Journal of Economics and Sustainable Development
ISSN 2222-1700 (Paper) ISSN 2222-2855 (Online)
Vol.4, No.1, 2013

Foreign Direct Investment (FDI) and Its Effects On Oil, Gas And Refinery Production and Their Exports: An Applied Study.

Dr.Gaber Mohamed Abdel Gawad [1, 2*] Dr.Venkata Sai Srinivasa Rao Muramalla [2]

1. Associate Professor of Economics, College of Business Administration at Hotat Bani Tamim Campus of Salman Bin Abdul Aziz University, Alkharj, Riyadh Region of Kingdom of Saudi Arabia.
2. Assistant Professor of Marketing, College of Business Administration at Hotat Bani Tamim Campus of Salman Bin Abdul Aziz University, Alkharj, Riyadh Region of Kingdom of Saudi Arabia.

* E-mail of the corresponding author: *gabergagm@yahoo.com*

Abstract

The paper test the relationship between FDI and Oil, Gas and Refinery (OGR) industries production and their exports in seventeen countries selected from all the seven region in the world which are attracting FDI and leaders in the production and exports of OGR products through period from 1995 to 2011. By using simple leaner regression model the parameters such as R Square, F Value, T Test, and Standard Division (SD) are used to identify the significant relationship in two directions between FDI and production and exports of OGR industries. The study results are supporting with the assumption that there is a positive and significant relationship between FDI and Exports of Oil and Gas Industries (XCO, XNG) in the selected countries and this result is also shown agreed with many other studies about FDI and exports from developed and developing countries. However the relation between FDI and Production of Crude Oil (PCO) is insignificant in 14 countries among the selected countries in the world regions and significant only in two countries such as U.A.E, and China, the direction of relation is not determine, so we can conclude that PCO does not affect by FDI. Otherwise there are positive relationships between FDI and production of natural gas (PNG) because we have three negative observations from fourteen observations but it is insignificant; we have only two high F values of fourteen countries, these countries are Nigeria, and China. So we can conclude that there is a positive relationship between FDI and PNG but this relation is insignificant. In case of the relation between FDI and Refinery Capacity (RC) there is a positive relationship between FDI and RC of all the selected countries, and this relation is strong in case of China, but it is weak in eleven countries and insignificant, instead of refinery industry depend on FDI in many other countries. Finally, relationship between FDI and its' effects on PCO, PNG, RC, XCO, XNG are analysed. The results are confirmed the continued insignificance of FDI effects on OGR production and significance on OGR exports in all the countries especially in Russia, U.A.E and China. Few countries have negative direction of effects of FDI inflows on production and exports of OGR industries which are representing the highly developed countries such as U.K., France and Norway and developing countries such as Nigeria and Angola.

Keywords: *Economic Growth, Foreign Direct Investment, Oil and Gas Production and Refinery Capacity, Exports of Oil and Gas, Multinational Corporations, Globalization Process.*

1. Introduction

In many countries, attracting investment has become the sum total of industrial policy.[1] Foreign investment today is regarded as the central engine for economic growth. The key donors like the United States (US), the International Monetary Fund (IMF) and the World Bank on the Washington Consensus pointed out that attracting Foreign Direct Investment (FDI) is always at the top of the economic policy agenda for most countries.[2] The World Investment Report also mentioned that currently, FDI is growing even faster than international trade, which has been the major mechanism connecting national economy. Even countries previously closed to foreign investors, for instance China, have recognized the economic benefits of foreign investment and have opened their borders to foreign capital. Competition to attract FDI involves not only developed countries, but also developing countries.[3]

[1] *Christian Aid written evidence on the Private Sector submitted to the* ***International Development Committee*** *of the Houses of UK parliament drafted by Sharon McClenaghan, 2006.*

[2] *UNCTAD (2003)* ***FDI Policies for development: National and International perspectives.***

[3] *Sukhoruchenko, V.(2007), "****Foreign Direct Investment in an Emerging Market: Implications for***

FDI Report 2012[4] of Financial Times Limited mentioned that the number of FDI projects all over the World increased by 5.6% in 2011, faster than the 3% increase in 2010. In total, FDI Markets recorded 13,718 FDI projects in 2011. After declining by 14.5% in 2010, the estimated capital investment associated with FDI projects grew by 1.2% in 2011 to $860bn, indicating the beginning of a recovery in more capital-intensive sectors. The same pattern was seen in employment, with estimated direct job creation from FDI increasing by 2.5% in 2011 to 2.27 million, following a 3.5% decline in 2010.

Further UNCTAD data[5] (world investment report 2012) reveals that the China from Asia is the biggest country in attracting FDI in 2011 in the world with 123985 million dollars (M$) around 30.4% FDI inflow/GDP and Belgium is the first in top 10 European countries in attracting FDI (with 89142 M$) flowed by UK and France (with 53949M$ and 40945M$ respectively); Russian, Federation from Eurasia attract 52878M$; Australia from Oceania attract 41317M$; Canada and Mexico from North America attracts 40932M$ and 19554M$ respectively; Brazil and Venezuela from South America attracts 66660M$ and 5302M$ respectively; Egypt was the biggest country from North Africa in attracting FDI through the last 10 years until 2010 but FDI inflow dropped from 6385M$ in 2010 to -483M$ in 2011; Nigeria is the biggest country from west Africa in attracting FDI it attract 8915M$; and Saudi Arabia is the biggest country from West Asia attract 16400M$.

Moreover, according to World Trade Organization (WTO) International Exports Statistics[6], the top five countries leading in their net exports of oil and gas industries in 2011 are as follows (next exports in thousand barrels per day of each country is given in parenthesis): Saudi Arabia(8167), Russia(7504), UAE (2309), Kuwait(2343), Nigeria(2242). The WTO report has segregated the world petrol and gas exports regions in the World in to seven different regions such as North America, Central and South America, Europe, Eurasia, Middle East, Africa, Asia & Oceania.

This paper covered seventeen countries having the highest net exports of oil and gas and FDI inflow and was investigated the relation between FDI and OGR and their exports in many developed and developing countries selected from seven regions across the world as follow: Canada from north America, Mexico; Brazil; and Venezuela from central and south America, Belgium; UK; France; and Norway from Europe (OECD) countries, Russia from Eurasia, three (Saudi Arabia, UAE, and Kuwait) from Gulf Cooperation Council (GCC) countries, west Asia and middle east, Egypt from north Africa, Nigeria and Angola from Africa, China from Asia and Australia from Oceania.

The reason for this research is that the oil, gas and refinery industry depend on Multinational Corporations (MNCs). Which possess huge capital and high technology and the main channel for this firm's expansion strategy is FDI. FDI in oil, gas and refinery industries promotes petrochemical exports and all other kinds of exports. There is a huge competition among the various countries of the world to get export oriented FDI. This is essentially true among developing countries like Egypt, China, and Brazil. Considering the fact that FDI is means for developing countries to get capital inflows, access to foreign technology, management skills and marketing networks. It promotes export activities by providing access to global markets and facilitating export oriented production with an inflow of capital and access to modern technology. Thus, FDI encourages exports of host country economies by way of enhancing their domestic capital for exports, facilitating in transfer of technology and new products and services for exports, providing linkages with new and large global markets, and lastly, helps in training the host country workforce in improving their both technical and management capabilities.[7] Hence, FDI is pursued as a tool for export promotion.

With this introduction, the paper is organized as follows. Section two presents a review of literature pertaining to the impact of FDI on OGR and their export performance and the choice of variables. Section three indicates the

---

Policy-Making in Kazakhstan*", Dissertation no. (3410), University of St.Gallen, Aktobe-Press: Aktobe, P. 1.*

[4] ***FDI Report 2012: Global green field investment trends,*** *FDI Intelligence, Global Insight from the Financial Times Limited, London.*

[5] *UNCTAD (2012),* ***"World Investment Report 2012: Towards a New Generation of Investment Policies",*** *Chapter – II – Regional Trends in FDI.*

[6] Access World Trade Organization Statistics Report on International Trade and Data
http://www.wto.org/english/res_e/statis_e/statis_e.htm

[7] Kuntluru, S. (et. Al.,), (2012), "Foreign Direct Investment and Export Performance of Pharmaceutical Firms in India: An Empirical Approach", ***International Journal of Economics and Finance***, Vol. 4, No. 5; May 2012, P. 216.

research methodology including data collection and model specification, and list of variables. Section four presents results and discussion. Section five concludes by pointing to a future research direction.

2. Review of Literature

Many developmental studies shows there are relationships between Development of Economy and FDI, the present study is concentrates on the relationship between FDI and Oil, Gas and Refinery Sectors production and exports in seventeen countries selected from the seven regions of the world. FDI effects on all sectors of an economy include agriculture, service, oil, gas and refinery (OGR) industries. However, various researchers concentrated on analysing the relation between FDI and economic growth in both developed and developing countries, like (Abdul Khaliq, and Ilan Noy 2007)[8] study, which investigates the impact of foreign direct investment (FDI) on economic growth using detailed sectoral data for FDI inflows to Indonesia over the period 1997-2006. In the aggregate level, FDI is observed to have a positive effect on economic growth.

However, when accounting for the different average growth performance across sectors, the beneficial impact of FDI is no longer apparent. When examining different impacts across sectors, estimation results show that the composition of FDI matters for its effect on economic growth with very few sectors shows positive impact of FDI and one sector even showing a robust negative impact of FDI inflows (mining and quarrying). The sectors examined are: farm food crops, livestock product, forestry, fishery, mining and quarrying, non-oil and gas industry, electricity, gas and water, construction, retail and wholesale trade, hotels and restaurant, transport and communications, and other private and services sectors. Other studies also concerned on how FDI concentrate on its relation with industry or agriculture in developing countries, the authors of this paper think it is vital to look at ways of effecting of FDI activity in OGR industry. The following is the literature reviewed for the purpose.

According to Kyla Tienhaara[9] there are three main types of foreign investment contracts in the upstream oil and gas sector: (1) concessions or licenses; (2) production sharing contracts (or agreements) ("PSCs" or "PSAs"); and (3) risk-service contracts. In addition, all three may be subject to association or joint-venture agreements. It is stated by Andrew Summer[10] "technically, foreign direct investment is usually defined as money invested by a private sector firm outside its home country where the amount exceeds ten per cent of the value of the venture in the foreign country".

However, as per the World Investment Report – 2012[11], FDI inflows increased in all major economic groups - developed, developing and transition economies. Developing countries accounted for 45 per cent of global FDI inflows in2011.The increase was driven by East and South East Asia and Latin America. East and South-East Asia still accounted for almost half of FDI in developing economies. Besides, in the findings of Fabienne Boudier-Bensebaa[12], in the Central and Eastern European Countries (CEECs), FDI is expected to play a crucial catalytic role in their transition from a centrally planned economy to a market system. Not only are the CEECs experiencing a systemic upheaval in the economy but also they are undergoing integration into the EU. The opening up of these countries through the globalization process and EU accession are expected to favour institutional change and promote FDI.

In specific to Oil, Gas and Refinery Industries, Jamola Khusanjanova[13] examined the impact of FDI on oil and gas industry and observed during the past two-three decades, the role of FDI has become more and more

---

[8] Khaliq, Abdul and Ilan Noy (2007), "Foreign Direct Investment and Economic Growth: Empirical Evidence from Sectoral Data in Indonesia", visit http://www.economics.hawaii.edu/research/workingpapers/WP_07-26.pdf

[9] Tienhaara, Kyla (2011), 'Foreign Investment Contracts in the Oil & Gas Sector: A Survey of World Countries' Article 6, Report of Sustainable Development Law & Policy, Volume 11, Issue 3 *Spring 2011: Trade, Investment, and Sustainable Development,* Published by Washington College of Law Journals & Law Reviews at Digital Commons @ American University Washington College of Law. http://digitalcommons.wcl.american.edu/sdlp

[10] Summer, Andrew (2005), 'Foreign Direct Investment – A Critical Perspective' A Re-Define Working Paper, Report on *Is FDI good for the poor? -A review and stock take, Development in Practice,* Volume 15, June 2005.

[11] UNCTAD *(2012), "World Investment Report 2012: Towards a New Generation of Investment Policies"*, Chapter – II – Regional Trends in FDI. UNCTAD FDI/TNC database: www.unctad.org/fdistatistics

[12] Boudier-Bensebaa, Fabienne (2008),'FDI-assisted development in the light of the investment development path paradigm: Evidence from Central and Eastern European countries', *Transnational Corporations,* Vol. 17, No. 1, April 2008, http://archive.unctad.org/en/docs/iteiit20081a3_en.pdf

[13] Khusanjanova, Jamola (2011), 'Enhancing FDI inflows into Oil and Gas Industry: Case Study of Selected

important, especially for developing countries. He concluded in his findings that in order to enhance their investment attractiveness countries started to take actions to make investment climate more attractive such as making legal frame more investors' friendly, decreasing taxations and etc. However in reviewing the cases all over the world on benefits of FDI in Oil and Gas Industry, Claire McGuigan[14] has mentioned, Bolivia is receiving FDI from its oil and gas sector are of course an issue of huge importance to the country, given the extremely high levels of poverty – with 63 per cent of people living on less than US$2 a day, jumping to a staggering 91 per cent in rural areas, it is not surprising that Bolivians are extremely sceptical of the benefits that foreign companies are bringing to the country. It is also reported that some costs and benefits that are associated with foreign investment in the oil and gas sector in Bolivia, and quantifies the real contribution that the sector has made to the Bolivian economy since privatisation at the end of 1996.

Nutavoot Pongsiri[15] of University of Manchester discussed and identified in his working paper on conditions that would facilitate foreign direct investment (FDI) in the upstream oil and gas industry. He concluded that the establishment of a stable and secure environment is a fundamental way that host governments can play a vital role in reducing risk and promoting opportunity through the implementation of suitable regulatory terms and conditions for oil exploration and production (E&P) work, as well as sufficient economic incentives to attract foreign investment capital in case of any country in the world.

John C. Anyanwu[16] estimated the results from cross-country regressions for the period 1996-2008 indicate that: (i) there is a positive relationship between market size and FDI inflows; (ii) openness to trade has a positive impact on FDI flows; (iii) higher financial development has negative effect on FDI inflows; (iv) the prevalence of the rule of law increases FDI inflows; (v) higher FDI goes where foreign aid also goes; (vi) agglomeration has a strong positive impact on FDI inflows.

Nabil Md. Dabour[17] the senior economist in the world and chief of social research section at the SESRTCIC has pointed that like other developing countries, the Organization of Islamic Cooperation (OIC) member countries were also seeking to enhance the inflow of FDI to their economies. However, in most these countries matters have not developed so well. He was also mentioned in his paper that the OIC countries, as a substantial group of the world developing countries, have attracted a small share of the total FDI flowing to developing countries. The main focus of his paper is on the role of FDI in development and growth in OIC member countries and the challenges facing these countries in attracting FDI that is consistent with their overall economic development strategy.

Faramarz Akrami[18] in the findings of his thesis for the award of Doctoral degree mentioned that many countries have been trying to attract and accumulate wealth in general and to attract FDI in particular. Furthermore, based on free market economic principles and theories, they have been encouraged by international organizations and investors and the worldwide economic structure to borrow from abroad and use foreign investment for meeting domestic needs, convinced that foreign investment can solve all their problems. Since the second half of the last century, the independent developing countries have been overwhelmed by the capitalist structures and have not been able to understand the proper basis for development in their countries, he added.

Countries in the World', *International Conference on Environment and Bio-Science,* IPCBEE vol.21, 2011, IACSIT Press, Singapore. http://www.ipcbee.com/vol21/12--ICEBS2011G011.pdf

[14] McGuigan, Claire (2007), *'The benefits of FDI: Is foreign investment in Bolivia's oil and gas delivering?',* Christian Aid Publications, January 2007. http://www.boliviainfoforum.org.uk

[15] Pongsiri, Nutavoot (2005), 'Foreign Direct Investment and Regulation: a Case Study of Thailand's Upstream Oil and Gas Industry', *Special Feature: Asian Energy Law and Policy*, OGEL – 4, June 2005.www.ogel.org

[16]Anyanwu, John C. (2012), '*Why Does Foreign Direct Investment Go Where It Goes? New Evidence from African Countries'*, Annals of Economics and Finance, Vol. 13, pp. 431 – 462.

[17]Dabour, Nabil Md. (2000), *'The Role of Foreign Direct Investment (FDI) in Development and Growth in OIC Member Countries'*, Journal of Economic Cooperation, Vol. 21, Issue 3, pp.27-55. http://www.library.sesrtcic.org/files/article/188.pdf

[18] Akrami, Faramarz (2008), *'Foreign Direct Investment in Developing Countries: Impact on Distribution and Employment, A Historical Theoretical and Empirical Study'*, e-thesis presented to the Faculty of Economics and Social Sciences at the University of Fribourg – Switzerland in fulfillment of the requirements for the degree of Doctor of Economics and Social Sciences.pp.3-4. http://ethesis.unifr.ch/theses/downloads.php?file=AkramiF.pdf

3. Model and Estimation Methodology

Time series data is used in this study. An econometric model is developed to examine the relationship among FDI; and oil, gas, refinery; and its exports for selected countries from all the regions in the world. The variables are used include the country's production of crude oil, country's production of natural gas, country's refinery capacity, country's exports of crude oil, country's exports of natural gas and foreign direct investment (FDI). Models are developed to analyze the exact relationship among the variables to test the causality between FDI and production and exports of oil, gas and refinery industries.

3.1 Model Specification

The research has been undertaken the assumptions of whether inflow of FDI affects exports and production of oil, gas, refinery industries in each of the country selected for the study as well followed by another assumption that the oil, gas and refinery industries and their production and exports are in turn affected by inflow of FDI of that country. On the opposite direction all these variables effect on attracting FDI. Hence the model is specified and formulated as follows:

$$\begin{bmatrix} PCO_J = f(FDI_J) & (1) \\ PNG_J = f(FDI_J) & (2) \\ RC_J = f(FDI_J) & (3) \\ XCO_J = f(PCO_J, R_J, FDI_J) & (4) \\ XNG_J = f(PNG_J, FDI_J) & (5) \\ FDI_J = f(PCO_J, PNG_J, RC_J, XCO_J, XNG_J) & (6) \end{bmatrix}$$

Where:

PCO represents production of crude oil

FDI represents inflow of foreign direct investment

PNG represents production of natural gas

RC represents refinery capacity

XCO represents exports of crude oil

XNG represents exports of natural gas

J denotes country

The statistical forms of models gives raise the following equations:

$$PCO_J = \alpha_0 + \alpha_1 FDI_J + e \quad (7)$$

$$PNG_J = \beta_0 + \beta_1 FDI_J + e \quad (8)$$

$$RC_J = \chi_0 + \chi_1 FDI_J + e \quad (9)$$

$$XCO_J = \delta_0 + \delta_1 PCO_J + \delta_2 RC_J + \delta_3 FDI_J + e \quad (10)$$

$$XNG_J = \varepsilon_0 + \varepsilon_1 PNG_J + \varepsilon_2 FDI_J + e \quad (11)$$

$$FDI_J = \phi_0 + \phi_1 PCO_J + \phi_2 PNG_J + \phi_3 RC_J + \phi_4 XCO_J + \phi_5 XNG_J + e \quad (12)$$

Where $\alpha_0, \beta_0, \chi_0, \delta_0, \varepsilon_0, \phi_0$ are intercepts for equations 1, 2, 3, 4, 5 and 6 respectively. $\alpha_1, \beta_1, \chi_1, \delta_3, \varepsilon_2$ are parameters of FDI in equations 7, 8, 9, 10 and 11.

δ_1 is parameter estimate of PCO in equation 10

δ_2 is parameter estimate of RC in equation 10

ε_1 is parameter estimate of PNG in equation 11

ϕ_1 is parameter estimate of PCO in equation 12

ϕ_2 is parameter estimate of PNG in equation 12

ϕ_3 is parameter estimate of RC in equation 12

ϕ_4 is parameter estimate of XCO in equation 12

ϕ_5 is parameter estimate of XNG in equation 12

e is a random variable or error term.

The model applies on data related to seventeen countries selected and estimated the parameters to analyse the significance and direction of the relation between FDI and other variables (PCO, PNG, RC, XCO, and XNG). The data set of each country is used for the analysis consists of annual data from 1995 to 2011. Since our data of selected countries are independent, four different techniques are performed to strengthen the results of the study. First R Square values are calculated to identify the least square values among the selected countries. In second and third techniques, we calculated the feasibility of F Values and t Tests to cognize the variations in the significance levels of FDI effects on OGR production and exports of selected countries and their directions effected by FDI. Fourth technique is performed to view that FDI decision may be made based on historical data and hence all the independent variables that are supposed to have effect on FDI inflow in each country would materialize their effect on the next period onward starting from the year 1995 until 2011.

4. Results and analysis

Only seventeen countries are examined in this study since the factors that determine the inflow of FDI to other countries are different from those that determine FDI elsewhere in addition to the fact that the structure and characteristics of selected countries are different from other developing countries. In addition, there is no doubt that this choice will ensure that the results are relevant and covered to the all continents in the world, its sub-regions and individual countries as well.

As stated in the earlier sections, there are assumptions that any FDI factor is effecting the production and exports of OGR industries and hence all the intercept points and parameters and other independent variables that are supposed to have an effect on FDI inflow would materialize their effect in the present study. Therefore, for the significance of effects of these variables and their comparison between the selected countries are presented in the results in which all the independent variables are lagged by FDI. Without accounting for the reverse causality, all of the estimated intercept Tests, R – Square values, F – Value, t - Value and Standard Deviation (SD) of Statistical Model Equations (equations from 7 to 12 in the methodology section) are presented in Tables numbered from 1 to 6 in this section. The results provided in each table of this section are based on the data processed related to each variable of the model equations (equations from 1 to 6 in methodology section) of all the countries selected for the study. The data pertaining to the values of each variable related to the all the countries are obtained from the various sources of data mentioned in the sources of each table. The data was processed by using SPSS software in the computer to obtain the results and was presented and analysed.

Table 1 *Intercept tests, r – square, f – value, t - value and standard deviation (SD) of statistical model equation (7) for the estimation of FDI effects on production and exports of OGR industries in selected countries.*

Country / *Values*	$PCO_J = \alpha_0 + \alpha_1 FDI_J + e$ (7)					
	α_0	α_1	*R Square*	*F Value*	*t Test*	*SD*
Canada	1366.169	-7.609	0.001	0.016	-0.126	0.968
Mexico	2891.576	5.361	0.016	0.250	0.500	0.968
Brazil	960.411	1.801	0.410	10.439	3.231	0.968
Venezuela	2833.040	-8.708	0.006	0.093	-0.304	0.968
Belgium	---	---	---	---	---	---
United Kingdom	2156.669	-2.996	0.098	1.635	-1.279	0.968

France	36.537	-2.041	0.245	4.863	-2.205	0.968
Norway	3012.277	-6.949	0.390	9.606	-3.099	0.968
Russia	8166.588	4.291	0.382	9.260	3.043	0.968
Saudi Arabia	8130.696	2.528	0.269	5.516	2.349	0.968
U.A.E	2144.055	3.072	0.714	37.506	6.124	0.968
Kuwait	2176.932	0.320	0.089	1.462	1.209	0.968
Egypt	720.954	-2.247	0.423	11.012	-3.318	0.968
Nigeria	2010.668	3.054	0.003	0.043	0.206	0.968
Angola	1154.474	-9.157	0.201	3.776	-1.943	0.968
China	2787.297	1.098	0.888	119.482	10.931	0.968
Australia	534.470	-1.709	0.153	2.705	-1.645	0.968

(---) Data is unavailable.

-Authors' calculations for summary statistics of data to each country processed in SPSS Software.

Sources: 1. World Investment Report of UNCTAD, various issues.

Visit:http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/World-Investment-Report.aspx

2.Annual Statistical Bulletin of OPEC, various issues.

Visit: http://www.opec.org/opec_web/en/publications/202.htm

From the estimation of the statistical model equation no.7 in Table 1 we can note that the relation between FDI and Production of Crude Oil (PCO) is insignificant in 14 countries and significant only in two countries (U.A.E, and China), the direction of relation is not determine because we have 8 observations which are negative and 8 observations are positive, so we can conclude that PCO does not affect by FDI but it may be affected by other factors like political variables in the beginning of the twenty century. China is the beigest country in attracting FDI in the recent years and UAE one of the top 10 countries in production of crude oil so the relation between FDI and PCO in these two countries is different from other countries. Instead of Belgium one of the highest European countries in attracting FDI, but it has not data about PCO through the period of study. The standard deviation among the selected countries in terms of their production of crude oil and the inflow of FDI is also shown as uniform of its kind.

Table 2 *Intercept tests, r – square, f – value, t - value and standard deviation (SD) of statistical model equation (8) for the estimation of FDI effects on production and exports of OGR industries in selected countries.*

Country / *Values*	$PNG_J = \beta_0 + \beta_1 FDI_J + e$ (8)			
	R Square	*F Value*	*t Test*	*SD*
Canada	0.050	0.797	0.892	0.968
Mexico	0.374	8.980	2.997	0.968
Brazil	0.432	11.402	3.377	0.968
Venezuela	0.215	4.117	2.029	0.268
Belgium	---	---	---	---
United Kingdom	0.002	0.026	-0.160	0.968

France	---	---	---	---
Norway	0.346	7.934	2.817	0.968
Russia	0.431	11.364	-3.371	0.968
Saudi Arabia	0.006	0.097	-0.312	0.968
U.A.E	0.589	21.471	4.634	0.968
Kuwait	0.181	3.315	1.821	0.968
Egypt	0.424	11.036	3.322	0.968
Nigeria	0.728	40.199	6.340	0.968
Angola	---	---	---	---
China	0.876	105.489	10.271	0.968
Australia	0.352	8.144	2.854	0.968

(---) Data is unavailable.

-Authors' calculations for summary statistics of data to each country processed in SPSS Software.

Sources: 1. World Investment Report of UNCTAD, various issues.

Visit:http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/World-Investment-Report.aspx

2.Annual Statistical Bulletin of OPEC, various issues.

Visit: http://www.opec.org/opec_web/en/publications/202.htm

Estimation of statistical model equation no.8 in Table 2 shows that there are positive relationships between FDI and production of natural gas (PNG) because we have three negative observations from fourteen observations but is insignificant; we have only two high F values of fourteen countries, these countries are Nigeria, and China. So we can conclude that there is a positive relationship between FDI and PNG but this relation is insignificant. The standard deviation among these countries in terms of their production of natural gas and the inflow of FDI is also shown as uniform of its kind.

Table 3 *Intercept tests, r – square, f – value, t - value and standard deviation (SD) of statistical model equation (9) for the estimation of FDI effects on production and exports of OGR industries in selected countries.*

Country / *Values*	$RC_J = \chi_0 + \chi_1 FDI_J + e$ (9)			
	R Square	*F Value*	*t Test*	*SD*
Canada	0.070	1.130	1.063	0.968
Mexico	0.001	0.009	0.093	0.968
Brazil	0.246	4.898	2.213	0.968
Venezuela	0.204	3.836	1.959	0.968
Belgium	0.146	2.570	1.603	0.968
United Kingdom	0.070	1.137	-1.066	0.968
France	0.209	3.957	1.989	0.968
Norway	---	---	---	---

Russia	0.781	53.439	-7.310	0.968
Saudi Arabia	0.552	18.501	4.301	0.968
U.A.E	0.224	4.341	2.083	0.968
Kuwait	0.163	2.923	1.710	0.968
Egypt	0.184	3.372	1.836	0.968
Nigeria	0.247	4.912	2.216	0.968
Angola	---	---	---	---
China	0.600	22.535	4.747	0.968
Australia	0.061	0.967	-0.983	0.968

(---) Data is unavailable.

-Authors' calculations for summary statistics of data to each country processed in SPSS Software.

Source: 1. World Investment Report of UNCTAD, various issues.

Visit:http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/World-Investment-Report.aspx

2.Annual Statistical Bulletin of OPEC, various issues.

Visit: http://www.opec.org/opec_web/en/publications/202.htm

Results of estimations in statistical model equation no.9 in Table 3 shows that a positive relationship between FDI and refinery capacity (RC) of all the selected countries, and this relation is strong in case of China, but it is weak in eleven countries and insignificant, instead of refinery industry depend on FDI in many other countries, but the results of estimation of this study model are deferent, this is because the variable RC depend on PCO and other factors in domestic market in most of countries selected in the present study. The standard deviation among these countries in terms of their refinery capacity and the inflow of FDI is also shown as uniform of its kind.

Table 4 *Intercept tests, r – square, f – value, t - value and standard deviation (SD) of statistical model equation (10) for the estimation of FDI effects on production and exports of OGR industries in selected countries.*

Country / *Values*	$XCO_J = \delta_0 + \delta_1 PCO_J + \delta_2 RC_J + \delta_3 FDI_J + e$ *(10)*			
	R Square	*F Value*	*t Test*	*SD*
Canada	0.608	6.719	1.022	0.901
Mexico	0.936	63.894	0.196	0.901
Brazil	---	---	---	---
Venezuela	0.415	3.080	0.514	0.901
Belgium	--	--	--	--
United Kingdom	0.968	132.362	0.321	0.901
France	---	---	---	---
Norway	0.979	330.652	-0.909	0.935
Russia	0.841	22.843	-2.071	0.901

Saudi Arabia	0.964	116.153	1.996	0.901
U.A.E	0.941	69.351	0.786	0.901
Kuwait	0.963	63.168	-0.735	0.901
Egypt	0.768	14.372	0.508	0.901
Nigeria	0.799	17.209	2.902	0.901
Angola	0.767	23.057	-01.047	0.935
China	0.739	12.277	0.243	0.901
Australia	0.400	2.885	1.225	0.901

(---) Data is unavailable.

-Authors' calculations for summary statistics of data to each country processed in SPSS Software.

Source: 1. World Investment Report of UNCTAD, various issues.

Visit:http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/World-Investment-Report.aspx

2. Annual Statistical Bulletin of OPEC, various issues.

Visit: http://www.opec.org/opec_web/en/publications/202.htm

In Table 4, from the results of estimations of statistical model equation no.10 we can conclude that there is a strong and significant relationship between PCO, RC, and FDI as independent variables whereas export of crude oil (XCO) is a dependent variable, and this relation is positive between FDI and XCO in ten countries from fifteen countries, these results are supporting with the assumption that there is a positive and significant relationship between FDI and XCO, and this result is also shown agreed with many other studies about FDI and exports from developed and developing countries. The standard deviation among these countries in terms of their exports of crude oil and the inflow of FDI is little deviated in Norway and Angola to the mean values of standard deviation.

Table 5 I*ntercept tests, r – square, f – value, t - value and standard deviation (SD) of statistical model equation (11) for the estimation of FDI effects on production and exports of OGR industries in selected countries.*

Country / *Values*	$XNG_J = \varepsilon_0 + \varepsilon_1 PNG_J + \varepsilon_2 FDI_J + e$ *(11)*			
	R Square	*F Value*	*t Test*	*SD*
Canada	0.640	12.467	2.061	0.935
Mexico	0.132	0.914	1.280	0.926
Brazil	---	---	---	---
Venezuela	---	---	---	---
Belgium	---	---	---	---
United Kingdom	0.042	0.307	0.552	0.935
France	0.046	0,584	-0.764	0.961
Norway	0.997	2258.704	0.405	0.935
Russia	0.920	80.856	8.867	0.935
Saudi Arabia	---	---	---	---

U.A.E	0.337	3.566	1.931	0.935
Kuwait	---	---	---	---
Egypt	---	---	---	---
Nigeria	0.932	68.190	0.789	0.913
Angola	--	--	--	--
China	---	---	---	---
Australia	0.968	209.298	0.143	0.935

(---) Data is unavailable.

-Authors' calculations for summary statistics of data to each country processed in SPSS Software.

Source: 1. World Investment Report of UNCTAD, various issues.

Visit:http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/World-Investment-Report.aspx

2.Annual Statistical Bulletin of OPEC, various issues.

Visit: http://www.opec.org/opec_web/en/publications/202.htm

As shown in Table 5 there are eight countries of which data is unavailable such as Brazil, Venezuela, Belgium, Saudi Arabia, Kuwait, Egypt, Angola, and China. This is because of some countries consume its production of natural gas in its domestic market such as Brazil, Venezuela, Saudi Arabia, Kuwait, and China and some other countries have not in production of natural gas such as Belgium, and Angola. But Egypt is newly entered into the production of natural gas hence; the countries' exports began in the year 2003. When production is increased in Egypt to more than the needs of the domestic market and as a result there is an increase in FDI until period of 2010.

From the results of estimation of statistical model equation no.11 in Table 5, nine countries has a strong and significant relationship between PNG and FDI as independent variables, and XNG as dependent variable in five countries (Canada, Norway, Russia, Nigeria, and Australia), this relation is positive from FDI to XNG in eight countries. This result is consistent with the study hypotheses and with the results of many other applied studies on identifying the relationship between FDI and exports of various countries. The deviation of exports of natural gas and the inflow of FDI is also shown insignificant among the selected countries.

Table 6 *Intercept Tests, R – Square, F – Value, t - Value and Standard Deviation (SD) of Statistical Model Equation (12) for the estimation of FDI effects on production and exports of OGR Industries in selected countries.*

Country / *Values*	$FDI_J = \phi_0 + \phi_1 PCO_J + \phi_2 PNG_J + \phi_3 RC_J + \phi_4 XCO_J + \phi_5 XNG_J + e$ (12)			
	R Square	*F Value*	*t Test*	*SD*
Canada	0.300	0.942	0.884	0.829
Mexico	0.676	3.763	0.746	0.802
Brazil	0.439	3.396	0.367	0.901
Venezuela	0.260	1.053	0.488	0.866
Belgium	0.146	2.570	1.603	0.968
United Kingdom	0.431	1.668	-0.897	0.829
France	0.181	0.739	-0.817	0.877

Norway	0.469	2.654	-0.756	0.866
Russia	0.930	29.267	3.820	0.829
Saudi Arabia	0.749	8.951	2.239	0.866
U.A.E	0.841	11.671	2.002	0.829
Kuwait	0.535	3.446	-1.416	0.866
Egypt	0.669	6.067	1.170	0.866
Nigeria	0.851	7.971	-0.074	0.764
Angola	0.259	2.449	-1.047	0.935
China	0.904	28.296	0.269	0.866
Australia	0.358	1.227	0.266	0.829

(---) Data is unavailable.

-Authors' calculations for summary statistics of data to each country processed in SPSS Software.

Source: 1. World Investment Report of UNCTAD, various issues.

Visit:http://unctad.org/en/Pages/DIAE/International%20Investment%20Agreements%20(IIA)/World-Investment-Report.aspx

2.Annual Statistical Bulletin of OPEC, various issues.

Visit: http://www.opec.org/opec_web/en/publications/202.htm

Table 6 shows the results of statistical model equation no.12 for the estimation of significance of relationship between the FDI and its affects by PCO, PNG, RC, XCO and XNG. The results are confirmed the continued significance of FDI effects on OGR production and exports in all the countries especially in Russia, U.A.E and China. Few countries have negative direction of effects of FDI inflows on production and exports of OGR industries which are representing the highly developed countries such as U.K., France and Norway and developing countries such as Nigeria and Angola. Only country that has a little insignificance of FDI effects is Kuwait because of its agglomeration and endowment of natural resources policies of the government from the year 2001. Brazil, Belgium and Angola are lagged behind to identify the opportunities of FDI inflows in their countries in specific to OGR industries. Obviously little deviation is observed in terms of the FDI inflows and other variables in all of the selected countries.

However, one possible problem with statistical model equation no. 12 is that it assumes that all of the right-hand side variables in the model including production of crude oil and exports of natural gas are exogenous to FDI inflows, even when the lagged independent variables are used in the model. Without accounting for the reverse relationship, all of the estimated values in Table 6 may be biased. One way of accounting for possible solution to this problem is to pursue the FDI effects on other variables. Therefore the countries such as Brazil, Belgium and Angola are provided the insignificant results in the estimations of the equation in relation to FDI inflows and net exports and production of OGR industries in these countries.

4. Conclusion

The evidences of FDI activities all across the World countries clearly points to the benefits being critically dependent on the form and terms of FDI, the sector in which it occurs. However, it seems that on aggregate, FDI to developing countries has success to live up to its promise and in a number of cases has even promoted exports rather than increased development. The other potential benefits of FDI, such as employment generation, technology transfer and local skills build up are also fulfilling their promise. This, combined with the real effects of FDI as discussed in the above sections of this paper, so on the logic of countries across the World mainly focusing on attracting FDI into OGR industries, especially in the developing countries. Therefore it is significant to know and understand such impacts of FDI on some of the countries involves highly in exports of OGR products. From analysis the effect of FDI on OGR production and exports, we note positive and significant

causality relationship between FDI and Exports of crude oil and natural gas, these conclusion may be leads to confuse between the role of FDI in promoting refinery industry; creating jobs; transfer technology; and industrialization in host counties, and its role in encouraging exports of row materials. Generally from these evidences FDI promote and encourage exports from host countries and this will impact on economic growth in developed and developing countries.

Hence, this research has its own importance and significance. The results of statistical values estimated to analyse the significance of relationship between FDI and its effects on production and exports of OGR industries has shown the positive results on an average country analysis and comparisons between them. Further research is also required to identify the political, legal and technological factors that affect the relationship between FDI and OGR industries.

References

Ajayi, S. Ibi, (2006). The Determinants of Foreign Direct Investment in Africa: A Survey of the Evidence, in Foreign Direct Investment in Sub-Saharan Africa: Origins, Targets, Impact and Potential, Edited by Ajayi, S.Ibi. African Economic Research Consortium: Nairobi.

Akrami, Faramarz (2008), *'Foreign Direct Investment in Developing Countries: Impact on Distribution and Employment, A Historical Theoretical and Empirical Study'*, e-thesis presented to the Faculty of Economics and Social Sciences at the University of Fribourg – Switzerland in fulfillment of the requirements for the degree of Doctor of Economics and Social Sciences.pp.3-4. http://ethesis.unifr.ch/theses/downloads.php?file=AkramiF.pdf

Alsan, Marcella, et, al. (2006) The Effect of Population Health on Foreign Direct Investment Inows to Low- and Middle-Income Countries. World Development 34, No. 4, 613-630.

Anyanwu, John C. (2012), '*Why Does Foreign Direct Investment Go Where It Goes? New Evidence from African Countries'*, Annals of Economics and Finance, Vol. 13, pp. 431 – 462.

Bergstrand, et, al., (2007). A knowledge-and-physical-capital model of international trade ows, foreign direct investment, and multinational enterprises. Journal of International Economics 73(2), 278-308.

Boudier-Bensebaa, Fabienne (2008),'FDI-assisted development in the light of the investment development path paradigm: Evidence from Central and Eastern European countries', *Transnational Corporations,* Vol. 17, No. 1, April 2008, http://archive.unctad.org/en/docs/iteiit20081a3_en.pdf

Buckley, P. J et, al. (2001). Increasing the Size of the \Country": Regional Economic Integration and Foreign Direct Investment in a Globalised Economy. Management International Review 41 (3), 251-274.

Campos, Nauro et, al. (2003). Why Does FDI Go Where it Goes?: New Evidence from the Transition Economies, IMF Working Paper, WP/03/228,November.

Christian Aid (2006) written evidence on the Private Sector submitted to the International Development Committee of the Houses of UK parliament drafted by Sharon McClenaghan.

Clarke, R. and Logan, T-M., 2008. Emerging FDI Patterns in the CARICOM Region. Journal of International Business Research 8 (1), 16-23.

Dabour, Nabil Md. (2000), *'The Role of Foreign Direct Investment (FDI) in Development and Growth in OIC Member Countries'*, Journal of Economic Cooperation, Vol. 21, Issue 3, pp.27-55. http://www.library.sesrtcic.org/files/article/188.pdf

Daude Christian and Stein, Ernesto, 2007. The Quality of Institutions and Foreign Direct Investment. Economics and Politics 19(3), November, 317-344.

Deichmann Joel Ian et, al. (2003). Foreign Direct Investment in the Eurasian Transition States. Eastern European Economics 41(1), 5-34.

Fan, Joseph et, al., (2009). Insti- tutions and Foreign Direct Investment: China versus the Rest of the World. World Development 37(4), 852-865.

FDI Report 2012: Global green field investment trends, FDI Intelligence, Global Insight from the Financial Times Limited, London.

Fern_andez-Arias et, al. (2000). Getting It Right: What to Reform in the International Financial Markets. Inter-American Development Bank, Working Papers, No. 428.

Gholami, Roghieh, Lee et, al. (2006). The Causal Relationship between Information and Communication Technology and Foreign Direct Investment. The World Economy 29(1), 43-62.

Hailu, Zenegnaw Abiy, 2010. Demand Side Factors A_ecting the Inow of Foreign Direct Investment to African Countries: Does Capital Market Matter? International Journal of Business and Management 5(5), 104-116.*http://www.wto.org/english/res_e/statis_e/statis_e.htm*

Jeon B. N. and Rhee S. S., 2008. The Determinants of Korea's Foreign Direct Investment from the United States, 1980-2001: An Empirical Investigation of Firm Level Data. Contemporary Economic Policy 26(1), 118-131.

Kapuria-Foreman Vibha, 2007. Economic Freedom and Foreign Direct Investment in Developing Countries. The Journal of Developing Areas 41(1), 143-154.

Khaliq, Abdul and Ilan Noy (2007), "Foreign Direct Investment and Economic Growth: Empirical Evidence from Sectoral Data in Indonesia", visit http://www.economics.hawaii.edu/research/workingpapers/WP_07-26.pdf

Khusanjanova, Jamola (2011), 'Enhancing FDI inflows into Oil and Gas Industry: Case Study of Selected Countries in the World', *International Conference on Environment and Bio-Science,* IPCBEE vol.21, 2011, IACSIT Press, Singapore. http://www.ipcbee.com/vol21/12--ICEBS2011G011.pdf

Kinda, Tidiane, (2010). Investment Climate and FDI in Developing Countries: FirmLevel Evidence. World Development 38 (4), 498-513.

Kuntluru, S. et. al. (2012), "Foreign Direct Investment and Export Performance of Pharmaceutical Firms in India: An Empirical Approach", ***International Journal of Economics and Finance***, Vol. 4, No. 5; May 2012, P. 216.

Mateev, Miroslav, 2009. Determinants of Foreign Direct Investment in Central and Southeastern Europe: New Empirical Tests. Oxford Journal 8(1), 133-149.

McGuigan, Claire (2007), *'The benefits of FDI: Is foreign investment in Bolivia's oil and gas delivering?',* Christian Aid Publications, January 2007. http://www.boliviainfoforum.org.uk

Nigh, Douglas, (1986). Political Events and the Foreign Direct Investment Decision: An Empirical Examination. Managerial and Decision Economics 7(2), 99-106.

Nonnemberg, Marcelo Braga and Cardoso de Mendon_ca, Mario Jorge, 2004, The Determinants of Foreign Investment in Developing Countries.

Pongsiri, Nutavoot (2005), 'Foreign Direct Investment and Regulation: a Case Study of Thailand's Upstream Oil and Gas Industry', *Special Feature: Asian Energy Law and Policy*, OGEL – 4, June 2005.www.ogel.org

Quazi, Rahim M., (2007). Investment Climate and Foreign Direct Investment: A Study of Selected Countries in Latin America. Global Journal of Business Research 1(2), 1-13.

Sukhoruchenko, V.(2007), "Foreign Direct Investment in an Emerging Market: Implications for Policy-Making in Kazakhstan", Dissertation no. (3410), University of St.Gallen, Aktobe-Press: Aktobe, P. 1.

Summer, Andrew (2005), 'Foreign Direct Investment – A Critical Perspective' A Re-Define Working Paper, Report on *Is FDI good for the poor? -A review and stock take, Development in Practice,* Volume 15, June 2005.

Tienhaara, Kyla (2011), 'Foreign Investment Contracts in the Oil & Gas Sector: A Survey of World Countries' Article 6, Report of Sustainable Development Law & Policy, Volume 11, Issue 3 *Spring 2011: Trade, Investment, and Sustainable Development,* Published by Washington College of Law Journals & Law Reviews at Digital Commons @ American University Washington College of Law. http://digitalcommons.wcl.american.edu/sdlp

Tsai, Pan-Long, (1994). Determinants of Foreign Direct Investment and its Impact on Economic Growth. Journal of Economic Development 19, 137-63.

UNCTAD (2003) FDI Policies for development: National and International perspectives.

UNCTAD (2012), "World Investment Report 2012: Towards a New Generation of Investment Policies", Chapter – II – Regional Trends in FDI. UNCTAD FDI/TNC database: www.unctad.org/fdistatistics

UNCTAD, (2010). Regional Trends: Africa, World Investment Report 2010 |Investing in a Low-Carbon Economy, United Nations Conference on Trade and Development:Geneva.

Zhao, John et, al., (2003). The Impact of Corruption and Transparency on Foreign Direct Investment: An Empirical Analysis. Management International Review 43(1), 41-62.

Dr.Gaber Mohamed Abdel Gawad is an Egiptian born in the year 1968 . He is the research scholar of Prof. Aly Lotfy of Ain Shams University, Egypt, and Prof. Samer Ryad Makary of American University in Cairo and Helwan University, Egypt. He obtained his MCs (Foreign Trade) and Ph D degrees(Economics) in 1997and 2003 respectively from Helwan University, Cairo, Egypt. He worked as a Visiting Research Fellow at the University of Greenwich, Business School, International Business and Economics Department, London, UK, from July2008 to April 2009.,He published nearly 23 papers in National and International Journals and published 5 books. He has attended more than 35 conferences, workshops and seminars. He is member of many professional associations of Economics and Business Management. His teaching and research interests are in the areas of economics, international economics, finance, money and banking, and public finance, he was member of counsel of research deanship at Salman Bin Abdul Aziz University, He is member of Economics department in Faculty of Commerce and Business Administration, Helwan University, Egypt, He is the Coordinator of Quality Unit at the College of Business Administration, Salman Bin Abdul Aziz University, Hotat Bani Tamim, Saudi Arabia.

Dr.Venkata Sai Srinivasa Rao Muramalla is an Indian born in the year 1976. He is the research scholar of Prof. B.Parvathiswara Rao and Prof. R.Satya Raju of Andhra University, India. He obtained his MBA (Marketing) M Phil and Ph D degrees in 1999, 2004 and 2011 respectively from Andhra University, Visakhapatnam, Andhra Pradesh, India. He published nearly 20 papers in National and International Journals and published one book. He has attended more than 30 conferences and seminars. He is member of many professional associations of Business Management. His teaching and research interests are in the areas of international business, marketing management, customer relationship management, insurance management.