The Impact of External Debt on Economic Growth

The Case of Egypt

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Abstract

The external Debt problem is one of the most crucial problems that face the whole world's countries nowadays, either developed or developing countries, creditor or debtor countries. Egypt has been suffering from the debt issue throughout the country's modern history from the beginning of the 1990s like all developing countries. According to international standards, Egypt started to exceed the safe limits and reach 25.5% of debt to the total exports of goods and services. Consequently, the study aims at investigating the relationship between external debt and economic growth in Egypt and pointing out the impacts within the period (1996-2019) by adopting ARDL Model. The research reveals the external debt has a negative impact on GDPPC where every 1% increase leads to a 0.12%decrease in GDPPC in the short term. Besides, the insignificant relationship between ED/GDP and GDPPC in the long term the researcher suggests that Egypt must direct new and

potential debts to investment so that the desired external assistance is achieved to reduce pressure on the public budget.

Keywords: External debt – Economic Growth- ARDL Model

المستخلص:

تعتبر مشكلة الديون الخارجية من أهم المشاكل التي تواجه دول العالم بأسره في الوقت الحاضر ، سواء كانت دولاً متقدمة أو نامية ، أو دولاً دائنة أو مدينة. عانت مصر من مشكلة الديون عبر التاريخ الحديث للبلاد منذ بداية التسعينيات مثل جميع الدول النامية. وبحسب المعايير الدولية ، بدأت مصر في تجاوز الحدود الآمنة لتصل إلى 25.5٪ من الدين من إجمالي الصادرات من السلع والخدمات. وتهدف الدراسة ، بحسب ، إلى التحقق من العلاقة بين الدين الخارجي والنمو الاقتصادي في مصر ، وبيان الآثار خلال الفترة (1996–2019) من خلال اعتماد نموذج ARDL. يكشف البحث أن الدين الخارجي له تأثير سلبي على الناتج المحلي الإجمالي للناتج المحلي الإجمالي حيث تؤدي كل زيادة بنسبة 1٪ إلى انخفاض بنسبة 0.12٪ في إجمالي الناتج المحلي على المدى القصير. إلى جانب ذلك ، فإن العلاقة الضئيلة بين ED / الناتج المحلي الإجمالي والناتج المحلي الإجمالي على المدى الطويل ، يشير الباحث إلى أنه يجب على مصر توجيه الجديد والإمكانات إلى الدين الاستثماري حتى يتم تحقيق المساعدة الخارجية المرغوبة لتقليل الضغط على الميزانية العامة.

الكلمات المفتاحية: الدين الخارجي – النمو الاقتصادي – نموذج ARDL

I. Introduction

The external Debt problem is one of the most crucial problems that face the whole world's countries nowadays, either developed or developing countries, creditor or debtor countries. In the second half of the 1990s, the world started to pay great attention to the highly indebted developing countries and more studies and researches have been conducted to answer controversial questions such as what are the levels of debt that have a positive impact on the Economy and growth? what are the channels that illustrate these impacts?

Egypt has been suffering from the debt issue throughout the country's modern history from the beginning of the 1990s, Egyptian economy has witnessed several changes following the Structural reform program, in addition to both monetary and financial reforms. According to international standards, Egypt is still in the safe zone, as the percentage of the external debt service/goods and services exports do not exceed 25%. Moreover, there are several indicators to determine the real value of the debt and its payment, which is a percentage of the external debt / GDP, and the percentage of the external debt service/goods and services exports.

By tracking numbers, it has been found that Egypt's external debt increased from 29.4 Billion $ in 2003 to 34.8 Billion $ in 2011 and declined again by 1.3 Billion $ in 2012 and increased again to reach 55.8 Billion $ in 2016, which represents 18.1% of the GDP. By 2019, External debt almost doubled to reach 108.7 Billion $ to represent 36% of the GDP and 25.5% of goods and services exports.

In 2019, Egypt External debt can be divided into three sections: Firstly; long term debts that reached 75.8% of the external debt. Secondly, medium-term debts by 10.2%. Lastly, short term debts represent the greatest share of Egypt's debts with a percentage of 52.7% of external debts in addition to the monetary authority it reaches 78.4% of the total external debt.

This study aims at investigating the relationship between external debt and economic growth in Egypt and pointing out the impacts within the period (1996-2019) by adopting econometric models.

The research includes four sections. The first section lays out the introduction. The second section emphasizes an overview of the theoretical background and review of previous literature. Further, the section illustrates the impact of external debt on economic growth by presenting various theoretical and empirical models. Meanwhile, the third section of the study manifests an econometric analysis of the impacts of the external debt and the economic growth in Egypt, data specifications,

methodologies and empirical results. Finally, the fourth section represents the main conclusion and the recommendations.

II. Theoretical Background and Literature Review

Different economic models have proposed different studies of the relationship between external debts and economic growth. Theoretical models divided into 3 parties. On one hand, the first party indicated that there is a positive relationship between debt and growth up to a certain threshold level. On the other hand, the second party pointed out the negative impacts of external debt on economic growth. Meanwhile, the last party illustrated the non-linear and inverted U-shape effect (Oleksandr, 2003).

Neoclassical literature indicated that low or reasonable debt levels have a positive impact on growth. The model refers to how capital mobility affects growth in the condition of capital scarcity whereas developing countries suffer greatly. That is only in case the marginal product of capital is greater than the world's interest rate (Pattilo, et al., 2002).

Jayaraman and Lau (2008) examined the relationship between external debt and growth rate in six PICs within the period 1988-2004. The paper manipulated the least square method that includes four variables which are RGDP, public budget deficit, exports, and external debt. The study found that there is an insignificant relationship between external debt and growth rate in the long term. However, in the short run, there is a causal relationship running from external debt, budget deficit, and exports to output. Meanwhile, there is a bi-directional relationship between external debt and growth rate in the short term. The study concluded that external debts contribute to growth in PICs in the short run, the image of the PICs is enhanced as efficient use of external debt, enabling it to borrow later in better terms.

Butts et al., (2012) identified the relationship between short term external debt and economic growth. Results illustrate the positive significant relationship in the long run. The study used Autoregressive

Distributed Lag (ARDL), and cointegration to analyze Thailand's data over the period (1970-2003).

Literature illustrated that in condition off debt overhang when the country exceeded its ability to repay debts and debt service. Debt service will increase in an increasing function pattern on the country's output level which results in weak investment and growth decline (Krugman, 1988) and (Sashs, 1989)

According to Al Kharusi and Ada (2018), the rapid increase in Oman's external debt to finance the annual budget had been clearly noted over the last twenty-five years. The paper analyzes the relationship between government external debt and economic growth. The study employed the Autoregressive Distributed Lag cointegration approach. Al Kharusi and Ada utilized growth rate, external debt to GDP ratio, gross fixed capital accumulation, population growth rate, and inflation. The study emphasized a negative and significant influence of external debt and growth rate. The study found that gross fixed capital is positively significant in calculating growth performance in Oman. The paper recommended using external debt efficiently in more productive projects.

In their study, Abdelaziz, et al., (2019), analyzed the impact of external debt on investment and economic growth. The paper selected a sample of 23 low-income countries and divided them into subsamples, (12) low indebted countries and (11) more indebted countries. The study employed the seemingly unrelated regressions model. Abdelaziz, et al., (2019), concluded that on one hand, external debt is negatively significant to both the total sample and the subsamples. On the other hand, Foreign trade has a positive significance on growth per capita income.

Ali and Mustafa (2012) investigated the relationship between external debt and economic growth in both short and long terms. The researchers used the Autoregressive Distributed Lag (ARDL), to analyze the impacts of external debt on economic growth. The investigation illustrated that the increase of external debt obstructed the economic growth as a result of debt overhang in Pakistan in the period (1970-2010). Results indicated that growth capital formation is positively significant to economic

growth, and it accelerates this growth. In addition to the influence of capital human. The study concluded that the more labour productivity is, the more economic growth. Nevertheless, the increase of labour force had a negative significance on growth and the researchers relied on the negative impacts on the low productivity of the labour force.

Rehman and Ahmed (2016) diagnosed not only the external debt, but also the official development assistance, foreign direct investments, and remittances. The study analyzed the data of 21 developing countries during the period (1990-2013) and figured out that the external debt and the official development assistance had a negative impact on the economic growth. Meanwhile, remittances and foreign direct investments had a positive impact on economic growth in the long run.

Siddique et al., (2016) studied the impact of external debt on economic growth in the long term, and the short term as well. It employed the panel data of 40 highly indebted poor countries during the period (1970-2007) by using many variables which are gross capital formation, population, public external debt, and exports. The research applied Autoregressive Distributed Lag (ARDL). It concluded the negative impact of external debt either in the long or short run. Whereas the gross capital formation and exports marked a positive impact on the economic growth due to the increasing production. Additionally, population had a positive influence in the long run because of the labour force and human capital.

Qayyum and Haider (2012), examined the impacts of foreign aid, external debt, and governance on economic growth. Findings attribute the positive impact of both foreign aid, and governance as well as the negative impact of external debt. The study sample included 60 developing countries over the period (1984-2010). The study drew attention to the importance of efficient governance and productive activities.

Other literature emphasized a non-linear relationship of the inverted U-shape effect. This model assumed that the first phase of debt when it is low or reasonable it has a positive impact on growth, and the country will

be able to achieve growth rates. Meanwhile, later on, repay and after debt threshold will decline growth and affect it negatively.

Gaies and Nabi (2019), studied the impact of external financing on economic growth which includes both external debt and Foreign Direct Investment (FDI). Analysis revealed that mixed financing (external debt and FDI) led to an increase in economic growth rather than depending on FDI only. The study emphasized the inverted U-shape growth effect throughout a sample of 67 developing countries with maintaining the stability in the exchange rate. Casares (2015), analyzed the data of both developed and developing countries using the Laffer curve and asserted the inverted U-shape effect in addition to the non-linear relationship between external debt and economic growth. Finally, results illustrated a positive impact in the case of using external debt efficiently in financing tradable goods.

III. The Data and Methodology

This paper aims at analyzing the impact of external debt (as a percentage of the GDP) on growth GPD per capita income in Egypt within (1996-2019) throughout the Economic Theory and the models o Patillo et al., and Mbah et al., (2016). Data is extracted from the World Bank (World Development Indicator Series) and Central Bank of Egypt. The study employs the Autoregressive Distributed Lag (ARDL). The model is expressed as Equation (1).

$$GDPPCGR_t = \beta_0 + \beta_1 ED/GDP_t + \beta_2 HC_t + \beta_3 TRD/GDP_t + \beta_4 GCF/GDP_t + \beta_5 INF_t \quad (1)$$

Where GDPPCGR refers to Gross Domestic Product Per capita Growth Rate. Meanwhile, ED/GDP represents the ratio of External Debt to GDP. The HC refers to the Human Capital by Secondary school enrolment. The TRD/GDP is the Ratio of Trade to GDP. The GFCF represents the Gross Fixed Capital Formation. INF points out Inflation. The β0 is intercept, β1,..., β5 are regression coefficients; U is the error term, and t represents time.

A. Modelling and Date

The research employed the ARDL Model that differs from the rest of the models like Engle and Granger (1987) and Johnathon (1988), which require that variable should be integrated in the same order, unlike ARDL which does not require variables to be integrated in the same order. So, some variables can be I (0) and I (1). It can be used in small specifications. The model tests cointegration by bound set (Pesaran, 2001). The test combined Autoregressive Model AR and Distributed Lag Model. Since time series data could be vulnerable to unit root problems, Augmented Dickey-Fuller (ADF) and Phillips–Perron (PP) unit root tests are implemented on the series to avoid spurious regressions. Unit root tests are first conducted to determine the stationarity of the variables, which must be a combination of the I(0) and I(1) series. Following Pesaran et al. (2001), the ARDL approach to cointegration is done as shown in Equation (2).

$$\Delta GDPPCGR_t = \beta_0 + \beta_1 \Delta ED/GDP_t + \beta_2 \Delta HC_t + \beta_3 \Delta TRD/GDP_t + \beta_4 \Delta GCF/GDP_t + \beta_5 \Delta INF_t + \beta_7 (GDPPCGR)_{t-1} + \beta_8 \Delta (ED/GDP)_{t-1} + \beta_9 \Delta (HC)_{t-1} + \beta_{10} \Delta (TRD/GDP)_{t-1} + \beta_{11} \Delta (GCF/GDP)_{t-1} + \beta_{12} \Delta (INF)_{t-1} + ECT_{t-1} \quad (2)$$

To obtain the optimal number of lags for each variable, a lag length test is conducted by estimating single equation Vector Autograssive (VAR) and using the lag length criteria. This is followed by the estimation of a single equation unrestricted Error Correlation (EC) model with the number of estimated lags as shown in Equation (3). This differs from the unrestricted error correction model in Equation (2) which includes only lags of all the variables including the dependent variable without a difference.

$$\Delta GDPPCGR_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta(GDPPCGR)_{t-i} + \sum_{i=1}^{p} \beta_2 \Delta(ED/GDP)_{t-i} + \sum_{i=1}^{p} \beta_3 \Delta(HC)_{t-i} + \sum_{i=1}^{p} \beta_4 \Delta(TRD/GDP)_{t-i} + \sum_{i=1}^{p} \beta_5 \Delta(GCF/GDP)_{t-i} + \sum_{i=1}^{p} \beta_6 \Delta(INF)_{t-i} + \beta_7 (GDPPCGR)_{t-1} + \beta_8 (ED/GDP)_{t-1} + \beta_9 (HC)_{t-1} + \beta_{10} (TRD/GDP)_{t-1} + \beta_{11} (GCF/GDP)_{t-1} + \beta_{12} (INF)_{t-1} + u_t \quad (3)$$

Here, Δ is the first difference operator, *p* is the optimal lag length, and all other variables remain the same. Wald tests on the coefficients of unrestricted ECT variables are conducted to obtain F-statistics, which are used to test the existence of a long-run relationship. The F-test has a non-standard distribution, which depends on whether the variables included in the model are I(0) or I(1), the number of regressors, and whether the model contains an intercept and/or a time trend. The F-statistics are compared with Pesaran's critical value at the 5% level of significance. The test involves asymptotic critical value bounds depending on whether the variables are I(0) or I(1) or a mixture of both. Upper and lower bound critical values derive from the I(1) and I(0) series, respectively. When an F-statistic is above the upper bound value, we reject the null hypotheses of no cointegration among the variables and therefore conclude that there is evidence of a long-run relationship among the variables regardless of the order of integration of the variables. If it falls below the lower bound value, we do not reject the null hypotheses of no cointegration, and if it lies between the bounds, the result is inconclusive. When it is established that variables are co-integrated (i.e., there is a long-run or equilibrium relationship between them), in the short-run there may be disequilibrium. Error correction mechanism is used to correct the disequilibrium. The short-run dynamics can be derived by estimating the Error Correlation Term (ECT) with the specified lags as shown in Equation (4).

$$\Delta GDPPCGR_t = \beta_0 + \sum_{i=1}^{p} \beta_1 \Delta(GDPPCGR)_{t-i} + \sum_{i=1}^{p} \beta_2 \Delta(ED/GDP)_{t-i} + \sum_{i=1}^{p} \beta_3 \Delta(HC)_{t-i} + \sum_{i=1}^{p} \beta_4 \Delta(TRD/GDP)_{t-i} + \sum_{i=1}^{p} \beta_5 \Delta(GCF/GDP)_{t-i} + \beta_6 \Delta(INF)_{t-1} + \beta_7 ECT_{t-1} \quad (4)$$

where ECT_{t-1} is the error correction term. All coefficients of the short-run equation relate to the short-run dynamics of the model's convergence to equilibrium, and β8 in Equation (4) represents the speed of adjustment.

B. Empirical Results

Descriptive Statistics summary (Minimum Value, Maximum Value, Mean, Standard Deviation) for all variables are presented in Table (1).

Table (1): Descriptive Statistics summary

Variables	Sample Size	Minimum	Maximum	Mean	Std. Dev.
GDPPCGR	24	-0.36394	5.26716	2.526047	1.647111
ED_GDP	24	13.99479	46.29687	28.46178	10.12338
HC	24	67.15641	89.48068	79.09142	6.041267
TRD_GDP	24	30.24655	71.68063	47.04046	10.41603
GCF_GDP	24	13.64319	22.38973	17.721	2.414672
INF	24	0.022444	0.258562	0.090732	0.057617

Pearson correlation coefficients are conducted (Table (2)) to determine if there any relationship between the independent and dependent variables, knowing that the correlation coefficient is coded as r and ranges from -1 and +1. The closer the correlation value to one (regardless of the sign), the greater the correlation between the variables. The closer the correlation value to zero, the weaker the relationship between the variables. On the other hand, the correlation coefficient sign describes whether the relationship is positive or negative. If the correlation sign is

negative, it indicates that the relationship between the two variables is indirect, and if the correlation sign is positive, it indicates that the relationship between the two variables is direct.

Table (2): Correlation Matrix

Variables	GDPPCGR	ED/GDP	HC	TRD/GDP	GCF/GDP	INF
GDPPCGR	1					
ED/GDP	0.340411	1				
HC	-0.29875	0.25369	1			
TRD/GDP	0.528495*	0.133433	-0.49156*	1		
GCF/GDP	0.681993*	0.212674	-0.55594*	0.50543*	1	
INF	0.083279	-0.04188	0.199007	0.198402	-0.29839	1

Note: * denote significant at 5%

Table (2) shows that there is a statistically significant relationship between GDPPCGR and both TRD/GDP and GCF/GDP at a 5% significance level, whereas *p*-value of correlation coefficients is less than the significance *p*-value $< \alpha = 0.05$.

A stationarity test using Augmented Dickey-Fuller (ADF) and Phillips–Perron (PP) tests is conducted to determine the order of integration for each variable as shown in Table (3).

Table (3): Unit root tests

Variables	Dickey-Fuller (ADF) test			Phillips–Perron (PP) test		
	Level	1st Diff.	I(d)	Level	1st Diff.	I(d)
GDPPCGR	-3.1716*	---	I(0)	-2.2106*	-4.3812*	I(1)
ED/GDP	-1.7997*	-3.0720*	I(1)	-1.9124*	-3.1336*	I(1)
HC	-1.5604*	-2.6177*	I(1)	-1.4064*	-2.6204*	I(1)
TRD/GDP	-1.4231*	-3.6169*	I(1)	-1.6014*	-3.5891*	I(1)
GCF/GDP	-1.4856*	-4.1448*	I(1)	-1.6115*	-4.1448*	I(1)
INF	-4.0816**	---	I(0)	-4.0670**	---	I(0)

Note: * indicates a model with a constant; ** indicates a model with both a constant and a trend.

Since the stationarity test of the variables under consideration is a mixture of I(1) and I(0) (except for **POPGR, so it excluded from the analysis**),

the ARDL approach was deemed appropriate for estimation. Thus, the first step is to estimate Equation (2) and conduct a lag length test to estimate the optimum lag length for the variables. Following Pesaran and Shin (1995), the maximum order of lags was set as two in the ARDL options using Schwarz Criterion (SC) to determine the optimum lag length to be included in the unrestricted ECM as shown in Table (4). The results suggests that the optimum lag length for GDPPCGR, ED/GDP, and HC is two; for INF it is one; and for TRD/GDP and GCF/GDP it is zero.

Table (4): Estimating the optimum lag length for each variable

Variable	Coefficient	Std. Error	t-Statistic	p-value
GDPPCGR(-1)	-0.258509	0.297866	-0.867872	0.4080
GDPPCGR(-2)	-0.350084	0.183817	-1.904528	0.0892
ED/GDP	-0.116794	0.055318	-2.111314	0.0639
ED/GDP(-1)	-0.020362	0.117130	-0.173844	0.8658
ED/GDP(-2)	0.126163	0.091118	1.384598	0.1995
HC	-0.046369	0.156543	-0.296207	0.7738
HC(-1)	0.016039	0.166998	0.096041	0.9256
HC(-2)	0.242472	0.118749	2.041882	0.0715
TRD/GDP	-0.064915	0.037846	-1.715225	0.1204
GCF/GDP	1.011027	0.255614	3.955288	0.0033
INF	14.60465	5.206288	2.805195	0.0205
INF(-1)	11.57449	6.665446	1.736491	0.1165
C	-29.50929	12.84799	-2.296802	0.0472

R-squared	0.912657	Mean dependent var	2.469756
Adjusted R-squared	0.796199	S.D. dependent var	1.710443
S.E. of regression	0.772168	Akaike info criterion	2.608771
Sum squared resid.	5.366189	Schwarz criterion	3.253478
Log likelihood	-15.69648	Hannan-Quinn criter.	2.760644
F-statistic	7.836807	Durbin-Watson stat	2.192847
Prob(F-statistic)	0.002146		

The next step is to estimate Equation (3), which examines the long-run relationships among the variables. Conducting a Wald test on the coefficients of unrestricted ECM variable in Equation (4), we obtain an F-

Bounds test for the joint significance of lagged levels of the variables as shown in Table (5).

Table (5): Cointegration testing

Test Statistic	Value	Sig. Level	I(0)	I(1)
F-statistic	5.256527	10%	2.08	3
K	5	5%	2.39	3.38
		2.5%	2.7	3.73
		1%	3.06	4.15

Table 5 shows that the calculated F-statistic of the Bounds test (5.256527) is higher than the upper bound critical value (3.38) at the 5% level of significance using a restricted constant and no trend. Thus, the null hypothesis (H_0) of no cointegration among the series can be rejected. This implies that there is a long-run relationship among all the variables. In order words, the model variables co-move together in the long run. Therefore, the estimation of the ECT short-run dynamics is conducted as shown in Table (6).

Table (6): Short-run error correction model

Variable	Coefficient	Std. Error	t-Statistic	*p*-value
D(GDPPCGR(-1))	0.350084	0.111033	3.152976	0.0117
D(ED/GDP)	-0.116794	0.036541	-3.196275	0.0109
D(ED/GDP(-1))	-0.126163	0.044245	-2.851481	0.0190
D(HC)	-0.046369	0.062028	-0.747552	0.4738
D(HC(-1))	-0.242472	0.075217	-3.223660	0.0104
D(INF)	14.60465	3.104654	4.704116	0.0011
ECT(-1)	-0.608594	0.205411	-2.962811	0.0180

R-squared	0.862915	Mean dependent var	0.004447
Adjusted R-squared	0.808081	S.D. dependent var	1.365299
S.E. of regression	0.598119	Akaike info criterion	2.063316
Sum squared resid	5.366189	Schwarz criterion	2.410466
Log-likelihood	-15.69648	Hannan-Quinn criter.	2.145094
Durbin-Watson stat	2.192847		

The results of the ECM presented in Table (6) show that all variables (except HC) are significant, where *p*-value < 0.05 for these variables. However, ED/GDP is the major variable of interest that is used to achieve the major objective of this study. ED/GDP is significantly and negatively related to GDPPCGR at 5% level of significance in the short run. Specifically, the ED/GDP coefficient of −0.116794 suggests that a 1% increase in ED/GDP is associated with a 0.12% decrease in GDPPCGR. One of the major results is that the increase of external borrowing has a negative impact on economic growth in Egypt that put great pressure on the public budget and increases the budget deficit Which increases accordingly debt service affects investment negatively (Crowding out effect). It is also expected to increase taxes Overall, the model performs well in terms of goodness of fit:R^2 = 0.862915 and Durbin-Watson (2.192847). Results also reveal a coefficient value for ECT(−1) of −0.608594, implying rejection of the null hypothesis of no cointegration. This represents the speed of adjustment from the short-run equilibrium to the long-run equilibrium and suggests that 61% of the error is corrected annually. This adjustment speed implies that it will take approximately 2 years to bring the economy back to equilibrium. Moreover, Breusch–Godfrey serial correlation LM test and Heteroskedasticity test are applied as shown in table (7).

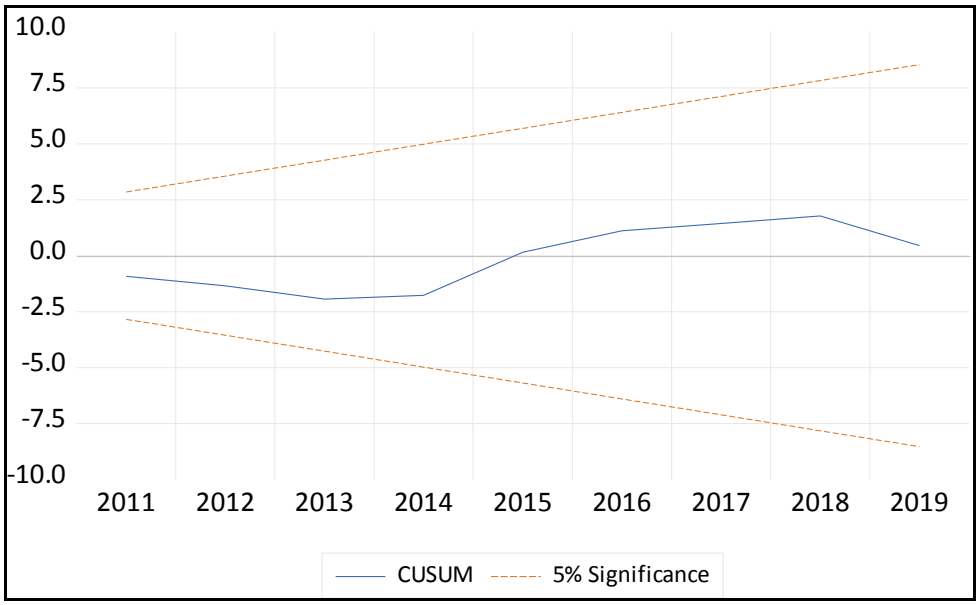
Table (7): Heteroskedasticity and Serial Correlation tests

Heteroskedasticity Test (ARCH)			Serial Correlation LM Test (Breusch-Godfrey)		
F	*df*	*p*-value	*F*	*df*	*p*-value
1.84531	(1,19)	0.1902	0.53493	(1,8)	0.4854

From Table (7), we cannot reject the null hypothesis of no Serial Correlation ($F_{(1,8)}$=0.53493, *p*-value = 0.4854>0.05), and we cannot reject the null hypothesis of no Heteroskedasticity ($F_{(1,19)}$=1.84531, *p*-value = 0.1902>0.05) thus, the model satisfies this assumption. Moreover, ensuring stability of the model, Figure (1) provides evidence from

Cumulative Sum Chart (CUSUM) stability test supporting the stability of the model at the 5% level because the blue line never deviates beyond the critical red lines.

Figure (1): Stability of the model



Moreover, Table (8) shows the estimated model and the relationship between all variables in the long-run.

Table (8): Long-run model

Variable	Coefficient	Std. Error	t-Statistic	*p*-value
ED/GDP	-0.006834	0.028692	-0.238202	0.8171
HC	0.131880	0.067028	1.967545	0.0807
TRD/GDP	-0.040355	0.024731	-1.631774	0.1372
GCF/GDP	0.628516	0.098404	6.387121	0.0001
INF	16.27455	3.334803	4.880215	0.0009
Constant	-18.34478	6.641824	-2.762009	0.0220

Table (8) shows that HC, GCF/GDP and INF are significant variable at the long-run, where *p*-value < 0.05 for GCF/GDP and INF variables and *p*-value < 0.10 for HC. However, ED/GDP is not significant at 5% level of significance in the long run (*p*-value > 0.05).

IV. Conclusion

The study figures out that the external debt in Egypt has been doubled in the last 3 years (2016-2019) and started to exceed the safe limits and reach 25.5% of the total exports of goods and services. The ED / GDP has been also doubled to reach 36% after being 18% in 2016. The econometric analysis by using the ARDL model and the ECM conclude that the external debt has a negative impact on GDPPC where every 1% increase leads to a 0.12%decrease in GDPPC in the short term.

The research reveals insignificant between ED/GDP and GDPPC in the long term. Thus it leads to the possibility of the external debt reaching the overhang debt problem and crowding out effect as it obstructs the economic growth. That is consistent with the neoclassical model. Therefore, Egypt must direct new and potential debts to investment so that the desired external assistance is achieved to reduce pressure on the public budget.

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