Ijems Ideal Journal of Economics and Management Sciences 2(6) 41-50 Ijems

http://ijems.truescholar.org

THE IMPACT OF FOREIGN DIRECT INVESTMENT ON ECONOMIC GROWTH IN UNITED ARAB EMIRATES: EMPIRICAL INVESTIGATION

Dr. Majeed Ali Hussain and Dr.Afaf Abdull J. Saaed

[1]Associate Professor of Econometrics, College of Business Administration
American University in the Emirates, United Arab Emirates
Dubai International Academic City, P.O. Box: 503000, Dubai, UAE
[2]Associate Professor of applied Economics, College of Business Administration
American University in the Emirates. Dubai International Academic City,
P.O. Box: 503000, Dubai, UAE

ABSTRACT
This paper investigates the causal relationship between RGDP, foreign direct investment (FDI), and domestic savings DS in UAE for the period 1980-2012. The econometric methodology employed was the Cointegration and Granger Causality test. First, the stationarity properties of the data and the order of integration of the data were tested using both the Augmented Dickey-Fuller (ADF) test. We found that the variables were non-stationary in levels, but stationary in first differences; that is, they are integrated of order one I (1)). Since we used single equation model(s), the application of Johansen multivariate approach to cointegration was necessary to test for the long-run relationship among the variables. The result showed existence of cointegration among the variables tested., Robust empirical findings drawn from the Johansen cointegration analysis suggest the existence of a long-run equilibrium relationship. Furthermore, Granger- causality test indicates that there is bi-directional causal links on the RGDP – RGDS relationship. However, there is a one-way causality running from FDI to GDP, as results for the two year lags imply, strongly indicating that FDI Granger-causes economic growth in UAE. The results reveal another unidirectional causation running from FDI to RGDP in UAE.Therefore, from the results of the present study, there is RGDS and FDI driven economic growth in UAE that is important for the development policy of the country. Government should pay more attention to make the environment better for foreign investors as well as to encourage increasing of domestic savings.

KEYWORDS: Cointegration, Granger Causality, Foreign Direct Investment, Economy of UAE.

INTRODUCTION

During the past two decades, foreign direct investment (FDI) has become increasingly important in the developing world, with a growing number of developing countries succeeding in attracting substantial and rising amounts of inward FDI. Economic theory has identified a number of channels through which FDI inflows may be beneficial to the host economy. Yet, the empirical literature has lagged behind and has had more trouble identifying these advantages in practice. Most prominently, a large number of applied papers have looked at the FDI-GDP growth nexus, but their results have been far from conclusive. Notwithstanding this absence of any robust conclusions, and somewhat surprisingly, most countries continue to vigorously pursue policies aimed at encouraging more FDI inflows.

UAE is one of six Gulf Cooperation Council (GCC) countries, which comprise Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the UAE. It is also one of the four GCC OPEC members, which include Kuwait, Qatar, Saudi Arabia, and the UAE.
FDI is considered an important factor in UAE efforts to reduce reliance on natural resources and diversify its economy in the long term. The UAE government aims to build a sustainable knowledge based economy, as projected in the UAE 2021 Vision. The UAE 2021 Vision charts the goals and steps for the next stage of the nation's progress leading up to the year 2021. Theme 3 of the Vision , "United in Knowledge", emphasizes that, in creating a sustainable and diversified economy, home-grown entrepreneurship is to be stimulated and FDI to be attracted. Accordingly, FDI is envisaged as one of the pillars for the structural transformation of the economy(Mina, 2013).

The UAE has a high inward FDI potential as reflected in the high UNCTAD's Inward FDI Potential Index ranking. In 2008 and 2009, UAE's inward FDI potential index was ranked third and fifth among 142 countries, respectively (Table 1). In 2011, the index was ranked 19th among 177 economies with high potential on market attractiveness (ranked ninth), enabling infrastructure (ranked 28th) and presence of natural resources (ranked 45th).
(UNCTAD, 2012),

Table 1. Inward FDI Performance and Potential Index Ranking (2000-2010)

	2000	2005	2006	2007	2008	2009	2010
FDI Performance Index							
UAE	137	19	33	49	54	92	103
Bahrain	49	20	10	23	30	103	121
Kuwait	133	131	134	138	137	113	135
Oman	123	43	64	35	68	68	54
Qatar	97	35	47	56	79	21	43
Saudi Arabia	131	56	58	54	31	19	29
FDI Potential Index							
UAE	22	14	12	7	3	5	
Bahrain	29	28	28	25	22	23	
Kuwait	31	36	35	37	35	37	
Oman	47	56	53	51	47	39	
Qatar	23	12	11	8	6	2	
Saudi Arabia	33	32	29	29	27	29	

Source: UNCTAD, World Investment Report 2011: Non-Equity Modes of International Production and Development (Geneva: United Nations), annex tables, web table 28, "Inward FDI Performance and Potential Index rankings, 1990-2010," available at: http://unctad.org/en/Pages/DIAE/World%20Investment%20Report/Annex-Tables.aspx

With such potential, the UAE aspires to becoming a global investment hub, which also helps the Government to fulfil its vision for diversifying the economy.

The economic literature has widely documented the significant impacts of FDI on economic growth. A number of studies have found that higher levels of FDI are associated with higher growth rates (e.g., Borensztein et al., 1998; Choong et al., 2005), while some studies have found no significant relationship between FDI and economic growth (e.g., Aitken et al., 1997; Aitken and Harrison, 1999). These controversial findings have motivated many empirical investigations to study the different mechanisms that explain the linkage between FDI and growth, including human capital (Borensztein et al., 1998), public infrastructure (Barro, 1990), trade policy or exports (Balasubramanyam, et al., 1996), technological diffusion (Barro and Sala-i-Martin, 1997), and level of economic development and absorptive capacity (Hermes and Lensink, 2003; Alfaro et al., 2004; Choong et al., 2010b, 2010c).

FDI is an important element for developing economies not only because of increasing supply of capital but also helping human capital formation with technology transfer. FDI contributes to economic development via direct channels as well as indirect channels (Anwar and Nguyen, 2010). Furthermore, Salahuddin et al. (2010) say that the effect of FDI on growth is a theoretical and empirical fact and affects growth in two ways:

The rest of the paper is organized as follows. Section 2 briefly reviews the literature. Section 3, presents the data and methodology employed. Section 4 presents the empirical results, while a summary of findings and concluding remarks are presented in Section 5.

REVIEW OF RECENT LITERATURE

Hussain and Ahmed (2014) have attempted to provide the empirical evidence concerning the relation between GDP, foreign direct investment and budget deficit of Pakistan. The analysis was based on Johansen cointegration and Granger causality analysis for Pakistani time series data for the period of 1971-2007. The unit root test shows that all variables are non-stationary at level and become stationary when data set is transformed into their first differences. Johansen cointegration test indicates that there exist a long-run relationship between GDP, budget deficit and foreign direct investment. The Granger causality test shows that there is bi-directional causal links on FDI-GDP and GDP-Budget Deficit. There is two way causality running from foreign direct investment to GDP and from GDP to budget deficit.

The study emphasis on the importance of foreign direct investment in the long run. Foreign direct investment stimulates development by encouraging investment in education and training. This increases the stock of human capital and productivity of factors of production. Pakistan's development depends on foreign direct investment. If Pakistan wants FDI to be a significant contributor of economic growth then government should focus on improving infrastructure, human resources as these will speed up the development of the country

Shafi (2014) tries to give a conclusion on the relationship between FDI inflows and economic growth. The study gives contradictory conclusions regarding the growth effects of FDI. Researchers supporting the significant impact of FDI inflows

GDP view FDI as a mechanism for economic growth. They think that FDI not only supplements capital but also stimulate growth by adopting foreign technology, technological spillovers, human capital (knowledge and skill) enhancement, and so on. The researchers having opposite opinion say that FDI may bring about crowding-out effect a country. They stink monopoly intentions of multi-national companies in making FDI in a country. They also argue that FDI brings destructive competition of foreign affiliates, external vulnerability and dependence.

Alkhasawneh (2013) investigate the casual relationship between inflows of FDI and GDP per capita by taking data from Qatar for a period of 1970-2010. By using Johansen cointegration it is found that there is a long-run equilibrium relationship between FDI and GDP. It is also seen from the results that there is bidirectional causality between FDI and GDP in Qatar for the study period.

Carp (2012) emphasizes the impact of the FDI inflows on the economic growth by analyzing both theoretical and empirical researches. The results reveal that the impact capital flows on economic growth is significant and the main channels for the transmission are: financial markets, absorptive capacity, human capital and technological.

Hossain and Hossain (2012) examine co-integration and the causal relationship between FDI and GDP of Bangladesh, Pakistan and India for a period covering 1972-2008. The findings show that there is no co-integration between FDI and GDP in the both long and short run in Bangladesh and India. However, they find the co-integration between them in the both short and long run in Pakistan. The results also reveal that there is no causality relationship between GDP and FDI for Bangladesh and unidirectional relationship is found for Pakistan and India.

Osinubi and Amaghionyediwe (2010) investigates the relationship between foreign private investment (FPI) and economic growth in Nigeria for the periods 1970 – 2005 and find that FPI, domestic investment growth, net export growth and the lagged error term were statistically significant in explaining variations in Nigeria economic growth. Ayashagba and Abachi (2002) explore the relationship between FDI and economic growth in Nigeria during the periods 1980 - 1997 and find that FDI had significant impact on economic growth. In a study on the impact of FDI on economic growth in Nigeria, for the periods 1970 – 2001, Akinlo (2004) through his ECM results shows that both private capital and lagged foreign capital have little and not statistically significant effect on the economic growth. The results seem to support the argument that extractive FDI might not be growth enhancing as much as manufacturing FDI.

Kotrajaras (2010) examines the effect of FDI on the economic growth of 15 East Asian countries which are classified by their economic conditions, i.e. levels of human capital, investment on infrastructure, and trade openness for the analytical purpose. The panel cointegration analysis with endogenous growth model is used to observe the effect. The analysis is based on time series data from 1990-2009. The results show that FDI does not necessarily enhance economic growth. FDI had a positive effect on the economic growth only in the countries that have the appropriate economic conditions. East Asian countries including Thailand need to invest more on fundamental infrastructure and human capital, and increase their degree of trade openness in order to gain more from FDI.

A study by Abu (2010) employed the Granger causality and co-integration techniques to analyze the relationship between saving and economic growth in Nigeria during the period 1970-2007. The Johansen co-integration test was used to test if long-run equilibrium exists between them (economic growth and saving) (Johansen, 1988). In addition, the Granger causality test revealed that causality runs from economic growth to saving, implying that economic growth precedes and Granger causes saving. Thus, the study rejected the Solow's hypothesis that saving precedes economic growth and accepts the Keynesian theory that

Ayadi (2009) investigates the relationship between FDI and economic growth in Nigeria (1980 – 2007) and finds a very weak correlation and causality between the variables and recommends that infrastructural development, human capital building and strategic policies towards attracting FDI should be intensified.

Tang et.al (2008) explores the causal link between FDI, domestic investment and economic growth in China between 1988 – 2003 using the multivariate VAR and ECM. The results indicate that there is a bi-directional causality between domestic investment and economic growth, while there is a single directional causality from FDI to domestic investment and economic growth.

Carkovic and Levine (2002) find no robust positive impact from FDI and the GDP growth rate. Further, they change the model specification to find no robust positive link between FDI and the log level of GDP. Moreover, Hansen and Rand (2006) improve the model specification of Carkovic and Levine (2002) by including country-specific trends in addition to country-specific level. They find a strong causal link between the FDI-to-GDP ratio (FDI ratio, for short) and the log level of GDP and that GDP Granger-causes FDI with no bi-directional causality. Their sample includes 31 countries with 10 countries in

Asia (including Singapore), 11 countries in Latin America and the remaining 10 are African countries.

Ericsson and Irandoust (2001) examine the causal effects between FDI growth and output growth for four OECD countries applying a multi- country framework to data from Denmark, Finland, Norway and Sweden. The authors fail to detect any causal relationship between FDI and output growth for Denmark and Finland. They suggest that the specific dynamics and nature of FDI entering these countries could be responsible for these no- causality results.

STUDY HYPOTHESES, DATA AND MYTHOLOGY

Study hypotheses

The purpose of this study is to investigate whether the direction of causality runs from Real Domestic savings (RDS) to economic growth (RGDP) or vice versa and from RGDP to FDI or vice versa during the study period. Thus the study tests the following hypotheses:

H0: RGDP does not Granger cause RGDS.
H1: RGDP growth does Granger cause RGDS

H0: RGDS does not Granger cause RGDP.
H1: RGDS does Granger cause RGDP.

H0: FDI does not Granger cause RGDP.
H1: FDI does Granger cause RGDP.

Accordingly, if the first two null hypotheses are rejected, it indicates that bilateral causality exists between RGDP and RGDS. If the first null hypothesis is rejected and the second null hypothesis is accepted, it means that there is unidirectional causality from RGDP to RGDS. On the contrary, if the second null hypothesis is rejected and the first null hypothesis is accepted, it shows a unidirectional causality from RGDS to RGDP. Finally, if both null hypotheses are accepted, then independence is suggested and means no causality between the two variables.

And if the third H0 is rejected, it indicates the unidirectional causality from FDI and RGDP.

DATA AND METHODOLOGY

Data used in this study are annual figures for the period of 1980-2012 and variables are Gross Domestic Product (GDP), Foreign Direct Investment (FDI) and Domestic Savings (DS) .Data are gathered from website of World Bank (2014) . GDP figures are in constant 2000 US$ and the other variables: FDI and RDS are in % of GDP. All variables are transformed into the natural logarithm in the econometric analysis to capture growth effects.

METHODOLOGY

In this study, three types of analyses were employed. First of all, Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests were undertaken to test unit roots of the FDI, RGDS and RGDP. Second, Johansen and Juselius (1990) tests were employed to assess the long-run equilibrium relationship between GDP and its possible determinants of RGDS and FDI. Lastly, Granger-causality tests were applied in order to identify the direction of causality between variables of the study.

ECONOMITRICS MODEL

The present research suggests that FDI and GDS might be determinants of RGDP in the case of UAE. Therefore, the functional relationship in this study can be shown as follows.

$$GDP = f(FDI, RGDS) \quad (1)$$

Where real income (GDP) is a function of foreign direct investment (FDI) and real domestic savings (RGDS).

The functional relationships in equation (1) can be expressed in the following model:

$$RGDP_t = \alpha + \beta_1 FDI_t + \beta_2 RGDS_t + \varepsilon_t \quad (2)$$

Where at period t, GDP is the real GDP; FDI is the foreign direct investment variable; RGDS is the Real Gross domestic savings; and ε is the error term. The coefficients β_1 and β_2 of FDI and RGDS variables respectively in the long term period.

The econometric methodology firstly examines the stationarity properties of the univariate time series. Augmented Dickey-Fuller (ADF) test has been used to test the unit roots of the concerned time series variables. It consists of running a regression of the first difference of the series against the series lagged once, lagged difference terms, and optionally, by employing a constant and a time trend. The general form of the ADF is estimated by the following regression.

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{i=1}^{n} a\Delta y_t + e_t \quad (3)$$

$$\Delta y_t = a_0 + a_1 y_{t-1} + \sum_{i=1}^{n} a\Delta y_t + \delta_t + e_t \quad (4)$$

Where y is a time series; t = time (trend factor), Δ is the first difference operator, a_0 is a constant term (drift), n is the optimum number of lags in dependent variable The number of lags "n" in the dependent variable was chosen by the Akaike Information Criterion (AIC) to ensure that the errors are white noise and e is the random error term.

The test for a unit root is conducted on the coefficient of (y_{t-1}) in the regression. If the coefficient is significantly different from zero then the hypothesis that (y_t) contains a unit root is rejected.

Rejection of the null hypothesis implies stationarity. Furthermore, the time series has to be examined for cointegration. Cointegration analysis helps to identify long-run economic relationships between two or several variables and to avoid the risk of spurious regression. Cointegration analysis is important because if two non-stationary variables are cointegrated, a Vector Auto regression (VAR) model in the first difference is misspecified due to the effect of a common trend. If a cointegration relationship is identified, the model should include residuals from the vectors (lagged one period) in the dynamic Vector Error Correcting Mechanism (VECM) system. In this stage, the Johansen (1988) cointegration test is used to identify a cointegrating relationship among the variables. Within the Johansen multivariate cointegrating framework, the following system is estimated:

$Y=\mu +\Delta Y +\text{-----} +\Delta PY + \varepsilon$

Where

y is an nx1 vector of variables that are integrated of order commonly denoted (1) and ε is an nx1 vector of innovations.

This VAR can be written as

$$\Delta y = \mu + ny + \sum_{i-1}^{p-1} \Gamma \Delta y + \varepsilon$$

$$\prod = \sum_{i=1}^{p} A \quad \text{and } \Gamma i = -\sum_{j=i+1}^{p} A \qquad (5)$$

To determine the number of co-integration vectors, Johansen (1988) and Johansen and Juselius (1988, 1990) suggested statistical test: the first one is the trace test statistic.

The trace test statistic can be specified as

$$T_{trace}(r) = -T \sum_{i=r+1}^{K} \ln (1 - X_i)$$

Where T is the number of usable observations, In the trace test, the null hypothesis is that the number of distinct cointegrating vector(s) is less than or equal to the number of cointegration relations (*r)*.

The second statistical test is The maximum eigenvalue test examines the null hypothesis of exactly *r=0* cointegrating relations against the alternative of $r + 1$ cointegrating relations with the test statistic:

$$T\max = (r, r + 1) = - T \ln (1 - \lambda r + 1) \qquad (7)$$

It is well known that Johansen's cointegration test is very sensitive to the choice of lag length. So, at first a VAR model is fitted to the time series data in order to find an appropriate lag structure. The Akaie Information Criterion (AIC), Schwarz Criterion (SC)

The Vector Error Correction Model (VECM)

Once the cointegration is proven to exist between variables then the next step requires the construction of ECM to model dynamic relationship. The purpose of the ECM is to indicate the speed of adjustment from the short-run equilibrium to the long-run equilibrium state. The greater the coefficient of the parameter, the higher the speed of adjustment of the model from the short-run to the long run state will be.

A Vector Error Correction Model (VECM) is a restricted VAR designed for use with non-stationary series that are known to be cointegrated. Once the equilibrium conditions are imposed, the VECM describes how the examined model is adjusting in each time period towards its long-run equilibrium state. Since the variables are supposed to be cointegrated, then in the short-run, deviations from this long-run equilibrium will feedback on the changes in the dependent variables in order to force their movements towards the long-run equilibrium state. Hence, the cointegrated vectors from which the error correction terms are derived are each indicating an independent direction where a stable meaningful long-run equilibrium state exists.

$$\Delta GDP_t = \sum_{i=1}^{k} \beta_1 \Delta GDP_{t-i} + \sum_{i-1}^{k} \alpha_1 \Delta FDI_{t-i} + \sum_{i-1}^{k} \alpha_2 \Delta GDS_{t-i} + Z_1 EC1_{t-1} + \varepsilon_{1t} \qquad (8)$$

$$\Delta FDI_t = \sum_{i-1}^{k} M_1 \Delta GDP_{t-i} + \sum_{i-1}^{k} N_1 \Delta FDI_{t-i} + \sum_{i-1}^{k} \alpha_3 \Delta GDS_{t-i} + Z_2 EC2_{t-2} + \varepsilon_{2t} \qquad (9)$$

$$\Delta GDS_t = \sum_{i-1}^{k} G_1 \Delta GDP_{t-i} + \sum_{i-1}^{k} J_1 \Delta FDI_{t-i} + \sum_{i-1}^{k} \alpha_4 \Delta GDS_{t-i} + Z_3 EC3_{t-3} + \varepsilon_{3t} \qquad (10)$$

EMPIRICAL RESULTS

Unit Root Test for Stationarity

Now, it is required to determine the order of integration for each of the two variables used in the analysis along with their stationarity tests. The Augmented Dickey-Fuller unit root test has been used for this purpose All the variables are non-stationary at their level, but become stationary after taking first difference and, the results of such test are reported in table 1.

Table 1: Tests for Unit root: ADF

		ADF Level		ADF First Difference		
Variable	C.V	T-Statistic	Probability	C.V	T-Statistic	Probability
RGDP 1% level 5% level 10% level	-3.646342 -2.954021 -2.615817	1.659943	0.9994	-3.689194 -2.971853 -2.625121	-4.063385	0.0036***
RGDS 1% level 5% level 10% level	-3.646342 -2.954021 -2.615817	-1.082438	0.7100	-3.689194 -2.971853 -2.625121	-6.597730	0.0000***
FDI 1% level 5% level 10% level	-3.670170 -2.963972 -2.621007	-0.999636	0.7418	-3.661661 -2.960411 -2.619160	-4.837540	0.0005***

*McKinnon Critical Value at 1 percent significance level.

A univariate analysis of each of the three time series (RGDP, RGDS, and RFDI) was carried out by testing for the presence of a unit root. Augmented Dickey Fuller (ADF) t-tests (Dickey and Fuller, 1979). Tests for the individual time series and their first differences are shown in Table 1. For the Augmented Dickey Dickey-Fuller test, the lag length is based on the Schwarz Information Criterion (SIC). The lag length for the ADF tests was selected to ensure that the residuals were white noise. The result shows that all the variables were not stationary in levels. This can be seen by comparing the observed values (in absolute terms) of ADF test statistics with the critical values (also in absolute terms) of the test statistics at the 1%, 5% and 10% level of significance. all the variables were differenced once the ADF test were conducted on them, the result reveals that all the variables became stationary at first difference, on the basis of this, it is safe to conclude that the variables are stationary. This implies that the variables are integrated of order one, i.e. 1(1).

Co-integration Analysis Test

As indicated earlier, we can run co-integration test only for those variables that are non-stationary at levels but all stationary at the same order of I(1). Thus, co-integration would be searched between real GDP, GDS and FDI in this study table 2. and 3 shows the result of the cointegration test. In the tables both trace statistic and maximum Eigenvalue statistic indicates cointegration at the 5 percent level of significance, meaning that the null hypothesis can be rejected at the 5% significance level. Meaning that there is cointegrating relations between the variables tested; this implies that RGDP, RGDS and FDI have long run relationship.

The Johansen procedure, like many others, requires estimation of various structural and nuisance parameters. For example, a vector Error Correction

Model (VECM) and then the lag parameters are estimated.

Table 2. Unrestricted Cointegration Rank Test (Trace)

Hypothesized		Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.489918	30.50452	29.79707	0.0414
At most 1	0.224628	8.962644	15.49471	0.3688
At most 2	0.025344	0.821448	3.841466	0.3648

Trace test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Table 3.Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized		Max-Eigen	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value	Prob.**
None *	0.489918	21.54188	21.13162	0.0438
At most 1	0.224628	8.141195	14.26460	0.3645
At most 2	0.025344	0.821448	3.841466	0.3648

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Error Correction Model Estimation Test

Table 4: Dependent Variable: D(RGDP)
Included observations: 31 after adjustments
D(RGDP) = C(1)*(RGDP(-1) + 4.79025668909*RGDS(-1) - 1.80453375338E-08*FDI(-1) - 4.27130980009) + C(2)*D(RGDP(-1)) + C(3)*D(RGDP(-2)) + C(4)*D(RGDS(-1)) + C(5)*D(RGDS(-2)) + C(6) *D(FDI(-1)) + C(7)*D(FDI(-2)) + C(8)

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.119670	0.029790	-4.017116	0.0005
C(2)	-0.115345	0.230285	-0.500879	0.6212
C(3)	0.137924	0.136906	1.007439	0.3242
C(4)	0.382797	0.228516	1.675145	0.1075
C(5)	-0.029521	0.153293	-0.192581	0.8490
C(6)	5.46E-06	1.28E-06	4.276559	0.0003
C(7)	2.25E-06	1.99E-06	1.130530	0.2699
C(8)	0.062956	0.020894	3.013178	0.0062
R-squared	0.682234	Mean dependent var		0.065024
Adjusted R-squared	0.585522	S.D. dependent var		0.091151
S.E. of regression	0.058683	Akaike info criterion		-2.615697
Sum squared resid	0.079205	Schwarz criterion		-2.245636
Log likelihood	48.54331	Hannan-Quinn criter.		-2.495067
F-statistic	7.054323	Durbin-Watson stat		2.102500
Prob(F-statistic)	0.000152			

Granger Causality Tests

Thus, in this study, to make better estimation for comparative purposes, alternative lag lengths ranging from 1 to 4 were preferred rather than selecting optimal lag as suggested by some econometricians (See also Pindyck and Rubinheld, 1991).

Granger (1988) suggests that in the presence of the co-integration there must be at least one direction of causality: unidirectional or bidirectional. As can be seen from Table 5, there is FDI and RGDS driven growth in the economy of UAE. VECM results suggest unidirectional causation running from both RGDS to RGDP and from RGDP to RGDS in UAE as proved by F test for VECM terms. And lastly, the results of the present study suggest bidirectional causal relationship between RGDS and RGDP in UAE at lag one level which statistically significant at 5%.

Table 5: Granger Causality Tests

	F-Statistic	Prob.	F-Statistic	Prob.	F-Statistic	Prob.	F-Statistic	Prob.	
Null Hypothesis	Lag	1	Lag	2	Lag	3	Lag	4	Conclusion
RGDS does not Granger cause RGDP	5.95***	0.0208	7.09	0.0033*	3.55835	0.0292	2.28486	0.0942	RGDS => RGDP
RGDP does not Granger cause RGDS	6.78**	0.0142	2.76598	0.0808	0.66240	0.5833	0.76229	0.5615	RGDP=>RGDS
FDI does not Granger cause RGDP	3.18932	0.0842	6.92566	0.0037*	4.31797	0.0143	3.46731	0.0252	FDI => RGDP
RGDP does not Granger cause FDI	2.979	0.0946	2.69688	0.0855	1.80694	0.1728	2.53386	0.0707	
FDI does not Granger cause RGDS	2.97128	0.0950	1.12447	0.3396	0.75956	0.5278	0.51242	0.7273	
RGDS does not Granger cause FDI	3.06405	0.0903	2.25503	0.1243	1.39576	1.13791	1.13791	0.3659	

CONCLUSION AND POLICY IMPLICATIONS

There is an enormous theoretical and empirical literature dealing with the relationship between economic growth, Domestic Saving RDS and FDI. The objective of this study is to investigates the causal relationship between RGDP, foreign direct investment (FDI), and domestic savings DS in UAE for the period 1980-2012.Johansen's multivariate co-integration techniques were used to assess the long run equilibrium relationship between economic growth, Real Domestic Saving RDS and FDI in UAE. Additionally, the VECM models were used to assess the direction of causal relationship between these variables in UAE. The main findings are: (i) there is a long-run equilibrium relationship between RGDP, RDS, and FDI with one co-integrated vector ;(ii) Granger causality test results reveal that there is bidirectional causation running from RGDS to RGDP and RGDP to RGDS growth (iv) Results reveal another unidirectional causation running from FDI to real GDP in UAE;

As can be seen from the results of the present study, there is RGDS and FDI driven economic growth in UAE that is important for the development policy of the country. Government should pay more attention to make the environment better for foreign investors as well as to encourage increasing of domestic savings.

More research should be dedicated to the empirical studies of convergence hypothesis. There are not many researches in convergence hypothesis especially based on UAE. The data using in the annually data. If we conduct the study by using the quarterly data, the empirical result would be more exactly. However, caution may be exercised due to one limitation of this study. The number of observations (33) we used as a result of unavailability of data on domestic investment before 1981 may be inadequate in applying Johansens cointegration approach. This limitation may warrant further investigation using additional observations where available or some approaches that may mitigate this limitation, such as Autoregressive Distributed Lag (ARDL) bounds test approach

REFERENCES

Abu, N, 2010. Saving-economic growth nexus in Nigeria, 1970-2007: Granger causality and co integration analyses. Rev. Econ. Bus. Stud., 3: 93-104.

Anwar, S. and Nguyen, L. (2010). Foreign direct investment and economic growth in Vietnam, Asia Pacific Business Review, 16: 1, 183-202.

Ayadi, F. S. (2009), "Foreign Direct Investment and Economic Growth in Nigeria." Proceedings of the 10 th Annual Conference of LAABD.

Ayanwale, A.B. (2007); "FDI and Economic Growth: Evidence from Nigeria" AERC Research Paper 165, African Economic Research Consortium, Nairobi

Aitken, B. J. and A. Harrison (1999), 'Do Domestic Firms Benefit from Direct Foreign Investment? Evidence from Venezuela', American Economic Review, 89, 3, 605-18.

Alfaro, L., Chanda, A., Kalemli-Ozean, S., and Sayek, S. (2004). FDI and economic growth: The role of local financial markets. *Journal of International Economics.* 64, 89-112

Alkhasawneh, M.F. (2013). The Granger Causality Relationship between Foreign Direct Investment (FDI) and Economic Development in the State of Qatar. Applied Mathematics & Information Sciences, 7(5), 1767-1771.

Balasubramanyam, V., Salisu, M. and D. Sapsford, 1996, "FDI and Growth in EP and IS Countries," *The Economic Journal* 106(434), 92-105.

Barro, Robert, 1990, "Government Spending in a Small Model of Endogenous Growth," *Journal of Political Economy* 98, 103-25.

Barro R., and Sala-I-Martin X. (1997): "Technological Diffusion, Convergence and Growth"; *Journal of Economic growth;* 1997, 2 June; 1-26.

Borensztein, E., de Gregorio, J., and J-W Lee, 1998, "How does foreign direct investment affect economic growth?" *Journal of international Economics* 45, 115-135.

Carkovic, M. and Levine R., 2002. "Does foreign direct investment accelerate economic growth?", Working Paper (University of Minnesota, Department of Finance, available at: http://www.ssrn.com/abstract=314924).

Carp, L. (2012). Analysis of the relationship between FDI and Economic Growth: A Literature Review Study. The USV Annals of Economics and Public Administration, 12 (1(15)), 154-160.

Choong, C.K., Yusop, Z., and Soo, S.C., 2005, "Foreign Direct Investment and Economic Growth in Malaysia: the Role of Domestic Financial Sector," *The Singapore Economic Review* 50, 245-268.

Choong, C.K., Lam, S.Y., & Yusop, Z. (2010b), Private capital flows to low-income countries: The role of domestic financial sector. *Journal of Business Economics and Management,* 11, 598-612.

Choong, C.K., Yusop, Z., & Law, S.H. (2010c). Private capital flows to developing countries: The role of domestic financial sector. *Journal of the Asia Pacific Economy*, 15, 509-529.

Ericsson, J. and Irandoust, M., 2001. "On the causality between foreign direct investment and output: a comparative study", The International Trade Journal, 15, 122-132.

Hermes, N., & Lensink, R. (2003). Foreign direct investment, financial development and economic growth. *Journal of Development Studies*, 40, 142-163.

Hossain, A., & Hossain, M.K. (2012). Empirical Relationship between Foreign Direct Investment and Economic Output in South Asian Countries: A Study on Bangladesh, Pakistan and India. International Business Research, 5(1), 9-21.

Hussain and Ahmad *(2014)"* Economic growth, FDI and Budget Deficit in Pakistan: 1971-2007: Evidence from Causality and Cointegration Analysis". Australian Journal of Basic and Applied Sciences. 9(5) March 2015, Pages: 49-498

Johansen, S. (1988). Statistical Analysis of Co-integration Vectors, Journal of Economic Dynamics and Control, 12, 231-254.

Kotrajaras,P. (2010). Foreign Direct Investment and Economic Growth: A Comparative Study among East Asian Countries. Applied Economics Journal, 17(2), 12-26.

Mina, W. (2013), 'United Arab Emirates FDI Outlook countries', MPRA, Online at http://mpra.ub.uni-muenchen.de/51810/ 1-21.

Osinubi, T. S. and Amaghionyeodiwe, L. A. (2010); "Foreign Private Investment and Economic Growth in Nigeria." REBS Review of Economic and Business Studies, Vol 3 Issue 1, pp. 105 – 127, June.

Pindyck,R.S and Rubinfield,D.L. (1991)" Econometrics Models and Economic Forecasts, New York, McGraw-Hill.

Salahedin,M, Shabbaz,M and Chani,M.I(2010)"A note on Casual Relationship between FDI and Saving in Bangladish. Theoretical and Applied Economics,11,53-62.

Shafi, M. (2014). Relationship between FDI inflows and Economic Growth: A Review. Singaporean Journal of Business Economics and Management Studies, 2(9), 67-77.

Tang, S., Selvanathan, E.A. and Selvanathan, S. (2008) "Foreign Direct Investment, Domestic Investment, and Economic Growth in China." UNU-WIDER Research Paper No. 2008/19.

UNCTAD, World Investment Report 2011: Non-Equity Modes of International Production and Development (Geneva: United Nations), annex tables, web table 28, "Inward FDI Performance and Potential Index rankings, 1990-2010," available at: http://unctad.org/en/Pages/DIAE/World%20Investment%20Report/Annex-Tables.aspx

UNCTAD (2012), web table 32A, "Country Rankings by Inward FDI Potential Index, 2011," available at: http: //unctad.org/en/Pages/DIAE/DIAE.aspx. Notes: See Box 1.3 in UNCTAD (2012) for more information on the economic determinants of the FDI potential index.

APPENDIX B

Pairwise Granger Causality Tests
Date: 06/26/15 Time: 17:43
Sample: 1 34
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
RGDS does not Granger Cause RGDP	33	5.95394	0.0208
RGDP does not Granger Cause RGDS		6.78312	0.0142
FDI does not Granger Cause RGDP	33	3.18932	0.0842
RGDP does not Granger Cause FDI		2.97978	0.0946
FDI does not Granger Cause RGDS	33	2.97128	0.0950
RGDS does not Granger Cause FDI		3.06405	0.0903

Pairwise Granger Causality Tests
Date: 06/26/15 Time: 17:41
Sample: 1 34
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
RGDS does not Granger Cause RGDP	32	7.09441	0.0033
RGDP does not Granger Cause RGDS		2.76598	0.0808
FDI does not Granger Cause RGDP	32	6.92566	0.0037
RGDP does not Granger Cause FDI		2.69688	0.0855
FDI does not Granger Cause RGDS	32	1.12447	0.3396
RGDS does not Granger Cause FDI		2.25503	0.1243

Pairwise Granger Causality Tests
Date: 08/27/15 Time: 09:04
Sample: 1 34
Lags: 3

Null Hypothesis:	Obs	F-Statistic	Prob.
RGDS does not Granger Cause RGDP	31	3.55835	0.0292
RGDP does not Granger Cause RGDS		0.66240	0.5833
FDI does not Granger Cause RGDP	31	4.31797	0.0143
RGDP does not Granger Cause FDI		1.80694	0.1728
FDI does not Granger Cause RGDS	31	0.75956	0.5278
RGDS does not Granger Cause FDI		1.39576	0.2683

Pairwise Granger Causality Tests
Date: 08/27/15 Time: 09:06
Sample: 1 34
Lags: 4

Null Hypothesis:	Obs	F-Statistic	Prob.
RGDS does not Granger Cause RGDP	30	2.28486	0.0942
RGDP does not Granger Cause RGDS		0.76229	0.5615
FDI does not Granger Cause RGDP	30	3.46731	0.0252
RGDP does not Granger Cause FDI		2.53386	0.0707
FDI does not Granger Cause RGDS	30	0.51242	0.7273
RGDS does not Granger Cause FDI		1.13791	0.3659