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By Driss Chkiriba & Nor-Eddine Oumansour
Moulay Ismail University

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External Public Debt and Economic Growth in Morocco: Assessment and Impacts

Driss Chkiriba [α] & Nor-Eddine Oumansour [σ]

Abstract- This paper has the aim to study the impact of the external public debt on the economic growth in Morocco. The estimates cover the period 1988-2016. The econometric instrument used for estimating the model parameters is based on the "ARDL bound testing" method. The results confirm the high public debt has a negative and largely significant effect on the economic growth, for the short as well as for the long term. The effect is much more important in the short term than in the long term. The results corroborate most studies stating that the external debt has a negative impact on economic growth.

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I. Introduction

The relationship between external public debt and economic growth continues attracting the interest of policy makers and academicians. This has allowed boosting the debate on the impact of external debt on growth.

According to some theoretical studies, the indebtedness has beneficial effects on financing a national economy. It can help on reducing capital over-accumulation (Diamond, 1965), as it can face the liquidity constraints affecting some economic agents (Woodford, 1990), and reduce the losses associated with non-lump-sum taxation (Barro, 1979). It enables developing the financial intermediation capabilities of an economy (Saint-Paul, 1993), and helps finance public expenditures. The theoretical literature suggests that foreign borrowing has a positive impact on investment and growth up to a certain threshold. Beyond this level, its impact becomes negative.

The theoretical literature dealing with the relationship between outstanding external debt and growth (Krugman, 1988) focus largely on the negative effects of debt overhang, which can be defined as a situation in which the prepayment of the external debt is lower than the contractual value of the debt. If a country's debt level exceeds its reimbursement capacity with a certain probability in the future, the expected debt service is likely to be a growing function of its production level. Thus, some returns on investment in the national economy are effectively "taxed" by existing foreign creditors, and investment by domestic and foreign investors is discouraged (Clements et al., 2003) leading to a negative impact on the economic growth.

Debt Overhang reduces investment and growth by increasing uncertainty. By increasing the stock of the public debt, it is expected that the debt service obligations will be financed by taxation measures (Agénor et al., 1996). Potential private investors will prefer to exercise their waiting option (Serven, 1997)). Moreover, any engaged investment is likely to be diverted to fast-return activities rather than long-term, high-risk, and irreversible projects. Rapid debt accumulation can be accompanied by increasing capital flight if the private sector fears imminent devaluation and / or higher taxes (Oks and Sweder, 1995).

As indicated by Cohen (1993), the relationship between the nominal value of debt and investment can be represented as a kind of "Laffer curve". When outstanding debt exceeds a threshold, the anticipated reimbursement declines due to the mentioned adverse effects previously.

In Morocco, as an economy classified by the World Bank in the "lower-middle-class income" category, the public debt continues increasing. Indeed, the stock of the treasury debt alone evaluated to 657.5 billion dirhams in 2016, which represents 65% of GDP against 430.9 billion in 2011, an increase of 52.6%. By integrating the sector of public institutions and enterprises, Morocco's total outstanding debt exceeded 970 billion dirhams in 2016, compared to 520.4 billion in 2011, an increase of 86.4%. As for Morocco's public external debt, it follows the same logic. Its outstanding amount increased from $ 22.048 billion in 2011 to 30.95 in 2016, an increase of 65.3%[1].

Moreover, the low growth rates achieved by the Moroccan economy during the study period and their volatility are often attributed to the importance of the level of public debt. The so conducted study of the effects of external indebtedness on economic growth is a current and particularly important subject of research.
The purpose of this paper is to assess the impact of external public debt on economic growth in Morocco. To test these effects, we will use a quantitative empirical methodology based on the "ARDL bound testing"

Author α: Professor-Department of Economic Sciences and Management, Moulay Ismail University, Meknes, Morocco. e-mail: d.chkiriba@fsjes.umi.ac.ma
Author σ: Professor –Department of Economic Sciences, Mohammed V University, Rabat, Morocco. e-mail: noreddine.oumansour@um5.ac.ma

[1] Data published by the Ministry of Economy and Finance of Morocco. Retrieved from: https://www.finances.gov.ma/fr/Pages/Statistiques.aspx?Active=Dette&m=vous%20%C3%AAtes?

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regression model. The estimates cover the period 1988-2016.

To achieve the purpose of this paper, we carry out in the first part an empirical literature dealing with the topic of the study. The part will deal with the stylized facts relating to growth and external indebtedness in Morocco. The specification of the empirical model and the presentation of the estimation method and variables are the subject of the third part. The last part concludes and discusses the implications of the results.

II. Review of the Empirical Literature

The empirical literature on the effect of external debt on the performance of the economy reveals diversified empirical support for the theory of debt overhang. Empirical studies of this relationship have been largely developed since the late 1980s. Their goal was often to evaluate the validity of the debt overhang theory (Abdelhafidh, 2014). According to this theory, the negative impact of debt on growth is confirmed only when its weight is high and when there are reimbursement shortcomings (Corden 1988; Krugman 1988).

Empirical studies that dealt with the relationship between external debt and economic growth focus either on a group of countries or on the particular cases. Looking at a sample of countries during the period 1982-1999, Chowdhury (2001) found a negative effect of debt on growth in poor and highly indebted countries and other countries, which are not poor and indebted.

On the basis of data from Latin American countries for the period (1970-2000) and Asian countries for the period (1982-2002), Sen et al. (2007) found that the effect of external debt on growth is negative, but more important in the first group countries. The used instrument in Sen et al. (2007) study are the ordinary least squares (OLS), the fixed effects models, the random effects models, and the instrumental variable models.

Having identified debt thresholds in a group of 93 developing countries over the period 1969-1998, Pattilloet al. (2002) found that the average impact of external debt per capita GDP growth is negative for the net present value of debt levels above 160-170% of exports and 35-40% of GDP.

On the other hand, high levels of public debt seem to affect growth because of their moderating effects on physical capital accumulation and total factor productivity growth. In another study of a group of 61 developing countries in Sub-Saharan Africa, Asia, Latin America and the Middle East for the period 1969-1998, Pattillo et al. (2004) found that the doubling of debt levels leads necessarily to a slowdown of almost 1 percentage point in the growth of physical capital per capita and the growth of total factor productivity.

In the same logic, Clements et al.(2003) concluded on the basis of a sample composed exclusively of low-income countries during the period 1970-1999 that high levels of debt can restrain economic growth. Debt seems to affect growth by its effect on the efficiency of resource use. Debt, however, has an harmful effect on growth only after reaching a threshold level. This threshold is estimated at around 50% of GDP for the nominal value of the external debt and at around 20 to 25% of GDP for its estimated net present value.

The external debt service can also affect growth by crowding out private investment or reducing the amount of resources available for infrastructure and human capital, which negatively impacts growth (Oxfam International, 1999). Similarly, the stock of debt is assumed to directly affect growth, by reducing incentives to undertake structural reforms by the state and indirectly by acting on investment.

In another recent study, based on a total sample of 35 countries in the euro area, the European Union and advanced countries, over the period 2006-2013, using the generalized dynamic moments method, Ben Ltaief (2014) concludes that the high burden of public debt has a negative effect on growth.

Based on the panel data modeling for a sample of six countries[2] of the West African Economic and Monetary Union Economic (WAEMU) during the period 1985-2010,Jerome (2013) concludes that the external debt is in favor of the growth. However, when this debt reaches a certain threshold, it influence negatively the growth. The external debt leads to an enhancement of the economic growth of the region when it is less than 51% of the GDP. Beyond this threshold, any accumulation of external debt constitutes an obstacle for the economic growth of the Union.

Based on the panel data from a sample of eight countries of the same region throughout the period 1972-2012, and by using the PTR model, Guissé (2016) concludes that below a threshold of 80% relative to GDP, external public debt has a positive effect on the growth. Beyond this threshold, the debt negatively and significantly influences the growth of the WAEMU countries.

Hwang et al. (2010) used panel data from 20 high external debt countries selected in Asia and Latin America over the period 1982-2004 to study the relationship between financial sector development and economic growth and the external debt on the other hand. The authors found that among 20 countries with high external debt, the external debt-to-GDP ratio is strongly negatively correlated with economic growth rates, indicating that excessive indebtedness weakenseconomic growth in a country.

[2] Burkina Faso, Côte d'Ivoire, Mali, Niger, Sénégal and Togo

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Ferreira (2009) conducted Granger causality tests for twenty OECD countries over the period 1988-2001, and showed that rising debt ratios have negative effects on economic growth. The effect is statistically significant in both cases: high public debt reduces economic growth, and weaker growth exacerbates debt. The use of time series econometrics has also examined the relationship between external debt and growth in particular country cases.

Having used the ARDL approach on data for the period 1970-2010, Abdelhafidh (2014) concludes that the effect of the debt on the growth of Tunisia was negative over the entire period under study.

Karagöl (2002) also showed a negative effect of debt service on Turkey's growth over the period 1956-1996 in the long and short terms. Hameed et al. (2008) confirmed the same result in the case of Pakistan over the period 1970-2003. For its part, were (2001) showed that current debt flows and accumulated debt stock in the past negatively impact Kenya's GDP growth for the period 1970-1995.

Based on endogenous growth models, Maghyereh et al. (2002) examined the relationship between external debt and economic growth in Jordan over the period 1970-2000. After taking into account the possibility of the existence of a threshold effect, the authors conclude that the external debt below a certain threshold (53%) has a positive impact on economic growth. In other words, once the external debt exceeds this level, its impact on the performance of the Jordanian economy becomes negative and statistically significant.

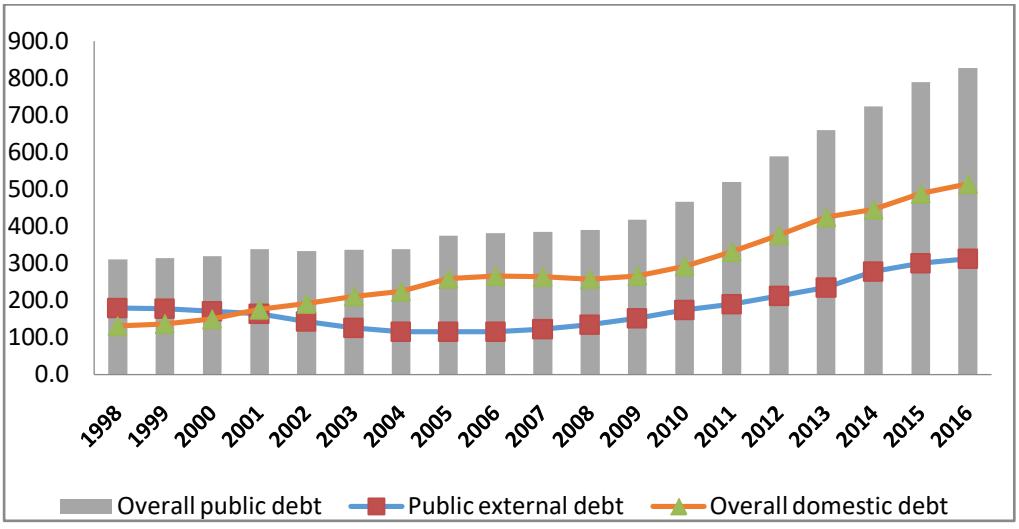
Using a microeconomic model with overlapping generations, Crettezet al. (1997) analyzed the effects on growth and well-being of two modes of financing productive public expenditure (education expenditure). It is a balanced budget policy (financing expenses only through taxes) and a public debt policy. The authors have shown that with a balanced budget policy, the equilibrium growth rate is always greater than what is achieved with debt financing.

III. External Debt Level and Composition: Major Trends

The external debt concerns the relationship between local debtors (public sector, institutions and public enterprises, local authorities, and the private sector) and foreign creditors (international organizations, commercial banks, holders of bonds and titles). Thus, the study of the evolution of this economic phenomenon remains incomprehensible and any attempt of explanation suffers from severe limitations or inconsistencies, if one does not take into account the economic reality of the country under study and in particular the transformations that occur in the internal economy and condition the behavior of external debtors (Basualdo, 2006).

In the implementation of its new strategy to adoption the new sectoral policies (industrial acceleration plan, Morocco Green Plan, Halieutiste plan ...), Morocco intends to accelerate its economic growth through a reinforcement of the investments financed particularly and largely by the indebtedness. A descriptive analysis of Morocco's external debt, of its components as well as its relations with certain key variables should allow a better understanding of its behavior and produce some indications a priori about its implications.

The figure 1 below shows that the evolution of the public debt in Morocco during the period 1998-2016 is strongly linked to that of the external debt with a weight lower than that of the domestic debt. However, with an upward trend especially from of the year 2007.



Source: Elaboration of authors based on data[3] from the Ministry of Economy and Finance of Morocco

Figure 1: Evolution of Moroccan public debt (billions of DH)

[3]https://www.finances.gov.ma/fr/Pages/Finances-publiques.aspx?m=NOS%20METIERS&p=32

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Since 2005, the stock of total public debt has seen an upward trend from MAD 374 billion in 2005 to MAD 827 billion in 2016, an increase of nearly 221% and with an average annual growth rate of 6.8%. This increase is attributable in part to the spectacular rise in the order of 169% of the total external debt which rose from 116 billion dirhams in 2005 to 312 billion dirhams in 2016, contrary to the period 1998-2004 of which it has decreased by 36% from 179 billion dirhams to 115 billion.

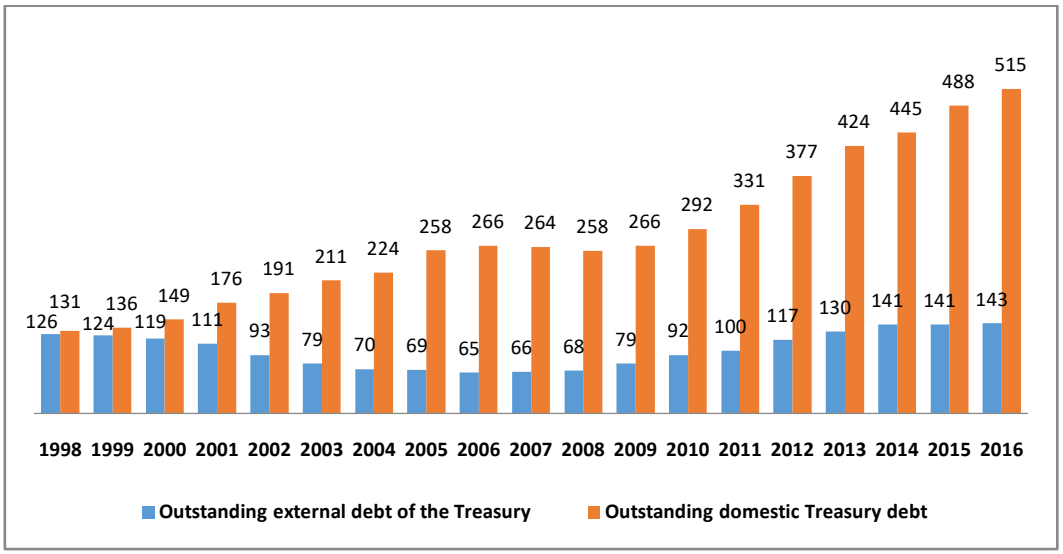
In total, over the entire period 1998-2016, the external debt increased by 74% with an average annual growth rate of 3%.

In the same way, domestic debt has seen an upward trend, rising from 131 billion DH in 1998 to 515 billion DH in 2016, an evolution of 293%, and an average annual growth rate of 7.5%.

Between 2012 and 2016, the external debt has evolved by 47% while the domestic debt has only increased by 37%. This shows that Morocco has resorted more to external indebtedness in recent years, even if the domestic debt is still higher with a 62% of the total stock of public debt in 2016. Further analysis, the structure of the debt, would permit a better understanding of their evolution.

The outstanding external debt of the treasury has decreased by 48% between 1998 and 2006, from 126 to 65 billion DH, before recording an increase of 117% to 143 billion DH in 2016 against DH 66 billion in 2007.

The outstanding domestic debt of the treasury had a first upward trend until 2006 to reach 266 billion DH, before stabilizing in 2008 to 258 billion DH and then again saw a spectacular uptrend to reach 515 billion of DH during the period 2009-2016.



Source: Elaboration of authors based on data from the Ministry of Economy and Finance of Morocco

Figure 2: Evolution of outstanding treasury debt (billion DH)

Moreover, unlike the share of the treasury in the total external debt, which fell from 54.9% in 2012 to 45.6% in 2016, Public Entities and Enterprises saw their weight in the outstanding total external debt increased from 44.5% to 54.4%.

This contrasting trend can be explained by the continued commitment of Morocco to achieve its sectoral strategies (Morocco green, industrial acceleration plan, Halieutis...) whose main operators are the public sector.

Table 1: Structure of the external public debt

	2012	2013	2014	2015	2016
External public debt (billion DH)	**212,7**	**234,7**	**278,0**	**301,0**	**312,5**
▪ Treasury (%)	54,9	55,3	50,7	46,8	45,6
▪ Public institutions (%)	44,5	44,3	48,9	52,9	54,4
% of GDP	**25,7**	**26,9**	**30,1**	**30,6**	**30,8**

Source: Elaboration of authors based on data[4] from the Ministry of Economy and Finance of Morocco

[4] https://www.finances.gov.ma/fr/Pages/Finances-publiques.aspx?m=NOS%20METIERS&p=32

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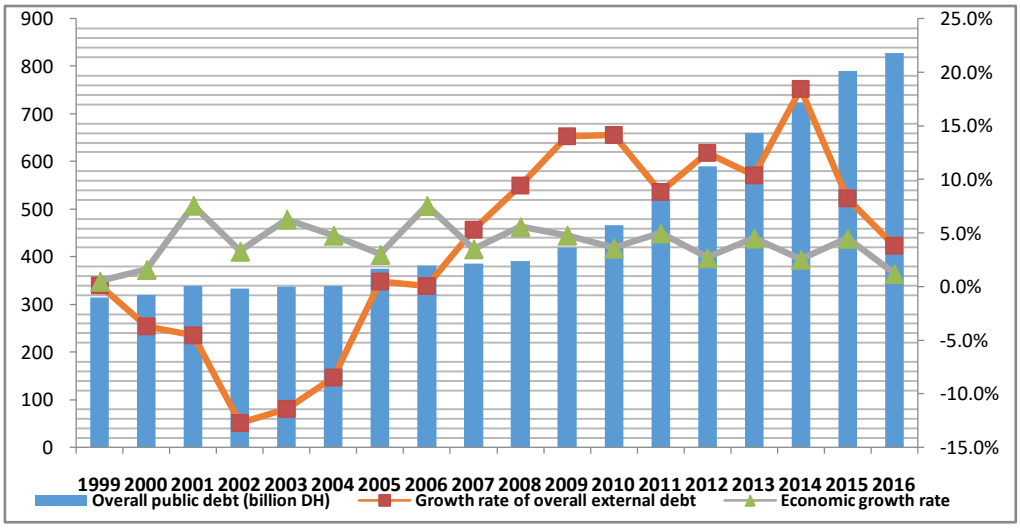
Related to GDP, the total debt of the treasury reached 64.8% in 2016 against 58.2% in 2012, an increase of 6.6 points. This trend is largely attributable to the increase in domestic debt of 6.3 points of GDP, from 44.4% in 2012 to 50.7% in 2016. Indeed, the external debt ratio of the treasury has increased from 13.8% of GDP in 2012 to 14.1% in 2016.

Moreover, the growth rate of Morocco's economy and that of the public external debt have evolved in the opposite way and with different magnitudes. Indeed, during the period 1999-2007, the external debt grew annually on average by- 3.9% against an economic growth rate of 4.2%. On the other hand, the level of external indebtedness experienced an average annual evolution of 11.1% over the period 2008-2016, while the growth rate increased by only 3.8%.



Source: Elaboration of authors based on data from the Ministry of Economy and Finance of Morocco

Figure 3: Evolution of the economic growth rate, the growth rate of public external debt (right axis in %) and the total public debt (left axis in billion DH)

IV. Empirical Methods and Procedures

a) Model specification

In order to assess the impact of the public external debt on economic growth, we assume a function of producing constant returns to scale of the form:

$$Y_t = K_t^{\alpha} H_t^{\beta} (A_t L_t)^{1-\alpha-\beta} \quad (1)$$

Where K measures physical capital,

$$\ln(y_t) - \ln(y_{t-1}) = \propto [\ln(k_t) - \ln(K_{t-1})] + \beta[\ln(h_t) - \ln(h_{t-1})] + [\ln(A_t) - \ln(A_{t-1})] \quad (2)$$

Equation (2) shows the growth of GDP per capita (y), explained by the contribution of growth in physical capital per capita (k), human capital per capita (h), and Total Productivity of factors(A).

Following the endogenous growth models (known as the AK models) developed by Romer (1986), Lucas (1988) and Pagano (1993), we use the following specification to examine the relationship between external debt and economic growth:

$$\Delta lnY_t = \propto_t + \beta X_t + \gamma D_t + \varepsilon_t \quad (3)$$

H measures human capital (educational level), and L is labor.

This specification is coherent with the Solow growth model developed by Mankiw et al. (1992) and with more recent work by Klenow and Rodriguez-Clare (1997) and Cohen (1997).

Taking into account the GDP per capita and introducing the log, equation (1) can be rewritten after first differentiation as follows:

Where $\Delta \ln Y_t$ is the dependent variable (the first logarithmic difference in GDP per capita),

X_t is the set of explanatory variables (including the logarithm of GDP lagged per capita, the first logarithmic difference in gross fixed capital formation as a percentage GDP, the terms of trade (TRAD), the inflation rate (INF) ...).

Variable D_t includes debt (including the first log difference in external debt as a percentage of GDP and the first logarithmic difference in debt service as a percentage of exports of goods, services and income streams) and $\varepsilon_t$is the error term.

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b) Presentation of the estimation method and variables

The cointegration methods developed by Johansen (1988), Johansen-Juselius (1990), and Pesaran (2001) as well as the ARDL methods are used in the economic literature to empirically determine the short-term (SR) and long-term (LR) between the variables. The ARDL model has some advantages over other cointegration approaches.

Indeed, the traditional methods of co-integration may encounter problems of endogeneity. Whereas the ARDL method makes it possible to distinguish the dependent and explanatory variables and to eradicate the problems that may arise due to the presence of autocorrelation or endogeneity. The ARDL method estimates the SR and LR relationships simultaneously and provides objective and efficient estimates. Also, the relevance of using this method is that it is based on a single equation framework. It also takes a sufficient number of offsets and directs the data generation process into a specific general modeling framework (Harvey, 1981).

Moreover, unlike other multivariate co-integration techniques such as Johansen and Juselius (1988), the ARDL method allows to estimate the co-integration relation by the methods of mean squares once the offset order of the model is identified. The Error Correction Model (ECM) can also be derived from the ARDL approach (Sezgin and Yildirim, 2003). This model provides results for LR estimates while the other traditional co-integration techniques do not provide such inferences. Similarly, the ECM combines SR adjustments with LR balance without losing information (Pesaran and Shin, 1999).

The basic form of an ARDL regression model is:

$$y_t = \beta_0 + \beta_1 y_{t-1} + \ldots\ldots + \beta_k y_{t-p} + \alpha_0 x_t + \alpha_1 x_{t-1} + \alpha_2 x_{t-2} + \ldots\ldots\ldots + \alpha_q x_{t-q} + \varepsilon_t \quad (4)$$

Where y_t is the variable to explain,
X_t is the set of explanatory varia
bles and
ε_t is a random term of "disturbance", which we will assume to be "well behaved" in the usual sense. In particular, it is independent of time.

The ARDL approach also has the advantage of testing the existence of the long-term relationships in small samples and allows testing between variables with different integration orders (Senayand Merter, 2010). Based on equation (3), the ARDL form of the equations to estimate in our model is as below:

$$\Delta grw_{(t)} = \alpha + \sum_{i=1}^{k} \mu_{1i}\, \Delta grw_{(t-i)} + \sum_{i=0}^{p} \mu_{ki}\, \Delta X_{(t-i)} + \beta_1 grw_{(t-1)} + \beta_k X_{t-1} + \varepsilon_{1(t)} \quad (5)$$

grw and X are respectively the endogenous variable (the rate of economic growth) and the set of explanatory variables explained below.

The parameter ε represents the error term and α the constant.

The long-term relationship between the variables of the model, according to the ARDL approach, exists when we reject the null hypothesis of the absence of co-integration ($\theta_1=\theta_k=0$). This hypothesis is tested through Fisher's test where the calculated value of the statistic is compared to the critical values simulated by Pesaran et al. (2001).

This study uses annual time series data on economic growth rate (grw), external debt (dx), human capital (sh), physical capital stock (sk), corruption perception index (corrup), inflation (Inf) and openness to trade (ouv) for the period 1988-2016 to examine the relationship between external debt and economic growth in Morocco. The data were collected from the database of the Ministry of Economy and Finance and the Office of the Higher Commissioner for Planning of Morocco, Transparency International and PWT9.

V. Results and Discussion

The first step in estimating an ARDL model is the analysis of the stationarity of the variables. Indeed, the results of the unit root tests show that the set of variables are not integrated of the same order (sh and grw are stationary in level and the other variables are integrated of order 1). As a result, none of the variables are integrated into an order greater than 1. From these two characteristics, we deduce respectively that to test co-integration, the use of the ARDL approach is possible and it is the most appropriate contrary to Johansen's approach.

The second step is to compute the F-statistics using the "Bound Testing" approach (Table 2). It is a question of testing the null hypothesis according to which the coefficients of the delayed variables of the equation (5) are null.

Pearson et al. (2001) tabulated two groups of critical values. One group assumes that all variables are of order I (1) while the other assumes that all are of order I (0). This provides a band covering all possible classifications of variables in I (0) or I (1) or even partially integrated.

The F-statistics are equal to 10.61 and 8.09 respectively for the two selected specifications. These values are to be compared to critical values below and above the significance level of 5% and 1%. The test statistics are higher than the upper bound of all the models (3.49 and 4.37 respectively). Therefore, the null hypothesis of no co-integration is rejected and the existence of a long term relationship between the variables of the two specifications is concluded.

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Table 2: ARDL F-Bound Test

Critical values		
Meaning threshold	I(0) Bound	I(1) Bound
5%	2,56	3,49
1%	3,29	4,37
F-statistical		
Specification I	10,61	
Specification II	8,09	

Source: Author's estimate

After showing the existence of a co-integration relationship between the model variables estimated by the Bound Testing method, the choice of the most appropriate ARDL model is made using the AIC criterion. In our case, we chose an *ARDL (2, 3, 3, 3, 2)* for the first specification and an *ARDL (1, 3, 0, 0, 0)* for the second specification (see figures in the appendix).

The estimates presented in the tables below show that the explanatory power of the two selected specifications is important and most of the estimated coefficients are statistically significant.

Similarly, the error correction mechanism is maintained for both estimated specifications. It is negative and significant at the 1% level. Thus, the coefficient associated with the variable grw shifted by one period (Δ (grw [-1])) being negative and significant at the 1% threshold for the two estimated specifications. Overall, the signs associated with the estimated short-term and long-term coefficients are overall satisfactory.

Table 3: Results of short-term estimates

	Specification I ARDL(2, 3, 3, 3, 2)	*Specification II ARDL(1, 3, 0, 0, 0)*
lgrw (-1)	*-2.12 (-6.87)*	*-1.22 (-6.44)*
lsk(-1)	*0.23 (3.97)*	*0.02 (0.75)*
lsh(-1)	*0,19 (3,33)*	
ldx(-1)	*-0,26 (-3,82)*	
Ldx		*-0,04 (-1,91)*
lOUV(-1)	*-0,04 (-0,50)*	
D(lgrw[-1])	*0,26 (1,47)*	
lINF		*-0,06 (-1,98)*
Lcorrup		*-0,22 (-2,11)*
D(lsk)	*0,17 (3,27)*	*0,13 (2,20)*
D(lsk[-1])	*-0,07 (-1,13)*	*0,08 (1,27)*
D(lsk[-2])	*0,07 (1,31)*	*0,23 (3,41)*
D(lsh)	*2,97 (3,22)*	
D(lsk[-1])	*-4,38 (-3,06)*	
D(lsk[-2])	*1,59 (1,99)*	
D(ldx)	*0,04 (0,53)*	

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D(ldx[-1])	*0,22* *(1,93)*	
D(ldx[-2])	*0,10* *(1,05)*	
D(lOUV)	*-0,09* *(-2,10)*	
D(lOUV[-1])	*-0,07* *(-1,49)*	
ECT	*-2,12* *(-10,17)*	*-1,22* *(-7,92)*

Student's statistics are in parentheses

These estimates highlight two results in which external debt has a different impact on economic growth. In the short term, external debt has a negative and largely significant effect on economic growth.

The variable approaching trade openness has a negative and significant impact on economic growth in Morocco in the short term, which shows that the Moroccan economy is very vulnerable to external shocks, especially with a structurally deficit trade balance. This result corroborates most studies that stipulate that external indebtedness and openness have a negative impact on economic growth, and thus seeking to maintain a growth rate at an acceptable level, the country will go further into debt. This idea is, however, rejected by Yapo (2002) and Cashin and Potillo (2000) who show that the deterioration of the terms of trade does not necessarily explain debt.

With regard to the stock of physical capital and human capital, a number of conclusions are highlighted. First, a one percentage point increase in physical capital stock is associated with a short and long-term increase of 0.23 and 0.11 percentage points, respectively, in the rate of economic growth. This result corroborates theoretical arguments and international empirical studies.

Second, the effect of human capital, measured by educational level, is positively and statistically significant. One percentage point increase in the human capital stock results in a short and long-term increase of 0.19 and 0.09 percentage points, respectively, in the rate of economic growth. This result is consistent with a number of theoretical points of view and empirical results. It also depends on the argument that the quality of human capital generates positive externalities and then puts the country on a higher growth path.

Table 4: Results of long-term estimates

	Specification I ARDL(2, 3, 3, 3, 2)	*Specification II ARDL(1, 3, 0, 0, 0)*
Lsk	0,11*** (5,90)	0,02 (0,76)
Lsh	0,09** (3,46)	-
Ldx	-0,12*** (-4,42)	-0,03 (-0,92)
lOUV	-0,02 (-0,51)	-
lINF	-	-0,04** (-2,008)
Lcorrup	-	-0,17** (-2,30)
Constant	-0,02*** (-4,13)	0,33** (2,28)
R^2	*0,95*	*0,78*
$\bar{R}^2$	*0,85*	*0,68*
Prob F-statistic	*0,001*	*0,00018*
DW	*3,26*	*2,03*
Hannan-Quinn criter	*-5,27*	*-4,61*

(***): Significance at 1% level
(**): Significance at 5% level
(*): Significance at 10% level
Student's statistics are in parentheses

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In the long term, the effect of the external debt appears negative in the two estimated specifications but not significant in the second specification after the introduction of corruption and inflation in the model.

According to estimates, Corruption[5] is estimated to have a negative and significant effect on short- and long-term economic growth, with elasticities of -0.22 and -0.17, respectively. This result confirms the idea that corruption has perverse effects on economic growth in Morocco. Mauro (2004) and Mo (2001) arrive at the same results in their studies.

Despite the efforts made by Morocco during the last two decades, in terms of investment in many infrastructure projects and equipment, financed mainly by external debt, these efforts seem to be have not contributed to the improvement of long-term economic growth in Morocco.

What characterizes the accumulation of capital in Morocco, which could explain its low profitability, is that the investment effort was mainly made by the public sector. However, and despite the economic results qualified as significant, Morocco records results in terms of inclusive social and human development that are still below the expectations of the population. Morocco's Gini coefficient reflects high levels of income inequality (Chauffour, 2018).

We also tend to believe that the negative impact of external public debt can also be explained by the combined effect of a series of factors, namely a shortage of competent executives, persistent administrative dysfunctions, and a lack of horizontal and vertical coordination.

VI. Conclusion

The main objective of this studyis to examine the impact of Morocco's external indebtedness on its economic growth. This issue is important considering that the country's external debt stood at 312 billion dirhams in 2016, which represents about 30.8 percent of GDP.

The results of this study showed a negative effect of external debt on economic growth in the short term, which was slightly larger, as well as in the long term. Indeed, during the analysis period, the growth rate of the Moroccan economy and that of the public external debt evolved in the opposite direction and with different amplitudes.

The related signs of other coefficients, such as physical capital stock, human capital, openness, and corruption allow us to conclude that these variables influence economic growth differently.

Although it is difficult to determine a critical threshold of public debt, several indicators suggest that the current level of Moroccan public debt is a constraint to long-term growth driven by public demand (Chauffour, 2018).

Indeed, an excessive debt, which leaves the whole problem of the optimal allocation, is translated in the long term by an exit of currencies, in the service of the external public debt towards the World Bank, superior to the drawings on the loans granted by this international financial institution in Morocco. This institution gives undue emphasis to financing activities that "self-amortize"[6] compared to those that "do not self-amortize" (Berrada, 2017).

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[5] This variable is approximated in the model by the perception index of corruption (ipc) which varies between 1 and 10. Closer it is to 10, the more the country shows a high probity and closer this index is to 1, higher is the corruption. This indicator has been re-parameterized so that a high score indicates a strong perception of corruption thus facilitating interpretation. Thus, we define the variable corrup = 10 - ipc. the IPC is now used in almost all scientific studies that places corruption at the heart of their analysis (Swaleheen, 2009 and 2007).

[6] That means those yielding an income, which makes it possible to cope, without great difficulty, with the service of the external debt.

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