Foreign Direct Investment and Economic Growth in KSA: A Causality Test

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Abstract:

Foreign Direct Investment which refers to capital provided by an investor in one country to an enterprise in another country to acquire long-term interest is considered important to development because of its significant potential benefits to developing countries. FDI is considered a desirable means of ushering in resources- capital, technology, and other skills that can facilitate the higher levels of productivity required for economies to transition to higher levels of development. The purpose of this paper is to find in case of Saudi Arabia whether net FDI leads to high GDP growth or a higher level of GDP attracts more FDI. The Granger-causality test (Grangers 1969) is applied to examine the causal nexus between Net FDI and economic growth. The findings using the data spanning over a period from 1971 to 2007 shows that the variables under study are stationary (ADF test) at the level itself. The Granger-Causality test result clearly leads to the conclusion that net FDI flow is a factor responsible for GDP growth rate in KSA, not the other way round.

I.   Introduction:

Foreign Direct Investment (FDI) refers to capital provided by an investor in one country to an enterprise in another country to acquire a long term interest is important from the point of view of development of developing economies. It is considered significant for steering up the domestic resources like labor, capital, technology and other skills to take them to higher level of productivity so that economies in transition may reach at the higher level of development.

Throughout 1960s to 1980s, the economists debated on the issue that whether the adoption of export-oriented policies is beneficial for the development of an economy or not. South Korea, Thailand, Malaysia, Singapore and Japan were few countries to

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be put before as an example of export-led growth. However, since 1990s the emphasis started shifting from export orientation to what we call as the phenomenon of Foreign Direct Investment (FDI). Numerous economists and policy makers assert that Foreign Direct Investment (FDI) can have much better impact on a host country's developmental efforts. In addition to the direct capital financing it supplies, FDI can be a source of valuable technology and know-how while fostering linkages with local firms, which can help jumpstart an economy. Based on these arguments, industrialized and developing countries have offered incentives to encourage foreign direct investments in their economies.

Since the first oil shock, foreign direct investment, FDI, has been a relatively minor capital source for Gulf economies. Most foreign participation has involved building productive facilities and providing services under contract, rather than through FDI. However, rapid population growth, burgeoning infrastructure requirements, diversification of economic activity away from oil, growing fiscal pressures and the desire to access new technologies are driving many regional governments to more actively seek FDI. Progress in liberalizing FDI restrictions is slow, but Qatar, Oman and recently, Saudi Arabia, lead reform. Important constraints on FDI across the Gulf region include restrictions on full foreign ownership outside the free trade zones, prohibitions on investing in many sectors (particularly oil), restrictions on both domestic and foreign competition in key infrastructure, energy and manufacturing sectors, and imprecise and inconsistently applied regulatory frameworks Infrastructure needs in the Gulf economies are massive. The greatest foreign participation opportunities are in pipeline construction, electricity and water.

In January 1999, Saudi Arabia created the Supreme Petroleum and Mineral Affair Council, separate from the Saudi Arabian Oil Company, ARAMCO, to direct post production energy policy. In 2000, the Government established a new investment regulatory body, the General Investment Authority. Subject to all appropriate documents being lodged, it will process applications within 30 days. Until April 2000 foreign equity in the industrial sector was limited to 49 per cent. While in principle full foreign ownership was allowed in other sectors (except oil), wholly foreign owned firms could not bid for government contracts or access cheap credit or tax concessions. Proposals approved by the Council of Ministers in April 2000 allow foreign investors to wholly own projects and industrial property. These proposals also

allow wholly owned foreign companies to access tax holidays and concessional finance in other sectors, making full foreign ownership more feasible.

Saudi Arabia had the highest actual annual FDI inflows, averaging around US$600 million per year between 1993 and 1998, followed by the UAE and Iran. The Saudi economy's size and massive oil and gas reserves make its FDI reform progress critical to the Gulf's future investment environment. Continued progress in Saudi Arabia will trigger further reform elsewhere in the region; otherwise, smaller economies will struggle to compete for investment capital. Saudi accession to the WTO would raise the probability of further investment reform.

According to World Investment Report (WIR) 2007, Services remained the dominant sector for FDI in the region, a major proportion of which went to financial services. There were also several large deals in telecommunications. High oil prices are attracting increasing FDI in oil and gas-related industries. The GCC countries with large surpluses are rapidly increasing expenditures on large infrastructure projects, which are also attracting more FDI. Under the new reforms taken by the Kingdom of Saudi Arabia, the Government will start permitting FDI in previously restricted sectors, such as mining, film distribution, air transport, wholesale and retail trade, etc. It will also start granting multiple-entry visas for business people. The Government will also establish industrial cluster zones to encourage industrial investment.

The role that FDI can play in the developmental process has remained an interesting area under discussion for many theoretical and empirical studies. However, there has been questionable disagreement among economists on the issue of correlation between FDI and economic growth. One view says that FDI inflows can be seen as an instrument of changing the factor endowment of a country, increasing the stock of real physical capital, channel for technological diffusion from developed countries to developing countries (Balasubramanyam et. al. 1996). But the success of FDI in transporting economic growth largely depends if it is accompanied by trade liberalization, greater competition and improvement in educational systems leading to better human capital and macroeconomic stability (Zhang 2001: 175-85).

On the contrary, there are certain studies which put forward the opposite hypothesis: Growth sets in motion FDI. Conversely, some studies suggest the opposite hypothesis: growth drives FDI. Chakrabarti (2003) pointed out that rapid economic growth leads to high level of aggregate demand, which stimulates demand for investment including FDI.

Therefore, if we look at all those likelihood correlations between economic growth and Net FDI, the following four possibilities emerge:

I.   Net FDI causes economic growth.
II. Economic growth attracts Net FDI.
III. There is bi-directional relationship between Net FDI and economic growth.
IV. There is no relationship between Net FDI and economic growth.

The objective of this paper is to examine the above hypotheses in the case of Kingdom of Saudi Arabia. The entire article is divided into six sections. The first part is introductory which discusses the importance of FDI in economic development and the logic behind the causal relationship between FDI and economic growth. The second section presents a bird's eye view on the trend of et FDI and GDP in KSA. Review of literature discussing the causal relationship between FDI and economic growth is given in the following section. Section four discusses the econometric methodology and data source. The fifth section makes an analysis and interpretation of the results obtained. The sixth and the final section gives the concluding observations.

II. The growth of GDP and FDI in KSA since 1971:

The GDP at current prices in KSA spanning over the period under study has shown large fluctuations. The average for the entire period was around $139 billion with coefficient of variation of 60.96%, which is quite large. The overall average growth rate in GDP was slightly more than 16%. During 70s the growth was quite impressive taking the average figure of 49% per annum (p.a.), with 1974 catching the magic figure of more than 200% GDP growth rate. The reason could be a spur in the income due to heavy increase in the oil prices, which is being called by the rest of the world as first oil shock. 80s has shown a dismal figure from the point of view of growth rate. It was a decade of around 2.5% p.a. growth rates with several years plunging into a negative growth. In 1982 & 86, the negative growth was as high as 16%. However 90s has reflected some sign of recovery with the decadal average growth of 5.2% per annum with a maximum figure of 17.08% in 2000 and 12.47% in 1991. The situation in the 21st century is also not very gloomy. So far the average growth has been 7.67% p.a. with the highest growth rate of 26% in 2005. However, the economy is showing a downturn in growth after 2005. The reason for this may be the recessionary trend prevailing all over the world and KSA can't remain unaffected from it.

Net FDI in KSA on an average over the period under study (i.e. 1971 to 2007) is around $473 million per annum with a coefficient of variation of 6.58. The economy has seen large fluctuations in terms of flow of FDI. In many years the outflow of investment was more than the inflow making the net FDI flow as negative. The outflow was so large in 1974 that the net FDI inflow became negative to the extent of -$3.7 billions. However, the year 1982 was very good from the point of FDI inflow and the net flow was to the extent of more than $11 billions. But it couldn't last and started declining sharply in the coming years taking a negative figure of more than $1.17 billions in 1987. 1990, 93, 97 and 98 could be considered as good one from the point of view of net FDI flow to Saudi Arabia. In all these years the inflow was much larger than the outflow. The situation in the new decade is also not very bright. In most of the years the outflow of investment has superseded the inflow. In 2007, it was more than (-) eight billions of US dollar.

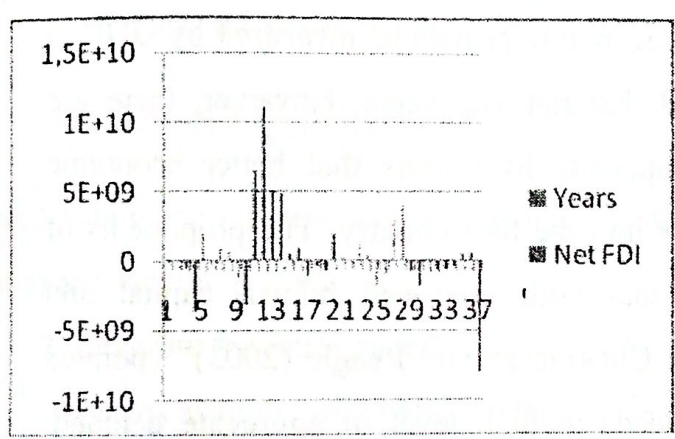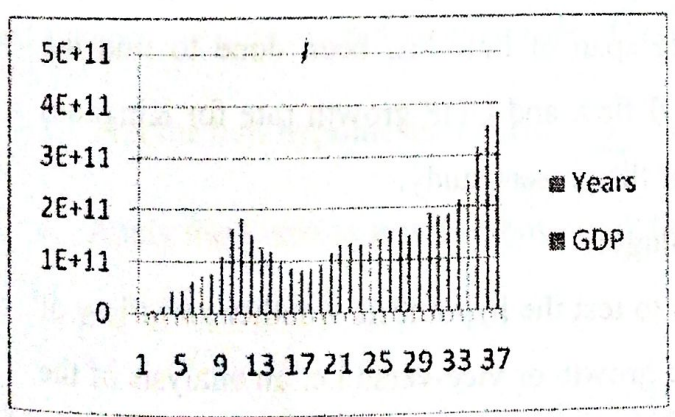### Figure-1: Net FDI(US $) in KSA during 1971-2007

Figure-2: GDP(US $) in KSA during 1971-2007

III.   Review of Literature:

Numerous empirical studies have been made to establish the relationship between FDI and economic growth. Balasubramanyam, Salisu and Sapsford (1996)[i] using cross sectional data of 46 countries found that FDI has stronger

effect in export promoting countries than import substituting countries. De Mello (2000)[ii] analyzed the time series and panel data for 32 OECD and non-OECD countries for the period 1970-90. He estimated the impact of FDI on capital accumulation and output growth in the recipient economy supporting the FDI led growth hypothesis. Similarly, Soto (2000)[iii]; Alfaro, Chanda, Kalelmi-Ozcan, Sayek (2004)[iv]; Li and Liu (2005)[v] found positive impact of FDI on GDP growth. They all used FDI measure as percentage of GDP. Liu et al. (2002)[vi] examined the long-run relationship between economic growth, FDI and trade in China. A study on the quarterly data for imports, exports, FDI and growth from 1981 to 1997, applying cointegration framework, revealed a bi-directional casual relationship between FDI, growth and exports. M. Feridun (2004)[vii] examined the relationship between FDI and GDP per capita in the economy of Cyprus, using the methodology of Granger causality and vector auto regression (VAR), found that economic growth as measured by GDP in Cyprus is Granger caused by FDI, but not vice-versa. However, there are certain studies that suggest the opposite hypothesis that better economic growth leads to greater FDI inflow into the host country. The proponents of this argument are of the view that both improved human capital and infrastructures are alluring to FDI. Chakrabarti and Reagle (2003)[viii] pointed out that rapid economic growth leads to high level of aggregate demand, which stimulates demand for investment including FDI.

The above mentioned review of literature clearly states that no in depth econometric study covering a long span of time has been done to find the causal relationship between net FDI flow and GDP growth rate for Kingdom of Saudi Arabia. Hence the need for the present study.

IV. Econometric Methodology:

The major concern of this paper is to test the hypothesis whether an inflow of FDI leads to high rate of economic growth or vice-versa i.e. an analysis of the causality relationship between net FDI and economic growth. In order to test the causality relationship from FDI to economic growth, the following equation is regressed:

$$FDI = \alpha_2 + \beta_2 \, GDP + \xi_{2t} \qquad \text{-- (I)}$$

Where,

GDP is annual rate of growth of GDP at current prices.

FDI is net FDI weight rate of GDP.

ξ_t is the error term.

The Granger-causality test (Grangers 1969)[ix] is applied to examine the causal nexus between net FDI and economic growth. The Granger causality test states that if Y is not influenced only by the lagged values of Y but also by the lagged values of X, then X causes Y. On the other hand, if X is influenced by lagged values of Y in addition to lagged values of X, then Y causes X. If X causes Y and Y also causes X then there is a bi-directional relationship between X and Y. Further, if X does not cause Y and Y does not cause X then there is an independent relation between X and Y. A simple F-test can show whether the lagged values of X contribute significantly to the explanatory power of the Y-equation.

The five steps involved in conducting a Granger-causality test[x] are:

1. Regress the restricted equation

i.e. $(Y_t = a_1 + \sum_{i=1}^{n} \alpha_i Y_{t-i} + \varepsilon_t)$

and obtain the residual sum of squares of this equation (which is restricted one) and label it as RSS_R.

2. Regress the unrestricted equation of Y_t on lagged Y terms and lagged X terms as in the following model:

$$Y_t = a_1 + \sum_{i=1}^{n} \alpha_i Y_{t-i} + \sum_{j=1}^{m} \beta_j X_{t-j} + \varepsilon_t$$

and find out the unrestricted residual sum of squares of this equation (RSS_U).

3. Test the null hypothesis that $H_0: \sum_{i=1}^{m} \beta_j = 0$

4. Apply the F-test to test the above hypothesis; it is given by

$$F = \frac{(RSS_R - RSS_U)/m}{(RSS_U)/(n-k)}$$

This follows the F distribution with m and n-k degrees of freedom.

5. If the computed F-value exceeds the critical F-value at the chosen level of significance, we reject the null hypothesis and accept that X causes Y.

Steps (1) to (5) should be repeated by interchanging the X and Y variables in the regression equations to test whether Y causes X.

The basic assumption of the Granger-causality test is that the data series are stationary. So, it becomes necessary to apply the test of stationarity of the given time series data. The Augmented Dickey-Fuller test (Dickey and Fuller 1979, 1981) is employed to test the stationarity of the set time series data. This requires the estimation of:

$$\Delta Y_t = \kappa_1 + \delta Y_{t-1} + \gamma_i \sum_{i=1}^{n} \Delta Y_{t-i} + \varepsilon_t$$

Where n is large enough to make ε_t white noise. The time series is stationary if the null hypothesis that $\delta = 0$ is rejected against an alternative hypothesis of $\delta < 0$. For testing the hypothesis, the t-statistic is taken as the test 'statistic' though it does not exactly follow the t-distribution. Critical values to conduct Dickey and Fuller test (1979, 1981) are provided by MacKinnon (1991). After confirming that the series is stationary at level itself, the Granger causality test is applied.

The data for the study has been taken from World Development Indicators-2008[xi] and for econometric results statistical software E-Views was used.

V.   Empirical Findings:

Stationary Test:

The econometric consequences of non-stationarity can be quite severe, leading to least squares estimators that are unreliable. Moreover, Granger causality test is applied when the data is stationary. So it is necessary to run stationary test of the variable.   Hence the Augmented Dickey-Fuller (ADF) test for stationarity of the variables is applied and the results obtained are as given in table-1:

Table-1: Result of ADF test for Stationarity:

Variables →	Growth rate of GDP			Net FDI & GDP Ratio		
Level	Constant	Constant & Trend	None	Constant	Constant & Trend	None
	-3.11 (0.034)	-3.94 (0.022)	-2.87 (0.005)	-4.37 (0.001)	-6.12 (0.000)	-4.39 (0.000)

Notes: a) Values in the parentheses shows MacKinnon (One sided) P-Values.
b) 5% significance value at level for Constant, Constant & Trend   and None are -2.94, -3.59 and -1.95 respectively.

The above mentioned table-1 clearly reflects that both the variables i.e. growth rate of GDP and the ratio of net FDI to GDP is stationary at the level itself as the calculated ADF value is higher than the critical values at 5% level of significance. The MacKinnon (One sided) P-Values also confirm the stationarity of the variables. Further, the Correlogram test at level to confirm the stationarity of the variables was done and the results clealy shows that the variables are stationary at level. The graph, AC values close to zero; higher Q-values and P-values of more than 0.05 clearly confirms the stationarity of the series. The results are given below in tables-2 & 3.

Table-2: Correlogram of Net FDI-GDP Ratio
Sample: 1971-2007

Autocorrelation	Lags	AC	Q-Stat	Prob
. |**. |	1	0.270	2.923	0.087
. | . |	2	0.047	3.016	0.221
. | . |	3	0.013	3.023	0.388
. *| . |	4	-0.097	3.433	0.488
. | . |	5	-0.045	3.524	0.620
. |* . |	6	0.095	3.941	0.685
. | . |	7	0.041	4.023	0.777
. **| . |	8	-0.200	6.022	0.645
. *| . |	9	-0.162	7.382	0.597
. **| . |	10	-0.255	10.85	0.369
. *| . |	11	-0.132	11.81	0.378
. *| . |	12	-0.094	12.32	0.420
. | . |	13	0.003	12.32	0.501
. | . |	14	0.025	12.36	0.577
. | . |	15	0.057	12.57	0.635
. | . |	16	-0.022	12.61	0.701

Table-3: Correlogram of GDP Growth Rate

Autocorrelation	Lags	AC	Q-Stat	Prob
. |**. |	1	0.251	2.516	0.113
. |**. |	2	0.222	4.540	0.103
. |* . |	3	0.151	5.509	0.138
. | . |	4	0.030	5.548	0.236
. |* . |	5	0.114	6.138	0.293
. |* . |	6	0.140	7.048	0.316
. | . |	7	0.022	7.071	0.421
. *| . |	8	-0.094	7.515	0.482
. *| . |	9	-0.111	8.153	0.519
. *| . |	10	-0.095	8.632	0.567
. *| . |	11	-0.123	9.474	0.578
. *| . |	12	-0.164	11.028	0.527
. *| . |	13	-0.130	12.045	0.524
. *| . |	14	-0.091	12.562	0.561
. *| . |	15	-0.064	12.831	0.615
. | . |	16	0.007	12.835	0.685

As the data is stationary, net FDI-GDP ratio is regressed on growth rate of GDP and then Granger-Causality test is applied to find the causal relationship. The result is mentioned below:

Table-4: Pairwise Granger Causality Tests

Sample: 1971-2007   Lags: 1

Null Hypothesis	F-Statistic	Probability
Net FDI-GDP Ratio does not Granger Cause GDP Growth rate	6.78	0.01
GDP Growth rate does not Granger Cause Net FDI-GDP Ratio	2.57	0.07

On the basis of F-value and P-value, the hypothesis that net FDI-GDP Ratio does not Granger Cause GDP Growth rate is rejected while the hypothesis that GDP Growth rate does not Granger Cause net FDI-GDP Ratio is accepted. Hence it can be concluded that net FDI flow is a factor responsible for GDP growth rate.

VI. Conclusion:

The present paper has tried to examine the causality relationship between net FDI and economic growth in Kingdom of Saudi Arabia by using the data spanning over a period from 1971 to 2007. The results of ADF test (for stationarity of data) shows that the variables under study are stationary at the level itself. The Granger-Causality test result clearly leads to the conclusion that net FDI-GDP Ratio Granger Cause GDP Growth rate while the hypothesis that GDP Growth rate does not Granger Cause net FDI-GDP Ratio is accepted. Thus, net FDI flow is a factor responsible for GDP growth rate. Hence the Saudi government should pursue a policy to attract FDI inflow in the economy. For this the country should also take measures to stop or reduce to the maximum possible level, the outflow of investment from the economy. So, introspection is needed if the country wants to add to its growth potentials by attracting FDI in export promoting industries, apart from import substitute industries to make the economy self reliant. This will not only add up to the growth prospects of the country but also provide stability in the economy. Foreign Direct Investment can provide foundations for these which not only

transfers capital but also the technical know how' and skilled human resources.

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الاستثمار الأجنبي المباشر و النمو الاقتصادي في المملكة العربية السعودية –واختبار السببية

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الملخص العربي :-

ينطوى الاستثمار الأجنبى المباشر على عدد من الجوانب الايجابية والتى يتمثل أهمها فى دفع عجلة النمو الاقتصادى و خلق فرص عمل جديدة فضلا عن دوره فى نقل الخبرات والمعارف والأساليب التكنولوجية الحديثة التى تسهم بشكل فاعل فى رفع معدلات الإنتاجية وتحقيق مستويات أعلى من التنمية الاقتصادية والاجتماعية ،هذا ويشيرمفهوم الاستثمار الأجنبي المباشر إلى تحركات رؤوس الأموال الأجنبية التى يتم تصديرها من بلد إلى آخر لتحقيق بعض المنافع والفوائد على المدى الطويل والتى تسهم بشكل فاعل فى زيادة الدخول الحقيقية ورفع مستويات المعيشة. هذا ويستهدف البحث الحالى دراسة ما إذا كان الاستثمار الأجنبي المباشر سيؤدى إلى ارتفاع معدلات النمو فى الناتج المحلى الاجمالى أم لا على مستوى المملكة العربية السعودية. وقد استند البحث على عدد من الأساليب البحثية أهمها أختبار العلاقة السببية (Grander-causality 1969) وعلاقات الانحدار وعدد من الاختبارات الاحصائية التى يعتمد عليها لتقدير سكون البيانات (Stionary Data)أم لا خلال فترة الدراسة وأهمها اختبار (ADF) كما استندت الدراسة فى بياناتها الثانوية على بيانات سلسة زمنية امتدت خلال الفترة ١٩٧١-٢٠٠٧. وقد تبين من نتائج التحليل الاحصائى لهذه البيانات أنها كانت ثابتة خلال فترة الدراسة استنادا إلى اختبار(ADF) ،كما تبين من نتائج التحليل الاحصائى لهذه البيانات أن معدل النمو الاقتصادى فى المملكة العربية السعودية يتأثر بعدد من العوامل الهامة بعد الاستثمار الأجنبى المباشر أحد أهم هذه العوامل وأن هناك علاقة طردية أحادية الاتجاه بين كل منهما ،وهو الأمر الذى يشير الى ضرورة الاهتمام به وتنميته وتوفير المناخ الملائم لاستقطابه مع ادخال مزيد من التعديلات على البيئة القانونية والتشريعية والسياسية بما يسمح بتحقيق مزيد من المشاركة الفاعلة فى رسم القرارات الاقتصادية والسياسات المصيرية المتعلقه به.

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