarithm form
RISK _i	Risk premium on lending in source country i (prime rate minus treasury bill rate, %)
RISK _j	Risk premium on lending in host country j (prime rate minus treasury bill rate, %)
TRADE _{ij}	Total ratio of bilateral trade (exports+imports) between source and destination countries relative to the destination country's GDP

Gross domestic product per capita constant: The variable GDP per capita indicates the relative wealth and market size of the source; and host countries in natural logarithm. Richer economies were major sources and recipients of foreign investment. The data were obtained from the World Bank (2014) and the WDI databases, which was expected to express a positive effect on bilateral FDI flows.

Population: Population, variable in natural logarithm form, indicates larger economies that were mainly the sources and recipients of foreign investment. Population will have a positive relationship with the bilateral FDI. Data were obtained from the World Bank (2014) and WDI databases.

Results

Summary statistics: Summary statistics of the data were presented in Table 3 based on the means for dependent and independent variables. Moreover, Table 1 shows a correlation matrix between the variables and bilateral FDI flows to the developed economies. The main outcomes were presented in Tables 1-3. The results of pooled OLS (Ordinary Least Squares) were listed in Models 1 to 3, while the results of RE (random effects) were utilized in Models 4 to 6 (Table 3).

Table 3. Summary statistics on the bilateral FDI flows and gravity model. Note: All variables are defined in the methodology; Ln (natural logarithm form).

Variables	Mean	Std. dev	Min	Max
RFDI _{ij}	649.89	1599.87	-788.02	10438.67
Ln RFDI _{ij}	4.61	2.81	-0.79	9.25
GDP pc _i	36056.3	19181.83	14232.22	74448.88
Ln GDP pc _i	10.35	0.53	9.56	11.21
GDP pc _j	42660.85	4717.5	30440.63	53421.2
Ln GDP pc _j	10.65	0.11	10.32	10.88
Population _i	6509853	8857768	613720	2.95E+07
Ln Population _i	14.96	1.13	13.32	17.19
Population _j	1.17E+08	9.84E+07	3880500	3.14E+08
Ln Population _j	18.1	1.17	15.17	19.56
Risk _i	5.05	1.36	2.94	7.16
Risk _j	2.42	1.44	-0.04	6.72
Trade _{ij}	0.0015	0.002	0.00004	-0.01
Dist	6600.87	3656.35	2756.08	14890.02
Ln Dist	8.56	0.51	7.92	9.6

Results of gravity equations with bilateral FDI flows: The estimated results of equations (1) to (3) for the base gravity Model for bilateral FDI inflows were reported in Table 1. The results showed that the GDP per capita of source economies is significantly positive in OLS (Model 1), and RE (Model 4), which were consistent with the empirical evidence. Whereas, it has been found to have a negative effect and significance in OLS (Models 2 and 3), and RE (Models 5 and 6). The coefficient of GDP per capita in the destination country has been negative and significant for OLS (Models 2 and 3), and RE (Models 5 and 6). The most interesting results were the positive and significant impacts on the population of source and destination economies as expected in OLS (Models 1 to 3), and RE in (Models 5 to 6).

The coefficient of risk premium in the source country has been found to have negative significance in regression in OLS (Model 3), and in RE (Model 6). Distance, as a proxy for the transaction, transportation cost, and information asymmetries, had a significant positive effect on assets only as per the analysis in OLS (Models 1 to 3), and in RE (Models 5 and 6) as per the expectation. These positive effects on investment have been attributed to the diversification motive.

Discussion

The analysis of the impact of bilateral trade among the countries showed a positive impact of GDP per capita, destination, and bilateral investment flow in a host country. A similar impact was found for the geographical proximity between the two regions. These results were found consistent with the previous researches, such as Didier on SSAC and BRICs, which reflected a positive impact of bilateral FDI flow on the GDP per capita. Van provided similar results, showing a positive impact on bilateral trade.

The distance was observed to be positively related with the GCC countries and developed countries' FDI flow. This is corroborated by earlier researches which showed that distance has a positive impact on the FDI inflow in the country. Likewise, Tsang & Yip also showed the benefit of distance for better FDI inflow in the country. However, the study findings of Nuroğlu and Kunst were found to be contradicted with the present study findings showing a negative impact of distance on the FDI inflow and bilateral trade. The population of source and destination economies has a positive impact on the FDI inflow between the two countries.

Conclusion

Based on the findings of the gravity model, it was recommended that policies concerning the trade should be revised for effectively promoting trade and economic value across different countries. These policies can

also help in collectively combating the problems related to bilateral trade CO₂ emission. The policies should overcome the trade barriers; devise new trade activities, and openness for economic progression between the two countries. Also, rigid institutions' policies should be revised for promoting the MNC's activities as rigidity can substantially hinder their economic growth and diversification. The study also acknowledged certain limitations, such as its concentration on the GCC countries. It has also suggested that similar variables can be adopted for exploring the impact of trade relations of the developed countries with individual GCC countries to expand the literature and broaden the study horizon.

This study has performed an empirical investigation on the determinants of bilateral FDI flows from 6 GCC countries and 8 developed countries. It employed the panel data analysis approach for 2001-2012. The study has applied two approaches, including OLS, and RE estimations, using a gravity model. GDP per capita for source, population for source, and destination countries were significant to the estimations. Bilateral trade may have negative effect on bilateral FDI flows, among Foreign Direct Investment (FDI), where trade appears to be a substitution. The most remarkable finding was the observation that expressed the distance to have positive effects on bilateral FDI flows because of the diversification motive.

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