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Abstract:

The aim of this work is to study the impact of tax revenues and domestic investments on social and economic well-being in Tunisia over the period 1976 – 2018. This study is based on co-integration analysis and Vector Error Correction Model. Empirical results indicate that in the long run domestic investment has a negative impact on economic growth, while the impact of tax revenues is positive. Also, results indicate that domestic investment and economic growth influence positively tax revenues. However, Tax revenue and economic growth don't have any effect on domestic investment in the long run. It is seen that in Tunisia the strategy policy of tax revenue is not safe for domestic investment and the strategy policy of domestic investment is not safe for economic growth. Therefore, we should encourage immediate intervention to take the necessary measures before the situation causes a greater disaster.

Key words: Tax revenue; Domestic investment; Economic growth, Tunisia.

JEL Classification: E62, H21, O47, O55

1. Introduction

To have an influence on future economic developments, the theories and models of economic growth highlight the different ways in which current economic activity to properly identify the sources likely to lead to continued economic growth.

In fact, several researchers and economists reaffirm that growth is a fundamental process of contemporary economies, based on the development of factors of production, and linked in particular to the industrial revolution, to access to new mineral and energy resources as well as to Technical progress. It transforms people's lives as it creates more goods and services. In the long term, growth has a significant impact on the demographics and the standard of living of the societies that form it. Likewise, the enrichment that results from economic growth can help reduce poverty.

Domestic investment may be a beneficial figure for economic growth. Consequently, residential ventures and capital arrangement increment economic growth. Economic demonstrate advocates that rise in venture leads to boost the capital arrangement which improves the economic growth.

An intensive debate area in economic literature is the relationship between economic growth and tax revenue. Although there are many variables that lead economic growth, taxation has a more pronounced impact on economic growth through its direct and derived effects. As motivation tools, taxes are one of the important tools in tax policy.

In developing countries, a large part of the recovery package consists of tax rules. Taxes also have a great impact on saving and investment decisions. The difficulties in financial investment and the growth of growth countries are important structural problems.

Whereas pay and corporate charges have a coordinate impact on the volume of reserve funds and venture choices, consumption charges can moreover influence the volume of investment funds, the level of generation and choices inclinations.

The nature and profundity of the relationship between economic growth and assess income is decided by numerous factors. A few of them are the sorts of charges; assess rates, the situational circumstance and the level of advancement of the particular economies. The relationship between economic growths is more critical, particularly for creating nations that confront major challenges in financing development and improvement.

Related nations have auxiliary issues in handling government shortfalls and private segment shortfalls, which decide speculation choices and economic growth. Whereas accomplishing one objective, you stray from another. Normal irregularities moreover happen between monetary arrangements goals in this range. Whereas charges are developing as an critical arrangement instrument to combat these issues, particular charge arrangements on this premise straight for wardly influence economic growth. For illustration, corporate assess cuts are exceptionally imperative to extend the level of venture.

However, while the aforementioned cuts will have an effect that will exacerbate the problems of public financing, increasing spending taxes to mitigate this effect will negatively affect the social purpose of taxation. At this point, it can be argued that the main priority for these countries is the tax packages that will encourage growth. Considering the evolution of the composition of tax revenue in Tunisia, it can be said that there has been an evolution in line with associated expectations.

In addition, such empirical research has never been conducted in the context of Tunisia. In this research, we try to bridge these gaps by using functional production (including taxation, domestic investment, and economic growth), and estimate from 1976 to 2018 by applying correlation analysis, co-integration analysis, and vector error correction models. The rest of this article is organized as follows. The second section is an investigation of literature. The third part clarifies the data characteristics and method structure. Empirical results and analysis will be considered in the next section 4. Section 5 will terminate the study and make recommendations.

2. Literature survey

In this review, we focus on empirical studies that have examined the link between domestic investment and economic growth, and the link between tax revenues and economic growth. The aim is to inspire us to study the impact of domestic investments and tax revenues on economic growth in Tunisia. Our review of the literature has indeed shown how little empirical work has been done on the link between these variables.

2.1.Domestic investment and economic growth

According to Bakari (2020a), domestic investment occupies a very important position in the national economy because it stimulates economic growth and sustainable development

through its influence on several economic variables. Similarly, in the context of economic growth theory, some economists, such as Romer (1986); Lucas (1988); Barrow (1991); Fischer (1993) confirmed the importance of domestic investment in improving economic growth. Other economists have also proved that, like Khan (1996), domestic investment does not necessarily have a beneficial effect on economic growth. Bakari (2021) investigated the impact of domestic investment on economic growth in Spain during the period 1970 – 2017. His research indicates that domestic investments are seen as the best source of economic growth in this country. He concluded that policy makers should pay attention to the nexus between trade, domestic investment and economic growth by making news formulating policies and innovative strategies. Javid (2019) inspected the relationship between domestic investment and economic growth for Pakistan over the period 1972 to 2015. He employed Johansen Co-integration Tests and fully modified ordinary least squares (FOLS). The principal punch line of this investigation is that public and private investment has positive impacts on economic growth. Furthermore, Tran and Hoang (2018) examined the impact of domestic investment on economic growth in 47 provinces of Vietnam during the period 2012 to 2015. The empirical results indicate that domestic investment has a positive effect on economic growth.

For the case of Vietnam, Nguyen and Trinh (2018) searched the influence of domestic investment on economic growth in the short term and in the long run during the period of 1990 - 2016. The results from this research mark that domestic investment in Vietnam affect economic growth in the short run and in the long run. Bakari et al (2020) examined the contribution of domestic investment on economic growth in Peru for the period 1970 – 2017. They found that domestic investments have not any effect on economic growth in the short run and in the long run. These results were interpreted in abundance by issues and a miserable economic organization.

Bouchoucha and Bakari (2019) searched the effect of domestic investment on economic growth in Tunisia during the period 1976 – 2017. By using Auto-Regressive Distributive Lags (ARDL) approach, they found that domestic investment has a negative effect on economic growth in the long run. The same study is investigated by Bakari (2020a). He found the same results in the long run by applying Vector Error Correction Model (VECM). Also, Bakari and Tiba (2019a) examined the impact of domestic investment on economic growth for the case of 24 Asian countries over the period 2002 – 2017. Empirical results indicated that domestic investment has a positive effect on economic growth.

In the case of Nigeria, Bakari et al (2018a) investigated the impact of domestic investment on economic growth for the period 1981 – 2015. They found that domestic investments have not any effect on Nigerian's economic growth in the short term and in the long term. Bakari (2018) investigated the influence of domestic investment on economic growth in Algeria for the period between 1969 and 2015. He found that domestic investment has a negative effect on economic growth in the long run with emphasis on the weak strategy for development and investment in this country.

Bakari (2017a) studied the impact of domestic investment on economic growth in Malaysia for the periods 1960 and 2015. He found that domestic investment cause economic growth in the short run and in the long run. In the case of Egypt, Bakari (2017b) found that domestic investment has a negative incidence on economic growth for the period 1965 – 2015. Also Bakari (2017c) searched found that domestic investment has a negative effect on economic growth for the case of Gabon. Kobilov (2020) examined the relationship between domestic investment and economic growth in the case of Uzbekistan. By using a VECM model, he found that there is a positive bidirectional relationship between domestic investment and economic growth. However, Ewubare and Worlu (2020) examined the effect of domestic investment on economic growth in Nigeria for the period 1990 to 2017, and they found that there is a negative relationship between domestic investment and economic growth in the long run.

2.2.Tax revenues and economic growth

Empirical studies on the relationship between taxation and economic growth have also yielded different results. Some studies have shown that this relationship is positive, while other studies have shown that this relationship is negative. At the same time, other studies assume that there is no relationship between these two factors. Widmalm (2001), Zeng and Du (2003), Lee and Gordon (2005), Momatzakis (2005) and Saqib et al. (2014) studied the impact of taxes on economic growth with the common conclusion that the impact of the taxation of economic growth is negative. Abdioyeva and Baygonuşova (2016), Ray et al (2012), Egbunike et al. (2018), Aydin and Esen (2019), and Ezhen and Stephen (2020) concluded that despite the various samples and groups of countries used in their work, a positive relationship between taxes and economic growth could be observed.

For example, Bakari (2019) studied the impact of tax revenue on economic growth in France for the period 1972 – 2016. By applying VECM model, he found that tax revenue has a negative effect on economic growth. As recommendations, his study indicated that the strategy tax policy of France is not safe for domestic investment and economic growth. Amin et al. (2018) studied the impact of personal income tax on the economic growth of Pakistan and China from 1986 to 2015. They used the time series data of these two countries to study the short-term and long-term relationship through the ARDL method. The results show that, in the long run, there is a positive correlation between the personal income tax and economic growth of the two countries.

Bakari et al (2020) searched the impact of tax revenue on economic growth in Germany. They found that tax revenue influence positively economic growth over the period 1972 – 2016. Bakari and Tiba (2019b) investigated the influence of tax revenue on economic growth for the period 1970 – 2016. They confirm that tax revenue is not seen as a source of economic growth in the short run and in the long run. Hamzaoui and Bousselhami (2017) studied the relationship between Moroccan taxation and economic growth. After recalculating a series of new public and private capital and based on the simultaneous equation model, the data for the period 1980-2015 was estimated. The idea is to measure the impact of taxes on economic growth through the impact of taxes on public capital. It turns out that the relationship between the two variables is positive. Households can raise public funds through taxation. Also, results indicated that public capital improves economic growth.

Takumah and Iyke (2017) used the Toda Yamamoto test instead of the traditional Granger causality test to avoid pre-tax bias, thereby exploring the causal impact of taxation on Ghana's economic growth. The quarterly data set they used spans from 1986 to 2014. This finding agrees that taxes can affect economic growth. Gurdal et al (2020) examined the nexus between tax revenue and economic growth for the G7 countries using annual data from 1980 to 2016. They found that there is no relationship between taxation and growth in the short run and the long run.

3. Data and empirical methodology

To inspect the relationship between tax revenues, investment and economic growth in Tunisia, we will use a time series database that will cover the period 1976-2018, and take and

collect annual statistical reports from the World Bank. The succinct representation of the variables is given below in Table 1

Table 1. Description of variables

No	Variables	Descriptions	Source
1	Y	Gross Domestic Product at constant price	World Bank Indicators
2	K	Gross Fixed Capital Formation at constant price	World Bank Indicators
3	T	Tax Revenues at constant price	World Bank Indicators

Source: The World Bank Indicators

To research the relationship between tax revenues, domestic investment and economic growth in Tunisia, we will use correlation analysis and an estimation base on the Sims model. The empirical methodology of this analysis is as follows:

- ✓ Correlation analysis using Pearson's correlation test;
- ✓ Determination of the order of integration of all the variables using the Augmented Dickey Fuller test;
- ✓ Determining the number of delays using a set of information selection criteria such as AIC, SC and HQ;
- ✓ Use the Johansen test to check the co-integration between the variables;
- ✓ Estimation of the Sims model (VAR if there is no co-integration; VECM if there is co-integration);
- ✓ Apply stability tests to verify the robustness and credibility of the model and the empirical results.

The augmented production function, including domestic investment, tax revenues, and economic growth, is expressed as:

$$\mathbf{Y = f(K; T)} \quad \mathbf{(1)}$$

Where Y, K and T represent respectively: gross domestic product, gross fixed capital formation and tax income the function can also be represented in a log-linear econometric format as:

$$\mathbf{Y_t = \alpha_0 + \beta_1 K_t + \beta_2 T_t + \varepsilon_t} \quad \mathbf{(2)}$$

Or:

- ✓ α_0: The constant term;
- ✓ β_1: The coefficient of variable (Domestic Investment);
- ✓ β_2: The coefficient of variable (Tax Revenues);
- ✓ t: The time trend;
- ✓ ε_t: The random error term assumed to be normally distributed, identically and independently.

Before attempting to demonstrate empirical performance and analyze the interpretation, some preparatory tests on data generally considered necessary. Therefore, the descriptive statistical board is one of the terms of data transfer that provides certain assumptions or information on the ability of compressed changes.

Table 2. Descriptive statistics

	Y	K	T
Average	2.62E+10	5.60E+09	20.21712
Median	2.22E+10	4.72E+09	20.04816
Maximum	5.10E+10	1.14E+10	23.06769
Minimum	8.21E+09	1.70E+09	17.78923
Standard deviation	1.37E+10	2.77E+09	1.313324
Skewness	0.405722	0.594679	0.461921
Kurtosis	1.775538	2.113798	2.680853
Sum	1.23E+12	2.63E+11	950.2046
Sum Sq. Dev.	8.60E+21	3.52E+20	79.34172
Observations	47	47	47

Source: Authors' calculations using Eviews 10 software

Table 2 presents the descriptive statistics of the variables in mass. According to Table 1, the mean and standard deviation of log Y are 2.62E + 10 and 1.37E + 10, respectively. All these statistics show that the variable which designates the gross domestic product is a considerable variable. In addition, the standard deviation of the variables takes into account the variation and volatility of the statistics during the investigation period. All the variables given are

positively skewed. The overall asymmetry and Kurtosis coefficients indicate that the variables follow the normal distribution. For all variables, the maximum has positive signs. Likewise the minimum has positive signs, which presents the existence of several evolutions and variations between them.

We will use the correlation coefficient which aims to measure the strength of the relationship between two variables (x and y). The simple linear correlation coefficient, known as the Pearson coefficient is given by:

$$\mathbf{r} = \frac{\mathbf{cov}\,(\mathbf{x},\mathbf{y})}{\boldsymbol{\sigma}_{\mathbf{x}}\boldsymbol{\sigma}_{\mathbf{y}}} = \frac{\sum_{\mathbf{i}=\mathbf{1}}^{\mathbf{i}=\mathbf{n}}(\mathbf{y_i}-\overline{\mathbf{y}})(\mathbf{x_i}-\bar{\mathbf{x}})}{\sqrt{[\sum_{\mathbf{i}=\mathbf{1}}^{\mathbf{i}=\mathbf{n}}(\mathbf{y_i}-\bar{\mathbf{y}})^2][\sum_{\mathbf{i}=\mathbf{1}}^{\mathbf{i}=\mathbf{n}}(\mathbf{x_i}-\bar{\mathbf{x}})^2]}} \quad \textbf{(3)}$$

- r: Correlation coefficient
- $cov\ (x, y)$: Covariance between the two variables x, y
- $\sigma_x$etσ_y: The standard deviations of the variables x, y
- $\bar{x}$ et$\bar{y}$: The means of the variables x, y
- n : Number of observations

The following table describes the results of the Pearson correlation test indicating the correlation relationships between the variables that are included in the estimated model.

Table 3. Results of correlation tests

	Y	K	T
Y	1		
K	0.967327223576189	1	
T	-0.3270635871904002	-0.1906051036189271	1

Source: Authors' calculations using Eviews 10 software

Table 3 shows the following results:

- ✓ There is a positive correlation coefficient between economic growth and investment. So an increase in the variable which designates the investment of 1% leads to an increase of 0.967327223576189% of the variable which designates economic growth (a strong correlation).
- ✓ The correlation coefficient between the variable which designates economic growth and the variable which designates tax revenues is negative. In this case, a 1% increase

in tax revenues results in a 0.3270635871904002% decrease in economic growth (a weak correlation).

- ✓ The correlation coefficient between the variable which designates the investment and the variable which designates the tax revenues is negative. In this case, a 1% increase in tax revenues results in a 0.1906051036189271% decrease in economic growth (a weak correlation).

4. Empirical Results

4.1. The results of the stationary test

The ADF test (Augmented Dickey-Fuller test) is a statistical test that wants to know if a time series is stationary, that is, if your statistical properties vary or not during the course of time.

Table 4. Analysis of the stationary of the variables

Constant		**Linear trend and constant**		**No constant no linear trend**	
Stationary at level: Y					
t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
2.167458	0.2205	0.883422	0.9492	10.39784	1.0000
Stationary at first difference: Y					
t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
6.672072***	0.0000	7.764960***	0.0000	1.458119	0.1334
Stationary at level: K					
t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
1.768032	0.3913	3.506574**	0.0507	2.797149	0.9984
Stationary at first difference: K					
t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
4.714895***	0.0004	4.798203***	0.0018	4.217138***	0.0001
Stationary at level: T					
t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
2.707185*	0.0805	3.281311*	0.0822	0.280815	0.7630
Stationary at first difference: T					
t-Statistic	Prob.*	t-Statistic	Prob.*	t-Statistic	Prob.*
7.929184***	0.0000	7.938684***	0.0000	8.020286***	0.0000

*****; ** and * denote significances at 1%; 5% and 10% levels respectively**

Source: Authors' calculations using Eviews 10 software

The results of the ADF test are shown in Table 4, it is clear that all the variables are integrated in order 1.

5. Determination of the number of the optimal lags

Verifying the number of optimal lags that will be applied in our model estimation is very important. To achieve this goal, we will base ourselves on a set of selection criteria which are FPE, AIC, SC and HQ.

Table 5. Determination of the number of the optimal lags

VAR Lag Order Selection Criteria

Lag	*LogL*	*LR*	*FPE*	*AIC*	*SC*	*HQ*
0	228.9334	NA	4.27e-09	-10.75873	-10.63461*	-10.71324*
1	236.8332	14.29485	4.50e-09	-10.70634	-10.20987	-10.52436
2	248.5843	19.58519*	3.98e-09*	-10.83735*	-9.968513	-10.51889
3	251.3596	4.228970	5.46e-09	-10.54093	-9.299740	-10.08599
4	255.4383	5.632566	7.14e-09	-10.30659	-8.693037	-9.715157

*** indicates lag order selected by the criterion**

LR: sequential modified LR test statistic (each test at 5% level)

FPE: Final prediction error

AIC: Akaike information criterion

SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Authors' calculations using Eviews 10 software

The results of Table 5 show us that the number of delays is equal to 2 since the LR, FPE and AIC criteria select that the number of delays is equal to 2.

6. Co-integration analysis

The Johansen co-integration test highlights the number of co-integration relationships and its functional form by following different criteria. In our case we will apply the criterion of the trace

Table 6. Results of the Johansen test

Unrestricted Cointegration Rank Test (Trace)				
Hypothesized No. of CE(s)	***Eigenvalue***	***Trace Statistic***	***0.05 Critical Value***	***Prob.*****
None *	0.548666	63.28914	29.79707	0.0000
At most 1 *	0.360933	29.08059	15.49471	0.0003
At most 2 *	0.204311	9.827540	3.841466	0.0017
Trace test indicates 3 cointegrating eqn(s) at the 0.05 level				
*** denotes rejection of the hypothesis at the 0.05 level**				
****MacKinnon-Haug-Michelis (1999) p-values**				
Unrestricted Cointegration Rank Test (Maximum Eigenvalue)				
Hypothesized No. of CE(s)	***Eigenvalue***	***Max-Eigen Statistic***	***0.05 Critical Value***	***Prob.*****
None *	0.548666	34.20855	21.13162	0.0004
At most 1 *	0.360933	19.25305	14.26460	0.0075
At most 2 *	0.204311	9.827540	3.841466	0.0017
Max-eigenvalue test indicates 3 cointegrating eqn(s) at the 0.05 level				
*** denotes rejection of the hypothesis at the 0.05 level**				
****MacKinnon-Haug-Michelis (1999) p-values**				

Source: Authors' calculations using Eviews 10 software

Table 6 indicates that there are three co-integration relationships. In this case, the error correction model can be kept.

7. Estimation of Vector Error Correction Model

After inspecting the long-term relationship between (Y), (K), and (T), a causality test aims to expose the causal direction between the variables. This test is constructed from the restriction of the Wald test coefficients, established on each equation of the error correction model (ECM). The VECM can be formulated with our variables as follows:

$$\Delta(\mathbf{Y})_t = \alpha_1 + \sum_{i=1}^{k} \beta_{1i}\Delta(\mathbf{Y})_{t-1} + \sum_{i=1}^{k} \gamma_{1i}\Delta(\mathbf{K})_{t-1} + \rho_1 \mathbf{ECT}_{1t-1} + \varepsilon_{1t} \qquad (4)$$

$$\Delta(\mathbf{K})_t = \alpha_2 + \sum_{i=1}^{k} \beta_{2i}\Delta(\mathbf{Y})_{t-1} + \sum_{i=1}^{k} \gamma_{2i}\Delta(\mathbf{K})_{t-1} + \rho_2 \mathbf{ECT}_{2t-1} + \varepsilon_{2t} \qquad (5)$$

$$\Delta(\mathbf{T})_t = \alpha_3 + \sum_{i=1}^{k} \beta_{3i}\Delta(\mathbf{Y})_{t-1} + \sum_{i=1}^{k} \gamma_{3i}\Delta(\mathbf{K})_{t-1} + \rho_3 \mathbf{ECT}_{3t-1} + \varepsilon_{3t} \quad (6)$$

To justify the robustness of the results and to prove and affirm that this long-term relationship is correct or not, it is necessary to test the significance of this equation. The decision rule is as follows: the error correction term (ECT) must be negative and significant. In this case the long-run equilibrium equation is significant (that is, all the coefficients included in the long-run equilibrium equation are significant). In the absence of this condition, the long-run equilibrium equation will not be significant.

Tableau 7. Estimation of VECM in the long term

VECM Models			
Long term equilibrium equations	**Equation 4**	**Equation 5**	**Equation 6**
Y	**1.000000**	-1.069945 (0.86820) [1.23237]	0.215947 (0.20463) [-1.05528]
K	-0.934628 (0.25827) [3.61876]	**1.000000**	0.201830 (0.04987) [-4.04672]
T	4.630771 (0.74284) [-6.23384]	4.954670 (0.60862) [-8.14086]	**1.000000**
C	0.064218	0.068710	-0.013868
ECT	-0.097238*	0.061857	-1.752560***

Source: Authors' calculations using Eviews 10 software

Table 7 shows that equations 4 and 6 are significant since their coefficient of the error correction term is negative (-0.097238 and -1.752560), and have significant probabilities. In the long run, the estimation of equation n ° 4 indicates that investments have a negative effect on economic growth and that tax revenues have a positive effect on economic growth. Equation 4 proves that a 1% increase in domestic investment leads to a decrease in economic

growth of 0.934628%. Likewise, a 1% increase in tax revenues leads to an increase in economic growth of 0.4630771%.

The estimate of Equation 6 indicates domestic investment and economic growth have a positive effect on tax revenues. Indeed, a 1% increase in domestic investments leads to a 0.201830% increase in tax revenues. Likewise, an increase in economic growth of 1% leads to an increase of 0.215947% in tax revenues.

Equation 5 is not significant because the coefficient of the error correction term is positive. In this case, the results confirm that economic growth and tax revenues have no effect on long-term domestic investments. For the existence of a short-term causal relationship, the following assumption is applied: If there is a probability less than 5%, then the independent variable causes the dependent variable. On the other hand, if there is a probability greater than 5% in this case, the absence of a short-term causal relationship can be noted.

Table 8. Estimation of VECM models in the short term

VEC Granger Causality / Block Erogeneity Wald Tests			
Dependant variable: T			
Excluded	Chi-sq	df	Probability.
Y	3.813897	2	0.1485
K	15.01951	2	0.0005
All	19.56152	4	0.0006
Dependant variable: Y			
Excluded	Chi-sq	df	Probability
T	1.595813	2	0.4503
K	1.587077	2	0.4522
All	1.966898	4	0.7418
Dependant variable: K			
Excluded	Chi-sq	df	Probability
T	1.658674	2	0.4363
Y	0.043780	2	0.9783
All	1.818030	4	0.7692

Source: Authors' calculations using Eviews 10 software

Wald tests indicate that only domestic investments and economic growth cause short-term tax revenues. Domestic investments and tax revenues do not cause short-term economic growth. Likewise, tax revenues and economic growth do not cause domestic investments.

8. Diagnostics tests

In the received methodology, it is important to perform indicative tests. The last show that the methodology regards the speculations identified with ordinariness (Jarque Bera test), homoscedasticity (Breusch-Pagan-Godfrey, Harvey, Glejser and ARCH heteroscedastity test), nonattendance of relationship (LM connection test) and fit (Coefficient of assurance and Fisher's test).

Table 9. The diagnostic tests of equation n°4

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.285571	Prob. F(12,30)	0.2771
Obs*R-squared	14.60270	Prob. Chi-Square(12)	0.2639
Scaled explained SS	11.16478	Prob. Chi-Square(12)	0.5149
Heteroskedasticity Test: Harvey			
F-statistic	0.492168	Prob. F(12,30)	0.9032
Obs*R-squared	7.072869	Prob. Chi-Square(12)	0.8528
Scaled explained SS	5.166584	Prob. Chi-Square(12)	0.9522
Heteroskedasticity Test: Glejser			
F-statistic	1.038908	Prob. F(12,30)	0.4413
Obs*R-squared	12.62340	Prob. Chi-Square(12)	0.3970
Scaled explained SS	11.26774	Prob. Chi-Square(12)	0.5061
Heteroskedasticity Test: ARCH			
F-statistic	1.340374	Prob. F(1,40)	0.2538
Obs*R-squared	1.361761	Prob. Chi-Square(1)	0.2432
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	1.014268	Prob. F(2,33)	0.3737
Obs*R-squared	2.490172	Prob. Chi-Square(2)	0.2879

Source: Authors' calculations using Eviews 10 software

Table 10. The diagnostic tests of equation n°5

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	1.462615	Prob. F(12,30)	0.1933
Obs*R-squared	15.87145	Prob. Chi-Square(12)	0.1972
Scaled explained SS	13.45383	Prob. Chi-Square(12)	0.3369
Heteroskedasticity Test: Harvey			
F-statistic	2.481663	Prob. F(12,30)	0.0215
Obs*R-squared	21.42086	Prob. Chi-Square(12)	0.0445
Scaled explained SS	27.60400	Prob. Chi-Square(12)	0.0063
Heteroskedasticity Test: Glejser			
F-statistic	1.784347	Prob. F(12,30)	0.0975
Obs*R-squared	17.90866	Prob. Chi-Square(12)	0.1185
Scaled explained SS	15.71543	Prob. Chi-Square(12)	0.2046
Heteroskedasticity Test: ARCH			
F-statistic	0.001947	Prob. F(1,40)	0.9650
Obs*R-squared	0.002045	Prob. Chi-Square(1)	0.9639
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.822608	Prob. F(2,33)	0.4481
Obs*R-squared	2.041963	Prob. Chi-Square(2)	0.3602

Source: Authors' calculations using Eviews 10 software

Table 11. The diagnostic tests of equation n°6

Heteroskedasticity Test: Breusch-Pagan-Godfrey			
F-statistic	0.430027	Prob. F(12,30)	0.9384
Obs*R-squared	6.310913	Prob. Chi-Square(12)	0.8996
Scaled explained SS	3.924166	Prob. Chi-Square(12)	0.9848
Heteroskedasticity Test: Harvey			
F-statistic	1.052220	Prob. F(12,30)	0.4310
Obs*R-squared	12.73724	Prob. Chi-Square(12)	0.3884
Scaled explained SS	11.69990	Prob. Chi-Square(12)	0.4701
Heteroskedasticity Test: Glejser			
F-statistic	0.421754	Prob. F(12,30)	0.9425
Obs*R-squared	6.207033	Prob. Chi-Square(12)	0.9053
Scaled explained SS	4.847165	Prob. Chi-Square(12)	0.9629
Heteroskedasticity Test: ARCH			
F-statistic	1.145128	Prob. F(1,40)	0.2910
Obs*R-squared	1.168920	Prob. Chi-Square(1)	0.2796
Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	0.597890	Prob. F(2,33)	0.5558
Obs*R-squared	1.503652	Prob. Chi-Square(2)	0.4715

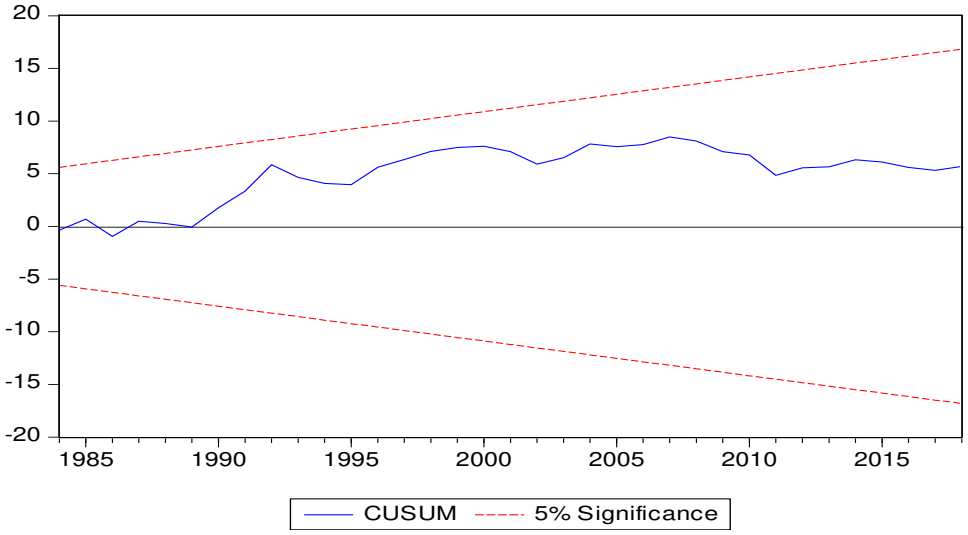
Source: Authors' calculations using Eviews 10 software

The analytic tests show that the assessment results are worthy in light of the fact that the probabilities of the heteroskedasticity tests and the Breusch-Godfrey LM arrangement relationship test are more prominent than 5%.

9. Stability of VECM models

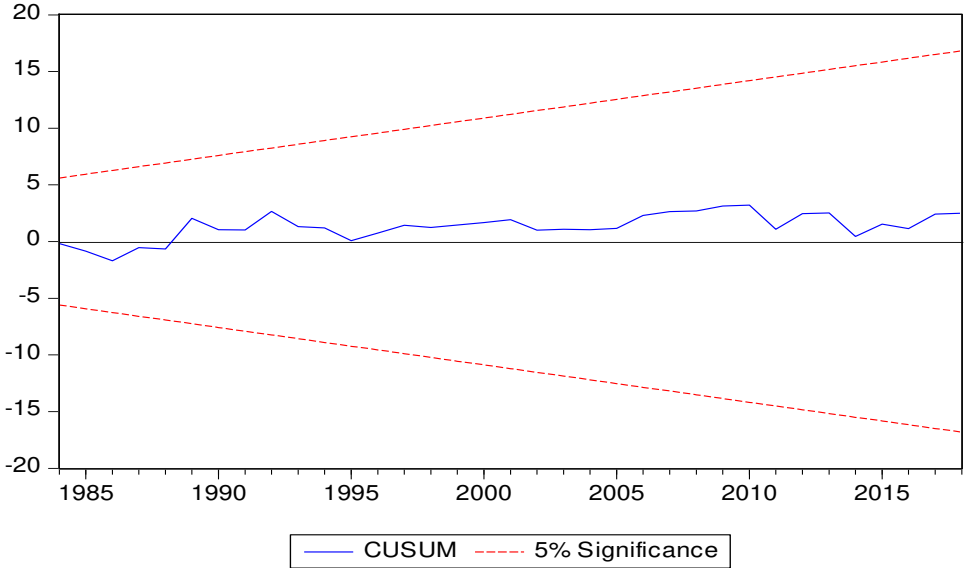
The stability test of long and short term estimates is tested using the cumulative sum of recursive residuals (CUSUM) of recursive residuals. Figures 1, 2 and 3 show the results of stability tests such as CUSUM.

Fig 1. Stability test for equation 4



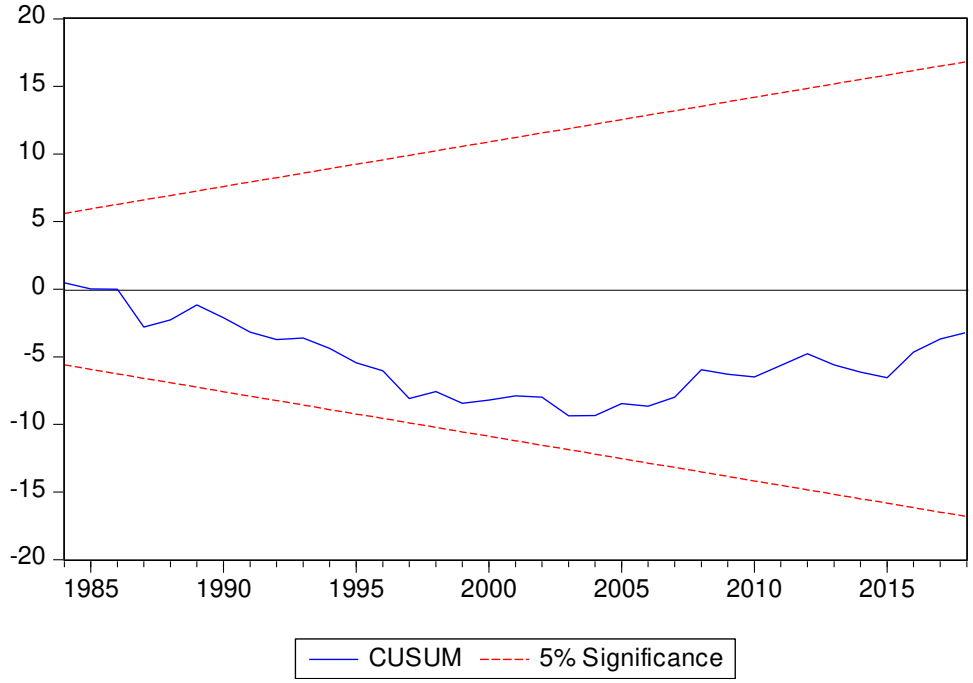
Source: Authors' calculations using Eviews 10 software

Fig 2. Stability test for equation 5



Source: Authors' calculations using Eviews 10 software

Fig 3. Stability test for equation 6



Source: Authors' calculations using Eviews 10 software

5. Conclusion

In this work, we have empirically examined the link between tax revenues, domestic investments and economic growth in Tunisia during the period 1976 - 2018. To achieve our objective, the second section concerns a review of the literature which includes the various works. Empirical related to our research theme to inspire our empirical methodology. The latter is presented in the third section, of which we decided to use an estimate based on the vector model with error correction.

The fourth section denotes our empirical results. Indeed, the results of the long-term estimate indicate that domestic investments have a negative effect on economic growth and that tax revenues have a positive effect on economic growth. Otherwise, and in the long run, we have found that domestic investment and economic growth have a positive effect on tax revenues. Wald tests indicate that only domestic investments and economic growth cause short-term tax revenues. Domestic investments and tax revenues do not cause short-term economic growth. Likewise, tax revenues and economic growth do not cause domestic investments.

Being one of the recent studies that investigated empirically the impact of tax revenue on economic growth in developing countries, this article attempted to identify the engine (s) of economic growth in Tunisia given the deliberate government actions through taxes. Tunisia

should search for new strategies to improve the relationship between tax revenues, domestic investment and economic growth through administrative simplification and financial stability to enhance investment and encourage investors to develop their investments.

5.1.Managerial and policy implications

In this regard, we offer some avenues for reflection in order to restore a fairer and more inclusive taxation and domestic investment systems to stimulate economic growth:

- ✓ Invest heavily in research to determine income levels and estimate the scale of breakthroughs significant investment in tax administration services has enabled them to fight tax fraud and evasion.
- ✓ Restore a progressive system with more tax brackets to reduce the burden on the middle class and make the higher tax brackets pay more.
- ✓ Align the tax on capital with the tax on labor Initiate a plan to review the various “tax incentive” measures in order to diagnose these policies and retain only the most profitable.
- ✓ Implement protectionist policies by imposing taxes on products from countries where we have a trade deficit.
- ✓ Only interventionist and redistributive countries can build a just and united society, a country that allows everyone to pay according to their abilities and give to each according to their needs.
- ✓ Returning resources to the country means enabling it to invest in education and research, major infrastructure and development projects, sanitation, transport and ecological transformation. Only state intervention can fundamentally change the daily life of citizens.
- ✓ The government should pay more attention to the structure of tax revenues and the nature of domestic investment.
- ✓ The government should direct domestic investment towards more productive and intelligent projects in order to promote economic growth.
- ✓ The government must improve good governance policies in order to reduce institutional inefficiencies.
- ✓ The government must create new strategies to eliminate the risks and uncertainty associated with capital investments.

- ✓ One of Tunisia's best solutions is domestic investment in the agricultural sector {See; Bakari and Abdelhafidh (2019), Abdelhafidh and Bakari (2019); Bakari et al (2018b); Bakari (2016); Bakari (2017d); Bakari (2020b)}

5.2.Limitations and future research directions

Regarding the limits of this study, we encountered problems related to the collection of the database, In fact, we wanted to have a wider period to examine the link between tax revenues, domestic investments and economic growth. Otherwise, and because of the short period of our samples, we used an ad hoc specification which has only three variables by eliminating several control variables whose goal is to have a larger and more efficient degree of freedom. Another limitation, which we encountered, is that the stationarity of our variable forces us to apply an estimate based on the VECM model.

In fact, the structure of the database shows us that we cannot use other econometric models, and this presents itself as an obstacle to verifying the robustness of our results by examining another econometric model. Finally, regarding the limits of this study, we encountered obstacles in the literature. Indeed we have noticed the absence of work that has studied the links between taxes, domestic investments and economic and social well-being, and this confirms in a way the originality of our work.

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