

## Analysis of The Relationship Between Governance and Economic Growth: New Evidence from Tunisia an ARDL Bounds Testing Approach

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### Abstract

The role of governance in economic growth has received much attention of the researchers and policy makers in the last two decades. The literature available on this issue is not clear. The literature reveals that there is a growing dissatisfaction over the neo-classical and endogenous growth models. In recent literature institutional economics has emerged for determining the economic growth. In view of this fact, the present study is an attempt to explain the impact of governance on economic growth in Tunisian economy. The study uses ARDL approach for the period 1996-2015. Governance index has been measured by voice and accountable, government effectiveness, control of corruption, political stability, rule of law and regulatory quality. The results of ARDL show that governance has positive impact on economic growth. The results of causality test show that causality runs from governance to economic growth. The study stresses that for increasing economic growth there is a need to improve governance in Tunisia.

### تحليل العلاقة بين الحوكمة و النمو الاقتصادي في تونس : نموذج الانحدار الذاتي ذي الفجوات الزمنية الموزعة المتباطئة (ARDL)

بوزيد عميرة

#### ملخص

تهدف هذه الدراسة إلى تقييم فعالية الحوكمة الرشيدة وذلك من خلال محاولة التعرف على اثر الشفافية الاقتصادية على معدل النمو الاقتصادي في تونس ولهذا الغرض فقد تم الاستعانة بمنهجيات الانحدار الذاتي ذي الفجوات الزمنية الموزعة المتباطئة (ARDL) باستخدام بيانات سنوية للفترة 1996-2015. وفي هذا الإطار استخدمت الدراسة مجموعة من المؤشرات لمقاربة البنية التحتية الاجتماعية (مؤشرات الحوكمة (Kaufman, Kraay and Mastruzzi) (2003) مثل التعبير والمحاسبة (Voice and Accountability) لقياس مدى قوة الحقوق المدنية، الإنسانية وحرية الإعلام، الاستقرار السياسي (Political Stability)، فعالية الحكومة (Government Effectiveness) لدى جدارة موظفين القطاع العام ومصادقية السياسات الحكومية، جودة التنظيمات (Regulatory Quality) والأعباء الناتجة عن التنظيم المفرط لبيئة الأعمال، سيادة القانون (Rule of Law) ومدى حماية حقوق الملكية وفعالية النظام القضائي والقدرة على تطبيق العقود، ضبط الفساد (Control of Corruption) وعدم استخدام سلطة ما لتحقيق مكاسب خاصة. وبالاعتماد على البيانات الإحصائية وباستخدام أسلوب من أساليب الاقتصاد القياسي المتمثل في نموذج ARDL وبعد ذلك تم بناء النماذج القياسية ومعالجتها باستخدام معايير اقتصادية وإحصائية ليتم ربطها بواقع الاقتصاد التونسي. وانطلاقاً من النتائج المتوصل إليها وجدنا بان الحوكمة الرشيدة تؤثر على النمو الاقتصادي في تونس على المدى الطويل خلال فترة الدراسة. ولتحسين وضعية الاقتصاد المؤسساتي توصي الدراسة بتحسين مكامن الضعف في مؤشرات الحوكمة وتحقيق الشفافية والمساءلة ومكافحة الفساد. والنتائج أظهرت أن معظم هذه المؤشرات هي ذات دلالة إحصائية حيث أن هناك علاقة ارتباط إيجابية بين كل من مؤشر التعبير والمحاسبة، فعالية الحكومة، جودة التنظيمات و النمو الاقتصادي في تونس، في حين أن هناك علاقة ارتباط سلبية بين مؤشر سيادة القانون، الاستقرار السياسي، ضبط الفساد و النمو الاقتصادي في تونس.

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## 1. Introduction

In recent years, emerging economies have achieved significant macroeconomic performance. To strengthen them, the authorities of these countries have initiated several institutional reforms affecting the functioning of the economy in general. The major objective of these countries is to achieve the transition to «good governance». Indeed, improving the quality of institutions becomes fatal in order to achieve a sustainable level of development and achieve a high rate of economic growth. From a theoretical and empirical point of view, several studies show the existence of a weak relationship between the institutional framework and the growth of per capita gross domestic product.

Instantly, several studies have shown that the quality of the economic environment is one of the main reasons why growth rates are different between countries. This environment includes the laws, institutions, rules, policies and government regulations of the country.

Good institutions are characterized by structures and incentives that reduce uncertainty and support efficiency. They contribute to good economic performance. A favorable environment for growth is one that provides adequate protection for property rights. The latter gives agents the incentive to produce, invest and accumulate skills.

The importance of good governance lies in improving the business environment, the competitiveness of the economy, the attractiveness of the country and the efficient management of human capital. In this context, public authorities in emerging countries have introduced a set of reforms designed to breathe new life into the development of the country.

Measuring the quality of governance is an arduous task. The World Bank in 2003 developed a set of indicators to measure the quality of governance.

Today, the dimensions and measures of governance lead us to explore the idea of distinguishing between macroeconomic governance and microeconomic governance.

In macroeconomic terms, governance means «the traditions and institutions through which authority is exercised in a country» (Kaufman, Kraay and Zoido-Lobaton, 2000). This definition underlines that the effective mobilization of resources, the formulation and implementation of appropriate policies depend on the capacity of the

leadership. Governance is described as “good” or “bad”, depending on the coordination mechanism between government, market and civil society. Good governance is defined as credibility based on the availability and transparency of information, accountability of government and participation in decision-making for the collective society. On the contrary, bad governance is expressed by the lack of rules of law, the existence of corruption, the asymmetry of information, and so on.

In microeconomic terms, “corporate governance” refers to “all the organizational mechanisms that have the effect of delimiting powers and influencing decisions of leaders, in other words,” governing “their conduct and Define their discretionary space “(Charreaux G., 1997). According to this definition, ownership structure and the company’s various partners play a crucial role in determining the organizational framework and rules.

This distinction seems difficult in the sense that the quality of corporate governance depends on the quality of the institutional governance system in the country. Thus, the construction of an overall index of governance is not easy since, at the macroeconomic level, governance depends on several qualitative variables. Indeed, the diversity of indicators can be explained by the complex and multidimensional nature of governance.

The study by Kaufman et al. uses at least 250 indicators to measure the quality of institutions in a country. The information collected comes from 25 different sources and is produced by 18 international organizations. This database covers 199 countries for the period 1996 to 2015. Each country scores between -2.5 and +2.5. A higher value for a given country at a given date is better governance.

Based on the above introduction, the remaining sections are structured as follows: section two focuses on governance measures, while section three presents the theoretical and empirical overview relationship between governance and economic growth, while section four presents results and discussion, and last section provides conclusion and policy recommendation.

## **2. Measuring governance**

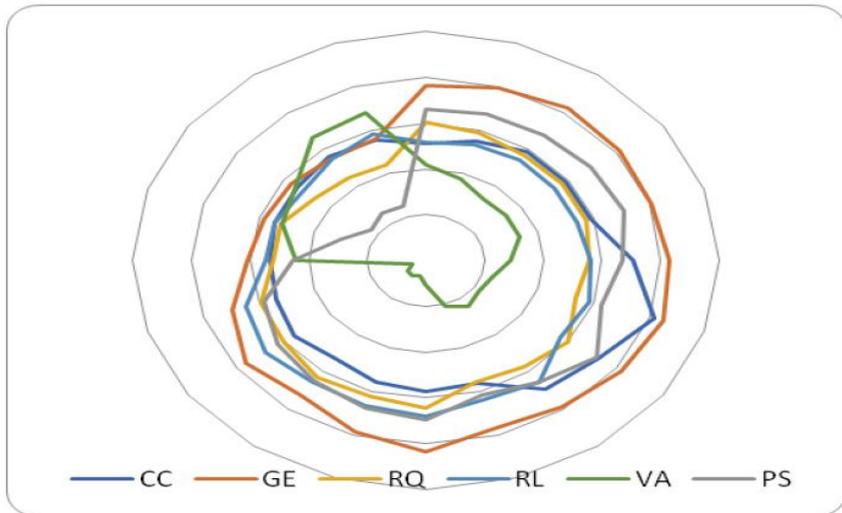
Although this is the most recent, the Kaufman, Kraay and Mastruzzi (2003) study proposes an overall index of governance calculated as the average of the following

six measures: citizen participation and accountability; Political stability and lack of violence; the effectiveness of public authorities; the weight of regulation; the rule of law and the absence of corruption.

1. Voice and Accountability (VA): measures the ability of citizens of a country to participate and choose government. It is based on a number of indicators measuring different aspects of the political process, civil liberties and human and political rights;
2. Political Stability (PS): measures the likelihood that the government of the day is destabilized or overthrown by unconstitutional and / or violent means or threatened by public order, such as terrorism.
3. Government Effectiveness (GE): measures aspects related to the quality and availability of public service, bureaucracy, the competence of civil servants, the independence of the administration of As well as the credibility and transparency of the government in its reforms, commitments and policies.
4. Regulatory Quality (RQ): focuses on the policies themselves including measures of the impact of anti-market policies such as price control or inadequate supervision and banking supervision as well as perception of the blockage imposed by excessive regulation in areas such as foreign trade and the business climate.
5. Rule of Law (RL): includes several indicators that measure the confidence of citizens in compliance with the laws and rules of society. This includes perceptions of the impact of crimes, the effectiveness and predictability of the justice system, and the applicability of judicial contracts.
6. Control of Corruption (CC): measures the extent of corruption, defined as the use of public power for personal interests and private profits in terms of wealth and corrupt gain.

The first two indices (1 and 2) describe the political process of democratization of political institutions, respect for civil rights, human rights and lack of instability such as political demonstrations or armed conflicts. The second category of indices (3 and 4) measures economic governance through the quality of public services, the quality and timeliness of public officials' decisions and transparency in tax collection. The third category of indices (5 and 6) measures the governance in the judicial field. It analyzes the independence of the judiciary, the security of investors, the absence of corruption related to the additional payments to state agents by businessmen.

Figure 1: Governance measures of Tunisia (1996–2015)



Source: Worldwide Governance Indicators (2015)

Note:  $VA_t$ ,  $GE_t$ ,  $CC_t$ ,  $PS_t$ ,  $RL_t$  and  $RQ_t$  are the voice and accountable, government effectiveness, control of corruption, political stability, rule of law, regulatory quality respectively

The graph above shows the importance of achieving the principles indicators of governance; Governmental effectiveness (GE) and Control of Corruption (CC) indicate a certain overall satisfaction. “Spider’s web” diagrams allow us to quickly identify the “profile” of the scores of six components of governance.

On government indicators, Government Effectiveness (GE) had the highest positive average score, followed by Rule of Law (RL), Control of Corruption (CC), Regulatory Quality (RQ), Political Stability and Absence of Violence (PS), and Voice and Accountability (VA).

### 3. Theoretical background & related literature

The relationship between governance and economic growth has been the subject of several theoretical and empirical studies. From the theoretical point of view, faced with the inadequacies of exogenous growth models to explain the stability of growth at steady state, several contributions (Lucas (1988), Romer (1986), McKinnon and Shaw (1973), Barro (1989), Roubini and Sala-I-Martin (1995) have developed models of endogenous

growth. These authors have quickly turned to deep variables, particularly institutional variables in an attempt to justify the development gaps between countries unexplained solely by economic variables. Several authors have highlighted political and institutional factors in the context of deepening growth models. Thus, Barro (1996) attaches particular importance to democracy, Clague, Keefer and Olson (1996) insist on the importance of respect for property rights, Alesina and Perotti (1994) stress the need to take into account the instability and Rodrik (1999) supports the idea that good governance is a necessary condition for improving economic aggregates. Hall and Jones (1999) show, from a sample of 133 countries, that differences in government institutions and policies across countries that explain differences in capital accumulation, level of education and productivity, which explain the disparity in income level and country development. On the other hand, Amable (2005) links institutions with the rest of economic activities. He finds that economic performance depends on the institutional policies adopted, in addition to the strictly technological elements, such as the accumulation of physical capital, investment in research and development and the type of training.

For their part, proponents of the New Institutional Economy (NIS) support the idea that executives of effective institutions can make a difference in the success of financial reforms. They argue that institutions are one of the determinants of long-term economic growth. Effective institutions create an environment conducive to capital accumulation. They direct resources towards productive projects and therefore generate high growth. Insufficient institutions, on the other hand, encourage the creation of non-productive activities and generate high transaction costs and low economic performance. The quality of institutions promotes growth through two channels: the investment channel, particularly foreign direct investment (FDI), and the channel of reducing transaction costs through risk reduction and neutralization of rigidities (Chtourou, 2004).

In general, institutions are a priori in interaction with growth. Improved economic activity is always accompanied by better institutions. This thesis is confirmed by the studies of Rodrik (1997, 2003), which show that the quality of the institutions accounts very well for the growth gaps between East Asian countries; Which cannot be attributed to traditional economic variables such as the accumulation of capital, technical progress or the increase in labor supply.

On the empirical level, a rich literature suggests that the good quality of institutions is fundamental for recovery and economic development. This literature often takes the form of cross-sectional studies that aggregate several countries. GDP per capita measuring the growth rate is estimated on many institutional variables such as voice and

accountability, political stability, government effectiveness, quality of regulation, rule of law and control of corruption. Other variables are used in these regressions but are not related to the quality of institutions such as monetary, banking and financial variables.

Econometric studies by authors such as Scully (1988), Grier and Tullock (1989), Barro (1996), Helliwell (1994) and Isham, Kaufman and Pritchett (1997) confirm the existence of a positive correlation between governance (Civil liberties) and economic growth for the majority of countries in their sample. In 2004, Kaufmann, Kraay and Mastruzzi show that good governance has a positive effect on growth. This result is proved by Acemoglu, Johnson and Robinson (2004). These authors have shown that the growth gap between rich and poor countries is due in large part to the difference in the guarantee of property rights in these countries. For their part, Rodrik, Subramanian and Trebbi (2002) emphasize the role of property rights in growth. Similarly, Barro (1991) and Londregan and Poole (1992) develop a robust econometric model confirming a positive correlation between political instability and growth. Political instability creates a low rate of growth. The same observation was obtained by Alesina and Perotti (1996), but with the exception that the dependent variable is investment. Some authors have tested the relationship between growth and institutional quality as measured by composite indices. As Easterly and Levine (2002) used the Kaufmann global governance index to show that governance affects growth positively and significantly. Similarly, after constructing two indices measuring contract security and property rights, Knack and Keefer (1995) suggest that these two indicators are positively correlated with growth. Finally, Mauro (1995) selected the three indexes of institutions built by Business International (BI): the index of corruption, the index of bureaucracy and the index of political stability. Econometric experiments confirm the positive and statistically significant impact of these indicators on economic growth. Moreover, among the most robust empirical studies devoted to the relationship between institutions and growth are published by the IMF and the World Bank. Thus, in its 2003 World Economic Outlook, the IMF stresses the importance of the quality of institutions as an explanatory factor for countries' development. According to the IMF, given the mobility of international capital, estimates of institutional realities have shown the major role of institutions in attracting investment. The study also shows that institutions have a positive and significant impact on economic growth. The growth rate of GDP per capita would increase by 1.7 percentage points if the quality of the institutions reached the average of the sample. Finally, this study shows that institutions have an effect on the instability of growth. The better the quality of institutions, the more stable the growth. Among the empirical studies devoted to the relationship between institutions – growth, we find that of the World Bank (2003) relating to MENA countries.

The study showed that since the 1980s, the annual average of economic growth per capita in the MENA region was 0.9%, a level lower than that of sub-Saharan Africa. The weak growth in the MENA region is explained by the governance gap. The simulations show that if the MENA region had been able to achieve an average quality of public sector administration comparable to that of a group of performing countries in South-East Asia, its growth rates would have been higher, by almost one percentage point per year.

#### 4. Model Specification

This study utilizes autoregressive distributed lags approach to co-integration, recently developed by Pesaran, Shin, & Smith, (2001) to overcome the difficulties of estimating time series data and establishing the long run relationship among economic variables. One of the advantages in the application of ARDL approach to co-integration is that it overcomes the unnecessary difficulty of achieving the order of  $I(0)$ , and  $I(1)$  as a condition of integrating order of series. This approach appears to be more reliable when compared with Engle, & Granger, (1987) and Phillips, & Hansen (1990) approach. One interesting thing with ARDL model is that it provides avenue for using OLS estimation criteria for identification and estimation of certain variables under consideration (Lee, Pesaran, & Smith, 1998). The application of OLS in the estimation of a long run relationship overcomes some of the weaknesses of other techniques. Thus, ARDL provides means for detecting the direction of causality through the modified OLS error correction representation mechanism. However, the decision rules of establishing the long run relationship in bound testing follow the rules that if the estimated F-test value of the joint significance is higher than the upper critical value computed values, the null hypothesis of no long run relationship is rejected. On the other hand, if the computed F-tests value of the joint significance lays below the lower critical value, the null hypothesis of no long run relationship is not rejected. But in any case where the F-test value falls in between the upper and lower critical values the outcome result is inconclusive. In every step of ARDL selection, the lag order is very important, therefore, the choice considers minimum lag value based on the Akaike Information criteria, (AIC), or the maximum lags length based on Schwartz-Bayesian Criteria (SBC).

A diagnostic test is performed in order to make sure that the model is well specified and it is free from any forms of disturbances or instability. The stability test is conducted by employing the cumulative sum of squares of recursive residuals (CUSUM)

and the cumulative sum of squares of recursive residuals (CUSUMsq). This enables us to be certain on the error correction representation results. Model specification is as follows:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta Y_{t-1} + \alpha_2 \Delta VA_{t-1} + \alpha_3 \Delta GE_{t-1} + \alpha_4 \Delta CC_{t-1} + \alpha_5 \Delta PS_{t-1} + \alpha_6 \Delta RL_{t-1} + \alpha_7 \Delta RQ_{t-1} + \alpha_8 Y_{t-1} + \alpha_9 VA_{t-1} + \alpha_{10} GE_{t-1} + \alpha_{11} CC_{t-1} + \alpha_{12} PS_{t-1} + \alpha_{13} RL_{t-1} + \alpha_{14} RQ_{t-1} + \varepsilon_t$$

The null hypothesis of no long run relationship is examined through F-test of the joint significant of the lagged level coefficient of equation.

$$H_0: \alpha_8 = \alpha_9 = \alpha_{10} = \alpha_{11} = \alpha_{12} = \alpha_{13} = \alpha_{14} = 0 \text{ (Variables are not cointegrated)}$$

$$H_1: \alpha_8 \neq 0, \alpha_9 \neq 0, \alpha_{10} \neq 0, \alpha_{11} \neq 0, \alpha_{12} \neq 0, \alpha_{13} \neq 0, \alpha_{14} \neq 0 \text{ (Variables are cointegrated)}$$

Where  $Y_t$  it is the dependent variable measured by the real GDP growth rate,  $VA_t$ ,  $GE_t$ ,  $CC_t$ ,  $PS_t$ ,  $RL_t$  and  $RQ_t$ , are the voice and accountable, government effectiveness, control of corruption, political stability, rule of law, regulatory quality respectively and  $\varepsilon_t$  is the white noise term.

## 5. Results and Discussion

### a. Stationarity test

In order to test the stationarity of the series used in this study, the Augmented Dickey-Fuller (ADF) test is used. This test examined the null hypothesis that the variable considered has a unitary (no stationary) root with respect to the alternative hypothesis that the variable is stationary. The results of the ADF test are shown in the table below.

Table (1) : Unit Root Test Results

	In level			First difference			Integration order
	Intercept	Trend and intercept	None	Intercept	Trend and intercept	None	
Y	-2.152	-2.987	-2.333	-4.636***	-4.442**	-4.664***	I(1)
VA	-0.769	-0.756	-0.847	-2.360	-2.993	-2.342**	I(1)
GE	0.022	-1.991	-1.083	-3.611**	-4.616**	-3.001***	I(1)
CC	-1.906	-2.380	-1.966**	-2.624	-2.538	-2.720***	I(0)
PS	-0.205	-1.606	-0.315	-2.743*	-3.369*	-2.316**	I(1)
RL	-1.583	-1.346	-1.664*	-2.144	-2.060	-2.212**	I(0)
RQ	-0.090	-0.587	0.510	-2.818*	-3.369*	-2.703**	I(1)

Source: Author's estimate, Eviews 9.5

Note: \*\*\*, \*\*, \* Significances level at 1% 5% 10%

The application of the unit root ADF tests on the studied series leads us to reject the hypothesis of stationarity for all the series except for the corruption (CC) and the rule and law (RL) which are stationeries in level. The results also shows that the other

series are integrated of order one,  $I(1)$ . Therefore no series is integrated in order two  $I(2)$  or more, which is essential for the application of the ARDL.

### b. Co-integration test: ARDL Bounds

The co-integration test under the Bounds procedure involves comparing the F-statistics with the critical values, which are generated for specific sample sizes.

Table (2) : ARDL Approach to Cointegration: Result of F-Test

F statistic estimated	90% lower bound	90% upper bound	95% lower bound	95% upper bound
3.68	1.99	2.94	2.27	3.28

Source: Author's estimate, Eviews 9.5

The calculated F-statistic is 3.68 ( $F=3.68$ ) is higher than the upper bound critical value at 5% level of significance using restricted intercept and trend. This implies that the null hypothesis of no cointegration can be rejected at 5% level of significance and therefore, there is a cointegration relationship among the variables.

### c. Long-term and short-term estimation of the ARDL model

After finding the long-term relationship between the variables, we proceed to the second step of the analysis. At this point, we estimate the long-term and short-term coefficients. The results of our ARDL model are presented in Tables 4 and 5.

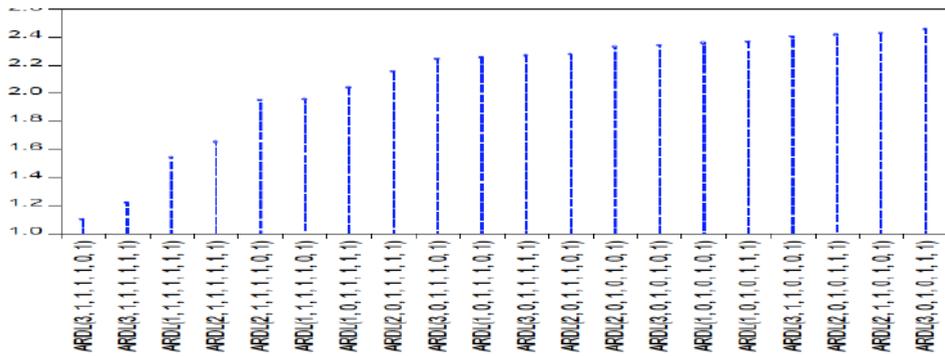
Table 3: ARDL Model (3, 1, 1, 1, 1, 0, 1)

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
Y(-1)	-0.469161	0.025246	-18.58339	0.0029
Y(-2)	-0.167579	0.032982	-5.080850	0.0366
Y(-3)	-0.170014	0.028544	-5.956300	0.0270
VA	-1.626695	0.186609	-8.717124	0.0129
VA(-1)	4.118787	0.654971	6.288498	0.0244
GE	0.704790	1.033052	0.682240	0.5655
GE(-1)	17.92305	1.891814	9.474003	0.0110
RQ	3.442727	0.646708	5.323468	0.0335
RQ(-1)	13.18953	1.305372	10.10404	0.0097
RL	8.856698	0.938441	9.437676	0.0110
RL(-1)	-14.11671	1.231957	-11.45877	0.0075
CC	-9.138420	0.917284	-9.962472	0.0099
PS	-1.136082	1.449709	-0.783662	0.5153
PS(-1)	-6.000356	0.409993	-14.63525	0.0046
C	3.283113	1.890258	1.736860	0.2245
<b>R-squared</b>	0.992882	<b>Adjusted R-squared</b>		0.943058
<b>F-statistic</b>	19.92779	<b>Prob(F-statistic)</b>		0.048773

Source: Author's estimate, Eviews 9.5

The ECM-ARDL model  $(3, 1, 1, 1, 1, 0, 1)$  is selected based on the Akaike information criterion (Figure 2).

Figure 2: the graph of the Akaike Information Criterion (AIC)



Source: Author’s estimate, Eviews 9.5

Table 4 presents the results of the long-term relationship between the dependent variable and the other explanatory variables.

Table (4): Long-term coefficients

Variable	Coefficient	Std. Error	t-Statistic	Prob.
VA	1.379320	0.291574	4.730603	0.0419
GE	10.310118	1.843976	5.591242	0.0305
RQ	9.205602	0.811978	11.337257	0.0077
RL	-2.911306	0.512793	-5.677347	0.0297
CC	-5.057923	0.588699	-8.591699	0.0133
PS	-3.949868	1.064989	-3.708834	0.0656
C	1.817134	1.003087	1.811542	0.2118

Source: Author’s estimate, Eviews 9.5

The institutional variable “Voice and Accountability” Has a positive and significant effect on economic growth in Tunisia. This result is expected in fact that Tunisia after the revolution is a country characterized by a developed legal system, a high level of transparency, protected civil liberties, respected political rights, a free press, democratic accountability and a media Independent.

Economic growth in Tunisia appears to be positively influenced by the institutional variable “Government Effectiveness “. Result is expected, considering the components of this variable namely: government policies, quality of administration, effective officials, government credibility, bureaucratic delays, utilities, low wastage in government spending.

The “Regulatory Quality” has a positive and significant impact on Tunisia’s economic growth. This result can be explained by the fact that in the case of the component elements of this variable, Tunisia can perform well.

The institutional variables “rule of law” and “corruption” the results shows that in Tunisia affect economic growth negatively in the long run. The study reveals that corruption and rule of law yields negative influence economic growth directly as well as indirectly.

The institutional variable “political stability” negatively influences economic growth in Tunisia. This is an expected result in the case of this particular country after 2010 year of the revolution. Indeed, Tunisia is a country characterized by high political instability an almost total presence of violence.

Table (5): Error Correction Model and Short-Term Estimates

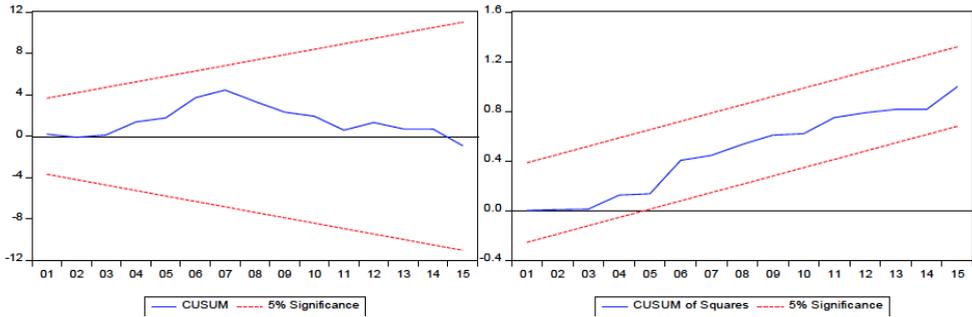
Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(Y(-1))	0.411725	0.260863	1.578322	0.2552
D(Y(-2))	0.161382	0.189637	0.851005	0.4844
D(VA)	-1.713576	1.807446	-0.948065	0.4432
D(GE)	-7.185206	4.317897	-1.664052	0.2380
D(RQ)	12.165096	6.485228	1.875816	0.2015
D(RL)	8.941441	4.171893	2.143258	0.1653
CC	-1.593690	1.687241	-0.944554	0.4446
D(PS)	-0.922119	3.370718	-0.273567	0.8101
ECM(-1)	-1.540381	0.316939	-4.860188	0.0398
Cointeq = Y - (1.3793*VA -5.0579*CC + 10.3101*GE + 9.2056*RQ -2.9113 *RL -3.9499*PS + 1.8171)				

Source: Author’s estimate, Eviews 9.5

The error correction model (ECM) is used to confirm the existence of a stable long-term relationship and a cointegration relationship between the variables. Table 5 shows that the coefficient of the error correction term ECM (-1) is statistically significant with the expected negative sign. This confirms the existence of a stable long-term relationship between the variables. The ECM coefficient (-1) is -1.54, suggesting

a fast adjustment process. Nearly 154% of the shock imbalance of the previous year was brought back to the long-term equilibrium of the current year.

Figure 3: Plotting of CUSUM Statistics for Stability Test    Figure 4: Plotting of CUSUMSQ Statistics for Stability Test



Source: Author’s estimate, Eviews 9.5

Finally, the structural stability of the long term and short term relationships of the ARDL model for the entire period is examined by the cumulative sum (CUSUM) and the cumulative sum of the squares (CUSUMSQ) of the recursive residual test proposed by Brown and al. (1975).

The null hypothesis of these tests is that the regression equation is correctly specified. These two tests are shown in Figures 3 and 4. The two lines indicate the significance level at the 5% threshold and if the CUSUM and SUSUMSQ plots remain within the straight lines then the null hypothesis of the model specification can be accepted. Otherwise, the null hypothesis is rejected and it can be concluded that the regression equation is misleading. The two figures reveal that the CUSUM and SUSUMSQ plots remain in the segments, confirming that the estimated equation is correctly specified and stable.

## 6. Conclusion and policy recommendation

This article analyzes the effects of institutional quality on economic growth. The quality of institutions is approximated by a set of six institutional variables: the presence of a democratic system, political stability, the rule of law, government effectiveness, quality of regulation and corruption. In order to achieve our objective, we opted for an empirical study of an ARDL bounds testing model for Tunisia during the period 1996–2015.

Recent economic literature poses good governance as a significant policy option to steer growth also advocating good governance as first priority.

Empirical results indicate the VECM–ARDL terms growth as insignificant for governance in the short run, which may indicate that the relationship is based on the long run phenomenon.

The empirical results thus support the viewpoint that governance is an end in itself and may not be attributed as a tool for development. It is good to ensure governance for better service delivery to the citizens even if it may not be the root cause of attaining economic growth goals. Further research on the dynamics of institution building and different parameters for governance and economic growth may improve the findings.

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