IOSR Journal of Economics and Finance (IOSR-JEF)
e-ISSN: 2321-5933, p-ISSN: 2321-5925.Volume 11, Issue 5 Ser. VI (Sep. – Oct. 2020), PP 25-32
www.iosrjournals.org

Efficiency of tax policy and economic growth in Morocco

Salma dasser
Laboratory of Applied Economics (LEA), Faculty of Legal, Economic and Social Sciences - Agdal, Mohammed V University of Rabat (UM5), Morocco

Abstract
Background *:In this work, we estimated the efficiency of tax policy by considering the tax pressure and the ratio of indirect taxes to direct taxes, as the two variables of measurement of tax policy. We then used these efficiency scores as a proxy for non-tax economic variables in an econometric model in which taxes directly influence economic growth, regardless of the non-tax factors that were isolated in the efficiency score. Then, we calculated the elasticities of growth in relation to the tax pressure and the tax structure.*
Materials and Methods:*For the estimation of the efficiency scores, we used the DEA technique (Data Envelopment Analysis) and for the calculation of elasticities, we have estimated a quadratic model.*
Results*:Our results of the estimation of efficiency scores, lead to a technical inefficiency of tax policy for our study period, which spanned from 1998 to 2017, marked by an inefficiency of scale. Our econometric model concludes that there is a positive impact of the tax burden and a negative impact of the tax structure on the rate of economic growth. The values of elasticities confirms that the positive impact of tax pressure on the economic growth rate is on average lower than the negative impact of the tax structure.*
Conclusion: *It is important to work towards a reduction in indirect taxes during future tax reforms, without neglecting the vector of tax policy efficiency, in order to hope positively impact economic growth in Morocco.*
Keywords*: DEA, economic growth, efficiency, elasticity, quadratic estimation, tax pressure, tax structure.*

Date of Submission: 10-10-2020 Date of Acceptance: 26-10-2020

I. Introduction

The performance of a taxation system depends on its ability to mobilize sufficient tax resources to contribute to the financing of public expenditures and the redistribution of revenues. It also owes its credibility to the use that government authorities make of these tax resources. Indeed, the more rigorous and transparent the management of tax resources, the more noticeable the effects of tax policy may be, and this could encourage taxpayers to pay their taxes. Therefore, in order to collect taxes more efficiently, tax authorities must make rational use of public by favoring or harming one economic sector over another, depending on the weight of the sectors in economic growth. Moreover, taxes should not asphyxiate economic activity, thereby discouraging entrepreneurship or encouraging tax evasion.

The efficiency of the fiscal components relates to the authorities' management of fiscal resources, that is to say, according to whether the tax revenues are allocated efficiently to the sectors leading to economic growth and the improvement of well-being. In other words, efficiency is the measure of the profitability of tax fiscal policy on economic growth and improvement of the well-being of populations.

In order to estimate the efficiency of tax policy and its impact on economic growth in Morocco over the period 1998-2017, we proceed in this work in two stages. In a first step, we adopted the non-parametric approach, using the DEA (Data Envelopment Analysis), to extract the efficiency scores of tax policy, by considering the tax pressure and the ratio of indirect taxes to direct taxes, as the two variables for measuring fiscal policy. Unlike parametric approaches, which use statistical techniques to estimate parameters, DEA technique uses linear programming to find the best frontier without using statistical techniques in analysis. By considering the rate of economic growth as the output, the fiscal components (the fiscal pressure and the ratio of indirect taxes to direct taxes) as inputs, we are wondering whether the fiscal components have been efficient in Morocco. Over the past two decades. We then decompose technical efficiency into pure technical efficiency and efficiency of scale to identify the origin of inefficiency. In the second step, we used these efficiency scores as a proxy for non-tax economic variables in a quadratic econometric model in which taxes directly influence economic growth, independently of the non-tax factors that were isolated in the first step. Then, we calculated the elasticities of growth in relation to the tax pressure and the tax structure.

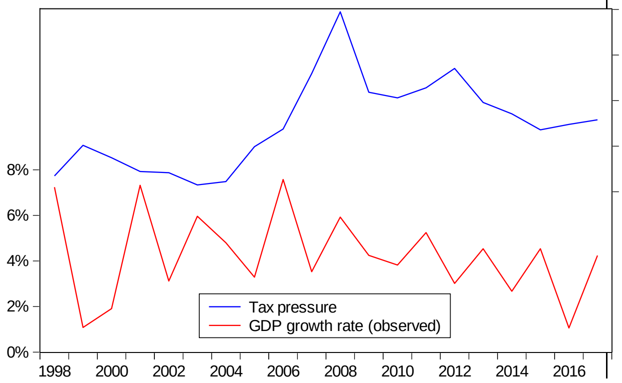
II. Tax policy and economic growth in Morocco: 1998-2017

In this part, we study the evolution of fiscal components and the dynamic of economic growth over the period 1998 to 2018.

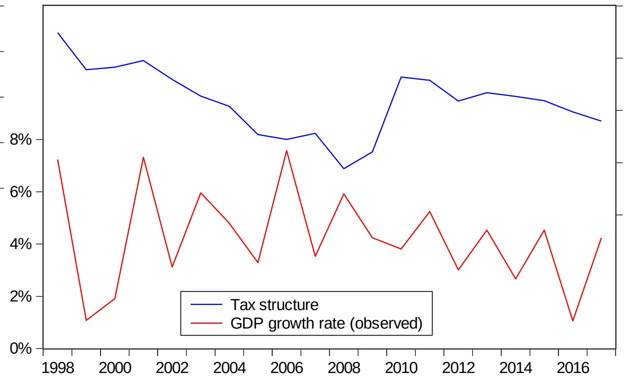
Graph 1 illustrates the evolution of the tax pressure in Morocco during the period from 1998 to 2017. The tax burden has alternately increased and decreased, from 1998 until 2008, from 17% in 1990 to a maximum of 23% in 2008, with a faster increase from 2003. It then experienced a downward trend until 2017 to reach almost 19%. With regard to the tax structure, Chart 2 shows that indirect taxes dominated, in terms of tax pressure, the period from 1990 to 2003. The situation then reversed until 2017.

Regarding the dynamics of economic growth. It is characterized by an evolution in saw teeth as shown in Graphs 1 and 2. We can distinguish two main phases in this development, the first one from 1998 to 2006 with more pronounced highs and lows and an upward trend; and the second phase, from 2007, corresponding to the post-crisis period, where the variations become smaller with a downward trend.

Graph 1. *Tax pressureand GDP growth rate*



Graph 2*. Tax structure and GDP growth rate*



III. Analytical foundation

Suppose that the Moroccan economy is governed by a production function of the form:

$$Y_t = F\ (A_t, K_t, N_t)$$

whereY_t denotes GDP, A_t technology at time t, K_t capital stock in the economy at time t, N_t human capital at time t.

Taking the natural logarithm of the production function assuming that the production function is Cobb-Douglas type, differentiation with respect to time and manipulation slightly gives the following growth equation:

$$G_Y = G_p + \beta_L . G_L + \beta_K . G_K \qquad (1)$$

$$with: \begin{cases} G_Y & : real\ GDP\ growth\ rate \\ G_L\ ;\ G_K & : growth\ rate\ of\ labor\ and\ capital\ "inputs" \\ G_P & : productivity\ growth\ rate \\ \beta_L\ ;\ \beta_K & : elasticities\ of\ real\ GDP\ with\ respect\ to\ labor\ and\ capital\ "inputs" \end{cases}$$

In order to integrate the concepts of endogenous growth, we assume that tax policy directly and indirectly affects the growth rates of each of these production inputs, as well as their appropriate elasticities, as suggested by Engen and Skinner (1996). A country's tax policy can thus influence the five variables to the right of equation (1) and can therefore indirectly influence its rate of economic growth.

Changes in fiscal policy may alter the incentives to invest in physical and human capital and hence the growth rates of human and physical capital inputs, thus influencing G_L and G_K. In addition, these changes in tax policy are also likely to influence the relative cost of physical and human capital; therefore, changes in fiscal policy should also affect the elasticities of inputs for human capital, physical capital, thus influencing β_L and β_K. Finally, tax policy can influence G_P productivity growth through its effect on research and development activities.

Fiscal policy can be summarized as the influence of fiscal indicators on the rate of economic growth. These tax indicators are the tax burden (FP), the ratio of the sum of taxes on GDP and the tax structure, ratio of indirect taxes (IT) to direct taxes (TD). These fiscal indicators are closely related to the economic growth rate, by their GDP/TD and GDP/IT components:

$$PF = \frac{TD + TI}{PIB} = \frac{1}{PIB/TD} + \frac{1}{PIB/TI} \quad et \quad SF = \frac{TI}{TD} = \frac{PIB/TD}{PIB/TI}$$

This results in a non-linear relationship where the economic growth rate is linked to tax variables, which are the tax burden (PF), the tax structure (SF) and Z the total non-tax dimension:

$$G_Y = f(PF\,;SF;Z\,) \quad (2)$$

We can interpret equation (2) as a production relation in which the economic growth rate G_Y is an "output" produced with fiscal policy "inputs" PF and SF in an environment characterized by non-fiscal variables Z.

IV. Empirical model specifications

Empirical review

Several studies have examined the impact of fiscal policy on economic growth. For more details on our empirical review, we refer to our previous article S. Dasser et al (2020).

We just cite here the base article here for our work. This is the study by Branson and Lovell (2001) on New Zealand. Using a DEA model, the authors estimate the efficiency of the tax burden and the ratio of indirect taxes to direct taxes on the rate of economic growth before estimating a quadratic linear model with interaction and determining the values of the fiscal pressure and the ratio of indirect taxes to direct taxes, which maximize the rate of economic growth. They conclude that the tax pressure has a negative and very high impact and a very low positive impact of the tax structure on the rate of economic growth.

Another study, referring to the same article, by Marire&Sunde (2012) for Zimbabwe over the period 1984–2009, finds a positive impact of tax structure and negative impact of tax pressure.

Estimation of efficiency by the DEA method

The pilot work of Farrell (1957) on measures of productive efficiency inspired by the measure of technical efficiency proposed by Debreu (1951) and the definition of Koopmans (1951)[1]efficiency, enabled it to take the first important step towards border econometrics. Farrell's innovation lies in applying the efficiency measured by Debreu to each production unit in a sector.

For the estimation of the technical efficiency measures of several inputs or outputs, two approaches can be used: The first approach, known as the input-oriented approach: minimization problem, which makes it possible to calculate by how much we can reduce the quantity d 'input without varying the quantity of output to have efficient production. The second approach, known as the output-oriented approach: maximization problem, which makes it possible to calculate by how much we can increase the output without modifying the quantity of input. As the output, maximization, problem is the dual of the input, minimization, problem, then whatever the choice of the orientation of the model the results remain the same.

We can calculate these efficiency indicators by the DEA (Data Envelopment Analysis) method: It is a non-parametric linear program, which assumes that the efficiency indicators lie on a convex curve, called the efficiency frontier. We must be estimated this border in order to identify the efficient points by determining the distance between the remaining observations and the border.

There are two options that are commonly used in the DEA approach depending on the choice of returns to scale given to changes in inputs. The first one is with the Banker-Charnes-Cooper (BCC) model, where technical efficiency is calculated with a constant yield scale (CRS), assuming that the inputs evolve with constant yield to scale. The second one with the Charne's-Cooper-Rhodes (CCR) model, where technical efficiency is calculated with a variable return scale (VRS), if we assume that the inputs evolve with a variable return to scale.

The DEA method not only allows the measurement of technical efficiency but also allows its decomposition. This makes it possible to specify the source of inefficiency, which can be twofold: the concept of pure technical efficiency related to the inefficiency linked to perfectible management and the concept of scale efficiency related to inefficiency linked to non-optimal size.

To measure pure technical efficiency (PTE), we must consider the VRS. We estimate the scale inefficiency (SE) by the ratio of the amount of input used if the firm was on the CRS and that used if it was on the VRS. Technical efficiency is the product of the two ratios. When a unit is efficient VRS but inefficient CRS, its inefficiency is then of scale.

[1] Koopmans definedefficiency as production possibilities for whichitis not possible to increase an output withoutsimultaneouslyincreasing an input, ceterisparibus.

Farrell and Fieldhouse (1962) established the notion of relative efficiency of a unit, when we have several production units in a production system, defined by the ratio of the weighted sum of the product units requiring the unit on the weighted sum of the input units. More formally written, we have:

$$\text{Unit efficiency} : j = \frac{u_1 Y_{1j} + \cdots + u_i Y_{ij} + \cdots + u_m Y_{mj}}{v_1 X_{1j} + \cdots + v_i X_{ij} + \cdots + v_n X_{nj}}$$

$$with : \begin{cases} u_i & : the\ weight\ given\ to\ the\ product\ "i" \\ Y_{ij} & : the\ quantity\ of\ product\ "i"\ requiring\ the\ unit\ "j" \\ v_i & : the\ weight\ given\ to\ the\ input\ "i" \\ X_{ij} & : the\ quantity\ of\ input\ "i"\ necessary\ for\ the\ production\ of\ output\ "j" \end{cases}$$

This efficiency is constrained in the range$[0,1]$

In the rest of this work, we propose to use the DEA technique to construct an economic growth frontier based on best practices and to evaluate the relative performance of each year in the sample (relative efficiency of the observations compared to the equivalences on the efficient production frontier).

Suppose we observe the real GDP growth rate $(G_Y)_t$, ratio PF and ratio SF for a sequence of years $t = 1, \dots, 20$, from 1990 to 2020, we can consider the following linear programming problem[2]:

VRS

$$\min_{\theta,\lambda} \theta \text{ under the constraints : } \quad t = 1, \dots, 20$$
$$(c1)\theta_t \ .(PF)_p \geq \sum_t \lambda_t.(PF)_t$$
$$(c2)\theta_t \ .(SF)_p \geq \sum_t \lambda_t.(SF)_t \qquad (3)$$
$$(c3)\sum_t \lambda_t.(g_Y)_t \leq (g_Y)_p$$
$$(c4)\lambda_t \geq 0 \ (n \text{ constraints})$$
$$(c5)\sum_t \lambda_t = 1$$

CRS

$$\min_{\theta,\lambda} \theta \text{ under the constraints : } \quad t = 1, \dots, 20$$
$$(c1)\theta_t \ .(PF)_p \geq \sum_t \lambda_t.(PF)_t$$
$$(c2)\theta_t \ .(SF)_p \geq \sum_t \lambda_t.(SF)_t \qquad (3)$$
$$(c3)\sum_t \lambda_t.(g_Y)_t \leq (g_Y)_p$$
$$(c4)\lambda_t \geq 0 \ (n \text{ constraints})$$

Here we consider the DEA approach, with the orientation towards inputs. Based on the observed economic growth rates, we estimate the efficiency frontier by minimizing the inputs that are the tax burden and tax structure.

This program is resolved 20 times, once for each year of our study period because each year is a decision-making unit that needs to be evaluated against the rest.

For each year, this linear program targets the lowest tax burden and tax structure consistent with an observed growth rate, given the historical growth rates, of the observed tax components.

The efficiency score θ_t is the distance between the observed growth rates and their equivalences on the efficiency frontier. These solution values of θ_t are the relative efficiency coefficients, which measure the performance of the economy, in terms of whether for a year t, observed economic growth rate could have been achieved with a lower tax burden and/or lower ratio I/D, compared to the combination of their histories. This gives us an idea of whether the observed tax variables have contributed effectively to the evolution of the rate of economic growth or not.

The solution valuesof θ_t^*satisfy $0 < \theta_t^* \leq 1$: If $\theta_t^* = 1$, the observed growth rate could not have been achieved with a lower tax burden and/or a lower ratio I/D. As a result, the non-fiscal influences on the growth rate were relatively unfavorable that year. If $\theta_t^* < 1$, the observed growth rate could have been achieved with a lower tax burden and/or a lower ratio I/D. The non-fiscal influences on the growth rate must have been relatively favorable that year. As θ_t^* tends towards 1, the fiscal dimensions become more favorable and as θ_t^* tends towards 0 these factors become less favorable.

[2] The vector of non-tax variables thatcould influence the growth rate does not appear in the linear program becausethese variables are not observed.Z_t

Quadratic estimate of the relationship between growth and fiscal components

Using a DEA model, we estimated the efficiency of the tax burden and the ratio of indirect taxes to direct taxes on the rate of economic growth. We will use these efficiency scores as a proxy for non-fiscal economic variables, in a quadratic model with interaction.

This method consists in estimating equations in quadratic forms based on the assumption of a bell curve, through econometric specifications consistent with the curves of Laffer (1981). Thus, we model a relationship regime "tax pressure-fiscal structure-economic growth" by a second-degree polynomial function in the log-linearized form:

$$\log(g_{Y_t}) = \alpha_0 + \alpha_1 \log(pf_t) + \alpha_2 \log\left({pf_t}^2\right) + \alpha_3 \log(sf_t) + \alpha_4 \log\left({sf_t}^2\right) + \alpha_5 \log(pf_t)\,.\log(sf_t) + \log(\theta_t) + \varepsilon_t$$

$$\text{with:}\begin{cases} g_{Y_t} & : \textit{the real GDP growth rate} \\ pf_t & : \textit{the tax burden ratio} \\ sf_t & : \textit{the tax structure ratio} \\ \theta_t & : \textit{the efficiency score} \end{cases}$$

We then calculate the pressure elasticity functions and the tax structure from the equation of the estimate of g_{Y_t}, real GDP growth rate, by the expressions:

$$\begin{cases} e_{pf} = \log(pf_t) + 2.\alpha_2 \log\log(pf_t) + \alpha_5 \log(sf_t) \\ e_{st} = \alpha_3 \log(sf_t) + 2.\alpha_4 \log(sf_t) + \alpha_5 \log(pf_t) \end{cases}$$

From the means and medians of the elasticity functions, we examine the responsiveness of growth to changes in the tax structure during our study period. We then conclude on the tax component witch has the most impact on growth economic.

V. Empirical results and interpretations

Data

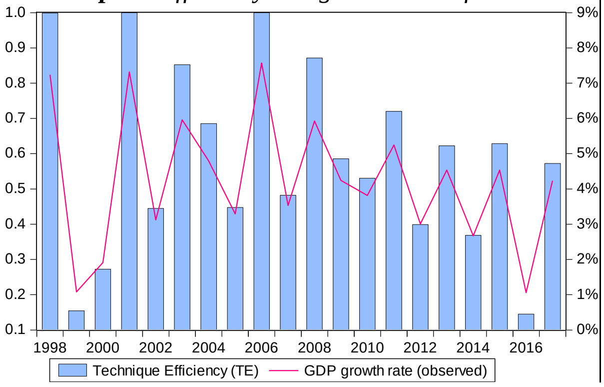
Our data come from the HCP for GDP growth rates and from the database of the Directorate of Treasury and External Finances (DTFE) of the Ministry of Finance for tax revenues and direct and indirect taxes.

DEA estimation results

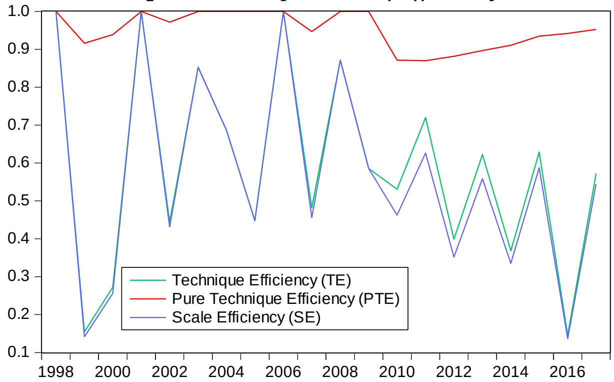
We estimated a model with two inputs, namely the Tax Pressure (pf) and the Tax Structure (sf) and a single output the growth rate of real GDP (g_Y). We estimate our model in Input orientation with the two versions VRS and CRS, over the period 1998-2017. We decompose the technical efficiency scores into pure technical efficiency and efficiency of scale. We used the "DEAFrontier" (deafrontier)

The efficiency scores from the results of the DEA method are shown in Figures 3 and 4.In view of these results, we can subdivide the study period into three sub-periods according to the "correlations" between the efficiency scores and the growth rate.

***Graph 3**: efficiency and growth rate of GDP*



***Graph 4**: decomposition of efficiency*



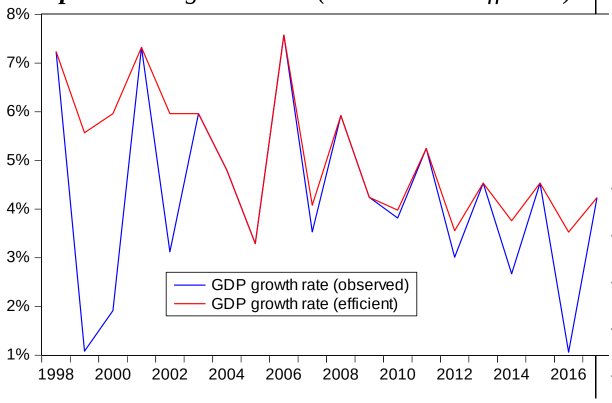
The first period, from 1998 to 2009, is characterized by relatively high growth rates and pure technical efficiency scores relatively close to 1. The tax components have been at their minimum and have a priori contributed to the maximum possible for the good evolution of the economy. In the second period from 2010 to 2014, the GDP growth rate has been trending downwards and the efficiency scores have been low. Tax policy has not really been favorable to economic growth. During the last period from 2015 to 2017, while the growth rate continued its downward trend, efficiency scores were rather high. Despite a downward trend in the growth rate, fiscal policy has been favorable to economic growth, but non-tax factors have contributed to this depreciation of growth.

Referring to the values of efficiency of scale, we can conclude that even in years when tax policy was fully technically efficient, it could have exploited its economies of scale to further increase its level of "productivity" and thus generate a better growth rate. Mainly from 2010 as shown in Figure 4. For these years, tax efficiency could have been improved, in particular by increasing the size of tax jurisdictions and broadening the tax base. Except for the years 2001 and 2006, all the other years showed increasing returns to scale, that is to say they have not yet reached their optimal size. Given their pure technical efficiency score, they could therefore have invested resources to increase the quantity of all inputs, tax pressure and structure, by a certain factor and the quantity of output, economic growth rate, would have increased by a greater factor. Knowing that the optimal size is reached when the returns to scale are constant. At this level of production, the average cost reaches its lowest point on the long-run average cost curve. This is the case for the years 2001 and 2006.

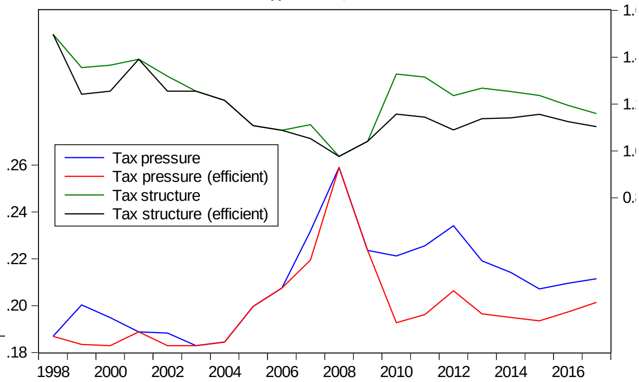
Our results also indicate that years of increasing returns to scale correspond to lower economic growth rates than years of constant and decreasing returns to scale.

In addition, we calculated the GDP growth rates g_Y^e and the ratios of the tax components pf^e and sf^e in an efficient situation. Figures 5 and 6 show the loss, in terms of economic growth, due to inefficient tax policy and the additional costs, in terms of tax burden and tax structure, which could have been avoided by an efficient tax system.

***Graph 5**: GDP growth rate (observed and efficient)*



***Graph 6**: ratios of fiscal components (observed and efficient)*



Quadratic model results

Using Eviews, we estimated the quadratic model:

$$\log(g_{Y_t}) = \alpha_0 + \alpha_1 \log(pf_t) + \alpha_2 \log\left(pf_t^{\,2}\right) + \alpha_3 \log(sf_t) + \alpha_4 \log\left(sf_t^{\,2}\right) + \alpha_5 \log(pf_t)\,.\log(sf_t) + \log(\theta_t) + \varepsilon_t$$

The estimated growth rate is given by:

$$\log(PIB_{TC}) = -5.85^{*} * LOG(R1) - 1.87^{*} * LOG(R1)^2 + 0.77 * LOG(R2) + 0.24 * LOG(R2)^2 + 0.56 * LOG(R1) * LOG(R2) + 1.02^{*} * R1\_R2\_ET - 7.17^{*}$$

$*$ significatif à 10%

With regard to R^2, the Fisher F-statistic and the Durbin-Watson statistic, the model looks good overall. In addition, Ramsey's Reset test confirms the correct specification of the model. Autocorrelation tests for Breusch-Godfrey errors, Breush-Pagan-Godfrey heteroskedasticity, and Jarque-Bera normality confirm the absence of error correlation, the absence of heteroskedasticity, and the normality of the residuals.

Our results show that tax pressure has a significant and negative impact on the rate of economic growth and efficiency scores a significant positive effect on the rate of economic growth. While the tax structure and the interaction between tax pressure and tax pressure, which positively affect economic growth, are not significant. Our results show that tax pressure is more damaging to economic growth than the components of the tax structure. Moreover, the ability of the efficiency score to capture the effects of non-fiscal influences on growth should capture the importance it deserves.

Elasticities of fiscal components

In this section, we examine the responsiveness of economic growth to changes in the tax structure during our study period. We wish to identify, from the elasticities, which of the two tax components has a significant effect on the rate of economic growth.

We then determine the elasticity functions of the tax pressure and of the tax structure from the equation of the estimated growth rate. The elasticity functions are given by the expressions:

$$\begin{cases} e_{pf} = -5.85 - 2 * 1.87 * LOG(R1) + 0.56 * LOG(R2) \\ e_{sf} = +0.77 + 2 * 0.24 * LOG(R2) + 0.56 * LOG(R1) \end{cases}$$

To assess the impact of tax components on economic growth, in terms of elasticity, we have calculated a few indicators, in particular the mean and the median as well as the standard deviation. We deduce that the impact of tax pressure on the rate of economic growth, over the entire study period, is on average lower than that of the tax structure. A 1% change in the pressure rate increases the economic growth rate by 0.1% on average, while a 1% change in the tax structure lowers the economic growth rate by 6.2% on average. In addition, the median of the elasticity of the tax pressure, equal to +0.07, being positive, the economic growth rate during the estimation period was affected more positively than negatively by the tax pressure, except for the period from 2008 to 2013. The impact of the tax structure on the economic growth rate is negative throughout the study period. These conclusions are consistent with the results already found in Salma Dasser et Al (2020). Thus corroborating the positive impact of the tax burden and the negative impact of the tax structure on economic growth.

VI. Conclusion

Our article aimed to assess the efficiency of the tax components in Morocco and the impact of tax policy on the rate of economic growth in Morocco.

We find that over our 20-year study period, the elasticity of growth to changes in the tax structure is negative and the elasticity of growth to changes in the tax burden, although positive, has been relatively low. These results agree with the results found in our previous article (S. Dasser et Al 2020), where we found an impact, negative of the tax structure and positive of the tax pressure, on economic growth in Morocco. A reduction in direct taxes is likely to stimulate spending and therefore increase the collection of indirect tax revenues. This would increase the tax burden and decrease the tax structure.

Our results conclude on a shortfall of about 1% of the growth rate of GDP, due to the inefficiency of tax policy. Institutional distortions, poor fiscal governance and other structural obstacles need to be addressed to improve efficiency.

We suggest that further analysis can be done in the context of optimal tax rates to determine whether Morocco is currently overtaxed or not.

It is necessary to unlock the black box by examining the sources of growth and inefficiency of the Moroccan economy. Another area of additional research would be to examine the quality of public finances and their impact on economic growth.

References

[1]. Bouin, X., Simon, FX (2009), "The new faces of management control: Tools and behaviors", Dunod, 3rd edition, p. 74.
[2]. Bourguignon, A. (1995), "Can we define performance?", Revue française de l'assurance, 269, 61-66.
[3]. Boussemart JP (1994), "Diagnosis of productive efficiency by the DEA method: application to pig farms", Cahiers d'EconomieetSociologie Rurales, n.31, p.44-58.
[4]. Branson, J. & Lovell, CAK (2001), "A Growth Maximizing Tax Structure for New Zealand", International Tax and Public Finance, 8: 129-146.
[5]. Cummins, J. David., Weiss, A. Mary and Zi, H., September 1999, "Organizational Form and Efficiency: The Coexistence of Stock and Mutual Property-Liability Insurers", Management Science, Vol.45, No.9, pp. 1254-1269.
[6]. Dasser S. and.SDasser,"Taxation and economic growth in Morocco: Econometric approach to the effects of fiscal pressure and fiscal structure.", IOSR Journal of Economics and Finance (IOSR-JEF), 11 (4), 2020, pp. 42-50.
[7]. Debreu, G. (1951), "The Coefficient of Resource Use. Econometrica", 19 (3), 27-3-292.

[8]. Engen, EM, and J. Skinner (1996), "Taxation and Economic Growth", Working Paper 5826. Cambridge, MA: National Bureau of Economic Research.

[9]. Farrell MJ (1957), "The measurement of productive efficiency", Journal of the Royal Statistical Society, series A. 120, n ° 3, p. 253-290.

[10]. Farrell, MJ and M. Fieldhouse (1962): "Estimating Efficient Productions Functions under Increasing Returns to Scale", Journal of the Royal Statistical Society 125, 252-267.

[11]. JunioursMarire&TafirenyikaSunde (2012), "Economic growth and tax structure in Zimbabwe: 1984-2009", International Journal of Economic Policy in Emerging Economies ", 2012 Vol.5 No.2, pp.105-121.

[12]. Koopman T. (1951), "Analysis of production as an efficient combination of activities", activity. In TC Koopmans, ed, activity analysis of production and Allowance. Monograph No. 13. John Wiley and Sons, Inc., New York.

[13]. Laffer Arthur B., 1981. "Government Abuses and Revenue Deficiencies", Cato Journal, Cato Journal, Cato Institute, vol. 1 (1), pages 1-21, Spring.

[14]. Maadani, M., Saïd, K. (2009), "Management and performance management", Hachette Éducation, p. 29.

[15]. deafrontier: http://www.deafrontier.net/index.html

Salma dasser. “ Efficiency of tax policy and economic growth in Morocco.” *IOSR Journal of Economics and Finance (IOSR-JEF),* 11(5), 2020, pp. 25-32.