Effect of Public Financial Management on Foreign Debt Accumulation: An Empirical Investigation into the Determinants of Moroccan Indebtedness

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Abstract

Emerging Markets Developing Economies (EMDE) rely on sovereign external debt to meet their financial needs and to enhance the economic growth. However, a high level of external indebtedness and its mismanagement can harm the economic performance, which outlines the importance of the objective of any operation of fund raising. These countries tend to accumulate significant levels of debts. This paper investigates the factors contributing in debt accumulation in case of Morocco, which is an emerging economy, using annual data over the last two decades. A certain determinants of external debt buildup identified by the literature are examined using ARDL approach to co-integration. The findings affirm the relationship between the level of external debt and the explanatory variables both in long and short run. Nevertheless, the nexuses are statistically insignificant. The Granger causality test that was conducted on the model variables reveals a bidirectional cause between external debt and exchange rate. Furthermore, the regulatory quality is the only variable among institutional variables which is caused by foreign borrowing.

Keywords
Public Financial Management Practices, Foreign debt, Debt threshold, Exchange rate, Institutional quality

1. Introduction

Public Financial Management (PFM) refers to a set of rules, policies and procedures governing public sector's resources and expenditures, covering the central government and sub-sovereign governments besides state-owned enterprises and Public-Private Partnerships (PPP). PFM is the determinant of public service quality since it affects the utilization of all national resources. Parry (2010) suggests four objectives (dimensions) of PFM, considering it as an information system providing both ex-ante and ex-post data. The first dimension is aggregate fiscal management aiming the fiscal sustainability, maximizing resource mobilization and its allocation in accordance with policy priorities. The second dimension is operational management. This dimension entails effective performance management, delivering value for money besides managing within the budget. The third objective is the fiduciary risk management, considering the contribution of PFM in managing the risk through an effective financial control, conformity with legal and regulatory requirements and auditing the reports. Governance is the fourth dimension. According to the author, this objective is based on two fundamentals namely, financial information's transparency and accountability. ACCA (2010) outlines that good public financial governance enhances economic growth, improves the effectiveness and the efficiency of national resources management decisions and rises the general public's trust in public sector.

Enhancing the country's development and quality of public service is a common challenge of all governments worldwide as every public decision must be simultaneously efficient, effective and frame perfectly with the economic and social trend. Thus, governments tend to adjust their public financial management frequently following the innovations in the international and national environment. In Morocco, the Public Financial management is governed by an organic law *(loi organique relative à loi de finances)*. This law has gone through several reforms under the influence exerted by the mutations and changes in the political, economic and social context. In 2001,

Morocco started a series of reforms to accommodate its public financial management with the practices of good governance and to meet the implications of globalization, aiming to promote the conditions of strong and sustainable economic growth. As result of this management restructuration, the budget deficit was on a downward trend during the periods 2001-2008, recording fiscal surpluses in 2007 and 2008. However, the international financial crisis has a negative and significant impact on the fiscal balance, thus increasing the deficit over the period 2009-2012. Subsequently to the various state interventions carried out since 2013, the budget deficit has decreased by 3.2 percent of GDP (from 6.8 percent of GDP in 2012 to 3.6 percent of GDP in 2019). For the second time over the last two decades, the government's actions to maintain the budget deficit at sustainable level will be interrupted in 2020 by the Covid-19 pandemic which has weakened the economic activity, thus the budget deficit resume the uptrend reaching the level of 7.6 percent of GDP.

Besides the economic performance, the exchange rate and the interest rate, the deficit has an important impact on the evolution of the Moroccan central government indebtedness in the period spanning between 2001 and 2020. Over the periods 2001-2008 and 2013-2019, which coincide with the periods of good fiscal situations, debt outstanding recorded a downward trend, whereas it was on an upward trend during periods when the budget deficit worsened, namely over the period spanning between 2009 and 2012 with an increase relative to GDP of 12.1 points within 4 years and in 2020, when the central government debt surge was estimated at 4.3 points of GDP in one year.

Niemann and Pichler (2015) outline the functions of PFM of which one of the functions is financing. Accordingly, financing the public sector through taxes income is insufficient in most of developing countries and this unsustainable fiscal position imposes the external borrowing. Morocco struggles with budget deficit for years and the sovereign debt reached high levels (32.6 percent of GDP by the end of 2020). In this study we will focus on sovereign external debt accumulation, since the increase of international debt buildup raises the risk of macroeconomic instability, thereby hindering the benefit of good financial governance practices.

1.1 Objectives

This study aims to investigate the factors contributed in the accumulation of Moroccan sovereign external debt over the period spanning from 2000 to 2020, focusing on both macroeconomic and institutional variables. Thus, we can assess the impact of government's policies on overseas borrowing.

2. Literature Review

One of the fundamentals of the aggregate public financial management is the optimal fiscal policy. According to Niemann and Pichler (2020), in periods of recession, the optimal fiscal policy might be expansionary, increasing as result the public expenditure and sovereign debt issuance. In the recent literature, studies on external debt outline the factors that are likely to shape the foreign debt buildup. The factors committing debt accumulation are both internal and external (Siddique, 1996). In an analyze of debt surge in Heavily Indebted Poor Countries (HIPC), Easterly (2002) finds that the highly levels of indebtedness in these countries are caused mainly by government's macroeconomic policies.

Edo (2002) explores the external debt problem in African countries, namely in Nigeria and Morocco, adopting ordinary least squares (OLS) and using data from 1980- 1999. The study shows that an increasing fiscal expenditure, balance of payments deficit and the global interest rate especially when it is compound and floating are the three crucial factors that explain debt accumulation in the two countries. Murwirapachena and Kapingura (2015) assess the factors contributing in overseas borrowing in South Africa over the period spanning between 1980 and 2010. The results reveal that the high levels of public expenditures on infrastructure and the sluggish levels of economic performance increase debt in South Africa, whereas, high levels of economic growth and foreign reserves decrease the external debt.

Tiruneh (2004) investigated the determinants of external borrowing in developing countries in 1980s and 1990s. The author outlines the main four factors of foreign borrowing namely the savings gap, income instability, debt service and capital flight. The contribution of economic variables in debt accumulation in EMDEs was also confirmed by Greenidge et al. (2010). The authors conclude that in the case of Caribbean Community, real effective exchange rate, exports, the real cost of external debt, output decline and the current separate government's expenditure have major impacts on sovereign foreign borrowing buildup.

According to Chowdhury (2001), six factors have led to the surge of external debt in developing economies: (1) disadvantageous terms of trade shocks; (2) the lack of sustained adjustment policies; (3) creditors' lending and refinancing policies; (4) debt mismanagement in terms of maintaining debt sustainability; (5) inefficiency of currency composition of debt and (6) political instability.

Feyen et al. (2015) analyze the trends of EMDEs external bonds issuances during the period 2000-2014. The authors found that favored global factors representing by benefit U.S financial conditions increase EMDEs external borrowing. Similarly, Kose et al. (2021) argue that external debt accumulation is a result of advanced economies' policies maintaining inflation and interest rates in low levels.

High interest rates, huge budget deficit, weak domestic savings and a persistent depreciation of exchange rate can lead countries to accumulate unsustainable levels of external debt. Export earnings decrease as debt commitments increase, since a part of the former is used in servicing the latter. As a result, inefficient public expenditures affecting negatively the economic growth (Abdullahi et al., 2015). Similarly, Adamu and Rasiah (2016) explore the factors of external debt buildup in Nigeria between 1970 and 2013. The empirical results demonstrate that oil price, exchange rate, debt service, gross domestic savings, and fiscal deficit are the factors contributing in overseas borrowing accumulation in Nigeria. Awan et al (2015) analyze the determinants of debt accumulation in Pakistan and assert that fiscal deficit, nominal exchange rate and trade openness cause the surge of sovereign debt.

Using panel data for 29 HIPCs of Sub-Saharan Africa (SSA) over the period spanning between 1984 and 2000, Anoruo et al. (2006) argue that exchange rate policy, debt service, corruption, political instability and administrative bottlenecks have strong correlation with the growth of external debt. Another investigation on the determinants of public external debt in Africa conducted by Bayale (2020) has found that official development assistance, trade openness, military and infrastructure expenditures, budget balance, real interest rate, real effective exchange rate and debt service, besides the governance stability and political regime type have been the main determinants of external debt outstanding in the continent. Chiminya et al. (2018) assess the impact of both economic and political variables on external debt buildup utilizing panel data on a sample of 36 SSA countries from 1975 to 2012. The authors find that political regime is an important determinant in debt accumulation. For instance, countries within democratic regimes accumulate more external debt than autocratic ones, likewise parliamentary democracies comparing to presidential systems.

Among the studies exploring Moroccan sovereign external debt, El-Qasemy and Alaoui (2021) apply the ARDL model with monthly data spanning from 1997 to 2019 to investigate the determinants of debt accumulation in Morocco. Accordingly, Moroccan public external debt buildup is due to the authorities' preoccupation to maintain a certain balance in current account and debt servicing.

3. Methodology

Factors contributing in sovereign external debt buildup will be defined utilizing ARDL model and following (Abdullahi et al., 2015). We use ARDL model since it is appropriate for a small sample of periods, and can be applied on variables with different levels of integration. The estimation is preceded by testing stationary in time series, for that purpose we use Augmented Dickey –Fuller (ADF) and Phillips- Perron (PP).

4. Data Collection

Factors contributing in external sovereign debt surge are specific to the country, since it depends on the government's development strategies and their financing. The literature enumerates various factors leading to debt accumulation, among others; we cite low levels of domestic savings, macroeconomic policies, debt mismanagement, exchange rate volatility and high interest rates.

The purpose of this section is to assess determinants of foreign public debt accumulation in the case of Morocco. The analysis tends to explain debt build up considering both economic-financial variables and institutional factors.
The economic factors are the following: First, the domestic savings (SAV), as it serves for financing investments and its lack impose external fund raising. Exchange rate (EXC) is considered as an explanatory variable, since LMICs cannot issue on the IFM with local (original sin) and are obliged to issue in foreign currency which increases the exposition to exchange rate volatility risks. Another explanatory variable is debt service (DSER); as countries with unsustainable levels of debt allocate their borrowed funds to service the previous debt commitments, creating

thereby a vicious cycle of debt accumulating which impacts negatively the economic performance. The state intervention to strengthen the economic growth and macroeconomic requires recourse to external financing, for this reason we include expenses (XPN) and current account balance (CAB) in the model as explanatory variables.

The World Bank specifies six indicators appraising the public sector governance quality, namely, government effectiveness, control of corruption, political stability and absence of violence/terrorism, regulatory quality, rule of law and voice and accountability. For the presence study, we retain government effectiveness (GE) as it captures the quality of public services, regulatory quality (RQ) which indicates the government's ability to promulgate sound policies, rule of law (RL) since under this mechanism, the state's intervention is less required *(In line with F. Hayek),* besides Voice and Accountability (VA) which captures the citizens influence on government priorities.

Following Abdullahi et al. (2015) framework, the model's equation is as follows:

$$EXD_t = \alpha_0 + \alpha_1 SAV_t + \alpha_2 EXC_t + \alpha_3 DSER_t + \alpha_4 XPN_t + \alpha_5 CAB_t + \alpha_6 GE_t + \alpha_7 RQ_t + \alpha_8 RL_t + \alpha_9 VA_t + \varepsilon_t \quad [1]$$

With, α_0 is the intercept, α_i represents factors' coefficients and ε_t is random error

To identify the determinants of debt buildup in Morocco over the period spanning from 2000 to 2020, we conduct the ARDL bounds test developed by Pesaran et al. (2001). In consistent with this framework, the model equation becomes:

$$\begin{aligned}\Delta lEXD_t = {} & \alpha_0 + \alpha_1 lSAV_{t-1} + \alpha_2 lEXC_{t-1} + \alpha_3 lDSER_{t-1} + \alpha_4 lXPN_{t-1} + \alpha_5 CAB_{t-1} + \alpha_6 GE_{t-1} + \\ & \alpha_7 RQ_{t-1} + \alpha_8 RL_{t-1} + \alpha_9 VA_{t-1} + \sum_{i=0}^{n} \beta_{1i}\, \Delta lEXD_{t-i} + \sum_{i=0}^{n} \beta_{2i}\, \Delta lSAV_{t-i} + \sum_{i=0}^{n} \beta_{3i}\, \Delta lEXC_{t-i} + \\ & \sum_{i=0}^{n} \beta_{4i}\, \Delta lXPN_{t-i} + \sum_{i=0}^{n} \beta_{5i}\, \Delta CAB_{t-i} + \sum_{i=0}^{n} \beta_{6i}\, \Delta GE_{t-i} + \sum_{i=0}^{n} \beta_{7i}\, \Delta RQ_{t-i} + \sum_{i=0}^{n} \beta_{8i}\, \Delta RL_{t-i} + \\ & \sum_{i=0}^{n} \beta_{9i}\, \Delta VA_{t-i} + \varepsilon_t\end{aligned} \quad [2]$$

With, α_0 is constant; α_i and β_i represent long run and short run respectively; $i = \{1; 2; 3; 4; 5; 6; 7; 8; 9\}$; n is the optimal lags.

As we employ the ARDL model, the impact of domestic savings, exchange rate, debt service, expenses, current account balance and governance quality on the external debt is assessed through the models long run relationships, which is estimated by the following equation:

$$lEXD_t = \alpha_1 + \sum_{i=0}^{n} \alpha_{2i}\, lEXD_{t-i} + \sum_{i=0}^{n} \alpha_{3i}\, \Delta lSAV_{t-i} + \sum_{i=0}^{n} \alpha_{4i}\, lEXC_{t-i} + \sum_{i=0}^{n} \alpha_{5i}\, lXPN_{t-i} + \sum_{i=0}^{n} \alpha_{6i}\, CAB_{t-i} + \sum_{i=0}^{n} \alpha_{7i}\, GE_{t-i} + \sum_{i=0}^{n} \alpha_{8i}\, RQ_{t-i} + \sum_{i=0}^{n} \alpha_{9i}\, RL_{t-i} + \sum_{i=0}^{n} \alpha_{10i}\, VA_{t-i} + \varepsilon_{1t} \quad [3]$$

The following equation appraises the impact in the short-term using the ARDL error correction model term (ECT);

$$\begin{aligned}\Delta \boldsymbol{lEXD_t} = {} & \boldsymbol{\alpha_3} + \sum_{i=0}^{n} \boldsymbol{\beta_{1i}}\, \Delta \boldsymbol{lEXD_{t-i}} + \sum_{i=0}^{n} \boldsymbol{\beta_{2i}}\, \Delta \boldsymbol{lSAV_{t-i}} + \sum_{i=0}^{n} \boldsymbol{\beta_{3i}}\, \Delta \boldsymbol{lEXC_{t-i}} + \sum_{i=0}^{n} \boldsymbol{\beta_{4i}}\, \Delta \boldsymbol{lXPN_{t-i}} + \\ & \sum_{i=0}^{n} \boldsymbol{\beta_{5i}}\, \Delta \boldsymbol{CAB_{t-i}} + \sum_{i=0}^{n} \boldsymbol{\beta_{6i}}\, \Delta \boldsymbol{GE_{t-i}} + \sum_{i=0}^{n} \boldsymbol{\beta_{7i}}\, \Delta \boldsymbol{RQ_{t-i}} + \sum_{i=0}^{n} \boldsymbol{\beta_{8i}}\, \Delta \boldsymbol{RL_{t-i}} + \sum_{i=0}^{n} \boldsymbol{\beta_{9i}}\, \Delta \boldsymbol{VA_{t-i}} + \boldsymbol{\delta ECT_{t-1}}\end{aligned} \quad [4]$$

5. Results and Discussion

5.1 Unit Root Tests

The integration of the variables at I(0) or I(1) is a condition to conduct an ARDL model. Table1 plots the results of variables' stationary process tests. The two tests (ADF) and (PP) were employed both at level and first difference and with and without trend. The results state that the dependent variable's integration process is I(1). In level without trend, all the variables are not stationary. However, the explanatory variables are stationary at mixed levels without exceeding I(1). Consequently, the ARDL model is valid for this analysis.

Table 1. stationary test results

Variables	ADF				PP			
	NO TREND		TREND		NO TREND		TREND	
	LEVEL	FIRST DIFF	LEVEL	FIRST DIFF	LEVEL	FIRST DIFF	LEVEL	FIRST DIFF
lEXD	-0.453160	-1.763769***	-1.837284	-2.806889	-0.115598	-1.763769***	-1.837284	-2.872929
lEXC	-0.439445	-3.612294*	-1.279478	-4.313592**	-0.433245	-3.630753*	-1.878892	-5.775205*
lSAV	-0.343444	-6.976118*	-4.125170**	-6.517216*	-0.344063	-6.582024*	-3.950600**	-6.192878*
CAB	-1.017116	-3.988862*	-1.286379	-3.967803**	-1.017116	-3.990943*	-1.286379	-3.971601**
lXPN	-0.177585	-4.664466*	-1.866484	-4.758772*	-0.187190	-4.677965*	-1.794078	-5.053246
lDSER	-0.218851	-3.259519*	-2.817927	-3.011893	-0.266072	-3.260465*	-2.863161	-2.966544
GE	-0.567714	-4.394220*	-2.592315	-4.119861**	-0.719399	-5.089295*	-2.425808	-4.569436**
VA	-0.139765	-15.53913*	-7.021480*	-5.313922*	-0.752280	-16.32080*	-6.718400*	-49.96349*
RQ	0.047150	-6.382825*	-2.642796	-5.959259*	-0.210762	-6.530591*	-2.725882	-6.199914*
RL	-0.288309	-3.834721*	-3.001010	-3.702371***	-0.378165	-7.738697*	-3.352349***	-7.839468*

*,**and *** denote at 1%,5% and 10% significance level respectively

5.2 Results of ARDL Approach to Co-integration

The ARDL method is composed of two phases. The first aims to determine the long-run co-integration leaning on the F-statistics, while the second tends to estimate the long and short run coefficients. In this case, the co-integration is estimated by the equation (3) and the results are presented in Table 2.

Table 2. ARDL co-integration results

F-Bounds Test		Null Hypothesis: No levels relationship		
Test Statistic	Value	Signif.	I(0)	I(1)
			Asymptotic: n=1000	
F-statistic	7.337647	10%	2.16	3.24
k	9	5%	2.43	3.56
		2.5%	2.67	3.87
		1%	2.97	4.24

As stated in Table 2, the F-statistic is upper the bounds with 5 percent level of significance which confirm the long run relationship.
Since the co-integration is proved, the following phase is to appraise the long run and short run coefficients.

- *Long-run estimation:*

In the long-run, the empirical estimation outlines the negative nexuses between external debt and savings, current account balance, Voice and accountability and rule of law. However, these relationships are statistically insignificant. Exchange rate, debt servicing, expenses, governance effectiveness and regulatory quality have a positive insignificant impact on foreign borrowing. Table 3 summarizes the estimation results.

Table 3. Long-run coefficients

Levels Equation Case 5: Unrestricted Constant and Unrestricted Trend				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
LSAV	-0.870476	1.536280	-0.566613	0.5915
LEXC	0.722620	1.246989	0.579492	0.5833
LDSER	0.584507	0.682768	0.856084	0.4248
LXPN	2.331719	2.955189	0.789025	0.4601
CAB	-2.16E-11	4.49E-11	-0.481109	0.6475
GE	0.041095	0.042232	0.973087	0.3681
VA	-0.050671	0.047854	-1.058856	0.3304
RL	-0.010487	0.036714	-0.285627	0.7848
RQ	0.064227	0.076341	0.841316	0.4324

- *Short-run estimation:*

The short run estimation reveals a negative and significant ECM t-1, which confirms variables' long-run co-integration. The negative value of the coefficient ECM t-1 = -0.241472 indicates an adjustment speed towards following year of 24.14 percent, which is slow to adjust the disequilibrium within one year.

5.3 The Granger Causality Test

To investigate the causality between ARDL model's variables, we conducted a Granger Causality Test. The results as presented in Table 4 show a unique bidirectional relationship established between external debt and exchange rate. The analyses reveal also that savings, debt servicing and current account balance cause foreign borrowing. No causal relationship was confirmed between external debt and good governance indicators excepting regulatory quality, as the findings outline an inverse causality that runs from external debt to regulatory quality.

Table 4. The Granger Causality Test Results

Null hypothesis	**F-statistics**	**p-Values**	**Conclusion**
lSAV does not Granger Cause lEXD	3.98775	0.0426	Unidirectional Causality run from lSAV to lEXD
lEXD does not Granger Cause lSAV	0.96107	0.4063	
lEXC does not Granger Cause lEXD	6.43123	0.0114	Bidirectional Causality
lEXD does not Granger Cause lEXC	8.17617	0.0050	
lDSER does not Granger Cause lEXD	5.94086	0.0136	Unidirectional Causality run from lDSER to lEXD
lEXD does not Granger Cause lDSER	1.52052	0.2526	
lXPN does not Granger Cause lEXD	1.48439	0.2687	No causal relationship
lEXD does not Granger Cause lXPN	1.55618	0.2540	
CAB does not Granger Cause lEXD	7.74354	0.0054	Unidirectional Causality run from CAB to lEXD
lEXD does not Granger Cause CAB	1.11207	0.3563	
GE does not Granger Cause lEXD	1.24402	0.3229	No causal relationship
lEXD does not Granger Cause GE	2.02462	0.1747	
VA does not Granger Cause lEXD	0.90981	0.4287	No causal relationship

lEXD does not Granger Cause VA	4.34344	0.1747	
RL does not Granger Cause lEXD lEXD does not Granger Cause RL	0.33777 2.36554	0.7199 0.1361	No causal relationship
RQ does not Granger Cause lEXD lEXD does not Granger Cause RQ	0.90763 4.41873	0.4295 0.0365	Unidirectional Causality run from lEXD to RQ

5.4 Validation

To ensure that the model is reliable, we apply residual and stability diagnostics.
The outcome of Serial correlation LM Test and the normally test indicate that there is no serial correlation and the model is normally distributed. Similarly, the model passes the test of linearity and heteroskedasticity (Table 5).

Table 5. Diagnostic Tests

Test techniques	**Statistics**	**Probabilities**
Serial correlation LM Test	2.371027	0.3056
Heteroskedasticity	11.15763	0.4302
Normality test	0.483706	0.785172
Ramsey reset test	4.591255	0.0921

The model's stability is tested utilizing the Cumulative Sum test (CUSUM). This test is adequate to detect the structural instabilities in the regression coefficients. The structural stability is proved when the curve of the CUSUM test lie within the 5 percent of significance interval bands. In our model, Figure1 plots the test's result. It shows that the cumulative sum statistics (blue line) doesn't exceed the bound of 5 percent level of significance (red lines), thus asserts the stability of our ARDL model.

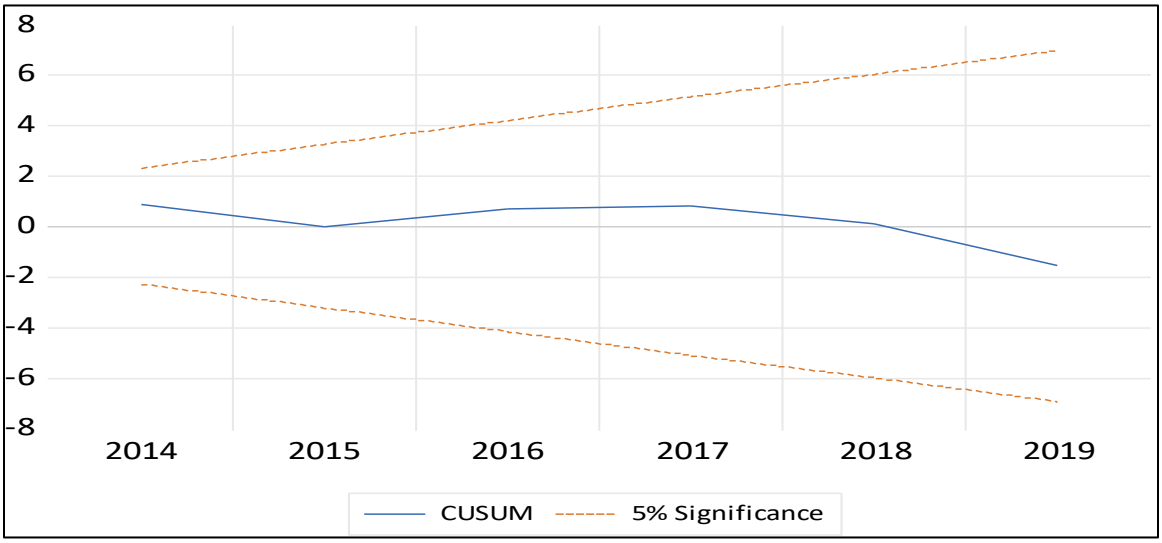

Figure 1. Stability diagnostic (CUSUM TEST)

6. Conclusion

This paper investigates the factors contributing in public external debt buildup in case of Morocco from 2000 to 2020. The study utilized the ARDL bounds test approach to co-integration. The results reveal that public external debt accumulation in Morocco is determined in long run by domestic savings, exchange rate, public expenses, debt service, current account balances, government effectiveness, regulatory quality, rule of law and voice and accountability. The empirical results show that debt service, exchange rate, expenses, governance effectiveness and regulatory quality have an insignificant and positive impact on external debt buildup in long run. The insignificant and negative effect is depicted in the relationships of debt surge with savings, current account balances, voice and accountability and rule of law in the long term. These findings suggest that the sovereign external debt is maintained at low levels and government's policies do not rely mainly on external debt, which can prevent the economy from the vulnerabilities associated to international fund raising. This study is limited to the interaction between government policies and external debt accumulation, without assessing the impact of financing the public sector through overseas borrowing and its costs on the Moroccan economic performance which can be investigated in another study.

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