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Estimating the Threshold Level of Public Expenditure and Fiscal Deficit in the United Arab Emirates (UAE): Evidence from Kuznets Curve Hypothesis

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ABSTRACT

This study estimates the threshold level of the relationship between fiscal deficit and public expenditure in the United Arab Emirates (UAE) based on the public expenditure Kuznets curve (PEKC) hypothesis during the 1975-2020 period. Employing the autoregressive distributed lag (ARDL) bound testing approach, the results indicate the existence of an inverted U-shaped PECK. In other words, public expenditure-fiscal deficit relationship exhibits an inverted U-shaped in the long-run, feature with public expenditure expanding in the early phases of rising fiscal deficit, and falling in the latter phases. Using the quadratic specification, the threshold of 22.45 percent is obtained for fiscal deficit (as a share of the GDP), and Dh. 6.583 billion for public expenditure. Moreover, the results illustrate that oil price, outflow of money, FDI outflow and interest rate are other important determinants of public expenditure in the country. Based on this evidence, policies aimed at reducing fiscal deficit through rationalisation of spending and prioritising of investment in human capital development are encouraged.

INTRODUCTION

In the conduct of fiscal and monetary policies, fiscal deficit and public expenditure are crucial. Perhaps, John Maynard Keynes was the first economist to advocate for deficit-financed expenditure during economic downturn to raise aggregate demand, savings, investment and production (Orji, Onyeze & Edeh, 2014). However, the linkage of fiscal deficit to public expenditure growth is credited to Buchanan and Wagner (1977). They argued that beyond just raising output and its components, consumption and investment, fiscal deficits would often produce higher levels of public expenditure. The premise of this proposition is that public deficits reduce the perceived price of publicly provided goods and services to citizens, who, in response increase their demand for the goods and services, and thus expansion in public expenditure levels.

Over time, public expenditure in the United Arab Emirate (UAE)–a young confederation of seven emirates: Abu Dhabi, Ajman, Dubai, Fujairah, Ras Al Khaimah, Sharjah and Umm Al Quwain–has been expanding significantly (Mestareehih, 2017; Santos & Shukurov, 2015). Though, as an oil-dependent country, the expansion is due to the huge inflow of oil wealth. However, due to the fluctuation in oil price and the meagre tax revenue inflow, the increase in public expenditure often outpace the available resources, thus giving rise to persistent and rapid increase in fiscal deficit (Federal Competiveness and Statistical Authority [FSCA], 2020). For instance, between 1975 and 2020, statistics indicate that, whereas public expenditure (as a percentage of GDP) maintained an upwards trend, albeit fairly unstable. However, the overall fiscal balance was in deficits in thirty-three years; specifically, in 1982-2004, 2009-2017, and 2020 (see Figure 1).

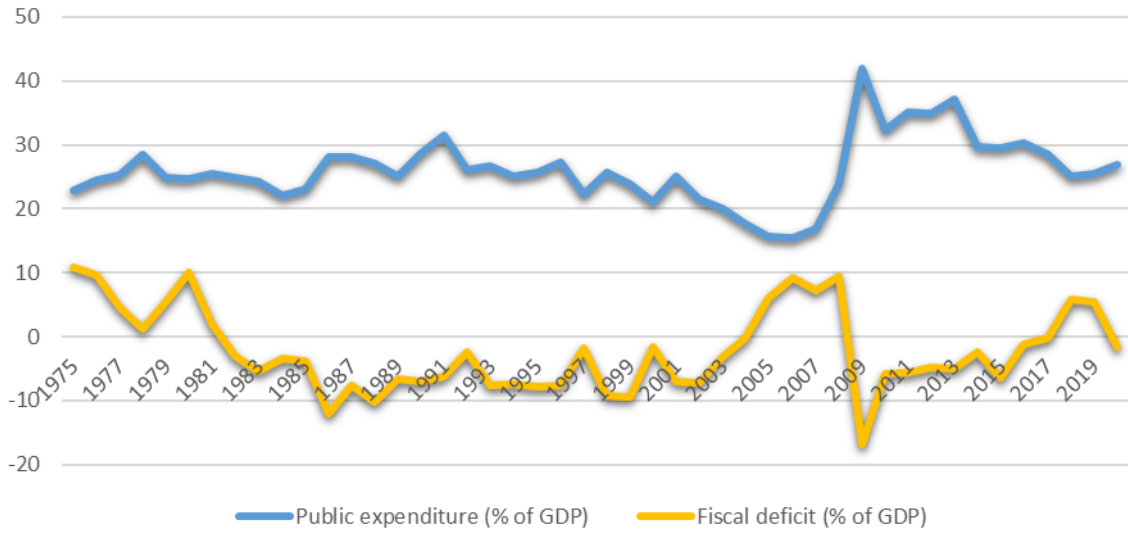

Figure 1. Plots of UAE's public expenditure and fiscal deficits in UAE:1975-2020

Source: FCSA and CBUAE annual reports, 2020

Though the behaviour of fiscal deficit and public expenditure in the UAE did not paint a clear picture on whether fiscal deficit is responsible for the expansion in public expenditure. However, researchers have paid little attention to the relationship between fiscal deficit and public expenditure in the country. Moreover, while studies on their relationship is sparse, the few attempts where outside of the UAE (see for instance, Ashworth, 1995; Craigwell & Rock, 1991; Hondroyiannis & Papapetrou, 2001; Jaén-García, 2016; Lee, 2016; Niskanen, 1978; Önal, 2021; Tridimas, 1992; Yay & Tastan, 2009). However, given the dissimilarities in structural, political and spending profile across countries, it therefore became imperative to specifically explore the connection between fiscal deficit and public expenditure in the UAE.

Moreover, though empirical studies on fiscal deficit-public expenditure nexus suggest that fiscal deficit is directly and linearly related to public expenditure (Önal, 2021). However, seeing that large fiscal deficit, especially debt-financed, beyond a specific "threshold" can generate diminution in public expenditure (especially social expenditures and public investment), either due to debt-induced liquidity

constraints, the need to ensure the continual service of debts, or because expenditure cuts are more quickly applicable in deficit reducing strategies than revenue generation (Krugman, 1988; Quattri & Fosu, 2012). Thus, given this scenario, perhaps, the fiscal deficit-public expenditure nexus may display an "inverted U-shaped" characteristic, with fiscal deficit giving rise to public expenditure in the early stage, and then fall in public expenditure in the subsequent phases (of rising fiscal deficit), instead of the definite direct effect of fiscal deficit reported in previous studies.

In essence, the main objective of this study is to examine the effect of fiscal deficit on public expenditure in the UAE for the period of 1975-2020, and also determine the threshold or peak-point of the relationship. The present study is relevant and contributes to the literature in many ways. For one, to the best of our knowledge, no study has examined the fiscal deficit-public expenditure nexus in the UAE, hence the present study constitutes the first attempt to evaluate the relationship for a long period in the country. Secondly, the present study is the first attempt in examining whether the relationship between the duo is non-linear, and then the identification of the threshold of the relationship. This is achieved by adopting the Kuznets curve approach to develop a self-styled public expenditure Kuznets curve (PECK). Lastly, aside from employing a robust estimation technique (the autoregressive distributed lag (ARDL) bound testing approach to cointegration) to estimate the relationship, post-estimation diagnostics are also conducted to verify the veracity, reliability and stability of the results generated.

Besides the introductory part, relevant empirical studies are reviewed in section one. In section two, theoretical framework, model formulation and econometric technique are considered. Results presentation and discussion are taken up in section three, and the paper is concluded in section four.

1. REVIEW OF RELEVANT EMPIRICAL STUDIES ON PUBLIC EXPENDITURE AND FISCAL DEFICIT

Since the 1970s after Buchanan and Wagner (1977) argued that fiscal deficit is responsible for public expenditure expansion, researchers have made frantic attempt to test this preposition empirically. However, the effect of fiscal deficit on public expenditure was first subjected to direct empirical tests by Niskanen (1978) based on post-war US federal budget deficits. Using the ordinary least squares (OLS) technique, the study concluded that fiscal deficit encourages higher levels of public expenditure in the United States. Later, researchers also confirmed similar outcome in developed and developing countries such as Greece, South Africa, Pakistan, Canada, France, Gernany, Italy, Japan, the United Kingdom, United States, Caribbean countries (Barbados and Trinidad and Tobago), and Turkey (see Ashworth, 1995; Craigwell & Rock, 1991; Diamond, 1989).

Recently, the effect of fiscal deficit on public expenditure has also been explored. For example, Hondroyiannis and Papapetrou (2001) examined the relationship between fiscal deficit and public expenditure in Greece over the 1961–1994 period. Using Johansen cointegration and vector error correction model (VECM), the findings indicate that high deficits encourage higher levels of public expenditure in the short- and long-run. Moreover, Yay and Tastan (2009) used the Engel-Granger, Johansen and ARDL techniques to ascertain the effects of fiscal deficit, income and revenue on public expenditure in Tukey during the 1950-2004 period. The findings demonstrate the existence of a long-run connection between public expenditure and fiscal deficit (and income, and revenue).

Furthermore, Jaén-García (2016) examined the relationship between public deficit and expenditure in Spain during the 1958-2014 period, using the Johansen cointegration and VECM techniques. The results demonstrate that fiscal deficit is an increasing function of public expenditure. In addition, Lee (2016) employed the Johansen approach to study the interrelationships between public expenditure, fiscal deficits, income, wages and population in Zhuhai between 1985 and 2014. Again, the findings validate the increasing effect of fiscal deficit on public expenditure. In exploring the determinants of public expenditure Imana (2017) discovered, using OLS estimator, that fiscal deficit amongst other factors is significant in influencing public expenditure. Also, Önal (2021) examined the fiscal deficit-expenditure relationship in Turkey between 1924 and 2008, using the ARDL approach. Interestingly, the results also corroborate the outcomes from earlier studies.

A survey of the literature thus indicates that, whereas empirical studies on the relationship between fiscal deficit and public expenditure abounds elsewhere, such studies on the UAE are scarce. Besides, the existing studies did not consider whether the relationship between fiscal deficit and public expenditure demonstrate a "U-shaped" feature, with fiscal deficit raising expenditure at the initial phase, and then reducing public expenditure in the later phase. Therefore, this study fills this research lacuna and contributes to the literature by evaluating the effect of fiscal deficit on public expenditure, and identifying the fiscal deficit-public expenditure threshold level in the UAE using the Kuznets curve approach. Furthermore, the study explores the effect of tax burden, outflow of money, foreign direct investment (FDI) outflow and interest rate on public expenditure in the country.

2. THEORETICAL FRAMEWORK, MODEL SPECIFICATION AND ECONOMETRIC TECHNIQUE

The theoretical framework of this study is based on the Kuznets curve hypothesis (Kuznets, 1955). The approach is important because all the empirical studies on the effect of fiscal deficit on public expenditure suggest that the relationship between the duo is linear in nature. However, evidence suggest that growing fiscal deficit, especially debt-based, beyond a specific threshold could generate large adjustments or diminution in public expenditure (especially social expenditures and public investment), due to debt-induced liquidity constraints and the need to ensure the continual service of debts (Quattri & Fosu, 2012). Hence, this suggest that the relationship between public expenditure and fiscal deficit may exhibit an "inverted U-shaped" feature, with an upward phase characterised by increase in public expenditure following rising fiscal deficit, and a downward phase characterised by falling public expenditure due to further increase in fiscal deficit beyond the "threshold."

Interestingly, researchers have fashioned the Kuznets curve hypothesis to observe the relationship between several phenomena, including the connection between shadow economy and economic growth (and environmental pollution, and urbanisation), environmental quality and income level relationship, and income inequality-protests nexus amongst others (see Elgin & Öztunali, 2014; Sulemana, James & Rikoon, 2016). In a similar manner, a PEKC could be estimated to explore the relationship between public expenditure and fiscal deficit in a view of identifying the threshold level of public expenditure as fiscal deficit rises.

To this end, a reduced logarithmic form of the quadratic specification of the PEKC, with the inclusion of the linear and quadratic term of the "x-axis," variable (fiscal deficit), and control variables, is given as:

$$ln(PEX_t) = \alpha + \beta_1 ln(DEF_t) + \beta_2 ln(DEF_t)^2 + \gamma ln(Z)_t + \varepsilon_t \quad (1)$$

where PEX_t represents public expenditure; DEF_t is fiscal deficit; α denote intercept; $\boldsymbol{\beta_1}$ and $\boldsymbol{\beta_2}$ are the linear and quadratic parameters of fiscal deficit; Z_t is vector of control variables (oil price, tax burden, outflow of money, FDI outflow and interest rate); ε_t is a random error term.

The signs of the coefficients $\boldsymbol{\beta_1}$ and $\boldsymbol{\beta_2}$, or specific relations between them determine the nature of relationship between public expenditure and fiscal deficit. In particular, for an inverted U-shaped relationship between the duo to be met (i.e. a PEKC to exist), it is expected that $\boldsymbol{\beta_1} > 0$ and $\boldsymbol{\beta_2} < 0$. In addition to the expect signs of the coefficients, they are also expected to be statistically significant.

If the PEKC exists, the "threshold," "peak" or "turning point" (τ), that is the point beyond which increase in fiscal deficit should ensure fall in public expenditure, can be obtained by setting the first derivative in equation (1) to zero, and solving for DEF_t. It is expressed in the following equation as:

$$\tau = exp\left({}^{-\beta_1}/_{2\beta_2}\right)$$

The study uses annual time-series datasets covering the 1975-2020 period. The data on public expenditure, GDP, public revenue, tax revenue and interest rate are collected from the FCSA and Central Bank of UAE (CBUAE) annual reports; while data for FDI outflow, outflow of money and interest rate were sourced from the UAE's Ministry of Economy statistical bulletin, GCC Secretary General annual report,

and OPEC annual statistical bulletin, respectively. The data are measured as follow: $lnPEX_t$ is log transformed non-adjusted absolute value of public expenditure in billions of UAE Dirhams; DEF_t is expressed as fiscal deficit as a percentage of GDP; $OILP_t$ is measured by the annual spot price of Murban crude oil; and TB_t is the ratio of tax revenue to the GDP. Also, OUM_t and $OFDI_t$ are measured as a ratio of outward remittance and FDI_t to the GDP_t, while INT_t is captured using nominal interest rate, respectively.

Suffice to say that the inclusion of the squared term of fiscal deficit in the PEKC model can lead to multicollinearity problem because it is calculated from the linear term (DEF_t) which is also present in the model, hence the likelihood of high correlation between them. Therefore, to eliminate multicollinearity, the quadratic term (DEF_t^2) is regressed on DEF_t, then the resulting residual is used in place of the quadratic term during estimation (see Abu, Karim & Aziz, 2013).

To estimate the PEKC model (i.e. the relationship between fiscal deficit and public expenditure), the ARDL approach to cointegration (Pesaran, Shin & Smith, 2001) is employed. This technique has numerous advantages over the traditional cointegration techniques. These advantages includes: its effectiveness whether the series are I(0), I(1) or mixture of I(0) and I(1) process; ability to determine cointegrating relationships when using small sample sizes; capacity of series to have different optimal lags; and the use of single reduced form equation for simultaneously estimation of both the short- and long-run parameters, whereas system of equations is required while using tradition approaches (see Abu & Gamal, 2020; Gamal et al., 2019; Sakanko & David, 2019).

3. RESULTS AND DISCUSSION

In this section, the estimation results are presented and discussed accordingly and the outcomes are stated in the appendix.

3.1 Results of Unit Root Tests

Prior to the estimation of the public expenditure and fiscal deficit relationship, the standard econometric procedure of stationarity diagnostics is undertaken using the Augmented Dickey-Fuller (ADF) test of Dickey and Fuller (1979) and the Zivot and Andrews's (1992) unit root test which account for the possibility of structural breaks in the series. Setting the maximum lag order to 4, which was selected based on Schwarz (1978) information criteria (SIC), the results of both tests with intercept (change in level shift) reported in Table 1 illustrate that fiscal deficit is stationary at level (that is, I(0) process) at 5 percent significance level, while other variables are stationary at 5 percent significance level after their first difference was taken.

Table 1. Results of Unit Root Tests

Variable	*ADF*		*ZA*				*I(d)*
	Level	*1st Diff.*	*Level*	T_b	*1st Diff.*	T_b	
$lnPEX$	-1.43	-4.79**	-4.14	2007	-5.27**	2012	I(1)
$OILP$	-1.46	-6.15**	-3.60	2005	-6.61**	2012	I(1)
TB	-1.66	-7.33**	4.22	2001	-8.08**	2010	I(1)
DEF	-3.71**	-8.65**	-4.97**	1987	-9.18**	2007	I(0)
OUM	-0.93	-4.71**	-2.03	2013	-5.75**	2012	I(1)
$OFDI$	-2.78*	-5.64**	-3.70	2008	-6.74**	2000	I(1)
IR	-2.01	-9.11**	-3.88	1985	9.12**	1987	I(1)

Notes: Both tests are conducted with intercept (random walk with drift). ADF's MacKinnon (1996) critical values for intercept are given as: −3.59, −2.93 and −2.60, at 1%, 5% and 10% levels, respectively. Zivot and Andrews (1992) critical values for intercept break are: -5.34 (1%), -4.93 (5%) and -4.58 (10%). The models are estimated by setting the maximum lag to 2, which was selected based on Schwarz (1978) information criteria (SIC). Asterisks (**) indicate significance at 5% level.

Source: Calculation by Author

3.2 Results of ARDL Bound Testing Approach to Cointegration

To determine the presence of long-run relationship between the variables, the bound testing mechanism within the ARDL framework is employed. The bound testing result presented in Table 2 illustrates that the computed F-statistic (3.27) exceeds the upper bound critical value of 3.21 provided by the Narayan (2005), at 5 percent level. Thus, this indicates the presence of a cointegrating (long-run) relationship between the variables.

Table 2. Results of ARDL Bounds Test

Model	*Calculated F-statistics*	*K*
$lnPEX = f(DEF, DEF^2, OILP, TB, OUM, OFDI, IR)$	3.27**	7
Critical values for Case II: restricted constant and no trend	I(0)	I(1)
10%	1.92	2.89
5%	2.17	3.21
1%	2.73	3.90

Notes: Critical bound values are provided by Narayan (2005). Asterisk (**) denotes significance at 5% level. $\mathbf{K}$ denotes the number of explanatory variables.

Source: Calculation by Author

3.3 Estimation Result of Public Expenditure Kuznets Curve (PECK)

Given the presence of long-run relationship between the variables as confirmed by the bound testing procedure, an ARDL model is estimated taking into consideration the optimal lag-length of (1,3,2,4,1,4,2,3), as suggested by Akaike's (1979) information criterion (AIC). The long-run, short-run and diagnostics test of the selected model are summarised in in panel A, B and C of Table 3, respectively.

The long-run results indicate that the effect of fiscal deficit on public expenditure is non-linear, with fiscal deficit influencing public expenditure positively, while fiscal deficit-squared (further increase in fiscal deficit) is inversely related to public expenditure, at 5 percent level of significance, respectively. Moreover, this suggests the existence of an inverted U-shaped PEKC in the long-term, because the coefficient of fiscal deficit $\boldsymbol{\beta}_1$ is positive whereas the coefficient of fiscal deficit-squared $\boldsymbol{\beta}_2$ is negative. Based on the size of the estimates, a percent increase in fiscal deficit and fiscal deficit-squared leads to 2.8 percent increase, and 0.4 percent reduction in public expenditure, respectively.

Interestingly, the discovery of a positive relationship between fiscal deficit and public expenditure is consistent with those reported in earlier studies in line with the Buchanan-Wagner hypothesis (see Ashworth, 1995; Craigwell & Rock, 1991; Hondroyiannis & Papapetrou, 2001; Jaén-García, 2016; Lee, 2016; Önal, 2021; Tridimas, 1992; Yay & Tastan, 2009). However, the reducing effect of fiscal deficit-squared (further increase beyond the threshold) can be explained from the perspective of rising fiscal deficit, especially debt-financed deficit, beyond a specific sustainable threshold or limit resulting to diminution or large adjustments in public expenditure (especially social expenditures and public investment), following debt-induced liquidity constraints or the need to ensure the continual service of debts (Quattri & Fosu, 2012).

Besides, the estimated trough (peak) turning point or threshold of fiscal deficit (as a percentage of the GDP) is 22.45 percent, and Dh. 6.583 billion for public expenditure. A graphical presentation of the quadratic function is presented in Figure 2. By and large, the results particularly imply that increase in fiscal deficit (as a share of the GDP) prior to its threshold (22.45 percent of GDP) will increase public expenditure due to the rising demand for public goods despite the mismatch in the available resource. However, over and above its 22.45 percent threshold, further increase in fiscal deficit (as a percentage of GDP) will be associated with declining public expenditure as the government reassess its commitment due to the unsustainability in the deficit, especially if financed through debt.

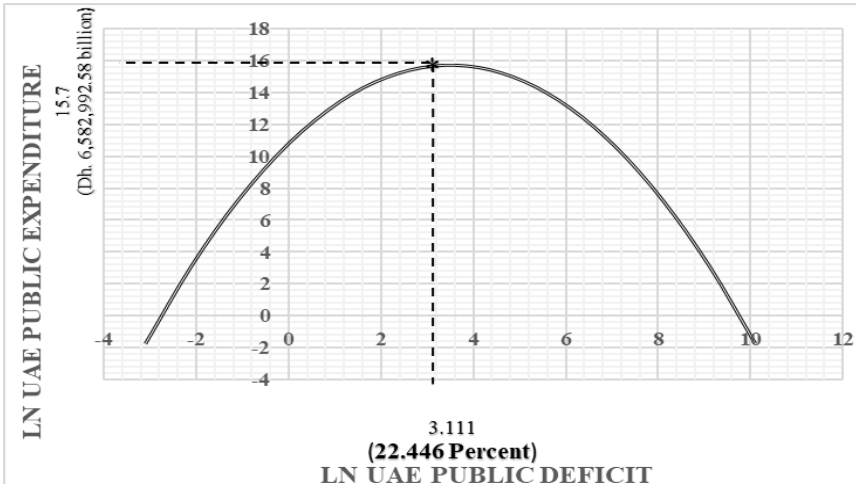

Figure 2. Plot of the Public Expenditure Kuznets Curve (PEKC)

Source: Authors' estimation

Regarding other variables, the long-run result demonstrates that oil price, outflow of money and FDI outflow are positively associated with public expenditure, and significant at 5 percent level, respectively. A dollar/percent increase in oil price, outflow of money and FDI outflow leads to increase in public expenditure by 3 percent, 8.5 percent and 0.61 percent, respectively. These outcomes lend support to research findings on oil-dependent countries (see Abdel-Latif, Osman & Ahmed, 2018; Aladejare, 2020; Dizaji, 2014; Hathroubi & Aloui, 2016). However, the results indicate that tax burden (ratio of tax revenue to GDP) and interest rate are not significant in influencing public expenditure in the long-run.

Table 3. Estimation Results of the PEKC using ARDL Model

Panel A: ARDL(1,3,2,4,1,4,2,3) Long-run Coefficient Estimates–Dependent variable: $lnPEX$							
$Cons$	DEF	DEF^2	$OILP$	TB	OUM	$OFDI$	IR
10.753 (23.10)	0.028** (2.38)	–0.004** (–1.90)	0.030** (10.62)	0.135 (1.18)	0.085** (2.86)	0.612** (7.33)	0.017 (0.41)
Turning point (Public Deficit): 3.11 (22.45 percent) Turning point (Public Expenditure): 15.64 (Dh. 6,194,423.44 billion)							
Panel B: ARDL(1,3,2,4,1,4,2,3) Short-Run Estimates – Dependent variable: $\Delta lnPEX$							
Lag order	0		1		2		3
ΔDEF	–0.018 (–4.50)**		–0.013 (–2.39)**		–0.021 (–4.78)**		
ΔDEF^2	–0.001 (–1.84)**		0.001 (3.33)**				
$\Delta OILP$	0.009 (5.85)**		–0.017 (–4.64)**		–0.008 (–3.11)**		–0.012 (–4.62)**
ΔTB	0.005 (0.12)						
ΔOUM	–0.036 (–2.45)**		–0.080 (–3.34)**		–0.093 (–4.18)**		–0.074 (–3.70)**
$\Delta OFDI$	0.042 (0.73)		–0.228 (–3.10)**				
ΔIR	0.016 (1.72)**		0.006 (0.60)		–0.001 (–0.09)		
Panel C: Diagnostic Statistics Tests							
ECT_{t-1}	$\chi^2_{SC}(1)$		$\chi^2_{FF}(1)$	$\chi^2_{HET}(1)$		$\chi^2_{NORM}(4)$	$Adj.R^2$
–0.66 (–6.81)**	0.25 [0.62]		0.018 [0.90]	21.52 [0.76]		29.26 [0.00]	0.76

Notes: The model is estimated by setting the maximum lag to 4, and the optimum lag-length is suggested by AIC. Δ is the first difference operator. Asterisk (**) denote significance at 5%, respectively. Values in parenthesis "()" in panel A and B are the t-ratio, and values in parenthesis "[]" in panel C are the probability values of the LM test statistics. χ^2_{SC}, χ^2_{HET}, χ^2_{N}, and χ^2_{FF} denote LM tests for serial correlation, heteroscedasticity, normality and functional form, respectively.

Source: Estimation by Author

Turning to the short-run estimates, the results suggest that current fiscal deficit (and fiscal deficit lagged by one and two periods) has negative effect on public expenditure, at 5 percent level. A percent increase in fiscal deficit in the current period (and fiscal deficit in past one and two periods) reduce public expenditure by 1.8 percent (and 1.3 percent and 2.1 percent), respectively. However, fiscal deficit-squared is a decreasing function of public expenditure, while fiscal deficit-squared lagged by one period has a significant positive effect on public expenditure. A percent changes in fiscal deficit-squared and fiscal deficit-square lagged by one period leads to reduction and increase in public expenditure by 0.1 percent and 0.1 percent, respectively. The negative and linear relationship between fiscal deficit and public expenditure in the short-run may not be unconnected to the series of fiscal rationalisation and consolidation strategies which was recently embarked upon by the UAE government in an attempt to reduce public expenditure in the country following the growing size of fiscal deficit and oil price fluctuation.

Moreover, the results illustrate that current oil price raise public expenditure, while oil price lagged by one, two and three periods reduce public expenditure, and significant at 5 percent level. A dollar increase in current oil price raise public expenditure by 0.9 percent, whereas changes in oil price in past one, two, and three periods lead to decline in public expenditure by 1.7 percent, 0.8 percent, and 1.2 percent, respectively. In addition, the results demonstrate that outflow of money (both current and lagged by one, two and three periods) and FDI outflow lagged by one period are negatively associated with public expenditure, while interest rate has a positive effect on public expenditure, and significant at 5 percent level, respectively. A percent increase in outflow of money (current and lagged by one, two and three periods) and FDI outflow reduce public expenditure by 3.6 percent (and 8 percent, 9.3 percent and 7.4 percent) and 0.23 percent, respectively. Also, a percent increase in interest rate raise public expenditure by 1.6 percent. More so, the coefficient of error correction term lagged by one period (ECT_{t-1}) is significant, correctly signed, and suggest that 66% of the deviation is corrected within a year.

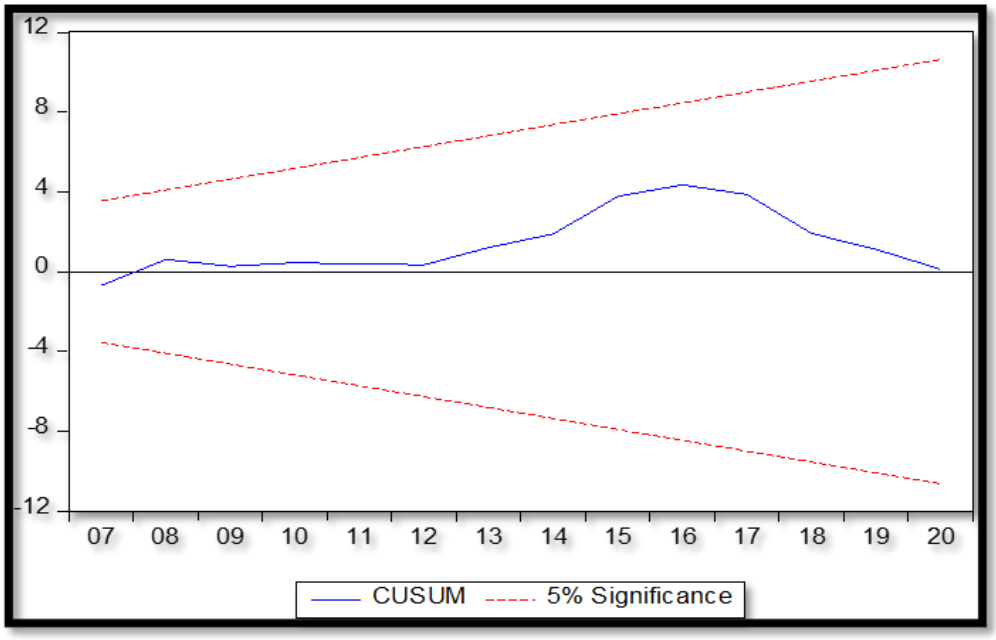

Figure 3. Plot of cumulative sum of recursive residuals

Source: Authors' estimation

The results of the diagnostic tests (panel C) indicate that the ARDL model is not suffering from the problems of serial-correlation, misspecification error or bias and heteroscedasticity. Moreover, though the Jarque-Bera test statistics suggest that the error terms are not normally distributed. However, given that the sample size is small, evidence suggest that this is not an issue (see for instance, Abu & Karim,

2021). Additionally, the adjusted R-squared (*Adj.R*^{2}) value shows that about 76 percent of changes in public expenditure is explained by fiscal deficit and the incorporated control variables. More so, the plots of the cumulative sum of recursive residuals (CUSUM) and cumulative sum of squares of recursive residuals (CUSUMQ) tests of Brown, Durbin and Evans (1975), in Figure 3 and 4, are well within the 5 percent critical value lines, therefore indicating that the parameters of the estimated model are stable over the long-run.

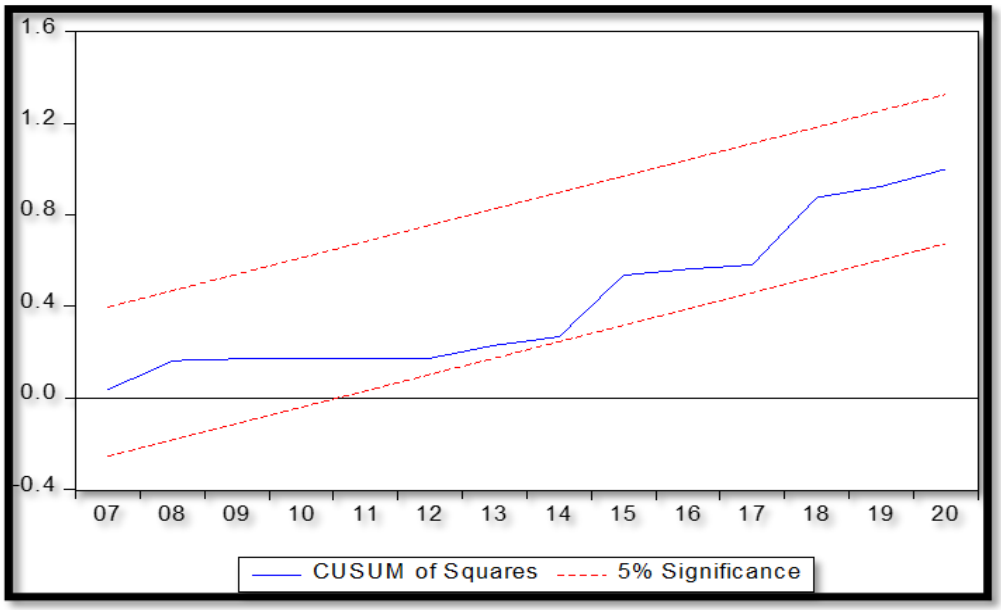

Figure 4. Plots of cumulative sum of squares of recursive residuals

Source: Authors' estimation

CONCLUSION

This study attempts to estimate the nature and threshold of the relationship between fiscal deficit and public expenditure in the UAE, using Kuznets curve hypothesis, during the 1975-2020. Employing the ARDL bound testing approach to cointegration, the results suggest the presence of a significant inverted U-shaped PEKC in the long-run, with fiscal deficit raising public expenditure at the early stage before its reach its peak-point, and reducing public expenditure at the later stage after reaching its maximum. Using the quadratic specification, the peak turning-point of 22.45 percent is obtained for fiscal deficit (as a percentage of GDP), and Dh. 6.583 billion for public expenditure. Moreover, besides fiscal deficit, the results illustrate that oil price, outflow of money, FDI outflow and interest rate are important factors which explain the expansion dynamics of public expenditure in the country.

In line with these findings, this study recommends policies to reduce the growing trend of fiscal deficit in the UAE. In particular, to avert the long-term unescapable consequence of large and excessive fiscal deficit on fiscal allocation, the re-introduction of the restrictive fiscal policy of the 1980s which is characterised by rationalisation of recurrent expenditure, elimination of unnecessary spending and concentration on basic development and maintenance of infrastructures is advanced. Moreover, it is recommended that the huge military expenditure in the country be reduced, while investment in human capital development which have long-term effect on economic growth and development be prioritise.

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