Economic policies and informal sector performance in Cameroon: a CGE analysis

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The main purpose of this paper is to evaluate the effects of economic policies on informal sector performances and poverty in Cameroon. It is based on a computable general equilibrium. The model has 5 production sectors including 2 commercial sectors, 2 tradable sectors and 1 non tradable sector, 4 production factors and 3 representative households. It has the advantage of incorporating a detailed modeling of transfers, taxes and consideration of trading margins. The data used in study come from a social accounting matrix developed for Cameroon with 2003 as base year and the third Cameroonians households survey which includes 11,391 households divided into formal households (27.42%), informal agricultural households (36.10%) and informal non-agricultural households (36.48%). Three types of policies have been simulated: the rise of informal household investment through the programs PIAASI and PADER, rising salaries of civilian and military personnel followed by the reduction of import taxes rate, and the combination of the two previous measures. The main results suggest that the increase in informal household's investment has a positive effect on the performance of the informal sector and led to a decrease in household poverty in this sector. However, it has the opposite effect on the formal sector. As against, rising wages and reduction of import taxes rate is beneficial to the formal sector, but less favorable to the informal sector. The combination of two effects resulted in attenuation of the effect of the each of them.

Keywords: EGC Model, Economic policy, Informal sector, Poverty.

JEL Classification: D58, E26, I32, O17

1 Introduction

For several years, and with the advent of the economic crisis of the 1980s, the formal-informal dualism has ceased to supply literature. This passion finds justification in the evolution of ever-growing sector in developing countries. Thus, in the early 1990s, the informal sector employs 77.4% of the workforce engaged in the agricultural sector and represents nearly 25% of GDP in sub-Saharan Africa.

In Cameroon, 42.3% of nonagricultural GDP in 1995 was the fact of the informal sector, so slightly less than 34% of national GDP. According to Cameroon's national accounts, the informal sector employs 93% of the workforce in 2003. In addition, this sector is the one that has created more wealth in Cameroon in 2003.

With this importance in creating wealth, the informal sector has a special place in public development programs in Cameroon during the last years. Many programs supporting the informal sector have been initiated. The most important of them are the Integrated Program of Support for Informal Sector Actors (PIAASI) and the Program of Support to Rural Jobs Development (PADER) which essentially boil down to training and financing of self-employment. Besides these programs, there are some policy measures which may have an impact on the informal sector. In this case, we distinguish measures aimed at upgrading salaries of civil and military servant of the government and exemption from taxes and duties on imports of certain essential commodities in 2008.

This paper intends to evaluate the effects of these policy measures on economic performance of the informal sector and the poverty in Cameroun by adopting a methodology based on building a computable general equilibrium (CGE) models. After this introduction, the second presents an overview of theoretical framework across the origin and the main applications of CGE models and different methodologies for poverty analysis used in the CGE models. The third will focus on the methodology adopted. The fourth will present the data used and some descriptive findings. The fifth section presents the simulations results and discussion and finally we conclude in the last section.

2 Theoretical Framework

CGE models find their origins in the theoretical models of competitive general equilibrium developed in the 19th century by the neoclassical economists. The desire to combine the framework of analysis information from microeconomic models of general equilibrium with a competitive global framework of economic analysis has led in the second half of the 20th century the growth of new macroeconomic models which were now open the door to a multitude of economic analysis.

During the end of the second half of the 20th century, CGE models have lent to many tests and in various fields. Johansen (1960), Haberger (1962) and Scarf (1973) are the first authors to have developed CGE (Adoété Ega [1]). These models which were mostly constructed for developed countries were called Walrasian CGE because they assume full employment of factors and focus particularly on the problem of optimal allocation of resources.

Therefore, the construction of CGE model will find a new focus attention almost entirely to issues of income distribution and poverty. The first authors which use CGE models in the analysis of income distribution were Adelman and Robinson (1978) (Boccanfuso and al [2]). The structural adjustment programs have also been analyzed by many CGE models (Bourguignon and al [3], Thorbecke [4]). Decaluwé and al (1998) showed how the Social Accounting Matrix and CGE models can be used to analyze the income distribution and poverty.

Many CGE models have also been developed to analyze poverty in Cameroon. Emini and al [5] examine the possible effects of Doha agreements (agreements made assemblies under the auspices of the World Trade Organization to promote the liberalization of trade.) on poverty in Cameroon. Using a CGE micro simulation, the authors show that the Doha agreements are likely to reduce poverty in Cameroon. Emini and al [6] implement a CGE model with dual calibration to decompose the effects of economic policies on the evolution of poverty in Cameroon.

The first CGE model which integrated the informal sector has been the work of Kelley [7]. It examines the influence at the macro level of informality in Peru. The author reaches the conclusion that the informal sector contributes to reducing the Keynesian multiplier. In disaggregating the informal production, he highlights the response of the informal sector due to one or more changes in economic policy. Another contribution is given by Montaud [8] who introduce two different approaches in modeling the informal sector: firstly the informal is

considered as a leading sector, relatively well integrated into the economy and placed in a competitive sense, secondly the informal is supposed to have small size and is marginal compared to the formal sector.

The informal sector in Cameroon has been modeled in the work of Cogneau, Razafindrakoto and Roubaud [9] who assess the impact of fiscal adjustment and monetary policy that was implemented following the 1994 devaluation. They arrived at the conclusion that production and employment in the informal sector are clearly countercyclical, while the real income per head appeared insensitive to the conditions of formal incomes.

3 Methodology

The theoretical model that we postulate in the context of this work is inspired by CGE models built by Cogneau and al [9], Montaud [8] and Strimbu-Lee [10]. The choice of these models is motivated by modeling the informal sector as competitive and/or dualistic formal sector.

The theoretical model includes five sectors: four tradable sectors of goods and services (formal and informal) and a non-profit sector that produces administrative services. These sectors use two factors: labor and capital which are considered as perfectly immobile at international level. Three types of households are present in this model and the economy is assumed to be small, opened with government presence.

Producers maximize their profit on the basis of a concave production function. The production of each sector is characterized by a Leontief-type technology with complementary factors between intermediate consumption and Added Value. The value-added of the tradable sectors is modeled as a Cobb-Douglas function of factors. The value added of non-tradable sector is equal to its demand for labor.

The labor factor is mobile between sectors, while capital input is fixed. It means that the model is a model of short-run. The government expresses no demand for capital and its demand for labor is the difference between its production and intermediate consumption in value. The demand for labor market sectors is given by maximizing the value added of these sectors. It is also assumed that labor is homogeneous but not perfectly mobile at the national level: the wage rate depends on the sector.

Household income comes primarily from the compensation for their labor supply, their capital return and transfers received from the others institutional sectors and the rest of the world. A detailed modeling of the redistribution of income through transfers and taxes was introduced. It is noteworthy that only households formal distribute a portion of their income in taxes and transfers.

The price system is the main element of transmission of the effects of policy on various economic aggregates. For this reason, a complete system price is determined. Overall, the implemented model contains 132 equations for 166 variables. Some variables must be exogenous. They are: transfers from the rest of the world, the nominal exchange rate, world prices, public consumption, and income from the rest of the word, capital demand, wage rate and the total supply of labor. The price index is chosen as numerous. The model is described and implemented in GAMS (General Algebraic Modeling System) software. Some parameters are been initialized using information from literature and from the SAM.

The performance analysis of the informal sector in Cameroon will use some macroeconomic indicators that will enable us to judge the role and importance of the effects. Our focus was mainly on the following variables: production, value added, the level of taxation in this sector, employment, investment, remuneration of factors. FGT indicators, proposed by Foster, Greer and Thorbecke [11] are computed to evaluate effect on poverty

4 Data and descriptive statistics

4.1 Data

The data used in this study come primarily from two sources: national accounts of Cameroon and Cameroon third household's survey (ECAM3). The base year used here is 2003. A Social Accounting Matrix has been built by taking the specificities of informal sector and economic policy simulations for which we analyze the impact. Beyond the household, there are also three other institutional sectors: governments, firms and the rest of the world. We will focus on the government account because we will use it to implement our shocks of economic policy

4.1 Descriptive statistics

Evaluated more than 5.917 billion FCFA in 2003, production in the informal sector has a prominent place in the production system in Cameroon (46.4% of total national production).

An examination of the value added in Cameroon in 2003, reveals in terms of wealth creation that the informal sector is more productive (56.1% of national value added). While informal activities (excluding trade) contribution is just under 49% of new wealth in 2003 versus 28% to formal sector (excluding commerce and administration).

A comparative analysis of total salary paid supports the conclusion that in 2003 the informal sector is by far the one who pays the lowest wages (87% of total salaries paid are in the formal sector).

After the wage, capital returns is the second source of income of households in Cameroon. To this end, the observation that we made in 2003 is that the capital is almost entirely formal firm's ownership (97.7%).

The savings of households in 2003 accounted for 15% of national savings; 11% of the national savings belongs to households formal and respectively 3% and 1% for households agricultural informal and households informal non-agricultural.

The other important finding concerns the final consumption. Globally consumer informal goods consumption is higher than formal one whatever the category of households. On contrary, the level of investment informal was lower than in formal sector.

5 Simulations results

5.1 Rising household investments informal (27.4%)

The increase of informal household's investment that we simulate occurs at two levels: increase of 10 billion CFA of non-agricultural informal households Investment throw funding allocated to the project PIAASI which represents about 26% of increase and increase of 432.8 million FCFA of informal Agricultural households investment throw the project PADER.

The increased investment of informal households has contributed to low boost in the informal economy and government production. We would note creation of additional wealth of about 0.01% for the informal sector activities and 0.8% for non-market activities. The growth of this wealth can be explained by an increase in labor demand for the informal sector of 0.18% and 0.25% for informal commercial sector and 0.77% in respect of the branch of non-market activities.

More jobs for the informal sector necessarily imply a higher income level of informal households. So, we expect respectively increase of 0.18% and 0.15% for agricultural informal households and informal non-agricultural households, which would contribute to an increase of nearly 0.08% of national household income, despite the little decrease of formal households income.

The increase of informal sector production and informal household income would lead to an increase in their consumption whether for informal goods as well for formal ones. These increases would be to just under 0.2% for the first and 0.1% for the second.

Regarding the administration, this policy is likely to reduce its revenue by 0.31% due to the crowding that it would have on the formal sector. The decrease of formal production would imply a decrease in government income, mainly those from duties on goods (-0.32%), on production (-0.14%) in this sector and importation duties (-0.5%). Theses implications arise because of the decrease in price in formal sector.

In summary, increased investment through projects PIAASI and PADER would be likely to give a boost to an informal sector which employs most of the workforce in Cameroon.

5.2 Rising wages (19.45%) and lower import taxes (17%)

This policy is an increase of the salary of the government civil servant equivalent to 96 billion FCFA per year and a reduction of imports duties on certain essential items estimated at 30 billion FCFA by the Ministry of Finance of Cameroon.

These policy measures would result, ex post, in a decrease of 0.4% of tax income. The loss of income would be so small because the same policy would imply rising in taxes on the production of formal goods (0.2%), taxes on formal products (0.46%), taxes on companies (0.85%) and the taxes collected on household income (6.23%).

Thus, rising wages and a lower level of taxation on goods would not improve performances of informal sector. Given the decrease of the added value price of the informal sector activities (-3.1%), we can conclude that the decline in this sector production (-0.18%) would lead to worse off in wealth. This would have a direct impact on the informal household income (-2.8% for informal agricultural households and -2.6% for the), and also a negative impact on their consumption, savings and lending.

Beyond the negative impact of these measures of economic policy on the informal sector, there is an increase of 2.51% of imports contributing to depreciate the balance of current transactions.

5.3 Increase of wages and investment and decrease of taxes on imports

The combination of these two above simulations wouldn't be beneficial for the informal sector, although the results appear less bad comparably to the second simulation. Thus the inclusion of household informal investments attenuates the negative impact on informal sector performance of the second policy. The positive impacts of the additional investment in the informal sector would not be sufficient to offset the effect of eviction due to a combination of the increase of wages of formal household and the decrease of taxes on imports of essential commodities.

5.4 Impact on poverty

The poverty analysis made here has been implemented with DAD (Distributive Analysis). It is based on the distribution of consumption expenditure per capita. The poverty line used is determined by the National institute of Statistics of Cameroon from the ECAM3 (269,443 CFA per year and per head). As presented in the table below, the impact of different policies analyzed through simulations does not affect uniformly all households.

Indicators	**FGT0**			**FGT1**			**FGT2**		
Simulation 1									
Households	Before	After	Δ	Before	After	Δ	Before	After	Δ
Formal	14.65	14.79	0.13	3.78	3.80	0.02	1.41	1.41	0.01
agricultural informal	22.97	22.88	-0.09	5.73	5.70	-0.03	2.06	2.05	-0.01
nonagricultural informal	59.57	59.46	-0.11	19.43	19.37	-0.06	8.14	8.10	-0.03
Total	39.88	39.83	-0.05	12.31	12.28	-0.04	5.03	5.01	-0.02
Simulation 2									
Formal	14.65	13.02	-1.64	37.81	3.16	-0.62	1.41	1.14	-0.27
agricultural informal	22.97	24.60	1.63	57.34	6.24	0.50	2.06	2.28	0.21
nonagricultural informal	59.57	61.14	1.57	19.43	20.48	1.05	8.14	8.73	0.60
Total	39.88	40.78	0.89	12.31	12.85	0.54	5.03	5.33	0.31
Simulation 3									
Formal	14.65	13.02	-1.64	3.78	3.17	-0.61	1.41	1.14	-0.26
agricultural informal	22.97	24.59	1.62	5.73	6.20	0.47	2.06	2.26	0.20
nonagricultural informal	59.57	61.10	1.52	19.43	20.42	0.99	8.14	8.70	0.56
Total	39.88	40.75	0.87	12.31	12.81	0.50	5.03	5.31	0.29

Source: author's calculations

The increase in private investment of informal households would lead to a reduction of all indicators of poverty at the global level. However, the second simulation would have resulted in an increase in the number of poor in Cameroon (0.89%) and worsen of their situation, including depth and severity.

These results hide differences by type of household. The declining of poverty headcount following the first simulation is entirely due to the decrease in the number of poor households from informal (0.09% of individuals in informal non-farm households and 0.11% among the informal agricultural households). This policy would increase the poverty headcount among formal households (0.13%).

For the second simulation we note that it reduce formal household poverty headcount (-1.64%) and increase poverty among informal households. In addition to this effect, we note an increase in the severity and depth of poverty among households informal, mostly in informal agricultural households. Thus, they move far away from the poverty line.

In sum, we hold that any simulation for a given category of households results in improved well being in this category and a deterioration in the other. Their combination attenuates the effect on the informal sector.

6 Conclusion

This research tends to analyze informal sector performances in an environment marked by major economic policy measures namely, the rising wages of government civil servant, reduction of taxes on imports of certain essential commodities in March 2008 and increased household investments informal through projects PIAASI and PADER. The methodological approach used is based on CGE model.

This paper has helped to highlight the crowding effect between formal sector and the informal sector. Indeed policies or programs supporting actors in the informal sector contribute to worse off the second. The simulation of the policy of the formal wage increase would increase the formal production and then decline in informal production. However, it is noteworthy that the increase in household investment informal would cause a decline in poverty at the national level, while the number of poor households indicted a slight increase.

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