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Impact of fiscal and employment policies on the informal sector in Cameroon

Jules Medard Nana Djomo
Serges R. Ngouana Koudjou
Carine F. Nzeuyang Nzouckio
Claudine Yanick Moukam

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Impact of fiscal and employment policies on the informal sector and poverty in Cameroon

Abstract

This study examines the relationship between the informal economy and the formal economy by undertaking to answer the following question: what is the impact of tax and employment policies on the informal economy and poverty in Cameroon? To achieve this, we adopt a methodological approach in general equilibrium (CGE) based on the works of Decaluwe et al. (2012) and Montaud (2000). The model is implemented using a Social Accounting Matrix (SAM) previously constructed from the 2010 national accounts and then disaggregated using ECAM3 and EESI2 survey data, available at the National Institute of Statistics. The simulation results show that an increase in skilled employment in the formal sector generates a decline in economic activity in the informal sector. This results in improved growth of GDP at market prices and a significant reduction of poverty. By contrast, fiscal policies do not have strongly differentiated effects between the formal and informal sectors. In addition, a taxation of products in the informal sector amplifies poverty.

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Authors

Dr. Jules Medard Nana Djomo

Senior Lecturer-Researcher

University of Yaoundé II

Yaoundé, Cameroon

jdjomo81@yahoo.fr

Dr. Serges Rodrigue Ngouana Koudjou

chargé d'études assistant

Institut National de la Statistique

Yaoundé, Cameroon

ngouanaserges@yahoo.fr

Mme Carine Flore Nzeuyang Nzouckio

Executive

National Institute of Statistics

Yaoundé, Cameroon

cnzeuyang@gmail.com

Miss Claudiane Yanick Moukam

PhD Candidate

University of Yaoundé 2

Yaoundé, Cameroon

yanickmclaudiane@yahoo.fr

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Executive summary

As part of the fight against poverty, Cameroonian government has taken a number of economic policy measures in order to improve living conditions of Cameroonians. These measures involve reduced taxes on basic products and an increase in employment opportunities in the formal sector, especially in the public sector. For example, 25,000 youth were recruited into the public service in 2011 and a number of large public works were undertaken by the government in recent years with one objective being to boost formal employment. The results of the employment survey show that poverty is strongly linked to the relatively large size of the informal sector, which employs more than 80% of the active working force, with remuneration that places households in a situation of permanent precariousness. The government aims to regulate the informal sector so that it will migrate towards the formal sector.

In this context, it seems opportune to look at the impact of government policies undertaken with the aim of improving household purchasing power. We therefore evaluate employment and fiscal policies and their effect on the informal sector and poverty. Using data from the 2010 national accounts, we build a Social Accounting Matrix (SAM). This enables us to perform simulations using a general equilibrium model based on the works of Decaluwe et al. (2012) and Montaud (2000). We simulate three policy scenarios: the first examines a 12.6% increase in qualified labour in the formal sector, the second involves taxing products in the informal sector, and the third sees reduced taxes on products most consumed by the poor. The simulation results are observed both in terms of the macro economy and household welfare.

The macroeconomic results of the simulation show that an increase in qualified employment in the formal sector leads to an increase in production and value added in this sector for a gain of 3.98%. However, since this surplus demand for labour is fed by the informal sector, the positive effects observed in the formal sector are counterbalanced by a decline in activity in the informal sector leading to a 2.85% decline, for an overall increase of about 1%. The results of simulations 2 and 3 show that due to rigidities observed in the demand of inputs, fiscal policies do not significantly affect activity in the informal sector, whether the tax is on products in the informal sector or a reduction in taxes on products. The relative fixity of inputs in the short term means that economic activity falls far from its trend after a change in taxes on products. Even though it is a theoretical result of assumptions in the modelling, it is worth highlighting that the informal sector is basically involved in subsistence occupations, and thus will persist for as long as there is no incentive for them to formalize. In sum, scenario 1 shows a decline in economic activity in

the informal sector to the benefit of the formal sector. It results in 1.31% additional GDP at the market price. Scenarios 2 and 3 show somewhat more perplexing changes, with no obvious linkages between the formal and informal sectors. In reality, we observe a rigidity, or an insensitivity of the informal sector in response to fiscal policies.

In terms of household welfare, the simulations use both the "equivalent variation" concept and the FGT poverty indices. The concept of "equivalent variation", in the sense of Hicks, enables us to evaluate the outcomes of real household income in the simulations. It shows that scenarios 1 and 3 show improved household welfare as opposed to a decline in scenario 2. Relative to the reference scenario, we see an overall improvement in household welfare by 1% and 0.7% in simulations 1 and 3 respectively, and a 0.45% decline in simulation 2. Analysis by area of residence (urban/rural) shows the impacts are clearer among urban households than rural ones.

In terms of poverty, the impact is analogous to that observed on real income. In effect, in simulation 1, the poverty incidence is about 11.5% in urban areas and 54.0% in rural areas, for a total of about 39% nationally. Compared to the reference scenario, this represents a considerable decline in poverty rates, respectively by 6.15%, 1.86% and 2.32% in urban areas, rural areas, and nationally. However, in simulation 2 poverty increases, by 3.38% in urban areas, 0.14% in rural areas, and 0.46% at a national level. This shows that taxing the informal sector is not likely to improve the welfare of households in either rural or urban areas. Those in urban areas would be most affected, considering that they are a very large majority of informal production units. In scenario 3, we see a decline in poverty estimated at 2.51% in urban areas as compared to 0.56% in rural areas, representing an overall 0.77% decline nationally.

In sum, most of the relationship between the informal economy and the formal sector is determined by the labour market where there is a wage differential which affects the purchasing power of households. Here, we see that promoting formal employment reduces poverty. Also, even though the goal was for informal activity to migrate into the formal sector which the government wants to do, this situation would only significantly impact growth and poverty if there were major effects on the wage situation of economic actors in the sector. In other words, the study shows us, on the one hand, that poverty reduction does not necessarily depend on the informal sector, and also that increased labour remuneration in the informal sector can significantly improve growth. So, the main recommendation we can draw may be in the direction of a significant increase in the minimum wage and improving the legal framework to make its application effective.

I. Introduction

1.1 Context of study

In recent years, the informal economy has regained the interest of economists, contributing to additional research on poverty (Islam, 2012; Cling et al., 2012; Gagnon et al., 2009; Bacchetta et al., 2009). This interest is directly in line with the Millennium Development Goals (MDGs) which pay specific attention to the informal economy, since the financial and economic crisis experienced in 2008, which had non-negligible effects on the world economy in terms of employment. The informal economy thus appears to draw a lot of attention because the majority of jobs available in developing countries are in this sector which generally places these actors in social conditions which do not enable them to flourish. In fact, the debate about the informal economy is first of all focused on defining the concept and the reasons that it persists (CEA, 2007; Henley et al., 2006; AFRISTAT, 2009).

In effect, faced with both unemployment and an absence of job creation in the modern sector, the World Labour Organization (WLO, 1972) gave birth to the concept of the informal sector to explain how the absence of job creation in the modern sector in Kenya did not lead to an increase in unemployment in the 1970s. The informal sector was thereafter defined starting with the criteria of ease of entry, family property, small scale and on-the-job training. The complexity of criteria to characterize this sector gave rise to a large variety of definitions, which makes it difficult to compare the phenomena internationally. This difficulty was partially addressed at the 15th International Conference of Labour Statisticians in 1993 which harmonized these definitions.

From this, we take that the informal sector is the set of units producing goods and services primarily to create employment and income for the persons involved. These units are characterized by a low level of organization, small scale, little division of labour and capital as production factors, and an absence of contractual agreements between employees and employers. Another statistical characteristic is added to this definition, specific to the national accounts. This considers the informal sector as an aggregatable set of production units, following the 1993 SAM, in the institutional treatment of households as individual entrepreneurs (ILO, 1993). Individual entrepreneurs are considered separately from corporations and quasi-corporations in terms of their legal status and the type of accounting they use. Among other things, individual entrepreneurs in the informal sector do not have a complete accounting which

enables them to clearly distinguish between production activities of the firm and those of the household.

In the present study, we use this aspect of accounting in defining the informal sector. The Surveys on Employment and the Informal Sector (EESI2) which provide the information on the informal economy in the national accounts (of Cameroon) mainly identify informal production units by two characteristics: an absence of formal accounting and not having a taxpayer identification number.

The accounting criterion has an important link with the size criterion¹ which is used in statistical works as well as those of researchers. In short, as presented in the table below, the average size of informal production units according to the accounting criteria is 1.3 nationally. More specifically, 86% of informal production units (IPUs) classified based on the accounting criterion are 1 person in size, 7.4% have a size of 2 persons, and 3% involve 3 persons. Only 3.4% of IPUs have a size of at least 4 persons. The predominance of very small production units applies across areas of residence and production sectors. This leads us to establish an equivalence criterion between the size criterion and the accounting criterion to identify IPUs, and we highlight the theoretical relevance of this last.

Number of persons	Area of residence					Sector of activity			Total
	Douala	Yaoundé	Other urban	Urban	Rural	Industry	Trade	Services	
1	88.0	84.7	83.0	85.5	86.5	81.2	89.3	87.6	86.0
2	6.3	6.8	10.0	7.7	7.1	8.9	6.6	6.5	7.4
3	2.6	4.3	2.8	3.1	2.9	3.8	2.4	2.8	3.0
4 Or +	3.0	4.2	4.2	3.7	3.5	6.0	1.7	3.1	3.6
Total	100	100	100	100	100	100	100	100	100
Av. IPU size	1.2	1.4	1.3	1.3	1.3	1.5	1.2	1.2	1.3

Source: EESI 2, Phase 2, INS

However, while the accounting definition is sufficiently clear and easily applicable, not accounting for informal employment in the formal sector (undeclared workers) is a major limitation of this approach. Moreover, a literature arising from the work of Hussmanns (2001) distinguishes between the informal and formal sectors. It considers that the informal economy

¹ The BIT (1993) defined the informal sector as including informal firms of own-account workers who may employ unremunerated family members or part time workers, and these as being separate from informal sector employers who may employ one or several paid workers on a permanent basis and satisfy one or more of the following criteria: a) a size of the establishment below a certain number of employees defined following the Delhi group of the United Nations Statistical Commission, which is set at 5 paid employees, b) non-registration of the firm or its workers (Jacques Charmes, IRD, p.4). This definition does not account for the place of work or the amount of capital, nor does it account for the duration of production activity or holding principle or secondary ownership.

is comprised of both the informal sector and also informal employment in the formal sector. Throughout this work, due to not accounting for informal employment in the formal sector, we do not pay careful attention to this distinction. As a result, the distinction between the informal sector and informal economy can be confounded.

While we consider the definition of the informal sector as having been established for now, we cannot say the same for the interrelations between the formal and informal sectors, which are insufficiently studied. The analyses here aim to explore the ever-growing weight given to the informal sector in development policies and to fill gaps with respect to lacunae in this area of study.

In Cameroon's national accounts, we evaluate the weight of the informal sector as a share of value added in the economy at 43% as compared to 57% for the formal sector. These statistics group primary production into the informal sector and nonmarket into the formal sector. The informal sector is 28% outside of the primary sector as compared to 15% in the primary sector, while the formal sector accounts for 43% of employment outside of nonmarket activities as compared to comprising 14% in nonmarket production. Overall, the contribution of the informal sector to total value added is 25% in the tertiary sector as compared to 3% in the secondary sector. In the informal tertiary sector, we observe a considerable share of activities in the "trade" subsector which contributes 13% of national value added as compared to 12% across other tertiary subsectors. In terms of remuneration to production factors, we note that the informal sector allocates 21% of its value added to labour remuneration and 79% to capital and mixed income (earnings before interest, taxes, depreciation and amortization – EBITDA). However, in the formal sector, remuneration to labour accounts for 34% of value added as compared to 66% going to capital and mixed income.

The informal sector is the largest provider of employment, accounting for 85.5% of total employment. It is followed by the formal sector which accounts for just 10.9% of employment – the State account for an estimated further 3.6% of total employment. However, the average monthly income of household heads is much lower in the informal sector, at about 72 700 CFA in the non-agricultural informal sector and 25 700 CFA in the informal agricultural sector. In the public formal sector, average income is 157 600 FCFA as compared to 154 000 FCFA in the private formal sector. Considering both the predominance of employment in the informal sector and the low wages received by agents in the sector, we can understand the precariousness of the situation of agents in the informal sector. Informal employment being most representative

in rural areas, due to the nearly inexistent formal structures in landlocked countries, it is thus not surprising that poverty rates are higher in rural areas (55%) than in urban areas (12%). Considering the socioeconomic group of the household head, the incidence of poverty is 9.6% in the private formal sector as compared to 23% in the non-agricultural formal sector and 59.6% in the informal agricultural sector. We also observe that the poverty rate is twice as high in the non-agricultural informal sector and five times higher in informal agriculture compared to the formal sector. Nationally, the poverty rate is 39.9%. The poverty rate can be explained by the low incomes caused by unemployment which affects 80% of the active population (INS, 2011).

In order to raise the quality of life of the population, the government has embarked upon a strategy of growth and employment which sets, among others, the goal of bringing the underemployment rate to at least 50% by 2020 by creating thousands of formal sector jobs annually.² This strategy also targets a considerably reduced size of the informal sector by migration of economic actors from it into the formal sector. The migration of informal production units towards the formal sector should lead to more of these firms using formal accounting practices and also charging different taxes on its products, in particular the VAT. From this perspective, the growth and employment strategy affects the structure of the economy in two main ways: employment, and taxation, which we pay particular attention to in this study. Moreover, in terms of the size of the informal sector as a share of the national economy, reaching the targets set by the Cameroonian government in the DSCEs (in terms of growth and poverty reduction) involve taking economic policy decisions where success likely depends on correctly balancing considerations of these types of firms.

1.2 Goals of study

The general goal of the study is to determine the impact of employment and fiscal policies on the informal economy and poverty in Cameroon. It shows the effects of an increase in formal employment on economic activity in the formal and informal sectors, as well as their effects on poverty. In the market for goods and services, it first examines the effect of extending taxes on products into the informal sector, and secondly the impact of reducing taxes on products which

² DSCE P. 15, section 2.2.

are highly consumed by poor economic agents. The increase in formal employment and the reduction in taxes on products highly consumed by the poor occur in a context of poverty reduction, while taxing products in the informal sector represents an increase in the tax pool, which could increase the level of public receipts and reduce budgetary constraints of the State.

From the methodological perspective, the study is interested in both micro and macroeconomic aspects, which should help to relate key aspects of circulation in the economy which are useful to understand in the context of a general equilibrium analysis in order to account for interconnections between markets.

The remainder of this document has three sections: the first provides an overview of the literature, the second explains the methodological approach used, and the third present the results of the study.

II. Literature review

2.1 Theoretical review

In the economic literature, three main approaches are used to determine the origins and causes of informality (Roubaud, 1994; Bacchetta et al., 2009):

- The "dualist" approach extends upon the work of Lewis (1954) and Harris-Todaro (1970); This is based on a dual labour market model, where the informal sector is considered as a residual component of this market which is not linked to the formal economy; this is a subsistence economy which exists because the formal economy is unable to provide enough jobs.

- The "structuralist" which, as opposed to the above, highlights the interdependence between the informal and formal sectors (Moser, 1978 ; Portes et al., 1989); according to this approach of Marxist influence, the informal sector is incorporated into the capitalist system in a subordinated relation, providing labour and market goods to formal enterprises. In so doing, it is intended to increase the flexibility and competitiveness of the economy;

- Finally, the "legalist" approach considers the informal sector as being comprised of micro entrepreneurs who prefer to operate informally to get around economic regulations (de Soto, 1994); this liberal approach can be grouped together with the previous two, in the sense that informality is a choice and is linked to the excessive costs of legalization, associated with having formal status and registration.

The validity of "dualist", "structuralist" and "legalist" approaches to the informal sector have been highlighted by many authors. For example, there are studies which compare the characteristics of formal and informal workers as well as their working conditions and income, and show that the informal economy tends to attract workers who are less qualified (and migrants) while offering jobs with lower remuneration (outside of agriculture); finally, employment in the informal economy is generally considered as temporary and with the expectation to find something better in the formal sector, which shows that this type of employment is undertaken more as a choice considering a surplus of workers in developing countries. This result tends more to promote conclusions along the "legalist" line of thinking in the case of Latin American (de Soto, 1994; Maloney, 2004).

Recent works have highlighted the heterogeneity of the informal sector, which is comprised of a large variety of individual firms which differ completely by size, economic performance, conditions associated with the activities, etc. (Guha-Khasnobis and Kanbur, 2006). Here we can observe segmentation of the informal economy where there is a larger segment comprised of larger successful firms and a smaller segment, comprised of small firms (the majority) with vulnerable conditions. These small firms face extreme barriers to entry upward in their area of activity, especially due to imperfections in capital markets (difficulties accessing credit) and training. In addition to these economic constraints there are institutional constraints according to the "legalist" approach (corruption, for example) which lead informal entrepreneurs to not declare their activity to evade a too constraining legislation or corruption.

Over time, we expect economic development to be accompanied by a progressive reduction in the weight of the informal economy. We can look at the example of developed countries where the informal sector plays a marginal role. In macroeconomic terms, there is an association between economic growth and dynamics of the informal economy. A multi-sectoral analysis of the labour market can be used to show changes in employment and demonstrate a link between this formal/informal connection and the macroeconomic environment (Bachetta et al., 2009). The disaggregation means that some workers do not receive sufficient remuneration

to meet certain basic needs or those of their family. Informality is associated with higher household poverty. The link between informality and poverty is studied here using both micro and macroeconomic approaches.

According to Cling et al. (2012), while in most developing countries economic policies have tended to neglect the informal economy, this is basically due to the simplifying approach in which economic development progressively replaces the informal economy. This vision promotes an emphasis on economic growth and modernization of the economy, rather than seeking to support a sector that is on the pathway to extinction. Moreover, policies aimed at the informal sector face the dilemma that can be summed up by the dual question: should the informal sector be supported at the risk of contributing to its expansion, or should we promote its formalization in order to improve productivity and incomes, as well as its taxation?

Finally, the type of policy to put in place also depends on a diagnosis concerning the determinants of employment in the informal sector. According to the dualist approach, we should promote the creation and development of formal enterprises. According to the structuralist approach, we should instead improve regulatory aspects. Finally, the legalist approach pushes towards reduced regulations and registration costs.

2.2 Empirical review

Many authors have taken interest in “dualist”, “structuralist” and “legalist” approaches to studying informality. This is the case in Maurizo (2012) who evaluated the link between informality, labour precariousness and disaggregation of income as well as the relationship between informality and poverty. The study deals with four Latin American countries (Argentina, Brazil, Chile and Peru). The author shows that there is a positive correlation between informality and poverty. Workers in the informal sector (which includes both workers in the informal sector and undeclared wage earners) have lower average education than workers in the formal sector; women and youth are over-represented in these activities, and much more so than formal workers, they are involved in trade, construction and household services. Moreover, in most countries, informal employment is mostly concentrated in services and agricultural subsectors, accounting for 50% of total value added between 2000 and 2013 (CEA, 2015). The services sector is largely informal, but also includes modern services (including IT and financial services),

presently undergoing positive changes in terms of the creation of more productive positions in the formal sector.

Razafindrakoto et al. (2012) adopt a more original approach which goes beyond accounting for just remuneration, and includes all aspects related to holding a job, including links with activities outside of work. They analyze the determinants of labour in the informal sector in Vietnam in terms of job satisfaction and projects to support them towards other types of employment. Employment in the informal sector both pays less (outside of agriculture) and brings less satisfaction (equal to in the agricultural sector). It is thus generally the case that “lower end” work is taken on, not so much by choice (once out of agriculture). This is the reason that many workers in this sector, whether entrepreneurs or especially employees, would rather change jobs, with a preference for protected positions in the public sector.

According to Lavallée and Roubaud (2015), few informal firms are involved in corruption in West Africa. These authors estimate that 37% of entrepreneurs involved in these sectors had contact with services of the state in the previous year. Larger informal firms, and especially those in the transportation sector, are most affected by corruption. In that sense, paying taxes in exchange for public services enables informal firms to improve their performance. Finally, not being registered is generally due to not knowing the laws more so than intentionally wanting to participate in corruption, as opposed to what is suggested by the “legalist” approach.

In recent years, African countries have experienced remarkable economic growth, but this has not generally been enough to create decent jobs for the millions of young persons entering into the labour market each year. While an estimated 122 million new entrants into the labour market each year, African countries created just 37 million jobs in the last decade, of which just 28 percent was in formal sector salaried positions (McKinsey, 2012). This slow growth of the formal sector is attributed to slowness of the structural transformation accompanying the transition to more productive jobs, of workers in manufacturing and higher end services (CEA, 2014).

After having analyzed the link between globalization and informal employment in developing countries, Bachchetta et al. (2009) arrive at proposals for economic policies which are very general but also novel. On the one hand, it is to promote formalization of the informal sector through better communications as well as reform and a simplification of taxes, while introducing basic social protections for those remaining in the informal sector. Better respect for international norms for labour in the formal economy is also considered as having a positive

impact on the informal economy. Finally, strengthened coordination between trade reforms and employment reforms is recommended.

There is also the example of Cling et al. (2010) who show that, despite rapid economic growth in Vietnam, the informal sector persists. In this regard, the authors recommend officially accounting for the informal sector (which in particular involves using a definition accepted by all), greater transparency and simplicity of registration rules, as well as implementing targeted policies, the most significant of which are explored on the basis of precise information.

2.3 Methodological review

Many studies have been used to evaluate the economic impact of the informal sector, in terms of econometric models and calculable general equilibrium models (CGEs).

Study of the technical efficiency of the informal sector in Madagascar was done by Rakotomanana (2010) using quantile regressions which show the low efficiency of informal production units (IPUs): with the same resources, it would be possible to triple production assuming that all constraints to supply are lifted (access to credit, suitable office space, etc.) and training. Firms in trade and those led by women are less highly performing. The results appear very stable over the two years of the estimations (2001 and 2004). Nguetse Tegoum (2009) focuses on this aspect, and measures the returns to education in the informal sector in Cameroon using matching and selection methods to account for unobservable characteristics. The estimates show an important impact of education on the incomes of workers in the informal sector. Completing basic education (before entering the labour market or after returning to school) increases income by between 20 and 33%. The probability of working in the informal sector also declines by education level.

Kelley (1994) studies the macroeconomic influences of the informal sector in Peru using a multisectoral CGE. The structuralist model developed by the author assumes a differentiation between the formal and informal sectors, as well as the markets for production factors (inputs) and outputs. In terms of the labour market, the author considers that a lack of employment in the formal sector feeds the informal sector, which appears as a residual. This dualist view of the labour market leads the author to suggest that full employment is upheld by the informal sector. In terms of the market for outputs, we assume imperfect substitutability between production

from the informal sector and that from the formal sector. The simulations done by the author show that the informal sector reduces the Keynesian multiplier. We also see very different changes in the incomes observed in the formal and informal sectors. In disaggregating informal production, the author emphasizes the reaction of the informal sector following economic shocks.

Montaud (2000) analyzes the behaviour of the informal economy in the Ecuadorian economy. The originality of his work is in accounting for the informal sector in two ways: a dualist view and a competitive view. The first treats the informal sector as subsistence activities, and so is treated as marginal compared to the formal sector. In the second view, more importance is attributed to the informal economy, which here is seen as competing with the formal sector. In a CGE, this dual concept enables simulation of economic responses of the Ecuadorian economy, especially the informal sector, to macroeconomic shocks. The author finds results of smaller magnitude when simulating the economic policies in the dualist approach compared to the competitive approach. The author also notes that informal activities do not just alleviate poverty: the informal sector is significantly affected by macroeconomic shocks, which has a non-negligible effect on the decision of which policy to implement to promote economic activity in Ecuador.

Agenor et al. (2003) analyzed the impact of policies and exogenous shocks on the labour market, the role of informal employment in the transmission of exogenous shocks to the poor, and also the negative effects of external debt on private investment.

The informal sector in Cameroon is modeled in a number of studies, notably including Fortin et al. (1995) and Cogneau et al. (1996). The use of the CGE approach developed by Fortin et al. (1995) for the Cameroonian economy shows that the informal and formal sectors have a dualism in terms of tax evasion. These works are notable for the labour market segmentation in three dualisms common in labour market in developing countries, one being in the wage dualism, and also the scale dualism and the tax evasion dualism³.

However, Cogneau et al. (1996) assumed that the informal and formal sectors are two different production sectors even when they produce substitutable goods. This leads to viewing the informal sector in a more competitive framework, and thus can be contrasted with works

³ Wage dualism: wage inequalities at same qualification; scale dualism: discontinuities in distribution by firm size (informal firms are generally smaller than formal firms which are larger, and hence the discontinuity.); evasion dualism: involvement in activities to avoid legal constraints (taxes).

such as those of Fortin et al. (1995). For Cogneau et al. (1996), he was focused on evaluating the impact of budgetary and monetary adjustments implemented after the SAP⁴ and devaluation of 1994. The authors arrive at the conclusion that production and employment in the informal sector are countercyclical, although real per capita income does not appear very sensitive to formal income.

III. Methodological framework

Here we share some specifications about the choice of theoretical model which best frames the economy being studied, and present some details on the model implemented and data studied.

3.1. Informal sector in Cameroon: Dualist or competitive model?

As highlighted above, Montaud (2000) established two macroeconomic approaches for the informal sector: a dualist model and a competitive model. The dualist model sees the informal economy as the subsistence sector where subsectors mostly use labour for production. However, in the competitive model, production structures are developed. Production technologies are comparable to those in the formal sector and use both labour and capital.

Although the research by Montaud (2000) deals with one specific country (Ecuador), it should be said that these considerations relating to the informal economy are part of a general theoretical framework where we can frame the economy as having an informal component. This having been done, the main concern for the modeller is to identify the most appropriate model for a given economy.

For Cameroon, the results of the EESI2 Survey show that informal production units have non-negligible amounts of capital. As shown in the table below, the 8.2% of informal production units have no capital in urban areas as compared to 9% in rural areas. By sector of activity, it is

⁴ Structural adjustment programme.

3.5% in industry, 16% in trade and 6.3% in services. Overall, this is 8.6% of informal production units with no capital.

Moreover, the endowment of capital among production units is non-negligible. Overall, informal production units have an estimated average total capital of 197 800 FCFA. This average varies slightly by sector of activity, being 156100 FCFA in industry compared to 215 300 FCFA in trade and 226 900 FCFA in services.

Table 2: Share of IPU with no capital and average capital per IPU by sector of activity and area of residence

	Area of residence					
	Douala	Yaoundé	Other Urban	Urban	Rural	Total
IPUs with no capital (%)						
Industry	2.9	1.2	7.8	4.2	3.1	3.5
Trade	5.6	18.2	19.8	13.6	18.6	16.0
Services	3.7	8.4	8.4	6.4	6.0	6.3
Total	4.1	9.7	12.0	8.2	9.0	8.6
Average capital per IPU (thousands FCFA)						
Industry	254.5	591.5	159.5	311.3	55.8	156.1
Trade	525.4	199.5	94.9	312.5	111.0	215.3
Services	392.5	233.6	162.1	279.3	141.1	226.9
Total	400.8	330.7	141.0	298.7	94.2	197.8

Source: EESI2, Phase 2, INS

Since a non-negligible share of capital is in informal production units, the production functions of the subsectors where the informal economy is active uses both capital and labour as inputs. From this perspective the informal sector in Cameroon falls within the competitive model in the sense of Montaud (2000).

3.2. The model used

The implemented model has both macroeconomic and microeconomic components.

3.2.1 Macroeconomic component

Imagine a competitive view of the informal sector in Cameroon, using the assumption that production subsectors in the informal economy have production technologies which are not too far from those in the formal sector. Also, consider that production occurs in a neoclassical environment where output results from an optimization process applied to an equilibrium model which is strongly inspired by the works of Ducalawe et al. (2011), and more specifically the PEP

1-1V2 model. However, considering the specifics of the study, some changes were introduced, mostly dealing with the labour market where we discern three production factors: formal qualified labour, informal qualified labour and unqualified labour. As compared to formal labour, informal labour is that which does not have social security.

According to Montaud (200), two assumptions can be made.

Assumption 1: workers in the formal sector have contracts which protect them from wrongful dismissal. Moreover, pay conditions are sufficiently high, there are unions, and the demand for labour and labour wage rates in the formal sector are assumed fixed in the short term in each subsector.

Assumption 2: the informal sector is considered as a “reservoir” of workers to be absorbed who have not found employment in the formal sector. So, labour demand is assumed to be flexible and variable with the market which enables it to reach full employment. In particular, the supply of qualified labour is fixed.

We thus have the following production structure.

Intermediate consumption, production and value added.

Considering the assumption of fixed technical coefficients in a given subsector, the relationship between intermediate consumption, production and value added follow a Leontief-type function (fixed proportions) is:

$$\begin{aligned} VA_j &= v_j XST_j \\ CI_j &= io_j XST_j \end{aligned}$$

VA_j : value added in subsector j; CI_j : intermediate consumption in subsector j; XST_j : total production in subsector j. v_j and io_j : parameters.

➤ **Production function**

The distribution of value added between remuneration to labour and remuneration to capital follows a CES-type function. So, firms are faced with resolving the following system:

$$VA_j = B_j^{VA} \left(\frac{VA}{j} LDC_j \right)^{\frac{VA}{j}} + \left(1 - \frac{VA}{j} \right) \left(\frac{VA}{j} \right) KD_j^{\frac{VA}{j}}$$

$$LDC_j = \frac{B_j^{VA} RC_j}{(1 + B_j^{VA}) WC_j} KD_j$$

LDC_j : composite labour demand in subsector j; KD_j : capital demand in subsector j; WC_j : remuneration rate to composite labour in subsector j; RC_j : capital remuneration rate in subsector j; B_j^{VA} , B_j^{VA} , B_j^{VA} and B_j^{VA} : parameters.

➤ Demand for production factors

The composite labour used in production subsectors is an aggregation of demand for different types of labour available in the market. Different from Montaud (2003) who stipulates an aggregation by taking a simple sum, we opt for the approach of the PEP 1-1 model which uses a CES-type function and takes the following approach to optimization:

$$LDC_j = B_j^{LD} \left(\sum_l LD_{l,j}^{LD} \right)^{\frac{1}{j^{LD}}}$$

$$LD_{l,j} = \frac{B_{l,j}^{LD} WC_j}{WTI_{l,j}} \left(B_j^{LD} \right)^{j^{LD} - 1} LDC_j$$

$LD_{l,j}$: demand for labour type l in subsector j; $WTI_{l,j}$: remuneration rate to labour type l in subsector j including taxes; B_j^{LD} , $B_{l,j}^{LD}$, B_j^{LD} et B_j^{LD} : parameters.

In order to provide more explicit definitions of assumptions 1 and 2, we have:

$$LS_{L_{-q_{-f}}} = \overline{LD}_{L_{-q_{-f},jf}}$$

$$LS_{L_{-q_{-nf}}} = \overline{LD}_{L_{-q_{-nf},jnf}}$$

$$\overline{LSTQ} = LS_{L_{-q_{-nf}}} + LS_{L_{-q_{-f}}}$$

$$LD_{L_{-q_{-nf},jnf}} = i^* LS_{L_{-q_{-nf}}}$$

$$LS_{nq} = \overline{LD}_{nq,jf} + \overline{LD}_{nq,jnf}$$

$$W_l = \overline{W}_l \quad (\text{with } WTI_{l,j} = W_l (1 + ttiw_{l,j}))$$

$LS_{L_{-q_{-f}}}$: total supply of qualified labour in formal subsectors; $LD_{L_{-q_{-f},jf}}$: demand for qualified labour in formal subsectors jf; $LS_{L_{-q_{-nf}}}$: supply of qualified labour in informal subsectors; $LD_{L_{-q_{-nf},jnf}}$: demand for qualified labour in informal subsectors jnf; $LSTQ$: supply of qualified labour in economy; LS_{nq} : supply of unqualified labour; $LD_{nq,jf}$: demand for

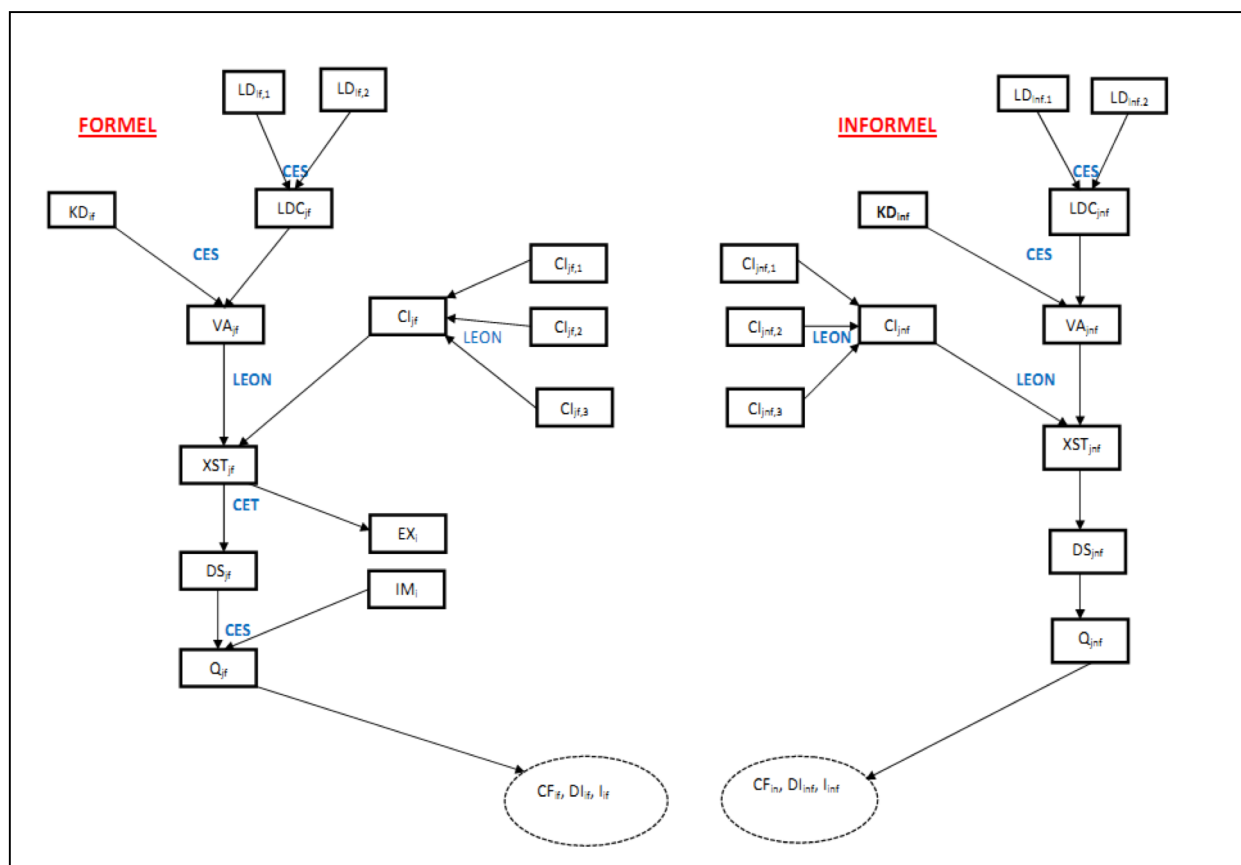
unqualified labour in formal subsectors j_f ; $LD_{nq,jnf}$: demand for unqualified labour in informal subsectors j_{nf} ; W_l : remuneration rate to labour type l.

Also, because of the short-term period of analysis, we assume that capital is fixed.

$$KS = \overline{KD}$$

And there is also the assumption that changes with respect to the rest of the world are basically through the formal sector. In sum, the economy has the following structure.

Box: Structure of supply in subsectors of economy by sector (formal-informal)



Source: authors; CES: CES function; and LEO: Leontief function

The complete structure of the equations in the model is available in the annex.

3.2.2 Microeconomic component

In order to evaluate the impact on household welfare in different simulations, we use the concept of equivalent variation as per Hicks and also FGT indices.

In terms of equivalent variation, we follow Emini (2006) who uses the following formula for the average:

$$VE_h = YDH0_h \prod_{i=1}^n \frac{(PC_i)^{LES_{i,h}}}{PC0_i} YDH_h$$

where:

VE_h : equivalent variation of household h;

$YDH0_h$: disposable income of household h in reference situation;

YDH_h : disposable income of household h in given situation;

$PC0_i$: consumption price of good i in the reference situation;

PC_i : consumption price of good i in given simulation;

$LES_{i,h}$: share of consumption of household h in final good i;

The FGT indices enable us to evaluate the impact of policies on poverty. These indicators belong to a class referred to as P_α (Foster, Greer and Thorbecke, 1984).

$$P = \frac{1}{n} \sum_{i=1}^n \frac{Y_i}{Z} \mathbf{1}_{(Y_i < Z)}^5$$

P_0 refers to the incidence of poverty incidence, P_1 refers to the depth of poverty, and P_2 refers to the severity of poverty.

In the context of the Cameroon Household Survey (ECAM 3), the poverty threshold is defined as the sum of a food poverty threshold and a non-food poverty threshold of the following form:

$$Z = Z_a + Z_{na}$$

where: Z_a is the food poverty threshold, defined using a basket of the 61 goods most consumed by households and representing nearly 80% of food consumption. Z_{na} refers to the non-food poverty threshold and is estimated by $Z_{na} = (1 - \alpha)Z_a$. The coefficient α is the food expenditures share of total spending among total households living at the poverty threshold.

⁵ $\mathbf{1}$ designates the indicator function. It has a value of 1 when the individual lives with a consumption level below the poverty threshold and 0 otherwise.

Evaluating the impact of shocks on poverty requires endogenizing the poverty threshold. In effect, we have $P_0 = (P_1^0, P_2^0, P_3^0, \dots, P_{61}^0)$ as the price vectors, in the initial situation, respectively the 61 goods in the reference basket $X = (x_1, x_2, x_3, \dots, x_{61})$ which are used to determine the poverty threshold (Z_0) in Cameroon after ECAM3. Let's say that in a given simulation we observe a new price vector $P_1 = (P_1^1, P_2^1, P_3^1, \dots, P_{61}^1)$ for basket X. This new price vector can be used to evaluate X in order to obtain a new poverty line (Z_{sim}) at the household level to find the impact on poverty in the simulation.

Considering that disaggregating the goods in the SAM does not give us the reference basket used to determine the poverty threshold, we assume that this basket of goods is sufficiently representative⁶ of the final consumption of household, such that the composite price index is the same as the consumer price index. This assumption makes it possible to link the poverty line to the consumer price index.

With the new poverty line, variations in consumption budget shares across different households can be found using the ECAM3 data in order to find the impact of shocks on the FGT indices, assuming homogeneity of consumption behaviour within each household type.

3.3. Data used

A social accounting matrix (SAM) was constructed using data from the 2010 national accounts. In particular, we use the Supply-Use Tables and the Integrated Economic Accounts Tables (IEAT). The year 2010 is chosen for two main reasons. First, it is the first in a series of national accounts implemented by Cameroon after resetting the base year⁷ in 2005. Also, it is the most recent year for which a complete definitive series of the national accounts is available. In addition to the national accounts, information from the ECAM⁸ and EESI⁹ surveys contribute to disaggregations of household accounts as well as production factors. We should briefly outline the structure of this SAM by presenting a descriptive analysis of the data in it.

⁶ This is a very plausible assumption considering that this basket includes 80% of goods consumed.

⁷ In 2005 Cameroon implemented a new base year for the national accounts. This base year should, in principle, be used for ten years, during which the structure of national accounts will not vary significantly. Thus, even if we view 2010 as not very recent, it can be noted that it does not significantly impact the economic analyses that can be done.

⁸ Cameroon Household Survey – Enquête Camerounaise auprès des Ménages (ECAM 3).

⁹ Survey on Employment and the Informal Economy – Enquête sur l'Emploi et le Secteur Informel (EESI 2).

3.3.1. Disaggregation of the SAM

3.3.1.1. The production factors

The production factors traditionally labour and capital are found in the SAM under the terms “labour remuneration” and “capital remuneration”. Also, the national accounts of Cameroon distinguish between two production factors; labour and EBITDA/mixed income. This last includes remuneration to capital and mixed income. The existence of mixed income is linked to production units having an absence of accounting which does not enable them to discern between remuneration for work for the entrepreneur and remuneration to capital within the value added. In order to facilitate consideration of the shocks and their effects on the labour market, assumptions were formed in order to find the share of labour in mixed income. Then, using the individual entrepreneurship rate in each subsector of activity in the EESI, we estimate the volume of individual employment in each subsector at the level of the supply-use table and then deduct the value of wages, etc., by applying average wages in each subsector (Annex 3).

In addition to specifically considering mixed income, the account for production factors was also disaggregated into two categories. The first is to differentiate by qualified and unqualified labour in order to see the impact of an increase in qualified labour on an economy. The second is a differentiation between formal and informal work to better approximate the realities of the Cameroonian economy where we observe major differences in remuneration to labour in the formal and informal sectors. Here, the SAM has four production factors: capital, formal qualified labour, informal qualified labour, and unqualified labour.

3.3.1.2. The agents

Here we disaggregate household accounts to evaluate welfare. Given that monetary poverty in Cameroon varies quite a lot by area of residence, we decide to disaggregate by this criterion. So, our SAM has 2 categories of households: a rural household and an urban household. The results of the Cameroon Household Survey¹⁰ (ECAM, 2007) enabled us to make this disaggregation.

3.3.1.3. Subsectors of activity and production

Traditionally we group the economy into three main sectors of activity: primary, secondary and tertiary. This classification does not enable us to clearly see public activities and trade

¹⁰ Survey with national coverage.

activities which deserve particular attention due to their importance in developing economies and the economy of Cameroon in particular. Thus, in keeping classifications such as primary, secondary, trade, nonmarket and other services, the formal-informal distinction results in us having 20 subsectors of activity overall. These subsectors follow the nomenclature of the subsectors in the national accounts (Annex 2). The products are linked to the subsector.

3.3.2. Some tables from the SAM

Table 3: Structure of value added by subsector and sector

Label	f industry	f trade	Tertiary other than f trade	Public admin	Other nonmarket services	Total f	Primary	nf industry	nf trade	Tertiary other than nf trade	Total nf
VA/VAT	0.20	0.04	0.20	0.05	0.08	0.58	0.15	0.04	0.13	0.11	0.42
Va/(VA+IC)	0.49	0.69	0.54	0.53	0.69	0.54	0.70	0.26	0.64	0.50	0.51
LD/VA	0.23	0.20	0.35	0.68	0.64	0.37	0.23	0.63	0.21	0.50	0.33
LD_nq/VA	0.01	0.03	0.01	0.01	0.01	0.01	0.06	0.09	0.02	0.10	0.06
LD_q/VA	0.22	0.18	0.34	0.67	0.63	0.36	0.17	0.55	0.19	0.40	0.27
cap/VA ¹¹	0.77	0.80	0.65	0.32	0.36	0.63	0.77	0.37	0.79	0.50	0.67

Source: SAM

VA: Value added in subsector; VAT: total value added; IC: Intermediate consumption; LD: Labour demand; LD_nq: Demand for uneducated labour; LD_q: demand for educated labour; cap: capital; f: formal; nf: informal

Table 4: Distribution of remuneration to labour by subsector and sector

Sub sector	f industry	f trade	Tertiary other than f trade	Public admin	Other non-market services	Total f	Primary	nf industry	nf trade	Tertiary other than nf trade	Total nf
L_nq	0.03	0.04	0.07	0.02	0.03	0.191	0.29	0.11	0.09	0.32	0.809
L_q	0.14	0.02	0.21	0.11	0.16	0.648	0.08	0.07	0.08	0.13	0.352
Cap	0.24	0.05	0.20	0.03	0.05	0.563	0.18	0.02	0.15	0.08	0.437

Source: SAM; f: formal; nf: informal

3.3.2.1 Distribution of value added

As shown in Table 3 above, the formal sector excluding nonmarket services provides 49% of value added (VA) in the national economy, as compared to 27% in the informal sector excluding primary. Nonmarket activities account for 13% of value added as compared to 15% for the primary sector. Nonmarket services refer to activities of the public administration as well as other nonmarket activities primarily provided by non-profit organizations for households

¹¹ Share of remuneration to capital (Cap) in value added (VA).

(NPOs). If we group together the primary sector within the informal sector¹² and nonmarket activities in the formal sector, we see a 58% contribution of the formal sector to the national economy as compared to 42% from the informal sector.

When considering relative weights of sectoral shares, we observe that formal labour reaches as high as 83% of value added in the secondary sector (industry) as compared to 17% in the informal sector. As for trade, the informal sector is predominant with 76% of value added as compared to 24% in the formal sector. In other tertiary subsectors (other than trade), we see a higher share in formal activity, estimated at 61% as compared to 39% in the informal sector.

Overall, Cameroon's economy is more in the informal sector in the trade and primary sectors, which are accompanied by generally low capital intensity. This low capital intensity can be explained by the existence of the informal economy itself in that it occupies the majority of active workers, and serves as a sort of back-up while looking for better opportunities in the labour market. It is also a sector of activity that economic actors can easily access considering the modest amount of investment needed.

3.3.2.2 Value added rate in production

Overall, the value added rate is higher in the formal subsectors than in the informal subsectors. This difference is more noticeable in the secondary sector which requires appropriate technology to transform products. The value added rate is 0.49 in the formal sector as compared to 0.26 in the informal sector. In the tertiary sector, the value added rates are 0.69 and 0.54 for trade and for other service activities in the formal sector, as compared to 0.64 and 0.50 respectively in the informal sector. This rate is highest in extractive industries (0.85 for formal and 0.83 for informal) and the agricultural sector (0.75). Clearly these areas of activity use few intermediate inputs as a share of production.

3.3.2.3 Structure of factor remuneration

Remuneration to labour accounts for 35% of value added as compared to 65% to capital in the economy of Cameroon. In terms of the formal/informal distribution, labour remuneration as a share of value added is 0.33 in the informal sector as compared to 0.37 in the formal sector. This leaves a relatively high share to capital remuneration. These shares are estimated at 0.63 across formal subsectors as compared to 0.67 in informal subsectors.

¹² This may be the case considering that agriculture accounts for most of the primary economy and more than 80% of informal assets. This situation can be explained by the strong predominance of subsistence agriculture.

3.3.2.4 Structure of household incomes

Table 5: Structure of household incomes

	L_nq	L_q	Cap	Transfer
uh	0.025	0.530	0.394	0.051
rh	0.061	0.190	0.702	0.046
Total	0.039	0.393	0.518	0.049

Source: SAM; uh: urban household; rh: rural household

Household income mostly comes from remuneration to capital. This provides 51.8% of income as opposed to 43.2% from work and 4.9% from transfers. Unqualified labour accounts for a modest share of just 3.9% of income, largely due to the high school enrolment rate in the country. Here, when referring to unqualified labour, we mean economic agents who have not completed primary education, or who stated that they have received no educational diploma whatsoever.

3.3.2.5 Structure of firms' income

Firms mainly receive income from capital remuneration, which accounts for 95.2% of their income as compared to 2.4% from transfers from the rest of the world. Transfers from other agents, notably households, and public administration + non-profits, hold fairly marginal shares at 1% and 1.5% respectively.

Table 6: Structure of firms' income

	Capital income	Transfers received from government	Transfers received from households	Transfers received from r.o.w.	Total
Value_SAM	2618851	40351	28037	65010	2752249
Share	0.952	0.015	0.010	0.024	1

Source: SAM

Firms mostly allocate their income to four main uses: transfers to households (8%), transfers to the rest of the world (0.4%), direct taxes (9%), transfers to public administration (+NPOs) (22%) and savings (the remaining 56%). Transfers to government here largely refer to payments relating to social benefits. Transfers to households refers to grants and other social assistance (or payments) that firms offer to households, whether through the parent company or through non-profit social foundations that they establish.

Table 7: Structure of firms' expenditures

	Transfers to households	Transfers to r.o.w.	Transfers to gvt	Direct taxes	Savings	Total
Value_SAM	219443	121 936	598244	259864	1552763	2752249
Share	0.08	0.04	0.22	0.09	0.56	1

Source: SAM

3.3.2.6 Structure of revenues of public administration and NPOs

Revenues of the public administration and non-profit organizations are mostly from taxes and transfers received from firms (25%), indirect taxes (26%) and direct taxes (20%). Indirect taxes are mostly from the VAT, while transfers are mostly through social services/benefits and income from capital. Taxes on external trade (imports and exports) and production taxes are fairly marginal with relative shares of 10% and 2%.

Table 8: Structure of revenues of public administration

Label	Value	Share
Capital income	195995	0.08
Transfers received from firms	598244	0.25
Transfers received from households	122372	0.05
Transfers received from r.o.w.	75364	0.03
Taxes on imports	236298	0.10
Indirect taxes (taxes on products)	614311	0.26
Direct taxes (taxes on income and capital)	479966	0.20
Taxes on production	38741	0.02
Taxes on exports	7222	0.00
Total¹³	2368514	1

Source: SAM

Expenditures of the public administration (+NPOs) are 74% comprised of public consumption. Transfers to households account for 10% of revenues of the administration while 12% goes to savings. It should be noted that the small amount of public savings in the SAM is linked to the NPOs which have negative savings. Overall, in the IEAT, the savings of the public administration is 455541 million FCFA as opposed to -164657 million for NPOs.

¹³ The difference between this point in time and the present pertains to transfers of the Administration to itself (142142) which are not accounted for in this table.

Table 9: Structure of expenditures of the administration

	Transfers to households	Transfers to firms	Transfers to r.o.w.	Public consumption	Savings	Total
Value SAM	230542	40351	42 742	1763995	290884	2368514
Share	0,10	0,02	0,02	0,74	0,12	1

Source: SAM

3.3.3 Structure of taxes on products

Due to the inability of public powers to keep tabs on production and distribution channels of informal products, taxes on products, in particular the VAT, are not collected on products in the informal sector. Only products from formal subsectors of activity face these taxes. As shown in Table 8 below, most of this type of taxes falls on products from industry and market services. Agribusiness, despite its importance in the economy, only accounts for 13% of taxes on products. This situation is related to removing taxes on a certain number of basic products needed for life in order to ease household budget constraints in a context of the fight against poverty.

Table 10: Structure of taxes on products¹⁴

Product	Net taxes	share
Other industry f	261432	43%
Other market services f	125087	20%
Agroindustry f	80269	13%
Transportation f	71344	12%
Other primary	35350	6%
Hospitality f	33736	5%
Extractive industries f	4588	1%
Agriculture	1482	0%
Other nonmarket services	1023	0%
Total	614311	100%

Source: SAM; f: formal; nf: informal

3.3.4 Calibrating the model

A number of parameters relating to economic relationships, notably those involving accounting equilibrium, are deduced empirically using the SAM. Those pertaining to behaviour are calibrated using the methodology of the PEP 1-1 model. More specifically, the values of the

¹⁴ See Annex 2, table A3, for definitions of the abbreviations.

parameters for “sigma”¹⁵ in CES and CET functions can be set arbitrarily, which makes it possible to automatically determine other parameters by linking inputs and outputs in the different areas of activity in the SAM. This calibrating procedure implemented in the PEP 1-1 model reproduces the reference scenario with the model.

3.4 Simulated scenarios

Related to our research objectives, three scenarios are simulated.

- ❖ *Sim 1: 12.6% increase in qualified employment in the formal sector and corresponding reduction of volume in informal sector.*

This scenario involves the recruitment of 25,000 youth into the public service as done by the government in April of 2011 and other recruitment relating to major public works. As per the economic and finance report of Cameroon¹⁶ in 2014, the change of employment in the formal sector is as shown in the following table:

Table 11: Distribution of employment by sector in Cameroon in 2011 and 2012

	2011	2012
Public sector	273110	308183
Modern productive sector (private formal)	541932	609588
Total	815042	917771

Source: RASIPEFIN (2014)

This table shows a 12.6% increase in formal sector employment between 2011 and 2012. Moreover, considering the full employment assumption in the model, the increase in formal employment is seen here as a migration of workers from the informal sector into the formal sector.

- ❖ *Sim 2: Adjustment by extending taxes on products (VAT) onto 50% of products in informal subsectors.*

This scenario assumes better monitoring of the informal sector (in terms of its migrating towards the formal sector) could increase public receipts. Basically, monitoring informal activities

¹⁵ Elasticity of substitution.

¹⁶ This is the Report on the Situation and Economic, Social and Financial Perspectives of the Nation (*Rapport sur la Situation et les Perspectives économiques, sociales et financières de la Nation*).

in order to bring them into the formal sector is one of the government's main priorities and has received attention through the training and support structures of the PIAASI and PAJER-U¹⁷. This is also one of the specific objectives of the PIASSI. However, to account for the fact that complete migration out of the informal sector is difficult to imagine, we assume a migration rate of 50%.

❖ *Sim 3: 25% reduction in value added tax rates on (formal) products which are most consumed by the poor and a reduction in public expenditures by a similar amount.*

This third scenario aims to reduce consumer prices, with the expected effect being an improvement in the purchasing power and thus living standard of households in general and poor households in particular. However, in order to neutralize the effect that this would have directly on public finances, it is presumed to be accompanied by measures to reduce public spending by a similar amount.

IV. Effects in simulations

The effects in the simulations are observed in terms of economic variables such as supply, demand and GDP and also social variables such as the impact on household welfare.

4.1. Effects on supply, demand and GDP

4.1.1 Effects in scenario 1

The immediate consequence of an increase in labour in the formal sector is the increase in total production and value added in that sector. We see a 12.6% increase in qualified labour in the formal sector leading to a 3.98% increase in the value added in this sector and a similar change in production. A notable increase is observed in public administration (7.89%), construction (7.84%) and other nonmarket services (7.40%) because they are labour intensive.

¹⁷ PIAASI : Programme Intégré d'Appui aux Acteurs du Secteur Informel ; PAJER-U : Programme d'Appui à la Jeunesse Rurale et Urbaine.

The favourable situation in the formal sector is countered by a decline in economic activity in the informal sector. As shown in the following table, this partial effect is a -2.85% decline in economic activity and value added. The effect on other subsectors is not uniform and varies by the share of labour (relative to capital) in the subsectors. The change in value added also includes a -4.72% decline in informal agroindustry, -4.88% in other industries in the informal sector, -3.14% in informal construction and -5.85% in other informal market services.

Still thinking of the structure of inputs, we might think that the observed decline in economic activity in the informal sector should be considered alongside the fact that it continues to occupy the majority of labour in the economy, which is explained by two factors: low wages for workers and difficult access to financing for production units, most of which are involved in subsistence activities. This illustrates the vulnerability of the informal economy and the relative difficulty of growing into a large company over time.

In terms of the demand for goods and services, we see comparable changes in the two components, due to the fixed ratio linking the value added to intermediate consumption in the different subsectors. This leads to a 2.76% increase in intermediate demand for products in the formal sector as compared to a -0.54% decline in the informal sector outside of agriculture and -2.45% in agriculture. As for final consumption, it increases by 3.05% in the formal sector. The increase in formal sector activities initially causes a rise in the supply of goods and services relative to demand. This leads to a decline in final consumption prices (-2.03%), a necessary condition for equilibrium to be reached on the market for goods and services. However, the opposite situation occurs in the informal sector where there is a 5.35% increase in consumption prices.

Table 12: Impact on components of supply and demand, scenario 1

	XST	DS	VA	C	DIT	PC
Formal	3.98	4.82	3.98	3.05	2.76	-2.03
Public administration	7.89	7.89	7.89	7.77	#N/A	-7.26
Other industry f	4.78	5.02	4.78	2.73	3.76	-1.00
Other m services	4.34	4.46	4.34	2.80	3.02	-1.00
Other nm services	7.40	7.23	7.40	6.35	1.21	-5.70
Trade f	2.03	2.02	2.03	#N/A	#N/A	-2.01
Construction f	7.84	7.81	7.84	5.00	3.61	-3.97
Agroindustry f	2.38	2.54	2.38	1.81	1.88	0.19
Extractive industry f	0.52	-0.59	0.52	1.93	2.42	-0.58
Hospitality f	3.47	3.55	3.47	1.81	4.28	0.24
Transportation f	1.73	1.85	1.73	2.24	0.56	-0.34
Agriculture	-1.69	-2.96	-1.69	2.29	-2.45	-2.70

Informal	-2.85	-2.89	-2.85	-2.19	-0.54	5.35
Other industry nf	-4.88	-4.99	-4.88	-2.08	0.72	5.57
Other primary	-0.93	-0.73	-0.93	0.43	0.49	1.67
Other m services nf	-5.85	-5.86	-5.85	-2.51	-1.02	6.35
Trade nf	-1.67	-1.67	-1.67	#N/A	#N/A	2.46
Construction nf	-3.14	-3.15	-3.14	-1.33	0.22	4.39
Agroindustry nf	-4.72	-4.78	-4.72	-3.69	-0.25	8.36
Extractive industry nf	-0.78	-0.90	-0.78	-2.41	4.01	6.07
Hospitality nf	-1.58	-1.60	-1.58	-2.06	-0.23	6.13
Transportation nf	-1.85	-1.87	-1.85	-2.73	-0.39	7.02
Total	1.46	1.29	1.46	1.42	1.61	0.87

Source: authors' estimates; f = formal; nf = informal; m = market; nm = nonmarket

The very different changes in value added between the 2 sectors (formal and informal) both lead to higher nominal growth nationally, respectively by 0.74 points at base prices and 0.80 points at market prices. Accounting for the change in the GDP deflator and also the consumer price index, the real effects are smaller. A positive 1.31 percentage point effect is observed with respect to real GDP at base prices, while at market prices the effects are smaller, as a result of the increase in the general level of consumption prices.

Table 13: Impact on GDP - simulation 1

	valGDP_BP	valGDP_BP_REAL	valGDP_MP	valGDP_MP_REAL
BASE	12183229	12183229	13041060	13041060
SIM1	12272874.3	12342948.6	13145661.1	13031471.4
VAR	0.74	1.31	0.802	-0.074

Source: authors' estimates

4.1.2 Effects in scenario 2

Concerning the formation of prices (cf. annex 6), expanding the tax base into products in the informal sector directly impacts consumption prices of goods and services in this sector. In effect, goods consumed by households are composite goods which combine domestic and imported products. So, prices of consumer products are a weighted average of domestic and imported prices. The price of a domestic good is the price of this good (excluding taxes on products) plus taxes on the product and margins such as transportation and trade margins.

In so doing, extending the tax base to informal products involved, to start with, an increase in the tax rate on these products which were initially not taxed. The increase in the tax rate on these products leads to an increase in prices of domestic products, and so then also consumption prices. Moreover, due to rigidities observed in markets for production factors,

notably in demand for labour and capital, taxing informal products will leave the volume production of goods in different subsectors of the economy unchanged. On the demand side, we observe an increase in demand from public consumption (0.32%) which can be explained by the improvement in the surplus of tax receipts from taxing informal goods. Also, the fact that the technical coefficients are fixed implies rigidity in intermediate demand in subsectors and, due to this stability of intermediate demand, we observe a slight decline in final consumption demand for formal goods (-0.57%) and for informal goods (-0.42%) which serves to establish equilibrium of supply and demand of goods and services. This causes a 0.633% decline in the consumer prices.

Macroeconomically, the real gross domestic product at base prices remains stable while real GDP at market prices is higher than in the base scenario, following the impact of an increase in the volume of taxes. However, nominal GDP at base prices is somewhat lower due to the effect of the GDP deflator.

Table 14: Impact on GDP - simulation 2

	valGDP_BP	valGDP_BP_REAL	valGDP_MP	valGDP_MP_REAL
BASE	12183229	12183229	13041060	13041060
SIM2	12001664.5	12183229	13016458.9	13099493.2
VAR	-1.49		-0.18	0.44

Source: authors' estimates

4.1.3 Effects in scenario 3

Scenario 3 features a decline in the tax rate on products which are most consumed by the poor, alongside a reduction in public consumption expenditures to avoid deterioration in fiscal balance. On the supply side, we see stability in production in terms of the structure of inputs, in particular in the demand for labour and capital. In terms of the components of demand, the effect of a relative increase in export prices compared to domestic prices is a slight increase in exports (0.56%). The technical coefficients being fixed gives us stability in the intermediate demand within both formal and informal subsectors. Final consumption grows by 0.96% for formal sector goods, under the effect of a decline in prices in the sector. However, we observe rigidity against the decline in consumption of goods in the informal sector due to rigidity in supply. This effect is more relevant for domestic prices under the assumption that informal goods go to domestic markets. Spending on final consumption by the administration declines by 5.82% for other formal industrial products, 4.54% for other nonmarket services and 7.02% for

formal transportation. This is a direct result of the decline in public spending to neutralize the effects of reduced tax receipts on the budget balance of the State.

Compared to taxing products in the informal sector, real GDP at base prices is stable and at market prices it declines alongside the deflator (-1.14%). GDP at market prices which accounts for taxes, and which thus declines in this simulation, records a nominal decline evaluated at 1.93% as opposed to 0.6% in real terms.

Table 15: Impact on GDP - simulation 3

	valGDP_BP	valGDP_BP_REAL	valGDP_MP	valGDP_MP_REAL
BASE	12183229	12183229	13041060	13041060
SIM3	12043814.5	12183229	12788220.7	12962737.6
VAR	-1.14		-1.93	-0.60

Source: authors' estimates

In sum, scenario 1 has a decline in economic activity in the informal sector to the benefit of the formal sector. Scenarios 2 and 3 show somewhat uncertain changes, with no obvious distinction between the formal and informal sectors. Regardless, these economic changes determine incomes which can be studied to find the impact on household welfare in the simulations.

4.2 Effects on household welfare

The effects on household welfare are evaluated, first in terms of equivalent variation as per Hicks, and second in terms of poverty indicators.

4.2.1 Impact in real disposable income (equivalent variation)

Compared to the reference scenario, we see an overall improvement in household welfare by between 1% and 0.7% respectively in simulations 1 and 3, while in simulation 2 it declines by 0.45%. These overall changes hide differences observed by area of residence, however. In short, urban households are more affected in simulation 1, with a 1.6% increase in average real income among urban households as compared to 0.10% among rural households. Given that this simulation deals with migration of qualified workers from the informal sector into the formal sector, this result is not surprising consideration the high endowment in qualified labour in urban

areas compared to rural areas. Taxing products in the informal sector (simulation 2) reduces the welfare of urban households by 0.59% as compared to 0.45% among those in rural areas. Simulation 3 sees nearly identical changes in rural (0.67%) and urban (0.72%) areas.

Table 16: Equivalent variation as a share of income in the reference scenario

VE	SIM1	SIM2	SIM3
urban households	1.60%	-0.36%	0.72%
rural households	0.10%	-0.59%	0.67%
Total	1.00%	-0.45%	0.70%

Source: authors' estimates

4.2.2 Impact on poverty

The reference scenario, based on data from the ECAM3 survey, presents a poverty incidence of 39.9% nationally, with major differences by area of residence: 12.2% in urban areas compared to 55.0% in rural areas. In simulation 1, the poverty incidence is estimated at 11.5% in urban areas, 54% in rural areas and 39% nationally. Relative to the reference scenario, there are considerable declines in the poverty rate respectively by 6.15%, 1.86% and 2.32% in urban and rural areas, and nationally.

However, in simulation 2 we see an increase in the poverty rate: it increases by 3.38% in urban areas, 0.14% in rural areas and 0.46% nationally. This means that taxing the informal sector does not improve the welfare of households on average in either rural or urban areas. Urban areas are most affected because the vast majority of informal production units are located there.

Scenario 3 shows an improvement in household living conditions in terms of poverty. We observe a decline in the relative number of poor. This decline is estimated to be 2.51 percentage points in rural areas and 0.56 percentage points in rural areas, which sums to a 0.77 point decline nationally.

Table 17: Change in poverty incidence with respect to reference year, by rural/urban residence

	nominal			relative change		
	Urban	Rural	Total	Urban	Rural	Total
reference situation	12.2	55.0	39.9	-	-	-
simulation 1	11.5	54.0	39.0	-6.15%	-1.86%	-2.32%
simulation 2	12.6	55.1	40.1	3.38%	0.14%	0.49%
simulation 3	11.9	54.7	39.6	-2.51%	-0.56%	-0.77%

In addition to changes in poverty shown by the P0 poverty indicator, we can also point to the impacts of the shocks on the P1 and P2 indicators on the depth and severity of poverty.

Nationally, scenario 1 shows a depth of poverty of 11.9% as opposed to 12.3% in the reference scenario. The severity of poverty goes from 5% in the reference situation to 4.8% in this scenario. This goes along with -3.43 and -4.34 percentage point (p.p.) changes respectively in the depth and severity of poverty. However, in scenario 2 these indicators worsen: the depth of poverty increases by 1.13 p.p. while the severity of poverty increases by 1.47 p.p. In scenario 3, we see the depth of poverty fall by 1.27 p.p. and the severity of poverty by 1.63 p.p.

Table 18: Change in poverty indices relative to reference situation

	Initial situation	simulation 1		simulation 2		simulation 3	
	value	value	variation	value	variation	value	variation
P0	39.9	39.0	-2.32%	40.1	0.49%	39.6	-0.77%
P1	12.3	11.9	-3.43%	12.4	1.13%	12.1	-1.27%
P2	5	4.8	-4.34%	5.1	1.47%	4.9	-1.63%

Source: authors' estimates

The poverty analysis according to the FGT indicators is important for more than one reason. P0 gives us the poverty rate (the share of the poor) in a given population. The P1 indicator gives us the depth of poverty, which is the average gap with respect to the poverty line among the poor. The P2 indicator, the severity of poverty, is the average square of these gaps. This captures the extent of extreme poverty. In this sense, changes in P2 lead to different targeting in an economic policy for the poorest economic agents. Thus, in scenarios 1 and 3, the decline in the P2 indicator suggests that these policies could be somewhat targeted to the poorest economic agents. Similarly, these scenarios show reduced gaps relative to the poverty line but in scenario 2 all measures of poverty rise.

V. Conclusion

This study aimed to evaluate the impacts of policies undertaken by the government to improve the household purchasing power. It involves employment and tax policies that we evaluate in terms of their impacts on the informal sector and poverty. Using data from the 2010 national accounts, a social accounting matrix (SAM) was constructed. This enabled us to perform simulations in a calculable general equilibrium framework along the lines of Decaluwe et al. (2012) and Montaud (2000). Three economic policy scenarios were simulated: the first examines the impact of a 12.6% increase in qualified labour in the formal sector, the second deals with taxing production in the informal sector, and the third scenario has a reduction in the tax rate on products most consumed by the poor. The simulation results are observed for both the macroeconomy and household welfare.

In macroeconomic terms, simulation 1 shows that an increase in qualified employment in the formal sector leads to a 3.98% increase in production and value added in this sector. However, since this additional demand for labour is provided by the informal sector, the positive effects observed for the formal sector are countered by a decline in activity in the informal sector which contributes to a -2.85% decline in value added (for a total increase in the range of 1%). The results in simulations 2 and 3 show that the tax policies, whether they deal with taxing products in the informal sector or a reduction in the tax rate on production, do not significantly impact activity in the informal sector due to observed rigidities in production technologies. In effect, the fixedness of inputs in the short term does not permit economic activity to stray very far from trend following a change in taxes in products. While here it is a consequence of the assumptions in the modeling, this situation gives us a chance to explain the stylized fact that the informal sector is a subsistence sector and, as such, is able to persist so long as economic actors in the sector are not induced to join the formal sector.

In short, scenario 1 shows a decline in economic activity in the informal sector, to the benefit of the formal sector, resulting in 1.31% additional GDP at market prices. Scenarios 2 and 3 show less clear changes, with no obvious connections between formal and informal markets. In particular, we see rigidity, or perhaps insensitivity, of the informal sector to tax policies.

In terms of evaluating welfare effects, the simulation results were evaluated using equivalent variation and FGT poverty indices.

The use of "equivalent variation", which enables us to evaluate the effect of simulated policies on real household income, shows that scenarios 1 and 3 lead to improved household

welfare and a decline in poverty, whereas deterioration is observed in scenario 2. Compared to the reference situation, we see 1% and 0.7% improvements in household welfare in simulations 1 and 3, while in simulation 2 there is a 0.45% deterioration. An analysis by area of residence shows that the impacts are greater among urban households than rural ones.

In terms of poverty, the impact is analogous to that observed for real income. In simulation 1, the poverty incidence is 11.5% in urban areas, 54% in rural areas and 39% nationally. Compared to the reference situation, this represents a considerable decline in the incidence of poverty, respectively by 6.15%, 1.86% and 2.32% in urban and rural areas, and nationally. However, in simulation 2 poverty rises, by 3.38% in urban areas, 0.14% in rural areas and 0.46% nationally. This means that taxing the informal sector does not improve the average welfare of households in either rural or urban areas. Urban areas are most affected, which is not surprising considering that the vast majority of informal production units are located in urban areas. In scenario 3, we see a decline in poverty which is estimated at 2.51% in urban areas as compared to 0.56% in rural areas, which sums to a 0.77% decline nationally.

In sum, we see that most interactions between the informal economy and the formal economy transit through the labour market, and there is a wage differential between the two sectors; this affects the purchasing power of households. Thus, a considerable reduction in poverty results from promoting formal employment. The goal of bringing the informal sector into the formal sector would not have a significant impact on growth unless emphasis was placed on the wages of economic actors in that sector. In other words, the study shows that poverty reduction does not necessarily flow from a reduction in the informal sector, a support policy which aimed to increase remuneration to labour in this sector in order to boost growth. Thus, a major recommendation is an increase in the minimum wage alongside a legal framework for its effective application.

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Annexes

Annex 1: Macro SAM

		L	K	AG	AG	AG	AG	AG	AG	AG	J	I	X	OTH	OTH	OTH
		L	Cap	Households	Firms	APU+ISBL	TD	TM	TI	r.o.w.	Subsector	Product	Product	INV	VSTK	Total
L	L										4257661					4257661
K	cap										7886826					7886826
AG	Households	4234921	5071980	30143	219443	230542				33941						9820969
AG	Firms		2618851	28037	323712	40351				65010						3075961
AG	APU+ISBL		195995	122372	598244	146142	479966	236298	614311	75364	38741		7222			2514656
AG	TD			165966	259864					54136						479966
AG	TM											236298				236298
AG	TI											614311				614311
AG	r.o.w.	22740		29 699	121 936	42 742							3489824			3706941
J	Subsector											19466174	2863723			22329897
I	Product			8764846		1763995					10146669			3110959	20138	23806607
X	Product									2870945						2870945
OTH	INV			679905	1552763	290884				607545						3131097
OTH	VSTK													20138		20138
OTH	Total	4257661	7886826	9820969	3075961	2514656	479966	236298	614311	3706941	22329897	23806607	2870945	3131097	20138	

Source: authors, using national accounts

Annex 2: Differentiating between formal and informal subsectors within the SAM

2.1. Decomposition of products

The account for products includes 20 products as per Table A1. The decomposition is done without any particular difficulty because the process of developing the National Accounts of Cameroon uses a nomenclature for products which are sufficiently disaggregated. The national accounts are based on a nomenclature of 44 level 1 products¹⁸. So, the products in the SAM were determined by grouping together basic products at the level of the supply-use table (Table A2). The following table provides details on the groupings.

Table A1: Grouping subsectors and products in the supply-use tables (national accounts)

Subsectoral grouping in supply-use table ¹⁹	Subsectors or products aggregated in SAM	Number of subsectors or products
1	agriculture	1
3 to 4	other primary products	1
5 to 6	extractive industry	2
7 to 14	agroindustry	2
15 to 30	other industries	2
31	construction	2
32	trade	2
34	Hospitality and hotels	2
35	transport	2
33, 36 to 39	other market services	2
40	administration	1
41 to 44	other nonmarket services	1
	Total	20

1= formal or informal; 2= formal and informal

¹⁸ There are actually 3 levels in the nomenclature. Level 1 is the most aggregated, level 2 is obtained by disaggregating level 1 products, and level 3 results from disaggregating level 2.

¹⁹ See table below for details on nomenclature on these subsectors and products.

Table A1': Nomenclature of products and subsectors in supply-use table (national accounts)

Product code	Supply-use table products	Supply-use table subsectors	Code Branche
1	Agricultural products	Agriculture	1
2	Livestock and hunting products	Livestock and hunting	2
3	Forestry products	Forestry and silviculture	3
4	Fishing and aquaculture products	Fishing and aquaculture	4
5	Energy products	Energy production extraction	5
6	Other products from extraction	Other extractive activity	6
7	Meat and fish	Meat and fish industry	7
8	Grain products	Grain processing and production	8
9	Cacao, coffee, tea and sugar products	Cacao, coffee, tea and sugar industry	9
10	Oilseed and animal feed	Oilseed and animal feed industry	10
11	Cereal products	Agroindustry in basic cereals products	11
12	Milk products; fruit and vegetable products	Milk and vegetable industry, and fruit and vegetable products	12
13	Beverages	Beverage industry	13
14	Tobacco products	Tobacco industry	14
15	Textiles and clothing products	Textiles and clothing production	15
16	Leather and footwear	Leather and footwear manufacturing industries	16
17	Woodworking and wood article products	Wood industries other than furniture	17
18	Paper and cardboard: published and printed products	Paper and paper articles manufacturing	18
19	Products for refining, coking and nuclear industries	Oil refining, coking and refining industry	19
20	Chemical products	Chemical industries and goods	20
21	Rubber and plastic products	Rubber production and manufacturing of rubber articles	21
22	Other non-metal mineral products and construction materials	Manufacturing of other non-metal mineral products	22
23	Basic metals and manufactured metals products	Manufacturing of basic metallurgical products and manufactured metals products	23
24	Machines, electric devices and parts	Production of machines, electrical devices and parts	24
25	Audio-visual and communications equipment	Manufacturing of audio-visual equipment and devices	25
26	Transportation equipment	Manufacturing of transportation equipment	26
27	Furniture, various industrial production and repair services	Manufacturing of furniture and related activities	27
28	Repair and installation of machines and equipment	Repair and installation of machines and equipment	28
29	Electricity and infrastructure	Production and distribution of electricity and infrastructure	29
30	Water and sanitation	Production and distribution of water and sanitation	30
31	Construction works	Construction	31
32	Wholesale and retail	Trade in wholesale and retail	32
33	Repair and upkeep of vehicles	Vehicle repair	33
34	Hotel and hospitality services	Restaurants and hotels	34
35	Transportation and warehousing	Transportation, warehousing and communications	35
36	Information and communications services	Information and communications	36
37	Financial services	Financial activities	37
38	Real estate services	Real estate activities	38
39	Professional, technical, etc., services	Professional and technical service activities	39
40	Public service and social security	Public service and social security	40
41	Education	Education	41
42	Health and social services	Health and social services	42
43	Other services	Other services	43
44	Regional correction	Fictitious production	44

Source: authors, using data extracted from the ERETES module, software for constructing the national accounts of Cameroon

2.2. Decomposition of accounts by activity

The disaggregation of the national accounts by area of activity is done to differentiate between activities in the formal and informal sectors. To do this, we take advantage of the structure of the national accounts, which specifies each subsector of activity clearly. We specify 8 modes of production with groupings showing the share of the informal sector in the given subsectors.

Table A.2: Distinction of modes of production.

Code mode_production	Label of mode of production	Grouping in formal/informal in the SAM
1	Formal individual enterprises	Formal sector
2	Formal firms other than individual enterprises having returned the DSF	
3	Formal firms not having returned the DSF	
4	Formal undeclared	
5	Public administration and NPO	Nonmarket
6	Informal sector	Informal sector
7	Households	
8	Illicit activity (not informed)	

Source: authors, using data extracted from the ERETES module, software used to construct the national accounts of Cameroon.

Grouping these different modes of production enables us to differentiate between formal and informal in the production of different subsectors as presented by the nomenclature (Table A1) and the groupings (Table A1). From that, 20 subsectors are specified as follows:

Table A3: Nomenclature of subsectors in the micro SAM

Number	SAM subsector	Name
1	agri	Agriculture
2	autre_Pri	Other primary activities
3	ind_Extr_f	Formal extractive industry
4	ind_Extr_nf	Informal extractive industry
5	ind_agro_f	Formal agroindustry
6	ind_agro_nf	Informal agroindustry
7	autre_ind_f	Other formal industries
8	autre_ind_nf	Other informal industries
9	constr_f	Formal construction
10	constr_nf	Informal construction
11	cce_f	Formal trade
12	cce_nf	Informal trade
13	restau_f	Formal hospitality
14	restau_nf	Informal hospitality
15	transp_f	Formal transportation

16	transp_nf	Informal transportation
17	autre_ser_m_f	Other formal market services
18	autre_ser_m_nf	Other informal market services
19	adm	Public services
20	autre_ser_nm	Other nonmarket services

Source: authors

Annex 3: Disaggregation of factors

Our SAM includes four production factors: capital, unqualified labour, formal qualified labour and informal qualified labour. In order to have wages by the type of work being considered, we use data from the EESI (2010) survey which provides wage structures by subsector and level of education. For the needs of the study, data from the EESI was used to show the aggregate level of education between the shares of qualified (CEP or less) and unqualified (no diploma at all).

Treatment of wages

To show the share of labour remuneration in value added (the disaggregation of (EBIDTA)/(mixed income)), we tried to estimate the share of labour remuneration in mixed income in each subsector. We used EESI survey data to do this. Then, using these shares, we estimated the volume of independent employment and the corresponding wages. In doing this, we impute the average wage upon each independent worker in the subsector they operate in.

Table: Value added shares before and after imputing wages of independent employed (millions FCFA)

	agric ulture	other prim. produ cts	extractive industries	agroindus try	other industri es	constr uction	trade	hospitalit y	transp ort	other market services	public servic e	other nonmark et services	Total
Wage remuneration	17819 5	35855	45489	133149	212781	25025 1	26651 0	40522	10638 1	51258 8	43393 6	54581 7	276147 4
Gross operating income / mixed income	11145 19	49161 6	879426	695019	983650	31131 7	18053 48	39759 1	65144 9	13950 84	23122 4	43200 2	938824 5
VA	12927 14	52747 1	924915	828168	119643 1	56156 8	20718 58	43811 3	75783 0	19076 72	66516 0	97781 9	121497 19
share of labour in VA before imputation	14%	7%	5%	16%	18%	45%	13%	9%	14%	27%	65%	56%	23%
share of labour in VA after imputation	26%	14%	5%	31%	47%	54%	21%	23%	19%	49%	66%	64%	35%

Source: 2010 supply-use table and development by authors

Annex 4: Disaggregation of households

Methodological notes for dealing with the FCCF

The households account was disaggregated by area of residence (urban, rural). Also, to discern between final consumption in both the informal and formal sectors, we used data from section 15 of the ECAM3 survey. This section collects information on where the product was purchased. This allows us to make assumptions about the origin of the a variety of products consumed in terms of being formal or informal.

✓ Raw data from ECAM3

In the raw ECAM3 data, we extract 6 key variables:

Variable code from the ECAM3 database	Variable label in the ECAM3 database
S15Q5	Code produit
S15Q7	Montant total de la dépense
S15Q10	Lieu d'acquisition
Coefext	Coefficient d'extrapolation
Milieu	Milieu de vie (urbain, rural)
Nivie	Niveau de vie (pauvre, non pauvre)

✓ Treatment

Aggregating spending

After having weighted consumption expenditures by the corresponding extrapolation coefficients, we first aggregated consumption expenditures by area of residence, living standard, product code and place of purchase. Then, we brought together the nomenclature (of products) used in the ECAM3 with that used in the national accounts.

Updating the transition in nomenclatures

Here, the table showing the changes in nomenclature between the ECAM3 survey and that of products in the national accounts was updated. It allows us to move between the final consumption data (ECAM3) and the national accounts.

Formulation of assumptions on origins of products consumed

With the help of data on type of purchase location (S15Q10) declared in the survey, we formulate the following assumptions on product origin.

ECAM3 purchase location code	ECAM3 purchase place label	Assumption on product origin
01	Auto production	informal
02	Supermarket	formal
03	Specialized stores	formal
04	Specialized sellers other than stores	formal
05	Grocer/shops/stalls	informal
06	Markets	structure of final production *
07	Hotels	formal
08	Transportation sector	structure of production by sector **
09	Individual services	informal
10	Public services	formal
11	Clinics, medical laboratories and schools	formal
12	Street vending, improvised location on a route	informal
13	House of vendor	informal
14	Game booth or call box	informal

*We use the structure of total production, by formal and informal sectors, to account for the fact that formal and informal products coexist on the market.

** We use the structure of production in the transportation sector to discern between formal and informal products.

This treatment enables us to see the structure of final consumption by household type and product in a table. However, it should be noted that the assumptions in the previous table remain debated.

Transfers matrix

The data on the transfers matrix come from the 2010 IEAT. Also, for current taxes on income and capital (0D5), which are accounted for in the SAM in the account for direct taxes, we discern between three elements of the distributor account: social contributions (0D6001), in-kind social benefits (0D6002) and other transfers (0D7). These three elements enable us to easily build the transfers matrix from the supply-use table from the IEAT. The amount of transfers relating to household from the national accounts is distributed according to the profile of transfers paid

according to ECAM3. Income from property is broken down by capital structure (EBIDTA of households in formal sector) and the wage structure in the formal sector is used to separately consider social contributions by household group. As for other transfers, these are distributed following the structure of transfers implied by ECAM3.

Annex 5: Structure of final consumption

Table: Structure of final consumption

Product	Structure FC, poor	Structure FC, non-poor
Agriculture	0.19	0.12
Other primary	0.07	0.05
Extractive industry f	0.00	0.00
Extractive industry nf	0.00	0.00
Agroindustry f	0.13	0.14
Agroindustry nf	0.09	0.08
Other industry f	0.13	0.18
Other industry nf	0.09	0.06
Construction f	0.00	0.00
Construction nf	0.00	0.00
Trade f	0.00	0.00
Trade nf	0.00	0.00
Hospitality f	0.03	0.04
Hospitality nf	0.05	0.08
Transportation f	0.04	0.05
Transportation nf	0.01	0.01
Other m services f	0.04	0.07
Other market services nf	0.05	0.03
Public administration	0.00	0.00
Other nm services	0.07	0.09
Total	1.00	1.00

Source: SAM

f: forma l; nf: informal; m: market; nm: nonmarket

Annex 6: Equations in model

A0 Definition of sets

- ❖ j, jj J set of economic subsectors as shown in Annex 2, Table A3, above;
- ❖ i, ij I set of products (goods and services) in the economy;
- ❖ l $L = \{L_S_f, L_S_nf, L_NS\}$ respectively represent formal qualified labour, informal qualified labour and unqualified labour;
- ❖ k $K = \{capital\}$;
- ❖ ag, agj $AG = H \cup F \cup \{Govt, Row\}$; H = set of households and F = firms;
- ❖ h, hj H ;
- ❖ f, fj F ;
- ❖ $agng$ $AGNG = AG \setminus \{Govt\}$;
- ❖ agd $AGD = AG \setminus \{Row\}$.

A1 Formal statement of equations

A1.1 Production

1. $VA_j = v_j XST_j$
2. $CI_j = io_j XST_j$
3. $VA_j = B_j^{VA} \frac{VA}{j} LDC_j \frac{VA}{j} + \left(1 - \frac{VA}{j}\right) KDC_j \frac{VA}{j} \frac{1}{j}$
4. $LDC_j = \frac{\frac{VA}{j} RC_j}{\left(1 - \frac{VA}{j}\right) WC_j} KDC_j$
5. $LDC_j = B_j^{LD} \frac{LD}{l} LD_{l,j} \frac{LD}{j} \frac{1}{LD}$
6. $LD_{l,j} = \frac{\frac{LD}{l,j} WC_j}{WTI_{l,j}} \left(B_j^{LD}\right)^{LD-1} LDC_j$
7. $KDC_j = B_j^{KD} \frac{KD}{k,j} KD_{k,j} \frac{KD}{j} \frac{1}{KD}$
8. $KD_{k,j} = \frac{\frac{KD}{k,j} RC_j}{RTI_{k,j}} \left(B_j^{KD}\right)^{KD-1} KDC_j$
9. $DI_{i,j} = aij_{i,j} CI_j$

A1.2 Income and Savings

A1.2.1 Households

$$10. YH_h = YHL_h + YHK_h + YHTR_h$$

$$11. YHL_h = \sum_l \frac{WL}{h,l} W_l LD_{l,j}$$

$$12. YHK_h = \sum_k \frac{RK}{h,k} R_{k,j} KD_{k,j}$$

$$13. YHTR_h = TR_{h,ag}$$

$$14. YDH_h = YH_h TDH_h TR_{gvt,h}$$

$$15. CTH_h = YDH_h SH_h TR_{agng,h}$$

$$16. SH_h = PIXCON sh0_h + sh1_h YDH_h$$

A1.2.2 Firms

$$17. YF_f = YFK_f + YFTR_f$$

$$18. YFK_f = \sum_k \frac{RK}{f,k} R_{k,j} KD_{k,j}$$

$$19. YFTR_f = TR_{ag,f}$$

$$20. YDF_f = YF_f TDF_f$$

$$21. SF_f = YDF_f TR_{ag,f}$$

A1.2.3 Government

$$22. YG = YGK + TDHT + TDFT + TPROD + TPRCTS + YGTR$$

$$23. YGK_f = \sum_k \frac{RK}{gvt,k} R_{k,j} KD_{k,j}$$

$$24. TDHT = TDH_h$$

$$25. TDFT = TDF_f$$

$$26. TPROD = TIWT + TIWT + TIKT + TIPT$$

$$27. TIWT = TIW_{l,j}$$

$$28. TIKT = TIK_{k,j}$$

29. $TIPT = TIP_j$
30. $TPRCTS = TICT + TIMT + TIXT$
31. $TICT = TIC_i$
32. $TIMT = TIM_i$
33. $TIXT = TIX_i$
34. $YGTR = TR_{gvt, agng}$
35. $TDH_h = PIXCON \ ttdh0_h + ttgh1_h YH_h$
36. $TDF_f = PIXCON \ ttdf0_f + ttgf1_f YFK_f$
37. $TIW_{l,j} = ttiw_{l,j} W_l LD_{l,j}$
38. $TIK_{k,j} = ttik_{k,j} R_{k,j} KD_{k,j}$
39. $TIP_j = ttip_j PP_j XST_j$
40. $TIC_i = ttic_i \ PL_i + PC_{ij} tmrg_{ij,i} \ DD_i + (1 + ttim_i) PWM_i e + PC_{ij} tmrg_{ij,i} \ IM_i$
41. $TIM_i = ttim_i * PWM_i * e * IM_i$
42. $TIX_i = ttix_i \ PE_i + PC_{ij} tmrg_{ij,i}^X \ EXD_i$
43. $SG = YG \ TR_{agng, gvt} \ G$

A1.2.4 Rest of world

44. $YROW = e \ PWM_i * IM_i + \sum_k \frac{RK}{row,k} \sum_j R_{k,j} KD_{k,j} + TR_{row, agd}$
45. $SROW = YROW \ PE_i^{FOB} EXD_i \ TR_{agd, row}$
46. $SROW = CAB$

A1.2.5 Transfers

47. $TR_{agng, h} = TR_{agng, h} YDH_h$
48. $TR_{gvt, h} = PIXCON \ tr0_h + tr1h * YH_h$
49. $TR_{ag, f} = TR_{gvt, h} YDF_f$
50. $TR_{agng, gvt} = PIXCON \ TR_{agng, gvt}^0$
51. $TR_{agd, row} = PIXCON \ TR_{agd, row}^0$

A1.3 Demand

52. $PC_i C_{i,h} = PC_i C_{i,h}^{\min} + \frac{LES}{i,h} CTH_h \quad PC_{ij} C_{ij,h}^{\min}$
53. $GFCF = IT \quad PC_i * VSTK_i$
54. $PC_i INV_i = \frac{INV}{i} GFCF$
55. $PC_i CG_i = \frac{gvt}{i} G$
56. $DIT_i = \frac{DI_{i,j}}{j}$
57. $MGRN_i = \frac{tmrg_{i,ij} DD_{ij}}{ij} + \frac{tmrg_{i,ij} IM_{ij}}{ij} + \frac{tmrg_{i,ij}^X EXD_{ij}}{ij}$

A1.4 Supply of products and international trade

58. $XST_j = B_j^{XT} \quad \frac{XT}{j,i} XS_{j,i}^{XT} \quad \frac{1}{j^{XT}}$
59. $XS_{j,i} = \frac{XST_j}{(B_j^{XT})^{1+} \quad \frac{XT}{j,i} PT_j} \quad \frac{P_{j,i}}{j^{XT}}$
60. $XS_{j,i} = B_{j,i}^X \quad \frac{X}{j,i} EX_{j,i}^{X,j,i} + (1 \quad \frac{X}{j,i}) DS_{j,i}^{X,j,i} \quad \frac{1}{j^{X,j,i}}$
61. $EX_{j,i} = \frac{(1 \quad \frac{X}{j,i}) PE_i}{(\frac{X}{j,i}) PL_i} \quad DS_{j,i}^{X,j,i}$
62. $EXD_i = EXD_i^O \quad \frac{e * PWX_i}{PE_i^{FOB}} \quad \frac{XD}{i}$
63. $Q_i = B_i^M \quad \frac{M}{i} IM_i^M + (1 \quad \frac{M}{i}) DD_i^M \quad \frac{1}{i^M}$
64. $IM_i = \frac{\frac{M}{i} PD_i}{(1 \quad \frac{M}{i}) PM_i} \quad DD_i^M$

A1.5 Price

A1.5.1 Production

$$65. PP_j = \frac{PVA_j VA_j + PCI_j CI_j}{XST_j}$$

$$66. PT_j = (1 + ttip_j) PP_j$$

$$67. PCI_j = \frac{PC_i DI_{i,j}}{CI_j}$$

$$68. PVA_j = \frac{WC_j LDC_j + RC_j KDC_j}{VA_j}$$

$$69. WC_j = \frac{WTI_{l,j} LD_{l,j}}{LDC_j}$$

$$70. WTI_{l,j} = W_l (1 + ttiw_{l,j})$$

$$71. RC_j = \frac{RTI_{k,j} KD_{k,j}}{KDC_j}$$

$$72. RTI_{k,j} = R_{k,j} (1 + ttik_{k,j})$$

$$73. R_{k,j} = RK_k \text{ if capital mobile}$$

A1.5.2 International trade

$$74. PT_j = \frac{P_{j,i} XS_{j,i}}{XST_j}$$

$$75. P_{j,i} = \frac{PE_i EX_{j,i} + PL_i DS_{j,i}}{XS_{j,i}}$$

$$76. PE_i^{FOB} = PE_i + \sum_{ij} PC_{ij} tmrg_{ij,i}^X (1 + ttix_i)$$

$$77. PD_i = (1 + ttic_i) PL_i + \sum_{ij} PC_i tmrg_{ij,i}$$

$$78. PM_i = (1 + ttic_i) (1 + ttim_i) * e * PWM_i + \sum_{ij} PC_{ij} tmrg_{ij,i}$$

$$79. PC_i = \frac{PM_i IM_i + PD_i DD_i}{Q_i}$$

A1.5.3 Price indices

$$80. \text{PIXGDP} = \sqrt{\frac{\prod_j \left(PVA_j + \frac{TIP_j}{VA_j} VA_j^0 \right)}{\prod_j \left(PVA_j^0 VA_j^0 + TIP_j^0 \right)}} \frac{\prod_j \left(PVA_j VA_j + TIP_j \right)}{\prod_j \left(PVA_j^0 + \frac{TIP_j^0}{VA_j^0} VA_j \right)}$$

$$81. \text{PIXCON} = \frac{\prod_i PC_i \prod_h C_{i,h}^0}{\prod_{ij} PC_{ij}^0 \prod_h C_{ij,h}^0}$$

$$82. \text{PIXINV} = \frac{\prod_i PC_i^{INV}}{\prod_i PC_i^0}$$

$$83. \text{PIXGVT} = \frac{\prod_i PC_i^{GVT}}{\prod_i PC_i^0}$$

A1.6 Equilibrium

$$84. Q_i = C_{i,h} + CG_i + INV_i + VSTK_i + DIT_i + MRGN_i$$

$$85. LD_{l,j} = LS_l$$

$$86. KD_{k,j} = KS_k$$

$$87. IT = SH_h + SF_f + SG + SROW$$

$$88. DS_{j,i} = DD_i$$

$$89. EX_{j,i} = EXD_i$$

A1.7 Gross domestic product

$$90. \text{GDP}^{BP} = \prod_j PVA_j VA_j + TIPT$$

$$91. \text{GDP}^{MP} = \text{GDP}^{BP} + TPRCTS$$

$$92. \text{GDP}^{IB} = \prod_{l,j} W_l LD_{l,j} + \prod_{k,j} R_{k,j} KD_{k,j} + TPROD + TPRCTS$$

$$93. \text{GDP}^{FD} = \prod_i PC_i \prod_h C_{i,h} + CG_i + INV_i + VSTK_i + \prod_i PE_i^{FOB} EXD_i + \prod_i PWM_i IM_i$$

A1.8 Variables in volume

$$94. CTH_h^{REAL} = \frac{CTH_h}{PIXCON}$$

$$95. G^{REAL} = \frac{G}{PIXGVT}$$

$$96. GDP^{BP_REAL} = \frac{GDP^{BP}}{PIXGDP}$$

$$97. GDP^{MP_REAL} = \frac{GDP^{MP}}{PIXCON}$$

$$98. GFCF^{REAL} = \frac{GFCF}{PIXINV}$$

$$99. LSTQ = LS_{L_q_if} + LS_{L_q_jnf}$$

$$100. VE_h = YDH_0_h \prod_{i=1}^n \frac{(PC_i)^{LES_{i,h}}}{PC0_i} YDH_h$$

A2 Variables in model

A2.1 Real variables (volume)

$C_{i,h}$: Consumption of product i by household type h

$C_{i,h}^{Min}$: Minimum consumption by household h of product i

CG_i : Public consumption of good i

CI_j : Intermediate consumption of subsector j

CTH_h^{REAL} : Real expenditures on final consumption by household h

DD_i : Domestic demand for product i produced domestically

$DI_{i,j}$: Intermediate demand for product i by subsector j

DIT_i : Total intermediate demand for good i

$DS_{j,i}$: Supply of product i by subsector j on domestic market

$EX_{j,i}$: Quantity of product i exported by subsector j

EXD_i : Demande mondiale des exportations en bien i

G^{REAL} : Real government expenditures

GDP^{BP_REAL} : Real GDP at base prices

GDP^{MP_REAL} : Real GDP at market prices

$GFCF^{REAL}$: Real fixed capital formation

IM_i : Quantity of product i imported

INV_i : Demand for good i for investment
 $KD_{k,j}$: Demand for capital type k by subsector j
 KDC_j : Demand for composite capital by subsector j
 KS_k : Supply of type k capital
 $LD_{l,j}$: Demand for labour type l by subsector j
 LDC_j : Demand for composite labour by subsector k
 LS_l : Supply of type l labour
 $MRGN_i$: Trade and transport margins of good i
 Q_i : Quantity demanded of composite good i
 VA_j : Value added in subsector j
 $VSTK_i$: Change in stock of good i
 $XS_{j,i}$: Production of good i by subsector j
 XST_j : Aggregate production in subsector j

A2.2 Prices

e : Exchange rate, price of external money in domestic currency
 $P_{j,i}$: Base production price of good i in subsector j
 PC_i : Price at consumption for composite good i (including margins and taxes)
 PCI_j : Price index of intermediate consumption in subsector j
 PD_i : Domestic price of product i (including margins and taxes)
 PE_i : Price of exports (excluding taxes on exports)
 PE_i^{FOB} : FOB price of exports (in domestic currency)
 $PIXCON$: Consumer price index
 $PIXGDP$: GDP deflator
 $PIXGVT$: Price index of public spending
 $PIXINV$: Price index of investment
 PL_i : Price of domestic product i (excluding taxes on products)
 PM_i : Price of imported good i (excluding taxes on products)
 PP_j : Unit price in subsector j (including taxes on labour and capital; but excluding other production taxes)
 PT_j : Base price of output in subsector j
 PVA_j : Price of value added in subsector j
 PWM_i : World price of imports of good i (expressed in foreign currency)
 PWX_i : World price of exports of good i (expressed in foreign currency)

$R_{k,j}$: Rental rate of capital type k in subsector j
 RC_j : Rental rate of composite capital in subsector j
 RK_k : Rental rate of capital type k (if capital is mobile)
 $RTI_{k,j}$: Rental rate paid by subsector j on capital type k (including taxes on capital)
 W_l : Wage rate for labour type l
 WC_j : Wage rate for composite labour in subsector j
 $WTI_{l,j}$: Wage rate paid by industry j for labour type l

A2.3 Nominal variables (in value)

CAB : Current account balance of the balance of payments
 CTH_h : Consumption budget of household h
 G : Government expenditures on goods and services
 GDP^{BP} : GDP at base prices
 GDP^{FD} : GDP at market prices, final demand view.
 GDP^{IB} : GDP at market prices, income view
 GDP^{MP} : GDP at market prices
 $GFCF$: Fixed capital formation
 IT : Total investment
 SF_f : Firms' savings
 SG : Government savings
 SH_h : Savings of household type h
 $SROW$: Savings of rest of world
 TDF_f : Taxes on income of the firm
 $TDFT$: Total government revenues from taxes on firms' income
 TDH_h : Tax on income of household type h
 $TDHT$: Total government revenues, from taxes on household income
 TIC_i : Government revenues, from indirect taxes on product i
 $TICT$: Total government revenues from indirect taxes
 $TIK_{k,j}$: Government revenues, from taxes on type k capital used by subsector j
 $TIKT$: Total income from capital
 TIM_i : Revenues from taxes on imports
 $TIMT$: Total revenues from imports
 TIP_j : Government revenues, from taxes on production in subsector j
 $TIPT$: Total government revenues, from taxes on production
 $TIW_{l,j}$: Taxes on labour type l used by subsector j
 $TIWT$: Total taxes on labour
 TIX_i : Taxes on exports

$TIXT$: Total taxes on exports
 $TPRCTS$: Total government revenues from taxes on products and imports
 $TPROD$: Total revenues of government from other than production taxes
 $TR_{ag,agj}$: Transfers from agent agj to agent ag
 YDF_f : Firms' disposable income
 YDH_h : Households' disposable income
 YF_f : Total income of firm f
 YFK_f : Capital income of firm f
 $YFTR_f$: Income from transfers, firm f
 YG : Total government revenues
 YGK : Capital income paid to government
 $YGTR$: Revenues from transfers paid to public administration
 YH_h : Total income of household h
 YHK_h : Capital income paid to household h
 YHL_h : Labour income paid to household h
 $YHTR_h$: Income from transfers paid to household h
 $YROW$: Income from rest of world

A2.4 Other variables

$sh0_h$: Autonomous savings of household h (constant in the investment function)
 $sh1_h$: Slope of the savings function of household h
 $tr0_h$: Autonomous transfer of household h to the administration (constant)
 $tr1_h$: Slope of function of transfers of household h to the administration
 $ttdf0_f$: Constant in the tax function on income of firm f
 $ttdf1_f$: Slope of function which expresses taxes on income of firm f
 $ttdh0_h$: Constant of tax function on income of household h
 $ttdh1_h$: Slope of function which expresses taxes on income of household h
 $ttic_i$: Tax rate on product i
 $ttik_{k,j}$: Tax rate on rent from capital type k used by subsector j
 $ttim_i$: Tax rate on imports of product i
 $ttip_j$: Tax rate on production in subsector j (production tax)
 $ttiwl_{l,j}$: Tax rate on labour type l used in subsector j
 $ttix_i$: Tax rate on exports of good i

A.3 Parameters

- $aij_{i,j}$: Coefficients of input-output matrix
- B_j^{KD} : Scale parameter in CES function expressing composite capital in subsector j
- B_j^{LD} : Scale parameter in CES function expressing composite labour in subsector j
- B_i^M : Scale parameter in CES function expressing composite good i
- B_j^{VA} : Scale parameter in CES function expressing value added in subsector j
- $B_{j,i}^X$: Scale parameter in CET function expressing the domestic-export shares of product i in subsector j
- B_j^{XT} : Scale parameter in CET function expressing total output
- β_j^{KD} : Share parameter in CES function expressing composite capital in subsector j
- β_j^{LD} : Share parameter in CES function expressing composite labour in subsector j
- β_i^M : Share parameter in CES function expressing composite good i
- β_j^{VA} : Share parameter in CES function expressing value added in subsector j
- $\beta_{j,i}^X$: Share parameter in CET function expressing the domestic-export shares of product i in subsector j
- β_j^{XT} : Share parameter of CET function expressing total output
- ϵ : Price elasticity of transfers
- β_i^{GVT} : Share of good i in total public consumption of goods and services
- β_i^{INV} : Share of good i in total investment
- $\beta_{i,h}^{LES}$: Share of good i in total consumption budget of household h
- β_j^{IO} : Coefficient of Leontief-type function expressing IC in subsector j
- $\beta_{ag,h}^{RK}$: Share of income from type k capital received by household h
- $\beta_{ag,agj}^{TR}$: Share of transfer from agent "ag" to agent "agj", compared to total transfers
- $\beta_{h,l}^{WL}$: Share of labour type l income received by household h
- β_j^{KD} : Elasticity parameter in the CES function expressing composite capital in subsector j
- β_j^{LD} : Elasticity parameter in the CES function expressing composite labour in subsector j
- β_i^M : Elasticity parameter in the CET function expressing the domestic-export shares of product i in subsector j
- β_j^{VA} : Elasticity parameter in the CES function expressing value added in subsector j
- $\beta_{j,i}^X$: Elasticity parameter in the CET function expressing the domestic-export shares of product i in subsector j
- β_j^{XT} : Elasticity parameter in the CET function expressing total output
- β_j^{KD} : Elasticity of substitution in the CES function expressing composite capital in subsector j

LD_j : Elasticity of substitution in the CES function expressing composite labour in subsector j
 M_i : Elasticity of substitution in CET function expressing the domestic-export shares of product i in subsector j
 VA_j : Elasticity of substitution in CES function expressing value added in subsector j
 $XD_{j,i}$: Elasticity of substitution in the CET function expressing the domestic-export shares of product i in subsector j
 XT_j : Elasticity of substitution in the CET function expressing total output
 $tmrg_{i,ij}$: Type i margin rate applied on products ij
 $tmrg_{i,ij}^X$: Type i margin rate applied on exports of products ij
 v_j : Leontief coefficient of value added

A.4 Exogenous variables and macroeconomic closure

$C_{i,h}^{Min}$: Minimum consumption of good i for household h
 CAB : Current account balance of balance of payments
 G : Public expenditures on goods and services
 e : Exchange rate
 $KD_{k,j}$: Demand for type k capital in subsector j
 $LD_{L_q_f,ij}$: Demand for labour type l in formal subsector jf
 $LSTQ$: Total supply of qualified labour in the economy
 $LD_{L_nq,j}$: Demand for unqualified labour in subsector j
 w_l : Remuneration rate to labour type l
 PWM_i : World price for imported good i
 PWX_i : World price for exported good i
 $sh0_h$: Autonomous savings of household h (constant in the investment function)
 $sh1_h$: Slope of savings function of household h
 $tr0_h$: Autonomous transfers of household h to the administration (constant)
 $tr1_h$: Slope of household h transfer function to the administration
 $ttdf0_f$: Constant in the tax function on income of firm f
 $ttdf1_f$: Slope of function which expresses taxes on income of firm f
 $ttdh0_h$: Constant of tax function on income of household h
 $ttdh1_h$: Slope of function which expresses taxes on income of household h
 $ttic_i$: Tax rate on product i
 $ttik_{k,j}$: Tax rate on rent from type k capital used by subsector j
 $ttim_i$: Tax rate on imports of product i
 $ttip_j$: Tax rate on production of subsector j (production tax)

$ttiw_{l,j}$: Tax rate on labour type l used in subsector j

$ttix_i$: Tax rate on exports of good i

$VSTK_i$: Change in stock of good i