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Relationship Between GDP And GDS In The UAE: ARDL Bound Testing Approach

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ABSTRACT
This study **explores the relationship between Gross Domestic Product (GDP) and Gross Domestic Saving (GDS) in United Arab Emirates (AUE covering the period 1980 – 2013, using the autoregressive distribution lag (ARDL) cointegration framework. Granger Causality test were employed in the empirical analysis. Using Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP) stationarity test, the variable proved to be integrated of the order one 1(1) at first difference. *The results based on the bounds testing procedure confirm that a long-run relationship between GDP and GDS exist.* The results indicate that domestic savings is significantly positively related to growth in UAE These results are consistent with the findings of Mphuka (2010), Abu (2010), Nurudeen (2010) and Mohan (2006). The econometric evidence that LGDS causes LGDP and there is evidence that saving is the driver of economic growth in UAE. Considering the findings mentioned above, we make the following recommendations; Measures to increase growth and economic diversification in UAE should aim to promotes domestic savings and increases domestic savings overall. Fiscal and Monetary policies that allow for increased savings and that enhances domestic savings is vital. The study recommends the need for development of financial instruments to encourage domestic savings.**

Keywords: Savings; Economic Growth; Bounds; Cointegration; UAE.

INTRODUCTION

There exists a rich literature that examine the relationship between Gross Domestic savings (GDS) and economic growth (GDP)in both single and multi-country contexts for developed and developing countries and employing a variety of estimation techniques. The findings for the most part is varied based on the country under study, technique used and years considered. The two avenues followed in the relationship are whether higher savings induce higher growth and whether economic growth leads savings. The view that savings is essential for growth is supported by the growth models of Harrod (1939)[1], Domer (1946) [2] and Solow (1956) [3] and more empirical works of Lean and Song (2009)[4], Sheggu (2009) [5]. The alternative view that economic growth leads savings is supported by findings from Sinha and Sinha (1998) [6] Saltz (1999) [7] and Anoruo and Ahmad (2001) [8]. Despite the policy significance of determining and quantifying the importance of Gross Domestic savings in the economic growth process, there is still a paucity of empirical research analyzing the relationship between Gross Domestic savings and economic growth. This is because the relationship may differ depending on the country under study and because of mixed results from empirical studies. The aim of this study is to extend this debate to a country like United Arab Emirates (UAE) and ascertain the nature of the relationship between Gross Domestic savings and economic growth and thus suggest appropriate economic growth policies. To address this issue, we draw on recent Gross Domestic savings- economic growth modelling literature and examine the Gross Domestic savings and economic growth relationship in UAE using data from 1980- 2013. This study utilizes an ARDL bounds testing approach to cointegration to determine both the long run and short run impacts of Gross Domestic savings on economic growth.

In the empirical literature, the issue of the relationship between Gross Domestic savings (GDS) and economic growth (GDP has attracted a lot of academic interest from different parts of the world (Abu Al-Foul, 2010; [9]; Masih & Peters, 2010 [10]; Tang & Tan, 2014) [11]and central to this relationship is the issue of causation. While some studies have reported causality running from saving to growth (Alguacil et al., 2004 [12]; Anoruo & Ahmad, 2001[13]; Olajide, 2010 [14]; At the same time, we have studies that report bidirectional relationship (AbuAl-Foul, 2010 [9]; Zeren & Ekrem, 2013) [15]. Meanwhile, the existing studies continue to yield conflicts and inconclusiveness depending on the methodology, measure of variables and environments.

To our knowledge, the number of the studies suggesting the relationship between GDP and GDS is quite limited. Our study aims to eliminate the deficiency of interest even partially. In this context, in our study, using the data between the periods of 1980 and 2013, the relationships between GDP and GDS were aimed to be investigates the long-run and short run relationship between saving and economic growth using the recently developed ARDL method. suggested by Pesaran et al. (2001) [16].

The rest of the article is structured as follows: The [2] a review of available literature is undertaken. while [3] addresses the issues relating to data requirement, sources and methodology Model Specification applied in this paper will be introduced and presents a stationarity test, while the empirical results of using the ARDL modeling approach in this study are presented in section [4].. The final section [5] summarizes the important findings and brings out some policy implications.

LITRETURE REVUEWS

Several studies have been conducted so far to study the relationship between savings and economic growth in many developing countries, but most of them are connected to Latin American, Sub-Saharan and East Asian countries.

(Adeleke AM 2014) revealed that there is bi-directional causality exists between Savings and Economic Growth in Nigeria [17]. (Robson Mandishekwa,2014) [18] studied the casual relationship between investment and economic growth based on Zimbabwe, but the findings revealed that there is no causality from any direction between two variables. However, the study does not deny any other relationship between the investment, savings and economic Growth.

(Samantha and Patra,2014) argued that understanding the behavior of savings has critical role to sustain higher economic growth. For this reason, they analyzed the determinants of household saving in India from the period 1971-1972 to 2011-2012 by using the ARDL framework. The empirical results exposed that the GDP has positive effect on household saving and the spiral interlinkages between saving and economic growth [19].

(Jangili ,2011) found that saving and investment led to economic growth, but the opposite relationship was not found. This suggests that the classical viewpoint was prevailing in India. It also implies that higher saving leads to higher investment and, consequently, higher economic growth. The study also reported long-run relationship among saving, investment and economic growth in India. [20]

(Mphuka,2010) investigated the causality between savings and economic growth in Zambia using bivariate vector auto- regression (VAR) estimation procedure. The test indicated that economic growth granger cause savings, even though the article argues that savings may influence the economic growth indirectly, because the savings will cause to accumulate capital and to inject the technologies from developed countries, in fact the technologies are the key to the economic growth. [21]

(Abu Al-Foul,2010) studied the relationship between savings and economic growth in Nigeria using Granger Causality techniques and Co-Integration for the period 1970 to 2007. His results indicate that the variables are co-integrated in such a manner that one can conclude there is a long-run equilibrium relationship between them and that causality is from economic growth to savings [9].

(Nurudeen,2010) found out causality run from economic growth to saving, implying that economic growth proceeded and Granger causes saving [22].

(Dipendra,2009) studied the relation between savings and economic growth in India. The goal of this study was to check the long-run relationship between GDP and savings. An Engel-Granger Co-Integrated method was used, and the results showed that gross savings of the private sector have a bigger impact on GDP than gross domestic savings [23].

(Hemmi et al.,2007) studied the relationship between precautionary savings and economic growth. They used an Autoregressive Conditional Heteroscedastic (ARCH) model with annual data from 1955 to 1990. They concluded that increased savings can have a favorable impact on sustainable growth. They also found that stronger shocks on precautionary savings result in the higher levels of savings as a whole [24]

(Mohan,2006) examined the relationship between savings and economic growth for high, middle and low income countries utilising annual data from 1960-200.The results indicated that causality run from economic growth to savings. The findings also indicate that in countries with a forced savings policy like Singapore, causality runs from savings to economic growth [25]. Similar results are observed by (Sheggu,2009) who models the relationship between savings and economic growth in Ethiopia from 1960-2003 in a vector autoregressive model (VAR) model. Sheggu finds that faster growth rates in the gross domestic savings caused higher growth rates in real GDP in Ethiopia. Conversely [26], Saltz ,1999) uses Granger causality in an error correction framework to investigate the causal relationship between savings and growth in the third world countries and finds that higher growth leads to faster growth in the savings rate. The result suggests that in addition to promoting higher savings, efforts promoting economic growth are also essential [7]

The relevant literature generated a mixed view regarding the relationship between savings and Economic growth. Some of the researches explain that savings cause to economic growth; however, some other certain works argue that economic growth granger causes savings. Different countries also have different effect of saving; income source of a country does play an important role in determining the direction of causality. In most developing countries, the economic growth Granger causes the private saving, where as in most developed countries the private savings leads to economic growth. However, all the researches related to capital formation, savings, and economic growth agreed that savings has positive impact on economic growth, it can either be direct or an indirect way.

Based on the results of recent empirical studies on the relationship between the GDP and GDS, and to ensure an adequate examination of the UAE evidence, our study will have to answer four salient questions regarding the impact of GDS on GDP in UAE covering the period 1980 – 2013. Which are:

- Does an association exist between GDP and GDS in UAE? If so, is it positively or negatively related to GDP?
- Is the impact of the GDS on GDP direct or indirect?
- What is the direction of association between GDP and GDS?

The direction of association between GDP and GDS for UAE n may consist of four possible alternatives. These are:

- No association.
- GDS affects GDP and vise-versa.

DATA AND METHODOLOGY

Data

Data used in this paper are annual figures covering the period 1980 – 2013 and the variables of the study are gross domestic product (GDP) and Gross Domestic Saving (GDS). Data were gathered from World Bank Development Indicators (World Bank, 2014) [27].

Methodology

To allow for causality and dynamics and given that not all of our time-series may be stationary to the same order (some are I(0) while others are I(1)), the cointegration technique suggested by Pesaran et al. (2001), the autoregressive distributed lag model (ARDL) procedure will be used. The approach can be implemented regardless of whether the variables are integrated of order (1) or (0) and can be applied to small finite samples. Considering the existing literature, theories of economic growth, and diagnostic tests, the long run relationship between economic growth and gross domestic saving can be specified as:

$$GDP_t=\alpha_0+\beta_1\ GDS_t++\varepsilon_{1t} \quad (1)$$

$$GDS_t = \alpha_1 +\beta_2\ GDP_t++\varepsilon_{2t} \quad (2)$$

Where GDP is Gross Domestic Product, GDS is Gross Domestic Saving),ε_i (i=1,2) is a stationary error term, αi (i-1,2) stand for intercept terms, βi (i=1,2) All variables are expressed in natural logarithm.

To examine long run relation among the series we implement ARDL bounds testing approach to cointegration developed by (Pesaran et al., 2001) [16]. ARDL Cointegration Approach Several methods are available for conducting cointegration tests. Commonly used methods include the residual based (Engle-Granger,1987) [28] test, Johansen (1988) [29], and (Johansen-Juselius,1990) [30]. The proposed autoregressive distributed lag (ARDL) approach, developed by (Pesaran and Shin,1995) [31], (Pesaran et al.,1996) [32] and (Pesaran et al.,2001) [16] has become popular in recent years. The ARDL has several advantages over other techniques of cointegration: it can be applied irrespective of whether the underlying variables are I(0), or a combination of both . The model takes a sufficient number of lags to capture the data generating process in general to specific modeling frameworks. The error correction model (ECM) can be derived from ARDL through a simple linear transformation, which integrates short run adjustments with long run equilibrium without losing long run information. The small sample properties of the ARDL approach are far superior to those of the Johensen and Juselius cointegration technique. endogeneity is less of a problem in the ARDL technique because it is free of residual correlation. As (Pesaran and Shin,1999) [33] demonstrate, the appropriate lags in the ARDL model are corrected for both serial correlation and endogeneity problems. The ARDL method can distinguish between dependent and explanatory variables. Thus, the ARDL approach avoids the use of Augemented Dicky Fuller unit root tests and autocorrelation function tests for testing the order of integration.

The asymptotic distributions of the F-statistics are non-standard under the null hypothesis of no cointegration relationship between the examined variables, irrespective of whether the variables are purely I (0) or I (1) , or mutually cointegrated. Two sets of asymptotic critical values are provided by (Pesaran et al.,2001) [16]. The first set assumes that all variables are I (0) while the second set assumes that all variables are I (1). The null hypothesis of no cointegration will be rejected if the calculated F-statistic is greater than the upper bound critical value. If the computed F-statistics is less than the lower bound critical value, then we cannot reject the null of no cointegration. Finally, the result is inconclusive if the computed F-statistic falls within the lower and upper bound critical values. The ARDL modeling approach involves estimating the following error correction models for GDS and GDP given in equation 1and 2 (considering each variable as a dependent variable) as follows:

$$DLGDP_t = \alpha o + \sum_{i=1}^{n} \beta 1\ DLGDP_{t-1} + \sum_{i=1}^{n} \beta 2\ DLGDS_{t-1} + \delta 1\ LGDP_{t-1} + \delta 2 LGDS_{t-1} + \varepsilon_{1t} \quad (3)$$

$$DLGDS_t = \alpha 1 + \sum_{i=1}^{n} \beta 3\ DLGDP_{t-1} + \sum_{i=1}^{n} \beta 4\ DLGDS_{t-1} + \delta 3\ LGDP_{t-1} + \delta 4 LGDS_{t-1} + \varepsilon_{2t} \quad (4)$$

Here D denotes first difference, t-1 denotes one-period lag,αi(i=1,2) shows constants,$\sum_{i=1}^{n}$ denotes the sum from i = 1,2,3, … n; and n signifies the maximum lag length.The coefficients δi where (i = 1, 2,3,4) are the corresponding long-run multipliers, while the parameters βi(i=1,2,3,4) are the short-run dynamic coefficients of the underlying ARDL model. In equations (3) and (4), D is the difference operator i.e. DGDP=GDP-GDP(-1),DGDS=GDS-GDS(-1), also GDP and GDS lagged one period operator is GDPt-1=GDP(-1) and GDSt-1 =GDS(-1), and L denotes the log operator where DLGDPt = DlogGDPt and DLGDSt = DlogGDPt. Also DLGDPt-1 =LGDP- LGDP (-1) and DLGDSt-1 =DLogGDS(-1),and $\varepsilon 1t$ and $\varepsilon 2t$ are serially independent random errors .

Again, in equations (3) and (4), the F-test is used for investigating one or more long-run relationships. In the case of one or more long-run relationships, the F-test indicates which variable should be normalized. In equation (3), when GDP is the dependent variable, the null hypothesis and the alternative hypothesis of co-integration is: H0: $\delta 1 = \delta 2 = 0$ and H1: $\delta 1 \neq = \delta 2 \neq 0$. On the other hand, in equation (4), when GDS is the dependent variable, the null hypothesis of no co-integration is H0: $\delta 3 = \delta 4 = 0$ and the alternative hypothesis of co-integration is H1: $\delta 3 \neq = \delta 4 \neq 0$.

In the case of co-integration based on the bounds test, the Granger causality tests should be done under vector error correction model (VECM) when the variables under consideration are co-integrated. By doing so, the short-run deviations of series from their long-run equilibrium path are also captured by including an error correction term (Narayan and Smyth, 2004). Therefore, error correction models of co-integration can be specified as follows:

$$DLGDPt = \alpha 2 + \sum_{i=1}^{n} \beta 1 DLGDPt\text{-}1 + \sum_{i=1}^{n} \beta 2\ DLGDSt\text{-}1 + \delta 1 EC_{t-1} - + \varepsilon 1t \quad (5)$$

$$DLGDS_t = \alpha 3 + \sum_{i=1}^{n} \beta 3\ DLGDP_{t-1} + \sum_{i=1}^{n} \beta 4\ DLGDS_{t-1} + \delta 2EC_{t-2} -+ \varepsilon 2t \quad (6)$$

In equations (5) and (6), D denotes the difference operator and L denotes the log operator where $DLlag1GDP_t = DLGDP_{t-1}$. EC_{t-1} is the lagged error correction term derived from the long-run co-integration model. Finally, ε_{1t} and ε_{2t} are serially independent random errors with mean zero and finite covariance matrix. Finally, according to the VECM for causality tests, having statistically significant F and t ratios for EC_{t-1} and EC_{t-2} in equations (5) and (6) respectively would be enough condition to have causation from GDS to GDP and from GDP to GDS respectively.

RESULTS AND DISCUSSIONS

Interpretation of Augmented Dickey-Fuller Unit Root Test Results:

Before performing the ARDL bound test, it is essential to check for the stationarity of the data series used.. This is important to obtaining an unbiased estimation from the Granger causality tests, and because the bound test is used only when variables are 1(0) or 1(1). The only reason is to make sure that variables is not stationary at I(2),otherwise, no need to test stationarity in ARDL model The Augmented Dickey-Fuller (ADF) test was applied to test for the existence of unit root tests. Both the (Augmented Dickey–Fuller (ADF), and Phillips–Perron (PP),1988) [34] unit-root tests have been employed for that purpose and the results are summarized in Tables 1. Therefore, the ADF test results show that both variables GDP and GDS are stationary in their first difference. In addition, the Phillips-Perron test results confirm the results that both variables GDP and GDS are stationary in their first difference. Thus, none of the series are not cointegrated or order higher than one, and they can be used in the ARDL bound Test method. The approach provides us with 95 percent critical bounds for F and W (Wald) statistics. And also, for conducting Granger causality test. According Chigusiwa *et* al.(2011), in presence of 1(2) variables the computed F-statistics of the bounds test are rendered invalid because they are based on the assumption that the variables are 1(0) or 1(1) or mutually cointegrated

Table 1: Results of Augemented Dicky Fuller and PP unit root tests

	Variable in levels		Variable at first differences		Order of integration
Variable —	ADF Statistic	PP Statistic	ADF Statistic	PP Statistic	
LGDP	-**1**.332 (0.999)	1.272 (0.998)***	-4.748 (0.0006)***	-4.754 (0.000)***	I(1)
LGDS	3.582 (0.010)***	-3.538 (0.013) ***	- -6.198 (0.000)***	-8.464 (0.000)***	I(1)

Note: Values in parenthesis are p-values. *** indicates significance at 1 percent

Source: Author calculation using EVIEWS software 9.

Granger Causality Test

Interpretation of Granger Causality Test Results

If the cointegration test results reveal that the variables are cointegrated, we use the Vector Error Correction (VEC) model estimation as in equations 4 and 5. However, but if the variables are not cointegrated we use Vector Autoregressive (VAR) model in the first difference in the estimation given that both variables are I (1). If the variables are cointegrated we use VER model to examine the Granger causality between GDP and GDS.

Results of short run Granger causality tests are shown in Table 2. In the short-run, the F-statistics on the explanatory variables suggest that at the 1% level there is unidirectional Granger causality between LGDS and LGDP. Similarly, there is weak Granger causality between LGDP and ECM as well as between LGDS and ECM at 10% level of significance. There is strong long run Granger causality from ECM to LGDP at 1% level.

Table 2: Pairwise Granger Causality Tests

Pairwise Granger Causality Tests
Date: 06/14/18 Time: 15:05
Sample: 1980 2013
Lags: 1

Null Hypothesis:	Obs	F-Statistic	Prob.
LGDS does not Granger Cause LGDP	33	8.55908	0.0065
LGDP does not Granger Cause LGDS		0.53496	0.4702
ECM does not Granger Cause LGDP	33	8.55908	0.0065
LGDP does not Granger Cause ECM		2.96466	0.0954
ECM does not Granger Cause LGDS	33	0.53496	0.4702
LGDS does not Granger Cause ECM		2.96466	0.0954

Source: Author calculation using EVIEWS software 9

Selection Of Lag Length

A general model of ARDL is first performed with the lag length to select the lag length of the VAR model the selection criteria is used, Sequential Modified Likelihood Ratio (LR), Final Prediction Error (FPE), Akaike Information Criterion (AIC), Schwarz Information Criterion (SIC) and Hannan-Quinn Information Criterion (HQ) are employed. It is clear from Table 3 that LR, FPE, AIC, SC, HQ and HQ statistics have chosen lag 1for each endogenous variable in their autoregressive and distributed lag structures in the estimable VAR model. Therefore, lag of 1 is used for estimation purposes.

Table 3:: VAR Lag Order Selection Criteria

VAR Lag Order Selection Criteria
Endogenous variables: LGDP LGDS
Exogenous variables: C
Sample: 1980 2013
Included observations: 31

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-19.33021	NA	0.013574	1.376143	1.468658	1.406300
1	51.76152	128.4238*	0.000179*	-2.952356*	-2.674810*	-2.861883*
2	54.07715	3.884288	0.000201	-2.843687	-2.381111	-2.692899
3	58.63988	7.064867	0.000196	-2.879992	-2.232385	-2.668888

** indicates lag order selected by the criterion*
LR: sequential modified LR test statistic (each test at 5% level)
FPE: Final prediction error
AIC: Akaike information criterion
SC: Schwarz information criterion
HQ: Hannan-Quinn information criterion

VECM Stability Test

Figure 1 is a graphical representation of CUSUM and CUSUMSQ plots which are applied to the VECM model. CUSUM plots do not cross critical bounds; accordingly, the null hypothesis would be rejected at the 5% significant level, indicating the stability of VECM parameters. While CUSUMSQ plots do cross critical bounds with slight deviation, we can conclude that our model is stable or stationary.

CUSUM and CUSUM of squares for equation 1

Figure 1. Plot of CUSUM of Recursive Residuals

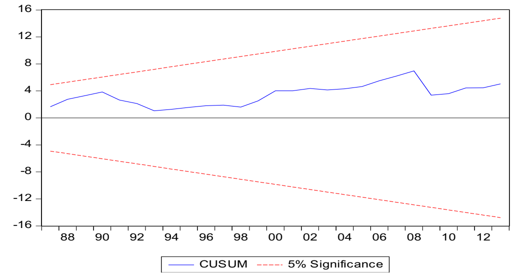
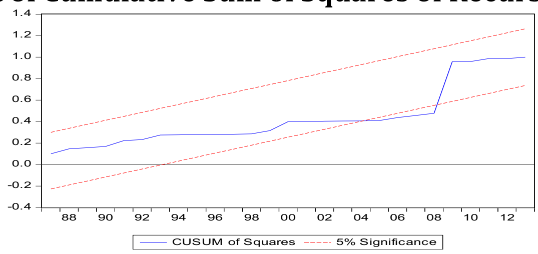


Figure 2. Plot of Cumulative Sum of Squares of Recursive Residuals



Note: The straight lines represent critical bounds at 5% significance level.

Source: Author calculation using EVIEWS software 9

In order to establish the validity of the estimates, a number of diagnostic tests including the Jarque-Bera normality test statistics of 34.9506 with the probability value of (0.0000), the Breusch-Godfrey serial correlation LM test statistics of 1.996219 with the probability value of (0.1309 and ARCH test for heteroscedasticity of 0.004547 with the probability value of (0.9444)are carried out.

Overall, the Results indicate the soundness of the equations; correct specification of the model and the absence of serial correlation and heteroscedasticity, but the residuals are not normally distributed, and this is the only problem in our model. To determine the stability of the parameters of the estimated equation, the CUSUM and CUSUM of squares test is carried out. From the results the model is stable. The next step is to ascertain the presence of a long run relationship amongst the variables. To do this we employ the bounds test, the results of which are presented in the table 4 below:

Table 4: Bounds Test Results

Dependent variable	Function		F-Statistic
DLGDP	DLGDP, DLGDS		5.385579**
DLGDS	DGDS, DLGDP		3.175314
Asymptotic critical value	Significance Level		
	5%	10%	
Lower bound	4.94*	4.04**	
Upper bound	5.73*	4.78**	

Notes: DLGDP is the first difference lag of GDP and DLGDS is the first difference lag of GDS. The critical values for the lower I (0) and upper I (1) bounds are taken from Pesaran et al. (2001), Appendix: Table CI (iii) Case III: (unrestricted intercept and no trend)). *, ** Significant at 5% and 10% significance levels, respectively

Source: Author calculation using EVIEWS software 9

To investigate the presence of long-run relationships among the variables, testing of the bound under Pesaran, et al. (2001) procedure is used. Given a relatively small sample size (33) and the use of annual data, a lag length of 1 is used in the bounds test. The results of the bound test are given in Table 3. Based on Table 4 above, the results suggest the existence of cointegration, when LGDP is the dependent variable as the computed F= 5.85579is greater than the upper bound critical value at 10% level. Meaning that we can reject H_N and accept H_A, meaning that the two variables DLGDP and DLGDS have long run association ship over the period of 1980-2013 in UAE. However, there is no evidence of cointegration when DLGDS is taken as dependent variable as the computed F= 3.175314 is lower than the lower bound critical value at 5% level. In other words, these results suggest that DLGDS and DLGDP have no long run association ship when LGDS is a dependent variable. These results is consistent with the findings of (Mphuka,2010)[21], (Abu Al-Foul,2010) [9], (Nurudeen,2010) [22] and (Mohan,2006) 25].The next stage of the procedure would be to estimate the coefficients of the long-run relations and the associated error correction model (ECM) using the ARDL approach. The appropriate lags on variables is automatically selected using Schwartz Bayesian Criterion (SBC) these tests, and turned out to be the ARDL (2, 3). The long-run estimated coefficients are shown in the Table 5. The results show that LGDS does not contribute to economic growth significantly. It is concluded based on our findings that the coefficient of LGDS positive and statistically not significant, meaning that if LGDS increase or decrease by 1 percent LGDP increase (decreases) economic growth just by 24.11 percent. Indeed, the size of coefficient is big and insignificant. The effect of LGDS in difference one period on economic growth is positive and statistically significant at 5 percent and 1 per cent increase in LGDS on economic growth contributes economic growth by 30.41 percent.

Table 5: Short-run and long-run relationships

ARDL Cointegrating And Long Run Form
Dependent Variable: LGDP
Selected Model: ARDL(2, 3)
Sample: 1980 2013
Included observations: 31

Cointegrating Form

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP(-1))	-0.284086	0.199029	-1.427359	0.1664
D(LGDS)	0.304144	0.141227	2.153590	0.0415
D(LGDS(-1))	0.256140	0.157969	1.621458	0.1180
D(LGDS(-2))	0.232367	0.138298	1.680187	0.1059
CointEq(-1)	0.022968	0.023804	0.964873	0.3442

Cointeq = LGDP - (24.1107*LGDS -82.4927)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDS	24.110694	25.358554	0.950791	0.3512
C	-82.492748	91.177557	-0.904748	0.3746

Table 5: Short-run and long-run relationships

ARDL Cointegrating And Long Run Form
Dependent Variable: LGDS
Selected Model: ARDL(1, 3)
Sample: 1980 2013
Included observations: 31

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LGDP)	0.316253	0.238827	1.324191	0.1974
D(LGDP(-1))	0.404169	0.292539	1.381589	0.1793
D(LGDP(-2))	-0.397171	0.208244	-1.907234	0.0680
CointEq(-1)	-0.467823	0.192389	-2.431654	0.0225

Cointeq = LGDS - (0.0876*LGDP + 3.0470)

Long Run Coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LGDP	0.087600	0.074596	1.174335	0.2513
C	3.047007	0.318537	9.565640	0.0000

Source: Author calculation using EVIEWS software 9

Table 6 shows that the result of ECM of selected ARDL (2,3) When LGDP as a dependent variable the ECM (-1) = 0.02296 (positive) and P-value=0.3442 greater than 0.05, meaning that there is no SR association ship. The coefficients of ECM terms present the speed of adjustment in the long-run due to a shock is not effective. The results of ECM of selected ARDL (1,3) were analyzed in Table 6. The estimated value of error correction coefficient was -0. 467823; which was significant at p=0.0225 and showed negative sign. It established the association between LGDS and independent variables of LGDP. The calculated value of ECM recommended the rate of amendment of the long-term disequilibrium due to short-term interruption of the preceding year.

CONCLUSION AND POLICY IMPLICATIONS

This study examines the relationship between Gross Domestic Product (GDP) and Gross Domestic Saving (GDS) in United Arab Emirates (AUE), using the autoregressive distributed lag (ARDL) cointegration framework. Prior to the Cointegration test, we tested for stationarity of the variables using Augmented Dickey-Fuller (ADF) and Phillip-Perron (PP). The variable proved to be integrated of the order one 1(1) at first difference. The ARDL cointegration approach was employed to determine the long-run relationship of LGDS and LGDP. The F-statistics indicate that the null of no cointegration cannot be rejected only when GDP is the dependent variable. We also estimate the long-run and short-run between LGDS and LGDP growth which brings out the conclusions that LGDP and LGDS have long run association ship when LGDP is a dependent variable and have no long run association ship when LGDS is a dependent variable. These results are consistent with the findings of [21],[9], [22] and [25].

These results suggest that the econometric evidence that LGDS causes LGDP and there is evidence that saving is the driver of economic growth in UAE. Similarly, there is strong long run Granger causality from ECM to LGDP at 1% level. Our results also reveal that after incorporating the CUSUM and CUSUMSQ test results show that the Modulus of all roots are less than unity and lie within the unit circle except of CUSUMSQ test results show slight deviation from unity. Accordingly, we can conclude that our model is stable or stationary between 1980 and 2012. Also, the study showed a positive and not significant error correction term when LGDS dependent variable which implies the adjustment process to restore equilibrium is not effective. While, there is negative (-0.467823) and significant error correction term (0.0225) which less than 5 percent level of significance. Which implies the adjustment process to restore equilibrium in the long run by 46.78 percent. While the result of ECM of selected ARDL (2,3) When LGDP as a dependent variable the ECM (-1) = 0.02296 (positive) and P-value=0.3442 greater than 0.05, meaning that there is no SR association ship. The coefficients of ECM terms present the speed of adjustment in the long-run due to a shock is not effective. Considering the findings mentioned above, we make the following recommendations; Measures to increase growth and economic diversification in UAE should aim to promotes domestic savings and increases domestic savings overall. Fiscal and Monetary policies that allow for increased savings and that enhances domestic savings is vital. The study recommends the need for development of financial instruments to encourage domestic savings. Moreover, if domestic savings are invested efficiently and are therefore an important factor of economic growth, the main objective of national economic policy should be to encourage the people to save. In addition, national economic authorities should create appropriate conditions for the reallocation of national resources from traditional (non-growth) sectors to the so-called modern (growth-led) sectors of the economy.

The present study like the existing studies on the debate, therefore, suggests that the relationship between LGDP and LGDS is country-specific even among the fastest growing economies. Each country should, therefore, set up policies individually to achieve either of the macroeconomic variables. However, the existence of a long- run relationship between the variables is general among the countries.

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