Impact of Fiscal Policies on Economic Growth and Poverty in Morocco: An analysis in Computable General Equilibrium

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ABSTRACT

This work sets the objective of analyzing the impact that fiscal policies (fiscal and public expenditure) can have on economic growth and poverty in Morocco. This analysis is conducted through a computable general equilibrium model where the macro-micro link is established. The splitting of the household agent into a quintile makes the model a powerful instrument for analyzing the effects of these policies on the behavior of the different classes of households.

Keywords: CGE Model, tax policies, public expenditures, education spending, health spending, economic growth, poverty.

INTRODUCTION

Fiscal policy is a means available to the government to regulate the economy and conduct actions on economic cycles in order to achieve its economic and social objectives.

Sustained growth and sustainable improvement of the living conditions of the population are the main objectives of every state. Public finance managers have to find the best possible combination, between the various means of fiscal space, namely the levies, internal and external borrowing, donations for the poorest countries and income seigniorage. Given the constraints weighing on these means, the tax constitutes a privileged means (Brun.J.F and al, 2006) to finance the social demand and also the investment and thus to promote the economic growth and to reduce the poverty.

The reduction of poverty begins with sustained economic growth, which itself results from the combination of several factors, one of which is the mobilization of public resources (especially fiscal in the case of Morocco).

Except that the use of taxation must respect the teachings of the theory of optimal taxation. One of the basic ingredients of this theory is the cost-benefit ratio. This incorporates an arbitration between the criteria of economic efficiency and social equity. The first criterion accounts for the reaction of economic agents following the change in the structure of taxation; the second takes into account a value judgment on how individual losses and gains should be weighted to capture the redistributive effects of reform.

The supply of public goods and services (education, health, road, transport and telecommunication infrastructure) can play a particularly important role in preventing the poor from continuing to become poorer (Stiglitz.J, 2012). It is also a fundamental factor in accelerating growth (Brun.J.F et al, 2007). The logic that proves it is impressive: If the state

increases its expenditures, the GDP increases by a multiple of this sum (the mechanism of the Keynesian multiplier), even if this mechanism has been much disputed.

Of course, public spending can be even more effective if it is spent on high-productivity investments, such as those that facilitate the restructuring of the economy. Beyond their high direct returns, these investments have other benefits - private investment returns increase, so that they are invited; the deficit is reduced in the medium term, which should inspire confidence, and it is even possible that consumers, understanding that the future tax burden will be lower than expected, increase their consumption. Even private consumption is "invited" (Stiglitz.J, 2012).

Therefore, the quantitative analysis of the impacts of fiscal policy is crucial to guide decision-making and optimize actions in terms of state intervention. Indeed, any state interventionism should be analyzed and appreciated at its fair value compared to the costs incurred in terms of income redistribution and wealth.

However, the quantitative analysis of redistribution issues requires the availability of appropriate technical tools and summary tables of national accounts, which can provide information on the effects of policies implemented in both macroeconomic and microeconomic terms.

The advances made in terms of general equilibrium modeling, offer an analytical platform that responds to this type of problem. They make it possible to understand the interdependence and feedback effects of the behavior of economic agents in a context of general equilibrium, taking into account the structure of the economy as a whole and the interrelationships between different economic agents.

In this context, and based on a computable general equilibrium model developed by Decaluwé, Martens and Savard, a new model, taking into account the specificity of our problematic has been developed, in which the micro-macro link is established through the reconciliation of microeconomic information from household surveys and macroeconomic data provided by national accounts summary tables. Its accounting framework is the social accounting matrix that summarizes national economic activity in 2007 and the 2007 national survey on living standards and household consumption.

This model enables to quantify the effects of economic policies. Two examples of policies are illustrated in this regard: one analyzes one set of tax measures while the other analyzes public expenditure policies. Thus, these effects can be apprehended at the macro level on economic growth, inflation, macroeconomic balances, the internal and external competitiveness of the national economy as well as the income and savings of economic agents. At the micro level, a set of indicators of living standards are apprehended, including the structure of consumption expenditure by household classes, the redistribution of incomes and the level of poverty.

The splitting of the household agent into quintiles (from the poorest Q1 to the richest Q5) makes it a powerful instrument to establish the link between the simulated (fiscal and social) policies and their impacts on the living standards of the different types of households.

Seventeen shocks were simulated and the results differed whether it was a single shock or a multiple shock.

The article will be organized as follows: A first section is devoted to the theoretical part explaining the theoretical links between, on the one hand, taxation, economic growth and poverty, and on the other hand, public spending, economic growth and poverty. The second section will deal with the CEGM -Computable Economic General Equilibrium Model- (MEGC), the simulations and the analysis of the results obtained.

THEORETICAL FRAMEWORK FOR FISCAL POLICY ANALYSIS

Taxation, economic growth and poverty

Economic growth is necessary for economic and social development. The role of the state in economic recovery has been the subject of intense debate in economics. Many economists recognize that a minimum size of the state intervention is necessary for the economic and social development of a country. Tax intervention is considered as one of the means of development.

At the theoretical level, the causal relationship between tax and economic growth is often understood in the sense of an influence of macroeconomic variables growth on tax revenues (Hénin.PY and Ralle.p, 1993) and rare are models that place a high value on the tax variable as a determinant factor of growth (Charlot.S and Schmitt.B, 1999). The role of the tax in determining the growth rate is therefore little taken into consideration.

Going beyond the simple technique of covering public expenditures, taxation is a powerful instrument of economic policy capable of reaching the economic optimum if it is properly designed (Valenduc.C, 2011). If is not, it may lead to net losses in production, productivity, and social utility (RAJHI, 1993, Hénin.P.Y and Ralle.P, 1993). Tax intervention is, from this point of view, necessary to avoid economic crises, to stimulate the growth process and consequently to reduce social inequalities (Valenduc.C, 2011).

In the traditional theory of public finance, the roles attributed to fiscal policy are financial, economic and social (Musgrave, 1959, Keho, 2009). On the financial level, the tax system must be able to find the resources needed for the functioning of the state. On the economic front, tax policy can be used to regulate economic activity by changing the tax effort required of taxpayers or take the form of tax incentives to reduce the tax burden in order to boost consumption, investment and employment. On the social level, taxation is an instrument of redistribution of income in the sense of greater social equity. Budgetary revenue is, therefore, an essential instrument of development strategies.

A high growth rate and a more equitable income distribution are the ultimate goals of any progressive society. These two goals, however, conflict with each other. We must then focus on one or the other. The question then is whether the price to be paid for greater equality must be translated into terms of stunting economic growth.

Given the low growth rates of developing economies, income redistribution provides relatively little for low-income groups, far less than its advocates claim (Valenduc.C, 2011). Making the rich pay is advantageous in political terms, but is hardly advantageous in terms of purchasing power. The solution to this thorny problem is an ethical choice about the relative importance we allocate to income distribution and growth in the short and long term. It seems that at first taxation should encourage and stimulate economic growth. Even low-income groups have more to gain from rapid economic expansion than a policy of income redistribution that is likely to be that of poverty (Moummi.A, 2012). The goal of correcting collective disparities can only be achieved as a result of relatively high and sustainable economic growth.

Growth is based on three principles: the restriction of consumption, the desire to produce as much as possible and the preference for productive investment. Taxation with the incentive opportunities it offers is an important incentive for achieving the objectives of the development plan. With this in mind, the objective is, on the one hand, to bring savers to invest in a productive way, and on the other hand, to achieve preferential consumption by fiscal means. This is the very concept of functional taxation, whose effects do not only depend on the total volume of revenues, but also on their impact.

The objective of economic growth places taxation, once again, before the need for a choice. Is it aimed at increasing the production of private enterprise, by diverting savings from unproductive or low-interest jobs to the economy, or by focusing on public investment and ,in this case, increasing the public savings?

In the developed liberal countries, growth depends to a large extent on the dynamism of private enterprise. The inadequacies of the latter in developing countries are well established. They come mainly from the irrational behavior of high income earners. These are attracted, first by hoarding (buying gold), sterile investments, or conspicuous consumption. The dynamism and entrepreneurial spirit of private initiative is still, in the developing countries, at an embryonic stage.

The deficiency of private enterprise makes it necessary to increase public savings. The state must then replace the private entrepreneur. It remains to be seen whether the importance attached to the increase in public revenues will not, on the one hand, hinder the rise of a minority of wealthy people who save and invest in the productive sectors a substantial part of their income and, on the other hand, to increase public consumption.

Assuming that public spending is maximized and productive investments have priority, taxation can and should help achieve the following objectives:
- o Mobilizing public savings and encouraging the formation of private savings;
- o Channeling savings into its most productive uses such as education and health;
- o Encouraging both domestic and foreign productive investment;
- o Reducing the regressivity of indirect taxation;
- o Restricting luxury consumption.

But whatever the role and importance of a development tax policy, it can only be effective if it is based on a political will for growth. A tax system is not a simple adjustment of taxation techniques; it is above all a moral and political fact and, as such, depends closely on the political orientation of the regime in place. Therefore, an effective fiscal policy must be formulated according to the objectives of economic growth and must be adapted to the socio-political environment.

Taxation can lead to various distortions in the behavior of economic agents. These distortions exist theoretically whenever the promulgation of a tax measure influences the plans and the behavior of the economic agents, so that they differ from what they would have been, in the absence of this taxation. The distortions can be, depending on the case, positive or negative. In the first case, taxation creates an incentive to do, to act. In the second case, it seeks to avoid a certain behavior, it encourages not to do. Positive distortions generally lead economic agents to act in a desired direction according to the intended modalities. This is called "tax incidence".

Tax incidence is the positive analysis of the distribution of the burden of a tax, or tax system, between economic agents. The goal is to identify who in the economy ultimately bears the burden of a tax or taxes that could initially be applied to a particular activity or economic agent. The underlying premise of this analysis is that the tax burden is described by its effects on the well-being of individuals (and not on institutions) in their roles as consumers, producers and suppliers of factors of production. This analysis shows that the cost of the tax has an impact on prices and that therefore the person who bears the tax is not the one who should legally bear the burden.

The impact analysis aims to help define a quality policy. In order to make a rational choice between the various tax options, in particular to respect the precept of equity, it is necessary to have the best available information on the persons or categories of people who will ultimately bear the burden of the tax. Impact theory and therefore an important and necessary step in tax policy recommendations.

Poverty and Social Impact Analysis (PSIA) involves analyzing the distributional impact of policy reforms on the standard of living of different stakeholders, while paying particular attention to the poor and vulnerable populations. In this momentum, a CGEM (MEGC) was conducted to assess the consequences of tax reforms on macro and micro-economic aggregates in Morocco.

Public expenditures, economic growth and poverty

Traditionally, fiscal policy debates as a macroeconomic policy instrument have focused on defining the desired level of government balance. From a Keynesian perspective (Mills.P and Quinet.A, 1992), public balances can contribute to the smoothing of cyclical fluctuations: thus, in a downturn, an increase in public spending stimulates private expenditure; the net effect on the economy is activity depending on the foreclosure of the propensity to import and the possible rise in the real interest rate. Such a representation of the functioning of the economy, however, is based on simplifying assumptions: first, it assumes that the horizon of private agents is sufficiently limited, because of liquidity constraints or phenomena of tax illusion, for the consumption reacts significantly to fluctuations in current income. It also supposes that the formation of agents' expectations gives way to a certain monetary illusion. Contesting these two hypotheses, monetarists (Mills.P and Quinet.A, 1992) questioned the cyclical effectiveness of fiscal policy. According to them, consumption, which is a function of permanent income, is not very sensitive in the medium term to variations of public expenditure. Moreover, in the absence of a lasting monetary illusion, an expansive fiscal policy is not able to lower the unemployment rate below its "natural" level permanently.

The monetarist proposals have contributed to reconsider the cyclical approach of the public finances: without necessarily calling into question the very effectiveness of the budgetary policy, economists agree today on the harmful effects of a systematic use of the public finances for the purposes of cyclical regulation. Reasoning in the context of the state's intertemporal budget constraint, Barro (1974, Mills.P and Quinet.A, 1992) went further by challenging any conjunctural effectiveness in fiscal policy: reformulating the Ricardian hypothesis of equivalence between debt and tax. He estimates that any change in the public balance is offset by a similar variation in private savings. If the validity conditions of this proposal are rarely met (perfect forecasts, absence of liquidity constraints, flat-rate taxes ... (Boskin, 1987, Mills.P and Quinet.A, 1992) it has nonetheless contributed to renewed focus on the medium-term effects of fiscal policy. Increased attention has been paid to the impact of tax rates, the volume and the composition of public spending on private behavior. This highlighted the distortions in labor supply and savings caused by high marginal tax rates. In terms of public spending, Barro

(1981, Mills.P and Quinet.A, 1992) emphasizes differentiated impact of a temporary or permanent change in the level of public expenditure on activity. If private agents reason over a long period by forming rational expectations, causing a permanent change, leading to future increases of taxes, which will depress the permanent income: the increase in public spending is then fully offset by the decline in private consumption. However, a temporary change- since it does not imply a future tax increase- has a stimulating effect on activity less than the Keynesian multiplier to the extent that public expenditure partially replaces private expenditure.

Aschauer (1989) for his part argues that the increase in public investment expenditure, by boosting the profitability of private capital, would have an impact on production higher than an equivalent increase in public consumption. At the same time, he finds a favorable effect of the public capital stock on the overall productivity of private factors of production. His latest work has broadened the scope for thinking about the medium-term impact of public finances. In particular, they encourage a more in-depth assessment of the impact of public spending on the utility function of consumers and the production function of entrepreneurs.

Thus, the impact of investment expenditure and public capital stock on private productivity and return on capital is potentially significant for fiscal policy. This means that the government has, alongside with the budget balance and tax burden rates, another macroeconomic instrument to boost private sector productivity. This issue is of particular importance to any economy. A positive contribution of public finances to the improvement of the productive supply can consist of an increase in public savings and a corresponding reduction of the pressure of the State on private savings flows. The control of the balance must therefore be a priority objective. Given the high level of compulsory deductions and the amount of distortions that can be generated by taxation, the satisfaction of a pay-as-you-go objective is above all a matter of controlling expenditure.

In addition to its role as an instrument of macroeconomic policy, public spending can also influence the distribution of income in the short term (through subsidies and transfers) and in the long term (through health services and education). Transfers to households (food subsidies or unemployment allowances) directly affect the income and consumption of the beneficiaries, while subsidies and transfers to businesses have a more indirect impact on their income and consumption. Education and health services improve the productive capacity of beneficiaries (IMF, 1996). These well-targeted expenditures are a powerful instrument for boosting economic activity and reducing, either directly or indirectly, the levels of poverty (Touhami.A, 2005).

A lasting improvement in the living conditions of the population undoubtedly depends on greater access to education and health services (Djindil.N et al, 2005). This is especially true for the poor as their main asset is usually human capital. Any reform aimed at promoting the accumulation of this capital is likely to reach the poor. For sustainable development, special emphasis must therefore be placed on access to these basic services. And because of market failures, state intervention is seen as the most effective way to ensure fairness and efficiency in the provision of these services.

Hence the need to simulate, through our computable general equilibrium model, the impact of a change in public spending, especially of a social nature, on the macro and microeconomic aggregates of the country.

COMPUTABLE GENERAL EQUILIBRIUM ANALYSIS IN MOROCCO

Interest of the CGEM (Computable General Equilibrium Model)

The basic theoretical framework of computable general equilibrium models is offered by the competitive general equilibrium model. Its original structure was developed during the second half of the nineteenth century by economists from the neoclassical or marginalist school of thought (Decaluwé.B et al, 2001), including, in particular, the German Gossen (1854), the Englishman Jevons (1871), the Austrian Menger (1871) and the Frenchman Walras (1874-1877). However, it is widely accepted that it is the latter who contributed the most to the conceptualization of the model, hence its alternative name of general Walras system. In the twentieth century, more modern formulations, because they made use of an advanced mathematical language, came into being with the works, mainly, of Arrow and Debreu (1954) and McKenzie (1954-1981).

These models, based on the Walrasian theory, are concerned, in this theoretical framework, with the determination and estimation of the consequences of possible economic policies. These are models in which prices and quantities are determined endogenously, knowing that agents are following optimization behaviors. Price flexibility will guarantee the adjustments and will lead to balance.

They include different types of households, with different budgetary constraints, in which welfare plays a fundamental role since the effect of economic policies on the redistribution of income are quantified while judging efficiency.

The methodological approach adapted to these objectives requires modeling that simulates a structural shock and captures the effects on all components of the economy. This is the reason why it was opted for computable general equilibrium modeling.

In this work, our modeling is based on the simulation of shocks related to fiscal (revenue) and social (expenditure) policies.

In this respect, the Social Accounting Matrix (SAM), serving as a database of our CGEM, is the one developed by the National Accounting Department in 2007. To meet the objective of the analysis (micro-simulation) , the population was split into the MCS in five quantiles (from the poorest 20% to the richest 20%). This classification is based on data from the Household Living Standards Survey conducted by the HCP in 2007, which distinguishes in household income between the remuneration of factors of production, in particular labor and capital, and transfers they receive from other economic agents, including the State. Labor and capital incomes are mainly attributed to households and businesses. In this perspective, the labor factor is disaggregated into three categories according to the level of education and the degree held by the individuals in the household. Three levels of qualification of the workforce are distinguished according to whether it is low, medium or highly qualified. Government revenue comes from direct and indirect taxes.

Closing the model

The model is a system with simultaneous equations. This requires that the number of equations equals the number of variables in order for the model to have a single solution. For this purpose some variables will be kept fixed in relation to the type of macroeconomic closure chosen for the model, which is likely to make the system of equations determined.

However, the choice of macroeconomic closures goes beyond the simple lifting of the under-determination of the system of equations and is truly an in-depth reflection on the theoretical

mechanisms of transmission of the effects of simulated shocks and on the factors that generate them.

Closing a model therefore comes down to identifying the arguments in favor of a particular functioning of the economy that is able to reflect as accurately as possible its realities and characteristics and to better understand the impact of simulated policies, as reported by the results of simulations performed on the basis of the model.

In response to the shocks to be simulated, the various variables of the model react according to schemes strongly conditioned by the nature of the macroeconomic closure chosen.

This loopback modification, depending on the objective pursued, gives the computable general equilibrium models great flexibility and enriches them in comparison with other types of models, thanks to the possibility of simulating the effects of a variety of measurements and to nuance them according to the privileged mode of the behavior of the variables.

Nevertheless, it is not always easy to pinpoint all the implications of one loopback over another as the expected impact is often influenced by other elements such as structural effects or micro economic specifications of the model.

Given the structure of the Moroccan economy, especially the behavior of the state, and the static nature of the model, a closure consisting in considering that state expenditures are exogenous and that the investment adjusts to savings has been retained. This closure is based on the Walras law, which states that prices are flexible and the investment is residual and automatically equates to savings. This type of closure appears to be appropriate for the study of economic policies that lead, mainly, to a reallocation of resources between activities. Resources are assumed to be fully employed at the level of the economy as a whole.

The capital stock is assumed to be specific to each of the sectors, which means that the return on the investment is not captured during the current period and the results deduced have a short-term interpretation in this context of static CGEM s. This same hypothesis implies that there are as many capital factor remunerations as there are branches of activity in the model.

Still based on the static criterion of the model, the total supply of the labor factor of the different skills is assumed to be exogenous as well. The labor market is in full employment. Only the reallocation of this offer between the branches of activity is possible.

According to the "small country" hypothesis, world prices for imported and exported goods are also assumed to be exogenous to the model, since the small open economy can not influence these international prices.

Similarly, the current account balance is considered exogenous and it is the real exchange rate that adjusts to rebalance the balance of payments. As a result, RM savings (= - CAB) are also fixed.

And to keep the equilibrium of the model, it was necessary to fix another variable. To do this, we proposed to consider the change in stock as exogenous, because it is not an economic policy variable.

Proposed simulations
Despite the fairly standard structure of the constructed model, it can be used to simulate the impacts of several interesting economic policies (fiscal and social) on economic growth and poverty.

With this in mind, we first start with tax policies. These relate to two types of taxes namely income tax (IT) and value added tax (VAT), then public expenditure policies, covering total expenditures, education expenditures, and health expenditures. Finally, we will try to evaluate the changes observed by combining the two categories of policies (revenue and expenditure).

Tax policies
Among all the taxes applied in Morocco, those retained in our work are the VAT and the IT, because of their direct impact on the households. VAT affects their consumption and the IT affects their income. VAT revenues increased by 572% between its creation in 1986 and 2015 and the IT increased by 966% between 1990 (the year of its creation) and 2015.

Chart.1- Evolution of IT and VAT revenues at the end of 2015.
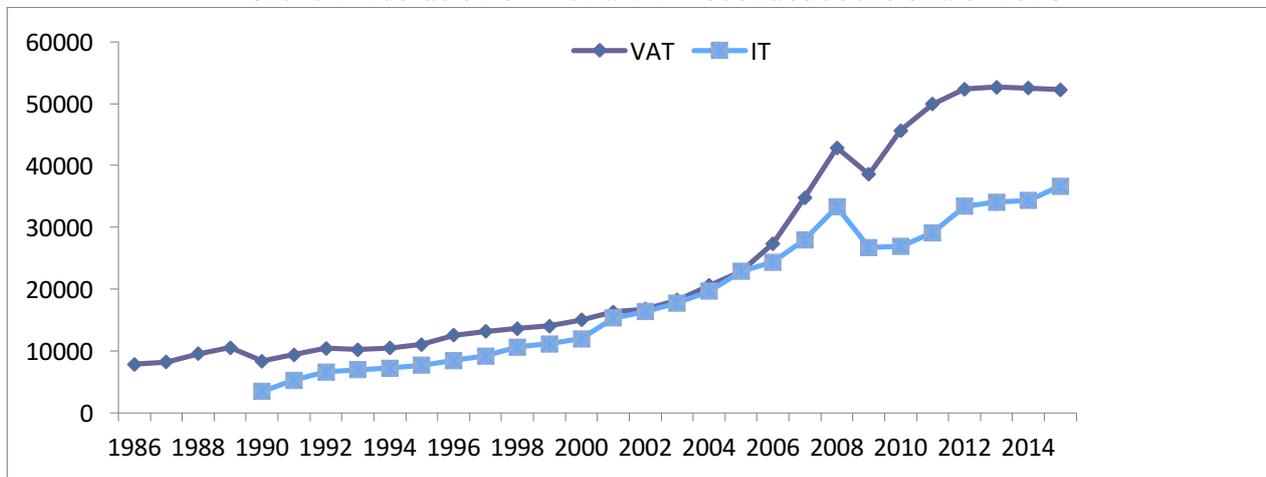
Data source: Ministry of Economy and Finance (DEPF)

These two taxes represent, on average, 24% and 17% respectively in tax revenue (FR) and 21% and 15% in total revenue (TR):

	VAT		
	1986	2015	average
VAT/FR	28	29	24
VAT/TR	27	25	21

	IT		
	1990	2015	average
IR/FR	8	20	17
IR/TR	7	17	15

The simulations are designed to analyze the effects on economic growth and poverty following: 1) 20% decrease in the total IT rate (SIM1), 2) 20% decrease in the household IT rate in Q1 quintile (SIM2), 3) 20% decrease in the IT rate of Q2 (SIM3) households, 4) 20% decrease in QI Q3 household IT (SIM4)), 5) 20% increase in the IT rate of households in Q4 (SIM5), 6) 20% increase in the IT rate for households in Q5 (SIM6), 7) combination of SIM2 to SIM6 (SIM7), 8) 20% decrease in the local total VAT rate (SIM8), 9) 20% decrease in the local VAT of agro-food products (SIM9), 10) 20% decrease in total import VAT (SIM10), 11) 20% reduction of the import VAT on agro-food products (SIM11).

Spending policies
The evolution of public expenditure (table-1), in Morocco, shows that their average growth

rate over the period 2000-2015 is 6.6%, their share in GDP rose from 22.1% in 2000 to 28.4% in 2015 (6.3 points more). Hence, there is a need for effective control of expenditure. A better allocation of expenditures can contribute to growth, as the theory of endogenous growth teaches. When spending is both reduced and redeveloped, growth and social indicators are not necessarily threatened (IMF, 2006).

Table-1: Evolution of public expenditure (in billions of dhs) and their share in the GDP (in %) over the period 2000-2015.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
PE	101	111	109	115	123	144	146	159	192	195	205	241	264	255	260	256
growth PE(%)	6,7	10	-2	5,4	7,2	17	1,2	9,3	20	1,9	5	17	9,7	-3,3	2	-1,5
PE/GDP	22	23	22	21	22	25	23	25	28	27	28	31	33	30	30	28

Source: Calculated from data from the Ministry of Economy and Finance (DEPF)

Social indicators are heavily influenced by spending on education and health. Higher education and better health are the most effective ways to boost productivity, and thereby create added value in all economic sectors. This improvement is thus one of the surest ways to make growth sustainable, to ensure a better sharing of its fruits and thus to combat poverty.

Expenditure on education in Morocco is characterized by the predominance of operating expenditures, as shown in Table 2. The latter represent, on average, between 2000 and 2015, 93% against 7% for investment expenditures. The average share of operating expenditures of education in the total operating expenditure of the State is 28%. As for investment expenditures, they are only 8%, on average, in total investment expenditure. In total, education spending absorbs, on average, 6% of GDP, or 21% of total expenditure. This share (1/5 of 11 ministries) is important but the results are lower. The education system is therefore ineffective because the budget is spent in an undifferentiated way, without taking into account the socio-economic situation of the population and spatial disparities. This situation makes the system a source of inequality no longer representing a social lift for the population (Khellaf.A, 2015).

Table-2: Evolution of educational expenditure (in billions of dhs and in %) between 2000 and 2015.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
EE	11	25	25	29	29	38	35	37	39	44	45	42	48	51	54	55
OEE	90,6	91,9	91,7	92,7	93,8	95,2	93,4	92,9	93,1	87,8	89	98,1	96,6	94,1	94,3	94,1
IEE	9,4	8,1	8,3	7,3	6,2	4,8	6,6	7,1	6,9	12,2	11	1,9	3,4	5,9	5,7	5,9
EE /GDP	2,4	5,1	5	5,3	5,2	6,6	5,6	5,7	5,6	6,2	6,1	5,4	6	6	6,4	6,1
EE/ TE	10,6	22,3	23,1	25	23,8	26,7	24,2	23,2	20,1	22,7	22,2	17,5	18,3	19,9	21,1	21,6
OEE/OTE	29,8	30,5	31,7	33,6	33,3	32,1	31,2	30,5	25,5	27,2	29,6	18,2	23,7	24,3	26	26,7
IEE/ITE	8,6	7,6	11,1	11,9	9	9,7	10,7	10	7,3	12,3	9,4	1,8	3,5	7	6,3	6

Source: Calculated from data from the Ministry of Economy and Finance (TGR).

Public expenditure on health is relatively low in Morocco. Table 3 shows that, on average, over the period 2000-2015, it amounts to 5% of the total State expenditure. However, the international standard set by WHO (World Health Organization) is set at 10% (Khellaf.A, 2015). Their average share of GDP is only 1%: 85% of these expenditures are operating expenses and 15% are investment expenditures. The Ministry of Health's operating and investment expenditures represent, on average, 6% of total operating expenditure and 4% of

total investment expenditure. All these indicators affirm that the sector is still confronted with the low level of health expenditure.

Table-3: Evolution of health expenditure (in billion dhs and in%) between 2000 and 2015.

	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
HE	2	5	5	5	6	7	7	8	8	9	10	9	12	12	13	13
OHE	82,6	84,6	85,1	85,7	82,2	86,1	82,7	83,7	83,2	85,5	82,1	85,5	87,5	88,1	88,4	88,5
IHE	17,4	15,4	14,9	14,3	17,8	13,9	17,3	16,3	16,8	14,5	17,9	14,5	12,5	11,9	11,6	11,5
HE/ GDP	0,5	1	1	1	1,1	1,2	1,1	1,2	1,2	1,3	1,4	1,2	1,4	1,4	1,5	1,5
HE/ TE	2,3	4,3	4,4	4,6	5,1	5	4,6	4,8	4,4	4,7	4,9	4	4,4	4,7	5	5,1
OHE/OTE	5,9	5,4	5,7	5,7	6,2	5,4	5,3	5,6	5	5,5	6	3,6	5,2	5,4	5,7	6
IHE/ITE	3,5	2,8	3,8	4,3	5,5	5,3	5,3	4,7	3,9	3	3,3	3,1	3,1	3,4	3	2,8

Source: Calculated from data from the Ministry of Economy and Finance (TGR).

According to the 2007 ENVM, hygiene and health care are the fourth largest household expenditure for Moroccan households at the national level, with an average annual expenditure per person of 809.2 dirhams as against 627 dirhams in 2001. This expenditure is of 1055 dhs in urban areas against only 489 dhs in rural areas. It reaches 199 dhs in households of the least wealthy class against 1993 dhs in the wealthiest class.

With insufficient and unequal spending on education and health, our simulations require more importance. Thus we will try to analyze the effects on the growth and standard of living of the households of a: 12) decrease of 10% of the total public expenditure (SIM12), 13) an increase of 10% of the expenses of education (SIM13), 14) an increase of 10% of expenditure allocated to the health sector (SIM14) and 15) a combination of the last two measures (SIM15).

Then we propose the grouping of several measures (receipts + expenses) in a single simulation. The (SIM16) is a multiple shock that combines SIM1 + SIM8 + SIM12 and (SIM17) encompasses SIM7 + SIM9 + SIM15.

Discussion of the results
Tax measures
The results show that in terms of **economic growth**, the 20% downward revision of the IT has the biggest impact (+ 0.26%), compared to all the proposed IT measures. This increase in GDP is mainly due to the importance of the VA achieved by the majority of production sectors. The sector achieving the most important VA, following this shock, is that of the food and tobacco industry (FTI) with a rate of 0.45%. This increase is due to the largest increase in the return on capital in this sector (1%) as well as the increase in demand for labor. The latter is the result of the fall in the unskilled wage rate (-0.34%), due to the increase in the demand for unskilled labor in this sector (1.85%). The improvement in the rate of return on capital also explains the rise in business income by 0.3%.

Overall investment increased 2.01% from its 2007 level (base year). This increase resulted in an increase in aggregate demand in the domestic market. The largest value (0.59%) remained in the food and tobacco industry (IAT) and other non-financial services (OPO). This increase in aggregate demand may also explain GDP growth.

However, the increase in aggregate demand would put upward pressure on domestic prices. As a result, the CPI rose by 0.22%, affecting the competitiveness of Moroccan products both domestically and externally. The additional demand would be satisfied more by imports. Almost all sectors saw their imports increase (especially IAT of 1.31% and OPO of 1.85%). On

the other hand, exports have been reduced in almost all sectors.

The public revenue generated by the improvement of economic activity would not compensate for the diminished value induced by the downward revision of the IT (ie a decrease of 8.63%) and consequently, public savings would be down about 13.10%.

In **microeconomic** terms, the measure of a 20% decrease in total IT is always that in which the rates of variation of the different variables are the most important. Thus, their income improved by 0.19% for Q1 and 0.11% for Q2 and 0.13% for Q3. An improvement in available income (+ 0.60% for Q1, + 0.65% for Q2 and + 0.77% for Q3) resulted in an increase in their consumption (+ 0.4% for Q1, + 0.47% for Q2 and + 0.57% for Q3) and their savings (+ 0.20% for Q1, + 0.23% for Q2 and + 0.37% for Q3).

On the other hand, of the four VAT simulations, the one that had a favorable impact on **economic growth** is the 20% drop in total local VAT. It resulted in an improvement in GDP (+ 0.41%), GFCF (+ 1.86%) and total investment (+ 1.77%). However, public savings would be marked by a decline of 11.54%, in relation to the shortfall of the State in terms of income (-8.49%).

Variations in VA are not the same for all sectors. Thus, the sectoral VAs recorded positive rates of change in 10 sectors (the most important of which are the PTC - posts and telecommunications - (+ 0.53%), the TLI textile and leather industry (+ 0.38%), the electricity and water (+ 0.32%), construction and public works CPW (+0.22%)), while the other 11 have negative rates (the lowest recorded is that of the transport sector TRA (-0.38%)). Except that this decline did not greatly influence GDP growth which still recorded a rise of 0.41%. This improvement is due to the rise of the VA in the sectors which occupy a relatively important weight in the formation of the GDP. The sectors performing the most important VA are those which also recorded higher rates of return on capital (+ 2.39% for PTC, + 1.16% for UAE, + 0.95% for BTV and +0, 93% for ITC) as well as higher labor demands for the three categories of work L1, L2 and L3. (+ 2.93% L1, + 3% L2 and + 3.05% L3 for PTC). The increase in the demand for labor explains the improvement in wage rates for the three categories of work (+ 0.47% for L1, + 0.38% for L2 and +0, 32% for L3). And the increase in the rate of return on capital in the sectors that contributed the most to GDP growth explains the rise in corporate savings of + 9.79%.

Moreover, price variations differ from one sector to another. But in general, most sectors had negative domestic price movements (especially the HRS hotel and restaurant sector: -3.85%), composite prices (-4.12% for the same sector) and prices. on import (-4.93% still for the HRS sector). The decline of the latter will act positively on imports. Almost all sectors saw their imports increased (the much imported products are those of the PTC with + 4.85% followed by those of the HRS with + 3.86%). On the other hand, export prices all posted positive rates of change except ITCP textile and leather products with -0.18% and those of financial activities and insurance AFAP with -0.03%. As a result, all sectors experienced declines in their exports, apart from the two ITC and AFA sectors.

On the **microeconomic** variables, the measure that has had the greatest impact on the standard of living of poor and middle-income households is that of a 20% drop in the VAT on food products, the main constituents of their basket. Their income has increased more than that of the upper classes. That is 0.53% for Q1; 0.50% for Q2; 0.48% for Q3; 0.45% for Q4 and 0.47% for Q5. This will lead to an improvement in consumption of 0.60% for Q1; 0.57% for Q2;

0.49% for Q3; 0.47% for Q4 and 0.48% for Q5; and savings of 0.41% for Q1; 0.38% for Q2; 0.33% for Q3; 0.29% for Q4 and 0.31% for Q5.

But in terms of macroeconomic aggregates, this is a measure to avoid. If we return to the theory of optimal taxation, the growth-equity trade-off does not make it possible to opt for the pro-poor measures at the expense of economic growth. On the other hand, the first measure, which is a 20% VAT cut for all domestic products, had a positive impact on both macro and microeconomic aggregates. Economic growth and poverty levels have improved as a result of this measure. Hence the need to give more importance to the reform of VAT. It is a tax that ensures both economic efficiency (by improving the rate of growth and preserving employment) and social equity (by improving the standard of living of poor and average households).

Public expenditure measures
Public expenditure reforms are generally aimed at reducing state expenditure. A 10% reduction did not have a positive impact on GDP **growth** (-1.32%) even though almost all sectors recorded an improvement in their value added, demand and intermediate consumption. This has led to a drop in prices (-0.09), thus strengthening the competitiveness of the Moroccan product both in the domestic and foreign markets. Exports made gains in almost all sectors. The demand for work has increased which has resulted in lower wages.

The state's shortfall in terms of income and savings following this measure is 6.55% and 0.9%, respectively.

On the other hand, the results obtained, by reorganizing social expenditures such as education and health expenditure, show that even if the state did not gain in terms of income (-6.32% for SIM13 , -6.35% for SIM14 and -6.30% for SIM15), it was able to improve its savings (+ 0.17% for SIM13, + 0.05% for SIM14 and + 0.22% for SIM15). This situation can be explained by the drop in transfers from the state to other agents, which allowed the government to save more GDP improved by 0.52% (SIM13), 0.17% (SIM14) and 0.69 (SIM15). These results lead to the conclusion that among all the measures proposed, the most favorable policy for economic growth is that relating to the development of education and health (SIM15). This additional allocation of resources for these two social sectors could be more effective than a decrease in total public expenditures.

In terms of indicators measuring the **standard of living of households**, it is still the SIM15 that has recorded the highest growth rates among the poor and middle classes. Household income increased (1.99% for Q1, 1.87% for Q2, 1.85% for Q3, 1.73% for Q4 and 1.86% for Q5), leading to a larger increase in consumption (1.96% for Q1, 1.79% for Q2, 1.73% for Q3, 1.62% for Q4 and 1.76% for Q5) and an improvement in savings (1.75%). % for Q1, 1.69% for Q2, 1.63% for Q3, 1.62% for Q4 and 1.66% for Q5).

Combined measures: revenue-expenditure
The fact that a 10% drop in state spending (SIM12) did not have the expected impact of the measure, we propose to integrate it at the same time with the most effective tax measures (SIM1 and SIM8). This combination is causing loss to the state in almost all macroeconomic indicators. GDP decreased by 0.87%, public revenue fell by 10.87%, public savings also fell by 25.18%, GFCF decreased by 0.94% and therefore IT will decrease by 0.94%. Ditto for micro economic indicators, all have reacted negatively to this multiple shock: Income, available income, consumption and savings of all households, especially the poor.

As a result, it can be said that governments should not introduce all these measures for a single budget year. On the other hand, altering them one by one can have positive results, ether on economic growth or on household living standards.

However, when the targeted measures for the poor were grouped together (SIM7 + SIM9 + SIM15), the results changed. Even if the income shortfall of the State in terms of income is 4.44% (lower loss of the SIM16: general measures), it was able to improve its savings of + 10.98%. GFCF increased by 6.14% and therefore IT improved by 5.91%. This led to GDP growth of 0.65%.

On the household side, this combination has benefited the poor and the middle classes in particular. The increase in wages (0.56% for L1, 2.19% for L2 and 2.43% for L3) generated an increase in household income. The improvement in household incomes combined with the drop in consumer prices (-0.03%) led to an improvement in consumption (1.00% for Q1, 1.06% for Q2, 1.10% for Q3, 0.18% for Q4 and 0.21% for Q5) and therefore in savings (0.09% for Q1, 1.00% for Q2, 1.02% for Q3).

For this combination, unlike the previous one, the policies chosen did not have a positive impact on both the economic growth and standard of living of poor households until they were grouped together. The positive variation in GDP is clearly visible following this simulation, although it was negative for SIM7 (IR) and stable for SIM9 (VAT) when each measure was introduced on its own.

CONCLUSION

In this work, we tried to provide some answers to the problem of the effectiveness of fiscal policies, as a means of economic growth and the fight against poverty, by improving the standard of living of poor and middle class households in Morocco.

From a methodological point of view, our analysis was based on a micro-simulated computable general equilibrium model in order to capture the impact of the proposed fiscal policies on the economy as a whole. The very disaggregation of the MCS of the Moroccan economy made it possible to follow the variations of the different variables measuring the standard of living for all the classes of households.

Simulation results have shown that fiscal policy can serve the goals of economic growth and poverty reduction by contributing to the well-being of households. However, the mechanisms by which fiscal policy can affect growth and poverty can be differentiated according to whether it is a fiscal policy (IT or VAT) or public expenditure (DP, DE or DS) or both at the same time.

Of all the measures proposed, those that have a significant impact for both objectives (growth and poverty) are the 20% downward revision of the IT, the 20% downward revision of the local VAT and the revision to the increase in education and health spending by 10% each knowing that the latter is the most effective for both goals at once.

Another conclusion to draw from the simulations made is that the fact of integrating several reforms into a single fiscal year may not have the same expected effects of the reform when introduced separately. The effect can be positive for some combinations, as it can be negative for others. Hence the need for this type of study, through the CGEM, before any reform, because they present us with a clear image on the macro and micro level of the economy as a whole. The objective is to identify the best possible combinations for public finance managers.

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ANNEX

				Tax policies=Revenus										
				IR							VAT			
				SIM1	SIM2	SIM3	SIM4	SIM5	SIM6	SIM7	SIM8	SIM9	SIM10	SIM11
	Variables		**Base**	var %	var %	var %	var %	var %	var %	var %	var %	var %	var %	var %
Growth (Macro)	**GDP**		647530	0,06	0	0	0,01	-0,01	-0,04	-0,04	0,41	0	-1,34	-0,62
	FBCF		208216	2,1	4,08	4,04	3,99	4,38	5,64	5,66	1,86	4,14	-1,76	2,47
	IT		215830	2,01	3,92	3,88	3,83	4,2	5,42	5,45	1,77	3,98	-1,76	2,36
	IPC		1	0,22	0	0,01	0,02	-0,03	-0,15	-0,15	-0,28	-0,01	-2,52	-1
	tx rém w	l1	1	-0,34	0	-0,01	-0,02	0,04	0,27	0,27	0,47	0	-1,63	-0,9
		l2	1	0,13	0	0	0,01	-0,02	-0,11	-0,11	0,38	0	-0,3	-0,35
		l3	1	0,28	0	0,01	0,01	-0,03	-0,22	-0,23	0,32	0	-0,44	-0,21
	Epargne	firm	80085	9,88	9,51	9,52	9,52	9,48	9,19	9,19	9,79	9,51	7,48	8,68
		gvt	40167	-13,1	-0,21	-0,38	-0,66	1,32	10,5	10,57	-11,5	-0,11	-20,7	-4,8
		row	808	0	0	0	0	0	0	0	0	0	0	0
	Revenu	firm	233925	0,3	0	0,01	0,01	-0,03	-0,25	-0,25	0,28	0	-1,84	-0,75
		gvt	227039	-8,63	-6,41	-6,43	-6,48	-6,14	-4,55	-4,55	-8,49	-6,35	-10,7	-7,48
		row	309321	0,02	0	0	0	0	-0,01	-0,01	-0,11	0	0,18	-0,04
poverty (Micro)	**YH**	Q1	42658	0,19	0	0	0,01	-0,01	-0,16	0,17	0,23	0,53	-1,4	-0,66
		Q2	45975	0,11	0	0	0,01	-0,01	-0,09	0,09	0,2	0,5	-1,55	-0,69
		Q3	64168	0,12	0	0	0,01	-0,02	-0,09	0,09	0,19	0,48	-1,63	-0,68
		Q4	84696	0,12	0	0	0,01	-0,02	-0,09	-0,09	0,17	0,45	-1,74	-0,7
		Q5	284726	0,13	0	0	0,01	-0,02	-0,2	-0,1	0,18	0,47	-1,6	-0,66
	YDH	Q1	42018	0,6	0,21	0	0,01	-0,01	-0,17	0,06	0,3	0,61	-1,38	-0,66
		Q2	44511	0,65	0	0,36	0,01	-0,01	-0,08	0,3	0,28	0,6	-1,46	-0,69
		Q3	61308	0,77	0	0	0,46	-0,02	-0,07	0,47	0,25	0,54	-1,52	-0,68
		Q4	78667	0,93	0	0	0,01	-0,73	-0,09	-0,88	0,18	0,49	-1,63	-0,7
		Q5	233533	1,57	0	0	0,01	-0,02	-2	-2	0,22	0,51	-1,5	-0,66
	CMH	Q1	33108	0,4	0,2	0	0	-0,01	-0,12	0,04	0,34	0,6	-1,3	-0,66
		Q2	43790	0,47	0	0,31	0	-0,01	-0,06	0,27	0,3	0,57	-1,46	-0,69
		Q3	54736	0,57	0	0	0,42	-0,02	-0,05	0,37	0,28	0,49	-1,52	-0,68
		Q4	73040	0,83	0	0	0	-0,7	-0,08	-0,8	0,24	0,47	-1,63	-0,7
		Q5	149495	2	0	0	0	-0,02	-1,96	-1,96	0,27	0,48	-1,5	-0,66
	S_H	Q1	8386	0,2	0,11	0	0,01	-0,01	-0,13	0,02	0,14	0,41	-1,22	-0,66
		Q2	-511	0,23	0	0,26	0,01	-0,01	-0,05	0,25	0,19	0,38	-1,34	-0,69
		Q3	4487	0,37	0	0	0,36	-0,02	-0,04	0,33	0,1	0,33	-1,42	-0,68
		Q4	1750	0,53	0	0	0,01	-0,63	-0,06	-0,76	0,08	0,29	-1,53	-0,7
		Q5	57401	1	0	0	0,01	-0,02	-1,5	-1,83	0,09	0,31	-1,59	-0,66

				Social Policies= Expenditures					Rev+Exp	
				DP	EDUC	HEALTH	ED&HT		OG	Pauvres
				SIM12	SIM13	SIM14	SIM15		SIM16	SIM17
	variables		Base	var %	var %	var %	var %		var %	var %
Growth (Macro)	GDP		647530	-1,32	0,52	0,17	0,69		-0,87	0,65
	FBCF		208216	3,28	4,45	4,23	4,56		-0,94	6,14
	IT		215830	3,13	4,28	4,06	4,39		-0,94	5,91
	IPC		1	-0,09	0,09	0,03	0,12		-0,16	-0,03
	tx rém w	l1	1	-0,27	0,21	0,07	0,28		-0,16	0,56
		l2	1	-4,57	1,73	0,56	2,3		-4,07	2,19
		l3	1	-5,7	2,01	0,65	2,66		-5,12	2,43
	Epargne	firm	80085	9,26	9,68	9,57	9,74		9,89	9,42
		gvt	40167	-0,9	0,17	0,05	0,22		-25,18	10,98
		row	808	0	0	0	0		0	0
	Revenu	firm	233925	-0,2	0,15	0,05	0,2		0,37	-0,06
		gvt	227039	-6,55	-6,32	-6,35	-6,3		-10,87	-4,44
		row	309321	0,54	-0,19	-0,06	-0,25		0,45	-0,26
Poverty (Micro)	YH	Q1	42658	-1,58	0,83	0,35	1,99		-1,27	0,79
		Q2	45975	-1,36	0,75	0,29	1,87		-1,06	0,7
		Q3	64168	-1,22	0,66	0,27	1,85		-0,95	0,64
		Q4	84696	-1,11	0,57	0,23	1,73		-0,75	-0,53
		Q5	284726	-1,41	0,67	0,29	1,86		-1,01	-0,63
	YDH	Q1	42018	-1,67	0,82	0,32	1,97		-1,24	1
		Q2	44511	-1,53	0,7	0,26	1,86		1,03	1,06
		Q3	61308	-1,24	0,6	0,18	1,82		-0,87	1,1
		Q4	78667	-1,08	0,52	0,15	1,72		-0,65	-0,18
		Q5	233533	-1,5	0,57	0,26	1,83		-0,09	-1,21
	CMH	Q1	33108	-1,78	0,72	0,23	1,96		-1,06	1
		Q2	43790	-1,45	0,6	0,19	1,79		-0,7	1,06
		Q3	54736	-1,33	0,55	0,18	1,73		-0,5	1,1
		Q4	73040	-1,1	0,47	0,15	1,62		-0,05	0,18
		Q5	149495	-1,4	0,57	0,19	1,76		0,84	0,21
	S_H	Q1	8386	-1,48	0,61	0,18	1,75		-1,04	0,09
		Q2	-511	-1,25	0,52	0,12	1,69		-0,62	1
		Q3	4487	-1,13	0,45	0,13	1,63		-0,48	1,02
		Q4	1750	-1,02	0,36	0,11	1,52		-0,03	-0,15
		Q5	57401	-1,2	0,47	0,12	1,66		0,54	-1,19