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Taxation and economic growth in Morocco: Econometric approach to the effects of fiscal pressure and fiscal structure

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Abstract
Background*:In this work, we try to examine empirically the long-term impact of taxation on economic growth in Morocco for the period 1990-2017, considering its two measures, namely the tax pressure and the tax structure. Our model is based on Solow's neoclassical growth model considering that technology evolves over time.*
Methods*:In view of the nature of the series (integrated in the order of 0 or 1) and the short study period, we opted for the Auto-Regressive Distributed Lag (ARDL) bound testing techniques to measure the impact of tax variables on economic growth over the long term.*
Results*:Our empirical results have led to the conclusion that when the two tax variables, pressure and structure, are separately integrated as the only tax variable, each of them negatively impact economic growth in Morocco over the long term. While in the model, where both tax measures are taken into account, the impact of the tax pressure becomes positive and that of the tax structure remains negative. Moreover, all our models conclude that the activity rate has a positive impact on economic growth. For the other two control variables, Gross Capital Formation and the CPI Index; they have a long-term positive impact on economic growth in Morocco in oursingle tax variable models; which is reversed by the simultaneous inclusion of the two tax variables.*
Conclusion:*Hence, the need to take into account the two tax measures in any tax reform in Morocco in favor of reducing direct taxation.*
Keywords*:tax structure, tax pressure, economic growth, ARDL.*

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I. Introduction

In Morocco, similar to the developing countries that do not have energy resources, taxation is the main contributor to the state budget, whose tax revenues exceed 80%. Since the 1980s, Morocco has undertaken a series of tax reforms. The main objective expected from these reforms is the development of a fair, simple and efficient tax system, which would enable it to act as a lever for economic development. Indeed,[1] the 2002 Monterrey Consensus recognized the essential role of taxation in mobilizing national resources, which was confirmed at the 2008 UN Doha Conference on Financing for Development. Taxation has thus been recognized as an indispensable element of a country's development policies, since it can impact several areas, ranging from good governance to stimulating economic growth.

Moroccan taxation draws its resources from three main tax structures: personal income taxes (IR), corporate income taxes (SI) and value added tax (VAT). These taxes bring to the state nearly 80% of the total tax revenue. In addition to these tax structures, there are other taxes, such as property taxes, customs taxes, stamp and registration fees and other miscellaneous tax structures.

The objective of this work is then to conduct an empirical analysis of the impact of the fiscal structure and the fiscal pressure on economic growth in Morocco for the period 1990-2017 by an econometric estimation based on a neoclassical growth model of Solow.

The impact of taxation is integrated into these growth models by its impact on growth variables, which are capital accumulation, human capital and technology.

First, we estimated a model in which we consider the tax pressureas the only tax variable and the Activity Rate (ACR) and Gross Capital Formation (GCF) as non-tax variables. We then added The CPI indexas a control variable to capture macroeconomic instability.

[1]Report on the International Conference on Financing for Development, Monterrey, Mexico, 18-22 March 2002, United Nations.

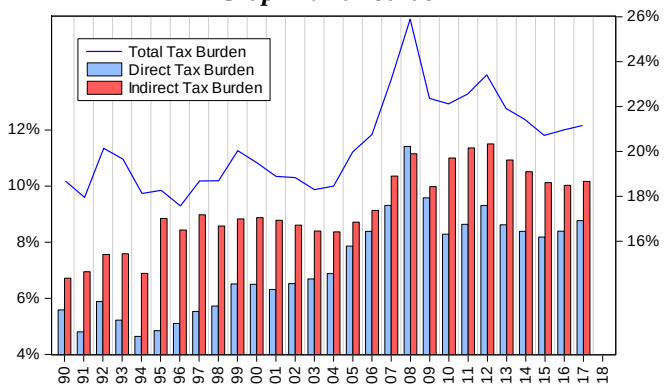
Second, we consider the tax structure as the only tax variable and the ACR and the GCFare retained as non-tax variables, then the CPI variable is added in this case as well. A final model considers the tax pressure and tax structure as two tax variables. Finally, we also included non-tax revenues (Total government revenues include tax revenues and non-tax revenues) in each of the estimated models. Since the addition of non-tax revenue (NTR) does not significantly change our results, we can conclude that our models are robust.

II. Evolution of tax revenues and growth dynamics in Morocco

In this section, we will analyze the evolution of tax structures and the dynamics of economic growth over the period 1990 to 2017.

Graph 1 above illustrates the evolution of direct and indirect tax burden as well as the total tax burden in Morocco over the period 1990 to 2017. The total tax burden experienced two main periods: the first was from 1990 to 2008 with an upward trend, rising from 19% in 1990 to a maximum of 26% in 2008, with first a "boom and bust" trend and then a rapid increase from 2004. The second period saw a downward trend until 2017, reaching nearly 21%. In terms of tax structure, indirect taxes dominated the period from 1990 to 2003 in terms of tax burden. The gap then narrowed until 2008, when direct taxes slightly exceeded indirect taxes, and then widened again until 2017 with a gap that remains less pronounced than in the first period.

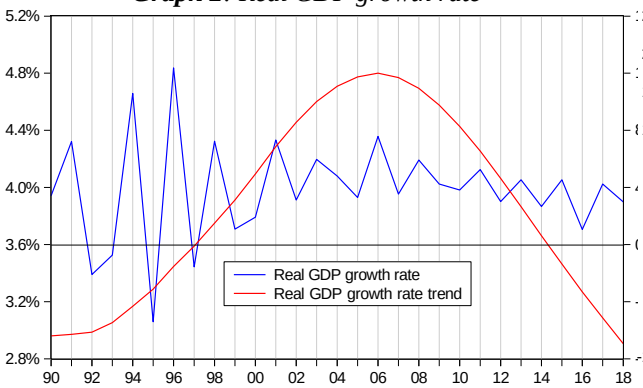
Graph 1: *Tax burden*



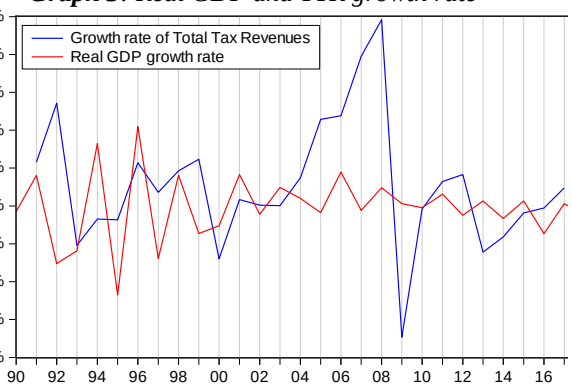
This trend in the tax burden is not unrelated to the ongoing major tax reforms initiated since 1985 (Dasser (2009)). Graph 1 shows the dominance of indirect tax burden during the years 1990 to 2004. It was during this period that the implementation of the first tax reforms began and the sedularity, which characterized the tax system, ended, by the abrogation of certain sedular taxes and the integration of others in the IS or IGR; as well as the harmonization of the rate applicable in terms of IR with that provided for IS. It is only from 2004, when the direct tax burden will begin to catch up with the indirect tax burden, which the major projects of the reform have begun. Thus, 2004 and 2005 were the first two years of implementing the reform of the VAT by widening the tax base. 2007 was the year in which the first work was started on the redevelopment of the IR tax scale, followed by that of the IS in 2008 and by the harmonization of the VAT tax thresholds in 2009 (DGI (2013)). 2007 was also the year of the elaboration of the General Code of Taxes, which has constantly updated itself according to the laws of finances (DGI (2020)). From 2007 onwards, the total tax burden reversed its trend: its downward trend continues until 2017. During this period, the gap between the direct and indirect tax burden widened again in favor of indirect taxes.

As regards the dynamics of economic growth, it is characterized by an evolution in saw teeth as shown in Graph 2. Two main phases can be distinguished in this evolution, the first one from 1990 to 2006 marking more pronounced highs and lows with an upward trend and the second one, from 2007, corresponding to the post-crisis period, where the variations become less significant with a downward trend.

***Graph 2**: Real GDP growth rate*



***Graph 3**: Real GDP and TTR growth rate*



In addition, graph3 shows that tax revenues and real GDP grew at the same rate from 1990 to 2003. Tax revenue growth began to diverge from GDP growth in 2003, when the major tax reform projects began, and resumed the same pace of growth as GDP in 2011 until 2017.

III. Specifications of the theoretical model

The neoclassical growth model of Solow (1956) and Swan (1956) provides the basic theoretical link between economic growth and tax revenues. The Solow (or Solow-Swan) model explains the total output in an economy as the product of the combination of capital and labor. In his founding article, Solow (1956) demonstrates that after taking into account the proportion of total output attributed to labor and capital, the remaining portion is due to what he calls total factor productivity (TFP). Thus, the growth in total output of an economy isattributed to the growth of labour, capital and TFP, according to Solow's growth accounting framework. The growth of TFP is seen as the effect of exogenous technological progress in its neoclassical growth model, which can also be reflected in the increase in productive efficiency (Mankiw and Al (1990)). Solow (1956) argues that the production function of Cobb-Douglas is convenient because it has constant returns of scale. The key point to note here is that total factor productivity (technology) is not constant but varies over time. This hypothesis allows factors such as tax revenues, among others, to influence the TFP. The hypothesis that the functional form of the production function is of the Cobb-Douglas type is widely used in the literature.

IV. Specifications of the empirical model

Empirical review

Several studies have attempted to estimate empirically the impact of taxation, by its pressure or structure, on economic growth. These results differ, depending on the period, the countries and the basic growth model. Here are a fewof this studies.

Anastassiou and Dritsaki (2005) used in their study two different ratios as an indicator of the tax structure: the ratio of indirecttaxes on direct taxes as the 1stratio and the ratio of indirect taxes on total tax revenues as the 2ndratio. In both cases, they concluded that the tax structure had a negative long-term effect on economic growth in Greece for the period 1965 to 2002.

Munir and Sultan (2016) attempt in their paper to examine the relationship between economic growth and tax revenues in Pakistan from 1976 to 2014. Tax revenues include direct and indirect taxes. The study also broke down indirect taxes into five different categories (namely excise duties, sales tax, surtaxes, international trade tax and other taxes). The results confirmed the positive and significant relationship between direct tax, sales tax, international trade tax and long-term economic growth.

Ogundana et al (2017) examined the impact of the disaggregated direct and indirect tax on the growth of the Nigerian economy over the period 1994 to 2013. The results of the ordinary least squares regression show that indirect taxation has a positive and significant impact on growth economic linked to direct taxation which has a positive but insignificant impact on Nigeria's economic growth.

Moussavou (2017) shows that the State's revenues exert a positive influence on Congolese economic growth over the period 1980 to 2015. This result has been demonstrated by Widmalm (2001) according to which the share of government expenditure coming in particular from tax revenue contributes to the improving productivity. His study concludes that an increase in personal and corporate income taxes has a negative effect.

The results of the study conducted by Gashi et al (2018) on Kosovo for the period 2007-2015 show that not all taxes have a positive impact on Kosovo's economic growth. They concluded that profit tax, value added tax and corporate tax are important and have a positive impact on Kosovo's GDP, in contrast to personal income tax and withholding tax, which are not significant and have a negative impact on economic growth.

SunaKorkmaz, MetehanYilgor, FdimeAksoy (2019) use the ERDF model to study the relationship between tax composition and growth in Turkey. The results obtained suggest that real output is positively linked to indirect tax revenues while direct taxation has no significant effect.

For the studies on Morocco, we selected the following studies:

Mr. Amori and El M. Zbair (2016) concluded that the effect of taxation on economic growth is not verified, due to the peculiarities of the tax system and its constraints, namely the weight of the informal sector, the weakness of direct taxes, unequal taxation across sectors, and the multitude of exemptions.

Salhi and Al (2018) empirically assessed the impact of tax levies on macroeconomic variables in Morocco over the period 1985-2016. They found that income tax is not significant in relation to GDP in the short term and has a positive and significant impact on the level of GDP in the long term. Unlike the corporate tax, which negatively impacts the country's level of growth over the long term, while it is positively significant in the short term. For value added tax, it has a positive impact on the long and short term.

Fahim and Bourdane, (2019) show that the effect of direct and indirect taxation on economic growth is negative in the short term. In the long term, the effect of direct taxation becomes positive and the effect of indirect taxation remains negative. In the long term, they show that investment has a negative and significant effect and that openness has a positive and not significant impact on economic growth.

Empirical methodology

We adopt Solow's neoclassical growth model considering that technologyA_t evolves over time. Our production function is then of the form: $$Y_t = A_t . K_t^{\alpha} . L_t^{\beta} \; ; \; \alpha, \beta \geq 0 \quad (1)$$

WithY_t:level of production, A_t: technical progress, K_t :physical capital,L_t : labor.

In our model, the dependent variable is the real Gross Domestic Product:Studies such as Kargbo and Adamu (2010), Erbaykal, and Okuyan (2008) used real GDP as a measure of economic growth in their empirical analysis.*Y*

For the explanatory variables, there are two types of variables: the total tax pressure equal to the ratio of total tax revenue to GDP and the tax structure equal to the ratio of indirect tax pressure to direct tax pressure:[2]

- TTP: ratio of total tax revenues to GDP. Total tax revenue (including VAT of Local Authorities) as a percentage of GDP indicates the share of a country's production levied by the State in the form of taxes. Tax revenues are used to finance public spending and redistribute wealth, which translates into financing a country's development. The tax has micro-effects on the distribution of income and the efficiency of resource use, as well as a macro-effect on the level of output of capacity, employment, prices and growth. A portion of government spending comes from tax revenues and can contribute to economic growth, so its sign is not necessarily negative.
- TST: ratio of indirect taxes to direct taxes, which represents the ratio of indirect tax pressure to direct tax pressure. In general, agents have different preferences regarding the tax structure. The public agent prefers a direct predominant tax structure with a high income tax rate and a low consumption tax rate while the private agent has opposite preferences.

For non-tax control variables, we chose the following variables:

- GFC: The ratio of Gross Fixed Capital to GDP. It is the investment in fixed capital of the various resident economic agents. This variable is a proxy for physical capital. In line with neoclassical and endogenous growth forecasts, Gross Fixed Capital formation has positive effects on real GDP. However, in the absence of a mechanism to encourage private companies and households to invest, public investment alone cannot have a positive effect on production. It is thus possible to have a negative relationship between the stock of physical capital and the GDP for a small stock.
- ACR: we chose the activity rate as a proxy for human capital because it represents the population, aged over fifteen, active and productive in the country. The sign expected in neoclassical models distinguishing physical capital from human capital is positive,(Barro and Al(1996)).
- CPI: The Consumer Price Index measures the weighted average prices of consumer goods and services.We use the CPI to grasp macroeconomic instability. Inflation causes price distortions and redistributive effects through a transfer of resources from the private owner of the currency to the state. Thus, if public spending is less efficient than private spending, inflation will lead to inefficient resource allocation. This has a negative effect on growth.

[2] Depending on the model

The data

Our study is conducted over the period 1990 to 2017 with an annual frequency for Morocco. The tax data (direct taxes, indirect taxes, total tax revenues and non-tax revenues) come from the Treasury and External Finance Directorate (DTFE). The data for the real GDPcome from the High Commission of the Plan (HCP), while the data for nominal GDP, CPI and Gross Capital Formation (GCF) come from the IMF database and those for the World Bank (WB) activity rate.

Stationarity of series

We use the Augmented Dickey-Fuller (ADF) and Phillips-Perron (PP) tests[3] to verify the order of integration of our variables. We start by using the tests on our level variables and then in first difference, based on the three possible specifications[4]. The results, summarized in Table 1, show that the variables selected are all integrated on the order of 0 or 1.

Table 1*: Stationarity tests of the series*

	Constant and trend		Constant without trend		neither constant nor trend	
	ADF	PP	ADF	PP	ADF	PP
LY	NS	NS	NS	NS	3.697469	9.615656
LGCF	NS	NS	NS	NS	-0.704517	-0.698477
LACR	NS	NS	2.931214	3.119800		
LCPI	-6.173972*	-6.295721*				
LTTP	NS	NS	NS	NS	-0.492947	-0.540084
LTST	-2.679226	-2.708417				
LNTR	NS	NS	-7.467271*	-7.499239*		
△(LY)	NS	NS	-11.53288*	-10.78188*		
△(LGCF)	NS	NS	NS	NS	-4.570083*	-4.571439*
△(LACR)	NS	NS	NS	NS	-3.073852*	-3.082892*
△(LTTP)	NS	NS	NS	NS	-5.258301*	-5.263267*
△(LTST)	NS	NS	NS	NS	-6.125081*	-6.067323*

*,** : significantat 1%,5%

Estimation method

We adopt the co-integration method called the Distributive Lag Autoregressive (ARDL) to measure the impact of taxation on economic growth. This technique, introduced by Pesaran, Shin and Smith (2001), is used when the variables are a mixture of I(0) and I(1). The two important assumptions of the ARDL must be fulfilled, that is, the dependent variable must be I(1) and none of the variables is I(2). In addition, we used the ARDL technique because it provides more accurate results compared to other tests seen the small sample size. To test the cointegration between variables, we use the cointegration test said at the terminals.

We also used diagnostic tests for serial correlation (Breusch Godfrey LM test), heteroscedasticity (Breusch Pagan-Godfrey test) and model specification error (Ramsey Reset test). We used the CUMSUM and CUSUMSQ tests to check the stability of the parameters. We generate graphs for each testbased on the ARDL estimates for each model. The model is stable if all residual values are in the confidence lines.

Causality test

To test the causality between the variables of each model, we use the Toda-Yamamoto causality test advanced by Toda and Yamamoto (1995). After examining the stationarity properties of ours series, we estimate an autoregressive vector model (VAR) for our equation and determine the optimal offset to be included in the parsimonious VAR model using the standard information criteria[5]. Then we adjust an augmented VAR model equal to the optimal offset plus the maximum order of integration of the series. Finally, we perform the causality test by estimating a modified Wald statistic for the delayed covariates in our augmented VAR model.

[3]The difference between the PP and ADF unit root test is their way of dealing with the serial correlation problem (PP test uses a nonparametric approach while ADF test uses the lag of the dependent variable as an explanatory variable).

[4]For each of the variables, we examine the three modelsto check the significance of the trend and/or the constant and to conclude on the specification to be retained.

[5]AIC generally works well when the goal is prediction and SIC selects the simplest possible model to explain the data. In addition, SIC assumes that your real model resides in model space, while AIC does not.

V. Results of the estimates

Since our series are integrated in the order of 0 or 1 and due to the fact thatthe small size of our series, we opted for the ARDL method to measure the impact of tax variables on long-term economic growth.
We start with the first model, where tax pressure is the only tax variable and Gross Capital Formation and the activity rate are the non-tax variables.

$$\text{Model 1}: \quad LY_t = \alpha_0 + \alpha_1 LGCF_t + \alpha_2 LACR_t + \alpha_3 LTTP_t \quad (1)$$

In order to take account of macroeconomic instability through the CPI index, we estimate the 1st model increased by the CPI variable, in logarithm.

$$\text{Model 2}: \quad LY_t = \alpha_0 + \alpha_1 LGCF_t + \alpha_2 LACR_t + \alpha_3 LTTP_t + \alpha_4 LCPI_t \quad (2)$$

In our 3rd model, we consider the tax structure as the only tax variable and we keep the ACR and the GCF as non-tax variables. Our model is then:

$$\text{Model 3}: \quad LY_t = \alpha_0 + \alpha_1 LGCF_t + \alpha_2 LACR_t + \alpha_3 LTST_t \quad (3)$$

To take account of macroeconomic instability, the CPI index is introduced in the 3rd model, as in the 1st model. We estimate the third model, increased by the CPI variable, in logarithm:

$$\text{Model 4}: \quad LY_t = \alpha_0 + \alpha_1 LGCF_t + \alpha_2 LACR_t + \alpha_3 LCPI_t + \alpha_4 LTST_t \quad (4)$$

Our latest model integrates the two measures of taxation, namely tax pressure and tax structure:

$$\text{Model 5}: \quad LY_t = \alpha_0 + \alpha_1 LGCF_t + \alpha_2 LACR_t + \alpha_3 LPFT_t + \alpha_4 LTST_t \quad (5)$$

Which, after integrating the CPI, is written:

$$\text{Model 6}: \quad LY_t = \alpha_0 + \alpha_1 LGCF_t + \alpha_2 LACR_t + \alpha_3 LCPI_t + \alpha_4 LPFT_t + \alpha_5 LTST_t \quad (6)$$

For each of the six models, we test the existence of a cointegration relationship between the model variables. As shown in Table 2, the calculated F statistic value is greater than the critical upper limit value at the 1% or 5% significance level for all models:

Table 2: *Boundary Cointegration tests*

	1st model ARDL (2, 1, 1, 1)	2nd model ARDL (3, 3, 0, 0, 3)	3rd model ARDL (4, 3, 2, 1)	4th model ARDL (3, 3, 2, 2, 3)	5th model ARDL (2, 0, 0, 1, 2)	6th model ARDL (1, 2, 0, 2,1)
F-statistic calculated	12.07928*	11.70054*	7.497862*	35.72183*	6.309624*	5.113859**

*,** : significantat 1%,5%

This indicates the existence of a cointegration relationship between economic growth and explanatoryvariables in each of the six models.

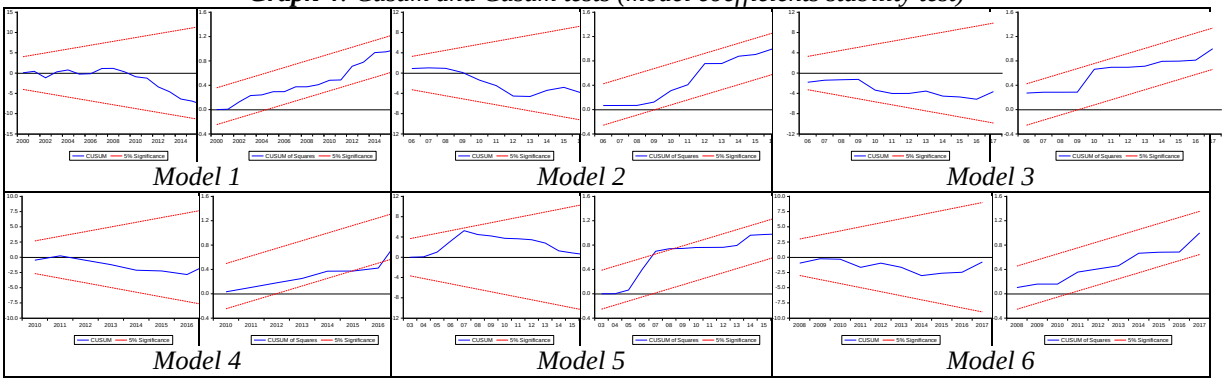
Before examining the long-term parameters and the short-term recall coefficient, we apply diagnostic tests to our ARDL models selected by Eviews. We check the absence of autocorrelation in series in the model, using the LM test of Breusch-Godfrey BG; the heteroscedasticity by the test Breusch Pagan-Godfrey that indicates no heteroscedasticity and the model specification error via the Ramsey Reset test, which confirms the correct model specification. We present the diagnostic test results of our models in Table 3 above: (All probabilities are greater than 0.05)

Table 3*: Model diagnostic tests: Values (probability)*

Tests	1st model (1)	2nd model (2)	3rd model (3)	4th model (4)	5th model (5)	6th model (6)
Autocorrelation of errors (BG)	0.385645 (0.6862)	0.782926 (0.4832)	2.641155 (0.1200)	2.468810 (0.1651)	1.248693 (0.3191)	1.315983 (0.3206)
Normality (Jarque Berra)	1.436391 (0.487631)	2.302773 (0.316198)	0.697774 (0.705473)	0.129095 (0.937492)	0.503228 (0.777545)	2.201526 (0.332617)
Heteroscedasticity (BPG)	2.481409 (0.0549)	0.238689 (0.9916)	1.767504 (0.1773)	1.018525 (0.5243)	0.589721 (0.7988)	1.124215 (0.4368)
Heteroscedasticity (ARCH)	0.126340 (0.7255)	1.446981 (0.2418)	0.626305 (0.4376)	6.061002 (0.0221)	0.739181 (0.3988)	0.012333 (0.9125)
Ramsey Model specification (Ficher))	2.460076 (0.1352)	0.054585 (0.8196)	0.305470 (0.5915)	0.020621 (0.8899)	0.008445 (0.9281)	3.591454 (0.0906)

We also found that all models estimated were stable: we evaluate the stability of the regression coefficients using the cumulative sum (CUSUM) and the cumulative sum of squares (CUSUMSQ). All residual values are in the trust lines, as shown in the graphs above, suggesting the consistency of our ARDL models selected by Eviews.

***Graph 4**: Cusum and Cusum tests (model coefficients stability test)*



Based on the results found above, we can therefore affirm that our six models can be validly estimated using the ARDL technique.

We summarized the results of our six estimates in the two tables (4) and (5):

***Table 4:** Recall coefficient (Values in square brackets are t-statistics)*

	1st model ARDL (2, 1, 1, 1)	2nd model ARDL (3, 3, 0, 0, 3)	3rd model ARDL (4, 3, 2, 1)	4th model ARDL (3, 3, 2, 2, 3)	5th model ARDL (2, 0, 0, 1, 2)	6th model ARDL (1, 2, 0, 2,1)
CointEq (-1)	-0.118462** [-2.441107]	-0.539953* [-10.970038]	-0.107093* [-3.356300]	-0.686251* [-3.038611]	-0.664349* [-3.895496]	-0.933566** [-2.971595]

*,**,*** : significantat 1%,5%,10%

***Table 5: Long term relationship** (Values in square brackets are t-statistics)*

independent variables	1st model ARDL (2, 1, 1, 1)	2nd model ARDL (3, 3, 0, 0, 3)	3rd model ARDL (4, 3, 2, 1)	4th model ARDL (3, 3, 2, 2, 3)	5th model ARDL (2, 0, 0, 1, 2)	6th model ARDL (1, 2, 0, 2,1)
GCF	4.038063* [4.225756]	0.852262* [6.569696]	0.985352* [3.285662]	0.339284* [5.388010]	-0.511535*** [-1.953668]	-1.171321*** [-2.034287]
ACR	3.193456* [10.032005]	0.723034* [9.847605]	3.928345* [28.989830]	1.020028* [9.886653]	0.657585 [1.411005]	1.606193** [2.340245]
CPI	-	2.259340* [38.206339]	-	2.197413* [27.314576]	-	-0.805367** [-2.260572]
TTP	-4.109866** [-2.756787]	-0.988162* [-5.649088]	-	-	0.556403** [2.357596]	1.182945** []
TST	-	-	-1.218166* [-2.097491]	-0.169675* [-3.545170]	-0.182305*** [-2.097491]	-0.167446 [-1.405659]
Constant	-	-	-	-	10.305374* [5.424103]	9.902966* [5.643749]
Trend	-	-	-	-	0.046968* [12.067353]	0.072359* [5.259309]

*,**,*** : significantat 1%,5%,10%

As regards the coefficient measuring the adjustment speed towards the long-term equilibrium level, it is significant and negative at the 1% threshold in the six models.

In the 1st model, the adjustment speed to the long-term equilibrium level is 12%[6]. After the introduction of the CPI Index, we note that 54% against only 12% in the first model, of any imbalance that occurred the previous year is corrected during the following year. After replacing the tax pressure in the 1st model with the tax structure, 11% as in the 1st model (12%), of any imbalance that occurred the previous year is corrected during the following year. For the 4th model, where the CPI index is introduced, 69% of any imbalance that occurred the previous year is corrected during the following year. For models with both aspects of the tax variable taken into account, more than 60% for the 5th model, compared with nearly 90% for the 6th model with the CPI taken into account, any imbalance that occurred the previous year is corrected during the following year.

[6] $|V_a| = |-0.12|$

As for the long-term relationship, we note the significance, at 10%, 5% or 1%, of all the coefficients with the exception of the activity rate in the 5th model and the tax structure in the 6th model.

Moreover, the sign of tax pressure is negative in the first two models while it becomes positive in the last two models after the introduction of the variable tax structure whose sign is negative in all models.

We also find that the positive sign of GCF in the first four models where only one of the two tax variables, pressure or structure, is taken into account, becomes negative in the last two models where the two variables are jointly integrated.

The long-term relationship resulting from the 1st model (1) indicates that a 1% increase in the tax pressure leads to a 4% decrease in economic growth.

After the introduction of the CPI variable, to take account of macroeconomic instability, in this first model, the results indicate that a 1% increase in the tax pressure leads to a decrease of almost 1% in economic growth.

As for the models with the tax structure, they conclude on a long-term elasticity of the tax structure of the order of -1% for the 3rd model and -0.2% for the 4th model.

Moreover, we note that when the tax structure and the tax pressure are taken into account in our last two models, unlike the first models, the latter acts positively on economic growth with a long-term elasticity equal to 0.5% (resp. 1.2%) in the 5th model (resp. 6th model). While the tax structure still has a negative impact on economic growth with a long-term elasticity of the order -0.2% in the last two models.

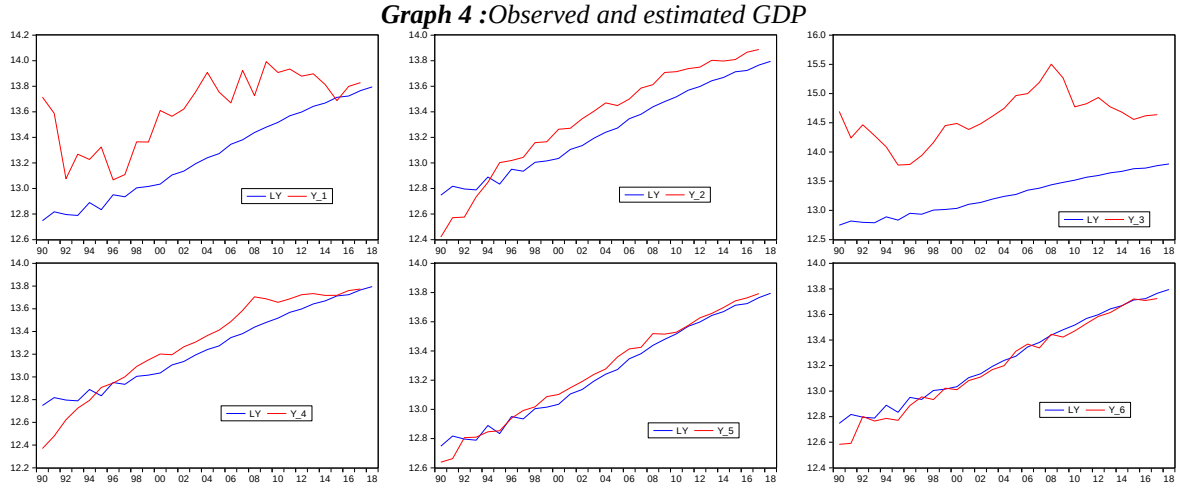
Our empirical results also indicate that the activity rate positively affects economic growth in the six models in line with the traditional production function.

As regards gross fixed capital formation and the CPI index, our estimates show that their impacts on economic growth are positive in models integrating one of the two tax variables and negative in the 5th and 6th models that simultaneously integrate the two tax variables.

Furthermore, the correlation values obtained show a strong correlation between real GDP and the two tax variables, negative with the tax structure and positive with the tax pressure. Also, the Toda-Yamamoto causality test between the different variables confirms the existence of causality relationships between the variables for the six models.

In terms of comparison of the six estimated models, we plotted above graphs representing the estimated and observed GDP:

Graph 4 :*Observed and estimated GDP*



We note that it is the GDP estimated by the 5th and 6th models that are the closest to the observed GDP. This confirms the need to take into account the two measures of taxation, namely the tax pressure and the tax structure.

VI. Conclusion

Economic development often generates additional needs, in terms of the tax revenues needed to finance increased public spending in the sectors that generate this development. However, at the same time it increases the country's ability to finance its new needs. As a result, the use of tax revenues matters more than the level of taxation per se. Economic development thus tends to lead to a relative shift in the composition of tax revenue in favor of direct taxation.

This is how Morocco, like all developing countries, if it wants to integrate into the global economy, it will probably need a higher level of tax revenue if it wants to acquire the means of intervention enjoyed by industrialized countries with tax revenues on average twice as high.

To meet these challenges, Morocco's policy makers will need to take a critical look at their strategic priorities and demonstrate political will to implement the necessary reforms. As for the tax administration services, they must be strengthened to promote the necessary changes in tax policies.

The objective of the Moroccan authorities should no longer focus simply on reducing the tax burden nor converging it in favor of indirect taxes (although this is desirable). Rather, fiscal policies should aim for the effectiveness and efficiency of tax revenues by seeking the optimal tax structure that would minimize the negative impact of taxes on growth while preserving the tax revenues necessary for the country's development.

In that sense, the most important finding of our study is that we cannot simply suggest that taxation has a negative impact on growth. Rather, our results suggest that there is increased potential to improve the efficiency of tax revenues in order to promote growth.

It should also be noted that the choice of an indicator to measure the impact of taxation on an economy comes up against the need for an arbitration between ease of measurement and theoretical rigor in construction. It is not a question of rejecting these different indicators, but of becoming aware of their limitations. This is a necessary condition for their responsible use.

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