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Exports, Imports, FDI and Trade Openness on Economic Growth: Evidence from ARDL Bounds Testing For United Arab Emirates

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ABSTRACT

The aim of this paper to investigates the effect of foreign direct investment (FDI), exports(EX), import (IM) and trade openness (TO) on economic growth(GDP) in UAE.This paper provides a survey of literature on FDI, export, and growth, and empirically investigates the causal relationship between economic growth, export, and FDI for UAE. The ARDL bounds testing approach is used to investigate the existence of long-run relationship between FDI, export, import and economic growth for UAE. After detection of cointegration relationship, the error-correction based Granger causality test is employed to examine the both long-run and short-run causality issues between the variables by using data from 1977 to 2012. The bounds tests suggest that the variables of interest are bound together in the long-run when foreign direct investment is the dependent variable. The results indicate also that there is significant Granger causality from economic growth to FDI, from FDI to economic growth and there is significant and strong Granger causality from FDI to Imports and from Imports to FDI. The results indicate also that there is no significant Granger causality from EX to IM, from IM to EX, in the short run. In brief, our results show that there is a positive relationship between FDI and GDP in UAE. And the main point to consider which is evident through statistics and results is that there is a greater impact of FDI on GDP, Exports, and Imports.

KEYWORDS: GDP, FDI, Exports and Imports. ARDL cointegration, UAE.

1. INTRODUCTION

The relationship between economic growth and FDI has been studied well in the empirical literature focusing on both developing and developed countries. The relationship has been studied by explaining four main channels: (a) determinants of growth, (b) determinants of FDI and (c) direction of causality between the two variables. A large number of empirical studies on the role of FDI suggest that FDI is an important source of capital, complements domestic private investment, is usually associated with new job opportunities and enhancement of technology transfer and spillover, human capital (knowledge and skill) enhancement, and boosts overall economic growth in host countries (Chowdhury and Mavrotas, 2006:2).

Some past studies on this subject suffer from two limitations. The first limit is that these studies used cointegration techniques based on either the Engle and Granger (1987) cointegration test or the maximum likelihood test based on

Johansen (1988) and Johansen and Juselius (1990). Or, these cointegration techniques may not be appropriate when the sample size is too small (Odhiambo, 2009). Odhiambo (2009) uses the bounds testing cointegration approach developed by Pesaran et al. (2001) which is more robust for the small sample. The second limit is that by using cross-sectional data some studies do not address the country-specific issues (Odhiambo, 2009; Ghirmay, 2001; Casselli et al., 1996).

The objective of this study is to investigate the relationship between economic growth, export, import and FDI inflows during the period of 1977-2012 by using abound testing approach based on autoregressive distributed lag (ARDL).

The paper has contributed to the body of existing literature and filled some gaps that were not discuss, and is significance to economic decision-makers, as it will assist us with the basic knowledge and skills needed to tackle the pressing issue of economic growth, export, import and FDI inflows in UAE.However, a good deal of research work has been carried out on economic growth Worldwide, but not much has been carried out using economic growth, export, import, TO and FDI inflows *in UAE* the UAE economy and within the scope of our analysis.

The rest of the paper is structured as follows: Section 2 presents a brief literature review. Section 3 presents a model, methodology and data, while section 4 deals with the estimation technique and the empirical analysis of the results. Finally, the paper is concluded with some remarks on policy lessons.

2. LITERATURE REVIEW

The relationship between exports, imports, FDI and economic growth in both developed and developing countries is an issue that continues to be of substantial theoretical and empirical interest; cross-country trade, capital flow and interpreting the importance of these activities towards economic growth lie at the key of the debate oneconomic growth (Abdullahi *et al*., 2013; Azam *et al*., 2013; Wei and Wang, 2012; Mishara, 2011). In the literature with regards to both FDI and economic growth, there are several channels through which foreign investments are linked to growth in developing countries. The role played by inward FDI in export performance of developing countries is one of the intensely debated issues in the literature of development economics (Teodora and Marinela, 2011; Elbeydi *et al*., 2010).

Many empirical studies have tried to explain the relationship between FDI and growth

Ozturk, 2007. As it can be seen in the most of these studies, FDI has a positive effect on growth. Alfaro et al. (2010), Lensink and Morrissey (2001), Campos and Kinoshita (2002), Basu et al. (2003), Hermes and Lensink (2003), Nath (2004), Makkiand Somwaru (2004), Li and Liu (2005), Hansen and Rand (2006), Lensink and Morrissey (2006), Ghatak and Halicioglu (2007), Apergis et al. (2008), Batten and Vo (2009), and Alfaro et al. (2010), among others, have found positive effects of FDI on growth. In general, recent empirical literature survey shows that the causality relations vary with the period studied, countries studied, treatment of variables (real or nominal), the econometric methods used, and the presence of other related variables or inclusion of interaction variables in the estimation equation (Hsiao and Hsiao,2006). The results may be bidirectional, unidirectional, or no causality relations.

Onakoya (2012) seeks the impact of FDI on GDP in different sectors of Nigeria country through using three-stage least square (3SLQ) technique and Macro-Econometric model of simultaneous equation. He found that FDI affects the GDP but significantly cast an impact on the output of that economy. Zeeshan and Antique (2012) investigated the relationship between FDI and GDP in Pakistan. Cobb – Douglas Production function was used along with regression equation to draw a conclusion from data period of 1971-2001.

Rahman (2007) re-examined the effects of exports, FDI and expatriates' remittances on real GDP of some Asian countries (Bangladesh, India, Pakistan and Sri Lanka) using the ARDL technique for cointegration for the period of 1976-2006. The ARDL technique confirmed cointegrating relationship among variables in these three countries. The short-run net effects of exports on real GDP of Bangladesh are more visible than those of FDI. The same apply to India as well with some minor exceptions for relatively stronger short-run effects. In the case of Pakistan, FDI was found to exert net restrictive effects on its real GDP, though not highly significant. For Sri Lanka, FDI was found to have consistently restrictive effects on real GDP.

Darrat et al. (2005) investigated the impact of FDI on economic growth in Central and Eastern Europe (CEE) and the Middle East and North Africa (MENA) regions. They found that FDI inflows stimulate economic growth in EU accession countries, while the impact of FDI on economic growth in MENA and in non-EU accession countries is either non-existent or negative.

Hisarciklilar et al. (2006) don't find causality between FDI and GDP for most of the following Mediterranean countries of Algeria, Cyprus, Egypt, Israel, Jordan, Morocco, Syria, Tunisia, and Turkey for the period of 1979-2000. These countries could create an environment that attracts FDI and lead to the transfer of technology and skills and increase production, creation of new jobs and exports.

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Athukorala (2003) studied the impact of FDI on GDP in the context of Sri Lanka and found that FDI contributes to accelerating the GDP rate but it is not a sole factor that affects GDP. In order to gain these results, he used Econometric framework because regression was proved not so much supportive in that context. Akinlo (2003) and Adelegan (2000) found that foreign funds inflow is not statistically significant to increase the level and rate of economic growth in Nigeria and mostly in developing host countries. Furthermore, FDI is negatively related to domestic investment. This result is drawn using seemingly unrelated regression (SURE).

Based on the results of recent empirical studies on the relationship between the economic growth, export, import FDI and TO and to ensure an adequate examination of the UAE evidence, our study will have to answer four hypotheses regarding the impact of export, import FDI and TO on economic growth for the period 1976-2016. Which are:

H01: There is no positive relation between import and GDP in the long run in UAE.
H1: There is positive relation between import and GDP in the long run in UAE.

H02: There is no negative relation between export and GDP in the long run in UAE.
H2: There is negative relation between export and GDP in the long run in UAE.

H03: There is no positive relation between FDI and GDP in the long run in UAE.
H3: There is positive relation between FDI and GDP in the long run in UAE.

H04: There is no positive relation between TO and GDP in the long run in UAE.
H4: There is positive relation between TO and GDP in the long run in UAE.

3. DATA AND METHODOLOGY

Annual time series data on economic growth, FDI, EX, TO and IM, which cover the 1977-2012 period, have been used in this study. The data has been obtained from different sources, including, different volumes of the International Financial Statistics (IFS) Yearbook, published by the International Monetary Fund, and World Development Indicators 2014 edition published online by the World Bank have been used to supplement the local data.

Methodology

The long-run relationship among FDI, EX, IM, TO and economic growth in UAE may be expressed as:

$$GDP_t = \alpha + \beta Ex_t + \beta_1 IM_t + \beta_2 FDI_t + \beta_3 TO + \varepsilon_1 \quad \text{..............................(1)}$$

Where GDP_t is the Gross Domestic Product in millions); Ex is the export in millions; IM is the Import; TO is trade openness and FD is the Foreign Direct Investment and ε is error term.

We use the two-step procedure from the Engle and Granger (1987) model to examine the causal relationship among real GDP, EX-IM , TO and FDI in UAE. In the first step, we explore the long-run relationships between the variables. In the second step, we employ error-correction based on Granger causality model to test causal relationship among variables in the model.

Before running the causality test the variables must be tested for stationarity. For this purpose, in this current study we use the conventional ADF tests, the Phillips-Perron test following Phillips and Perron (1988) and the Dickey-Fuller generalizedleast square (DF-GLS) de-trending test proposed by Elliot et al. (1996).

The ARDL bounds test is based on the assumption that the variables are I(0) or I(1). So, before applying this test, we determine the order of integration of all variables using the unit root tests. The objective is to ensure that the variables are not I(2) so as to avoid spurious results. In the presence of variables integrated of order two, we cannot interpret the values of F statistics provided by Pesaran et al. (2001).

4. ARDL BOUNDS TESTS FOR COINTEGRATION

In order to analyze the long-run and short-run interactions among the variables under study (FDI, EX, IM, TO and GDP), we apply the autoregressive distributed lag (ARDL) cointegration technique. The ARDL cointegration approach was developed by Pesaran and Shin (1999) and Pesaran et al. (2001). It has three advantages in comparison with other previous and traditional cointegration methods. The first one is that the ARDL does not need that all the variables under study must be integrated of the same order and it can be applied when the underlying variables are integrated of order one, order zero or fractionally integrated. The second advantage is that the ARDL test is relatively more efficient in the case of small and finite sample data sizes. The last and third advantage is that by applying the ARDL technique we obtain unbiased estimates of the long-run model (Harris and Sollis, 2003). The ARDL model for the linear functional specification of long-run relationship among gross domestic product (GDP), export (EX) import (IM),trade openees (TO) and foreign direct investment (FDI) may follows as:

$$DGDP_t=\alpha_1+\sum_i^n\beta_1 DGDP_{t-1}+\sum_i^n\beta_2 DEX_{t-1}+\sum_i^n\beta_3 DIM_{t-1}+\sum_i^n\beta_4 DFDI_{t-1}+\sum_i^n\beta_5 DTO_{t-1}+\delta 1\, GDP_{t-1}+ \delta 2 EX_{t-1}+\delta 3 IM_{t-1}+\delta 4 FDI_{t-1}+\delta 5 TO_{t-1}+\varepsilon_{1t}\ldots\ldots (2)$$

$$DEX_t=\alpha 2+\sum_i^n\beta_6 DGDP_{t-1}+\sum_i^n\beta_7 DEX_{t-1}+\sum_i^n\beta_8 DIM_{t-1}+\sum_i^n\beta_9 DFDI_{t-1}+\sum_i^n\beta_{10} DTO_{t-1}+\delta 5 GDP_{t-1}+ \delta 6 EX_{t-1}+\delta 7 M_{t-1}+\delta 8 FDI_{t-1}+\delta 9 TO_{t-1}+\varepsilon_{1t}\ldots\ldots (3)$$

$$DIM_t=\alpha 3+\sum_i^n\beta_9 DGDP_{t-1}+\sum_i^n\beta_{10} DEX_{t-1}+\sum_i^n\beta_{11} DIM_{t-1}+\sum_i^n\beta_{12} DFDI_{t-1}+\sum_i^n\beta_{13} DTO_{t-1} +\delta_{10} GDP_{t-1}+\delta_{11} EX_{t-1}+\delta_{12} IM_{t-1}+\delta_{13} FDI_{t-1}+\delta_{14} TO_{t-1}+\varepsilon_{1t}\ldots\ldots (4)$$

$$DFDI_t=\alpha 4\ \sum_i^n\beta_{13} DGDP_{t-1}+\sum_i^n\beta_{14} DEX_{t-1}+\sum_i^n\beta_{14} DIM_{t-1}+\sum_i^n\beta_{15} DFDI_{t-1}+\sum_i^n\beta_{16} DTO_{t-1}\ \delta_{12} GDP_{t-1}+\delta_{13} EX_{t-1}+\alpha_{14} IM_{t-1}+\alpha_{15} FDI_{t-1}+\delta_{16} TO_{t-1}+\varepsilon_{1t}\ldots\ldots (5)$$

$$DTO_t=\alpha 4\ \sum_i^n\beta_{17} DGDP_{t-1}+\sum_i^n\beta_{18} DEX_{t-1}+\sum_i^n\beta_{19} DIM_{t-1}+\sum_i^n\beta_{20} DFDI_{t-1}+\sum_i^n\beta_{21} DTO_{t-1}\ \delta_{17} GDP_{t-1}+\delta_{18} EX_{t-1}+\alpha_{19} IM_{t-1}+\alpha_{20} FDI_{t-1}+\delta_{21} TO_{t-1}+\varepsilon_{1t}\ldots\ldots (6)$$

Where ε and D are the white noise term and the first difference operator respectively.

The bounds test is mainly based on the joint F-statistic which its asymptotic distribution is non-standard under the null hypothesis of no cointegration. The first step in the ARDL bounds approach is to estimate the four equations (2, 3 ,4,5 and 6) by ordinary least squares (OLS). The estimation of the four equations tests for the existence of a long-run relationship among the variables by conducting an F-test for the joint significance of the coefficients of the lagged levels of the variables, i.e.,

$$H0: \delta 1=\delta 2=\delta 3=\delta 4=\delta 5=0$$

(There is no long-run relationship) against the alternative hypothesis that not all of this coefficient are equal to zero.

$$H1: \delta 1\neq\delta 2\neq\delta 3\neq\delta 4\neq\delta 5\neq 0$$

(There is a long-run relationship).

An appropriate lag selection based on a criterion such as Akaike Information Criterion (AIC) and Schwarz Bayesian Criterion (SBC). According to Pesaran and Shin (1999), the SBC is generally used in preference to other criteria because it tends to define more parsimonious specifications. Two sets of critical values (*CVs*) that are reported by

Pesaran et al. (2001) provide *CV* bounds for all classifications of the repressors into purely *I(1)*, purely *I(0)* or mutually cointegrated. If the calculated *F*-statisticslies above the upper level of the band, the null is rejected, indicating cointegration. If the calculated *F*-statistics is below the upper *CV*, we cannot reject the null hypothesis of no cointegration. Finally, if it lies between the bounds, a conclusive inference cannot be made without knowing the order of integration of the underlying regressors. Recently, the set of critical values for the limited data (30 observations to 80 observations) were developed originally by Narayan (2005).

If there is an evidence of long-run relationships (cointegration) between the variables, the second step is to estimate the following long-run and short-run models that are represented in Equations (7) and (8):

$$GDP_t = \alpha_{1+} \sum_i^n \beta_1 GDP_{t-1} + \sum_i^{n1} \beta_2\, EX_{t-1} + \sum_i^{n2} \beta_3\, IM_{t-1} + \sum_i^{n3} \beta_4\, FDI_{t-1} + \sum_i^{n4} \beta_5 \mathrm{TO}_{t-1} + \varepsilon_{1t} \quad ..(7)$$

$$DGDP_t = \alpha_1 + \sum_i^n \beta_1 DGDP_{t-1} + \sum_i^{n1} \beta_2\, DEX_{t-1} + \sum_i^{n2} \beta_3\, DIM_{t-1} + \sum_i^{n3} \beta_4\, DFDI_{t-1} + \sum_i^{n4} \beta_5 \mathrm{DTO}_{t-1} + \delta ECT_{t-1} + \varepsilon_{2t} \quad ..(8)$$

Where δ is the coefficient of error correction term ECT_{t-1}. It shows how quickly variables converge to equilibrium and it should have a statistically significant Coefficient with a negative sign.

The orders of the ARDL (n, n1, n2, n3 and n4) model in the five variables are selected by using AIC. Equation (7) is estimated using the following ARDL (3,0,4,4,3) specification. The results obtained by normalizing on GDP, ARDL cointegration method tests whether the existence or absence of long-run relationships among GDP, EX, IM, TO and FDI. It doesn't indicate the direction of causality. Granger (1988) emphasizes that a vector error correction (hereafter VEC) modeling should be estimated rather than a vector autoregression (hereafter VAR) as in a standard Granger causality test if variables in the model are cointegrated. Once estimating the long-run model in Equation (7) to obtain the estimated residuals, the next step is to estimate error-correction based on Granger causality models in Equation (8). Thus, the following models may employ to explore the causal relationship between variables:

$$DGDP_t = \alpha_1 + \sum_i^n \beta_1 DGDP_{t-1} + \sum_i^n \beta_2\, DEX_{t-1} + \sum_i^n \beta_3\, DIM_{t-1} + \sum_i^n \beta_4\, DFDI_{t-1} + \sum_i^{n4} \beta_5 \mathrm{DTO}_{t-1} + \delta ECT_{t-1} + \varepsilon_{3t} \quad (8a)$$

$$DEX_t = \alpha_1 + \sum_i^n \beta_1 DGDP_{t-1} + \sum_i^n \beta_2\, DEX_{t-1} + \sum_i^n \beta_3\, DIM_{t-1} + \sum_i^n \beta_4\, DFDI_{t-1} + \sum_i^{n4} \beta_5 \mathrm{DTO}_{t-1} + \delta ECT_{t-1} + \varepsilon_{4t} \quad (8b)$$

$$DIM_t = \alpha_1 + \sum_i^n \beta_1 DGDP_{t-1} + \sum_i^n \beta_2\, DEX_{t-1} + \sum_i^n \beta_3\, DIM_{t-1} + \sum_i^n \beta_4\, DFDI_{t-1} + \sum_i^{n4} \beta_5 \mathrm{DTO}_{t-1} + \delta ECT_{t-1} + \varepsilon_{5t} \quad (8c)$$

$$DFDI_t = \alpha_1 + \sum_i^n \beta_1 DGDP_{t-1} + \sum_i^n \beta_2\, DEX_{t-1} + \sum_i^n \beta_3\, DIM_{t-1} + \sum_i^n \beta_4\, DFDI_{t-1} + \sum_i^{n4} \beta_5 \mathrm{DTO}_{t-1} + \delta ECT_{t-1} + \varepsilon_{6t} \quad (8d)$$

$$DTO_t = \alpha_1 + \sum_i^n \beta_1 DGDP_{t-1} + \sum_i^n \beta_2\, DEX_{t-1} + \sum_i^n \beta_3\, DIM_{t-1} + \sum_i^n \beta_4\, DFDI_{t-1} + \sum_i^{n4} \beta_5 \mathrm{DTO}_{t-1} + \delta ECT_{t-1} + \varepsilon_{7t} \quad (9d)$$

Residual terms $\mathcal{E}_3 \mathcal{E}_4 \mathcal{E}_5$ $\mathcal{E}_6$ and $\mathcal{E}_7$ are independently and normally distributed with zero mean and constant variance. An appropriate lag selection is based on a criterion such as AIC and SBC.

5. EMPIRICAL RESULTS

The ARDL model used for empirical analysis was constructed using Eviews 9 for econometric. Since the ARDL model only can be used in the variables are integrated of I(0) or I(1) (Pesaran et al. 2001), unit root tests have to be used to make sure all the variables are no integrated of I(2) or higher. The study used two popular unit root tests, the augmented Dickey-Fuller (ADF) (Dickey and Fuller, 1979) and Phillips–Perron (PP)(Phillips and Perron, 1988) tests. Table 1 shows the unit root tests results. All variables in the levels are not stationary but all variables in integrated of order 1 or I(1), first difference, are stationary. The bound test was used to evaluate cointegration. And the result of the bound test is shown in Table 2

5.1. Unit Roots Tests

The Augmented Dickey-Fuller (ADF) test is widely used in this regard, as in [Dickey, and Fuller,1979,1981] and Reference (Phillips and Perron, 1988) proposed a modification of the Dickey-Fuller (DF) test and has developed a comprehensive theory of unit roots. The Phillips-Perron (PP) test has introduced a t-statistic on the unit-root coefficient in a DF regression, corrected for autocorrelation and heteroscedasticity. Formally, the power of a test is equal to the probability of rejecting a false null hypothesis. Monte Carlo simulations show that the power of the various DF tests can be very low. Reference [Maddala] and. Kim, 1998) comments that the DF test does not have serious size distortions, but it is less powerful than the PP test. Reference (Choi Iand Chung,1995] asserts that for low frequency data the PP test appears to be more powerful than the ADF test. Accordingly, I adopt the ADF and PP methodology to test unit roots in the variables. Table I presents the results of the ADF and Phillips-Perron unit root tests with UAE's GDP, exports, Imports and FDI. All the variables exhibit unit roots, whereas they become stationary in first differences. Thus, none of the series are (2), and they can be used in the ARDL bounds test method.

The ADF and the Phillips-Perron, tests applied to the first difference of the data series reject the null hypothesis of nonstationary for all the variables used in this study. It is, therefore, worth concluding that all the variables are integrated of order one

Table 1. The ADF and the Phillips-Perron tests applied to the first difference of the data series reject the null hypothesis of nonstationary for all the variables used in this study It is, therefore, worth concluding that all the variables are integrated of order one.

Table 1: Tests for Unit root: ADF

ADF 1st diff.				PP 1st Diff.		
Variables	t-Stat (p-value)	Critical value at 1%	lag	t-Stat (p-value)	Critical value at 1%	lag
GDP	-5.108858 0.0002*	-3.63	1	-5.138250 0.0002*	-3.63	1
EX	-5.456177 0.0001*	-3.63	1	-5.48685 0.0001*	-3.63	1
IM	-4.675243 0.0006*	-3.63	1	-4.712360 0.0006*	-3.63	1
FDI	-5.4247320. 0.0001**	-2.94	1	-5.432886 0.0001**	-2.94	1
TO	-4.983136 0.0003**	-2.951	1	-4.954593 0.0003**	-2.95	

Note: * denotes significance at 1% & ** denotes significance at 5%

Source: Authors' calculation using EViews 9.

5.2. ARDL Bounds Tests For Cointegration

We choose a maximum lag order of 4 for the conditional ARDL vector error correction model by using the Akaike information criteria (AIC). The calculated F-statistics are reported in Table 2 when each variable is considered as a dependent variable (normalized) in the ARDL-OLS regressions.

After determining the order of integration, next we employ ARDL approach to co-integration to determine the long run relationship among the variables. The F-Statistics tests the joint Null hypothesis that the coefficients of lagged level variables in equation (2) are zero. Table 2 reports the result of the calculated F-Statistics. The bound test evidence confirms the long run relationship for equation 2,4 and 5 with GDP, FDI and TO as the dependent variables. As in these cases, the calculated F statistics greater than the critical values of the upper level of the bound at 5 Percent level of significance for equations 2 4 and 5. We choose a maximum lag order of 3 for the conditional ARDL vector error correction model by using the Akaike information criteria (AIC). The calculated F-statistics are reported in table 2 when each variable is considered as a dependent variable (normalized) in the ARDL-OLS regressions.

After having the appropriate lag selection, we move to calculate F-statistics that are reported in table 2. When GDP is taken as dependent variable and Ex,IM,TO and FDI as independent variables, the F-statistic is 6.65 that is greater than the upper bounds (4.01) at 5 percent level of significant. So, we conclude that there is a long run association among the variables. We replace independent variable EX by making it dependent to check weather GDP,IM,TO and FDI will make long run association. Result shows that F-statistics 2.96 that is less than the upper bounds at 5 percent level of significant. So, we conclude that there is no long run association among the variables. Similarly, when we take (TO) as a dependent variable we fail to reject the null hypotheses of no cointegration as F-statistics found 3.69.

Table 2: Results from bound tests

Dependent variable	AIC lags	F-statistic	Decision
GDP *(GDP,EX,IM,FDI,TO)*	3	6.649471	Cointegration
EX (*GDP,EX,IM,FDI,TO*)	3	2.964135	No cointegration
IM *(GDP,EX,IM,FDI,TO)*	3	11.26410	cointegration
FDI *(GDP,EX,IM,FDI,TO)*	3	13.46698	cointegration
TO *(GDP,EX,IM,FDI,TO)*	3	3.689545	No cointegration
Lower-bound critical value at 5%		2.86	
Upper-bound critical value at 5%		4.01	

Lower and Upper-bound critical values are taken from Pesaran et al. (2001), Table CI(ii) Case II.
See tables A1-A5 Appendix. Source: Authors' calculation using EViews 9.

Also, there is a long run relationship amongst the variables when *IM* is the dependent variable because its F-statistic (11.26) is higher than the upper-bound critical value (4.01) at the 5 percent level of significance. Similarly, when we take FDI as a dependent variable we reject the null hypotheses as F-statistics found 13.47.

This implies that the null hypothesis of no cointegration among the variables in equation (3 and 5) is accepted. are reported in Table 2.

Table 3 report the estimation of long-run and Short-run elasticities results using the ARDL approach to cointegration. The short-run and long run for equation 2 are reported in Tables (3).

Table 3: Statistical output for long run and short run model

ARDL Cointegrating And Long Run Form
Dependent Variable: GDP
Selected Model: ARDL(3, 0, 4, 4, 3)
Sample: 1977 2012
Included observations: 32

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(GDP(-1))	0.036011	0.148910	0.241832	0.8127
D(GDP(-2))	-0.518248	0.155880	-3.324656	0.0055
D(FDI)	-0.098981	0.178778	-0.553656	0.5892
D(EX)	3.345704	0.259330	12.901351	0.0000
D(EX(-1))	-0.783064	0.797940	-0.981357	0.3443
D(EX(-2))	3.117782	0.599082	5.204265	0.0002
D(EX(-3))	1.012667	0.382806	2.645383	0.0202
D(IM)	1.660604	0.516919	3.212503	0.0068
D(IM(-1))	-2.151291	0.502382	-4.282180	0.0009
D(IM(-2))	-0.001575	0.489230	-0.003219	0.9975
D(IM(-3))	-0.897120	0.502982	-1.783604	0.0978
D(TO)	-416612.210285	112023.339727	-3.718977	0.0026
D(TO(-1))	-199716.111415	171879.820853	-1.161952	0.2661
D(TO(-2))	-458714.808251	202183.037207	-2.268810	0.0410
CointEq(-1)	-0.507808	0.100504	-5.052600	0.0002

Cointeq = GDP - (-0.1949*FDI -3.8662*EX + 9.1578*IM + 897867.9015*TO
+ 460.5937)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	-0.194919	0.349120	-0.558315	0.5861
EX	-3.866153	1.243704	-3.108579	0.0083
IM	9.157779	1.164813	7.862019	0.0000
TO	897867.901493	236531.969021	3.795968	0.0022

C	460.593719	34409.243145	0.013386	0.9895

Source: Authors' calculation using EViews 9.

From the table above we can see that: Our guidelines: If ECM (-1) negative and the p-value is less than 0.05, we can conclude that there is a short run. Therefore, ECM (-1) = -0.507 (Negative) and P-value=0.0000 Less than 0.05, meaning that there is a SR associationship. The coefficients of ECM terms present the speed of adjustment in the long-run due to a shock. The coefficients of ECM terms imply that 50.7% of the disequilibria in GDP of the previous year's shock adjust back to the long run equilibrium in the current year. The second part in table 3 is Long Run Coefficients

$$GDP = -0.1949*FDI - 3.8662*EX + 9.1578*IM + 897867.9015*TO + 460.5937$$

Here we can take each variable individually and test the significance as: First I talk about FDI. where p-value = 0.000 < 0.05, meaning that FDI negative coefficient and statistically not significant to explain the dependent variable GDP. Meaning that if FDI increase by 1 percent, this will lead GDP to decrease by the value of the coefficient 1.959, meaning that we fail to reject H_0 and accept the H_1 as hypothesized by H03. While Ex p-value < 0.05, meaning that EX negative coefficient and statistically significant to explain the dependent variable GDP. meaning that if EX increase by 1 percent this will lead GDP to decrease by the value of the coefficient 3.87, meaning that we have the evidence to reject H_0 and accept the H_2as hypothesized by H2.

While IM p-value < 0.05, meaning that we reject H_0, and accept H_1. meaning that IM has positive and statistically significant to explain the dependent variable GDP as hypothesized by H1. similarly, TO p-value=0.0022 < 0.05, meaning that we reject H_0, and accept H_1. meaning that TO has positive and statistically significant to explain the dependent variable GDP as hypothesized by H4.

To summarize we can say there is a long run association between the variables under study. as well as SR association.

5.3. Causality Analysis

The causality test results in Table 4 are as follows:

The main results are as follows: a) There is an evidence of two-way Granger causality from EX to FDI and weak two-way Granger causalities between GDP and FDI at 10 percent level of significant. b) There is an evidence of two-way strong Granger causality from GDP to IM and from IM to GDP. C) There is an evidence of one- way Granger causality from TO to Ex, IM and GDP.

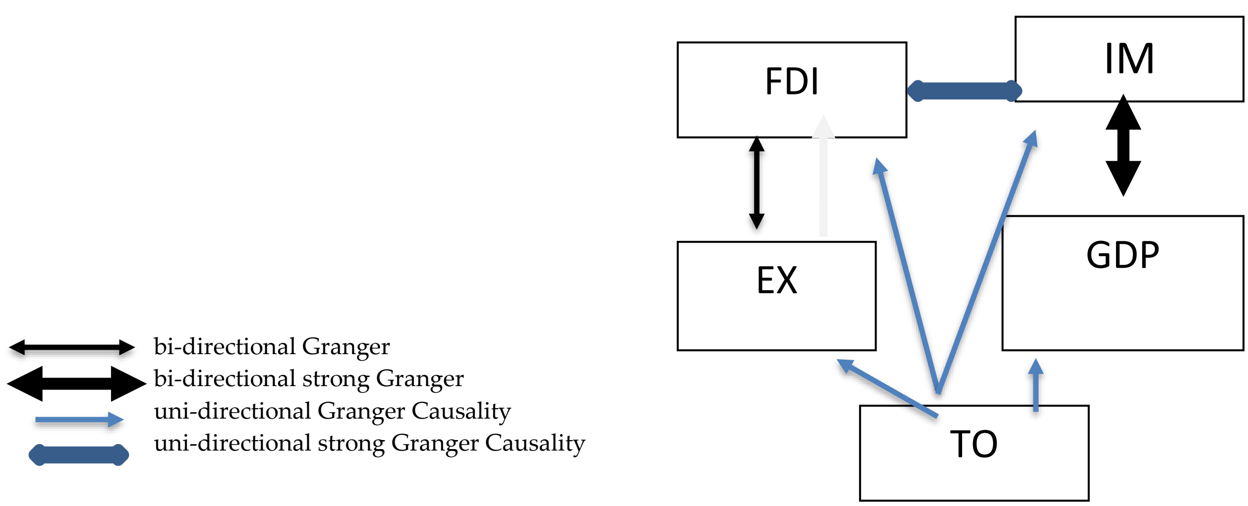
Table 4: Granger Causality Test Results

Pairwise Granger Causality Tests
Date: 06/09/18 Time: 16:45
Sample: 1977 2012
Lags: 3

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause GDP	33	2.38709	0.0919
GDP does not Granger Cause FDI		2.40784	0.0900
EX does not Granger Cause GDP	33	2.36392	0.0942
GDP does not Granger Cause EX		2.18969	0.1133
IM does not Granger Cause GDP	33	4.21664	0.0148
GDP does not Granger Cause IM		5.84214	0.0034
TO does not Granger Cause GDP	33	3.97340	0.0186
GDP does not Granger Cause TO		0.15014	0.9287
EX does not Granger Cause FDI	33	3.57077	0.0275
FDI does not Granger Cause EX		4.37436	0.0128
IM does not Granger Cause FDI	33	5.42363	0.0049
FDI does not Granger Cause IM		7.84963	0.0007
TO does not Granger Cause FDI	33	3.15406	0.0417
FDI does not Granger Cause TO		0.64560	0.5927
IM does not Granger Cause EX	33	1.95974	0.1448
EX does not Granger Cause IM		0.79467	0.5080
TO does not Granger Cause EX	33	3.63813	0.0258
EX does not Granger Cause TO		0.43543	0.7295
TO does not Granger Cause IM	33	3.50713	0.0293
IM does not Granger Cause TO		0.49373	0.6898

Source: Authors' calculation using EViews 9.

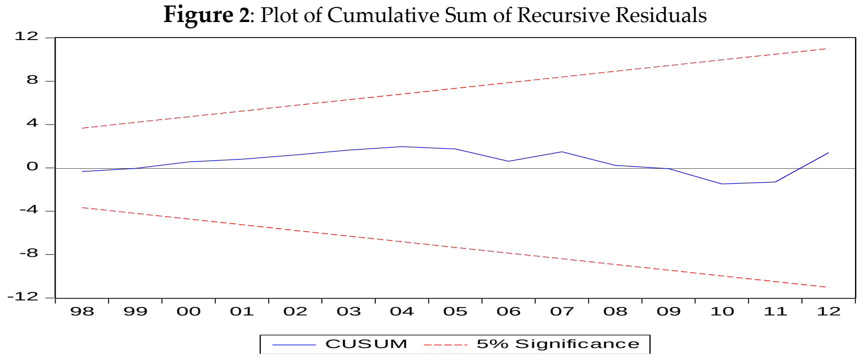
Figure 1: Ganger Causality Relationships



5.4. Stability Test

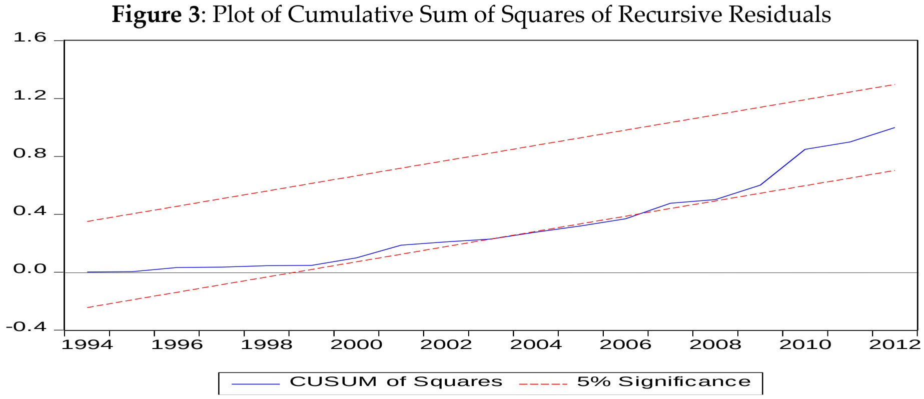
To test the stability of parameters, Cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMSQ) tests have been employed to investigate the stability of long and short run parameters. Pesaran et al. (2000, 2001) suggest that the stability of long and the short run estimate be verified using the CUSUM and CUSUMSQ tests. Figures 1 and 2 provide the plots for CUSUM and CUSUMSQ. These are between the critical bounds at the 5 percent level, this asserts the stability of short run and long run parameters.

Figure 2: Plot of Cumulative Sum of Recursive Residuals



The straight lines represent critical bonds at 5% significance level

Figure 3: Plot of Cumulative Sum of Squares of Recursive Residuals



The straight lines represent critical bonds at 5% significance level
Source: Eviews version 9.

5.5. Diagnostic Tests

Statistical diagnostic tests are applied to examine model specification and functional forms. As shown in Table 5, the diagnostic tests show that the model passed successfully the tests of serial correlation, functional form, normality and heteroscedasticity. The empirical evidence shows that no serial correlation exists, the functional form of the model is well specified, the residual term is normally distributed, autoregressive conditional heteroskedasticity,.and the null of homoscedasticity test ARCH is not rejected.

Table 5. Results of diagnostic tests

Model (1) ARDL (3,1,3,3)			
Null Hypotheses	**Statistics**	**sig**	**Decision**
There is no serial correlation in the residual	$\chi2 = 4.226813$	0.2380	fail to reject H_0
There is no autoregressive conditional heteroscedasticity	$\chi2 = 17.69008$	0.4762	fail to reject H_0
Normal distribution	JB=0.1007	0.950	fail to reject H_0
Heteroskedasticity Test: ARCH	$\chi2= 6.341799$	0.0961	fail to reject H_0
Ramsey RESET Test	$\chi2= 0.053658$	0.9827	fail to reject H_0

Source: Authors' calculation using EViews 9.

See tables A7-A8 and Fig.A1 Appendix

6. CONCLUSIONS AND POLICY IMPLICATIONS

The Paper investigates the effect of Exports, Imports, FDI *and* TO on Economic Growth in the United Arab Emirates using data for the period 1977 to 2012. Overall, many studies appear to favor the conventional assumption that FDI plays a vital role in economic growth of any country. The past decades found it's significant and positive impact on growth. The ARDL bounds testing approach to cointegration has been implemented for establishing the long run and the ECM based Granger causality test used in this paper have revealed that there is a long-run relationship and short-run causality between export, import, FDI,TO and economic. Stationarity of the series has been examined by the ADF and PP unit root test. All series difference stationary at the first difference.

The main results are as follows: a) There is an evidence of two-way Granger causality from EX to FDI and weak two-way Granger causalities between GDP and FDI at 10 percent level of significant. b) There is an evidence of two-way strong Granger causality from GDP to IM and from IM to GDP. C) There is an evidence of one- way Granger causality from TO to Ex, IM and GDP.

The results show that there is cointegration among the variables specified in the model when GDP, IM and FDI are the dependent variable. Export, import and TO are independent variables and promote GDP, IM and FDI in UAE in the long run. In short, these finding describes that UAE Economic Growth capacity depends upon its ability to attract FDI and degree of FDI impact on GDP depends upon its trade policy regime that is Export Promotion policy.

The diagnostic tests are applied to examine model specification and functional forms.

The empirical evidence shows that no serial correlation exists, the functional form of the model is well specified, the residual term is normally distributed, autoregressive conditional heteroskedasticity,.and the null of homoscedasticity test ARCH is not rejected.

the stability test suggests that the stability of long and the short run estimate be verified using the CUSUM and CUSUMSQ tests, this asserts the stability of short run and long run parameters.

The above findings show that the relation between Exports, Imports, TO, FDI and Economic Growth is varying form economy to economy but most of the studies indicate that the conventional assumption that FDI plays a vital role in economic growth of any country. The past decades found it's significant and positive impact on growth.

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