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Foreign Direct Investment and Economic Growth in Saudi Arabia from 1980 to 2012: An ARDL Approach

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Abstract :

This paper empirically investigates the short and long-run GDP-FDI relationship along with other macroeconomic variables in Saudi Arabia. The Autoregressive Distributed Lag (ARD-L) model is our main instrument of analysis because of its obvious econometric advantages, to explore the interdependencies among the variables. The results confirm that FDI inflows and Government expenditures have significant and positive relationship with GDP growth both in the short and long-run. They are therefore, important factors in Saudi's developmental efforts. The sensitivity of the Government expenditures variable to the trade Openness and GDP growth variables in this study is also significant. This suggests that Government or public expenditures both in the form of capital or recurrent should be monitored to strike a balance.

Keywords: FDI, Economic growth, Openness, ARDL, Saudi Arabia.

Introduction

The emerging economies of the Gulf Cooperation Council (GCC) countries have long realized that increasing the per capita income of their citizens could only be achieved by enhancing growth and development through economic activities, and it is also the best option to ensure economic and political stability in their region. To achieve this feat requires massive injection of capital into developmental projects. The need to augment internally generated sources of revenue to finance these robust economic activities therefore, becomes inevitable. The individual country's efforts to diversify its economy, privatize some of its public sectors, utilize advances in technology, and improve legal and financial institutional infrastructures have resulted in real development of their markets and manage to attract the much needed foreign Direct Investments (FDI) to them. But how, and to what extent has FDI affected the economic growth of these developing countries, especially Saudi Arabia which is our focus of study in this paper?

The significant role of FDI inflows in the development of economies, especially in developing countries had been highlighted in many empirical studies (Borenzstein *et al*, 1998; Carkovic and Levine, 2002; Zhang, 2001). This pro-

gress is achieved through its contribution in capital formation, development of human capacity building, technology transfer, and managerial skills among others in the recipient countries. Despite the above mentioned perceived FDI contribution to developing economies, some empirical studies still find contrary results. The evidence on FDI and economic growth therefore, give mixed results or at best inconclusive.

There is no argument that domestic sources of revenue play a part in providing capital for economic development of a nation, but where the flow from domestic sources is grossly inadequate in case of low level of income and little or no savings, this will lead to a decreasing level of capital formation. FDI in flows therefore, provide an opportunity for closing capital deficit gap (Yilmazer, 2010). Krugman and Obstfeld (1994) opine that FDI is one means of bridging the demand and supply of capital gap for most developing economies, which normally suffer a shortage of such capital.

Saudi Arabia is the largest economy among the GCC countries; it has an increasing GDP of US$852.1 billion, US$895.8 billion and US$927.8 billion for the years 2011, 2012 and 2013 respectively. There is also an increasing FDI into the country of US$223.2 billion and US$240.6 billion for the year 2012 and 2013 respectively (The World Factbook). It is on record that FDI goes to countries where the environment is conducive for business; as the environment could serve as a barrier to both local and foreign investments if it is not properly and efficiently managed with a great measure of transparency and accountability. Saudi Arabia has been able to display some of these favorable investment climates. They have been able to present reasonable economic risk, political stability in its own form in terms of the country's ability to carry out declared programs. They are also able to finance their commercial and trade debt obligations, thus demonstrating relatively moderate financial risks.

The gradual upward trend of their GDP and steady increase of FDI inflows into the country could be seen as a testimony to the above mentioned favorable investment climate deliberately created by the regulators of the economy. But how much of this GDP growth is influenced by the inflow of FDI into the country? This is the main focus of this paper. In the context of a developing economy, the role of government in financial and economic activities cannot be ignored, as government expenditures have been known to stimulate economic development (Barro, 1990). Economic literature has also highlighted causality between trade openness and GDP growth. This paper has therefore, identified three key variables; Foreign Direct Investment (FDI) inflows, Trade Openness and Government Expenditures as some of the determinants of GDP growth.

Thus to what extent, can the economic growth (GDP) of Saudi Arabia, which is a leading member of the Gulf Cooperation Council (GCC) countries, is influenced by the inflows of FDI, its internal government expenditures and Trade with its trading partners (Openness)? This paper employs the recent econometric technique of Autoregressive Distributed Lag (ARDL) bound testing approach as postulated by Pe-

saran et al. (2001) to investigate the short-run dynamics and long-run relationship between the selected determinants. Other notable recent works that adopted this newly developed ARDL bound testing procedure include Fosu and Magnus (2006), Karimi and Yusop (2009), and Atif et al, (2010) among others.

Study Plan

The Remaining part of this paper is organized as follows; section two discusses related literature. Section three explains the methodology adopted in this paper. Section four presents the ARDL procedure and discusses its empirical findings. Conclusion is given in section five.

Study Limitation

The study is limited to the extent of availability of data. A sufficiently long time series may produce better results

Literature Review

The relationship between Foreign Direct Investment (FDI) and economic growth is a widely researched area, but evidence shows mixed results about its (FDI) impact on the economic growth of the hosts or the recipient countries (Pardhan, 2009; Samimi et al, 2008; Herzer et al, 2008). What is not in doubt is FDI inflows like any other investments into a country depend upon a couple of socioeconomic and political factors that include economic and political stability and a moderate or acceptable financial risk environment. Research has shown some of the necessary conditions that must exist in the host country before the intended objectives of FDI could be realized, these include among others; human capital, reasonable size of market, availability of technology, functioning financial markets and favorable laws and policies related to investments (Blonigen and Wang, 2004).

As for the extent of the impact of FDI on economic growth of developing economies, the influence will depend largely upon the necessary conditions existing in the specific countries for FDI to strive. But it is generally believed that FDI may affect economic growth of a country directly or indirectly, for the former because it contributes to capital formation and transfer of new technology to the host country. The recipient country also benefit indirectly from the improved management practices and skills acquisition through transfer of technology (De Mello, 1999).

In as much as foreign direct investment is beneficial to the recipient country, its full potential can only be maximized with the availability of human capital (Bengoa and Sanchez-Robles, 2003). Borensztein (1999) also came to a similar conclusion by arguing that growth prospect increases with a mixture or interaction of FDI and human capital. Zhang (2001) opine that to promote economic growth FDI recipient countries must adopt liberalized trade regime, ensure macroeconomic stability and human capital development among others, as these are some of the necessary ingredients for economic growth.

The importance of FDI in the economic growth of the host country is also confirmed by various studies (Kukeli et al, 2006; Jonson, 2006; Brock, 2005). Balasubramanyan et al. (1999) also show that countries that consistently follow inward looking developmental strategies show a significant economic growth as a

result of FDI in flows. The presence of positive relationship between FDI and economic growth in the recipient developing countries was also confirmed by Jonson (2006), he stressed that this is likely because of the technology spillover effects. A similar research on developing economies by Li and Lue (2005), reports that both FDI and human capital have a positive relationship with economic growth.

Pradhan (2009) using sample of selected Asian countries finds that the contribution of FDI was significant and impact positively on growth in all the countries except Malaysia. The work by Samimi et al. (2008) on oil importing countries also confirm the positive impact of FDI on economic growth, but stressed that the openness of these recipient economies play a significant contributory role. The results of Wu and Hsu (2008) are similar to those of Samimi et al. (2008), but in this case the initial GDP and human capital were the energizers.

The study by Mamun and Nath (2005) using data from Bangladesh confirm the existence of positive relationship between exports and economic growth. Narayan et al. (2007) examined the export-led growth hypothesis for Fiji and Papua New Guinea. Their results support the export led growth hypothesis in the long-run for Fiji, while for Papua New Guinea there is evidence of export led growth hypothesis in the short-run.

According to Yao (2006), there is a strong relationship between exports, FDI and economic growth for China. Rahman (2007) re-examined the effects of exports, FDI and some other variables on real GDP of some Asian countries using the ARDL technique for cointegration, his findings are similar to those of Yao (2006).

A study by Kamaly (2002) on some Middle East and North African countries confirms the effect of FDI inflows on the economies of most of these countries. Also worthy of mention are the studies by (Chowdhury and Mavrotas, 2005; Zhang, 2001; Khathlan, 2014). All these authors came to a similar conclusion that a positive relationship exist between FDI and economic growth. Zhang (2001) opine that this relationship is only possible when there is a favorable condition in the recipient countries. Khathlan (2014) using data from Saudi Arabia, but this time using a different methodology finds a positive and significant role FDI plays in the economic growth of Saudi Arabia in the long-run.

However, other studies expressed reservations about the positive effects of FDI on the economic growth of the recipient countries. Scholars are of the opinion that the reverse will be the case if the demands on the host countries result in substantial net outflows or reverse flows in the form of remittances of profits, dividends and other perquisites of office, and also if the investing multinational companies obtain large investment concessions from the host countries. According to Dreher (2006) inward FDI exposes the economic assets of the recipient countries to the risk of loss of control to foreign interests.

Alfaro (2003) carried out a detailed and segregated economy study and find that FDI have a negative influence on the primary sector and does not always have a positive spillover effects on the host countries. Herzer et al. (2008) using data from developing economies failed

to establish a link between FDI and economic growth both in the short and long-run in most of the countries. In a related study but this time using data from both developed and developing economies, Charkovic and Levine (1998) also failed to establish a relationship between FDI and economic growth in the host countries.

Lipsey (2002) also find no special relationship between FDI and economic growth and stressed that FDI does not always have significant spillover effect on the local economy. As rightly pointed out by UNCTAD (1999) the desired objectives of FDI could only be attained if the host countries already have some functioning structures in place, in terms of level of financial development, the level of education and domestic capital and political stability among others.

Methodology

The data used in this study were sourced from the World Bank and Saudi Arabia Monetary Agency (SAMA). While data on GDP per capita, Foreign Direct Investment (FDI) inflows and Openness were obtained from the World Economic Outlook Database (2013), the Government Expenditures were obtained from (SAMA Annual Report, 2012). We adopted the Autoregressive Distributed Lag (ARDL) approach because of its obvious econometric techniques advantages to find the relationships among the variables.

The Autoregressive Distributed Lag (ARDL) Model

This model as developed by Pesaran and Pesaran (2009) involves series of steps in establishing the interrelationships among the dependent and the forcing variables where each variable is also considered as a dependent variable. The order of integration is fist checked among the variables as it is commonly done for most economic time series data. Though, this process may be necessary but not a sufficient condition to perform ARDL procedure, because of the econometric properties of the ARDL model, since the model can allow for a mixture of 1(0) and 1(1) as regressors. In the first place the presence of cointegration among the variables is tested using the bound testing procedure to predict the long-run relationships between a dependent variable and its independent variables. Secondly the ARDL models are formulated based on the results of the initial cointegration test. Finally, the short-run dynamics are then estimated.

Bounds Testing and Long-Run Relationships

The bound test method does not require specific identification of the order of the time series data. The method can also estimate the long and short-run coefficients of the model. It is also the preferred model for small and finite sample size (Pesaran et al. 2001). We can therefore formulate the following regression equations following Pesaran et al. (2001) postulations.

$$\Delta \text{InGDP}_t = a_{10} + \sum_{i=1}^{n} b_{1i}\, \Delta \text{InGDP}_{t-i} + \sum_{i=1}^{n} c_{1i}\, \Delta \text{InFDI}_{t-i} + \sum_{i=1}^{n} d_{1i}\, \Delta \text{InOPN}_{t-i} + \sum_{i=1}^{n} e_{1i}\, \Delta \text{InGXP}_{t-i} + \lambda_{11}\, \text{InGDP}_{t-1} + \lambda_{12}\, \text{InFDI}_{t-1} + \lambda_{13}\, \text{InOPN}_{t-1} + \lambda_{14}\, \text{InGXP}_{t-1} + \varepsilon_{1t} \quad (1)$$

Where,

GDP = Annual growth rate of GDP.
FD = Inward Foreign Direct Investment.
OPN = Openness {Ratio of trade (imports and exports) to GDP
GXP = Government Expenditures.

a, b, c, d, and e = Short-run coefficients for the TASI and the risk components.
λs = The long-run coefficients of the ARDL model.
ε_{1t} = is the white noise error term.
Δ = is the first difference operator.

$$\Delta \text{InFDI}_t = a_{20} + \sum_{i=1}^{n} b_{2i}\, \Delta \text{InFDI}_{t-i} + \sum_{i=1}^{n} c_{2i}\, \Delta \text{InGDP}_{t-i} + \sum_{i=1}^{n} d_{2i}\, \Delta \text{InOPN}_{t-i} + \sum_{i=1}^{n} e_{2i}\, \Delta \text{InGXP}_{t-i} + \lambda_{21}\, \text{InFDI}_{t-1} + \lambda_{22}\, \text{InGDP}_{t-1} + \lambda_{23}\, \text{InOPN}_{t-1} + \lambda_{24}\, \text{InGXP}_{t-1} + \varepsilon_{2t} \quad (2)$$

Where;
GDP = Annual growth rate of GDP.
FDI = Inward Foreign Direct Investment.
OPN = Openness {Ratio of trade (imports and exports) to GDP
GXP = Government Expenditures.

a, b, c, d, and e = Short-run coefficients for the TASI and the risk components.
λs = The long-run coefficients of the ARDL model.
ε_{1t} = is the white noise error term.
Δ = is the first difference operator.

$$\Delta \text{InOPN}_t = a_{30} + \sum_{i=1}^{n} b_{3i}\, \Delta \text{InOPN}_{t-i} + \sum_{i=1}^{n} c_{3i}\, \Delta \text{InFDI}_{t-i} + \sum_{i=1}^{n} d_{3i}\, \Delta \text{InGDP}_{t-i} + \sum_{i=1}^{n} e_{3i}\, \Delta \text{InGXP}_{t-i} + \lambda_{31}\, \text{InGDP}_{t-1} + \lambda_{32}\, \text{InFDI}_{t-1} + \lambda_{33}\, \text{InOPN}_{t-1} + \lambda_{34}\, \text{InGXP}_{t-1} + \varepsilon_{3t} \quad (3)$$

Where;
GDP = Annual growth rate of GDP.
FDI = Inward Foreign Direct Investment.
OPN = Openness {Ratio of trade (imports and exports) to GDP
GXP = Government Expenditures.

a, b, c, d, and e = Short-run coefficients for the TASI and the risk components.
λs = The long-run coefficients of the ARDL model.
ε_{1t} = is the white noise error term.
Δ = is the first difference operator.

$$\Delta \text{InGXP}_t = a_{40} + \sum_{i=1}^{n} b_{4i}\, \Delta \text{InGXP}_{t-i} + \sum_{i=1}^{n} c_{4i}\, \Delta \text{InFDI}_{t-i} + \sum_{i=1}^{n} d_{4i}\, \Delta \text{InOPN}_{t-i} + \sum_{i=1}^{n} e_{4i}\, \Delta \text{In-NGDP}_{t-i} + \lambda_{41}\, \text{InGDP}_{t-1} + \lambda_{42}\, \text{InFDI}_{t-1} + \lambda_{43}\, \text{InOPN}_{t-1} + \lambda_{44}\, \text{InGXP}_{t-1} + \varepsilon_{4t} \quad (4)$$

Where;

GDP = Annual growth rate of GDP.

FDI = Inward Foreign Direct Investment.

OPN = Openness {Ratio of trade (imports and exports) to GDP

GXP = Government Expenditures.

a, b, c, d, and e = Short-run coefficients for the TASI and the risk components.

λs = The long-run coefficients of the ARDL model.

ε_{1t} = is the white noise error term.

Δ = is the first difference operator.

Economic Interpretation of the Equations

The explicit forms of the equations are as follow,

$$\text{GDP}_t = F(\text{FDI}_{t-i}, \text{OPN}_{t-i}, \text{GXP}_{t-i})$$

$$\text{FDI}_t = F(\text{GDP}_{t-i}, \text{OPN}_{t-i}, \text{GXP}_{t-i})$$

$$\text{OPN}_t = F(\text{GDP}_{t-i}, \text{FDI}_{t-i}, \text{GXP}_{t-i})$$

$$\text{GXP}_t = F(\text{GDP}_{t-i}, \text{FDI}_{t-i}, \text{OPN}_{t-i})$$

In estimating the parameters (a, b, c, d, e for short-run and λs for long-run) of the model in the equations using the ARDL technique, the equations have to be log transformed (See variables definition). The model is "autoregressive", in the sense that, for example GDP_t is explained (in part) by lagged values of itself. It also has a "distributed lag" component, in the form of successive lag of the explanatory variables. These characteristics are fully reflected in the regression equations 1-4.

To test for the long-run relationship among the concerned variables, the bound testing procedure is adopted. This procedure is based on the Wald test (F-test). This is a test of the hypothesis of no cointegration or presence integration among the variables. The null and the alternative hypotheses are stated as follows:

$H_o = \lambda 1j = \lambda 2j = \lambda 3j = \lambda 4j = 0$, where j *represents one of the four* variables. (i.e., there is no long-run relationship among the variables).

$H_1 = \lambda 1j \neq \lambda 2j \neq \lambda 3j \neq \lambda 4j \neq 0$, where j *represents one of the four* variables. (i.e., there is long-run relationship among the variables).

The result of the cointegration test which is based on the F- test is evaluated by the lower and upper critical values table in Pesaran et al, (2001). The Authors state that all the variables are integrated of order zero or 1(0) when they fall within the lower bound critical values; that is, there is no integration among the variables. While the upper bound critical values assumed that the variables are integrated of order one or 1(1); meaning there is cointegration among the variables. The null hypothesis of no integration is not rejected if the computed F-statistic is smaller than the lower bound value, meaning there is

no long-run relationship among the variables. But if on the contrary, the computed F-statistic is bigger than the upper than the upper bound value the null hypothesis of no integration is rejected. The result is considered inconclusive if the computed F-statistic falls between the upper and lower bound values.

The estimation of the long-run and short-run relationship among the variables is the final stage of the ARDL model. The estimation of the coefficients of the long-run relationship of the variables is based on the assumption that the bound testing process produced a conclusive result; meaning there is cointegration among the variables. The final step is the estimation of the short-run dynamic coefficients through the use the unrestricted error correction model (URECM).

Descriptive Statistics and Empirical Results

This section is in two parts. The first part presents the descriptive statistics used in this study, while the second presents the empirical findings of the tests utilized, reviewing their results and provide an interpretation for each finding. The paper used annual GDP per capita, Foreign Direct Investment (FDI) inflows and Openness data of Saudi Arabia from the World Economic Outlook Database and Government Expenditures data from SAMA Annual Report

Descriptive Statistics

Table 1 shows the distribution of the data in terms of their mean, standard deviation etc. of the variables. The maximum and minimum GDP values are US$895.843 billion and US$85.696 billion respectively, while the FDI has US$223.696 billion as its maximum. All the variables are positively skewed, and very high Jarque-Bera statistics test with the exception of the openness variable, which suggests a rejection of the normality hypothesis. Figure 1 also shows the distribution of the data (GDP, FDI, Openness and Government Expenditures) over time during the sample period.

Table 1: Descriptive Statistics

Variable	Mean	Median	Std. Dev,	Skewness	Jarque-Bera
GDP	232.304	160.957	1.714	1.583	16.847
FDI	40.639	17.120	0.554	1.934	27.747
Openness (OPN)	0.752	0.723	0.115	0.276	2.207
Govt.Exp. (GXP)	54.053	41.092	0.302	1.561	16.737

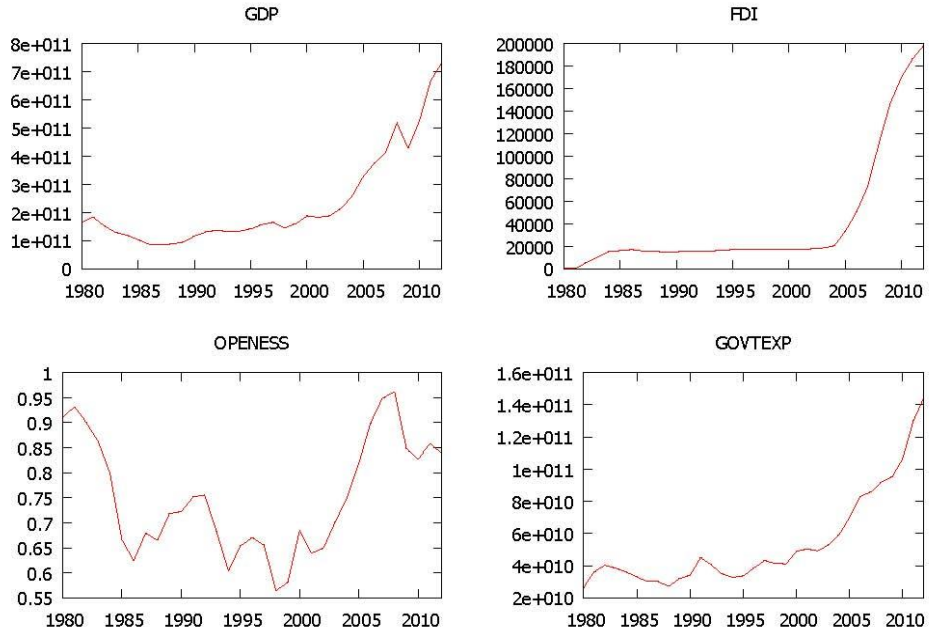

Figure 1: Distribution of GDP, FDI, Openness and Government Expenditures variables.

Empirical Results

Unit root test for stationarity

The ARDL cointegration approach normally does not require unit root tests because of its econometric techniques. Nevertheless, the time series properties of the data is checked using the standard Augmented Dickey-Fuller (ADF) unit root test, this is to check and confirm the order of integration of these variables. we also need to conduct this test to ensure that none of the variables are the integrated of order 2, i.e., I (2), because, in case of I (2) variables, ARDL procedures make no sense, since the computed F-statistic as produced by the Pesaran et al. (2001) can no longer be valid. The test result is presented in table 2. The results indicate that the variables are integrated 1(0) and 1(1). Out of the four variables, three (GDP, FDI and Government Expenditure) have unit root i.e. 1(1), While Openness is 1(0) variable. For this reason it is justifiable for using the bounds approach or the ARDL model as postulated by Pesaran et al. (2001).

Table 2: ADF Test results

Variables	ADF 1ST Difference	
	t-statistics	p-value
GDP	-4.8039	0.0007034***
FDI	-2.8951	0.03894***
Openness (OPN)	-0.7892	0.8553
Government Expenditure (GXP)	-4.01136	0.00257***

Bounds testing and Long-run Relationships

Before estimating the cointegration relationship between the variables (GDP, FDI, Openness and Govt. Exp.) using the ARDL bound testing procedure, the order of lags on the first differenced variables in our four equations (1–4) are obtained. The researcher has the choice of lag-lengths and criterion to use, as long as long as optimal lag-lengths structure is ensured.

The results of the bounds testing procedure is reported in table 3.

Table 3: Bounds testing procedure results

Cointegration Hypotheses	F- statistics		Lag
	With Trend	Without Trend	
$F(InGDP_t \mid InFDI_{t,}\ InOPN_{t,}\ InGXP_{t,})$	2.1161	4.2382***	1
	1.1955	3.9884***	2
	2.0896	2.1006	5
$F(InFDI_{t,} \mid InGDP_t\ InOPN_{t,}\ InGXP_{t,})$	1.7214	1.8032	1
	1.8869	1.1401	2
	4.5230***	4.6043***	5
$F(InOPN_{t,} \mid InFDI_{t,}\ InGDP_t\ InGXP_{t,})$	1.4626	1.5806	1
	2.0074	2.0187	2
	1.4203	2.0055	5
$F(GXP_{t,} \mid InFDI_{t,}\ InOPN_{t,}\ InGDP_t)$	2.8930	2.2264	1
	2.8625	2.7663	2
	2.5738	2.8906	5

*represents significance at 1%, ** represents significance at 5% and *** represents significance at 10%.

For the equation with the GDP as the dependent variable; {F(InGDP $_t$ | InFDI$_{t,}$ InOPN$_{t,}$ InGXP)$_{t,}$)}, the Wald f-statistics without trend at lag 1 and lag 2 are 4.2382 and 3.9884 respectively which are statistically significant (the computed F-statistics are bigger than the upper critical bound value of 3.8-00). The null hypothesis of no cointegration among the variables is rejected. This indicates the existence of a long-run relationship among GDP growth, FDI inflows, Openness of trade and Government internal expenditures. The later three being the forcing variables on the GDP. This is consistent with the findings of Zhang (2001) for East Asia and Latin America, and Ali and Ali (2012) for the region of Economic Co-operation Organization (ECO).

For equation 2, with the Foreign Direct Investment (FDI) as the dependent variable i.e. {F (FDI$_t$| |InOPN$_{t,}$ InGDPt, InGXP$_t$)}, the Wald f-statistics with and without trend are also significant; 4.5230 and 4.6043 respectively at 10% significant level. The null hypothesis of no integration among the variable is once again rejected. Therefore, the GDP growth, Trade Openness and Government expenditures are forcing variables of the FDI inflows.

Other cointegration hypotheses are tested using the lag orders. No significant findings are reported for equations{F(InOPN$_t$|InGDP$_{t,}$ InOPN$_{t,}$ InGOPN$_{t,}$ InGXP$_t$)} and {F(InGXP$_t$|InFDI$_{t,}$ InOPN$_{t,}$ InGDP$_t$)} i.e. using the Ope-nness and the Government expenditures models separately as dependent variable.

Estimating Long-run and Short-run relationships

The estimation of the coefficients for the long-run relationships in 5 and 6 is conducted using the bounds testing procedure.

$$\text{InGDP}_t = a_1 + \sum_{i+1}^{x} \alpha_{i1} \text{InGDP}_{t-i} + \sum_{i=0}^{Y} \beta_{i1} \text{InFDI}_{t-i} + \sum_{i=0}^{z} \delta_{i1} \text{InOPN}_{t-i} + \sum_{i=0}^{1} \eta_{i1} \text{InGXP}_{t-i} + \mu_{i1} T + \varepsilon_{1t} \quad \textbf{(5)}$$

$$\text{InFDI}_t = a_2 + \sum_{i+1}^{x} \alpha_{i2} \text{InFDI}_{t-i} + \sum_{i=0}^{Y} \beta_{i2} \text{InOPN}_{t-i} + \sum_{i=0}^{z} \delta_{i2} \text{GDP}_{t-i} + \sum_{i=0}^{1} \eta_{i2} \text{InGXP}_{t-i} + \mu_{i2} T + \varepsilon_{2t} \quad \textbf{(6)}$$

When the GDP growth (equation 5) is the dependent variable, we use an ARDL model without deterministic trend. When the financial risk rating is the dependent variable, we consider both with and without trend. This reasoning is based on the results of the initial procedure and the results in table 3. We determined the optimal lags for the ARDL models (InGDP$_t$ and InFDI$_t$) before determining the coefficients. Table 4 shows the sensitivity of both the FDI and the GXP in the long-run.

Table 4: Estimated Long-run Coefficients

Regressor	InGDP without Trend: ARDL(4,0,4,0)	InFDI without Trend: ARDL (5,0,1,3)	InFDI with Trend: ARDL (5,0,1,3)
InGDP	-	1.0524	3.0013***
InFDI	3.6018***	-	-
InOPN	1.1162	0.5824	0.8169
InGXP	3.2261***	3.1305***	2.6632
C	-7.3917	-2.4261	-2.3094
T	0.0652	-	0.0552

*represents significance at 1%, ** represents significance at 5% and *** represents significance at 10%.

FDI inflows are significant for economic growth. This means that Saudi Arabian government should endeavor to create the necessary economic and political conditions that will attract FDI. Growth enhancing policies, coupled with sound and transparent macroeconomic policies to foster a healthy rate of return on investment, current account balance and exchange rate stability and of course keeping an eye on government expenditures to check inflationary trends. As an economy will attract more FDI inflows once it has implemented monetary and fiscal discipline to control inflation and other imbalances. This result is consistent with the findings of Zhang (2001), who finds the existence of a positive relationship between Foreign Direct Investment and economic growth and concludes that the magnitude of the above mentioned relationship depends upon host country's conditions.

In the short-run: as shown in table 5, the FDI and GXP show the most sensitivity. The relationship between the GDP and each of the FDI and Government Expenditures (GXP) variables is positive and statistically significant, as it is in the long-run. The Openness sensitivity is not significant even in the short-run. This shows that variations in export and import with its trade partners and other trade related policies have little or no influence on the GDP growth and FDI inflows of Saudi Arabia. The country's FDI inflow is sensitive to its own, GDP growth and Government expenditures. The error term is negative and significant.

The result of the FDI model (InFDI$_t$); equation 6 is also reported in table 5.

Table 5: Error Correction Model (ECM_{-1}) results for the selected ARDL

Regressor	ΔInGDP	ΔInFDI(Without Trend)	ΔInFDI (With Trend)
ΔInFDI1	-0.7016**		
ΔInFDI2	-0.5341***	0.3392**	-0.1774***
ΔInFDI3	n. a	-0.1897**	n. a
ΔInFDI	n. a	n. a	n. a
ΔInOPN1	n. a	n. a	n. a
ΔInOPN2	n. a	n. a	n. a
ΔInGXP	n. a	n. a	n. a
ΔInGXP1	1.1078**	0.0119	-0.3118***
ΔInGXP2	1.6397**	-0.4294***	n. a
ΔInGDP	0.2905**	n. a	n. a
C	-3.8902*	n. a	n. a
T	n. a	-	n. a
ECM(-1)	-0.3552**	-0.3041*	-0.3759*

Note: n. a = not significant; *represents significance at 1%, ** represents significance at 5% and *** represents significance at 10%.

GDP growth and Government Expenditures indicators have slightly significant coefficients, i.e. the FDI inflows show sensitivity to the GDP growth and Government Expenditures variables. As stated earlier, the country should pursue a high degree of macroeconomic and socio-political stability to attract international equity investors.

Policy Recommendations for Saudi Arabia in the Short and Long-run

FDI inflows are significant for the economic growth of Saudi Arabia both in the short and long-run. This means that Saudi Arabian government should endeavor to create the necessary economic and political conditions that will attract FDI. They should encourage growth enhancing measures, coupled with sound and transparent macroeconomic policies to foster a healthy rate of return on investment, current account balance and exchange rate stability and of course keeping an eye on government expenditures to check inflationary trends. As an economy will attract more FDI inflows once it has implemented monetary and fiscal discipline to control inflation and other imbalances,

Conclusion

This paper empirically examines the short and long-run GDP-FDI relationship along with other macroeconomic variables which also affect economic growth in Saudi Arabia. The study employed the ARDL bound testing method developed by Pesaran and Pesaran (2009) and Pesaran et al. (2001).

First, the analysis demonstrates that there is a long-run association between FDI inflows, trade Openness, Government expenditures and the GDP growth in Saudi Arabia. FDI inflows, Openness and Government Expenditures are forcing variables on Saudi's economic

growth. FDI inflows and Government expenditures have significant and positive relationship with GDP, and are therefore important factors in Saudi's developmental efforts.

Second, the sensitivity of the Government expenditures variable to the trade Openness and GDP growth variables in this study is significant. This suggests that Government or public expenditures both in the form of capital or recurrent should be monitored to strike a balance. Finally, there is reduced or insignificant trade Openness sensitivity to other variables as compared to the FDI inflows and Government expenditures. Thus, trade openness activities are relatively the least in Saudi Arabia economic growth as shown in this study.

The findings of this paper have added to the FDI-GDP growth relationship literature in a developing country like Saudi Arabia using the ARDL bound testing approach. Although there are many other factors that directly or indirectly influence the GDP growth level of a country, this paper has chosen the specified variables in the study because Saudi economy derives its revenues mainly from the export of petroleum products and their huge appetite for massive expansion through public expenditures to meet up with the rest of the world. The use of different techniques or dynamic models and appropriate conditional determinants deserve more theoretical and empirical research in the future.

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Appendix

1 Data for the study

YEAR	FDI (million US$	GDP (tens of millions US$	OPENNES	GOVT EXP. US$
1980	409.48	153.105	-0.36207	2.615E+10
1981	413.92	175.251	-0.32788	3.603E+10
1982	5786.67	165.468	-0.11639	4.012E+10
1983	10730.57	157.867	0.092302	3.845E+10
1984	15580.43	158.422	0.107303	3.605E+10
1985	16071.85	156.421	0.065713	3.315E+10
1986	17038.55	167.308	0.090833	3.015E+10
1987	15863.65	165.125	0.062708	3.018E+10
1988	15535.21	184.963	0.03879	2.73E+10
1989	14881	203.024	0.043317	3.203E+10
1990	15193	228.069	-0.09027	3.413E+10
1991	15358	257.114	-0.0193	4.516E+10
1992	15608	275.146	-0.0314	4.077E+10
1993	15788	281.77	-0.00904	3.497E+10
1994	16478	289.681	-0.07981	3.272E+10
1995	17056	296.321	-0.09694	3.362E+10
1996	17120	311.939	-0.1347	3.866E+10
1997	17177	325.503	-0.13206	4.32E+10
1998	17271	338.361	-0.03198	4.138E+10
1999	17394	340.626	-0.11541	4.109E+10
2000	17577	365.313	-0.1875	4.901E+10
2001	17281	375.725	-0.15803	5.032E+10
2002	17734	381.987	-0.17402	4.92E+10
2003	18512	419.466	-0.22003	5.284E+10
2004	20454	453.77	-0.26888	5.914E+10
2005	33535	510.998	-0.32147	7.009E+10
2006	50659	556.077	-0.29719	8.307E+10
2007	73480	605.043	-0.25012	8.594E+10
2008	111632	668.841	-0.2812	9.203E+10
2009	147145	686.322	-0.09319	9.52E+10
2010	170451	746.27	-0.16634	1.067E+11
2011	186850	826.138	-0.26624	1.301E+11
2012	199032	889.438	-0.25099	1.447E+11

Compiled by the author: Data on the FDI inflows, GDP and Openness were sourced from the World Development Indicators Database (2013). Government Expenditures were sourced from Saudi Arabia Monetary Authority (SAMA) Annual Report 2012.